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PLEASE NOTE: The materials provided for this course are intended for general reference and teaching purposes only and are not intended as legal advice. The advice of qualified legal counsel should be sought with regard to individual facts and circumstances.

Efforts have been made to provide up-to-date materials. However, due to frequent changes in the law, some of the materials contained in this manual may not contain the most current revisions, or may be subject to change in the future.

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CHAPTER 1

AIR QUALITY

I. INTRODUCTION

A. Federal Regulation.

As in other areas of environmental regulation, air quality in Arizona is regulated at multiple levels. The United States Environmental Protection Agency ("EPA") has responsibility for certain "major sources" and "area sources" under the Clean Air Act, 42 U.S.C.A., § 7401 et seq., and the 1992 Clean Air Act Amendments. The Air Act is very complex, having been created through at least ten Federal statutes dating back to 1955. These include the Air Pollution Control Act of 1955, the Clean air Act of 1963, the Air Quality Act of 1967 and the Clean Air Amendments of 1970, 1977 and most recently, 1990.

Since the first air pollution control legislation in 1955, the responsibility for air pollution control has rested primarily with the states. With each subsequent Federal enactment, more and more authority was transferred to the Federal government, more specifically to the Environmental Protection Agency ("EPA"). Much of the complexity of the Act rises out of Federal directives to the states to enact air pollution legislation that must conform to Federal standards.

The current composition of the Act consists of six subchapters: subchapter I deals primarily with ambient air quality controls and the Federal and state programs for management of the overall air quality. Subchapter II creates a federal program governing emission standards for mobile sources such as automobiles and trucks; Subchapter III contains procedural and miscellaneous provisions; Subchapter IV addresses the problem of acid rain; Subchapter V sets forth the procedures for stationary sources to obtain necessary permits; Subchapter VI addresses the stratospheric ozone problem.

Until the 1990 amendments, the Act was paralleled in Arizona by state air pollution control laws and regulations. Since many parts of the Federal Clean Air Act were significantly changed and additional parts were added as a result of the 1990 Amendments, many of the states as well as Arizona's air pollution control laws and regulations will have to be revised during the next several years to conform to the new changes.

B. State Regulations.

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The Arizona Department of Environmental Quality ("ADEQ") has responsibility under the Arizona Air Quality Act and the 1992 Comprehensive Air Quality Act. A.R.S. § 49-401, et seq.. Further, the political subdivisions of the State of Arizona (primarily the counties) have responsibilities (either delegated by ADEQ or independent of ADEQ) under the Arizona Air Quality Act as well as the 1992 Comprehensive Air Quality Act, A.R.S. § 49-471 et seq., as well county rules and regulations. How these various levels of regulations interact determines to a large degree the effectiveness of that regulation in Arizona and the resulting degree of air quality.

> It is the declared policy of Arizona to control present and future sources of emission of air contaminants to the end that air polluting activities of every type shall be regulated in a manner that insures the health, safety and general welfare of all the citizens of the state; protects property values and protects plant and animal life.

A.R.S. § 49-401(A). The legislature has also announced that "no further degradation of the air in the State of Arizona by any industrial polluter shall be tolerated." A.R.S. § 49-401(B).

In order to establish the "coordinated state-wide program" envisioned in A.R.S. § 49-401, et seq., the legislature specifically provided for both state and county involvement as follows:

> The legislature further intends to place primary responsibility for air pollution control and abatement in the Department of Environmental Quality and the hearing board created thereunder. However, the county shall have the right to control local air pollution problems as specifically provided herein.

A.R.S. § 49-401(B).

1. Duties of the ADEQ:

The duties of ADEQ are set forth in A.R.S. § 49-424. These include inter alia the duty to determine whether air pollution can be controlled by establishing air pollution control districts within well-defined geographical areas, make continuing determinations of the quantity and nature of emissions of air contaminants, topography, wind and temperature conditions, possible chemical reactions in the

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atmosphere, the character of development of the various areas of the state, the economic effect of remedial measures on the various areas of the state, the availability, use and economic feasibility of air cleaning devices, the effect on human health and danger to property from air contaminants, the effect on industrial operations of remedial measures, and other matters necessary to arrive at a better understanding of air pollution and its control, determine the standards for the quality of the ambient air and the limits of air contaminants necessary to protect the public health and to secure the comfortable enjoyment of life and property by the citizens of the state, conduct investigations, inspections and tests, and prepare and develop a comprehensive plan or plans for the abatement and control of air pollution in the state. A.R.S. § 49-424(1),(2),(3),(4), and (6). Further, ADEQ is also specifically tasked with insuring that the various political subdivisions of the state handle air pollution problems within their jurisdictions. For example, ADEQ is required to insure that required planning agencies develop necessary plans and that the cities, towns and counties within their respective jurisdictions implement those plans. A.R.S. § 49-425(a),(10) and (11).

Pursuant to its authority ADEQ has promulgated extensive rules addressing air quality issues. A.A.C. R18-2-101 et seq. These regulations address such things as ambient air quality standards (A.A.C. R18-2-201 et seq.), permits (A.A.C. R18-2-301 et seq.), emissions from non point sources (A.A.C. R18-2-401 et seq.), performance standards for existing stationary sources (A.A.C. R18-2-501 et seq.) and new sources (A.A.C. R18-2-801 et seq.), emissions from mobile sources (A.A.C. R18-1-601 et seq. and R18-2-1001 et seq.) and hazardous air pollutants (A.A.C. R18-2-901 et seq.).

ADEQ, however, has no jurisdiction under the Air Quality Act with respect to air contaminants or pollution existing solely within commercial and industrial plants, works or shops owned by or under the control of the person causing the air contamination or pollution. A.R.S. § 49-448. This area is reserved for Federal and State Occupational Safety and Health Administration ("OSHA") regulations.

2. Air Pollution Control Hearing Board.

ADEQ is assisted in its duties by the Air Pollution Control Hearing Board. A.R.S. § 49-423. The Board is composed of five members appointed by the Governor pursuant to A.R.S. § 38-211. The Hearing Board is available to hear appeals from individuals who have

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had installation, operating or temporary conditional permits (now called "conditional orders") denied or revoked (A.R.S. § 49-428), and also hears challenges to orders of abatement issued by ADEQ (A.R.S. § 49-435). Decisions by the Hearing Board are appealable to the Maricopa County Superior Court. A.R.S. § 49-443 and § 12-910.

3. Air Quality Advisory Committee.

Arizona law also provides for an advisory committee on air quality compliance which consists of representatives from the legislature, Maricopa and Pima County Boards of Supervisors, Phoenix and Tucson City Councils and Chambers of Commerce, the public and the Director of ADEQ. The committee's function is to monitor the compliance of the state and political subdivisions with air quality requirements, develop a plan for business to adjust work schedules, in order to decrease carbon monoxide levels, evaluate the various reports required to be submitted by ADEQ and other state and county agencies and submit annual reports to the legislature concerning the progress of air quality regulation. A.R.S. § 49-403.

C. County/State Jurisdiction.

As stated previously, A.R.S. § 49-402 vests concurrent authority for air pollution control in the Arizona Department of Environmental Quality and the counties. The authority at the county level is vested in "control officers" who are designated officials in each county. In Maricopa County that authority is vested in the Bureau of Air Pollution Control while in Pima County it is vested in the Director of the Pima County Department of Environmental Quality.

ADEQ has original, but not necessarily exclusive, jurisdiction and control over such air pollution matters, air pollution sources, installation permits, operating permits, conditional permits, and violations that pertain to the following:

1. Major sources of air pollution (defined as more than 75 tons of air contaminants per day). In Arizona, the only sources of this size are mines and coal-fired generating stations. (None of these, for example, are found in Maricopa County. Consequently, Maricopa County exercises authority over all privately owned stationary sources.)

2. Air pollution generated by operations and activities of the state and its political subdivisions.

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3. Air pollution by motor vehicles including dust pollution generated by motor vehicles operating for recreational purposes in dry washes and river beds. It should be noted, however, that A.R.S. § 11-251(43) authorizes counties to make and enforce necessary ordinances not in conflict with state law to regulate three and four wheel drive vehicles manufactured for recreational, non-highway, all terrain travel.

4. Air pollution by mobile or portable combustion engines, machinery or equipment which are capable of being operated in more then one county; and

5. Such air pollution matters, air pollution sources, installation permits, operating permits, conditional permits and violations as the Director of ADEQ designates by order. Authority exercised by order of the Director under this provision is the only exclusive authority vested in ADEQ.

A.R.S. § 49-402(B) provides that except as discussed above, jurisdiction and control of air pollution shall be by the county and multi-county air quality control regions pursuant to the provisions of A.R.S. § 49-471 et seq. Further, the counties are specifically granted the following:

a. Authority to issue installation permits for installing, replacing or making a major alteration to any machine, equipment, incinerator, device or other article which may cause or contribute to air pollution or the use of which may eliminate, reduce or control the emission of air pollutants. A.R.S. § 49-480(A). This provision is interpreted by Maricopa County, for example, to require an installation permit for such "devices" and "other articles" as a stock pile soil removed for remediation of petroleum contamination.

The Board of Supervisors of each county is also required to adopt rules and regulations to control the release of air contaminants into the atmosphere within county boundaries. A.R.S. § 49-479.

(1) Maricopa County.

The Maricopa County Board of Supervisors has adopted the Rules and Regulations of the Maricopa County Bureau of Air Pollution Control. These rules address the following issues:

i) Require installation operating permits for the same things as A.R.S. § 49-480 (Rule 200, Subsections 301.1 - 301.2);

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ii) Require permits for the use of earth moving equipment, Rule 200, Section 301.3;

iii) Require permits for open outdoor fires, Rule 200, Section 301.4;

iv) Provide a schedule of fees for permits, Rule 200, Section 407 and Rule 280;

v) Authorize the control officer to propose a wide range of conditions for permits including conditions that restrict hours of operation and require the use of appropriate control technology, Rule 200, Section 303;

vi) Prohibit the transfer of permits, Rule 200, Section 304;

vii) Prohibit modification, alteration, defacing, etc., of permits, Rule 200, Section 305;

viii) Require that permits be properly posted, Rule 200, Section 306;

ix) Authorize the control officer to require air quality impact modeling, Rule 200, Section 405;

x) Authorize the control officer to require monitoring of emissions by the permittee, Rule 245. It should be noted, however, this does not include ambient air quality monitoring;

xi) Authorize the control officer to require performance testing, Rule 270;

xii) Prohibit emission of air contaminants of a shade or density darker than 20% opacity, Rule 300;

xiii) Require that reasonable steps be taken to prevent fugitive dust from becoming airborne when engaged in construction, demolition and a wide range of other activities, Rule 310;

xiv) Regulate process industries in order to limit the release of particulate matter into the atmosphere, Rule 311;

xv) Regulate abrasive blasting operations, Rule 312;

xvi) Regulate the use of incinerators, Rule 314;

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xvii) Regulate spray coating operations, Rule 315;

xviii) Regulate and control emission of gaseous air contaminants, Rule 320;

xix) Regulate and control the emission of volatile organic compounds, Rules 330-353;

xx) Establish design and performance criteria for certain new and modified sources, Rule 360.

(2) Pima County.

The Pima County Department of Environmental Quality is responsible for air quality management activities in Pima County. It has been delegated authority in this area as a result of a local agency delegation agreement dated January 21, 1991. That agreement sets forth those areas which have been delegated to Pima County by ADEQ relating to air quality regulations. The delegation agreement provides that responsibility specifically retained by ADEQ includes all sources capable of emitting 75 tons per day or greater of any pollutant and mobile and portable sources except those specifically delegated to Pima County. The delegation includes any related air pollution sources in schools, community colleges, county and municipal facilities, county and city construction, federal facilities and state facilities other than the exceptions noted within the delegation agreement which are located entirely within the county.

The delegation agreement provides that ADEQ retains jurisdiction over refineries, the Rillito Portland Cement Plant, Cyprus Sierrita (all operations), Tucson Electric Power Co-Fired Unit (Irvington Station) and the Phelps Dodge Facility at Ajo.

The delegation agreement gives to Pima County authority over the following types of activities:

State Rule (A.A.C.)	Type of Source
R18-2-402	Open Burning
R18-2-404	Open Areas
R18-2-405	Roadways and Streets
R18-2-406	Material Handling
R18-2-407	Storage Files

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R18-2-408	Mineral Tailings (exclusive of State Permitted source)
R18-2-409	Agricultural Practices
R18-2-503/ 801.2, 801.3, 801.4	Steam Generators and General Fuel Burning Equipment (Except for coal conversion)
R18-2-504/ 801.5/804	Incinerators
R18-2-508/ 801.9	Asphalt Concrete Plants (stationary sources only)
R18-2-510/ 801.11, 801.12, 801.13	Petroleum Storage Vessels
R18-2-514/ 801.18	Sewage Treatment Plants
R18-2-519	Stationary Rotating Machinery
R18-2-521	Nonferrous Metals Industries
R18-2-522/ 801.58	Gravel and Crushed Stone Processing
R18-2-523	Concrete Batch Plants
R18-2-524/801.4	Fossil-Fuel Fired Industrial/Commercial Equipment
R18-2-525/801.55	Dry Cleaning Plants
R18-2-526	Sand Blasting Operations
R18-2-527/801.45, 801.46, 801.40, 802.44, 801.49	Spray Painting Operations
R18-2-528/801.42	Ammonium Sulfide/Sulfate Manufacturing

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R18-2-529	Cotton Gins
R18-2-530	Unclassified Sources
R18-2-602	Off Road Machinery
R18-2-603	Heater Planner Units
R18-2-604	Roadway and Site Cleaning Machinery
R18-2-605	Asphalt and Tar Kettles
R18-2-801.1 thru R18-2-801.60	New Source Performance Standards
R18-2-901.1 thru R18-2-902.11	Hazardous Air Pollutant Standards

In addition to delegating certain responsibility to Pima County, the delegation agreement sets forth standards that must be met with respect to personnel qualifications and standards of performance. For example, permit evaluations must be performed by or under the direct supervision of an engineer qualified through air quality permitting experience or registration as a professional engineer in the State of Arizona. Further, field inspectors must maintain current certification as a visible emissions observer. With respect to standards of performance, the delegation agreement provides that the permitting activity shall be completed within thirty days of the determination that the application is complete, including a record of public comment and response. All applicable county air quality rules must be at least as stringent as the corresponding ADEQ rules. All air pollution sources must be inspected during construction to assure that the facilities are within specification. Unannounced annual inspections must be conducted on each permitted source to determine compliance. All permits must include maximum allowable emission rates expressed in pounds per hour and tons per year for all pollutants (both conventional pollutants and those compounds for which ambient air guidelines are provided by ADEQ) emitted for sources emitting more than 25 tons per year of carbon monoxide, reactive organic compounds, PM-10, SO_2, NO_x and five tons per year of lead. ADEQ provides to Pima County a list of ambient air guidelines for all pollutants that have guidelines established. ADEQ also provides additional ambient air guidelines for nonlisted pollutants within thirty days of receiving a request from Pima County.

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II. MOBILE SOURCES

A. Federal Requirements in Subchapter II of the Clean Air Act Amendments of 1992

The 1990 Clean Air Amendments provide several mechanisms by which EPA and the states must control motor vehicle emissions including (1) emissions standards, (2) equipment requirement on vehicles, (3) special fuel requirements and (4) special experimental programs.

1. Emissions Standards.

The amendments specify in detail various emission standards that must be met for non-methane hydrocarbons (MHC), carbon monoxide, nitrous oxide and particulate matter. All of the standards generally provide that for model years beginning in 1994, various percentages of a manufacturer's cars and light duty trucks must comply with the specified emission limits. For example, for model year 1994, 40% of each auto maker's passenger cars and light duty trucks (less than 6,000 pounds gross vehicle weight) must comply with the new standards. In 1995 this raises to 80% and in 1996 and thereafter 100%. The standards are grouped into two categories including those vehicles that are less than five years old and less than 50,000 miles and those vehicles less than 10 years old with less than 120,000 miles.

For gasoline and diesel powered heavy trucks (greater than 6,000 pounds gross vehicle weight), the emission standards must be met in 50% of the manufacturer's product line in model year 1996 and 100% thereafter.

In addition to establishing detailed standards, the 1990 amendments require EPA, with the participation of the Office of Technology Assessment, to study in model year 2003 and later whether EPA should establish even more stringent emission standards which are also set forth in the Act on a nationwide basis for passenger cars and trucks. The EPA must submit a report to Congress no later than June 1, 1997 setting forth the study results. No later than December 31, 1997, the EPA must decide whether to further reduce emissions to attain or maintain the national ambient air quality standard, whether the technology for meeting more stringent emission standards is available and whether further emissions reductions from such vehicles is needed and cost effective.

a. Ozone Non-Attainment Areas.

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EPA must within one year issue regulations requiring the use of cleaner reformulated gasoline in nine worst ozone non-attainment areas for the period of 1987-1989, beginning in 1995. The reformulated gasoline must meet specified emission standards. The amendment also sets up a procedure for EPA to certify alternative fuel formulations to obtain the more stringent emission standards. Fuel refineries or marketers would be prohibited from selling uncertified fuel after January 1, 1995 in any covered ozone non-attainment area.

EPA must apply similar prohibitions on conventional fuel sales in marginal, moderate or serious or severe non-attainment areas by 1995, or one year after receiving an application to do so from the Governor of a state, whichever is later. If EPA determines in consultation with the Secretary of Energy that there is insufficient domestic capacity to produce a certified fuel, EPA must extend the effective date of the conventional fuel sales prohibition in marginal, moderate, serious or severe areas for one year. The prohibition may be extended for two additional one-year periods.

The 1990 Amendments also require that credit be granted for fuel that exceeds and is cleaner than the various limitations set forth in the statute. Such credits can be transferred to another fuel producer for the purposes of complying with the Clean Air Act, but credits cannot be used in non-attainment areas.

b. CO Non-Attainment Areas.

Any state in which there is all or part of a moderate or serious CO area must submit a SIP within one year after classification of the area to ensure that gas being sold in the non-attainment area be blended to contain not less than 2.7% oxygen as of November 1, 1992. The EPA must weigh the requirement if the state demonstrates that use of oxygenated fuels would interfere with attainment of national or local ambient air quality standards for any air pollutant other than CO or if the state demonstrates that mobile sources do not contribute significantly to CO levels in the area.

Within nine months after enactment EPA must allow use of marketable oxygen credits from fuels with higher oxygen content than required to offset the sale of fuels with lower oxygen content. States must submit a SIP revision within nine months after EPA determines that the NAAQS for carbon monoxide was not met in a serious area by the applicable date to require that gas to be blended contain not less than 3.1% oxygen.

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2. Enforcement

The 1990 Amendments make it illegal for anyone to remove or disable any component of vehicle emission control system or for a manufacturer to sell or offer to sell any device designed to bypass or disable any emission control system. Administrative penalties can total no more than $200,000, unless the EPA and the attorney general determine that a larger penalty is appropriate. A prior penalty provision providing for fine of $10,000 per day for fuel regulation violations was replaced in the 1990 amendments with a civil penalty of up to $25,000 per day for each violation plus the economic benefit of non-compliance.

3. Other Standards

The Act also establishes very detailed requirements and time schedules for additional limitations relating to the following: (1) CO emissions in cold temperatures (20'F); (2) reduction of evaporative emissions from gasoline powered vehicles (within 33 months of enactment); (3) 90% efficiency for on-board vapor recovery systems (effective the fourth model year after the regulations are issued); (4) regulation of hazardous air emissions for motor vehicles (within 54 months of enactment); (5) on-board diagnostic emission control systems (within 18 months of enactment) capable of detecting an emission system malfunction such as failure in the catalytic converter or oxygen sensor (requires a revision to the SIP to include on-board diagnostic system inspections); (6) beginning in model year 1995 mandates a two-year or 24,000 mile warranty on light duty trucks and vehicles to be free of pollution control defects. The catalytic converter, electronic control unit and on-board emissions diagnostic device are considered "major emission control components" and will have mandated warranties of eight years or 80,000 miles; (7) additional reductions and volatility of gasoline during high ozone seasons (primarily the summer months) promulgated within six months of enactment to take effect no later than 1992; (8) prohibiting the sale, manufacture or transport as of October 1, 1993 of diesel fuel with high sulfur content; (9) clean fuel vehicles (within two years EPA must issue regulations including clean fuel standards for fleets of 10 or more motor vehicles capable of being centrally fueled, except those garaged at personal residence at night or those used for law enforcement emergency; (10) urban buses (EPA must promulgate by January 1, 1992 emission standards for clean fuel buses for model year 1994 and thereafter. The standards will be based on best technology that could reasonably be anticipated to be available at the time the standards are implemented,

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taking into account cost, safety, energy, lead time and other relevant factors. The clean fuel regulations would also apply to existing buses that had their engines rebuilt or replaced after January 1, 1995).

California provisions: The 1990 Amendments provide that the California air resources board may adopt more stringent standards for clean fuel vehicles that can be adopted for fleets nationwide. Further, the EPA must issue regulations within ten years mandating the sale of 150,000 clean fuel vehicles in California in model year 1996, 1997, and 1998 increasing to 300,000 vehicles in 1999 and thereafter. California is required to revise its SIP to ensure that sufficient amounts of clean fuels are produced and distributed. Other states may opt into the program, although there are no provisions to mandate the sale or production of clean vehicles or fuels in other states. States are not authorized to limit the manufacture or sale of vehicles or engines certified by California as being in compliance with California standards, or to take action that would result in the creation of a vehicle or engine different from one certified by California (a third vehicle).

B. Stage I Vapor Recovery

A.R.S. § 41-2132(B) provides that beginning July 1, 1993, gasoline dispensing sites with a throughput of more than 10,000 gallons per month in counties with more than 125,000 population must have Stage I vapor recovery systems in place. Stage I systems are designed to recover vapors during bulk fuel transfers (e.g. tanker trucks to underground storage tanks).

C. Stage II Vapor Recovery

1. Mandatory.

A.R.S. § 41-2132(C) provides that in ozone nonattainment area designated by EPA as moderate (Maricopa County), serious, or severe or extreme, gasoline dispensing sites must have Stage II vapor recovery systems in place by certain designated dates. Stage II systems are designed to recover vapors during the nonbulk transfer of fuel (e.g. from gasoline pumps to individual vehicles).

2. Optional.

The Act provides, however, that any city, county or town outside a moderate ozone nonattainment area may also require the installation of Stage II vapor recovery systems. A.R.S. § 41-2132(J).

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ADEQ must adopt by rule compliance schedules for such jurisdictions within twelve months of receiving the required resolution from the jurisdiction. A.R.S. § 41-2132(L).

3. Exceptions.

The statute also provides for several exceptions as follows:

a. Gasoline dispensing sites with less than 10,000 gallons throughput per month;

b. Gasoline dispensing sites with less than 50,000 gallons throughput per year in the case of independent small business marketers of gasoline as defined in § 324 of the Clean Air Act; and

c. Gasoline dispensing sites located on a manufacturer's proving grounds.

4. Compliance Deadlines.

A.R.S. § 41-2132(I) provides that gasoline dispensing sites must comply with the following deadlines with respect to stage II vapor recovery systems:

a. If construction of the site commenced after November 15, 1990, the compliance deadline is May 15, 1993.

b. If construction began after the rules implementing § 41-2132 are certified, the site must be constructed so as to include Stage I and Stage II systems.

c. If there is an annual thru-put of more than 1.2 million gallons for any year after January 1, 1987, the compliance deadline is November 15, 1993.

d. For all remaining sites, the compliance deadline is November 15, 1994.

5. Additional requirements.

Owners and operators of gasoline dispensing sites which are required to have Phase II vapor recovery systems must post operating instructions for customers A.R.S. § 41-2132(E), maintain the system in good operating condition, A.R.S. § 41-2132(D) and must provide proper training for on site personnel. A.R.S. § 41-2132(D).

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III. AIR QUALITY PLANNING

This section provides an overview of the air planning process, which provides the basic framework around which Clean Air Act regulation revolves. Title I of the Clean Air Act establishes mechanisms for setting and enforcing ambient air quality standards, including the establishment of air quality control regions; development of air quality control criteria for major pollutants and setting forth information on techniques to control sources of such pollutants; setting national ambient air quality standards for these pollutants; and preparation and enforcement of state implementation plans to implement the standards. Each of these aspects of Title I are examined below.

A. Air Quality Control Regions (AQCRs)

The first step in establishing standards is to create air quality control regions (AQCRs). A region can consist of an entire state, part of a state or parts of different states. 40 CFR § 81. Arizona has established six AQCRs consisting of Maricopa County, Pima County, Northern Arizona (Apache, Coconino, Navajo and Yavapai Counties), Mohave and Yuma Counties, Central Arizona (Gila and Pinal Counties) and Southeast Arizona (Cochise, Graham, Greenly and Santa Cruz Counties). AQCRs are not responsible for setting standards, enforcement or planning, but are used to measure compliance with ambient standards.

B. Air Quality Criteria

The next step in establishing standards is to develop air quality criteria beginning with the EPA published list of dangerous and ubiquitous pollutants. For each of these pollutants, EPA is required to issue air quality criteria documents. § 108(a)(1). The criteria documents describe the type and extent of the adverse effect of the pollutants on public health and welfare. Criteria pollutants are those which are reasonably anticipated to endanger public health and welfare and whose presence in the atmosphere is attributable to "numerous or diverse mobile or stationery sources." EPA must also issue information on control techniques for such pollutants.

C. National Ambient Air Quality Standards (NAAQS)

National ambient air quality standards (NAAQS) are issued for pollutants covered by air quality control criteria. NAAQS establish concentration limits for criteria pollutants and determine the amount of source

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control required to meet the standard. Areas in which one or more NAAQS are exceeded are "nonattainment" areas. "Major" sources in nonattainment areas are subject to the new source review (NSR) requirement. In areas where the NAAQS are already being met, the program for preventing significant deterioration (PSD) of air quality applies.

NAAQS involve both primary and secondary standards. Primary standards are to be set at a level necessary to protect the public health with a "adequate margin of safety." The "margin of safety" is designed to protect against potential health hazards not yet identified by research, and allows for the prohibition of certain activities even if there are no proven health hazards.

Secondary standards are those necessary to protect the public welfare from any known or anticipated adverse effects associated with the presence of a pollutant in the air. "Welfare" is defined to include virtually everything except health. It includes "effects on soils, water, crops, vegetation, man-made materials, animals, wildlife, weather, visibility, climate, damage to and deterioration of property, hazards to transportation, as well as effects on economic values and on personal comfort and well being." § 302(h).

To date, NAAQS have been established for only six pollutants: sulphur oxides (SO_2), particulate matter of less than 10 micron diameter (PM-10), carbon monoxide (CO), ozone, nitrous oxides (NO_x) and lead, the so-called criteria pollutants. See 40 CFR Part 50. EPA must periodically review air quality criteria and the NAAQS and, if appropriate revise them. 42 U.S.C. § 7409(d). Arizona ambient air quality standards (which cover the same six pollutants) are found at A.A.C. R18-2-201 et seq.

D. State Implementation Plans (SIPs)

Once NAAQS are established, the means for achieving them are prescribed in state implementation plans (SIPs), which must provide for the implementation, maintenance and enforcement of NAAQS within each ACQR. SIPs are not aimed at controlling all pollutants but are directed to the criteria pollutants only.

The 1990 Amendments expanded the SIP requirements. See 42 U.S.C. § 7410(a)(7). SIPs must include: (1) enforceable emissions limitations and other control measures (i.e., economic incentives, marketable permits, auction of emission rights), schedules and timetables for compliance to meet the NAAQS, (2) mechanisms to

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monitor, compile and analyze data concerning ambient air quality, (3) enforcement mechanisms, (4) regulation of modifications to and construction of any stationary source within the area covered by the SIP to assure NAAQS are achieved (permit program), (5) prohibit any source within the state from emitting air pollutants in amounts which will contribute significantly to nonattainment by or interfere with maintenance of the NAAQS by any other state, (6) provide assurance that the state (or local or regional air quality agency) has adequate funding, personnel and authority under state law to carry out the SIP. More specific guidelines were provided by EPA in its General Pre-Amble at 57 Fed. Reg. 13498 (April 16, 1992).

All SIPs must provide for the control of new sources and the modification of existing sources to insure compliance with ambient standards and other requirements. The Act provides for several different permit programs, which will be discussed in PERMITTING and which are dependent upon a number of factors such as the type of pollutants emitted, the location of the source (nonattainment or attainment) and the type of facility involved (major, new or existing).

Arizona's SIP includes provisions in the Arizona Air Quality Act, certain regulations promulgated by ADEQ and the various counties, and certain other documents submitted to EPA for inclusion in the SIP. The materials comprising the current SIP are listed in 40 C.F.R. § 52.120 et seq. (Furthermore, Arizona is in the process of finalizing the necessary rules to implement the 1992 Comprehensive Air Quality Act. Once the rules are final, they will be submitted to EPA for approval and inclusion in the Arizona SIP.

1. Attainment/Nonattainment Area Classifications

a. Initial Classification

The 1990 Clean Air Act Amendments provide that within one year of EPA's promulgating a new or revised ambient air quality standard, the governor of each State must submit a list of areas within the state designating the area as (1) nonattainment (any area that does not meet or contributes to ambient air quality in areas that do not meet the NAAQS), (2) attainment (any area meeting NAAQS) or (3) unclassifiable (lack of available information to determine if it meets the NAAQS). 42 U.S.C. § 7407(d). Governor Symington submitted this initial list of areas on May 15, 1991.

The initial list of areas is as follows:

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Carbon monoxide nonattainment areas

1. Maricopa Association of Governments Urban Planning Area
2. Tucson Urban Area

Ozone nonattainment areas

1. Maricopa Association of Governments Urban Planning Area

Particulate Matter of Ten Microns or Less nonattainment areas

1. Ajo
2. Bullhead City
3. Douglas
4. Hayden
5. Nogales
6. Payson
7. Paul Spur
8. Phoenix
9. Rillito
10. Yuma

Sulfur Dioxide nonattainment areas

1. Ajo
2. Douglas
3. Hayden
4. Miami
5. Morenci
6. San Manuel

Nitrous Oxides and Lead nonattainment areas

None

EPA must then designate all such areas within two years of promulgating the revised NAAQS (three years if there is insufficient data). Any area designated by EPA as an attainment, nonattainment or unclassifiable area with respect to any NAAQS prior to the passage of the 1990 Amendments retain that same designation under the 1990 Amendments until the designation is changed pursuant to the procedures set forth in the Amendments.

b. Reclassification as Attainment/Non-Attainment

The 1990 Amendments provide that an area can be reclassified upon either a request from a governor or on the initiative of EPA with no prior request. EPA may at any time, based upon air quality data, notify a governor

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that information indicates that a designation of an area needs to be revised. EPA is required to provide the governor with all available information to explain the reasons for the redesignation. The governor then has 120 days to respond to EPA with the proposed redesignation as deemed appropriate by the state. EPA then has an additional 120 days to promulgate the redesignation as proposed by the governor, making such modifications as EPA deems necessary. If the governor fails to submit the proposed redesignation subsequent to the EPA notice, EPA is required to make the redesignation it deems appropriate.

In addition to this method, the governor of the State may request that an area be redesignated. The EPA must approve or deny a state's request for redesignation within eighteen months of receiving a "complete" state redesignation proposal. (What constitutes a "complete" state redesignation proposal will be set forth in regulations to be promulgated by EPA).

c. Reclassification Procedural Requirements

In order to redesignate an area from nonattainment to attainment, the following must be established to EPA's satisfaction: (1) the area has attained the NAAQS; (2) the EPA has fully approved the applicable SIP for the area; (3) the improvement in air quality is due to permanent enforceable reductions in emissions resulting from implementation of the approved SIP or applicable air pollutant control regulations; and (4) EPA has fully approved the maintenance plan for the area. EPA may not redesignate an area from nonattainment to unclassifiable under any circumstances.

EPA must promulgate minimum criteria the SIP must meet before EPA is required to act on the SIP. EPA has six months after the submission of the SIP to determine whether the submittal satisfies the minimum criteria. Failure of the EPA to reject the SIP for incompleteness within the six months results in the SIP being considered to be complete as a matter of law. After determining that a state has submitted a complete SIP, EPA has twelve months to reject or approve, in whole or in part, the SIP.

In those states where EPA had approved a SIP prior to the 1990 Amendments, the previously approved SIP will remain in effect except to the extent that a revision is approved or promulgated by EPA under the 1990 Amendments. EPA may set deadlines of up to three years for submission of a SIP in response to the promulgation of new or modified NAAQS. By contrast, if EPA

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determines that a SIP submitted is "substantially inadequate" to meet the NAAQS within the times set forth in the Act, the state must submit a revised SIP within the EPA imposed deadline which can be up to 18 months.

2. Requirements for Non-Attainment Areas

a. Ozone Nonattainment Area.

The 1990 Amendments classify ozone nonattainment areas into a five tier classification system based upon the area's ozone "design value," which is the fourth highest monitored ozone level over the most recent three-year period for which monitoring data is available. The design values are expressed in parts per million. EPA may adjust a classification by one level if the design value is within five percent of the cutoff.

Area Classification	Ozone (ppm)	No. of Years to Comply
Marginal	.121-.138	3
Moderate	.138-.160	6
Serious	.160-.180	9
Severe	.180-.190	15
Severe	.190-.280	17
Extreme (Los Angeles only)	.28-and higher	20

Based upon these design values, the Maricopa Association of Governments Urban Area has been designated as a "transitional" nonattainment area. Symington Letter at 2. The rest of the state is designated unclassifiable.

EPA may grant two one-year extensions of the attainment deadlines provided there was no more than one exceedence of the NAAQS in the preceding year. Further, for newly designated nonattainment areas, the deadlines are determined from the date of designation, not enactment.

The 1990 Amendments establish a core set of SIP requirements for marginal areas and imposes additional, more restrictive requirements for each higher classification area. The definition of "major source" and "major stationary source" changes as the degree of nonattainment increases. A facility is a major source if it has the "potential to emit" the following threshold amounts of volatile organic compounds (VOCs).

Revised Major Source Definitions:

Marginal-100 tons per year

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Moderate-100 tons per year
Serious - 50 tons per year
Severe - 25 tons per year
Extreme - 10 tons per year

Thus, the more severe the nonattainment area, the greater number of sources which must be controlled via permitting.

(1) Marginal Area SIP Requirements: Some of the more significant SIP requirements are as follows:

(i) A comprehensive, accurate and current inventory of actual emissions is required within two years of enactment. The inventory must be updated every three years until attainment is achieved.

(ii) Existing sources must meet reasonably available control technology ("RACT") requirements in effect as of the date of enactment.

(iii) Vehicle inspection and maintenance ("I&M") programs in existence or required must meet certain minimum requirements.

(iv) New source review (NSR) permit program must meet all new requirements within two years after enactment.

(v) Emission offsets require reductions at a ratio of at least 1.1 to 1.

(2) Moderate Areas: Marginal area requirements plus the following:

(i) Provision to achieve "reasonable further progress" ("RFP") (a fifteen percent reduction in baseline VOCs within six years of enactment).

(ii) RACT required for all sources by EPA control technique and guidelines issued at anytime prior to attainment and for all other major stationary sources of VOCs.

(iii) Motor Vehicle I&M (Inspection and Maintenance) programs are mandatory.

(iv) Gasoline vapor recovery systems required at certain facilities.

(v) Emission offsets require reductions at a ratio of at least 1.15 to 1.

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(3) Serious Area: Moderate area requirements plus the following:

(i) RPF demonstrations must include an additional three percent reduction per year from baseline, for each consecutive three-year period beginning six years after enactment.

(ii) Must include an enhanced vehicle I&M program and a clean fuel vehicle program.

(iii) Transportation control measures must be implemented.

(iv) Enhanced monitoring of ozone, nitrogen oxide and VOC is required.

(v) De minimis threshold for NSR of modifications lowered to 25 tons in the aggregate over a five-year period.

(vi) For modifications of sources emitting less than 100 tons per year, internal VOC offsets in a ratio of 1.3 to 1 are required to net out of the NSR.

(vii) For modifications of sources emitting more than 100 tons per year of internal VOC offsets in a ratio of at least 1.3 to 1 are obtained, lowest achievable emissions reduction does not apply.

(viii) The SIP must contain contingency provisions to take effect automatically if applicable milestones are not met.

(ix) Emissions offset require reductions at a ratio of at least 1.2 to 1.

(4) Severe areas: Serious areas requirements plus the following:

(i) Employees required to implement programs to reduce work-related vehicle trips and miles traveled by employees (including car pooling for commuting).

(ii) Must have program to assess penalty fees against each major stationary source of VOCs if area fails to meet attainment deadline.

(iii) Emission offsets require reductions at a ratio of at least 1.3 to 1. However, if all existing major sources are required to use BACT (instead of RACT), the ratio may be reduced to 1.2 to 1.

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(5) Extreme areas: Must meet severe area requirements plus the following:

(i) Any increase in VOC emissions from a discrete operation unit or activity considered a modification for NSR purposes. However, if internal VOC offsets in a ratio of at least 1.3 to 1 are obtained, no external offsets are required.

(ii) Electric utilities and industrial and commercial boilers that emit more than 25 tons per year of nitrous oxide must burn clean fuels or use advanced control technology.

(iii) Traffic control measures during heavy traffic hours may be imposed.

(iv) Emission offsets require reductions at a ratio of at least 1.5 to 1. However, if all existing major sources are required to use BACT (instead of RACT), the ratio may be reduced to 1.2 to 1.

b. Carbon Monoxide (CO) Nonattainment.

The 1990 Amendments establish a two tier classification system based upon a CO "design value" as follows:

Area Classification	Co (ppm)	Compliance Date
Moderate	9.1-16.4	Dec. 31, 1995
Serious	16.5 +	Dec. 31, 2000

Based upon these criteria, the Maricopa Association of Governments Urban Area and the Tucson Urban Area were designated moderate and transitional nonattainment areas, respectively. Symington Letter at 1-2. The rest of the state is designated unclassifiable.

(1) Moderate Area SIP Requirements: The following minimum requirements must be satisfied:

(i) An actual emissions inventory within two years of enactment and an update every three years thereafter until attainment.

(ii) Vehicle miles traveled forecast within two years of enactment if design value is greater than 12.7 ppm and annual updates thereof.

(iii) Contingency provisions within two years of enactment if the design value is greater than 12.7 ppm

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to provide for additional specific measures if any VMT forecast exceeds prior VMT forecast or if area fails to attain the NAAQS.

(iv) Basic vehicle inspection and maintenance program within two years of enactment if not otherwise required.

(v) Enhanced vehicle inspection and maintenance plan within two years of enactment if design value is greater than 12.7 ppm.

(vi) Demonstration within two years of enactment if the design value is greater than 12.7 ppm that the SIP will result in attainment of the NAAQS by the deadline.

(2) Serious Area: The moderate area requirements plus the following:

(i) Traffic control measures (employer travel reduction plans for those businesses employing more than 100 persons).

(ii) Oxygenated fuels program within two years after enactment within the metropolitan statistical area or consolidated metropolitan statistical area.

c. Particulate Matter, Less than 10 microns in diameter (PM-10)

The Clean Air Act quantifies visual pollution by establishing standards for particulate matter smaller than 10 microns (commonly referred to as PM-10). 52 Fed. Reg. 29383 (Aug. 7, 1987) Under the 1990 amendments, PM-10 areas are divided into two classifications:

Area	Attainment Date
Moderate	Six Years
Serious	Ten Years

Instead of design values, the 1990 amendments provide that every area designated nonattainment for PM-10 shall be classified as a moderate nonattainment area.

The ten areas designated nonattainment for PM-10 by operation of law are all classified as moderate areas. These are: Ajo, Bullhead City, Douglas, Hayden, Nogales, Payson, Paul Spur, Phoenix, Rillito, and Yuma. The rest of the state is designated unclassifiable for PM-10.

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The EPA may reclassify a moderate area as a serious area if it determines prior to the attainment dates that the area cannot practically attain the NAAQS for PM-10. EPA is required to designate by June 30, 1991 those moderate areas that were nonattainment prior to the 1990 Amendments that are to be reclassified as serious. EPA must take final action on the reclassification by December 31, 1991. For those areas subsequently designated nonattainment for PM-10, EPA must reclassify the moderate areas as serious areas within eighteen months of the due date for the state SIP.

The EPA may grant two one-year extensions of the attainment dates for moderate areas provided there has been no more than one exceedence in the area of the PM10 NAAQS in a prior year and the state has complied with all SIP requirements. Extensions for serious areas are also possible provided the state establishes that the SIP contains the most stringent measures of any state and submits a revision to the SIP providing for attainment by the most expeditious alternative date. One such extension may be granted for up to five years.

The states must submit their SIPs within one year of November 15, 1990 if classified as nonattainment area prior to the 1990 Amendments and eighteen months after November 15, 1990 if subsequently designated nonattainment.

If the State's particulate nonattainment area is designated "serious," the State's SIP must include the following:

(i) Demonstration of attainment by deadline or extension of deadline.

(ii) Best available control technology implemented within four years of classification as serious.

EPA may waive any requirement applicable to a serious area if it determines that the anthropogenic sources do not significantly contribute to the PM-10 violation. The states must submit the demonstration and BACT requirements within eighteen months of reclassification as serious.

d. Sulfur Dioxide (SO_2), Nitrous Oxides (NO_x) and Lead Non-Attainment

Any state containing an area designated or redesignated nonattainment for SO_2, NO_x or lead NAAQS must submit a SIP within eighteen months of the designation of nonattainment and achieve attainment

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within five years of the designation. If the state had a partially approved SIP as of November 15, 1990 for these NAAQS, the state must submit a new SIP satisfying the 1990 requirements within eighteen months of enactment and achieve attainment within five years of enactment. If the state had an approved SIP as of November 15, 1990, which is subsequently determined to be substantially inadequate, attainment must be accomplished within five years from the date of such finding.

Arizona has six areas classified as nonattainment for Sulfur Dioxide. These are: Ajo, Douglas, Hayden, Miami, Morenci and San Manuel. The rest of the state was designated as unclassifiable. The entire state is designated unclassifiable for lead and nitrous oxides.

3. Sanctions

If a state fails to submit a SIP for a nonattainment area, if a state submits a SIP which fails to meet the minimum criteria requirements, or if EPA determines that any requirement of an approved SIP is not being implemented and the discrepancy is not corrected within eighteen months of EPA's determination of nonsubmittal, insufficient submittal or SIP violation, EPA may impose the following sanctions: (1) prohibit federal funding for highway construction except those projects deemed necessary to improve safety for a demonstrated safety problem and which will likely result in a significant reduction in or avoidance of accidents, public transit or other programs designed to reduce emissions (car pool lanes, ramp metering, corridor parking for high occupancy vehicle. (HOVs); or (2) Requiring emissions offset reductions for new and modified sources required to be permitted to be increased to at least two to one.

IV. HAZARDOUS AIR POLLUTANTS

ADEQ estimates that there are 48,000 chemicals in commercial use in the United States with hundreds more being developed each year. For the great majority of these chemicals, there are currently no ambient air quality standards or existing national programs to guide state or local regulatory agencies. Recent activities at the federal and state levels are attempting to address this problem. In particular, the 1992 Clear Air Act Amendments and the 1992 Arizona Comprehensive Air Quality Act both contain sections which attempt to regulate hazardous air pollutants ("HAPs").

A. Federal Hazardous Air Pollutant Program.

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1. History.

Prior to the 1990 amendments, EPA was given authority under 42 USCA § 7412 to set national emission standards for hazardous air pollutants (NESHAPS). These pollutants were not emitted by a sufficient number of sources to justify a national ambient standard but, were pollutants which "may reasonably be anticipated to result in an increase in mortality or an increase in serious irreversible or incapacitating reversible illness." 42 USCA § 7412 (a)(1) (West 1983). EPA was required to set NESHAPS at "the level which provides an ample margin of safety to protect public health from such hazardous pollutant." 42 USCA § 7412 (b)(1)(B) (West 1983). As in the case with ambient standards, this standard was health based and was supposed to ignore cost as a factor.

The pre-1990 list of hazardous air pollutants included asbestos, arsenic, benzine, beryllium, coke oven emissions, mercury, radionuclides and vinyl chloride. 40 CFR § 51.01(a). That list was also adopted by Arizona. A.A.C. R18-2-901.

Section 112(c) of the Clean Air Act prohibits the construction of a new source or the modification of an existing one, which will emit a hazardous air pollutant for which a standard has been established under § 112, unless such source, if properly operated, will not cause emissions in violation of such standard. 42 USCA § 7412(c)(1)(A). Pursuant to that section, EPA created a pre-construction clearing program for new or modified sources emitting hazardous air pollutants. 40 C.F.R. §61.05, .07, .08.

The 1990 Clean Air Act Amendments significantly revised the hazardous air pollutant program. The 1990 amendments are located at 42 U.S.C. § 7412 (1992 Supp.). (In order to shorten subsequent citations, all future references to the 1990 Clean Air Act Amendments will only cite to the 42 USCA § 7412 (1992 Supp.)). The basic thrust of the HAPs program is to (1) identify those hazardous air pollutants to be controlled, (2) identify those sources emitting hazardous air pollutants in certain minimum amounts and (3) establish performance standards for use by those sources in the hope of minimizing future emissions.

2. What are the federal hazardous air pollutants?

The 1990 amendments contain an initial list of 172 specific pollutants and 17 families of pollutants which are identified as HAPs. 7412 (b)(1). (A copy of the

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list is attached as Appendix A.) EPA must periodically review the list and where appropriate, revise the list using formal rule-making procedures. The criteria for adding a substance to the list is whether a substance

> presents or may present, through inhalation or other routes of exposure, a threat of adverse human health affects including but not limited to substances which are known to be, or may reasonably be anticipated to be carcinogenic, mutagenic, teratogenic, neurotoxic, which cause reproductive disfunction, or which are acutely or chronically toxic or adverse environmental effects, whether through ambient concentrations, bioaccumulation, deposition or otherwise.

42 USCA § 7412 (a)(2).

"Adverse environmental effects" include any threat of significant adverse effects that can reasonably be anticipated to wildlife, aquatic life, or other natural resources, disruption of local ecosystems, impacts on endangered or threatened species, or significant degradation of environmental quality over broad areas or other comparable effects. § 7412 (a)(7).

a. Modification of HAP List.

The 1990 amendments require EPA to periodically review the list and where appropriate revise the list by adding pollutants which present or may present through inhalation or other routes of exposure a threat of adverse human health affects. § 7412 (b)(2). The amendments prohibit EPA from listing elemental lead as a HAP § 7412 (b)(7).

b. Petition to Modify HAP List.

The 1990 amendments also provide a mechanism by which any person may petition the EPA to add or delete a substance. § 7412 (b)(3). The petition must contain adequate data on the health effects of the substance or other evidence sufficient to support the petition. The EPA has 18 months after the submission to grant or deny the petition and explain the reasons why. Further, a petition may not be denied on the grounds that the EPA had insufficient time or insufficient resources to review it. (But note, there is no provision providing for automatic approval if the EPA fails to satisfy the 18-month deadline.)

3. What are the regulated sources?

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a. Major Sources.

The 1990 amendments define "major sources" as any stationary source which emits or has the potential to emit an aggregate of at least 10 tons per year of any hazardous air pollutant or at least 25 tons per year of any combination of hazardous air pollutants. § 7412 (a)(1). EPA also has the authority to establish different criteria for radionuclides or lesser thresholds for pollutants on the basis of the pollutant's potency, persistence, potential for bioaccumulation or other factors.

b. Area Sources.

The amendments define "area source" as any stationary source emitting hazardous air pollutants which is not a major source. § 7412 (a)(2). A stationary source in turn is defined to mean a facility or installation that emits or might emit hazardous air pollutants. § 7412 (a)(3).

c. List of Sources.

The EPA was required to publish a list within 12 months of enactment setting forth all categories and subcategories of major sources of hazardous air pollutants. § 7412 (c). EPA did publish a draft list of categories and subcategories of HAPs at 56 Fed. Reg. 28548 (June 21, 1991). That list has not yet been finalized. Further, the list must be revised at least every eight years.

The EPA must also list categories and subcategories of area sources which EPA finds present a threat of adverse effect to human health or the environment. § 7412 (a)(3). Within five years of enactment, the EPA must list sufficient categories or subcategories of area sources to insure that 90% of the 30 most hazardous air pollutants in the largest number of urban areas are regulated. The regulations to be imposed on said area sources must take affect within 10 years of enactment.

There are also special provisions relating to particular pollutants or businesses. First, EPA must list within five years of enactment all categories or subcategories of sources (major or area) to ensure that 90% of the aggregate emissions of the following pollutants are subject to standards: alkylated lead compounds, polycyclic organic matter, hexachlorobenzene, polychlorinated biphenyls (PCBs), 2,3,7,8-tetrachlorodibenzo-furans and 2,3,7,8 tetrachlorodibenzo-p-dioxin. § 7412 (c)(6). Second,

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EPA is authorized to establish a separate category for research or laboratory facilities to ensure the equitable treatment of such facilities. § 7412 (c)(7). The research or laboratory facility must not be engaged in the manufacture of products for commercial sale and commerce, except in a de minimis manner. Third, boat manufacturing is to be listed as a separate category with respect to styrene. § 7412 (c)(8). Finally, the EPA may delete from the list (1) any category of sources that emits carcinogenic hazardous air pollutants in quantities that cause no more than one in a million excess life time cancer risk to the most exposed individual (70 years, 24 hours per day at the facility boundary or at the point of greatest concentration) and (2) any category of sources that emits hazardous air pollutants that cause adverse health effects in humans other than cancer or adverse environmental effects, in quantities that do not exceed a level which is adequate to protect public health with an ample margin of safety and no adverse environmental effect. § 7412 (c)(9).

4. What are the standards?

a. General standards.

The 1990 amendments require EPA to set a first round of technology-based emission standards for every category and subcategory on the list of sources. The EPA may differentiate among classes, types and sizes of sources, but such differentiation may not result in a delay in compliance. § 7412 (d)(1). The emission standards are effective upon promulgation. § 7412 (d)(10).

The first round of standards must require the maximum emissions reduction achievable for new or existing sources, taking into consideration costs and any non-air quality health and environmental impacts and energy requirements. In addition to any numerical limit, EPA may require technological pollution controls, process changes, substitution of materials, or special operator training and certification (This technology based standard is commonly referred to as maximum achievable control technology or MACT). § 7412 (d)(2).

EPA must set such alternate standards whenever it is not feasible to prescribe or enforce an emission standard - for instance if the relevant pollutant could not be emitted through equipment designed or constructed to emit or capture that pollutant. The EPA may also set an alternative means of emission limitations if it would achieve reductions equal to those achieved by the primary design, equipment, work practice or operational standards. Further, the EPA may consider any health

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threshold which can be established plus an ample margin of safety when setting the emission standards. § 7412 (d)(2).

b. New sources.

The emissions reduction standard for new sources must be at least as stringent as the most stringent emission level achieved by a source in the same category or subcategory. § 7412 (d)(3).

c. Existing sources.

The emissions reduction standard for existing sources must be at least as stringent as (1) the average emissions limitation of the best performing 12% of sources in a similar category or subcategory with 30 or more sources; or (2) the average emission limitation of the five best performing sources in a category or subcategory with fewer than 30 sources. § 7412 (d)(3)(A) and (B).

d. Area sources.

Emission reduction standards or requirements for area sources may provide for the use of cost-effective and generally achievable control technologies ("GACT") or management practices. § 7412 (d)(b).

e. Periodic Review of Standards.

Once established, EPA must revise the emission standards at least every eight years. § 7412 (d)(6).

5. When must sources comply?

a. New sources.

A new source that begins construction or reconstruction after a standard is proposed but before it is promulgated will not be required to comply with the promulgated standard until three years after the date of promulgation if the promulgated standard is more stringent than the proposed standard and if the source complies with the proposed standard during the three years after promulgation. § 7412 (i)(2).

b. Existing sources.

The compliance date for any category or subcategory of existing sources may be as long as three years after the effective date of the standard or limitation. § 7412 (i)(3)(A). The EPA or state may grant an extension giving an existing source up to one

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additional year to comply, if the extra year is necessary for the installation of emission controls. § 7412 (i)(3)(B).

c. Mining.

An additional extension of up to three years is allowed for mining waste operations, if a four-year compliance deadline is insufficient to dry and cover mining waste to reduce emissions of hazardous pollutants. § 7412 (i)(3)(B).

d. Offsets.

Any physical change in, or change in the method of operation of, a major source that results in a greater than de minimis increase in actual emissions of a hazardous air pollutant will not be considered a modification, if the increase is offset by an equal or greater decrease in the quantity of emissions of a more hazardous air pollutant or pollutants from the source. The EPA was required within 18 months to publish guidance on meeting such offset requirements including identification, to the extent practicable, of the relative hazard to human health resulting from emissions of the listed hazardous pollutants. § 7412 (g).

6. When will the first round standards be published?

EPA must promulgate the first round technology based emission standards within the following guidelines: (1) at least 40 categories and subcategories (not counting coke ovens) within two years of enactment (e.g. 1992), (2) regulations for coke ovens by December 31, 1991, (3) emission standards for 25% of the listed categories and subcategories within four years of enactment (e.g. 1994), (4) an additional 25% of listed categories and subcategories within seven years (e.g. 1997), and (5) emission standards for all remaining categories and subcategories within 10 years (e.g. 2000). § 7412 (e)(1). EPA must publish within two years of enactment a schedule showing when the standards for each category or subcategory will be promulgated. § 7412 (e)(3).

In determining the order in which to set emission standards for various source categories or subcategories, EPA must consider known anticipated adverse effects on health and the environment, the quantities of hazardous air pollutants emitted and the efficiency of grouping various categories or subcategories. § 7412 (e)(2). Finally, within five

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years after enactment EPA must promulgate emission standards for publicly owned sewage treatment works.

The Act further requires the owner or operator of any major source to submit a permit application subject to the MACT standards within 18 months of the EPA deadlines even if EPA fails to promulgate a standard for that category or subcategory by the applicable date. § 7412 (j)(2).

7. Residual risk.

The EPA must, in consultation with the Surgeon General, report to Congress within six years on residual risk matters including (1) the risk to public health remaining or likely to remain from sources subject to regulation under the HAPs program after the application of MACT standards, (2) the public health significance of such estimated remaining risk and the available methods and costs of reducing such risk, (3) the actual health effects on people living in the vicinity of sources, and (4) recommendations for legislation regarding such risks. § 7412 (f)(1). If Congress does not act on the EPA recommendations, the EPA must within eight years after promulgating a MACT standard for a particular category or subcategory of sources issue additional standards to ensure an "ample margin of safety" to protect the public health. The EPA may determine that a more stringent standard is necessary to prevent an adverse environmental effect. Such standards are required for pollutants classified as known, probable or possible human carcinogens if cancer risk to the most exposed individual is not reduced to less than one in a million. § 7412 (f)(2). § 7412 (f)(2).

With respect to the first 40 categories of major sources for which MACT standards must be promulgated within two years of enactment, the EPA has nine years to determine if additional safeguards are necessary. § 7412 (f)(2)(C).

Residual risk standards will be effective upon promulgation. § 7412 (f)(3). In the case of an existing source, the standard may not be applied until 90 days after its effective date. § 7412 (f)(4)(A). The EPA may grant a waiver allowing up to two additional years for the source to comply if the delay is necessary for the installation of controls and if steps will be taken during the period to ensure the public health will be protected from imminent danger. § 7412 (f)(4)(B).

8. Alternative Emission Standards.

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If a state has a permit program approved by EPA, the state may issue a permit that authorizes the source to comply with alternative emissions limitations in lieu of the EPA promulgated standards if the source meets specified requirements.

a. Early reduction - pre-MACT.

When an existing source shows that it has achieved a 90% reduction or more in emissions of hazardous air pollutants (95% in the case of particulates) prior to the proposal of a MACT standard, it need only continue to meet the prior reduction. The emission reduction must be determined with respect to verifiable and actual emissions on an annual average basis in a representative year not earlier than calendar 1987 (unless EPA permits an earlier base year to be used). Such alternative emissions limitations can be permitted in lieu of the MACT standard for a period of six years from the otherwise applicable MACT compliance date, after which the source must comply with the MACT standard. § 7412 (i)(5)(A).

b. Early reductions - post-MACT.

An alternative emissions limitation for early reductions is also available for emissions reductions achieved after a MACT standard is proposed. If the early reductions are achieved by January 1, 1994, the source can be granted an alternative emissions limitation, provided the source made an enforceable commitment to achieve the required early reductions before the proposal of the MACT standard. § 7412 (i)(5)(B).

c. MACT Extension.

An existing source can be allowed five years to comply with a MACT standard, once it is proposed, if it achieves a level of emissions reduction that complies with the best available control technology (BACT) or lowest achievable emissions rate (LAER) within five years prior to the proposal of the MACT standard. § 7412 (i)(6). EPA has published additional guidelines on the early reduction programs at 56 Fed. Reg. 27338 (June 13, 1991) and 57 Fed. Reg. 61470 (December 20, 1992).

9. Accident Prevention.

The 1990 Clean Air Act Amendments set as a general objective the prevention of sudden accidental releases of extremely hazardous substances and the minimization of the consequences of any such release. The owners and

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operators of facilities that deal with such substances must (1) use hazard assessment techniques to identify hazards from such releases, (2) design and maintain a safe facility and (3) minimize the consequences of accidental releases. An accidental release is defined to mean the unanticipated emission of a regulated substance or other extremely hazardous substance into the air from a stationary source.

a. List of substances.

The EPA must promulgate within 24 months of enactment a list of at least 100 substances that might suddenly be released in concentrations that could reasonably be anticipated to cause death, injury or serious adverse affects to human health or the environment. The initial list must include: chlorine, anhydrous ammonia, hydrochloric acid, methyl chloride, ethylene oxide, vinyl chloride, methyl isocyanate, hydrogen cyanide, ammonia, hydrogen sulfide, toluene diisocyanate, phosgene, bromine anhydrous hydrogen chloride, hydrogen fluoride, anhydrous sulfur dioxide and sulfur trioxide. The list of substances must be revised by EPA at least once every five years. EPA issued a proposed rule on January 14, 1993 which listed 100 toxic substances, 62 flammable substances and commercial explosives. 58 Fed. Reg. 5102. (for inclusion at 40 C.F.R. Part 67).

b. Threshold amounts.

For each substance initially listed or added later, the EPA must establish by formal rule-making a threshold quantity taking into account the toxicity, reactivity, volatility, dispersibility, combustibility, or flammability of the substance and the amount of the substance which, as a result of an accident release is known, or may reasonably be anticipated to cause death, injury or serious adverse health effects.

The proposed threshold quantities for acute chemicals are based upon each chemicals' toxicity and potential to become airborne and disperse. The thresholds for flammable substances are based on the quantity that could result in a vapor cloud explosion. The thresholds for high explosives is based on the quantity that could produce potentially lethal blast waves at a distance of 100 meters.

The proposed rule provides that the threshold determination include all containers located sufficiently close to each other or so interconnected that they might be involved in a release at one time. The proposed rule also provides various exemptions

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including the following: (1) substances in mixtures if the substance is less than 1% by weight, (2) substances contained in articles (e.g., batteries), (3) routine janitorial maintenance, (4) consumer products, (4) ammonia when held by a farmer as an agricultural _____.

c. Chemical Safety Board.

The Act establishes a Chemical Safety and Hazard Investigation Board consisting of five persons appointed to five year terms by the President. § 7412 (r)(6). The Board must investigate and report to the public the cause or probable cause of sudden accidental releases of chemical substances that caused a fatality, serious injury or substantial property damage. It must also issue periodic reports to Congress, and federal, state and local agencies recommending measures to reduce the likelihood or consequences of accidental releases and must establish regulations for reporting accidental releases. No part of the conclusions, findings or recommendations of the Board relating to any accidental release or the investigation thereof is admissible in court as evidence or is to be used in any action or suit for damages arising out of any matter mentioned in such report.

d. Risk Management Plan.

EPA must promulgate within three years of enactment regulations and guidance for the prevention, detection and correction of accidental releases. § 7412 (r)(6). Requirements may include record keeping, reporting, training, vapor recovery, and secondary containment. The regulations may distinguish between types and classes of facilities, devices and systems. The regulations must require the owner or operator of a stationary source in which regulated substances are present in more than a threshold quantity to prepare and implement a risk management plan. The plan must include as a minimum: (1) a hazard assessment to assess the potential effect of an accidental release to include estimated potential release quantities, down wind effects, exposed populations, and release history for the last five years, (2) a program to prevent the accidental release of regulated substances including safety precautions, maintenance, monitoring and employee training measures, and (3) a response program providing for specific action to be taken in response to an accidental release of a regulated substance including procedures to inform the public and local agencies, and institute emergency health care, and (4) employee training measures.

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Copies of the risk management plan must be submitted to EPA, the Chemical Safety and Hazard Investigation Board, the state in which the stationary source is located, and local emergency response agencies and must also be made available to the public.

10. Municipal Waste Combustion.

The 1990 amendments require the EPA to establish performance standards and other requirements for each category of solid waste incineration unit. § 7412 (n)(3). The standards must include emission limitations and other guidelines for both new and existing units. The standards must be promulgated within 12 months of enactment for solid waste incineration units with a capacity of more than 250 tons per day that burn municipal waste, within 24 months of enactment for units with a capacity of 250 tons or less per day that burn municipal waste or hospital, medical and infectious waste and within 48 months of enactment for solid waste incineration units burning commercial or industrial waste.

Within 18 months of enactment, the EPA must publish a schedule for promulgating standards for other categories of units. The standards for new solid waste incinerator units would be effective six months after promulgation. Standards for existing units would be effective no more than five years after promulgation.

The standards for solid waste incineration units must reflect the greatest degree of emission reduction achievable through the application of best available control technologies and practices. The degree of reduction in emissions that is deemed achievable for new units in the category shall not be less stringent than the emissions control that is achieved in practice by the best controlled similar unit. Emissions standards for existing units must not be less stringent than the average emission limitation achieved by the best performing 12% of the units in the category. The standards must specify numerical emission limits for particulate matter (total and fine), opacity (as appropriate), sulfur dioxide, hydrogen chloride, oxides of nitrogen, carbon monoxide, lead, cadmium, mercury, dioxins and dibenzofurans. The standards must be reviewed by EPA every five years.

Within one year after the EPA has promulgated guidelines for the category of solid waste incineration unit, the states must submit to EPA a plan to implement and enforce the guidelines. The EPA must approve or disapprove any state plan within 180 days of submission.

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If the state does not submit a plan, EPA must develop such a plan for the state.

The 1990 Amendments also provide that each solid waste incineration unit must have a permit beginning 36 months after promulgation of a performance standard for that category of solid waste incineration unit or by the effective date of a permit program provided for under Title V which is discussed later. Permits for municipal incinerators would be issued for up to 12 years subject to a review every five years.

B. Arizona HAP Program.

1. Current Program.

The "current program" will be superseded by a new HAPs program in September 1993. The following discussion, however, is helpful in understanding the history of HAPs regulation in Arizona.

a. Statutory Authority.

A.A.C. R18-2-901, et seq., contains the current "official" hazardous air pollutant standards for Arizona. That regulation adopted the federal standards of performance for HAPs for the following chemicals which are found at 40 C.F.R. 61.01-.2473: Beryllium, mercury, vinyl chloride, benzine, asbestos and inorganic arsenic.

The AQA establishes the following public policy for the State of Arizona:

> . . . To control present and future sources of air contaminants to the end that air polluting activities of every type shall be regulated in a manner that insures health, safety and general welfare of all the citizens of the state . . . .

The statute also provides that ADEQ has the duty to determine "the limits of air contaminants necessary to protect the public health." A.R.S. § 49-424(A)(3). "Air Contaminants" are defined as including smoke, vapors, dust, soot, grime, carbon, fumes, gases, sulfuric acid, mist aerosols, aerosol droplets, odors, particulate matter, windborne matter or noxious chemicals or any other material in the outdoor atmosphere. Further, the statute gives ADEQ authority to control emissions of air contaminants through permit terms and conditions. A.R.S. § 49-426-427.

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Based upon the foregoing authority, ADEQ incorporated an "air toxics" review process into the air pollution control permit approval process for new and modified sources. The stated purpose of the program was "to provide a regulatory screening mechanism to control the release of toxic air emissions which have no established state or federal ambient air quality standards, but have the potential to be admitted into the ambient air in Arizona in quantities that may pose threat to human health or the environment."

Despite the reference to the "regulatory screening mechanism," the process was not created by any formal rule-making process. It has therefore been difficult to ascertain the exact parameters of that program. During the negotiations and drafting of the 1992 Arizona Comprehensive Air quality Act, however, ADEQ issued a document entitle " Arizona's Air Toxic's Control Program." That document is the first to set forth the parameters of the "unofficial" air toxic's program currently employed by ADEQ. The following discussion is based largely on ADEQ's own statement of the parameters of that program.

Until the passage of the 1992 Comprehensive Air Quality Act, the legality of Arizona's air toxics review process was anything but certain. This uncertainty was based on two primary arguments. The first argument was based upon A.R.S. § 49-425 which provides that the Director of ADEQ "shall adopt such rules and regulations as he determines are necessary and feasible to reduce the release into the atmosphere of air contaminants . . . ". Under this argument, ADEQ had no authority to create a HAP program without formal rule-making pursuant to the Administrative Procedures Act, A.R.S. § 41-1001 et seq. The second argument was based upon A.R.S. § 49-425 (A) which states in part "the ambient air quality standard shall not be more restrictive than that provided by federal law." Under this argument, ADEQ had no authority to establish any HAP emission standards beyond those established at the federal level and adopted pursuant to A.A.C. R18-2-901. Although never judicially challenged, the uncertainty of the validity of the air toxics review process was utilized by permit applicants as a basis to negotiate acceptable emission limits for HAPs in order to obtain the necessary air quality permit.

b. Purpose.

According to ADEQ, "the Arizona Air Toxics Control Program supplements the criteria pollutant control program with the additional goals of protecting the health of Arizona by limiting the risks associated with

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the release of toxic air contaminants." This was accomplished primarily through the completion of a risk based analysis of new, modified and existing sources of toxic air contaminants and the implementation of control strategies (most often reflected as permit conditions) to reduce toxic air pollutant emissions. The program was intended to address releases which occur during normal business operations and was not intended to address catastrophic or accidental releases.

c. Applicability.

According to ADEQ the air toxics review process applied to new, modified and existing sources. As a practical matter, however, the air toxics review process was part of the review process relating to the issuance of installation and operating permits, and therefore applied primarily to new and modified stationary sources.

d. Process.

All sources that emit more than certain quantities or types of air pollutants must apply to ADEQ (or the counties under appropriate delegations discussed supra) to receive air pollution control permits. The sources that are required to obtain approval are described in A.C.C. R18-2-302. ADEQ incorporated into the approval process a review of the impact of toxic air pollutants that were anticipated to be emitted from the new facility or the proposed modification.

When a permit application is received by ADEQ, the application is reviewed to assess the environmental effect of criteria pollutants (SO2, Nox, CO, Lead, particulates and volatile compounds ("VOCS") as precursors to ozone) that are remitted from the facility. The current review process involves determining the applicability of the federal review programs such as new source performance standards (NSPS), prevention of significant deterioration (PSD) and national emissions standards for hazardous air pollutants (NESHAPS) and state air quality rules. (A.A.C. R18-2-101 et seq.)

If a facility emits large enough quantities of criteria pollutants to trigger the PSD review process then control of toxic air pollutants may be required in order for the facility to obtain a permit. Sources and categories which are affected by the NSPS program often must meet specific emission limits or install specific control technology. These requirements often can cause toxic air contaminants to be reduced since the control

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technology utilized will often reduce VOC or particulate matter emissions.

Once it has been determined that a facility is a source of toxic air contaminants, the toxic air pollutants must be identified and the characteristics of the emissions quantified. The following discussions break down how ADEQ accomplishes this.

(1) Identification of air toxic chemicals.

Each applicant is required to submit air emission data for all SARA Title III list chemicals for each emission point. ADEQ then reviews the identified air toxics for completeness with available EPA data bases.

(2) Review of emission rates.

ADEQ then checks the emission rates against the EPA publication "Toxic Air Pollutant Emission Factors - Compilation for Selected Air Toxic Compounds and Sources, 2nd Edition, October 1990".

(3) Establish ambient air quality guidelines.

ADEQ then reviews the current listing of the "Arizona Ambient Air Guidelines" ("AQGs") for allowable ambient air concentrations. If no AQG has been established for any identified air toxic, ADEQ then requests the Arizona Department of Health Services (ADHS) to establish such an AQG. ADHS would then evaluate the air toxic using a health risk analysis and determine an AQG. A list of the 1992 AQGs is attached as appendix B.

(4) Perform air impact analysis.

ADEQ then requests the air assessment section of ADEQ to perform air modeling for each identified air toxic. For each emission point, ADEQ determines the emission rate for each toxic air pollutant emitted, the height of the release and the type of source. For pollutants that are emitted from stacks the flow rate of the exhaust gases, the temperature of the effluent and the stack diameter and height are also quantified. After the above information has been collected it is input into an EPA screening model to predict the maximum ambient concentration of each pollutant. Modeling is done without consideration of the background concentrations from other sources or cumulative effects.

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The ambient concentration is predicted by modelling which may be adjusted to appropriate averaging times or compared to the individual AQG for each toxic air pollutant. Additive exposure to all the releases from a facility are not accessed. If modeling predicts that the ambient concentrations will exceed the AQG, closer examination is warranted. Three courses of action are then generally pursued: reevaluate the parameters used in the screening model, use of more sophisticated modeling or use of methods to reduce the emissions, including the application of work practices or controls which represent best available control technology (BACT). If, on the other hand, emissions from the screening model indicated that the facility will meet the AQGs, ADEQ proceeds with the permit drafting.

(5) Air toxic emission limits.

As part of the final permit drafting, ADEQ establishes emission limits for each emission point and each air toxic chemical based on maximum expected emission rates submitted in the permit application. In determining these limits, the facility would be permitted based on the following factors: projected actual as opposed to hypothetical exposure; the cost and benefits of requiring additional controls; confidence of ADHS in the specific AQGs; and the relative toxicity of the pollutants of concern. In addition. for carcinogens, plant life may be considered.

2. Future State HAP Program.

The 1992 Comprehensive Air Quality Act created a formal state hazardous air pollutant program. The state program is similar in structure to the federal HAP program in the 1990 Clean Air Act Amendments, but there are some uniquely Arizona aspects. The state HAP program basically consists of three parts: adoption and enforcement of the federal HAPs program set forth in the 1990 Clean Air Act Amendments, creation of an interim state HAP program, and a state study of HAPs and future recommendations for legislative changes to the interim state HAPs program to convert it into a permanent program.

a. Effective dates.

The new state HAP program (and the corresponding county HAP programs) are not effective until September 1, 1993. This was intended to allow ADEQ sufficient time to promulgate the rules necessary to implement the Program. (The rules necessary to implement the state program are currently in the formal rulemaking process.)

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Because the new state HAP program did not take effect for approximately one year, the act establishes a "status quo" with respect to the current "unofficial" HAP program.

> Until the rules provided by this Act become effective, it is not the purpose of this Act to reduce or rescind the authority of the Director of ADEQ under Title 49, Chapter 3, A.R.S.

This language was a compromise between ADEQ and the regulated community and while it states that the creation of a new state HAP program was not intended to diminish ADEQ's authority in the interim, it also does not expand the validity of the "unofficial" current program beyond whatever authority currently exists.

b. Adoption and enforcement of federal HAP program.

The Act creates a new statute, A.R.S. § 49-426.03, the effect of which is to adopt and enforce the federal HAP program established in the 1990 Clean Air Act Amendments. The parameters of the state enforcement of the federal program are as follows:

(1) Adoption of federal HAP.

A.R.S. § 49-426.03 (A) provides that the list of HAPs set forth in Section 112 (b)(1), 42 USCA §7412(b)(1), of the Clean Air Act, Appendix A, is adopted by Arizona. The section also provides that within one year of EPA adding or deleting a pollutant from the federal list, ADEQ must also adopt those revisions to the state list unless ADEQ finds that there is no scientific basis to support the revision by EPA.

(2) Enforcement of federal HAP.

A.R.S. § 49-426.03(B) provides that the director must adopt rules to administer and enforce the federal HAP program established by the Clean Air Act.

(3) Maximum available control technology.

The rules adopted by ADEQ must insure that any new or modified major source of federally listed HAPs employ the maximum available control technology (MACT). MACT is defined in the statute, A.R.S. § 49-401.01(14) as follows:

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> [A]n emission standard that requires the maximum degree of reduction of emissions of the hazardous air pollutants subject to this chapter, including a prohibition of such emissions where achievable, that the director, after considering the cost of achieving such emission reduction and any non air quality health and environmental impacts and energy requirements, determines to be achievable by an affected source to which such standard applies through application of measures, processes, methods, systems or techniques including measures which (i) reduce the volume of or eliminate emissions of such pollutants through process changes, substitution of materials or other modifications, (ii) enclose systems or processes to eliminate emissions, (iii) collect capture or treat such pollutants when released from a process stack, storage or fugitive emissions point, (iv) are design equipment, work practice or operational standards including requirements for operator training or certification.

Major sources have the same meaning set forth in the Clean Air Act (greater than ten (10) tons per year of any one HAP or twenty-five (25) tons per year of any aggregate of HAPs.)

A "new" or "modified" major source means a major source which commences construction or modification after the effective date of the ADEQ rules. But a physical change to a source or a change in the method of operation of a source is not a modification under this section of the Act if it qualifies under the offset provisions of Section 12(g) of the Clean Air Act. 42 USCA §7412(g).

Until EPA adopts MACT standards for the applicable source categories under the federal program, ADEQ will determine MACT for a new or modified major source on a case by case basis. Further, if an emission standard is not feasible, ADEQ has the authority and is required to impose design, equipment, work practice or operational standards instead of emission limits.

(4) Early reduction program.

If an existing major source qualifies under the Federal Clean Air Act early reduction program thereby allowing it to meet an alternative emission limitation standard, it will also be allowed to meet the same alternative limitation standard under the state program

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for a period of six years from the compliance date otherwise applicable.

(5) Delay by EPA.

If EPA fails to adopt a MACT standard for a source category or subcategory within 18 months of the deadlines established in the Clean Air Act, an existing major source must submit a permit application to ADEQ. ADEQ will then issue a permit based upon a case-by-case determination of MACT (or an alternate standard if emission standards are not feasible.)

(6) EPA MACT standard.

When EPA adopts standards for a source category or subcategory, ADEQ must also adopt those same standards. Thus, it is possible that a major source in Arizona may be required to apply a "case-by-case" MACT standard only to discover that the MACT standard later established by EPA is less stringent.

(7) Radionuclides.

For any facility licensed by the Nuclear Regulatory Commission, ADEQ cannot adopt or enforce any standard limitation on radionuclides emissions which is more stringent than that adopted by EPA.

3. Interim State HAP Program.

a. Identification of State HAPs

(1) Criteria for State HAPs.

In addition to adopting the list of federal HAPs, ADEQ may designate additional state HAPs provided they satisfy all of the following criteria. A.R.S. § 49-426.04(A):

(1) There is sufficient scientifically reliable evidence on the health or environmental effect of the pollutant to support the designation including credible medical or toxicological evidence that has been subject to peer review. Evidence is "scientifically reliable" if it demonstrates adverse human health or environmental effects at concentrations that are likely to occur in the environment as a result of emissions into the ambient air. "Adverse effects" to human health mean those affects that result in or significantly contribute to an increase in mortality or an increase in serious, irreversible or incapacitating reversible illness, including adverse effects that are known to be or may reasonably be anticipated to be caused by substances

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that are acutely toxic, chronically toxic, carcinogenic, mutagenic, teratogenic, neurotoxic, or causative of reproductive disfunction. "Adverse environmental effect" means any significant and widespread adverse effect which may reasonably be anticipated on wildlife, aquatic life or other natural resources including adverse impacts on populations of endangered or threatened species or significant degradation of environmental quality over broad areas.

(2) Emissions, ambient concentrations, bioaccumulation or deposition of the pollutant result in adverse human health or environmental effects.

(3) An adequate and reliable methodology exists for quantifying emissions and ambient concentrations.

(2) Initial State HAPs.

ADEQ filed with the Secretary of State a list of Air Quality Guidelines (AQGs) in effect as of July 15, 1992 and must review the list of AQGs to make a preliminary determination which substances meet the criteria for listing as a state HAP. ADEQ must adopt rules by November 1, 1993, establishing any AQG as a state HAP that satisfies all of the listing criteria. A.R.S. § 49-426.04(B). (Appendix B is a list of the 1992 AQG's.)

(3) Modification of State HAP's List.

ADEQ may rescind the designation of a state HAP if it determines that any one of the listing criteria is not met. Further, any person may petition ADEQ to add or delete a chemical to the state HAP list based upon the chemicals's ability or inability to satisfy all of the listing criteria. ADEQ has six months after receiving a petition to initiate a rule making if the pollutant satisfies (or fails to satisfy) the listing criteria. Finally, ADEQ is prohibited from listing a conventional air pollutant as a HAP unless the pollutant is only a precursor to a conventional air pollutant. A.R.S. § 49-426.04C through F.

b. Designation of HAP Sources.

ADEQ is required to designate by rule categories of sources that are subject to the state HAP program. A.R.S. § 49-426.05. In determining the source categories, ADEQ must determine that emissions of HAPs from sources in the category individually or in the aggregate result in adverse human health or environmental effects based on the following criteria:

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(1) The number of persons likely to be exposed to emissions from the source;

(2) Whether the category should be limited to certain thresholds (e.g., should it be limited to the thresholds established in the statute or a higher (less stringent) threshold);

(3) Whether the category should be limited to a particular geographical area.

c. Information Gathering.

In order to assist ADEQ in designating source categories, ADEQ has the authority to require owners and operators of sources in a category ADEQ reasonably believes may qualify for designation to provide information on the types and amounts of HAPs emitted. Readily available information must be provided but the source can not be required to conduct performance tests, sampling or monitoring in order to respond to requests for information under this section. Further, any inaccuracies in the information provided is not a violation of the statute (and does not subject one to civil or criminal penalties) if the inaccuracy resulted from a good faith effort to identify HAPs or estimate the amount of HAPs emitted. A.R.S. § 49-426.05(B).

d. Applicability of State Program.

(1) Thresholds.

A.R.S. § 49-426.06(A) provides that the state HAP program will apply to sources that emit or have the potential to emit with controls more than ten tons per year of any single HAP (state or federal) or 25 tons per year of any aggregate of HAPs (state or federal). The program will also apply to any sources that emit or have the potential to emit with controls more than one ton per year of any single HAP (state or federal) or 2.5 tons per year of any combination of HAPs (state or federal) and are within a category designated by ADEQ.

After the effective date of the rules issued by ADEQ to implement the program all new or modified sources must obtain a HAP permit. A.R.S. § 49-426.06(B). Further, ADEQ must establish de minimis levels for nonfederal HAPs for purposes of determining whether a particular change is a "modification" under the program.

(2) New Categories of Sources.

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If a new or modified source, which is in a category that has not yet been designated by ADEQ for purposes of the HAP program, submits a permit application (for a non HAP permitting purpose), ADEQ can suspend action on the permit if all of the following occur: (i) the category satisfies all the criteria to be designated, (ii) the applicant is notified prior to a completeness determination being made by ADEQ and (iii) the applicant refuses to be treated as if it was already in a listed category. A.R.S. § 49-426.05(C). This provision assures that ADEQ will not be required to issue a permit to a new source simply because it is the first source in that category to apply for a permit in Arizona.

e. Applicable Standards.

The level of emission controls required depends upon the amount of HAPs emitted and whether the source is in an ADEQ designated HAP source category. The following standards will apply:

(1) Maximum Available Control Technology.

If the new or modified source exceeds the 10/25 ton threshold, it must satisfy a MACT standard or conduct a risk management analysis ("RMA") which is discussed below.

(2) Reasonably Available Control Technology.

If the new or modified source exceeds the 1/2.5 threshold and is in a state listed category, it must apply reasonably available control technology ("RACT") or conduct a risk management analysis. In determining what reasonably available control technology is, ADEQ must take into consideration the estimated actual air quality impact of the standard, the cost of complying with the standard, the demonstrated reliability and widespread use of the technology required to meet the standard, and any non air quality health and environmental impacts and energy requirements. Under this approach, standards may be expressed as a numerical emissions limitations or as a design, equipment, work practice or operational standard.

(3) Alternate Standards.

The statute also provides that as in the case of the federal program, ADEQ cannot require compliance with a numerical emission limit if a reliable method of measuring the HAPs emission is not available and must instead rely upon design, equipment, work practices or operational standards. A.R.S. § 49-426.03(G).

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f. Risk Management Analysis.

Owners or operators of a new or modified source which emits HAPs below the federal thresholds may avoid the MACT/RACT requirements if they can demonstrate that the imposition of such standards is not necessary to avoid adverse effects to human health or the environment. A.R.S. § 49-426.06(C) & (D). This demonstration must be accomplished by conducting a scientifically sound risk management analysis and submitting the results to ADEQ along with the new or modified source permit application. This risk management analysis may include the following considerations:

(1) The actual exposure of persons living in the air shed,

(2) Available epidemiological or other health studies,

(3) Risks presented by background levels of HAPs,

(4) Uncertainties in the risk assessment methodologies,

(5) Health or environmental consequences from efforts to reduce the risk, and

(6) The technological and commercial availability of control methods and the cost of such methods.

Allowing owners and operators the option of conducting a risk management analysis as an alternative to MACT/RACT was intended to allow sources (primarily larger sources) the flexibility to attempt to convince ADEQ that expensive MACT standards were not required while at the same time allowing other sources who are more likely to be subject to less expensive RACT, to apply the required control technology without incurring the expense and uncertainty of a risk management analysis.

g. General Permits.

ADEQ also has the authority to designate general permit criteria for certain classes of sources if it so chooses. A.R.S. § 49-426 and 426.06(E).

h. Radionuclides.

For any facility licensed by the Nuclear Regulatory Commission ADEQ cannot adopt or enforce any

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standards or limitations for radionuclides which is more stringent than those promulgated by EPA. A.R.S. § 49-426.06(E).

4. Research Program.

a. Scope of Research

A.R.S. § 49-426.08 requires ADEQ to undertake a research program to evaluate existing risk to public health related to HAPs and to provide options and recommendations for programs to control the release of hazardous substances into the ambient air. The research must be conducted in cooperation with the Arizona Department of Health Services, EPA, and the National Academy of Sciences and must be submitted to national peer review. It will be funded from monies from the Air Quality Fund established pursuant to A.R.S. § 49-551.

b. Mandatory Factors

The study must address the following 11 items which are set forth in the statute.

(1) Identification of hazardous substances that are or may be emitted into the ambient air in this State and that present, through inhalation or other routes of exposure, a threat of adverse health effects or adverse environmental effects whether through ambient concentration, bioaccumulation, deposition or otherwise.

(2) Identification and evaluation of methods for conducting ambient air monitoring, measuring emissions and performing related analyses.

(3) A statewide survey to determine, through direct measurements and appropriate estimation techniques, concentrations of those hazardous substances in the ambient air and to estimate source contributions to ambient concentrations from permitted, unpermitted and natural sources as well as background concentrations.

(4) A statewide survey to identify permitted and unpermitted sources of these substances and to gather information necessary to quantify emissions.

(5) Identification and evaluation of alternative risk assessment methodologies.

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(6) Evaluation of alternative methods to perform atmospheric modeling and determine receptor-source relationships.

(7) An assessment of residual risk after the implementation of controls during the terms of the research program.

(8) An evaluation of estimated actual risk from exposure to those substances in this State.

(9) An evaluation of the feasibility of, need for and potential methods for establishing ambient air quality standards or health based guidelines for those substances.

(10) A public education program to provide information and increase public awareness of hazardous air pollutants and the research program.

(11) Other data that the Director deems useful or necessary for the purpose of developing the research program.

c. Report to Legislature.

By September 1, 1997, ADEQ must publish and submit to the governor and the legislature results of its findings and recommendations as to what changes, if any, are needed to the interim program to protect public health and the environment. The recommendations must consider the costs of achieving the changes, any non air quality health and environmental impacts and any energy requirements that may result from the changes. ADEQ must also conduct meetings throughout the state to receive comments from the general public on the report.

5. Injunctive Authority.

Notwithstanding the fact that a permit is issued, ADEQ has the authority to seek injunctive relief on receipt of evidence that a source or combination of sources is presenting an imminent and substantial endangerment to public health or the environment. A.R.S. § 49-426.07.

6. County HAPs Program.

The Act also contains parallel provisions authorizing the counties to adopt and enforce their own HAPs program. With a few exceptions, the counties are given authority similar to that given to ADEQ. For example, A.R.S. § 49-480.03 provides for adoption and

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enforcement of the federal HAPs program while A.R.S. § 49-480.04 provides for adoption and enforcement of a non federal HAPs program similar to the state program.

With respect to the non federal HAPs program, however, there are certain limitations on the counties. These are as follows:

a. The counties are only authorized to require permits for those sources which are regulated under the state program (e.g., sources emitting or having the potential to emit more than 10/25 tons per year of HAPs or more than 1/2.5 tons per year of HAPs and which are in a category listed by ADEQ). The counties do not have the authority to require permits for thresholds lower than that established at the state level. A.R.S. § 49-480.04 and 49-480.04 (H).

b. The counties are only authorized to regulate those HAPs designated by ADEQ. A.R.S. § 49-480.04 (H). The counties do not have the authority to adopt their own list of county HAPs. If a county desires to regulate a pollutant that is unique to that county, it must petition ADEQ under A.R.S. § 49-426.04 (A) to list the pollutant as a state HAP.

c. When a new or modified source, that is in a category that has not been designated by ADEQ pursuant to A.R.S. § 49-426, submits a permit application, the county control officer can suspend the application pending designation by ADEQ under the same procedures established for suspension by ADEQ under A.R.S. § 49-426.05(B). The counties, however, are not authorized to establish source categories beyond those established by ADEQ.

V. SUBCHAPTER IV - ACID DEPOSITION

In Subchapter IV Congress sought to address growing public concern about the impact of acid deposition (acid rain) on lakes and aquatic life forms in the northeastern United States and eastern Canada. In addressing acid deposition, Congress had to contend with regional rivalries between the relatively more heavily populated and polluted Northeast and Midwest and the rapidly growing, relatively cleaner South and Southwest. Congress was also forced to seek a compromise between the producers of eastern high sulphur coal and western low sulfur coal. This regional interplay and the resulting compromises complicated development and enactment of the acid deposition program.

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Congress chose to address the acid deposition problem by mandating a ten million ton reduction in annual sulfur dioxide (SO_2) emissions by the year 2000. Congress also mandated a 2 million ton reduction in annual nitrous oxides (NO_x) emissions. In order to achieve the 10 million ton SO_2 emission reduction, Congress established an emission allowance system. No "affected unit" is permitted to emit SO_2 in excess of its emissions allowances. Emission allowances can be freely sold or traded to encourage the most efficient allocation of resources.

The emission allowance program and its provisions for marketing and trading permits represents a substantial step in the development of environmental policy. The emissions allowance trading system is the first major attempt to implement economic incentives as the primary method of controlling pollution.

A. Phase I.

1. Emissions Limitations and Allowances.

Congress chose to implement Subchapter IV in two phases. In Phase I, 111 specifically-named utility generating stations are required to reduce their SO_2 emissions to 2.5 lbs/mmBtu or have sufficient emissions allowances to cover all of their excess emissions. See 42 U.S.C. § 7651c(a). The number of Phase I emissions allowances allocated to each "affected unit" is set forth in Table A of section 7651c. In addition to these basic allowances, Congress provided for an additional 200,000 allowances to be shared on a pro rata basis between utility units located in Illinois, Indiana and Ohio. See id. § 7651c(a)(3). Other units may be substituted for the statutory Table A units with the approval of the Administrator. See id. § 7651c(b), (c).

2. Phase I Extension Program.

In order to encourage earlier SO_2 emission reductions, Congress created an extension program. The owner or operator of a Phase I affected unit may volunteer to employ a "qualifying Phase I technology" or to transfer its Phase I emissions reduction obligations to another unit employing a qualifying Phase I technology. See id. § 7651a(d)(1). A qualifying Phase I technology is "a technological system of continuous emission reduction which achieves a 90 percent reduction in emission sulfur dioxide." Id. § 7651a(19). Units opting into the Phase I extension are then entitled to be allocated additional SO_2 allowances from the Phase I reserve. See id. § 7651c(d)(5), (6). If no reserve allowances are available, however, the Administrator

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must disapprove the extension application. See id. § 7651c(d)(4). Units failing to meet their extended emissions limitations, however, will have the amount of exceedence deducted from their next year's allowances. See id. § 7651c(d)(7).

3. Energy Conservation and Renewable Energy.

In addition to these traditional technology-based controls, Congress also passed a program to encourage demand-side consumption controls. These provisions, found in section 7651c(f), provide allowances for "qualified energy conservation measures" and the use of "qualified renewable energy." Qualified energy conservation measure means a "cost effective measure . . . that increases the efficiency of the use of electricity provided by an electric utility to its customers." Id. § 7651c(f)(1)(A). Qualified renewable energy means "energy derived from biomass, solar, geothermal, or wind." Id. § 7651c(f)(1)(B). The Act requires the Administrator to allocate up to 300,000 allowances to electric utilities for SO_2 emissions avoided from January 1, 1992 to December 31, 2000, subject to certain calculations and reporting requirements. See id. § 7651c(f)(2).

B. Phase II.

1. Emissions Limitations and Allowances.

Phase II becomes effective January 1, 2000. Unlike Phase I, which is limited to the 111 named generating units, Phase II applies to virtually all fossil fuel powered utility generating units. The Phase II program reduces the allowable emissions rate for all "affected units" from 2.5 lbs SO_2/mmbtu to 1.2 lbs SO_2/mmbtu, unless the unit has emissions allowances sufficient to cover the excess. See id. § 7651d. The Phase II program caps the number of regular SO_2 emission allowances at 8.90 million, thus ensuring attainment of the ten million ton SO_2 reduction goal. Unlike Phase I, where each utility unit is entitled to the congressionally-mandated number of allowances, in Phase II all affected units obtain their allowances on a pro rata basis from the available pool. If the statutory formulae for allocating allowances among the units would result in more than 8.90 million regular allowances being allocated, the Administrator must reduce each unit's allowances on a pro rata basis until the 8.90 million allowance cap is achieved.

Some flexibility is built into the Phase II program, however. First, affected units that emitted

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less than 1.20 lbs SO_2/mmbtu in 1985 are permitted an approximately 20% increase in emissions to allow for growth. See id. § 7651d(d),(e)(f). Furthermore, 50,000 additional allowances are granted to units in Illinois, Indiana and Ohio. Special provisions provide bonus allocations to states with emissions rates at or below 0.80 lbs SO_2/mmbtu in 1985, see id. § 7651e, and to units in high growth states, id. § 7651d(i). A high growth state is one "that has experienced growth and population in excess of 25% between 1980 and 1988 and has an electrical generating capacity of more than 30 million kw in 1988." Id. § 7651d(i)(1).

Unlike Phase I, the Phase II program allows owners and operators of other sources of SO_2 emissions to opt into the allowance program. See id. § 7651i. If a unit opts in and is approved by the Administrator, allowances are allocated to the unit. See id. § 7651i(a). Unlike an "affected unit" allowance, which survives the shutdown or closure of the generating facility, see id. § 7651b(a), shutdown or closure of a non-utility unit terminates the allowances granted to that unit, see id. § 7651i(f). Allowances granted to "opt in" sources are not counted against the 8.90 million allowance cap because they do not impact the 10 million ton reduction in SO_2 emissions.

C. Allowances.

Allowances are the heart of the acid deposition subchapter. While an allowance is not a property right, see § 7651b(f), it shares many of the characteristics of property. Each allowance is a "limited authorization" to emit one ton of SO_2 for a year. An allowance may be bought, sold or transferred, subject to regulations promulgated by the EPA Administrator. See id. § 7651b(b). The Administrator may not, however, "prohibit or affect temporary increases and decreases within utility systems . . . and such temporary emissions increases and decreases shall not require transfer of allowances." See id. § 7651b(d)(2). Allowances may be saved for future years but may not be used before issuance. Id. The EPA Administrator issues regular allowances to affected units at no cost to the receiving unit. Some allowances are retained for sale by auction by the Administrator in order to ensure minimal market liquidity and to protect independent power producers. See § 7651o.

D. Excess Emissions Penalty.

If a facility's SO_2 emissions exceed its available allowances, the facility must pay an excess emissions penalty of $2,000 for each missing allowance. See

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§ 7651j(a). This penalty is payable without demand by the Administrator. Id. This fine exceeds the probable cost of purchasing allowances, which are estimated to run between $750 and $1,500. Moreover, the affected source must also offset the excess emissions by deducting the excess from its allowance entitlement in the next year or longer period as prescribed by the Administrator. See id. § 7651j(b). In addition to these allowance-based penalties, an affected unit that exceeds its emissions limitations or allowances may also be fined in a regular civil administrative proceeding, with each ton of excess emissions counting as a separate violation. See id. § 7651m.

E. Nitrogen Oxides Emission Reduction Program.

When a coal-fired utility unit becomes an "affected unit" under the SO_2 provisions, it also becomes an affected unit under the NO_x provisions. See id. § 7651f(a). Unlike the SO_2 provisions, which rely on a market in emission allowances, the NO_x program relies on traditional command-and-control regulation.

The Act requires the Administrator to establish emissions limitations for NO_x for utility boilers as follows:

	Boiler	Maximum Emission Rate
1	Tangentially-fired boilers	Â 0.45 lb/mmbtu
2	Dry bottom wall-fired boilers (not cell burner technology)	Â 0.50 lb/mmbtu
3	Wet bottom wall-fired boilers	(by regulation)
4	Cyclones	(by regulation)
5	Cell burner technology	(by regulation)
6	All others	(by regulation)

The Administrator is required to set the rates for boiler types 3-6 based on the "degree of reduction achievable through the retrofit application of the best systems of continuous emissions reduction, taking into account available technology, costs and energy and environmental impact." Id. § 7651f(b)(2). These rates are required to be comparable to those for boiler types 1 and 2, id., and are subject to periodic revision see id. § 7651f(c). Emissions averaging is permitted under certain conditions. See id. § 7651f(e).

F. Permits and Compliance Plans.

The Act requires permits and compliance plans. Each permit is required to prohibit: (1) SO_2 emissions in excess of allowances; (2) exceedences of applicable

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emissions rates; (3) the use of any allowance for any year prior to the year for which it was allocated; and (4) contravention of any other provision of the permit. See id. § 7651g(a). Each unit is also required to submit a compliance plan demonstrating how the unit will comply with the requirements of the title. See id. § 7651g(b). Nothing in the compliance plan or the permit subchapter "shall be construed as affecting allowances." Id. The allowance system and the Subchapter V permit system thus operate essentially independently of each other.

The Act provides for implementation of the permit system and compliance plans in two phases. In Phase I, each unit is required to submit a permit application and compliance plan to the Administrator. The Administrator is required to approve or disapprove the compliance plans in order to ensure achievement of the Act's objectives. See id. § 7651g(c). Upon promulgation of EPA's initial acid deposition regulations, the Administrator will issue a federal permit to the affected units. This federal permit shall supersede any permit application and compliance plan previously submitted. See id. § 7651g(c)(3).

In Phase II, the affected unit will submit a permit application and compliance plan to the permitting authority by January 1, 1996. In most cases, this permitting authority should be a state with an approved permit program. See id. § 7651g(d). The state is then required to issue the permit, or, in the case of a state without an approved permit program, the Administrator will issue the permit. Permit applications and compliance plans, including amendments thereto, are binding on the affected unit and are enforceable as permits for purposes of the acid deposition subchapter and the subchapter title of the Clean Air Act until a permit is issued by the permitting authority. See id. § 7651g(d)(3).

Permits may be revised by submission of amended applications and compliance plans. See id. § 7651g(g). Permit applications, compliance plans, and permits are also amended automatically upon the Administrator's recording of a transfer of allowances. See id. § 7651g(b). Nothing in the permit, the compliance plan or the use of allowances may permit violation of a national ambient air quality standard, however. Id.

VI. SUBCHAPTER V - PERMITS

In many ways, the Subchapter V permit provisions are the heart of the Clean Air Act Amendments of 1990. By mandating an operating permit system, Congress

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shifted the Clean Air Act from a planning orientation, as seen in the State Implementation Plans (SIPs), to direct controls similar to those in the Clean Water Act. One of Congress' expressed intentions was that the operating permits contain all the relevant air emissions limitations, monitoring and reporting requirements applicable to the source that are currently found in the SIP, the air toxics provisions, and the new source performance standards (NSPS).

Congress sought to change the nature of the Clean Air Act's operations for a variety of reasons. First, Congress was concerned that sources and citizens alike were unable to gather all the relevant information required to successfully implement the Act. Requirements in SIPs were often abstract, with little guidance or direction as to how the requirement should be applied to any particular source. Second, SIPs rarely contained the monitoring and reporting requirements necessary for effective enforcement. Third, the lack of permits or a similar source-specific mechanism caused many site-specific issues to be addressed in the SIP, resulting in frequent SIP revisions, long delays and general uncertainty. Finally, Congress believed that all of a source's applicable requirements into a single permit would ease the enforcement burden on EPA and state enforcement agencies and facilitate enforcement by citizens' groups.

EPA promulgated the implementing regulations for the new operating permit program in part 70 of title 40 of the CFR. See 57 Fed. Reg. 32550 (July 21, 1992). Part 70 establishes the parameters for state permitting programs.

Arizona had developed an air permitting system before Congress required the adoption of an operating permit system in the 1990 Clean Air Act Amendments. The Amendments required a substantial overhaul of Arizona's operating permit program, however. In enacting the Comprehensive Air Quality Act of 1992, the Legislature chose to simplify Arizona's existing permitting system, which had used both installation and operating permits, by combining the functions served by the two types of permits into a single air permit. This change would reduce the uncertainty inherent in the dual permitting system. The Comprehensive Air Quality Act's unitary permit scheme became effective September 1, 1993.

A. Permitting Under Former Arizona Law

This section briefly discusses how the previous dual permitting program worked. The Section focused on permits issued by ADEQ. Permits issued by counties or

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multi-county air authorities followed similar procedures.

1. Installation Permits.

An installation permit was required for "any person commencing construction of or making modification to any building, structure, facility or installation which may cause of contribute to air pollution or the use of which may eliminate, reduce or control the emission of air pollutants." A.R.S. § 49-426(A). Installation of air pollution control equipment also required an installation permit under the old program.

An installation permit authorized the construction, modification or installation of a source or air pollution control device. The installation permit also authorized the temporary operation of the source for 90 days.[1] Id. § 49-426(A)(3).

a. Application process. The permitting authority (either ADEQ or the county/multi-county air district, as appropriate) was required to act upon an installation permit application within 30 days. Installation permits were issued subject to such terms and conditions as the permitting authority deemed necessary, after public notice and comment, and after payment of "a reasonable fee based on the actual cost of processing the permit application, but not exceeding twenty-five thousand dollars." Id. § 49-426(F).

b. Special requirements. All persons applying for a major source installation permit were required to demonstrate that the source would comply with applicable emission limitations and design, equipment work practice or operational standards. Major Source installation permit applicants were also required to conduct an air impact analysis for the geographical area within a 50 kilometer radius of the source. Major Source permits were subject to either New Source Review or Prevention of Significant Deterioration preconstruction review requirements.

2. Operating permits.

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[1] Hazardous waste disposal facilities authorized under chapter 5 of title 49 are not authorized to operate under this provision. See A.R.S. § 49-426(A)(3).

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An operating permit was required before any "building, structure, facility or installation . . . may be operated or used beyond the [90 day period] authorized" by the installation permit. See A.R.S. § 49-426(C). As in the case of installation permits, the permitting authority was required to act within 30 days of receiving the complete application. The permitting authority was authorized to include "such terms and conditions as are consistent with the federal clean air act, as amended, and are found by the director to be necessary." Operating permits had a term of three years. Id. § 49-426(G).

3. Transition from Installation and Operating Permits to Air Permits

Because the authority to issue installation and operating permits terminates on September 1, 1993, transition provisions are required to transfer sources operating under old air permits to the new air permits until a Comprehensive Air Quality Act permit can be issued. The ADEQ regulations make the following provisions for this transfer:

1. An installation or operating permit issued before September 1, 1993 and its corresponding authority to operate continue in effect until either:

   a. the installation or operating permit is terminated or
   b. the director issues or denies a Class I or Class II permit to the source.

   A.A.C. R18-2-303(A).

2. Existing major sources shall submit applications for Class I permits on or before the following dates (R18-2-303(B)):

Type of Source	Date Due
Kraft pulp mills; Metallic mineral processing plants	5/1/94
Portland cement plants; non-metallic mineral processing plants; lumber mills	8/1/94
Primary copper smelters; lime manufacturing plants; nitric acid plants; petroleum refineries	11/1/94
electric utility steam generating units; combined cycle gas turbines; fossil fuel fired industrial and commercial equipment	2/1/95

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Type of Source	Date Due
stationary gas turbines; any other major source	5/1/95

3. Existing sources requiring Class II permits and other non-major sources requiring Class I permits shall submit permit applications within 180 days of receipt of written notice from ADEQ that an application is required. A.A.C. R18-2-303(C). All sources requiring a Class I permit must submit an application no later than May 1, 1998. A.A.C. R18-2-303(D).

4. Any application for an operating permit or an installation permit determined to be complete prior to the effective date of the new rules is considered complete under the new rules. In issuing a permit, the director shall include a schedule of comojpliance for submitting an application for a permit revision to address the elements required to be in a Comprehensive Air Quality Act permit that were not present in the application for a permit under the former Air Quality Act. The director shall act on all pending complete Air Quality Act applications within six months of the effective date of the new rules. A.A.C. R18-2-303(E).

Other transition issues will be addressed by ADEQ on an ad hoc basis, unless further rulemaking is required. The counties probably will follow ADEQ's lead in handling transition issues.

B. The Federal Framework Governing the Arizona Air Permitting Program

The following discussion outlines the requirements Arizona must meet to have an approved permitting program under the federal Clean Air Act Amendments. The Arizona Comprehensive Air Quality Act establishes the legal mechanism for meeting these requirements.

1. Requirements for EPA Approval of Arizona Operating Permit Program

Congress maintained the states' primary role in the Clean Air Act Amendments of 1990. EPA was required to promulgate regulations establishing the minimum elements of a state air permit program within one year of enactment, See 42 U.S.C. § 7661a(b), a deadline it missed by nearly seven months. Arizona must submit its

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permit program to EPA by November 15, 1993. See 40 C.F.R. § 70.4(a); see also 42 U.S.C. § 7661c(d)(1).

a. Approval schedule

EPA must approve or disapprove Arizona's program within one year of receipt. 40 C.F.R. § 70.4(e). Notice and comment is required. Id. EPA may approve the program in its entirety. Alternatively, EPA may approve a partial program for a limited geographical area. Id. § 70.4(c)(1). A partial program may not be approved unless the Subchapter IV acid rain requirements are met; the air toxics requirements of Section 7412 are met for "major," "area" and "new" sources; and SIP and Subchapter I standards (other than section 7416) are met. See 42 U.S.C. § 7661a(f). EPA also requires partial programs to comply with title V and Part 70 regulation. 40 C.F.R. § 70.4(c). Approval of a partial program would not relieve Arizona from mandatory sanctions for failure to submit a complete program. Id.

EPA's third option is to grant interim approval of the state program. EPA may grant interim approval if the program "substantially meets" the requirements of Subchapter V, but is not "fully approvable." See 42 U.S.C. § 7661(a)(g); 40 C.F.R. § 70.4(d)(1). Interim approval may be for a period of up to two years and is not renewable. See 42 U.S.C. § 7661a(g); 40 C.F.R. § 70.4(d)(2). The regulations define "substantially meets" as including adequate fees, applicable requirements, public participation, EPA and affected state review, EPA veto of permits, operational flexibility and a provision for alternative scenarios, among other requirements. See 40 C.F.R. § 70.4(d)(3). Unlike a partial program approval, a state that has submitted a program which has received interim approval is not subject to the mandatory sanctions during the period of interim approval. The state must submit to EPA program changes addressing deficiencies within six months of interim approval, however. Id. § 70.4(d)(2).

b. Sanctions.

EPA may impose sanctions under section 7509(b) if a state misses the statutory deadline. See 42 U.S.C. § 7661a(d)(2)(A); 40 C.F.R. § 70.10(a)(1)(i). EPA must apply sanctions where the state does not submit a program within 18 months after the deadline or fails to submit a revised program within 18 months after EPA disapproved the previous program submission. See 42 U.S.C. § 7661a(d)(2)(B); 40 C.F.R. § 70.4(a)(1)(ii). Sanctions may take any one of the following forms: (1) a federal highway funding cutoff in nonattainment areas (except for safety and certain traffic control measures)

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and (2) increasing the emissions offset ratio for new or modified sources for which a permit is required under Title I, part D to 2:1. See 42 U.S.C. § 7509(b); 40 C.F.R. § 70.10(a)(2). Both sanctions are limited to pollutants for which the area has been designated nonattainment. See id. § 7661a(d)(2)(C). EPA is required to impose the sanctions in the following manner: EPA's choice first, followed by the other after six months. EPA must apply both sanctions if the state's failure to submit a program lacks good faith. See id. § 7509(a). If the state's program has not been approved within two years after the first submission or resubmission was required, EPA is required to promulgate a federal program. See id. § 7661a(d)(3).

c. Ongoing federal supervision.

After Arizona's program is approved, EPA suspends the issuance of federal permits and monitors Arizona's performance. See id. § 7661a(e), (i). If the state does not adequately enforce and administer the program, EPA must give notice of the inadequacy, see 42 U.S.C. § 7661a(i)(1); 40 C.F.R. § 70.10(b)(1), and unless the state demonstrates within 90 days adequate enforcement, EPA may impose any of the sanctions discussed above, see id. § 7661a(g)(3); 40 C.F.R. § 70.10(b)(2). Unless Arizona demonstrates adequate enforcement and administration of the program within 18 months after notice, EPA must impose the section 7509(b) sanctions. 40 C.F.R. § 70.10(b)(3). If the state fails to correct the deficiency within 18 months of the notice, EPA must promulgate a federal program within an additional 6 months. See 42 U.S.C. § 7661a(i)(4); 40 C.F.R. 70.10(b)(4).

2. Federal permitting program minimum requirements.

The Clean Air Act Amendments require that the Arizona permit program contain an extensive list of minimum program elements, including standard applications, mandatory emissions monitoring and reporting, and specified legal and enforcement authorities. See id. § 7661a(b). These requirements are set forth in greater detail in the federal regulations. See 40 C.F.R. § 70.4(b).

In addition to these requirements, Congress mandated that state programs must include fees. The fees must be "sufficient to cover all reasonable (direct and indirect) costs" of the air permit program. See id. § 7661a(b)(3)(A). Congress specified a minimum of $25 a ton fee for regulated pollutants, which includes volatile organic chemicals, pollutants regulated under

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sections 7411 (NSPS) or 7412 (air toxics) and pollutants regulated by the national primary ambient air quality standards (excluding carbon monoxide). See id. § 7661a(b)(3)(B). However, states are not required to consider emissions in excess of 4,000 tons in setting the fees. Id. The fee must also be indexed to the Consumer Price Index and provide for interest and 50% penalties for late or nonpayment. Id. In certain circumstances, a state may charge less than $25 per ton if the state can prove to EPA that it will otherwise recover all the costs of its program. See id. § 7661a(b)(3)(B)(i). Currently, the minimum fee is $28.39 after adjusting for inflation. EPA has promulgated detailed regulations governing the adequacy of a state's fee program. See 40 C.F.R. § 70.9(b).

3. Scope of the federal operating permit program.

The Clean Air Act Amendments extend potential Title V permitting requirements to affected sources under the Acid Rain title, major sources, sources subject to preconstruction review or New Source Performance Standards (NSPS) requirements, certain radionuclides, and any other source designated by the Administrator. See generally 42 U.S.C. § 7661a(a); 40 C.F.R. § 70.3(a). The Administrator may exempt categories of sources by rule if compliance is found to be "impracticable, infeasible, or unnecessarily burdensome." Id. However, the Administrator is not authorized to exempt any "major source." Id. EPA has allowed states to exempt all sources that are not "major sources, affected sources, or solid waste incineration units required to obtain a permit pursuant to Section 129(e) of the Act". See 40 C.F.R. § 70.3(b)(1). NSPS, NESHAP and air toxic sources' obligations to obtain a part 70 permit will be established at the time a new standard is promulgated. Id. § 70.3(b)(2). Unless specifically required to obtain a permit by a state, residential wood heaters and asbestos demolition and renovation sources do not require a permit. Id. § 70.3(b)(4).

C. State and County Permitting Jurisdiction Under the Comprehensive Air Quality Act

1. State Jurisdiction

Under the Comprehensive Air Quality Act, ADEQ has original air permitting authority over the following classes of sources:

a. major sources in any county or multi-county area where the local authority does not have New Source

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Review or Prevention of Significant Deterioration permitting authority under the federal Clean Air Act;

b. smelters and smelting;
c. petroleum refineries;
d. coal fired electrical generating stations;
e. portland cement plants;
f. portable sources;
g. mobile sources for purposes of ensuring compliance with articles 4 and 5 of the Comprehensive Air Quality Act; and
h. After September 1, 1993, sources in any county or multi-county area where the local authority does not have an approved permit program.

See A.R.S. § 49-402(A). ADEQ may also assert state jurisdiction over any permits administered by a county or multi-county authority after giving the local authority notice and following a conference procedure. ADEQ then becomes the exclusive permitting authority for those sources until it relinquishes authority back to the relevant local authority.

Sources subject to state original jurisdiction or transferred from local authority to state authority are subject to local emissions limitations and standards of performance. In order for these standards to be applied to a particular source, the standard must be "specifically identified as applicable to the permitted source or a component of the permitted source." Id. § 49-402(D). Sources identified in categories 2, 3, 4, or 5 are only subject to these local standards or limitations if they have been proposed for inclusion in the State Implementation Plan (SIP). Id.

2. County Jurisdiction

The counties or multi-county air districts have general permitting and regulatory authority over all other sources.

For the sake of simplicity, the following discussion is addressed to permitting by ADEQ. Current rulemaking efforts at the County level generally are following the state model.

D. Scope of Air Permitting Under the Comprehensive Air Quality Act of 1992

The new Comprehensive Air Quality Act and its implementing regulations provide that "no person shall commence construction of, operate, or make a modification to any source subject to regulation under [the Act] without first obtaining a permit or permit

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revision from the Director." A.A.C. R18-2-302(A). Two classes of permits are established for sources requiring a permit.

Class I permits are required for the following sources:

1. Major sources
2. Any source subject to a standard, limitation, or other requirement under section 111 of the Clean Air Act.
3. Any source subject to section 112 of the Clean Air Act (except sources solely subject to the accidental release prevention program, § 112(r)).
4. Affected sources under the Acid Rain provisions.
5. Any source in a category designated by the Administrator or the Director.

Class II permits are required for the following sources:

1. Sources that satisfy all of the following criteria:
   a) The source is within a category designated pursuant to A.R.S. § 49-426.05 (hazardous air pollutants); and
   b) The source emits a hazardous air pollutant listed under A.R.S. § 49-426.04(A); and
   c) The source emits, or has the potential to emit, with controls, one ton per year or more of any hazardous air pollutant (HAP) or two and one-half tons per year of any combination of HAPs.
2. Any source that emits, or has the potential to emit, without controls, significant quantities of regulated air pollutants.
3. Stationary rotating machinery of greater than 325 brake horsepower.
4. Fuel burning equipment or incinerators that are fired at a sustained rate of more than 500,000 Btu per hour for more than an eight hour period.

The following sources are not required to obtain a permit under the Arizona program:

1. New residential wood heaters subject to 40 C.F.R. Part 60, Subpart AAA.
2. Sources and source categories required to obtain a permit solely for asbestos removal, demolition or renovation (40 C.F.R. § 61.145)
3. Agricultural equipment used in

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normal farm operations, which excludes sources required to obtain a permit under Title V or subject to NSPS or air toxics rules.

A.A.C. R18-2-302(B) & (C).

Class I permits are thus required for major sources, NSPS sources, federal HAPs sources, affected sources and designated sources. Class II permits are required for state HAPs sources, certain rotating and fuel burning equipment, and non-major sources that emit "significant" quantities of regulated air pollutants.

Significant quantities are defined in R18-1-101(95) as follows:

Pollutant	Emissions (tpy)
Carbon monoxide (CO)	100
Nitrogen oxides (NO_x)	40
Sulfur dioxide (SO_2)	40
Particulate matter, total	25
Particulate matter, < 10 micron (PM_{10})	15
Volatile organic compounds (VOCs)	40*
Lead	0.6
Fluorides	3
Sulfuric acid mist	7
Hydrogen sulfide (H_2S)	10
Total reduced sulfur (incl. H_2S)	10
Reduced sulfur compounds (incl. H_2S)	10
Municipal waste combustor organics (as total tetra- through octa-chlorinated dibenzo-p-dioxins and dibenzofurans)	3.5E-06
Municipal waste combustor metals (measured as particulates)	15
Municipal waste combustor acids (measured as SO_2 and HCl)	40
All others (except HAPs)	any

* VOC emissions in serious ozone nonattainment areas are subject to R18-2-405 to determine significance.

In addition to the numeric significance levels established in the regulations, major sources or modifications with a net emissions rate or any net

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emissions increase which would be constructed within 10 kilometers of a Class I visibility area and have an impact on ambient air quality in that area of greater than 1 ug/m^3 are significant. A.A.C. R18-1-101(95)(d).

E. Preconstruction Review Requirements

Preconstruction review requirements apply to the construction of new "major sources" and "major modifications." The purpose of preconstruction review is to ensure that construction, modification and reconstruction activities do not prevent attainment in a nonattainment areas and do not cause significant degradation of air quality in attainment areas.

There are two different programs governing preconstruction review. In nonattainment areas, the program is known as New Source Review or NSR. In attainment areas, the program is Prevention of Significant Deterioration, or PSD. Both programs are discussed below.

1. Scope of Preconstruction Review

The preconstruction review requirements apply to major sources and major modifications. Under the Clean Air Act Amendments of 1990, the definition of major source depends, in part, on the classification of the area in which the source is located. Major source is defined as follows:

a. Any stationary source located in a nonattainment area which emits, or has the potential to emit, 100 tons per year or more of any conventional air pollutant, except as follows:

Pollutant Emitted	Non Attainment Classification	ton/yr
Carbon monoxide (CO)	CO, serious, with stationary sources more than 25% of inventory	50
Volatile organic compounds (VOCs)	Ozone, serious	50
Volatile organic compounds (VOCs)	Ozone, severe	25
Particulate matter, less than 10 microns (PM_{10})	PM_{10}, serious	70

b. Any source located in an attainment or unclassifiable area which emits, or has the potential to emit, 100 tons per year or more of

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any conventional pollutant if the source is classified as a categorical source, or 250 tons per year or more of any pollutant subject to regulation if the source is not a categorical source. The categorical sources are:

coal cleaning plants with thermal dryers	kraft pulp mills
portland cement plants	primary zinc smelters
iron and steel mills	primary aluminum ore reduction plants
primary copper smelters	municipal incine-rators with greater than 50 tpd capacity
hydrofluoric, sulfuric or nitric acid plants	petroleum refineries
lime plants	phosphate rock processing plants
coke oven batteries	sulfur recovery plants
carbon black plants using furnace process	primary lead smelters
fuel conversion plants	sintering plants
secondary metal production plants	chemical process plants
fossil-fuel boils or combinations of > 250 MMBtu/hour heat input	Petroleum storage & transfer units with > 300,000 bbl capacity
taconite processing plants	glass fiber processing plants
charcoal production plants	fossil fuel-fired steam electric plants and combined cycle gas turbines > 250 MMBtu/hr heat input

c. Any change to a minor source that would increase its emissions to a level qualifying under (a) or (b) above;

d. Any stationary source which emits, or has the potential to emit, five or more tons of lead per year;

e. Any source classified as major undergoing modification that meets the definition of reconstruction;

f. A major source that is major for volatile organic compounds shall be considered major for ozone.

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g. A major source that is major for oxides of nitrogen shall be considered major for ozone in nonattainment areas classified as marginal, moderate, serious or severe.

A.A.C. R18-2-401(11). A "major modification" is defined as "any physical change or change in the method of operation of a major source that would result in a significant net emissions increase of any pollutants subject to regulation under this Chapter". A.A.C. R18-2-101(58). Increases that are significant for volatile organic compounds or for nitrous oxides in non-extreme ozone nonattainment areas are considered significant for ozone. Id. Routine maintenance, repair and replacement and certain fuel changes are not considered "major modifications." Id.

2. General Preconstruction Review Requirements

a. Permit requirement. No person shall commence construction of a new major source or the major modification of a source without first obtaining a permit or permit revision from the Director. A.A.C. R18-2-402(A). The Director is required to give notice of any deficiencies in a permit application within 30 days of receipt, and to provide copies of the application (in addition to those required by Article 3, permits) to the county air pollution control officer and county manager of the county in which the source is located, the city or town manager of all towns within 5 miles of the source, any regional land use planning body with authority over the source and any state, federal land manager or Indian governing body whole lands may be affected by the emissions.

b. Air impact analysis requirement. The permit applicant is also required to perform an air impact analysis. For new sources, the analysis must cover each pollutant the source would have the potential to emit in significant amounts; for modifications, each pollutant for which it would result in a significant increase. A.A.C. R18-2-407(A). In general, monitoring must be for at least a period of one year, unless the Director determines that a shorter period (not less than 4 months) is appropriate. The monitoring requirements do not apply if the net emissions increase of the pollutant from the modification's air quality impacts or the concentrations in the area of the new source or modification are less than the following amounts:

Pollutant Emitted	Level
Carbon monoxide	575 ug/m^3 8 hr avg

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Pollutant Emitted	Level
Nitrogen dioxide	14 ug/m^3 yr avg
Particulate matter, < 10 microns	10 ug/m^3 24 hr avg
Sulfur Dioxide	13 ug/m^3 24 hr avg
Lead	0.1 ug/m^3 24 hr avg
Fluorides	0.25 ug/m^3 24 hr avg
Total reduced sulfur	10 ug/m^3 1 hr avg
Hydrogen sulfide	0.04 ug/m^3 1 hr avg
Reduced sulfur compounds	10 ug/m^3 1 hr avg
Ozone	*

* Ozone is triggered by increased emissions of less than 100 tons per year of VOCs or oxides of nitrogen.

c. Visibility analysis requirement. The permit applicant also is required to prepare an analysis of the visibility effects of the new major source or major modification for any Class I visibility areas that may be affected by emissions. See A.A.C. R18-2-410.

3. New Source Review for Sources Located in Nonattainment Areas.

No permit or permit revision may be issued for a major source or major modification in a nonattainment area unless:

1. The source demonstrates compliance with the lowest achievable emission rate (LAER) for that source for the specific non-attainment pollutant.

2. The applicant certifies that all existing major sources controlled by that person are in compliance with all conditions and requirements of the Clean Air Act.

3. The person demonstrates that emission reductions for the specific pollutants from sources in existence in the allowable offset area of the new major source or major alteration (whether or not under the same ownership) meet the offset and net air quality benefit requirements of R18-2-404.

4. The applicant performs an analysis of alternative sites, sizes, production processes and environmental control techniques for the new major source or major modification and the Director determines that the benefits of the new major

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source or major modification outweigh the environmental or social costs imposed as a result of its construction and/or location.

Secondary emissions are not considered in determining whether a source is major, but must be considered in whether the source complies with LAER and the certification requirements in paragraph (2) above. A.A.C. R18-2-403(D). Fugitive emissions are not considered in determining whether the source is major or a major modification, but the conditions in paragraphs (1) through (3) must be met for fugitive emissions before a permit can be issued, unless the source is a categorical source, subject to NSPS or NESHAP standard issued before August 7, 1980. A.A.C. R18-2-403(E). Certain exemptions are available from these requirements. See generally A.A.C. R18-2-403.

Offset requirements. Major sources or major modifications must demonstrate that their emissions will be offset by other emissions decreases so that reasonable further progress toward attainment is shown. The requirements for demonstrating offset are as follows:

1. offset must be obtain within the allowable offset area;

2. offset must be contemporary with the operation of the new major source or major modification;

3. offset must be less than the baseline of the total emissions for that pollutant, except in ozone nonattainment areas classified as moderate, serious or severe; and

4. such reductions are sufficient to satisfy the director that emissions from the new major source of major modification, plus offsets, will result in reasonable further progress toward attainment for that pollutant.

5. for ozone nonattainment areas classified as marginal, total emissions from VOCs and oxides of nitrogen must be offset by a ratio of at least 1.10:1. In moderate nonattainment areas, the ration must be 1.15:1.

6. only intrapollutant offsets are allowable. Intrapollutant offsets for precursors of ozone or nitrogen dioxide shall include offsets in VOCs and nitrous oxides respectively.

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7. Only offsets not previously accounted for in attainment demonstrations may be used.

A.A.C. R18-2-404. Special rules apply to VOC and nitrous oxide emissions in serious or severe ozone nonattainment areas. See A.A.C. R18-2-405.

4. Prevention of Significant Deterioration Requirements for Sources Located in Attainment and Unclassifiable Areas

No permit may be issued for a new major source or major modification in any Attainment Area (or Unclassifiable Area) unless the source meets the Prevention of Significant Deterioration program requirements outlined in A.A.C. R18-2-406 for each pollutant for which the Area was designated. The principal requirements of the Prevention of Significant Deterioration Program are as follows:

1. New major sources shall apply best available control technology (BACT) for each conventional air pollutant for which the potential to emit is significant. Major modifications shall apply BACT for each conventional air pollutant for which the modification would result in a significant net emissions increase. For phased construction projects, BACT is determined no later than 18 months prior to commencement of each independent phase of the project.

2. BACT is a case-by-case determination and may not be less stringent than under applicable NSPS requirements.

3. An air impact analysis to demonstrate the new source or modification

   a. will not cause or contribute to air pollution in excess of any applicable maximum allowable increase over the baseline concentration established in R18-2-218 for any attainment or unclassifiable area; OR

   b. Would not contribute to an increase in ambient concentrations for a pollutant by an amount in excess of the significance level for that pollutant in an area in which Arizona primary or secondary ambient air quality standards for that pollutant are being violated. A new major source or major modification of VOC or oxides of nitrogen within 50 kilometers of a nonattainment area is presumed to contribute to violations

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unless a satisfactory demonstration to the contrary is made.

A.A.C. R18-2-406. Fugitive emissions are not considered in determining whether the source is major or a major modification, but the conditions in paragraphs (1) through (3) must be met for fugitive emissions before a permit can be issued, unless the source is a categorical source, subject to NSPS or NESHAP standard issued before August 7, 1980. A.A.C. R18-2-406(C). The requirements also do not apply to portable sources in certain circumstances. A.A.C. R18-2-406(E).

F. Comprehensive Air Quality Act Permitting Process

1. Application Deadlines. Initial permit applications for existing non-major sources are due within 12 months after the source became subject to the permitting program. Permit renewals are due at least six months prior to permit expiration, but no longer than 18 months before permit expiration. Sources that become subject to a federal standard under the HAP program must submit an application within 12 months demonstrating how the source will comply with the standard. A.A.C. R18-2-304(B). If a source is subject to preconstruction review requirements (New Source Review or Prevention of Significant Deterioration), the source must comply with the New Source Review and Prevention of Significant Deterioration requirements established in Article 4. A.A.C. R18-2-304(E)(2).

2. Application Form. All applicants for a permit must use a standard application form that covers each emissions unit at the source, although the state may exempt "a list of insignificant activities and emissions levels that need not be included in the permit application. 40 C.F.R. § 70.5(c); A.R.S. § 49-426(C). The applications are required to include, in part, the following information:

- identifying information,
- description of source processes and products, including any alternative scenarios,
- all emissions of regulated air pollutants, unless "insignificant," including emission points and rates, fuels, and air pollution control equipment,
- a compliance plan describing compliance status, a statement that the source will remain in compliance, comply with new requirements in a timely fashion, and achieve an enforceable schedule, including certified

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progress reports at least once every six months,

- compliance certification and certification of truth and accuracy.

Id. Certain requirements may be waived by the Director for Class II permits.

3. Completeness Determination. Except for proposed new major sources or major modifications subject to the preconstruction review requirements of Article 4, an application for a new permit, permit revision or permit renewal is deemed to be complete unless the Director notifies the applicant within 60 days by certified mail that the application is not complete. A.A.C. R18-2-304(E)(4). The applicant is allowed one additional information submission to complete the application, after which ADEQ may deny the application. Id. R18-2-304(E)(5). Applications are required to be certified as "true, complete and accurate", and applicants are under a continuing duty to supplement and correct the application. 40 C.F.R. § 70.5(b); A.A.C. R18-2-304(G) & (H). The state must approve or disapprove the completed application within 18 months. 40 C.F.R. § 70.5(b). A complete application activates the "application shield," discussed below.

4. Transmission Requirements. The state must submit to EPA a copy of each permit application, including the compliance plan, each proposed permit and each final permit. See 42 U.S.C. § 7661d(a)(1); 40 C.F.R. § 70.8(a)(c). Copies must also be made available to the public. See U.S.C. § 7661b(e); 40 C.F.R. § 70.7(h). Arizona provides copies of Class I permit applications, proposed final Class I permits after public and affected state review and final Class I permits to EPA. See A.A.C. R18-2-307(A).

5. Notification Requirements. The state must notify all contiguous states whose air quality may be affected and any state that is within 50 miles of the source. See id. § 7661d(a)(2). Arizona provides affected states notice of each Class I permit on or before public notice as required by A.A.C. R18-2-330, except as R18-2-319 provides otherwise. See A.A.C. R18-2-307(E). Each affected state is provided an opportunity to submit written recommendations respecting issuance of a permit and its terms and conditions. If ADEQ declines to accept any recommendations, ADEQ will give notice in writing to EPA and the affected state. See 42 U.S.C. § 7661d(a)(c); 40 C.F.R. § 70.8(b)(2); A.A.C. R18-2-307(E)(2). ADEQ is not required to accept recommendations not based on federal applicable requirements or Arizona law. A.A.C. R18-2-307(E)(3).

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In addition, once a Class I permit application is received, the ADEQ will publish notice in a newspaper of general circulation in the county where the source is or will be located. A.A.C. R18-2-330(B). Then, ADEQ will give notice of the proposed Class I or Class II permit once each week for two consecutive weeks in two newspapers of general circulation in the county where the source is located. A.A.C. R18-2-330(C). In addition, the application must post a notice at a prominent location at the site of the proposed permit and must also post a notice of the hearing date and location, if one is scheduled. A.A.C. R18-2-330(F). The permitting authority is required to send a copy of the notice of the hearing to the permittee and to members of the public who have requested such notice. A.A.C. R18-2-330(C). Any person is permitted to comment on the proposed permit, and ADEQ must keep the comment period open for 30 days from the date of first notice. See A.R.S. § 49-426(D); A.A.C. R18-2-330(G).

6. Notice of Receipt. The permitting authority must consider and respond to all comments prior to issuing the final permit. See A.R.S. § 49-426(D).

7. EPA Objection. The Administrator is required to object to any permit which contains provisions not in compliance with the Act or the SIP. The Administrator must object in writing within 45 days after receiving a copy of the proposed permit or after receiving the state's refusal to accept another state's recommendations. The Administrator is required to provide a reason for the objection. See id. § 7661d(b)(1); 40 C.F.R. § 70.8(c). The Comprehensive Air Quality Act grants the permitting authority specific authority to decline to grant a permit if EPA objects. See A.R.S. § 49-426(J). ADEQ's regulations provide that no permit shall be issued to which the Administrator objects. A.A.C. R18-2-307(D).

8. Administrator's Failure to Object. If the Administrator fails to object, any person may petition within 60 days after the expiration of the 45 day period to have the Administrator object to the issuance of that permit. The petition must state specific objections to the permit, and the petitioner has the burden of proof of showing the permit is not in compliance with the Act. The Administrator must act within 60 days after the petition is filed. Denial of the petition is subject to judicial review in a federal court of appeals. See 42 U.S.C. § 7661d(b)(2); 40 C.F.R. § 70.8(d).

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Arizona law requires a person petitioning the Administrator to object to serve notice on ADEQ by certified mail within 10 days following such petition. The notice must include the grounds for the objection and whether such objections were raised during the public comment period. A petition for review does not stay the permit's effectiveness if the permit was issued after the end of EPA's 45 day review period and prior to the Administrator's objection. See 42 U.S.C. § 7661d(b)(2); 40 C.F.R. § 70.8(d); A.A.C. R18-2-307(F).

9. State Response to EPA Objection. If the Administrator objects to the issuance of the permit, the state must revise the permit within 90 days to meet the objections. See 42 U.S.C. § 7661d(c); 40 C.F.R. § 70.8(c)(4). If the state has already issued the permit, the Administrator shall modify, terminate or revoke such permit, and the state may only issue a revised permit in accordance with EPA's objection. See 42 U.S.C. § 7661d(b)(3); A.A.C. R18-2-307(G). Within 10 days of receipt of notice from EPA that cause exists to reopen a Class I permit (for example, the Administrator objects to issuance), ADEQ shall notify the source. The source shall have 30 days to respond. Within 90 days of receipt of notice from the Administrator, ADEQ shall forward to the Administrator and the source a proposed determination of termination, revision, revocation or reissuance of the permit. Within 90 days of an EPA objection, ADEQ shall resolve the objection. A.A.C. R18-2-321(B).

10. Failure of State to Meet Objection. If the state fails to comply with EPA's objection within 90 days, the Administrator shall issue or deny the permit in accordance with the requirements of the Act. See id. § 7661d(c); 40 C.F.R. § 70.8(c)(4). The Administrator's action is not subject to judicial review until the Administrator issues or denies the permit.

11. Public Participation. Except for operational flexibility changes, administrative permit amendments and minor permit modifications, all permit proceedings shall include the following procedures:

- Notice in two newspapers of general circulation, posting in a prominent location, and mailing of notice to a mailing list of interested parties;
- Copies of application, draft permit and other relevant material will be made available;
- 30 days for public comment; at least 30 days notice before a public hearing.

12. Appeal of Permit Actions

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Where ADEQ or a county is the permitting authority, the permit applicant or permittee and any commenter on the permit application, renewal or revocation, may appeal ADEQ's decision to the air pollution control hearing board within thirty days after notice of ADEQ's action. The hearing board, after notice and a public hearing, may "sustain, modify or reverse" ADEQ's action. A.R.S. § 49-428(A). A person with an interest that may be adversely affected by ADEQ's delay is authorized to bring a civil action in superior court alleging that the director has failed to act in a timely manner. ADEQ must be given 60 days notice before the suit may be brought, however. A.R.S. § 49-428(B).

G. Permit Contents.

The permits required by the Comprehensive Air Quality Act and the Federal Clean Air Act Amendments of 1990 are substantially more detailed than those existing under the prior Air Quality Act. The new permits contain three four major types of provisions: emissions limitations; compliance schedules; fees; and application and permit shields. Each is examined in turn.

1. Emissions Limitations and Other Substantive Requirements

Permits are required to contain the following standard provisions:

- Date of issuance and permit term.
- Emission limitations and standards, including a citation of authority and, where a provision of the Act is more stringent than the regulations, the Act's provision;
- Monitoring requirements, including analysis procedures and methods, maintenance requirements, and self reporting of violations;
- Recordkeeping requirements, including certain records of all required monitoring and retention for at least 5 year.
- Reporting requirements, submittal of required reports at least once every 6 months and prompt reporting of deviations from permit requirements, including upset conditions.
- Standard provisions on compliance with all conditions, need to halt or reduce an activity not a defense, and that permit may be modified, revoked, reopened and reissued or terminated for cause; and that the permittee will furnish any information requested by the director on these issues;

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- Terms and conditions for reasonably identified operating scenarios identified by the source and approved by the Director;
- Terms and conditions for trading emissions or intermittent operating scenarios, if requested by the applicant.

A.A.C. R18-2-306(A). All permit terms and conditions not specifically designated as not federally enforceable are federally enforceable. A.A.C. R18-2-306(B). New Source Review/Prevention of Significant Deterioration program requirements discussed above also are included in Comprehensive Air Quality air permits.

In addition, permits shall include an affirmative defense of emergency for events beyond the reasonable control of the permittee, which require immediate corrective action and which cause the source to exceed a technology based emission limitation. Emergency does not include noncompliance caused by improperly designed equipment, lack of preventive maintenance, careless or improper operation, or operator error. A.A.C. R18-2-306(E). In order to assert emergency, the permittee must carry the burden of proof through contemporaneous operating logs or other relevant evidence that:

1. an emergency occurred and the permittee can identify the cause of the emergency
2. the permitted facility was being operated properly
3. the permittee took all reasonable steps to minimize excess emissions during the emergency
4. the permittee submitted notice to the Director by certified mail or hand delivery within 2 working days of the time the emission limitations were exceeded.

A.A.C. R18-2-306(E).

2. Compliance Plan and Schedule Requirements

Under the Comprehensive Air Quality Act, all permits are required to contain compliance plans and compliance certifications. The elements of these plans and certifications are described below:

a. Compliance plan. The compliance plan shall include the following elements:

- Monitoring requirements sufficient to ensure compliance with the terms and conditions of the permit.

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- All required recordkeeping requirements and copies of monitoring information, where applicable.

- All applicable reporting requirements, including a minimum of reporting any required monitoring at least once every 6 months. Such reports must identify deviations from permit requirements and be certified by a responsible official.

- A description of the compliance status of the source with respect to all applicable requirements and:

  * for all applicable requirements for which the source is in compliance, a statement that the source will continue to comply
  * for applicable requirements which become effective during the permit term, a statement that the source will meet such requirements on a timely basis;
  * for requirements for which the source is not in compliance at the time of permit issuance, a narrative description of how the source will achieve compliance.

b. Compliance schedule. The compliance plan shall include a compliance schedule including the following items:

- for all applicable requirements for which the source is in compliance, a statement that the source will continue to comply

- for applicable requirements which become effective during the permit term, a statement that the source will meet such requirements on a timely basis, unless the applicable requirement requires a more specific schedule.

- for requirements for which the source is not in compliance at the time of permit issuance, a narrative description of how the source will achieve compliance. The schedule shall include a schedule of remedial measures, including an enforceable sequence of actions with milestones, leading to compliance with any applicable requirement. This compliance schedule shall resemble and be no less stringent than any judicial consent decree or administrative order to which the source is

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subject. Such schedule shall not sanction noncompliance with the Act.

- a schedule of certified progress reports no less frequently than once every six months for sources requiring a schedule of compliance to remedy a violation;

- Compliance with any Federal Implementation Plan (FIP).

c. Compliance certifications. Compliance certifications shall be required no less than annually. The certification must identify each term and condition of the permit which is the basis of the certification, the compliance status, whether compliance is continuous or intermittent, the methods used to determine compliance and other facts the director may require. A.A.C. R18-2-309(A)(4). Compliance certifications must be submitted to the director and, for class I permits, to the Administrator. Id. Certifications must be certified by a responsible official as to their truth, accuracy and completeness. R18-2-309(A)(5).

3. Permit Fees

The Comprehensive Air Quality Act specifically authorizes ADEQ to collect fees for air permits. The type and amount of fee depends on whether the source is a "title V" source, a complex source or another type of source. The following are Title V and complex sources:

Title V Sources	Complex Sources
• Any source required to have a Class I permit • Any source allowed to operate under a Class II permit pursuant to being listed in R18-2-302(B)(2)(b)(i) or (ii) • Any source that qualifies for a Class II permit under R18-2-302(B)(2) but elects a Class I permit	• Agricultural chemical manufacturers and processors • Commercial ethylene oxide sterilizers • Foundries • Glass bead manufacturers • Lumber Mills • Mining and mineral processing facilities, except facilities engaged solely in the extraction and beneficiation of ores and minerals • Paper Mills • Refineries • Plastics extrusion facilities • Printers with VOC emissions > 35 tpy • Textile manufacturers • Manufacturers of tires and related products

A.A.C. R18-2-326(B)(1) & (2).

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a. Annual operating, inspection and performance fees. The owner/operator of a source required to obtain a permit under Title V (see above) shall pay an annual permit fee equal to $33.00 per ton of actual emissions of regulated pollutants or the minimum specified below. A.A.C. R18-2-326(C). This amount does not include emissions of a regulated pollutant in excess of 4000 tons per year; emissions of any regulated pollutant already included in the fee calculation (such a federal HAPs already included as VOC or PM_{10}); and emissions from insignificant activities excluded from permit. This fee shall be adjusted each January 1 by the increase in the Consumer Price Increase over the preceding year. Special provisions apply to new sources and sources that are less than significant. See A.A.C. R18-2-326(C)(5) & (6).

Complex sources that are not Title V sources shall pay an annual permit processing fee of $1097 per year, plus an annual inspection fee of $1560. In addition, each source shall pay a performance test fee of $635 for any year during which such test shall be performed. A.A.C. R18-2-326(D).

State sources that are neither Title V nor complex sources shall pay an annual permit processing fee of $565 per year, plus an annual inspection fee of $390. In addition, each such source shall pay a performance test fee of $488 during any year in which such test will be performed. A.A.C. R18-2-326(E).

b. Permit application fees. Before issuance of a permit or permit revision for a source required under Title V to be permitted, the applicant shall submit a fee representing the total cost of reviewing and acting upon the application. The fee shall be between $2500 and $30,000. Class I permittees shall submit $13,000 with the application, while class II permittees shall submit $2000 with the application.

If a source is not required by title V to be permitted, the applicant shall pay to the director a processing fee of $6250 for a complex source and $3040 for a noncomplex source. The source may pay one fifth before permit issuance and one fifth for each of the next four years.

c. Permit revision fees. The following fees shall apply to a source seeking a permit revision or transfer:

Title V Sources	Other Sources

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1. $10,000 for a significant permit revision that is the result of a major modification	1. $2,400 for a significant permit revision for a complex source
2. $1500 for other significant permit revisions	2. $700 for any other significant permit revision.
3. $500 for a minor permit revision.	3. $450 for a minor permit revision
4. $424 for a permit transfer.	4. $318 for a permit transfer.

Up to a maximum of $25,000 for a significant permit revision and $10,000 for a minor permit revision. A.A.C. R18-2-326(I), (J) & (K).

4. Accelerated processing

An applicant may request accelerated processing by providing the Director with written notice 60 days in advance of the filing. Any such request shall be accompanied by the standard application fees plus an additional 50% surcharge. The director may request an additional surcharge based on estimated cost of the accelerated processing. A.A.C. R18-2-326(L).

5. Resolution of fee disputes.

If there is a fee dispute, the applicant shall pay the fee under protest and the director shall issue the permit. A written request shall be filed within 30 days of receipt of the final bill and shall specify the areas of dispute. Informal review shall take place within 30 days of the directors receipt of the request. Notice of the time and place shall be mailed to the requestor at least 10 days before the review. The resolution at the informal review shall be final unless the requestor requests a hearing within 30 days. A.A.C. R18-2-326(M).

6. Application and Permit Shields.

a. Application shield. Congress provided that when an applicant has submitted a timely and complete application for a Subchapter V permit, and the state has not taken final action on that permit, the source's failure to have the permit is not a violation of the Act unless the delay in final action is due to the failure of the applicant to timely submit required information to the state or EPA. See id. § 7661b(d). The application shield does not affect, however, "the requirement that any source have a preconstruction

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permit under title I of the Act." 40 C.F.R. § 70.5(a)(6).

b. Permit shield. The Act's permit shield provides that where a source has been granted a permit, compliance with the permit will be deemed compliance with all "applicable requirements" as of the date of permit issuance if:

1. The permit specifically identifies the applicable requirements; or

2. The state makes an explicit determination that other provisions (referred to in the determination) are not applicable.

See 42 U.S.C. § 7661c(f); 40 C.F.R. § 70.5(f)(1); A.A.C. R18-2-325(A). The permit shall not shield or otherwise lessen the Administrator's authority under section 7603 (emergency orders), liability for previous violations, applicable requirements of the acid rain program, compliance with EPA information requests, or the authority of the director to requirement compliance with new applicable requirements adopted after the permit is issued. See 42 U.S.C. § 7661c(f); 40 C.F.R. § 70.5(f)(3); A.A.C. R18-2-325(B). A permit that does not expressly state that a permit shield exists is presumed not to provide a shield. 40 C.F.R. § 70.5(f)(2).

H. Permit Amendment and Modification

The Clean Air Act Amendments, the Comprehensive Air Quality Act and their implementing regulations allow for greater flexibility in permit administration than previous law. The new regulations distinguish between four types of facility modifications: facility changes not requiring a permit revision; administrative permit amendments; minor permit modifications; and significant modifications. See 40 C.F.R. § 70.7(d) & (e).

1. Facility Changes Not Requiring Permit Revision.

A facility that has received a permit may make changes to its equipment or operations without applying for a permit revision if all of the following requirements are met:

1. The changes are not modifications under any provision of title I of the Act or A.R.S. § 49-401.01(17).

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2. The changes do not exceed the emissions allowable under the permit whether expressed as a rate of emissions or total emissions.

3. The changes do not trigger or violate any additional applicable requirements; and

4. The changes meet all requirements for a minor permit revision under A.A.C. R18-2-319.

A.A.C. R18-2-317(A). Substitution of process equipment or pollution control equipment does not require permit revision if it meets the requirements of subsection A.

The Director and Administrator must receive by certified mail a written notice of the proposed change from the source at least 7 working days in advance of the change. Emergency changes may be provided less than 7 days, but should be provided as far in advance (or as soon thereafter) as practicable. A.A.C. R18-2-507(C). The notification must describe the change, any change in emissions, and any permit condition no longer relevant, in addition to other specified information. See A.A.C. R18-2-307(D).

The permit shield does not apply to any change made pursuant to this provision. A.A.C. R18-2-307(E).

This section also permits emissions trading within the permitted facility, as established in the permit, provided the emissions are quantifiable and replicable. This procedure is discussed in more detail at R18-2-307(F).

2. Administrative Permit Amendments.

An administrative permit amendment is defined as a permit revision that accomplishes one or more of the following changes:

(1) Corrects typographical errors;
(2) Identifies a change in the name, address, or phone number of any person identified in the permit, or provides a similar minor administrative change at the source;
(3) Requires more frequent monitoring or reporting by the permittee;
(4) Allows for a change in ownership or operational control of a source where the Director determines that no other change in the permit is necessary, provided that a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current

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and new permittees has been submitted to the permitting authority;

(5) Incorporates other types of changes which, for Class II permits the Director, and for Class I permits, the Administrator have determined to be similar to other changes under this section.

40 C.F.R. § 70.7(d)(1); A.A.C. R18-2-308(A). Administrative permit amendments must be made within 60 days after receiving notice from the permittee, but the amendment may be made without providing notice to the public or affected states. Id. § 70.7(d)(3).

3. Minor Permit Revisions.

The permitting authority may treat a permit revision as a minor permit modification if the proposed revisions:

1. Do not trigger or violate any applicable requirement;
2. Do not involve substantive changes to existing monitoring, reporting, or recordkeeping requirements in the permit;
3. Do not require or change a case-by-case determination of an emission limitation or other standard, or a source-specific determination of ambient impacts, or a visibility or increment analysis;
4. Do not seek to establish or change a permit term or condition for which there is no corresponding underlying applicable requirement and that the source has assumed to avoid an applicable requirement to which the source would otherwise be subject. Such terms and conditions include:
   (A) A federally enforceable emissions cap assumed to avoid classification as a modification under any provision of title I; and
   (B) An alternative emissions limit approved pursuant to regulations promulgated under section 112(i)(5) of the Act;
5. Are not modifications under any provision of title I of the Act or promulgated pursuant to A.R.S. § 49-426.06 (state HAP statute);
6. Are not changes in fuels not represented in the permit application or provided for in the permit;
7. The changes do not exceed the emissions allowable under the permit whether expressed as a rate or total emissions; and

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8. Are not required by the State program to be processed as significant modifications.

See A.R.S. § 49-426.01(A)(2)-(3); 40 C.F.R. § 70.7(e)(2)(i)(A). For class I permits, ADEQ must notify EPA and affected states within 5 working days and ADEQ may not issue the proposed permit modification until after the close of EPA's 45 day review period or notice that EPA will not object.

Within 90 days of receipt of a proposed Class I permit revision (or 15 days after the close of the administrator's 45 day review period), the director must issue the permit as proposed, deny the revision, determine that it is a "significant revision" or revise the application and submit the new application to EPA. A.A.C. R18-2-319(E)(1).

Within 90 days of receipt of a proposed class II permit revision, the director must issue the permit revision, deny the revision, determine that the revision should be processed as a "significant revision" or revise and issue the permit revision. A.A.C. R18-2-319(E)(2).

A source may implement a change allowed as a minor permit modification, immediately upon filing the proposed permit revision application. Until the director acts on the application, the source shall comply with both the applicable requirements governing the change and the proposed revised permit terms and conditions, but need not comply with the existing permit terms and conditions it seeks to modify. However, if the source fails to comply with the proposed terms, the existing terms and conditions may be enforced against the source. The permit shield does not cover minor permit modifications. A.A.C. R18-2-319.

4. Significant Permit Revisions

Modifications which are not allowed without permit revision, administrative permit amendments or minor permit amendments are subject to full 40 C.F.R. part 70 application requirements. See id. § 70.7(e)(4)(i); A.A.C. R18-2-320. All modifications to major sources of federally listed hazardous air pollutants shall follow significant revision procedures, except that physical changes or changes in the method of operation of a source that complies with Clean Air Act section 112(g)(1) shall be modifications requiring processing under this permit, but shall not trigger MACT controls. A.A.C. R18-2-320(B). Permit modifications are subject to the same procedural requirements, including public participation and federal oversight, as the original

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permit issuance. ADEQ will seek to accomplish the review within nine months of application, but must act within 18 months. A.A.C. R18-2-320(E).

I. Permit Reopenings, Revocation and Reissuance, Termination, Expiration and Renewal

1. Reopening for Cause.

A permit may be reopened for cause under any of the following circumstances:

1. Additional applicable requirements become applicable to a major source with a remaining permit term of three years or more. Reopening must be accomplished within 18 months. No reopening is required if effective date is later than expiration date. Any revision under this provision shall be treated as a permit renewal.

2. Additional requirements become applicable to an affected source under the acid rain program.

3. The permit contains a material mistake or inaccurate statements were made in establishing terms or conditions.

4. The permit need to be revised or revoked to ensure compliance with applicable requirements.

A.A.C. R18-2-321(A). Proceedings to reopen and issue shall follow the same procedures as initial permit issuance, but shall affect only those part of the permit for which cause to reopen exists. The director must provide at least 30 days notice to the source in advance of the reopening, except that a shorter time may be specified in case of emergency. The permit shield shall be modified to reflect the revisions. A.A.C. R18-2-321(A).

2. EPA Action.

Within 10 days of receipt of notice from EPA that cause exists to reopen a class I permit, the director shall notify the source. The source shall have 30 days in which to respond. Within 90 days of receipt of notice from EPA, ADEQ shall forward to the Administrator and the source a proposed determination of termination, revision, revocation or reissuance of the permit. Within 90 days of EPA's objection to the proposal, ADEQ shall resolve the objection and act on the permit.

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3. Permit Expiration and Renewal

Permit renewal follows the same procedures set forth for initial permit issuance. A.A.C. R18-2-322(A). Permit expiration deprives a source of authority to operate unless the source has filed a timely application for renewal sufficient under A.R.S. § 41-1064 in accordance with R18-2-304. Any testing for renewal shall be completed before the proposed permit is issued by the Director. A.A.C. R18-2-322(B).

J. General Permits.

The subchapter V program provides for general permits for "numerous similar" sources. See 40 C.F.R. § 70.6(d). Such permits need comply with all of the requirements of a regular part 70 permit and require a standard application. "Affected sources" are not eligible for general permits under subchapter V.

One of the most significant changes made by the Comprehensive Air Quality Act is its authorization of general permits for classes of air sources. The Comprehensive Air Quality Act authorized ADEQ to issue a general permit "for a defined class of facilities if the class contains a large number of facilities that are substantially similar in nature and that have substantially similar emissions," provided certain additional conditions are met. A.R.S. § 49-426(H); A.A.C. R18-2-501(A). "Similar in nature" refers to facility size, processes and operating conditions. Counties may also issue general permits, but these may be no less stringent than ADEQ's permits. Local general permits may be more stringent if the County makes the demonstration required by A.R.S. § 49-479(C). A.A.C. R18-2-501(C).

1. General permit issuance

General permits may be initiated by ADEQ, a county, or upon petition. A.A.C. R18-2-502(A). General permits generally are issued subject to the requirements of Article 3 of the regulations, but special public participation requirements apply. See A.A.C. R18-2-502(C). The general permit may contain conditions "applicable to sources located in a specified geographic area" at ADEQ's discretion or upon petition by a county air pollution control officer. A.R.S. § 49-426(H)(8).

Public notice requirements. ADEQ may issue a general permit after providing notice for two weeks in a newspaper of general circulation in the county in which

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the general permit will apply. General permits in lieu of a Title V permit require notice to the affected states and EPA. A.A.C. R18-2-504. General permits are reviewed and renewed every five years subject to the same public notice requirements. R18-2-505.

2. Application Process.

A source that is a member of a class of facility covered by a general permit may apply to ADEQ for coverage by completing a permit application, which may be customized by ADEQ for that class of facilities. A.A.C. R18-2-503(A). In addition, the source must submit a compliance plan meeting the requirements of R18-2-309. See A.A.C.R18-2-503(A)(2). ADEQ must act on the application within 180 days. A.A.C. R18-2-503(C). Upon granting an application to be covered by a general permit, ADEQ must publish notice of approval in a newspaper of general circulation in the affected county. A.R.S. § 49-426(H)(4).

A source may opt out of a general permit by applying for an individual permit. See A.A.C. R18-2-506.

3. Variance from General Permit Conditions

In certain circumstances, it is possible for a source to obtain a variance from a MACT or HAPRACT standard by demonstrating compliance with A.R.S. § 49-426.06(D) at the time the source applies for coverage under the general permit. If the director approves the variance demonstration, the source shall operate under the variance, but must comply with all other provisions of the permit. See A.A.C. R18-2-507.

4. Revocation of Authority to Operate Under the General Permit

The Director may revoke a source's authorization to operate under a general permit at any time if:

1. the source is not in compliance with the terms of the general permit;

2. the director determines that emissions from the source or facility class are significant contributors to ambient air quality violations and are not adequately addressed by the general permit; or

3. the director has information showing that the effects on human health and the environment

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from sources covered by the general permit are unacceptable.

A.A.C. R18-2-510(A). The director shall provide notice to all sources of the impending cancellation. Sources have six months in which to submit an individual permit application. A.A.C. R18-2-510(B). A source previously authorized to operate under a general permit may continue to operate under that permit until it submits an individual permit application or 180 days after the receipt of notice that the general permit has expired, been cancelled or terminated. A.A.C. R18-2-510(C).

K. Conditional Orders

The director may grant a conditional order after a public hearing allowing a source to vary from any non-federally enforceable requirement if the following conditions are met:

1. Issuance will not endanger public health or the environment, impede attainment or maintenance of national ambient air quality standards, or violate the Clean Air Act;

2. There has been a breakdown of equipment or upset of operations beyond the control of petitioner which causes the source to be out of compliance and the source was in compliance prior to the upset, and the upset can be corrected within a reasonable time; OR there is no reasonable relationship between the economic and social costs of, and benefits to be achieved from, achieving compliance.

A.A.C. R18-2-328. A source may obtain a conditional order by petitioning the director. A.A.C. R18-2-328(B). Notice of the petition and hearing date shall be published in a local newspaper. A.A.C. R18-2-328(B)(3). The director may grant a conditional order within 30 days after the hearing, or if no hearing is held, within 60 days of the filing of the petition, except that if a SIP revision is required, the director shall comply with the requirements for SIP revisions set forth in 40 C.F.R. § 51, subpart E.

A conditional order shall be for such period as the director prescribes, but no more than one year for a source subject to Title V, and three years in the case of any other source. The conditional order shall require a detailed plan for completion of corrective steps, a requirement that necessary construction shall begin as specified in the compliance schedule, and

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reserve the right to require written reports and periodic inspections. A.A.C. R18-2-328(E).

A holder of a conditional order may petition for renewal at any time not more than 60 days nor less than 30 days prior to expiration of the order. Renewals shall not exceed three years from the date of initial issuance, unless after the three years the director finds that failure to comply and conform is beyond the control of the petition, in which case up to two more years of extension may be granted. A.A.C. R18-2-328(E)(3).

If there is a change in conditions which require implementation of control strategies necessitating the installation of additional or different air pollution control equipment, the director may renew a conditional order for an additional term. A.A.C. R18-2-328(E)(4).

A conditional order shall be effective when issued unless it varies from the SIP, in which case the conditional order shall be submitted to the Administrator as a revision of the SIP or the conditional order varies from the requirements of a permit issued for a facility required to obtain a permit pursuant to Title V of the Clean Air Act, in which case the conditional order shall be submitted to the Administrator and shall be effective at the end of the 45 day review period, unless objected to by the Administrator. A.A.C. R18-2-328(E)(5).

The director may revoke a conditional order if its terms are being violated after notice and an opportunity for hearing. The hearing shall be within 30 days after the notice is served upon the holder of the conditional order. A.A.C. R18-2-328(F).

L. EPA Enforcement.

EPA may require a state to terminate, modify or revoke and reissue a permit for cause, after notice to the state and to the source. The state is required to act within 90 days on EPA's objection. See id. § 7661d(e). There may be a 90-day extension if the Administrator finds a new or revised application is required. Id. If the issuing state does not act or the Administrator objects and the issuing state fails to resolve the objection within 90 days, the Administrator may, after notice and in accordance with "fair and reasonable procedures," terminate, modify or revoke and reissue the permit. See id. § 7661d(e).

VII. SUBCHAPTER VI - STRATOSPHERIC OZONE PROTECTION

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A major aspect of the 1990 Clean Air Act Amendments is stringent provisions to protect stratospheric ozone. Concern over the ozone layer grew after scientists detected a "ozone hole" forming over Antarctica. In light of these discoveries, a number of developed and developing countries signed the Montreal Protocol. The Protocol commits the member countries to reducing the use of chlorofluorocarbons (CFCs) and related substances. Subchapter VI of the Clean Air Act implements the Montreal Protocol in the United States. Where there is disagreement between the Protocol and the Clean Air Act, the more stringent requirements apply. EPA's implementing regulations for the stratospheric ozone program are found at 40 C.F.R. Part 82.

A. Regulated Substances.

The Protocol and the Act require reductions in the amount of CFCs and other ozone damaging chemicals consumed, which is defined as the manufacture or importation of the chemicals, less those exported to member countries. The list of regulated CFCs and related substances is divided into two classes, based upon the relative degree of threat to stratospheric ozone. The class I substances, arranged by groups, are as follows:

Group I

$CFCl_3$ - Trichlorofluoromethane (CFC-11)
CCl_2F_2 - Dichlorodifluoromethane (CFC-12)
CCl_2F-$CClF_2$ - Trichlorotrifluoroethane (CFC-113)
CF_2Cl-$CClF_2$ - Dichlorotetrafluroethane (CFC-114)
$CClF_2$-CF_3 - (Mono) chloropentafluoroethane (CFC-115)

Group II

CF_2BrCl - Bromochlorodifluoromethane (halon-1211)
CF_3Br - Bromotrifluoromethane (halon-1301)
$C_2F_4Br_2$ - Dibromotetrafluoroethane (halon-2402)
All isomers

Group III

CF_3Cl (CFC-13)
C_2FCl_5 (CFC-111)
$C_2F_2Cl_4$ (CFC-112)
C_3FCl_7 (CFC-211)
$C_3F_2Cl_6$ (CFC-212)

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$C_3F_3C1_5$ (CFC-213)
$C_3F_4C1_4$ (CFC-214)
$C_3F_5C1_3$ (CFC-215)
$C_3F_6C1_2$ (CFC-216)
C_3F_7C1 (CFC-217)
All isomers

Group IV

$CC1_4$ - Carbon tetrachloride

Group V

$C_2H_3C1_3$ - 1,1,1 - trichloroethane (methyl chloroform)

All isomers, except 1,1,2 - trichloroethane
40 C.F.R. Part 82, Appendix A. The class II substances consist of the hydrochlorofluorocarbons (HCFCs). Thirty-three hydrochlorofluorocarbons currently are listed as class II substances. See 42 U.S.C. § 7671a(b); 40 C.F.R. Part 82 App. B.

Congress directed EPA to add, by rule, additional substances to the list of class I or class II substances. See 42 U.S.C. § 7671a(c). These substances will be assigned to either an existing or a new group. The Administrator is required to list as class I substances all substances determined to have an ozone depletion potential (ODP) of 0.2 or greater. See id. § 7671a(a). The ODP is determined by comparing the substance's effect on stratospheric ozone to the ODP of CFC-13, which is statutorily defined as having an ODP of 1.0. Citizens may petition to add substances to the list of class I or class II substances. The Administrator is prohibited from removing any class I substance from statutory list, and may only remove a statutory class II substance from the class II list by moving it to the class I list. See id. § 7461a(c)(4).

B. Reduction Schedules.

The heart of the stratospheric ozone protection subchapter is mandatory reductions in the production and consumption of class I and class II substances. The production phaseout for class I substances set by statute is as follows:

Date	Carbon tetrachloride	Methyl chloroform	Other Class I Substances
1991	100%	100%	85%

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Date	Carbon tetrachloride	Methyl chloroform	Other Class I Substances
1992	90%	100%	80%
1993	80%	90%	75%
1994	70%	85%	65%
1995	15%	70%	50%
1996	15%	50%	40%
1997	15%	50%	15%
1998	15%	50%	15%
1999	15%	50%	15%
2000	0%	20%	0%
2001	0%	20%	0%
2002	0%	0%	0%

See id. § 7671c(a), Table 2; 40 C.F.R. § 82.7. EPA has recently proposed to accelerate the phase out in response to petitions from environmental groups. See 58 Fed. Reg. 15014 (Mar. 18, 1993). The proposed phaseout schedule is as follows:

Proposed Schedule for Class I Phaseout

Date	CFCs (Groups 1 and 3)	Halons (Group 2)	Carbon Tetrachloride (Group 4)	Methyl Chloroform (Group 5)
1993	85%	85%	100%	100%
1994	25%	0%	50%	50%
1995	15%	0%	15%	30%
1996	0%	0%	0%	0%

Id. at 15022. The proposed schedule also is consistent with discussions among member states of the Montreal Protocol. Id.
Effective January 1, 2000 (January 1, 2002 in the case of methyl chloroform), it shall be unlawful for any person to produce any amount of a class I substance. See id. § 7671c(b). The date of this statutory ban also may be moved forward if EPA finalizes the proposed accelerated phaseout.

Limited exceptions to the production ban exist for "essential uses" of class I substances. These include the use of methyl chloroform in safety testing for metal fatigue and corrosion on airplane engines, the use of class I substances in certain medical devices and the use of the halons for aviation safety subject to certain

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certification requirements. See id. § 7671c(d). In no event, however, may any person produce a class I substance in annual quantities greater than 10% of that produced by the person during the baseline year. See id. 7671c(d)(4). Exports to developing countries who are parties of the Montreal Protocol, national security and certain fire suppression activities are also exempted. See § 7671c(d)-(g).

Class II substances are subject to similar production restrictions. Effective January 1, 2015, the Act prohibits any person from introducing into interstate commerce any class II substance unless the substance has been (1) used, recovered and recycled, (2) is used and entirely consumed in the production of another chemical, or (3) is used as a refrigerant in an appliance manufactured prior to January 1, 2020. See id. § 7672d(a). Moreover, the Act freezes the production of class II substances on January 1, 2015 at the quantity produced during the substance's baseline year (as determined by EPA), see id. § 7671d(b)(1), and bans the production of any class II substance on January 1, 2030, see id. § 7671d(b)(2). As with class I substances, exceptions for medical devices and developing countries exist. See id. § 7671d(d). Both exceptions are capped. See id. § 7671d(d)(1)(B); (d)(2)(B).

EPA also has proposed an accelerated phaseout of class II substances. See 58 Fed. Reg. at 15026-28. EPA's proposed phase out reschedule is as follows:

Date	Affected Compounds	Restriction
2003	HCFC-141b	Ban on production and consumption
2010	HCFC-22 HCFC-142b	Production and consumption frozen at baseline levels; ban on use of virgin chemical unless used as a feedstock or refrigerant in an appliance manufactured before January 1, 2010
2015	All other HCFCs	Production and consumption frozen at baseline levels; ban on use of virgin chemical unless used as a feedstock or refrigerant in an appliance manufactured before January 1, 2020
2020	HCFC-22 HCFC-142b	Ban on production and consumption

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2030	All other HCFCs	Ban on production and consumption

58 Fed. Reg. at 1502F.

C. Ban on Nonessential Products.

The Act provides for the banning of nonessential products containing CFCs. See id. § 7671i(a). EPA's regulations implementing the ban were promulgated on January 15, 1993. See 58 Fed. Reg. 5768. Effective February 16, 1993, none of the following products may be distributed or offered for sale in interstate commerce: Any plastic party streamer or noise horn which is propelled by a chlorofluorocarbons. See 40 C.F.R. §§ 82.64(a) and 82.66(a). Distribution and sale of the following items after February 16, 1993, is limited to commercial users: CFC cleaning fluids for noncommercial electronic and photographic equipment, including solvent wipes and sprays. See id. §§ 82.64(a) and 82.66(b).

On January 17, 1994, aerosol containers and plastic foam products which contain or are manufactured with a class II substance are prohibited, unless exempted as "essential uses" by the Administrator. See U.S.C. § 7671i(d); 40 C.F.R. §§ 82.64(c) and 82.66(c) and (d). EPA has requested nominations for essential uses. See 58 Fed. Reg. 29410 (May 20, 1993).

D. Motor Vehicle Air Conditioner Servicing and Prohibition on Sale of Small Quantities of Class I and II Substances

The Act mandates that as of January 1, 1992, "no person repairing or servicing motor vehicles for consideration may perform any service on a motor vehicle air condition involving the refrigerant for such air conditioner without properly using approved refrigerant recycling equipment and no such person may perform such service unless such person has been properly trained and certified." 42 U.S.C. § 7671h(c). EPA's implementing regulations were promulgated on July 14, 1992. See 57 Fed. Reg. 31242.

The regulations prohibit service on a motor vehicle air conditioner (1) without "properly using" approved equipment; and (2) the person performing service has been trained and certified by an EPA approved program. See 40 C.F.R. § 82.34(a). The regulations also require any person servicing motor vehicle air conditioners to certify to EPA, by January 1, 1993, that the person has acquired and is properly using, approved recycling equipment and that each person

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authorized to use such equipment is properly trained and certified. See id. § 82.42(a). Records of where refrigerant is sent off-site and of current employee training and certification status must be kept onsite for a minimum of three years. See id. § 82.42(b)(1) & (2).

In addition, the regulations forbid the sale of class I and II substances in quantities of less than 20 pounds to an uncertified person, unless certified as intended solely for resale. See id. § 82.34(b). Vendors of class I and II substances are required to verify certification, see id. § 82.42(b)(3), and to keep these records for three years. In addition, vendors must post a sign stating:

> It is a violation of federal law to sell containers of Class I and Class II refrigerant of less than 20 pounds of such refrigerant to any one who is not properly trained and certified to operate approved refrigerant recycling equipment.

Id. § 82.42(c).

E. Refrigerant Recycling Regulations

On May 14, 1993, EPA promulgated regulations governing the servicing and disposal of refrigerants containing ozone depleting substances. See 58 Fed. Reg. 28660. The regulations provide:

- Effective June 14, 1993, no person maintaining, servicing, repairing or disposing of appliances may knowingly vent or otherwise release into the atmosphere any class I or class II substances used as a refrigerant. De minimis releases, defined as those releases that occur even if regulatory requirements are met, are exempt. See 40 C.F.R. § 82.154(a). There is also a prohibition on tampering with recycling devices. See id. § 82.154(d).
- Effective July 13, 1993, no person may open appliances (except motor vehicle air conditioners) for maintenance, service, or repair, and no person may dispose of appliances (except small appliances, motor vehicle air conditioners and like devices) without observing required practices and using proper equipment See id. § 82.154(b). This requirement becomes more stringent on August 12, 1993, when prior certification to EPA that

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proper equipment has been obtained is required. See id. § 82.154(e)

- Beginning August 12, 1993, progressively stricter requirements for reclamation and certification of refrigerant are imposed, leading to a prohibition on any service except by a certified technician effective November 14, 1994. See id. § 82.154(f) to (l).

"Small appliances" are defined as fully manufactured, charged, and hermetically sealed in a factor with 5 pounds or less of refrigerant: refrigerators and freezers designed for home use, room air conditioners (including window air conditioners and packaged terminal air conditioners), packaged terminal heat pumps, dehumidifiers, under the counter ice machines, vending machines and drinking water coolers. See id. § 82.152(v).

Required practices are established in § 82.156, and include provision for minimum vacuum levels. Standards for recycling equipment, also including vacuum levels, are set in § 82.158. Technician training and certification requirements are established in § 82.161.

F. Labelling Requirements

Section 7671j of the Act requires labelling of containers of class I and class II substances, and products containing class I and II substances. See 42 U.S.C. § 7671j(b) & (c). For substances designated class I or II before February 11, 1993, the labelling requirements take effect May 15, 1993 (unless exempted), for all containers in which a class I or class II substance is stored or transported, all products containing a class I substance, and all products directly manufactured with a process using a class I substance (unless exempted). See 40 C.F.R. § 82.102(a). Substances designated class I or II after February 11, 1993, must comply with the labelling requirements within 1 year of the designated or the date established for compliance, whichever comes earlier. Id. Beginning on January 1, 2015 (or after a determination that a substitute product or manufacturing process exists that does not require class I or II substances), all products containing a class II substance, ; all products manufactured with a process that uses a class II substance must meet the labelling requirements. See id. § 82.102(b). The labelling requirements do not apply to products manufactured before May 15, 1993. See id. § 82.102(c).

The warning statement required on class I and class II containers and substances is:

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> WARNING: Contains [or Manufactured with, if applicable] [*insert name of substance*], a substance which harms public health and environment by destroying ozone in the upper atmosphere.

Id. § 82.106(a). Certain products are not required to bear this warning label. See id. § 82.106(b). The warning statement must be placed so as to be clearly legible, and must be conspicuous and be in a contrasting color.

G. Miscellaneous Requirements.

The Act requires monitoring and reporting to ensure proper implementation, including the reporting of production, import and export levels and the determination of production baselines, see id. § 7671b(c). These requirements are set forth in more detail in 40 C.F.R. Part 82, Subpart A.

H. Consumption Allowance Transfers.

Section 7671f specifically authorizes exchanges of CFC allowances among consumers to reduce the economic burden of phasing out class I and class II substances. The transfers permit a consumer to exchange an allowance for one type of class I or class I substance for another substance in the same class and group on an ODP weighted basis. See id. § 7671f(b). Trades may be made with other consumers provided the trade results in an "enforceable and quantifiable reduction in annual production" which exceeds the reductions otherwise applicable to the transferor and transferee and where the reduction would not have occurred in the absence of the transfer. See id. § 7671f(c). Detailed regulations governing such trades are set forth in 40 C.F.R. §§ 82.12 and 82.13.

VIII. ENFORCEMENT

The Director of ADEQ currently has several mechanisms to insure compliance with the various provisions of the Arizona Air Quality Act ("AQA"). A.R.S. § 49-401 et seq. These include both civil remedies and criminal enforcement provisions.

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A. Current Civil Remedies

1. Order of abatement

a. Content: A.R.S. § 49-434 provides that when the Director has reasonable cause to believe that any person is violating a (1) provision of the state AQA, (2) any rule or regulation adopted pursuant to the AQA, (3) or any requirement of an operating or conditional permit issued pursuant to the AQA he may either issue an order of abatement or file a civil complaint alleging a violation pursuant to A.R.S. § 49-451, or both. If ADEQ chooses to issue an order of abatement, it must satisfy the following requirements:

(1) It must be served either by certified mail or in person,

(2) It must state with particularity the act constituting the violation,

(3) It must state in its entirety the certain requirement, provisional rule or regulation being violated,

(4) It must state the duration of the order, and

(5) It must advise the alleged violator that he/she is entitled to a hearing if such hearing is requested in writing within 20 days of the date of the issuance of the order.

The order may also be conditional and require the person to refrain from particular acts unless certain conditions are met.

b. Effective date: An order of abatement is effective upon the expiration of the time during which a request for a hearing may be made (20 days after issuance), unless the alleged violator files a timely written request for a hearing before the Air Quality Hearing Board.

c. Hearing procedure: If a hearing is requested, the Hearing Board must hold a hearing within 30 days from the receipt of the request unless it is extended by the Hearing Board, within its sole discretion. Written notice must be sent to the person requesting the hearing and ADEQ at least 15 days before the hearing. If the Board, after the hearing, determines that the acts set forth in the order of abatement constitute a violation of the AQA, rules or regulations adopted pursuant to the act, or any

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requirement of an operating or conditional permit, it may affirm or modify the order of abatement. If the Board decides to modify the order, it has the authority to issue a temporary conditional permit (called a "conditional order" under the 1992 Arizona Comprehensive Air Quality Act).

2. Injunctive relief: A.R.S. § 49-445 provides that if a person refuses or otherwise fails to comply with an order of abatement (issued either by the Air Quality Hearing Board or the Director of ADEQ in cases where the order has become effective), the Director may file an action in the Superior Court to restrain and enjoin the person from engaging in further acts violating the order of abatement. Further, ADEQ may seek injunctive relief if a person is creating an imminent and substantial endangerment to the public health or the environment because of a release of a harmful air contaminant. A.R.S. §49-450 C. In such proceedings, any findings by the Hearing Board is prima facie evidence of the fact or facts found therein until rebutted by the defendant. Court actions or proceedings brought under the AQA must be given precedence and brought to trial ahead of other litigation concerning private interests and other matters that do not affect public health and welfare. A.R.S. § 49-446.

3. Civil penalties: Any person who violates (1) any provision of the AQA, (2) any rule or regulation adopted pursuant to the AQA, (3) any effective order of abatement or (4) any permit issued pursuant to the AQA is subject to a civil penalty of not more than $10,000 per day per violation. A.R.S. § 49-451C. Arizona law also provides that the Attorney General must initiate an action in Superior Court to recover such penalties if ADEQ so requests.

In determining the amount of the civil penalty, the Court must consider the following factors set forth at A.R.S. § 49-451D:

a. The seriousness of the violation,

b. Any history of such violation,

c. Any good faith efforts to comply with the applicable requirements,

d. The economic impact of the penalties on the violator,

e. As an aggravating factor only, the economic benefit, if any, resulting from the violation, and

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f. Such other factors as the court deems relevant.

4. Air pollution emergency: If ADEQ determines that air pollution in any area constitutes or may constitute an emergency risk to the health of those in the area, upon being so notified by ADEQ, the governor may by proclamation declare that an emergency exists and may prohibit, restrict or condition the following:

a. Motor vehicle traffic,

b. Operation of retail, commercial, manufacturing, industrial or similar activity,

c. Operation of an incinerator,

d. The burning or other consumption of fuels,

e. The burning of any materials whatsoever, and

f. Any other activity which contributes or may contribute to the emergency.

In order to enforce the proclamation, state and local authorities are authorized to take any reasonable steps to assure compliance including entry upon property believed to be violating the proclamation and if a request does not produce compliance, causing compliance, stopping, detouring, rerouting or prohibiting vehicle traffic or disconnecting incinerator or other types of combustion facilities. A.R.S. § 49-450.

5. Preservation of rights: A.R.S. § 49-449 provides that nothing in the AQA is intended to abridge or alter rights of action or remedies in equity, under the common law or statutory law, criminal or civil. The statute also provides that the AQA should not be construed as estopping the state or any municipality from exercising its rights in equity, common law or statutory law to suppress nuisances or abate pollution. Thus, in addition to the issuing of an order of abatement, seeking an injunction and imposing the civil penalties discussed previously, the state and all political subdivisions can also rely on any other statutory or common law causes of action applicable to the situation.

B. Current Criminal Penalties

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A.R.S. § 49-451 sets forth the current criminal penalties relating to the AQA.

1. State penalties: A.R.S. § 49-451A provides that any person who violates any provision of the AQA relating to the state air quality program, any rule adopted pursuant to the AQA, any effective order of abatement, or any permit or permit condition issued by ADEQ is subject to a criminal fine of between $50 and $1,000 per day per violation. Further, each day of the violation constitutes a separate offense.

2. County penalties: The statute also provides that any violation of any provision of the AQA relating to county air pollution control programs, or any rule, permit, permit condition or order of abatement issued by the county control officer is guilty of a Class I misdemeanor. Each day is again considered a separate offense. A.R.S. § 49-451A.

3. Criminal intent: The current statute also provides that criminal violations of the AQA are mallum prohibitum, which means the lack of criminal intent is not a defense to prosecution. A.R.S. § 49-452.

C. Future Civil Remedies:

1. Order of abatement: The 1992 Arizona Comprehensive Air Quality Act repeals the current section dealing with orders of abatement, A.R.S. § 49-434, effective September 1, 1993 and replaces it with a new section, A.R.S. § 49-461, which is effective that same date and which will then govern orders of abatement. (A.R.S. § 49-511 provides parallel authority for county control officers.)

Although similar to the provisions of A.R.S. § 49-434, the new statute does contain several differences.

a. Basis for order: The basis upon which ADEQ can issue an order of abatement are identical to the prior statute, with one significant change. Under A.R.S. § 49-434 (current law), ADEQ can only issue an order of abatement if ADEQ reasonably believes a person "is violating" the act, a rule, a permit or permit condition. Under A.R.S. § 49-461 (future law), ADEQ will be authorized to issue an order of abatement if a person "has violated or is in violation" of such provisions. Thus, under the new statute, ADEQ will be authorized to issue an order of abatement for exclusively past practices even if those practices are not currently taking place.

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b. Content of order: The procedure for serving the order of abatement on the alleged violator and the contents of the order are the same as current law except that a person will have 30 days (instead of 20) to request a hearing. The request must again be in writing.

c. The new statute also requires the order of abatement to require the person to comply as expeditiously as possible. In the case of a source required to obtain a permit under Title V of the federal Clean Air Act (e.g. federal major or area sources), the order must require compliance no later than one year after the date of the order and is not renewable.

d. Hearing procedure: The hearing procedures before the Air Quality Hearing Board also remain unchanged except that a "conditional permit" will be referred to as a "conditional order" under the new statute.

2. Injunctive relief: The 1992 Comprehensive Air Quality Act repeals A.R.S. § 49-445 dealing with injunctive relief effective September 1, 1993 and substitutes in its place a new statute, A.R.S. § 49-462, which will become effective the same date and which will govern injunctive relief from that date forward. (A.R.S. § 49-512 provided parallel authority for county control officers). The new statute provides that the Attorney General, at the request of ADEQ, must file an action for a temporary restraining order ("TRO"), preliminary injunction, permanent injunction or any other relief provided by law if the Director has reasonable cause to believe that any of the following applies:

a. A person has violated or is in violation of any provision of the AQA, a rule adopted pursuant to the AQA or a permit issued pursuant to the AQA. This provision is broader than current law because it authorizes ADEQ to seek to enjoin a person from repeating past conduct even if they are not currently participating in that conduct. A.R.S. § 49-445 (current law) by comparison only allows injunctive relief to prohibit current actions from being repeated in the future. The new statute also clarifies that ADEQ has authority to seek all forms of injunctive relief including a TRO and preliminary injunction.

b. A person has violated or is in violation of an effective order of abatement. This provision also allows injunctive relief to be sought for exclusively past conduct.

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c. A person is creating an imminent and substantial endangerment to the public health or the environment because of a release of a harmful air contaminant. As discussed previously, a similar provision is contained in the current law at A.R.S. § 49-450C, which will also be repealed effective September 1, 1993. Inserting this particular provision at this location under the new statute was an attempt to consolidate the various provisions relating to injunctive relief.

As is currently the case, court actions under the AQA will be given priority ahead of other litigation that does not affect public health or welfare. A.R.S. § 49-466 (superseding A.R.S. § 49-446 which is repealed effective September 1, 1993). (A.R.S. § 49-515 provides parallel authority for county control officers).

3. Civil penalties:

a. Basis: The 1992 Comprehensive Air Quality Act repeals the current civil penalties provisions of A.R.S. § 49-451 effective September 1, 1993 and substitutes in its place A.R.S. § 49-463. (A.R.S. § 49-513 provides parallel authority for county control officers). The new statute provides that any person who violates any of the following is subject to a civil penalty of not more than $10,000 per day per violation:

(1) Any provision of the AQA,

(2) Any permit or permit condition issued pursuant to the AQA,

(3) Any fee or filing requirement,

(4) Any rule adopted pursuant to the AQA,

(5) An effective order of abatement, and

(6) Any duty to allow or carry out inspections, entry or monitoring activities.

As set forth above, the new statute will contain civil penalties in the event that an individual fails to pay a fee or filing requirement or fails to allow or carry out required inspections, entry or monitoring activities. These are new requirements and are not specified in the current law. As is currently the case, the Attorney General must file the appropriate action in Superior Court if requested by ADEQ.

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b. Amount of penalty: In determining the amount of the civil penalty, the court must consider the same factors outlined in current law (A.R.S. § 49-434) and the following additional factors:

(1) The duration of the violation as established by credible evidence including evidence other than the applicable test method and

(2) Payment by the violator of penalties previously assessed for the same violation.

c. Presumption of on-going violation: In order to comply with the mandates of the 1992 Clean Air Act amendments, the 1992 Comprehensive Air Quality Act also creates a rebuttal presumption of continuous, on-going violations for purposes of calculating civil penalties. A.R.S. § 49-463(B) provides that the number of days of violation shall be presumed to include the date of notice by ADEQ of the violation and each day thereafter until the violator establishes that continuous compliance has been achieved. In order for the presumption to arise, ADEQ must make a prima facie showing that the conduct or events giving rise to the violation are likely to have continued or reoccurred past the date of the notice of violation. Further, the presumption can be rebutted if the violator can prove by a preponderance of the evidence that there were intervening days during which no violation occurred or that the violation was not continuing in nature.

A few examples will illustrate the possible effect of this presumption.

Example 1: Assume a permitted facility conducts intermittent stack testing and sends the test samples to an outside laboratory. If those test results are returned a week later and reflect a violation of a permit condition such as an emission standard, the presumption would imply a continuing violation for that entire week or until such time as "corrective action" was taken. If during that intervening week there were no changes made to the manufacturing process, feed stock or emission controls, it would be difficult to meet the burden of proof to rebut the presumption. Under this example, the facility could be found to have been in violation for seven days ($70,000 in civil penalties) instead of one ($10,000 in civil penalties).

Example 2: Assume the same permitted facility as in the first example. Assume further that during the intervening week the plant shut down or otherwise adjusted the manufacturing process, changed the feed stock or adjusted the emission control devices such that

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the emissions would have necessarily been reduced even though there is no hard evidence. Under this example, the facility may be able to establish sufficient evidence to rebut the presumption.

Example 3: Assume the same permitted facility as in the first example, but further assume that on the day the sample was taken one of the control devices was broken but that the device was fixed the following day. This would again be evidence useful in rebutting the presumption of on-going violations.

4. Air pollution emergency: The 1992 Comprehensive Air Quality Act repeals the current air pollution emergency provisions of A.R.S. § 49-450 effective September 1, 1993 and substitutes in its place A.R.S. § 49-465. The new statute is identical to the current law.

5. Preservation of rights: The 1992 Comprehensive Air Quality Act repeals the current provisions of A.R.S. § 49-449 effective September 1, 1993 and substitutes in its place A.R.S. § 49-467. The new statute is identical to the current law. (A.R.S. § 49-516 provides parallel authority for county control officers).

6. Citizen Suits. The 1992 Comprehensive Air Quality Act creates a private right of action. This right is effective now. Under A.R.S. § 49-407, any person having an interest in may commence a civil action in superior court on his own behalf against the Director of ADEQ on the following bases.

a. the failure of ADEQ to perform a duty under the AQA that is not discretionary, or

b. the unreasonable delay by ADEQ of an action within ADEQ's authority.

The Court has specific authority to order the Director of ADEQ to perform the act or duty. As in the case of several federal environmental statutes, no action may be commenced until 60 days after the plaintiff has given notice of the alleged violation to ADEQ. Further, the court is also authorized to avoid costs of litigation, including reasonable attorneys' fees and expert witness fees to any party "whenever the court determines it is appropriate." A.R.S. § 49-607(C). Under this authority, there is no requirement that a party necessarily be the prevailing party to receive attorneys' fees and costs. Finally, the statute provides that the citizen suit provision is in addition

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to any other right a person may have under any other statute or the common law to seek enforcement of an emission standard or limitation. A.R.S. § 49-407(D).

D. Future Criminal Penalties:

1. Tiered structure: The greatest change between the current law and the 1992 Comprehensive Air Quality Act with respect to enforcement is in the area of criminal penalties. The current provisions of A.R.S. § 49-451 are repealed effective September 1, 1993 and is replaced with A.R.S. § 49-464 which provides for significantly increased criminal penalties effective October 31, 1994. (It is unclear what, if any, criminal penalties will apply to violations of the AQA between September 1, 1993 and October 31, 1994. It is anticipated that this "loophole" will be corrected during the next legislative session.) (A.R.S. § 49-514 provides parallel authority for county control officers).

The new statute sets up a hierarchy of criminal penalties extending from a Class II felony (equivalent to second degree murder) to a Class I misdemeanor depending on the seriousness of the violation. In addition to carrying increased amounts of fines and confinement, the different classes of felonies also impose different considerations. For example, a Class VI felony can be reduced to a Class I misdemeanor or an undesignated offense on the court's own motion or a defendant's request while a Class V felony can only be reduced to a Class VI felony. Further, the pressure on a defendant to plea bargain when facing a Class V or Class II felony conviction is a very real factor.

2. State of mind: Most of the provisions under the new statute require a knowing violation. For purposes of the new criminal enforcement provisions, to prove a knowing violation the state must prove actual knowledge of circumstances constituting each element of the offense which, as defined, requires proof of a culpable mental state. Actual knowledge may be proved by either direct or circumstantial evidence, including evidence that the person deliberately avoided acquiring such knowledge. A person's knowledge may not be inferred merely by his or her position within an enterprise. A.R.S. § 49-464(U).

3. Classes of Offenses:

a. Class II felony: A person who knowingly releases into the ambient air any extremely hazardous substance listed in 42 U.S.C. § 11002(a)(2) [Emergency Planning and Community Right to Know Act] or

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any hazardous air pollutant and who knows at the time that he places another in imminent danger of death or serious bodily injury is guilty of a Class II felony. In determining knowledge for the purposes of this provision only, the defendant is responsible only for actual awareness or actual belief possessed and knowledge possessed by another person but not by the defendant may not be attributable to the defendant. Circumstantial evidence, however, including evidence that the defendant took affirmative steps to shield himself from relevant information may be used to prove knowledge. A.R.S. § 49-464(A).

b. Class V felonies: There are five different Class V felonies. A.R.S. § 49-464(B)-(F).

(1) Knowingly operating a source required to have a permit under Title V of the federal Clean Air Act permit and state permit without having obtained a permit and without having filed a complete permit application for renewal of an existing permit. (This will apply to federal "major" and "area" sources only, and should involve only large facilities).

(2) Knowingly violates an emission standard in a permit required under Title V of the federal Clean Air Act and the Arizona AQA. (This will apply to federal "major" and "area" sources only). For purposes of criminal enforcement, emission standards do not include opacity standards,

(3) Knowingly violates an effective order of abatement,

(4) Any person who is required by ADEQ to conduct performance tests and who knowingly alters or modifies the test in order to render the results inaccurate, and

(5) Any person who is required by ADEQ to maintain a monitoring device and who knowingly alters, modifies or destroys such device in order to render it inaccurate.

c. Class VI felonies: There are four categories of Class VI felonies. A.R.S. § 49-464(G)-(J). These are as follows:

(1) Any person who knowingly violates a material permit condition other than an emission limit. A.R.S. § 49-464(G). A material permit condition means a permit condition determined by the Director via formal rule making to be material. In designating a condition as material, the Director must

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consider the effect of the permit condition on the public health and the environment, ADEQ's ability to enforce the program, ADEQ's ability to determine a source's compliance status and the effect of non-compliance on emissions.

(2) Any person who knowingly commences construction without a permit required under Title V of the federal Clean Air Act and the AQA. (This will apply federal "major" and "area" sources only),

(3) Any person who knowingly operates a source without a permit and without having filed a complete application for renewal of an existing permit. (This will apply to state permitted sources), and

(4) Any person who knowingly fails to maintain, operate or repair a required monitoring device in order to render the device inaccurate.

d. Class I misdemeanors: There are five Class I misdemeanors designated under the new statute, all of which merely require criminal negligence. A.R.S. § 49-464(K) & (L). These offenses are as follows:

(1) Commences construction of a source without a permit,

(2) Violates a permit condition other than an emission standard or other material condition,

(3) Violates an opacity standard,

(4) Violates a fee or filing requirement required under Title V of the federal Clean Air Act and the AQA. (This will apply to federal "major" and "area" sources only),

(5) Violates any other provision for which a penalty is not prescribed.

4. Continuous violations: A knowing violation that continues for more than one day but results from a single act or series of related acts constitutes a single offense. This provision was intended to avoid the problem of aggravated sentencing because of the existence of prior offenses. A.R.S. § 49-464(M).

5. Authority of Attorney General: Unlike the civil enforcement mechanisms discussed previously,

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the Arizona Attorney General has independent authority to enforce the new criminal penalties. A.R.S. § 49-464(N). Thus, the Attorney General need not wait for a request from ADEQ to pursue a criminal enforcement action. Similarly, resolution of possible civil penalties with ADEQ will not necessarily prevent the Attorney General from pursuing an independent criminal enforcement proceeding.

6. Fines: As in the case of civil penalties, the new statute sets forth certain factors that the court must consider in determining the amount of the criminal fines. A.R.S. § 49-464(O). Those factors include the following:

a. The seriousness of the violation,

b. as an aggravating factor only, the economic benefit, if any, resulting from the violation,

c. Any history of that violation,

d. Any good faith efforts to comply with the applicable requirements,

e. The economic impact of the penalty on the violator,

f. The duration of the violation as established by any credible evidence, including evidence other than the applicable test method,

g. Payment by the violator of penalties previously assessed for the same violation, and

h. Other aggravating and mitigating factors as the court deems relevant.

7. Affirmative defenses: The 1992 Comprehensive Air Quality Act creates three affirmative defenses to criminal prosecution under the AQA. Such affirmative defenses must be established by a preponderance of the evidence and the burden of persuasion is on the defendant. A.R.S. § 49-464(S).

(1) It is an affirmative defense to any prosecution if the conduct is freely consented to by the endangered person and the danger and conduct were reasonably foreseeable hazards of an occupation, business profession or medical treatment or medical experimentation. A.R.S. § 49-464(P).

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(2) It is an affirmative defense to a prosecution for violating an opacity standard or emissions standard if the violation was self-reported to ADEQ verbally or via facsimile within 24 hours after first learning of the violation and written notification containing additional specified information is submitted to ADEQ within 72 hours of the verbal notification. A.R.S. § 49-464(Q).

(3) It is an affirmative defense to a prosecution for operating or commencing construction of a source without a permit if the defendant relied upon written advice from a permitting authority that no permit was necessary. A.R.S. § 49-464(R).

In order to qualify for this affirmative defense, the defendant must have accurately disclosed in writing all relevant information to the permitting agency necessary to assess the requirement to obtain a permit or that is otherwise requested by the agency. Further, the failure of the agency to respond within 14 days to a written request, containing all necessary information for a determination whether a permit is necessary, is deemed to be advice that no permit is needed. (It should be noted, however, that reliance on a permitting agency's statement that no permit is required will not necessarily protect one against civil penalties or any of the other civil enforcement mechanisms discussed previously, including injunctions).

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IX. ASBESTOS REGULATION

Asbestos is one of the most high profile hazardous substances regulated by federal and state governments. Since 1989, the Environmental Protection Agency (EPA) has proposed to ban the use of asbestos in manufactured products over the next decade. In addition, persons exposed to asbestos have instigated numerous lawsuits claiming millions of dollars in damages due to the harmful effects of asbestos on humans. In response to health-based concerns surrounding asbestos, federal, state and local governments have enacted extensive regulations governing the manufacture, use and disposal of the substance.

The health risks of asbestos are well known. EPA estimates that 2,000 to 12,000 Americans die each year of asbestos related cancer. The main concern with asbestos is in its "friable" or hand-crushable state. Friable asbestos can release fibers to the air that can be inhaled and thereby cause lung cancer and other diseases. Due to the concern over health effects, asbestos use has declined sharply over the last several years. In 1984, 240,000 metric tons of asbestos were used in manufacturing and by 1987 this had dropped to 85,000 metric tons. This use is expected to drop to 6,000 metric tons by 1996.

Asbestos is regulated at the federal level primarily pursuant to the Clean Air Act and the Occupational Safety and Health Act (OSHA). The primary agencies involved are EPA and the Occupational Safety and Health Administration. Other federal laws which apply to asbestos include those governing mine safety, the transportation of "hazardous materials" and the release of "hazardous substances." Asbestos is regulated on the state and local level through worker safety regulations, delegation of federal enforcement authority under the Clean Air Act to local air pollution control agencies and through special waste management laws.

A. Occupational Safety and Health Act

OSHA regulations generally apply to the work place environment. Basically, any employer with employees (except certain household or domestic employees) is required to comply with OSHA. Arizona has an approved state plan for implementing and enforcing OSHA requirements and, as to the standards covered by the state plan, has sole jurisdiction over work place standards. 50 Fed. Reg. 25561 (June 20, 1985); 29 C.F.R. Part 1952, Subpart CC; A.R.S. § 23-401 et seq. The Arizona plan does not cover private sector maritime

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employment, smelter operations or employees on Indian reservations. 50 Fed. Reg. at 25562. OSHA standards are generally administered by the Arizona Division of Occupational Safety and Health (ADOSH), a division of the Industrial Commission. ADOSH does not have jurisdiction over areas within the jurisdiction of the State Mine Inspector. See generally Struckmeyer, What Do Counsel and Employees Need to Know About Occupational Safety and Health, published in OSHA in the 90s in Arizona (National Business Institutes, Inc. 1991).

OSHA regulations limit the exposure of workers to hazardous substances, including asbestos. The OSHA rules governing worker exposure to asbestos fall into two categories: the general industry standards (covering all non-construction activities regulated by OSHA) published at 29 C.F.R. § 1910.1001 et seq., and the construction industry standards published at 29 C.F.R. § 1926.58(c). The two sets of standards are very similar, although there are a few important differences.

Under the standards, an employer is required to ensure that no employee is exposed to asbestos in excess of the permissible exposure limit ("PEL") which is set at either .2 fibers per cubic centimeters (f/cc) of air calculated on an eight hour time weighted average ("TWA"), or an "excursion limit" of 1.0 f/cc as averaged over a sampling period of 30 minutes. Id., § 1910.1001(c); § 1926.58(c).

For general industry, employers must monitor employees who might be exposed to asbestos in amounts at or above the excursion level (defined above), or the "action level," which is defined as airborne concentrations of 0.1 f/cc calculated on an eight hour time weighted average. Id., § 1910.1001(d). After the initial determinations of asbestos exposure are made, future monitoring must be "of such frequency and pattern as to represent with reasonable accuracy the levels of exposure of the employees." Id., § 1910.1001(b)(3). The monitoring frequency cannot be at intervals greater than six months for employees who might reasonably be expected to be exposed to asbestos in amounts exceeding the action level. Id., § 1910.1001(d)(3). The employer is required to notify the employee of the results of the testing. Id., § 1910.1001(d)(7).

For the construction industry, initial monitoring is required at the initiation of each "asbestos job" in order to determine potential employee exposure. Id., § 1926.58(f)(2). The employer is allowed to demonstrate that exposures are below the action level or excursion limit "by means of objective data demonstrating that the product or material containing asbestos . . . cannot

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release airborne fibers in concentrations exceeding the action level and/or excursion limit under those work conditions having the greatest potential for releasing asbestos . . .." Id., § 1926.58(f)(2) (ii). Employers in the construction industry are required to conduct daily monitoring that is representative of the exposure of each employee assigned to work in the area where the employee may be exposed to asbestos. Id., § 1926.58(f)(3). The exception is if all employees within the regulated area are equipped with respirators operated in conformance with the regulations. Id.

If there are areas where the permissible exposure limit is exceeded, the employer is required to establish "regulated areas" by demarcation to limit the number of persons who will be exposed to asbestos. Id., § 1910.1001(e). The employer is required to restrict access to the regulated area and supply persons entering the area with respirators. Id., § 1910.1001(e)(3),(4). For the construction industry, employers are required to establish "wherever feasible," negative-pressure enclosures prior to initiating removal, demolition, or renovation operations involving asbestos. Id., § 1926.58(e)(6).

The employer is required to use engineering controls and work practices to reduce employee exposure to the PEL, if "feasible." Id., § 1910.1001(f)(1); § 1926.58(g). If such methods cannot reduce exposure to permissible levels, employers are required to use those methods to achieve the lowest levels possible and then supplement such methods by use of respiratory protection. Id. Other requirements are provided for power tools which would produce a release of asbestos fibers, restrictions on spraying asbestos, and restrictions on the use of asbestos-containing products. Insofar as possible, the regulations recommend that asbestos be handled in a wet state. Id., § 1910.1001 (f)(1)(vi); § 1926.58(g)(1)(i)(E).

For general industry, where a PEL is exceeded, the employer is required to develop a written program to reduce employee exposure to the PEL or below. Id., § 1910.1001(f)(2). The program must be "reviewed and updated as necessary" and must be submitted on request to government officials, affected employees, and designated employee representatives. Id.

An employer (in both general and construction industries) is required to provide respirators during the interval necessary to install or implement engineering and work practice controls, in work operations where engineering and work practice controls are not feasible, and in work situations where

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engineering and work practice controls have not yet been effective in reducing exposure to permissible levels. Id., § 1910.1001(g); § 1926.58(h). The employer is required to provide a respirator to employees free of charge. The type of respirator is determined according to the regulations. Id., § 1910.1001(g)(2). Detailed regulations govern the selection and operation of respirators. Id.

In addition to providing a respirator, the employer is required to provide protective work clothing whenever exposure exceeds the PEL or where the possibility of eye irritation exists. Id., § 1910.1001(h); § 1926.58(i). The regulations prescribe methods for removing clothing and for cleaning the clothing. The employer must also provide prescribed change rooms, showers, and lunch rooms. Id. For the construction industry, detailed regulations apply to "decontamination areas associated with removal, demolition, and renovation operations." Id., § 1926(j)(2).

Detailed regulations govern communication of asbestos hazards to employees. Id., § 1910.1001(j). Communication is achieved through the utilization of warning signs which must be displayed in each regulated area and at all approaches to such areas. The content of the sign is prescribed in the regulations. In addition, labels must be attached to raw materials, mixtures, scrape, waste, debris and other products containing asbestos to warn of their contents. Also, the employer is required to institute an information and training program for employees exposed to asbestos in excess of the PEL. The program generally informs the employee of the risks of asbestos and the methods to protect against exposure. Id.

Medical surveillance is also mandated by the regulations. Id. § 1910.1001(l); § 1926.58(m). For general industry, this program must cover all employees who are or will be exposed to asbestos in excess of the action level or the excursion limit. Id., § 1910.1001(l)(1). For the construction industry, the medical surveillance program must be instituted for all employees engaged in work involving asbestos at or above the action level and/or excursion limit for 30 or more days per year, or for employees required by the regulations to wear negative pressure respirators. Id., § 1926.58(m)(1) (i). Prior to employment, the general industry employer is required to provide medical examinations for employees. Subsequent to this, annual examinations must be provided and a final exam provided upon termination. § 1910.1001(l). For the construction industry, exams must be provided prior to assignment of

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an employee to an area where negative pressure respirators are worn or when the employee is assigned to an area where exposure to asbestos may equal or exceed the action level for 30 or more days per year. Id., § 1926.58(m)(2). In this second instance, the exam must be given 10 working days after the 30th day of exposure. Id., § 1926.58(m)(2)(B). In both situations, exams must be given at least annually thereafter, and more frequently if requested by the examining physician. Id., § 1926.58(m)(2)(C), (D). The employer must obtain the examining physician's opinion as to the employee's risk of material health impairment from exposure to asbestos, any recommended limitations regarding the use of clothing or respirators, and a statement that the employee has been informed of the results of the examination. Id., § 1910.1001(l); § 1926.58(m).

Finally, the employer is required to keep all monitoring records, all medical records of employees and make those records available to the government and to affected employees. Id., § 1910.1001(m); § 1926.58(n).

A discussion of these requirements is intended to be illustrative only. Further, regulations governing asbestos exposure in OSHA-regulated industries is subject to change. Therefore, if conducting activities subject to OSHA, reference must be made directly to the regulations to be sure that all applicable requirements are being followed.

There are two major rulemaking efforts currently underway which may affect the regulation of asbestos under OSHA. First, in response to a court directive, OSHA is considering several changes to the asbestos standard to improve employee protection from asbestos. See Building and Construction Trades Dept., AFL-CIO v. Brock 838 F.2d 1258 (D.C. Cir. 1988) (remanding portions of the final asbestos rule to OSHA for further consideration); 55 Fed. Reg. 29712 (July 20, 1990) (proposed revisions to the asbestos standard); 57 Fed. Reg. 49657 (Nov. 3, 1992) (request for additional comment on July, 1990 proposal and new proposals regarding asbestos surveys). The current proposals include lowering the PEL to 0.1 f/cc, extending reporting and notice requirements (including requiring building owners to notify occupants of the presence of asbestos), and requiring a "competent person" to oversee all construction operations. 57 Fed. Reg. at 49658. The current schedule is for the proposals to be finalized in September, 1993. 58 Fed. Reg. 24606 (April 26, 1993)(OSHA regulatory agenda).

The second rulemaking involves additional changes to the PEL and other protection standards for workers in

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the construction industry, and promulgation of new standards for workers in agriculture or maritime industry. 57 Fed. Reg. 26002 (June 12, 1992) (proposed rule). Further development of the proposal has been delayed by the recent federal appellate court decision remanding a similar rule adopted by OSHA in 1989. AFL-CIO v. OSHA 965 F.2d 962 (11th Cir., 1992); 57 Fed. Reg. 37126 (Aug. 18, 1992) (extending indefinitely the comment period on the June 1992 proposal); 54 Fed. Reg. 2332 (Jan. 19, 1989) (OSHA final rule remanded by AFL-CIO).

B. Toxic Substances and Control Act

The Toxic Substances Control Act, 15 U.S.C. § 2601 et seq. ("TSCA") is a federal statute authorizing EPA to develop regulations for chemical substances which pose unreasonable risk of injury to health or the environment. A major provision of TSCA involves asbestos in schools. In 1980, with the enactment of the Asbestos School Hazard Detection and Control Act (technically not part of TSCA), Congress authorized funding for asbestos inspection and abatement in schools. The purpose of the 1980 Act was to offer technical assistance and guidance to schools that were concerned by the potential health effects of friable asbestos. In 1984, with the enactment of the Asbestos School Hazard Abatement Act (ASHAA) (also not part of TSCA), Congress established an Asbestos Hazard Abatement Assistance Program under the EPA to provide funds to schools with an urgent need for asbestos abatement, but without funds to undertake such a program. The Act's intent is to require schools to inspect for asbestos, but not to remove all hazardous asbestos discovered.

In 1986, Congress amended TSCA by passage of the Asbestos Hazard Emergency Response Act of 1986 (AHERA) which requires EPA to regulate response actions addressing friable asbestos in schools. Id., § 2641 et seq. The 1986 Act provides for regulatory guidance from EPA on the issues of asbestos removal, a uniform program for accrediting persons involved in asbestos removal, and EPA guidance for adopting abatement alternatives, such as asbestos management.

Under the authority of AHERA, EPA has promulgated federal regulations covering the inspection of asbestos-containing materials and implementation of response actions. The regulations require periodic re-inspections following response actions. 40 C.F.R. § 763.80 et. seq. EPA has also promulgated regulations requiring local education agencies (LEA) to implement operations and maintenance (O & M) programs whenever friable asbestos is present in school buildings. Id.,

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§ 763.91. In addition, regulations have been promulgated covering training and surveillance, management plans, record keeping, and warning labels. § 763.92-.95.

Also pursuant to TSCA authority, EPA announced in 1989 a ban on most of the remaining uses of asbestos. 54 Fed. Reg. 29460 (July 12, 1989). The ban was scheduled to be phased in over seven years and applied to the production of new products. The ban would apply to the use of asbestos in products such as roofing material, pipe wrap, and sheeting products. The use of asbestos by automakers in brake pads and linings would be banned in 1993, and the use of asbestos in auto replacement parts, concrete water distribution pipes, roof shingles and other uses would be banned in 1996.

The product ban rule was challenged by the asbestos industry and was remanded by the federal appellate court to EPA because the agency failed to "muster substantial evidence to support its rule . . . ." Corrosion Proof Fittings v. EPA, 947 F.2d 1201 (5th Cir. 1991), clarified at 33 ERC (BNA) 1961; 22 ELR 20304. The Corrosion Proof decision did leave intact EPA's rule banning products that were not being manufactured, imported, or processed on July 12, 1989. Id. EPA is in the process of identifying such materials. 57 Fed. Reg. 11364 (April 2, 1992). It does not appear that EPA intends to reinitiate rulemaking to reinstate that ban as applied to existing products. See EPA Regulatory Agenda (April 26, 1993) (no mention of product ban rulemaking).

C. Clean Air Act

Asbestos is regulated under the Clean Air Act as a "hazardous air pollutant." EPA has established National Emission Standards for Hazardous Air Pollutants (or "NESHAPs"), including standards for asbestos, which are set forth at 40 C.F.R. Part 61, Subpart M.

In Arizona, regulation of asbestos under Clean Air Act authority is delegated to county air pollution control districts (in Maricopa, Pinal, Gila and Pima counties) and is administered by the Arizona Department of Environmental Quality ("ADEQ") as to the remaining counties of the state. A.R.S. § 49-402; Maricopa County Bureau of Air Pollution Control Regulations, Rule 370, § 301; Pima County Code, Title 17, Article VI, § 17.12.200; Pinal-Gila Counties Air Quality Control District Rules and Regulations, § 7-3-7; A.A.C. R18-2-901 et seq. With minor exceptions, the NESHAPs have been adopted by reference by both the state and

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counties mentioned above. Id. For convenience, citations below are to the federal regulations.

The focus of the NESHAP regulations is to prevent asbestos fibers from becoming airborne. Generally, EPA regulates asbestos containing material ("ACM") that is friable (i.e., likely to emit or release fibers) or has the potential of becoming friable. As a general rule, a material is considered ACM if it contains more than 1 per cent asbestos as determined by an EPA designated method. § 61.141. Various regulatory requirements apply depending on the amount of friable or potentially friable ACM present at a particular facility and whether that ACM will be disturbed by renovation or demolition activities.

1. Regulated ACM

ACM is initially divided into three categories for regulatory purposes: "friable asbestos material" which includes ACM that "when dry, can be crumbled, pulverized, or reduced to powder by hand pressure"; "Category I nonfriable ACM" which includes "asbestos-containing packings, gaskets, resilient floor coverings and asphalt roofing products"; and "Category II nonfriable ACM" which includes ACM, other than Category I nonfriable ACM, that "when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure". Id., § 61.141. (emphasis added). These materials are further categorized as "regulated asbestos-containing material" (or "RACM") depending on their friability or potential to become friable. RACM is defined to include:

> (a) Friable asbestos material, (b) Category I nonfriable ACM that has become friable, (c) Category I nonfriable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II nonfriable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations regulated by [the asbestos NESHAPs].

Id. In short, RACM includes all friable ACM and all nonfriable ACM that is likely to become friable.

As indicated by the definition of RACM, handling practices have a significant impact on whether particular ACM will be subject to regulation. Any material that contains more than one per cent asbestos

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qualifies as ACM. However, ACM in good condition often is not friable, and therefore would be considered either Category I nonfriable ACM (if it is included in the list of materials comprising Category I nonfriable ACM) or Category II nonfriable ACM (if it generally cannot be "crumbled, pulverized or reduced to powder by hand pressure"). If Category I, a material will only be considered RACM if it will be subjected to sanding, grinding, cutting or abrading. If Category II ACM, a material is considered RACM only if it has a high probability of becoming crumbled, pulverized or reduced to powder by the forces expected to act on the material during the course of regulated demolition or renovation activities. Thus the methods for handling ACM will determine the degree of regulation to which those activities will be subject.

Determining whether Category II nonfriable ACM has a "high probability" of becoming friable, and therefore qualifies as RACM is done on a case-by-case basis. 55 Fed. Reg. 48406, 48409 (Nov. 20, 1990). In the draft of the 1990 amendments to the asbestos regulations, EPA included "broken" ACM within the definition of materials subject to regulation. 54 Fed. Reg. 912, 916 (Jan. 10, 1989). In response to comments on the draft, EPA eliminated all references to "broken" in the regulations because it "could be interpreted as substantially increasing the scope" of the regulations. 55 Fed. Reg. at 48409. EPA went on to explain:

> Most nonfriable materials can be broken without releasing significant quantities of airborne asbestos fibers. It is only when the materials is extensively damaged, i.e., crumbled, pulverized or reduced to powder, that the potential for significant fiber release is greatly increased.

Id. In enforcement actions taken prior to the 1990 amendments, the regulatory agencies typically considered broken transite pipe, for instance, to be friable. While the 1990 amendments suggest that broken pipe will not automatically be considered friable, it is possible that when a pipe is broken, portions would be "crumbled" or "reduced to powder," in which case the material would be friable (and therefore RACM).

2. Regulated Activities

Whether a particular activity involving RACM is actually regulated is determined by the amount of RACM present within a "facility" during or prior to "demolition" or "renovation." An important point to note here is that the location at which ACM is located

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must qualify as a "facility" in order to be regulated. A facility is defined in pertinent part as: "[A]ny institutional, commercial, public, industrial, or residential structure, installation, or building (including any structure, installation, or building containing condominiums or individual dwelling units operated as a residential cooperative, but excluding residential buildings having four or fewer dwelling units); any ship; and any active or inactive waste disposal site. . . ." § 61.141. Thus, certain residential dwelling units (such as single family homes) are not subject to NESHAP requirements, while apartment complexes are. In the nonresidential setting, the mere presence of RACM may be sufficient to qualify the site as a facility. (Note: in Pima County, residential buildings of two or fewer units are generally exempt from the NESHAPs. Pima County Code §§ 17.04.310.A.50, 17.12.200.B.)

Before discussing what exactly is regulated, the definitions of demolition and renovation should be understood. A demolition includes the "wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations or the intentional burning of any facility." § 61.141. A renovation includes "altering a facility or one or more facility components in any way, including the stripping or removal of RACM from a facility component. Operations in which load supporting structural members are wrecked or taken out are demolitions." Id. Finally, an "emergency renovation operation" is defined as:

> [A] renovation operation that was not planned but results from a sudden, unexpected event that, if not immediately attended to, presents a safety or public health hazard, is necessary to protect equipment from damage, or is necessary to avoid imposing an unreasonable financial burden. This term includes operations necessitated by nonroutine failures of equipment.

Id.

Notification must be provided to appropriate regulatory agencies whenever demolition occurs, regardless of whether asbestos is present. § 61-145(a)(1)-(3). More stringent requirements (including work practice controls) apply to demolitions involving at least 260 linear feet of RACM on pipes or 160 square feet of RACM on other facility components. For renovation activities, the notification and work

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practice procedures for emission control must be followed if at least 260 linear feet of RACM on pipes (or 160 square feet on other facility components) will be "stripped, removed, dislodged, cut, drilled, or similarly disturbed." For emergency renovation activities, the regulatory procedures must be followed if at least 260 linear feet of RACM on pipes (or 160 square feet on other facility components) will be "removed or stripped as a result of the sudden, unexpected event that necessitated the renovation." § 61.145(a)(4)(iv).

Planned renovation projects involving sufficient RACM generally require 10-day advance written notification to the appropriate regulatory agency. Notification is required "as early as possible before, but no later than the following working day" for emergency renovation operations. §§ 61.141, 61.145. Standardized forms used to provide the necessary information are included within the NESHAP regulations. Pima, Pinal and Maricopa Counties have been delegated authority to enforce federal regulations concerning asbestos and therefore must be notified. Although certain authority has been delegated to the counties, notification also must be sent to EPA. § 61.145.

The procedures required for asbestos emission control are set forth in § 61.145. Wetting the RACM is the usual method of emission control to prevent visible emissions of asbestos. Additional procedures that may be required include leak-tight wrapping or a local exhaust ventilation and collection system. Also, beginning in the fall of 1991, the regulations will require that at least one employee trained in asbestos-handling methods is present. § 61.145(c)(8).

Waste disposal methods for demolition and renovation operations are established in § 61.150. An owner or operator of a renovation operation is required to follow the standards for collection, processing, packaging and transporting of asbestos-containing waste material to prevent visible emissions of asbestos fibers. All asbestos-containing waste material must be deposited as soon as practicable by the generator at a waste disposal site operated in accordance with asbestos management standards. § 61.154.

The November 20, 1991 amendments to the asbestos NESHAPs extended coverage of the regulations to active waste disposal sites that receive ACM from regulated demolition and renovation activities. Prior to the 1990 amendments, the generator of ACM wastes was required to ensure that this waste was deposited in a waste disposal site which complied with certain federal standards, but

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the requirements did not apply directly to the waste disposal site itself (unless the site received wastes from asbestos mills or asbestos manufacturing or fabricating operations). § 61.156. One of the major complaints regarding the former regulations was that they limited the ability of the regulatory agencies to bring enforcement actions against improperly operated waste disposal sites. 54 Fed. Reg. 912,920 (Jan. 10, 1989). The new regulations directly impose substantive obligations on the waste disposal site owner or operator.

The main standard applicable to active waste disposal sites is that there "be no visible emissions to the outside air . . . ." § 61.154(a). Alternatives to the no visible emission standard include daily coverage of the waste material with six inches of compacted non-ACM or daily coverage with an effective dust suppressant. § 61.154(c). Other procedures are appropriate if they are approved by EPA. § 61.154(d). In addition to limiting emissions from the site, the active waste disposal site must either be protected by a "natural barrier" that "adequately deters access by the general public" or must be surrounded by a fence and prescribed warning signs. § 61.154(b). In addition to these requirements, extensive new recordkeeping requirements are imposed by the regulations. § 61.154(e); (f).

EPA was recently sued over revisions to the NESHAP regulations by an industry trade group which alleged that the November 1991 regulations were being misconstrued to require wholesale removal of asbestos from all buildings. Safe Buildings Alliance v. EPA, No. 91-1034 (D.C. Cir.). In a settlement agreement, EPA has agreed to publish a "Notice of Clarification" to allay industry concerns that such wholesale removal is required. 58 Fed Reg. 7561 (Feb. 8, 1993). The notice should be published when the settlement becomes final in the near future. Personal Communication with Tom Ripp, EPA (May 5, 1993). Specifically, the notice provides:

> [EPA] has learned that some part of the regulated community may have certain misunderstandings concerning the Asbestos NESHAP and that these misunderstandings may have resulted in unwarranted removals of asbestos-containing materials (ACM). One such misunderstanding is that the revised Asbestos NESHAP requires total ACM removal during any renovation whenever specific threshold amounts of ACM are involved. A second is the mistaken belief that removal is appropriate now because under the NESHAP regulation, removal in the future is "inevitable." Because these misunderstandings

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> may be encouraging unnecessary and unwise "from a health standpoint" removals, EPA makes this clarification. . . . EPA has previously stated, in guidance and other publications, that for the protection of health and minimization of risk, removal of ACM is not always a building owner's best course of action to reduce asbestos exposure . . . . Thus, EPA recommends proper in-place management of ACM. In many buildings, a well run in-place management program should be all that is necessary to control the release of asbestos fibers.

Notice of Clarification at pp. 1, 4.

D. Arizona Special Waste Program

The Arizona legislature has adopted legislation to regulate asbestos as a "special waste." 1991 Arizona Legislature, H.B. 2121, S.B. 1178, codified at A.R.S. § 49-851 et seq. As a special waste, disposal of asbestos would be subject to specific transport and disposal requirements. The special waste statute defines "asbestos" or "asbestos containing materials" as "friable asbestos material containing more than one percent asbestos by weight and that hand pressure can crumble, pulverize or reduce to powder when dry." Id. § 49-851.A.1. Therefore, the special waste statute is more limited in scope than the NESHAPs in that the special waste regulations can only apply to friable asbestos material, and does not extend to material that is potentially friable.

The Arizona Department of Environmental Quality ("ADEQ") is in the process of adopting rules to govern asbestos under the special waste program. An emergency rule to regulate the disposal of asbestos and asbestos-containing materials was adopted effective February 22, 1993. A.A.C. R-18-8-310. The rule basically adopts portions of the NESHAPs by reference. Id. ADEQ is also proposing a permanent asbestos best management practices rule which, in current form, is largely identical to the emergency rule. The rule should be adopted some time in the fall of 1993.

E. Other Federal and State Laws

Mandatory safety and health standards for miners are administered by Mine Safety and Health Administration. The MSHA standards relating to asbestos are far less detailed than the OSHA regulations, but do include exposure limits, engineering controls and respiratory protection measures for workers in surface mines. 30 C.F.R. § 56.5001-56.5050.

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There are federal regulations adopted pursuant to the Hazardous Materials Transportation Act which govern the transport of asbestos materials. 49 C.F.R. Part 173. Asbestos is designated as a "hazardous material" under the regulations and transportation requirements are prescribed for various forms of asbestos. § 173.101; 173.1090.

Asbestos is classified as a "hazardous substance" under the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA" or "Superfund"), 42 U.S.C. § 9601 et seq.; 40 C.F.R. § 302.4. CERCLA imposes release reporting requirements in the event of a release of a hazardous substance in a reportable quantity ("RQ"), which for friable asbestos is one pound. 40 C.F.R. Part 302.4. The release of a hazardous substance such as asbestos can subject a statutorily defined "responsible party" to potential liability. 42 U.S.C. § 9607.

Asbestos is also covered under the Emergency Planning and Community Right to Know Act ("EPCRA"), which applies to the release of hazardous substances outside of a facility boundary. 40 C.F.R. § 355.40(a). EPCRA imposes additional release notification requirements beyond those imposed by CERCLA. § 355.40(b).

Arizona has adopted a program for asbestos training and certification of employees and supervisors working with friable asbestos. A.R.S. § 23-492 et seq. The program is administered by ADOSH and is modeled on EPA's model accreditation program adopted under TSCA for asbestos in schools. § 23-492.01.C.; 40 C.F.R. Part 763, Subpart E, Appendix C. The statute provides that the asbestos abatement employee training course and the supervisor training course shall provide instruction on the identification of asbestos and asbestos-containing materials, control options, the potential health effects of working with asbestos, employee personal protective equipment, including respirator fit testing, state of the art work practices for asbestos abatement activities, personal hygiene, additional safety hazards and medical monitoring, air monitoring, and federal, state and local regulatory requirement affecting employees working with asbestos. In addition, the supervisor training course shall provide instruction on asbestos hazardous assessment considerations, federal and state regulator considerations, including asbestos exposure, asbestos construction and employee protection standards, respiratory protection and medical surveillance programs, insurance and liability issues, including workers' compensation, record keeping

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requirements, supervisory techniques, and contract performance specifications.

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CHAPTER 2

SOLID WASTE REGULATION

I. FEDERAL SOLID WASTE REGULATION

The Resource Conservation and Recovery Act (RCRA), 42 U.S.C.A. § 6901, et seq. was enacted in 1976 to regulate the handling, treatment, storage, and disposal of "solid waste." RCRA is one of the most complex environmental statutes and that complexity begins with the definition of "solid waste." In determining whether a substance is regulated by RCRA, it is necessary to determine if it is a solid waste.

A. Definition of Solid Waste

The first point that must be made is that not all solid waste is "solid." RCRA defines solid waste to mean:

> any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant or air pollution control facility and other discarded material including solid, liquid, semisolid or contained gaseous material resulting from industrial, commercial, mining and agricultural operations and from community activities.

42 U.S.C. § 6903(27) (Emphasis added). A more precise regulatory definition, found at 40 C.F.R. § 261.2(a)(1), is discussed elsewhere in these materials regarding hazardous waste regulation.

Generally, EPA classifies solid waste into two broad categories -- hazardous and nonhazardous. EPA defines as hazardous those wastes that either (1) exhibit one of four characteristics to a sufficient extent (ignitability, corrosivity, reactivity, and toxicity) or (2) are among the about 460 commercial products and production process wastes EPA specifically lists as hazardous. Nonhazardous wastes are those that either do not meet EPA's definition for hazardous waste or are exempted from hazardous waste regulation. Generally, nonhazardous wastes include industrial; construction/demolition debris; municipal; and four "large-volume wastes" excluded by law from control as hazardous waste, pending development of additional information to determine the level of control needed and the economic impact of regulating these wastes. The four large-volume wastes are (1) drilling fluids and other wastes resulting from oil and gas production, (2) mining and ore-processing wastes, (3) by-products of fossil fuel combustion, and (4) cement kiln dust. EPA

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has conducted special studies on the first three types of large-volume wastes and is considering promulgating a separate set of standards for them. Some mining wastes have been determined, following the EPA studies, to be worthy of regulation as hazardous wastes. Most are to be regulated under a new solid waste program that applies strictly to mining wastes.

B. Federal Regulation of Solid Waste

Traditionally most solid waste regulation has been left to the states and local authorities. In 1979, EPA promulgated guidelines for handling and disposal of various kinds of solid waste including guidelines for thermal processing of solid wastes, land disposal of solid wastes, storage and collection of residential, commercial and institutional solid wastes, and for development and implementation of state solid waste management programs. 40 C.F.R. Parts 240-249, 255-258.

Solid waste disposal facilities must meet the requirements of 40 C.F.R. Part 257, or else they are deemed in violation of 42 U.S.C. § 6945, which prohibits "open dumping." Perhaps the most relevant requirement is 40 C.F.R. § 257.3-4, which states that a facility or a practice of solid waste disposal may not contaminate an underground drinking water source beyond the solid waste facility boundary.

The EPA currently divides solid waste disposal facilities into two primary categories: (A) municipal solid waste facilities, which typically receive household and office refuse, "nonhazardous" commercial waste, and limited amounts of other solid waste; and (B) nonhazardous industrial and commercial waste facilities.

C. Land Disposal

1. Background

Based on the Environmental Protection Agency's estimates, municipal waste generated in the United States has increased from about 88 million tons in 1960 to about 163 million tons in 1989. Estimates are that the total amount generated will increase to about 193 million tons by the year 2000. Even after recycling and energy recovery, the majority of municipal waste generated will require disposal.

EPA estimates that about 134 of the 163 million tons of municipal waste are most likely being disposed of in municipal landfills. The following types of waste are going into municipal landfills: 7.3% plastics; 9% rubber and leather, textiles, wood, other;

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8.9% food wastes; 20.1% yard wastes; 35.6% paper and paperboard; 1.8% misc. inorganic wastes; 8.4% glass; 8.9% metals. Percentages reflect discards into the municipal waste stream as of 1986.

Half of today's municipal waste landfills are expected to close within the next five years as they reach capacity, even as EPA is predicting that municipal waste will continue to grow in volume from 163 million tons a year today to 193 million tons by 2000. Most existing landfills contain significant amounts of hazardous waste. Household hazardous wastes, such as paints, batteries, pesticides, and cleaning agents, usually are picked up along with other municipal waste and then incinerated or dumped in landfills, releasing hazardous pollutants through air emissions, incinerator ash, and possibly the groundwater. As a result, regulation of solid waste is expected to be a major environmental emphasis during the next decade.

2. Congressional action

Beginning in 1980, hazardous waste from large quantity generators no longer could be disposed of in sanitary landfills. EPA regulations required that hazardous waste be disposed of in hazardous waste disposal facilities. Exceptions were given, however, to hazardous waste generated by households and establishments that generate small quantities of hazardous waste. Household hazardous waste includes products such as household cleansers, grease and rust solvents, paints and thinners, and fingernail polish remover. Generators of small quantities of hazardous waste produce arsenic, lead, mercury, strong acids and alkalies, and other wastes. EPA does not have a good understanding of how many tons of these wastes are generated and ultimately disposed of in municipal landfills. One estimate is that one percent of household waste is hazardous waste.

In 1984, Congress amended RCRA. The legislative history of the 1984 amendments indicates that the Congress was concerned with the large amount of household hazardous waste and small quantity generator hazardous waste being disposed of in facilities, such as municipal landfills, because these facilities may not have been suited to receive such hazardous waste. The amendments further limited the amount of hazardous waste that was subject to small quantity generator regulation and placed further restriction on land disposal of hazardous waste.

To better ensure that human health and the environment are protected, the 1984 RCRA amendments

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required EPA to study the adequacy of its minimum criteria developed in 1979 for solid waste facilities and to revise the criteria for facilities that receive household hazardous waste or small quantity generator waste. The amendments also required states to establish, by November 1987, a permit program or other system of prior approval for facilities, such as municipal landfills, that may receive household hazardous waste or small quantity generator hazardous waste. In response to the 1984 amendments, EPA, in August 1988, proposed establishing new minimum criteria for operating municipal landfills.

3. Part 257 and Part 258 criteria

On August 30, 1988, EPA published a proposed rule revising the Criteria for Classification of Solid Waste Disposal Facilities and Practices as set forth in 40 C.F.R. Part 257, and adding a new Part 258 specifying requirements for municipal solid waste landfills. 53 Fed. Reg. 33313.

a. Part 257 regulation

The 40 CFR Part 257, amended effective October 9, 1993, will regulate several types of solid waste facilities:

- Industrial solid waste landfills (non-hazardous)
- Construction/demolition landfills
- Surface impoundments
- Land application units and
- Waste piles

After October 9, 1993, 40 C.F.R. Part 257 criteria will not cover municipal solid waste landfills. With that exception, Part 257 is basically unchanged. There are still restrictions on location in a floodplain, land application of solid waste, adverse impacts on endangered species, a requirement for disease vector control, limits on surface water and groundwater quality impact, air criteria and safety provisions. The EPA intends to update the maximum contaminant levels (MCLs) used as groundwater protection criteria.

Solid waste facilities that do not meet the Part 257 criteria are considered to be engaged in the practice of "open dumping" in violation of RCRA § 4005.

Industrial waste (handled in industrial solid waste disposal facilities) typically is generated from factories, processing plants, and other manufacturing

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activities. The types of waste vary from industry to industry as well as within an industry -- from brine in the food processing industry to dyes and pigments in the chemical industry. As a result, the universe of industrial waste includes wastes with different chemical compositions and physical form. Industrial waste also includes construction/demolition debris waste -- brush, stumps, or rubble from the construction or demolition of bridges, highways, or buildings. Wastes handled in nonhazardous industrial waste facilities may include (1) small amounts of hazardous wastes that are exempted from EPA's hazardous waste regulations and (2) other types of nonhazardous waste, such as wastes that EPA is studying to identify and regulate as hazardous in the future. Between 1985 and 1987, EPA collected data on industrial solid waste facilities. On the basis of its initial data collection efforts, EPA estimates that about 20,700 landfills and surface impoundments handle most of the more than 7.6 billion tons of industrial nonhazardous waste generated annually. EPA also estimates that 2,200, or more than 10 percent, of the industrial facilities handle small amounts of hazardous wastes.

EPA is expected to develop a regulatory program to address industrial solid waste facilities in the next couple of years.

b. Part 258 regulation

The purpose of the Part 258 criteria is to establish minimum national criteria for municipal solid waste landfills with regard to location, design, operation, cleanup and closure. The Part 258 criteria for Municipal Solid Waste Landfills, consists of seven major regulatory provisions:

- Subpart A Scope and Applicability
- Subpart B Location Restrictions
- Subpart C Operating Criteria
- Subpart D Design Criteria
- Subpart E Groundwater Monitoring and Corrective Action
- Subpart F Closure and Post-Closure Care
- Subpart G Financial Assurance Criteria

Municipal landfills will be regulated through federal performance-based standards to be enforced by the states. A landfill operator would be required to set up groundwater monitoring systems and meet other requirements, as well as clean up contamination at operating landfills. The Part 258 regulations will be effective on October 9, 1993, except for the Subpart G financial assurance criteria, which will take effect on April 9, 1994 and the Subpart E groundwater monitoring

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criteria, which will be phased in over a five year period.

The design requirements for new units would be left to the states, but the design would be required to meet a risk-based goal in the range of a lifetime cancer risk of 1 in 10,000 to 1 in 10 Million. The point of compliance for measuring the risk-based standard would be at the waste unit boundary or at a state-established alternative boundary that would be limited to no more than 150 meters from the waste management unit.

The new standards for both new and existing municipal landfills also would include location restrictions, facility design and operation standards, closure requirements, and post-closure care for at least 30 years. The proposal would also set new financial responsibility requirements.

The standards also include requirements for day-to-day management of both new and existing landfills, including waste-handling procedures, daily cover, rodent control, access control, liquids management, explosive gas control, control of open burning, runoff controls, and record keeping. The proposal also specifies a risk-based performance standard for landfill design.

D. Other Solid Waste Capacity Options

Aside from landfills, other methods for handling solid waste include incineration (regulated primarily for air pollution and leftover ash and waste), waste-to-energy (WTE) facilities that burn solid waste to produce energy, source reduction and recycling.

In 1971, EPA developed air pollution standards for new large municipal waste incinerators. 40 C.F.R. Part 60 Subpart E. Since that time, numerous other regulations have been adopted to control air emissions from other solid waste incinerators. These include regulations for hazardous waste incinerators (40 C.F.R. Parts 264 and 265, Subpart O), sewage sludge incineration (NSPS at 40 C.F.R. 60 Subpart O and 40 C.F.R. 503 Subchapter O) and standards are being developed for medical waste incinerators.

Waste-to-energy facilities are similar to incineration facilities, except they produce useful steam or electricity. Over 160 waste-to-energy facilities exist, which handle 14 percent of the U.S. solid waste. Fifty more are being developed, none to date in Arizona.

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Recycling and source reduction are discussed as options for reducing solid waste under the pollution prevention concept.

II. ARIZONA SOLID WASTE REGULATIONS

A. Background - New Solid Waste Management Regulations

Arizona solid waste regulations were fairly minimal until very recently, especially for private landfills. In 1991, the Arizona Legislature passed House Bill 2121, which clarified that ADEQ had the authority to regulate private, as well as public, solid waste facilities beginning on January 1, 1993. See Ch. 315, 1991 Ariz. Sess. Laws. In 1992, the Arizona Legislature revised and enlarged the statutory provisions regarding private and public landfills, and extended the implementation date to January 1, 1994. See Ch. 300, 1992 Ariz. Sess. Laws. To some extent, Arizona has expanded the Part 258 requirements for municipal solid waste landfills to all types of landfills, except for those expressly exempted.

The long awaited state solid waste rules to implement Arizona's new solid waste statutes were released in draft form on April 21, 1993. Public meetings were held during May 1993. Written comments on the first draft of the rules was due by June 1, 1993. The Arizona Department of Environmental Quality ("ADEQ") and the regulated community have also worked through a second and third draft of the rules. Once the informal draft rule process is completed, the rules will be formally proposed. In summary, the draft regulations follow the pattern set out in Part 258. Because the regulations are still in their preliminary draft form, and subject to much change, they will not be discussed in any great detail in this paper.

It is important to note that while the federal definition of "solid waste" includes domestic sewage and hazardous wastes, the state definition does not. See A.R.S. § 49-701(13).

B. Solid Waste Facility/Landfill Plans

By October 9, 1993, all new solid waste facilities must have facility plans, and by January 1, 1994, all existing solid waste facilities not open to the public must submit a solid waste facility plan to ADEQ. ADEQ has already been approving plans for solid waste facility open to the public. Solid waste

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landfills, a subset of solid waste facilities, are subject to more stringent planning and operating requirements than other types of solid waste facilities.

1. Facilities/operations subject to regulation

Both solid waste facilities and solid waste landfills, a type of solid waste facility, are subject to regulation by ADEQ.

A "solid waste facility" is defined as "any site owned, operated or utilized by any person for the collection, source separation, storage, transportation, transfer, processing, treatment or disposal of solid waste or household hazardous waste . . . ." A.R.S. § 49-701(14). Four types of facilities are exempt from the definition of a "solid waste facility": (a) a site at which solid that was generated on site is stored in containers or tanks for 90 days or less; (b) a transfer facility; (c) a site that stores receives, source separates or reduces certain types of common recyclable solid wastes listed in the statute; and (d) an agricultural site where sludge from a wastewater treatment facility is applied to the land as fertilizer or beneficial soil amendment. Id. Of the four exemptions, the "90 day or less" provision is the most important. It means that if you pay for normal commercial solid waste services on a routine basis, you will not be required to submit a solid waste facility plan for a trash dumpster or any similar type container, as long as it is emptied at least every 90 days.

While exempt from general solid waste regulation, sludge sites, transfer facilities and recyclable solid waste sites cited above, will be subject to special rules to be developed by ADEQ. A.R.S. § 49-761(A)(5)-(7). A "transfer facility" is "a site that is owned or operated or used by any person for the rehandling or storage for 90 days or less of solid waste that was generated off site for the purpose of transporting that solid waste" and does not include recyclable solid waste sites. A.R.S. § 49-701(18).

A "solid waste landfill" is a type of facility "at which solid waste is placed in or on land for the purpose of long-term storage or disposal." A.R.S. § 49-701(15). Exempt from this definition are: (a) landfill application units; (b) surface

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impoundments; (c) injection wells; (d) areas containing ash from the combustion of coal; (e) compost piles; and (f) certain agricultural on-site disposal areas regulated by the counties. Id.

The following eight types of operations are expressly exempted in statute from solid waste regulation, unless they require a special waste facility plan: (a) reclamation of land through the introduction of landscaping rubble or inert material; (b) large, off-road mining tires, rock, leach material, tailings and slag produced and maintained at the site of the mining or metallurgical operation; (c) certain types of agricultural on-site disposal activities regulated by the counties; (d) storage, treatment or disposal of inert material; (e) certain types of effluent applications; (f) application or release of return flows from irrigated agriculture; (g) use, storage, treatment or disposal of certain agricultural by-products; and (h) household hazardous waste collection events held at a temporary site for a period not to exceed six days per calendar quarter. A.R.S. § 49-762(H).

2. Solid Waste Facility Plans

Beginning October 9, 1993, all new solid waste facilities, both private and public, must have facility plans before starting operations. A.R.S. § 49-762(E). By January 1, 1994, all existing solid waste facilities not open to the public must submit a solid waste facility plan to ADEQ. A.R.S. § 49-762(E). Due to delays in the administrative rulemaking process, it is unlikely that the facility plan rules will be ready until at least mid-1994. It is therefore legally impossible for facilities not open to the public to comply with the statutory mandate of submitting plans by October 9, 1993 or January 1, 1994. Facilities open to the public will continue to comply with the existing facility plan rules until the new rules are adopted. See Section D(2) of this paper; A.R.S. § 49-762(A) & (E). ADEQ may temporarily authorize a new solid waste facility to operate without a plan if the solid waste facility is needed immediately and could not be properly planned in advance. A.R.S. § 49-762(E). General plans covering more than one solid waste facility with similar activities with similar waste streams are permitted by statute. Id.

ADEQ is required to approve or disapprove of solid waste plans for existing solid waste facilities

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within 180 days of receipt of a complete plan that contains all the supporting documentation. A.R.S. § 49-762(E). Existing facilities not open to the public may continue to operate while their plan is under review by ADEQ. A.R.S. § 49-762(E). If a plan is rejected by ADEQ, it must explain the plan's deficiencies, including recommendations for correcting them. A.R.S. § 49-762(A) & (E).

3. Substantial changes to facility plans

ADEQ must approve all "substantial changes" to a facility plan. A.R.S. § 49-762(B), (C) & (F). The definition of "substantial change" has not been codified. House Bill 2060 (1992) provided an interim definition of "substantial change." The bill defined "substantial change" to mean:

1. A change in an existing facility's approved solid waste facility plan that results in a significant alteration in the characteristics or a significant increase in the volume of the materials received for deposit at the landfill.

2. A change in an existing facility's approved solid waste facility plan that results in the addition of a process or major piece of production or treatment equipment, building or structure that is physically separated from the existing operation and that causes a discharge.

Ch. 300, 1992 Arizona Leg. Serv. 1721. Part two of this proposed definition is more precise and easily determinable than part one, because part one turns on the adjective "significant" which is not defined.

Owners and operators of public facilities, private facilities and landfills are required to submit proposed changes from a facility plan to the ADEQ Director. A.R.S. § 49-762(B),(C) & (F). The Director has 30 days to determine whether or not a change to a facility plan for a landfill is substantial and 15 days to determine whether or not changes to all other types of facility plans are substantial. Id. If the ADEQ

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fails to respond, the change is deemed not substantial. Id. If the Director determines that a change is substantial, it has 90 days to approve or disapprove of the amended plan for the facility. A.R.S. § 49-762(B), (C) & (F). Substantial changes for landfill facility plans must also be noticed to property owners in the area. A.R.S. § 49-762(C)(3).

4. Elements of a facility plan

In general, the draft solid waste facility rules provide that a facility plan will consist, in part, of the following elements: (a) owner/operator general information; (b) general facility information; (c) a demonstration of financial responsibility (A.R.S. § 49-770); (d) a demonstration of technical competency; (e) a copy of the certificate of disclosure of violations (A.R.S. § 49-109); (f) various acknowledgements; and (g) evidence of meeting zoning and other local requirements. Draft Arizona Solid Waste Facility Rules (July 1, 1993), Draft R18-8-1007.

The landfill plans will be much more complex. In addition to the facility plan requirements, the draft solid waste landfill rules provide, in part, that a landfill plan will have to include: (a) a project description; (b) location and vicinity maps; (c) a site plan; (d) an engineering report; (e) a quality assurance/control plan; (f) a facility development plan; (g) an operational plan; (h) a contingency plan; (i) a landscape plan; (j) a demonstration of compliance with location restrictions (A.R.S. § 49-772); (k) a hydrogeological study; (l) a description of the technology to be employed for maintenance of water quality; (m) a demonstration of compliance with groundwater monitoring and corrective action requirements; (n) a demonstration of compliance with operating standards; (o) a closure plan and a post closure maintenance plan; and (p) copies of other permits, approvals and clearances. Draft Arizona Solid Waste Facility Rules (July 1, 1993), Draft R18-8-1105. After construction is completed, the applicant must also submit a construction report, a certified copy of the recorded restrictive covenants (A.R.S. § 49-771), and adequate proof of financial assurance. Id.

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C. Disputes Regarding the Draft Solid Waste Rules

After the first and second drafts of the solid waste rules were distributed, the non-municipal landfill operators and owners have protested the general application of 40 C.F.R. Part 258 (municipal landfill) rules to their facilities. In short, the regulated community has had two major concerns about the draft Arizona solid waste rules: (1) the rules treat both municipal and non-municipal facilities the same; and (2) the water quality protection provisions of the solid waste rules conflict and overlap with the existing Arizona aquifer protection permit rules.

With regard to the first criticism, the non-municipal landfill owners have requested that the draft rules be modified to account for the specific nature of the incoming wastes. A.R.S. § 49-761(A)(4) requires ADEQ to do so when adopting the solid waste rules. The Arizona draft solid waste rules borrow heavily from the federal Part 258 municipal landfill rules. Non-municipal landfill owners have argued that the application of Part 258 municipal landfill rules to their facilities results in overregulation because municipal landfills receive household and household hazardous wastes and their facilities do not. In reaction, ADEQ has tentatively decided that, while all the landfill rule sections will apply to municipal landfills, the non-municipal landfills will only need to address certain rule sections based on the characteristics of the incoming waste stream.

ADEQ has tentatively addressed the second criticism by exempting landfills that are or will be regulated as part of an area-wide or consolidated aquifer protection permit from the water quality protection provisions of the solid waste rules. ADEQ is required by law to integrate all its water quality protection programs to the maximum extent possible. See A.R.S. § 49-203(C).

D. Other General Solid Waste Regulations

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Arizona has a variety of existing statutes and regulations governing solid waste management.

1. Public facilities

A.R.S. § 49-701 et seq., and A.A.C. § R18-8-501 et seq., require in part that each county, city or town provide (or contract for) public facilities necessary for "the safe and sanitary disposal of solid waste generated within its jurisdiction." A.R.S. § 49-741(1). In addition, local governments are given the authority to establish user fees for financing solid waste management activities. A.R.S. § 49-742. Also, commercial permits may be required for the purpose of regulating, identifying and determining specific categories of wastes and waste haulers. A.R.S. § 49-743. Finally, local governments may not prohibit or unreasonably restrain private business engaged in promoting recycling. A.R.S. § 49-746. Those governments do, however, have the authority to prescribe regulations covering recycling activities. Id.

The ADEQ is given the authority to promulgate rules regarding "storage, collection, transportation, disposal and reclamation of garbage, trash, rubbish, manure and objectionable wastes." In addition, ADEQ is required to adopt regulations governing the collection, source separation, storage, transportation, transfer, processing, treatment and disposal of solid waste at public waste management facilities. A.R.S. § 49-761(A).

2. Public facility plans

ADEQ is given the authority to review and approve public facility plans prior to construction and operation of the facility. In addition, ADEQ can suspend or revoke approval to operate a public waste management facility if that facility is in violation of the solid waste management rules. ADEQ is given inspection and monitoring powers to determining compliance with the Act. A.R.S. §§ 49-763 & -764. Local governments are given the right to establish regulations for solid waste collection within their jurisdictions, but regulations adopted must be equal to

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or more stringent than the state solid waste statute and ADEQ regulations. ADEQ has adopted regulations governing solid waste management planning, including establishing regional boundary designations for planning purposes. A.A.C. § R18-8-401 et seq.

3. Plan approval requirements for refuse

Regulations have been promulgated proscribing methods of handling and disposal of refuse and other objectionable wastes. R18-8-501 et seq. These regulations define "refuse" as "all putrescible and nonputrescible solid and semisolid waste, except human excreta, but including garbage, rubbish, ashes, manure, street cleanings, dead animals, abandoned automobiles, and industrial waste." R18-8-502(G). The rules specifically prohibit any person from placing, depositing, on any public street, road or alley any refuse or other objectionable waste except as provided in the rules. R18-8-503(A). The rules require approval by ADEQ of any plans for refuse and objectionable waste disposal. Other regulations are provided for the collection, storage, and disposal of refuse.

A special rule is provided for disposal of pesticide containers. A.A.C. R18-8-513. See the paper on pesticides in these materials.

4. Facility location restrictions

A facility designed to store, treat or dispose of solid waste permanently shall not be issued an aquifer protection permit or receive plan approval as a public facility, or be placed on any site if an irrigation grandfathered right is appurtenant to all or any part of the site or if any part of the facility is within one-half mile of a 100 year floodplain that has 100 year flows in excess of 25 cubic feet per second. A.R.S. § 49-767(B)(2). The floodplain restriction described above does not apply to a site used solely for any of the following:

a. Reclamation of land through the introduction of landscaping rubble or inert material.

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b. Material produced in connection with a mining or mineral processing operation.

c. Agricultural on-site disposal.

d. Solid waste transfer, recycling or any other use which does not involve permanent storage, treatment or disposal of solid waste.

e. Receipt of solid waste for application to agricultural land as fertilizer or other beneficial soil amendment.

f. Solid waste facilities not open to the general public that were in existence as of October 9, 1993, except for solid waste landfills.

A.R.S. § 49-767(C).

5. Criminal littering or polluting

A.R.S. § 13-603 creates a crime of littering or polluting if, without lawful authority, a person:

a. Throws, places, drops or permits to be dropped on public property or property of another any litter or destructive or injurious material;

b. Discharges or permits to be discharged any sewage, oil or other harmful substance into waters or onto any shoreline within the State;

c. Dumps any earth, stones, soil, ores or minerals on any land.

Knowingly violating this provision where the amount of litter exceeds 300 pounds or 100 cubic feet in volume or where the purpose of the dumping is

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commercial, results in a Class 6 felony. If the violation is not committed knowingly, and the material is dumped within 50 feet of a highway or shoreline of any body of water, the person is guilty of a Class 1 misdemeanor.

E. Regulation of Disposal of Specific Solid Wastes

Arizona has specific laws regarding the handling and disposal of the following specific solid wastes: (1) Waste tires, (2) Used oil, (3) Lead acid batteries and (4) Medical wastes.

1. Waste tire handling and disposal

A.R.S. §§ 44-1301 to -1307 imposes restrictions on the disposal of waste tires, which are defined as tires that are no longer suitable for their original intended purpose because of wear, damage or defect. A retail seller of tires and in some circumstances a wholesaler of tires must collect a fee of 2% of the purchase price for each tire sold (but no more than $2.00 for each tire sold). Monies so collected must be given to the Arizona Department of Environmental Quality and will be credited to the Waste Tire Grant Fund, which was established by this legislation. Monies from the Waste Tire Grant Fund are used to oversee the proper disposal of waste tires. A retail seller of tires and a wholesale seller of tires must accept waste tires from customers at the point of transfer. Tire retailers must post the following notice: "It is unlawful to throw away used tires. Recycle all used tires. This retailer is required to accept scrap tires if any used or recapped tires are purchased here. When any new tire is purchased, an additional fee will be charged."

Owners of waste tire collection sites must register with the ADEQ in 1990 or when they go into business. Beginning on January 1, 1992, tires must be disposed of at a waste tire collection site or other state-sanctioned method, such as shredding or flood control use. The incineration of disposal of tires in a landfill is banned. ADEQ is required to create a

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program prior to July 1, 1991 to make grants to counties or contracts with private enterprise to do one or more of the following: the construction or operation of a tire processing facility, contract for a waste tire processing service, removal from a county or other region, or the establishment of tire collection centers at landfills or waste tire processing facilities.

2. Used oil

A.R.S. § 49-801 bans the disposal of used oil, which is defined as oil that has been refined from crude oil and that has been contaminated by chemical or physical impurities as a result of use, by any of the following methods:

a. Discharge into sewers or waters of the state unless pursuant to permit.

b. Incineration except at a facility authorized to incinerate hazardous waste.

c. Disposal on land unless approved by the Arizona Department of Environmental Quality.

d. Dispersal as a dust suppressant or contact herbicide.

This statutory provision also applies specific restrictions to transporters, burners, and marketers of used oil. The legislation provides for extensive regulation of used oil transporters, including requiring a separate manifest for each load of used oil (some transporters are exempt from regulation) and creates standards for individuals who market used oil and/or burn used oil. In addition, a used oil fee of ten cents per gallon is imposed against the generator of used oil if the used oil exceeds five parts per million arsenic, two parts per million cadmium, two parts per million chromium, one part per million lead, two parts per million polychlorinated biphenyls, or has a flash point of 100 degrees Fahrenheit minimum.

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3. Lead acid battery disposal

A.R.S. §§ 44-1321 to -1324 regulates the disposal of lead acid batteries, which are defined as batteries with a core of elemental lead, a capacity of six or more volts, and is suitable for use in a vehicle or boat. Disposal of lead acid batteries in landfills and the incineration of these batteries is prohibited. In addition, each person who purchases a new lead acid battery must pay a $5.00 fee to the seller. The seller must refund the $5.00 fee upon presentation of a used lead acid battery and a receipt indicating the purchase of a new lead acid battery from the seller within the last thirty days.

4. Medical wastes

A separate paper on the regulations governing the handling and disposal of medical wastes is included in these materials.

F. Recycling Opportunities

In 1990, the Arizona Recycling Program was set forth at A.R.S. § 49-831 to -837. It is to be administered and overseen by the Arizona Department of Environmental Quality. The Arizona Department of Environmental Quality must implement and conduct a program of public education and provide information to increase awareness of individual responsibility for properly reducing and disposing of solid waste and to encourage participation in recycling, reuse and source reduction. Cities and towns must provide their residents with an opportunity to engage in recycling and waste reduction.

This legislation also requires that every consumer of newsprint ensure that at least twenty-five percent of all newsprint used by the consumer is made from recycled-content newsprint if recycled-content newsprint is reasonably available and is of comparable quality. Newsprint is defined as uncoated paper, whether supercalendared or machine finished, including the type generally used for the publication of newspapers,

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commercial advertising inserts, directories, or commercial advertising mailers. Consumer is defined as a person who purchases a product for use, consumption or any purpose other than resale. The percentage of newsprint used which is made from recycled-content newsprint shall increase to:

1. 30% on January 1, 1994.
2. 35% on January 1, 1996.
3. 40% on January 1, 1998.
4. 50% on January 1, 2000.

This legislation also requires that by July 1, 1991, a person shall not distribute, sell or expose for sale plastic bottles or plastic containers of specified sizes unless the product has a molded or imprinted label indicating the plastic resin used to produce the product. Finally, this legislation imposes a fee of twenty-five cents for each six cubic yards of uncompacted solid waste, twenty-five cents for each three cubic yards of compacted solid waste, twenty-five cents per ton of solid waste received at landfills regulated by the Arizona Department of Environmental Quality. A person who for a fee disposes of solid waste at a landfill not regulated by the Arizona Department of Environmental Quality must keep accurate records of the waste disposal in such landfills and remit a fee to the Arizona Department of Environmental Quality at the same rate as described above.

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CHAPTER 3

REGULATION OF MEDICAL WASTE

I. INTRODUCTION

The mismanagement of medical waste has been the focus of increasing public concern. Considering the risk of a health care worker contracting hepatitis B or the AIDS virus, improper handling and disposal of medical waste is of general concern. Although this problem came into the national limelight several years ago when medical waste washed up on the coast-lines of New York, New Jersey, and Hawaii, Arizona and other states have regulated medical waste for some time. Nearly all states now either have regulations or have bills pending concerning the proper handling, transportation and disposal of medical waste.

It is estimated that as much as two-thirds of all medical waste is shipped interstate. Michael R. Schumaker, Note, Infectious Waste: A Guide to State Regulation and A Cry for Federal Intervention, 66 NOTRE DAME L. REV. 555, 558 (1990). As a result, generators and transporters of medical waste in Arizona should consider the regulations of medical waste imposed by the State of Arizona, the state in which disposal of the medical waste will occur, and other states that the medical waste will pass through prior to ultimate disposal.

This paper presents a general guide to Arizona and federal regulation of medical waste. It does not address hazardous waste. Considering the increased public attention being paid to the proper handling, transportation and disposal of medical waste, generators and transporters of medical waste should also keep apprised of future federal and state programs regulating this area.

II. ARIZONA REGULATION

A. Arizona Statutory Requirements

Arizona recently enacted legislation defining medical waste as "any solid waste which is generated in the diagnosis, treatment or immunization of a human being or animal or in any research relating to that diagnosis, treatment or immunization, or in the production or testing of biologicals, but not including hazardous waste as defined in (A.R.S.) § 49-921." A.R.S. § 49-701.6. "Solid waste" in turn is defined as "any garbage, trash, rubbish, refuse, sludge from a waste treatment plant, water supply treatment plant or

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pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material but not including domestic sewage or hazardous wastes." A.R.S. § 49-701.12.

The recently enacted legislation directs the Arizona Department of Environmental Quality ("ADEQ") to adopt rules to define biohazardous medical waste, and to regulate both it and medical sharps. In defining biohazardous medical waste, ADEQ must at a minimum include "material which is likely to transmit etiologic agents which have been shown to cause or contribute to increased human morbidity or mortality of epidemiologic significance." A.R.S. § 49-761.A.3.a. The ADEQ rules also must contain reasonably necessary restrictions regarding the storage, collection, transportation, treatment and disposal of biohazardous medical waste and medical sharps, beginning with the placement by the generator of the waste in containers for the purpose of waste collection. A.R.S. § 49-761.A.3.b.

The recently enacted legislation also provides that ADEQ may adopt reasonably necessary rules regarding the storage, collection, transportation, treatment and disposal of nonbiohazardous medical waste. A.R.S. § 49-761.B.3. Finally, ADEQ may adopt reasonably necessary rules to track biohazardous medical waste and medical sharps.

B. Arizona Department of Environmental Quality Proposed Regulations

In accordance with the mandates of the Arizona statute, ADEQ has proposed a set of medical waste management rules. (R18-8-1401 through R18-8-1415.) These rules are in the formal commenting process. The end of the formal comment period is October 15, 1993. Public hearings are also scheduled for October 1st in Tucson, October 4th in Yuma, October 8th in Flagstaff and October 11 in Phoenix. It is anticipated the rules will become effective during late fall of 1993. The following discussion is based on the rules as proposed by ADEQ. The final rules may vary. (For purposes of the following discussion, the proposed rules are designated with "R". The current official regulations are designated with "A.A.C.")

1. What do the proposed rules govern?

Biohazardous medical waste is defined in R18-8-1401(3) as medical waste including:

a. Waste from patient care, surgery, an emergency room or the performance of an autopsy if

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the waste is saturated or dripping with blood or bodily fluids or has been in contact with known infectious agents. (Feces, nasal secretions, sputum, sweat, tears, urine or vomitus are excluded unless they contain visible blood).

b. Waste from animal care, surgery, or performance of an autopsy if the waste has been in contact with agents infectious to humans.

c. Human pathological waste including tissues, organs, and body parts removed during surgery, autopsy or other medical procedures.

d. Liquid waste human blood and blood products including serum and plasma and waste that was saturated or dripping with blood that is now caked with dried human blood or blood products and their containers.

e. Dialysis waste that has been in contact with the blood of patients undergoing hemodialysis if the waste is saturated or dripping with blood or body fluids or has been in contact with known infectious agents.

f. Medical sharps such as a hypodermic needle, syringe, lancet, scalpel blade, broken glass or any other medical device that can cause a cut, puncture, or laceration and which is intended for human or animal care or medical, research or industrial laboratories.

g. Biological waste and discarded materials contaminated with blood, excretion or secretion from humans or animals who are isolated because of highly communicable diseases.

h. Cultures and stocks of infectious agents and associated biologicals, wastes from the production of biologicals, discarded live and attenuated vaccines and culture dishes and devices used to transfer, inoculate and mix cultures.

i. Laboratory waste that has been in contact with known infectious agents.

j. Discarded medical equipment and parts that have been in contact with known infectious agents.

k. A reusable container which is damaged or is not capable of being rendered free of contamination.

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l. Solid waste not clearly of medical origin but which includes medical sharps or other discarded material which is of a type commonly used in rendering of health care.

m. Non-biohazardous medical waste when combined in a bag or container with biohazardous medical waste.

n. Other medical waste which is capable of producing an infectious disease because it contains pathogens of sufficient virulence and quantity so that exposure to the waste by a susceptible human host could result in an infectious disease.

2. **Who is governed by the proposed rules?**

The regulations apply to any person who generates, stores, transports, treats or disposes of biohazardous medical waste. (R18-8-1402.A). A generator is any person, whose act or process produces medical waste or who owns or operates a facility that produces medical waste. In the situation where more than one person located on the same facility generates medical waste (such as a medical office building with numerous physicians or health care offices), each individual business entity is considered a separate generator. (R18-8-1401(15)). A transporter is any person who moves biohazardous medical waste by air, rail, roadway or water to any intermediate point for storage or treatment or the point of ultimate disposal. (R18-8-1401(4) and (32)). Treatment includes the act of utilizing any ADEQ approved method to render the waste nonbiohazardous (e.g., such as incineration). (R18-8-1401(34)).

"Disposal" means the discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste, including medical waste into or on any land or water so that the solid waste or any constituents thereof may enter the environment or be emitted into the air, or discharged into any waters, including groundwater. Disposal also includes the placement of waste into an approved landfill or other approved land disposal facility, despite the fact the facility may be designed to minimize any discharges into the environment. (R18-8-1401(13)).

3. **Are there any exemptions?**

The rules provide for several exemptions. (R18-8-1404).

a. A household generator is exempt and may put untreated biohazardous medical waste and medical

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sharps out for municipal trash collection, if the medical sharps are secured in a puncture-proof container (R18-8-1404(A)(1)). If the medical waste is transported off site by the generator, however, the transporter safeguards set forth below apply.

b. Human corpses, remains, and anatomical parts that are intended for interment or cremation.

c. Hazardous waste as defined in A.R.S. § 49-921(5).

d. Source, special nuclear or by-product material as defined by the Atomic Energy Act of 1954, as amended, 42 U.S.C. et. seq.

e. A person engaged in farming or ranching who generates biohazardous medical waste as a result of directly conducting diagnosis, treatment or immunization of livestock.

f. Transporters of infectious or pathogenic agents and which are subject to interstate transportation pursuant to the requirements of the U.S. Department of Transportation or U.S. Department of Health and Human Services.

g. An agent of the Environmental Protection Agency or a state-designated enforcement agency who transports samples of biohazardous medical waste for law enforcement purposes.

h. Medical sharps which are returned to the manufacturer via the U. S. mail which are subject to the packaging requirements of R18-8-1406.

i. Biohazardous medical waste deposited down a sanitary sewer system under the authority of the local wastewater treatment facility.

j. Biohazardous medical waste under the following mixture rules:

Biohazardous Medical Waste	+	Regulated Hazardous Waste	=	Regulated Hazardous Waste
Biohazardous Medical Waste	+	Radioactive Waste	=	Radioactive Waste
Biohazardous Medical Waste	+	Hazardous and Radioactive Waste	=	Radioactive Waste

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k. Multipurpose vehicles used by public health personnel in routine business provided certain packaging, manifest, transportation and decontamination procedures are followed.

l. A person who transports biohazardous medical waste between multiple properties owned or operated by the same owner provided the packaging requirements of R18-8-1406 are followed.

4. **What is required of a small quantity generator?**

a. A person who generates 50 pounds or less per month of biohazardous medical waste based on an annual average of 600 pounds is considered a "small quantity generator" and under R18-8-1403 is subject to less onerous requirements. A small quantity generator must:

(1) Keep a record of the actual or estimated weight of biohazardous medical waste disposed of and the disposal date.

(2) Package the biohazardous medical waste as required in R18-2-1406 (like any other generator is required to do).

(3) Identify the biohazardous medical waste by placing it in a red biohazard bag with the universal biohazard symbol and an identification tag with the name and address of the generator.

(4) Dispose of medical sharps pursuant to R18-8-1414(A) which includes rendering the sharps incapable of puncturing prior to placement in the receptacle, placed only in the generator's designated disposal receptacle and the receptacle is securely fastened to prevent unauthorized access.

(5) Dispose of biohazardous medical waste by placing it in the normal municipal or commercial solid waste collection receptacle (with the hauler's approval), self hauling to a transfer facility with a capacity of ≤ 100 cubic yards, placing it in the normal receptacle for medical waste receptacle (with the hauler's approval).

(6) Discarded drugs in tablet or capsule form must be crushed and liquid drugs must be diluted to half strength or less.

b. A person may lose the small quantity generator status if they fail to comply with the

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foregoing requirements or if the ADEQ or local county health or environmental agency with jurisdiction finds that such disposal constitutes an environmental nuisance pursuant to A.R.S. § 49-141.

5. **What is required of a generator?**

a. A generator must segregate and properly package biohazardous medical waste (R18-8-1405 and R18-8-1406).

b. A generator must also originate a tracking document which lists the name and address of the generator, transporter, treatment facility, the amount and the date the waste is collected. This tracking document, which accompanies each shipment of waste, enables ADEQ to trace responsibility for the waste (R18-8-1410). A generator retains responsibility for biohazardous waste until that waste is rendered nonbiohazardous, including the retrieval and proper disposal of biohazardous medical waste improperly disposed. (R18-8-1402C).

c. A generator must segregate biohazardous medical waste from other solid waste and place it in a container for collection prior to transportation. Medical sharps packaged in a puncture proof container pursuant to R18-8-1414B may be mixed with other biohazardous waste, otherwise sharps must be segregated from other biohazardous medical waste.

6. **What are the requirements for on-site storage?**

A person may store biohazardous medical waste on site provided it is not stored for more than 90 days. If biohazardous medical waste is stored on site for longer than 90 days, the generator must obtain a solid waste plan approval from ADEQ. (A.R.S. § 49-1401(14), R18-8-1407A.) The generator must also comply with all of the following:

a. Secure any storage areas containing biohazardous medical waste to prevent unauthorized access.

b. Maintain the biohazardous medical waste in a nonputrescent state. Waste kept for 72 hours or less may be kept unrefrigerated. Waste not removed after 72 hours may be kept on site provided that it is refrigerated at 40 degrees or less and is kept for a maximum of not more than 90 days.

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c. Store the biohazardous medical waste in a manner that affords protection from water, precipitation, wind, animals and does not provide a breeding place or a food source for insects and rodents.

d. Display the universal biohazard symbol and post warning signs worded as follows: in English, "CAUTION -- BIOHAZARDOUS WASTE STORAGE AREA -- UNAUTHORIZED PERSONS KEEP OUT," and in Spanish, "CUIDADO -- ZONA DE RESIDUOS -- BIOLOGICOS PELIGROSO -- PROHIBIDA LA ENTRADA A PERSONAS NO AUTORIZADAS."

e. Minimize objectionable odors from migrating off-site.

f. Reusable containers shall be utilized for no other purpose than the storage of biohazardous medical waste.

g. Store containers of biohazardous medical waste in an area away from general traffic flow patterns, and restrict access or contact with such waste to authorized persons only.

h. Handle any spill which occurs in the storage area in accordance with R18-8-1409E and F.

i. Biohazardous storage areas shall not be used for the storage of substances for human consumption or for medical supplies.

j. Storage areas shall be kept free of contamination.

7. **How must biohazardous medical waste be packaged?**

a. A red biohazardous bag or a container which bears the universal biohazard symbol must be used for biohazardous medical waste. The container must meet certain minimum strength standards set forth in 49 C.F.R. § 106. If the container is reusable, it must be constructed of smooth, easily cleanable material which is impervious to liquid. It must also be kept in good repair and decontaminated weekly once emptied.

b. In addition, biohazardous medical waste must utilize one or more of the following procedures:

(1) The red biohazard bag must be tied so as to prevent leakage at all times;

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(2) In the alternative, the waste must be placed in a red biohazard bag which is then placed inside a rigid container and the container is closed in such a manner as to prevent leakage at all times and the outside of the container kept free of contamination.

c. Human blood or liquid biohazardous medical waste in quantities more than 20 cc must be placed in leak-proof, break resistant inner containers prior to placing in the red biohazard bag or other approved outer container.

d. Medical sharps waste must first be packaged in accordance with the requirements in R18-8-144B including the use of rigid, puncture resistant, leak-proof containers which cannot be reopened without great difficulty. The packaged medical sharps waste can then be mixed in another container with other biohazardous medical waste.

e. Waste that is encapsulized for disposal as a municipal solid waste must utilize containers designed for such use to enclose the contents within a solid matrix, must completely fill the container, must withstand pressure of 40 psi and must be identified as having been encapsulated pursuant to R18-8-1406F.

8. **What is required of a transporter?**

a. Under R18-8-1408, a transporter must:

(1) Accept only biohazardous waste properly packaged pursuant to R18-8-1406.

(2) Accept only biohazardous waste that is accompanied by a medical waste manifest pursuant to R18-8-1410.

(3) Either deliver the biohazardous medical waste within 24 hours of collection or refrigerate it at 40° F or less until delivery; but in any event, not hold the waste for more than 4 days.

(4) Deliver the waste to an ADEQ approved facility, or to a facility in another state in compliance with that state's and federal regulations.

(5) Maintain in each vehicle a copy of the biohazardous medical waste transportation plan. The plan must include procedures used to minimize the exposure of employees to biohazardous medical waste

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throughout the process of transporting and handling and emergency procedures for handling spills or accidents.

(6) Prior to reaching a treatment facility, not unload, reload or transfer the biohazardous medical waste to another vehicle except at an ADEQ approved facility or in an emergency. Coupling of trailers and vehicles is authorized so long as the biohazardous medical waste is not removed from the cargo compartment.

b. Any vehicle used to transport biohazardous medical waste must have any necessary permit or license where required by a local or other government agency and must satisfy the following criteria.

(1) Have security which limits access to persons who are specifically designated to handle biohazardous medical waste.

(2) Have a fully enclosed, leak-proof, cargo-carrying body, such as a cargo compartment or box trailer.

(3) The floor and sides of the cargo compartment must be made of an impervious, non-porous material.

c. While in operation, any vehicle used to transport biohazardous medical waste must satisfy the following criteria.

(1) All discharge openings must be securely closed during operation.

(2) The cargo compartment must be decontaminated when it shows signs of contamination.

(3) The cargo compartment must be locked at all times when biohazardous medical waste is present except while loading or unloading such waste.

d. The foregoing transporter requirements do not apply to an emergency rescue vehicle or a blood service collection vehicle provided that medical sharps are packaged in accordance with R18-8-1406 and provided the biohazardous medical waste is transported to a central collection facility which is considered to be the point of generation.

e. In the event of a spill or vehicle accident, a transporter must immediately notify ADEQ, the generator and local health department of the

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emergency situation. A transporter must carry spill containment and cleanup kits which must contain all of the following items:

(1) Material designed to absorb spilled liquids. The amount of absorbent material must be capable of absorbing ten gallons.

(2) One gallon, or concentrated liquid or powder sufficient to make up a one gallon, of a chemical disinfectant.

(3) Ten red biomedical hazardous waste bags.

(4) One set of impermeable and disposable overalls, gloves, boots, caps, protective eyewear, and tape. Overalls, boots and caps must be oversized or fitted to workers and be made of "Tyvek" (registered trademark) or equivalent material. Boots may be made of thick rubber and gloves must be of heavy neoprene or equivalent and latex.

(5) A first-aid kit, fire extinguisher, boundary tape, lights, and other appropriate safety equipment.

9. **What is required of a treatment facility?**

a. A treatment facility must be approved to accept medical waste by ADEQ.

b. An operator of a treatment facility must originate a certification document which certifies that the waste has been treated in accordance with R18-8-1411. It must include the name, address, telephone number and signature of the person or facility responsible for the treatment and the date of treatment. One copy must be sent to the generator, one copy to the landfill operator on request and one copy kept on file at the treatment facility.

c. The maximum storage time for medical waste is that set forth in the approved facility plan. Treatment facilities, unlike generators, are not necessarily limited to 90 days of storage.

d. The treatment facility must employ one or more of the following approved treatment methods to render the waste nonbiohazardous:

(1) steam treatment, (R18-8-141B);

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(2) chemical disinfection, (R18-8-1411C);

(3) incineration, (R18-8-1411D);

(4) microwaving, (R18-8-1411E);

(5) radiation, (R18-8-1411F);

(6) grinding, (R18-8-1411G);

(7) any other method approved by ADEQ where the treatment provides protection equal to that provided by the other designated methods, (R18-8-1411J). Compaction is specifically prohibited. (R18-8-1411M).

(8) Further processing after initial treatment is required for recognizable human tissue, organs, body parts and infected animals to render such waste nonrecognizable.

e. A treatment facility must also make a record of the treatment of such wastes and maintain the records for at least 3 years. The record must include the following:

(1) State of origin of the biohazardous medical waste.

(2) The weight or volume of biohazardous medical waste treated.

(3) The date of treatment.

(4) The duration of time for each treatment cycle.

(5) The method used to confirm the effectiveness of the treatment and the test results.

(6) The date and result of all equipment calibration and maintenance.

f. A treatment facility must also prepare and submit to ADEQ a biohazardous medical waste management plan in accordance with R18-8-1415C.

10. **What is required of a landfill?**

a. Only a landfill approved by ADEQ to accept municipal waste may accept medical waste.

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b. An approved landfill which is municipally owned or constructed for the purpose of complying with A.R.S. § 49-1441 must accept properly treated biohazardous medical waste, untreated biohazardous medical waste generated by a small quantity generator, and untreated biohazardous medical waste from any person exempted under R18-8-1404 unless the county, city or town has provided for alternative disposal of such waste.

c. An approved landfill not operated for the purpose of complying with A.R.S. § 49-741 may accept the same types of treated or untreated biohazardous medical waste set forth immediately above.

d. Prior to acceptance, the owner and operator of an approved landfill must verify that the biohazardous medical waste is properly packaged in accordance with R18-8-1406. If it is not properly packaged, the landfill must do one of the following:

(1) Refuse to accept the waste.

(2) Accept the waste and immediately repackage it in accordance with R18-8=1407.

(3) Accept the waste and transfer it directly to the open face of the landfill and immediately cover it.

C. Current Arizona Department of Health Services Regulations

The Arizona Department of Health Services ("ADHS") currently regulates certain aspects of the handling and disposition of medical wastes generated by certain health care institutions. (These regulations will be superseded to a large extent once the new ADEQ biohazardous medical waste rules become effective.) The type and level of regulation imposed depends upon the specific classification of the health care facility generating the waste.

1. General Hospital.

A "general hospital" is a subclass of hospital that provides inpatient beds and other hospital services, both surgical and non-surgical, to patients who have any variety of medical conditions. A.A.C. R9-10-212.15). A general Hospital must ensure that all "potentially

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hazardous wastes"[1] such as wastes from isolation rooms and materials contaminated with secretions, excretions or blood, patient care or laboratory animal care wastes, laboratory wastes and the like be sterilized by autoclaving and buried in an approved landfill or incinerated in an approved incinerator. (A.A.C. R9-10-220.E). In addition, a general hospital must adopt written policies concerning syringe and needle storage, handling and disposal. (A.A.C. R9-10-220.H).

2. **Rural General Hospital**.

A "rural general hospital" is a subclass of hospital having fifty or fewer inpatient beds serving an area not located less than twenty surface miles from another general hospital or rural general hospital and which provides hospital services. (A.A.C. R9-10-312.9). A rural general hospital must ensure that all "potentially hazardous wastes" are sterilized by autoclaving and buried in an approved landfill or incinerated in an approved incinerator. (A.A.C. R9-10-320.E). If, however, only one autoclave is available and no incinerator is available, the waste must be double-bagged, clearly marked and taken to an approved landfill. Id. In such event, the operator of the landfill shall be notified and immediate burial assured. Id. A rural general hospital also must develop written policies concerning syringe and needle storage, handling and disposal. (A.A.C. R9-10-320.H).

3. **Special Hospitals**.

Special hospitals include, but are not limited to, hospitals limiting admissions to patients requiring care or treatment for substance abuse, services for the terminally ill, psychiatric services, reconstructive surgery or services in rehabilitation medication, obstetrical or gynecological services, and the treatment of pain or stress. (A.A.C. R9-10-411.B). Special hospitals are subject to the same requirements with respect to the handling and disposal of medical waste as discussed previously with respect to general hospitals. (A.A.C. R9-10-420).

4. **Hospices**.

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[1]Although the regulations do not define the term "potentially hazardous wastes," it is clear the regulations intend that the term encompass more than "hazardous waste" as regulated under the federal Solid Waste Disposal Act, as amended.

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A hospice is defined as a "hospice service agency" or the provision of hospice services in an inpatient facility. (A.R.S. 36-401.19). A "hospice service agency" is an agency or organization engaged in providing hospice services at the place of residence of its clients. (A.R.S. 36-401.21). "Hospice service" means a program of palliative and supportive care for the terminally ill and their families or caregivers. (A.R.S. § 36-401.20). A hospice providing hospice services to a patient in a hospital must ensure that contaminated dressings and similar materials are disposed of in a sanitary landfill approved by ADEQ. (A.A.C. R9-10-811.D.3). If an approved sanitary landfill is not available, contaminated waste must be disposed of by an incinerator approved by the appropriate air quality control agency having jurisdiction. Id. In those counties with no air quality control agency, the incinerator facility must meet ADEQ standards. Id. The regulations do not define the term "contaminated dressings" or "contaminated waste".

5. Nursing Care Institutions.

A "nursing care institution" is an institution or other place, however named, whether for profit or otherwise, including facilities operated by the state or a subdivision of the state, which is advertised, offered, maintained or operated for the express or implied purpose of providing care to persons who need nursing service on a continuing basis, but who do not require hospital care or care under the daily direction of a physician. (A.R.S. § 36-446.7). A nursing care institution must meet the same requirements as to the proper handling and disposal of medical wastes discussed above with respect to hospices. (A.A.C. R9-10-921.A.3).

6. Infirmaries.

An "infirmary" is a class of health care institution having thirty or less inpatient beds and providing limited hospital services to the staff and students of a school, the members of an association, or the clients or wards of a public agency. (A.A.C. R9-10-1212.4). An infirmary must meet the same requirements as to the proper handling and disposal of medical waste as discussed previously with respect to rural general hospitals. (A.A.C. R9-10-1220).

7. Clinical Laboratories.

A "clinical laboratory" is any facility, agency, institution, medical office, health care institution, building, or place which provides through its ownership

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or operation facilities for the microbiological, serological, chemical, immunohematological, hematological, cytologic, histologic, radiobioassay, cytogenetic, histocompatibility, pathological, toxicological or other examination of materials derived from the human body for the purpose of providing information or the diagnosis, prevention and treatment of a disease or an impairment or the assessment of human health conditions or to determine the presence, absence or concentration of various substances in the body. (A.R.S. § 36-451.4). The regulations generally require that all clinical laboratories be maintained and operated in a manner which prevents undue physical, chemical and biological hazards to its employees or other members of the community. (A.A.C. R9-14-209.A). To this end, among other requirements, cultures and specimens must be discarded, and all other potentially infectious materials, must be sterilized before disposal by either steam under pressure, dry heat, chemical disinfectant, or in an incinerator approved by the appropriate air pollution control office having jurisdiction. (A.A.C. R9-14-109.17). In addition, all sewage and liquid wastes must be discharged into a municipal sewage system where such a system is available.[2] (A.A.C. R9-24-109.A.20). Where a municipal sewage system is not available, sewage and liquid wastes must be collected, treated and disposed of in a manner approved by the Arizona Department of Health Services. Id.

III. FEDERAL MEDICAL WASTE TRACKING ACT OF 1988

In November, 1988, Congress adopted the Medical Waste Tracking Act of 1988 (the "Act") as part of the Solid Waste Disposal Act. See 42 U.S.C.A. §§ 6992 through 6992K. The Act established a demonstration program for the tracking of medical waste in New York, New Jersey, Connecticut, the states contiguous to the Great Lakes (Illinois, Indiana, Michigan, Minnesota, Ohio, Pennsylvania, and Wisconsin), and any other state requesting to participate. See 42 U.S.C.A. § 6992.a. As a result of various opt out provisions set forth in the Act, the Act and its requirements applied only in Connecticut, New Jersey, New York, Rhode Island, and Puerto Rico (the "Covered States").

The demonstration program established in the Act was effective from June 22, 1989 to June 22, 1991 in

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[2]A regulated clinical laboratory should check applicable pretreatment requirements before discharging certain liquid wastes into the sewage system.

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CHAPTER 4

SPECIAL WASTE REGULATION

A debate arose in the 1991 regular session of the Arizona Legislature about whether a variety of wastes should be regulated as solid or hazardous. As a result, a new category of waste, known as "special waste," was created. Special wastes are to be regulated differently than either solid or hazardous wastes.

The special waste law has been amended during both the 1992 and 1993 Arizona legislative sessions. The 1992 legislation modified the statutory deadlines and limited the number of wastes required to be studied for special waste designation. See Ch. 54, 1992 Ariz. Sess. Laws. The 1993 emergency legislation, which is already effective, revamped the special waste designation process to cede the leadership role in the process to the Director of the Arizona Department of Environmental Quality ("ADEQ") and to limit the role of the Special Waste Best Management Practices Advisory Committee. See Ch. 200, 1993 Ariz. Sess. Laws. In addition, the number of wastes to be studied was reduced, and criteria for designation of special wastes and for the restudy of a waste for special waste designation were codified for the first time. Id.

"Special waste" is defined by statute to mean a solid waste (as defined by A.R.S. § 49-701), other than a hazardous waste, that requires special handling and management to protect public health and the environment and that is listed in A.R.S. § 49-852 or in rules adopted pursuant to A.R.S. § 49-854. There are a number of specific exemptions to the definition, including medical waste, waste that contains regulated radioactive materials, and various agricultural-related materials. See A.R.S. § 49-851(A)(9).

I. WASTES DESIGNATED AS SPECIAL BY STATUTE

At the time the special waste legislation was enacted, two types of wastes were statutorily designated as special wastes: (1) asbestos or materials containing asbestos; and (2) waste from shredding motor vehicles. A.R.S. § 49-852(A). The terms "asbestos" or "asbestos containing material" are defined to mean "friable asbestos material containing more than one percent asbestos by weight and that hand pressure can crumble, pulverize or reduce to powder when dry." A.R.S. § 49-851(A)(1). Auto shredder waste is not defined by the statute. ADEQ has adopted best management practices by emergency rule for these two statutorily designated special wastes.

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II. WASTES DESIGNATED AS SPECIAL AFTER STUDY

In addition to the two listed special wastes, the statute provides for the possible designation of additional special wastes by the ADEQ Director in consultation with the Special Waste Best Management Practices Advisory Committee ("Advisory Committee"). The Advisory Committee is comprised of 15 members serving four year terms. The Committee's function is to advise and make recommendations to the ADEQ Director regarding the designation of wastes as special wastes and the adoption of best management practices for the treatment, storage, and disposal of special wastes. A.R.S. § 49-853.

A. Waste Designation Study Process

The special waste statute contains (1) a list of wastes that the ADEQ Director must determine whether or not to designate as special wastes and (2) a process for studying wastes listed as special in other states, but not in Arizona, for possible designation as such in Arizona. A.R.S. § 49-854.

Due to a lack of scientific expertise, the Legislature created a list of 15 wastes for the Director to study, in consultation with the Advisory Committee, for possible designation as special wastes. See A.R.S. § 49-854. The final determination on each waste must be made by January 1, 1995. Of the wastes on the study list, the ADEQ Director has already determined that petroleum contaminated soil and incinerator ash should be designated as special wastes. Rulemaking is currently underway designating those two wastes as special wastes and adopting best management practices. The ADEQ Director is currently studying the 13 other wastes listed in the statute.

The Legislature has also mandated that the ADEQ Director compile a list by July 1, 1995, and annually update thereafter, of all wastes that have been designated as special wastes in other states that have not been designated as hazardous, special or medical wastes in Arizona. A.R.S. § 49-854(B). The ADEQ Director may study and designate any waste on this list for possible designation as a special waste in Arizona in consultation with the Advisory Committee. A.R.S. § 49-854(C). If the ADEQ Director decides to formally study a waste on this list, public notice of this decision must be given. A.R.S. § 49-854(B).

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B. Special Waste Designation Criteria

In determining whether a waste should be designated as a special waste, the ADEQ Director and the Committee must consider the potential adverse effects on public health or the environment from the treatment, storage, transportation or disposal of each waste based on:

1. The acute and chronic toxicity for those wastes including the human or animal data for aquatic, dermal, inhalation and oral exposures,

2. The carcinogenic, mutagenic or teratogenic effects of those wastes on humans or other life forms,

3. The degree to which the wastes or degradation products of those wastes are persistent or bioaccumulative in the environment,

4. Information and studies from other states and the federal government if the Committee or ADEQ Director finds them to be derived from standard protocols, and

5. Other appropriate scientific data, environmental testing or analytical data. A.R.S. § 49-854(F).

C. Restudy of Wastes for Designation

The ADEQ Director can only study a waste for special waste designation that has already been studied if there has been a change in the waste stream or there is newly identified scientifically reliable evidence which creates or demonstrates potential adverse effects on the public health or the environment from the treatment, storage, transportation or disposal of the waste in Arizona. A.R.S. § 49-854(D). Public notice of this decision to restudy a waste must be given. A.R.S. § 49-854(E)

D. Designation of Wastes as Special Wastes

The ADEQ Director must give public notice of the decision whether or not to designate a waste as special. A.R.S. § 49-854(G). If the decision is to designate, the Director must designate the waste as a special waste and adopt best management practices ("BMPs") for the waste by rule within 18 months of giving public notice. A.R.S. § 49-854(H). The

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designation and the adoption of the BMPs must occur in the same rulemaking. A.R.S. § 49-854(I).

III. ADOPTION OF SPECIAL WASTE BEST MANAGEMENT PRACTICES

As stated above, once the ADEQ Director decides to designate a waste as special, BMPs must be adopted by rule within 18 months. A.R.S. § 49-854(H).

A. Definition of BMPs

BMPs are defined to mean "a method or combination of methods that is used in the treatment, storage and disposal of a special waste that achieves that maximum practical cost effective protection of public health or the environment." A.R.S. § 49-851(A)(2). The BMPs are to contain "procedures necessary for the protection of public health and the environment for the transportation, treatment, storage, and disposal of special wastes." A.R.S. § 49-855(C). In addition, the BMPs must include a maximum time limit (not less than 90 days) for storage of such wastes, and a fee of not more than two dollars per ton for special waste that is transported to a facility in the state for treatment, storage or disposal. A.R.S. § 49-855(C). Transfers of special waste between facilities managed, owned or operated by the generator and on-site transfers are exempt from the tonnage fee. A.R.S. §§ 49-863(G) & (H).

B. BMP Criteria

The ADEQ Director must consider the following factors in adopting BMPs for special wastes:

1. The availability, effectiveness, economic feasibility and technical feasibility of alternative handling or management technologies and practice,

2. The potential nature and severity of the effect on public health and the environment resulting from the special waste,

3. Circumstances under which the practices shall be applied including climatological, geological and hydrogeological conditions, and

4. Consistency with other federal and state laws and rules in an effort to avoid practices or requirements that duplicate, are inconsistent with or result in dual regulation under other federal and state laws, rules and regulations. A.R.S. § 49-855(B).

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IV. REGULATION OF SPECIAL WASTE

A. Transportation, Treatment, Recycling, Storage and Disposal

In addition to BMPs, special waste will be subject to other regulations. ADEQ is required by statute to adopt rules by September 1, 1993 to implement the provisions of special waste statute, including a manifest form to track the movement of special wastes. See A.R.S. § 49-856(A). The draft special waste manifest rules are currently in the rulemaking process. Asbestos and auto shredder waste and all other special wastes will be subject to the manifest requirements within three months of the adoption of BMPs for those wastes. See A.R.S. § 49-852(C); § 49-856(B). Within three months of the adoption of BMPs for a waste designated as a special waste:

1. Persons who generate, transport, offer to transport or receive that waste for off-site treatment, recycling, storage or disposal must comply with ADEQ's rules and manifest requirements;

2. Transportation of the special waste must only be by a licensed transporter, and

3. Treatment, storage or disposal facilities of special waste is authorized only at ADEQ-authorized facilities. A.R.S. § 49-856(B).

In 1991, the Legislature adopted definitions for "disposal" and "treatment" applicable to special waste. See Ch. 315, § 36, 1991 Ariz. Sess. Laws. These definitions, however, have not been codified. "Disposal" is defined as "discharging, depositing, injecting, dumping, spilling, leaking or placing regulated waste into or on land or water so that the regulated waste or any constituent of the regulated waste may enter the environment, be emitted into the air or discharged into any waters, including groundwater." "Treatment" is defined as "any method, technique or process, including neutralization, designed to change the physical, chemical or biological character or composition or the regulated waste so as to neutralize such waste or to render such waste safer for transport amendable for recovery, amenable for storage or reduced in volume or toxicity." ADEQ has recommended to the Legislature changes in the definitions of "treatment" and "disposal" for purposes of the special waste program. See Letter from Edward Z. Fox, Director, Arizona Department of Environmental Quality, to Senator Peter Rios, Senate President (March 2, 1992), pp. 5-6. No action has been taken, however, by the Legislature.

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Notwithstanding references to "recycling" of special waste (see, e.g., A.R.S. § 49-856(B)), there is no definition of this term for special waste purposes. The Director of ADEQ has recommended to the Legislature that the definition of "recycling" in A.R.S. § 49-831(21) relating to solid waste also be used for the special waste program. See Letter from Edward Z. Fox, Director, Arizona Department of Environmental Quality, to Senator Peter Rios, Senate President (March 2, 1992), p. 6. For purposes of solid waste, "recycling" is defined as "the process of collecting, separating, cleansing, treating and reconstituting post-consumer materials that would otherwise become solid waste and returning them to the economic stream in the form of raw material for reconstituted products which meet the quality standards necessary to be used in the marketplace, but does not include incineration or other similar processes." A.R.S. § 49-831(21). No action has been taken, however, by the Legislature.

A special waste that also qualifies as a hazardous material under the federal Hazardous Material Transportation Act, will be subject to federal transportation requirements. See 49 U.S.C. §§ 1801 et seq.; A.R.S. § 49-856(B).

B. Special Waste Management Planning Requirements

Each facility that plans to manage a special waste must submit to ADEQ a full solid waste facility plan along with a special waste management component (for that portion of the facility engaged in the treatment, storage or disposal of special waste) that complies with the BMPs for each type of special waste handled. Upon approval of the plan, the Director may collect a "reasonable" fee based on ADEQ's total cost in processing the plan. A.R.S. § 49-857(C). Facilities which treat, store or dispose of a special waste only as a result of an "episodic" release are not subject to the special waste management plan requirements. A.R.S. § 49-857(D). Those few facilities that managed special wastes (asbestos, asbestos containing material or auto shredder waste) on the date the original special waste statute was effective (July 3, 1991) can continue to operate if they comply with certain interim facility filing requirements. See A.R.S. § 49-858.

The statute prescribes time periods and procedures by which ADEQ must comply in response to an application for special waste facility plan approval. See A.R.S. § 49-857.01. Also, ADEQ must approve of any major

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modification from an approved plan. ADEQ's disapproval is subject to judicial review.

C. Reporting Requirements

Separate reporting requirements are imposed on generators, shippers and facilities that treat, store or dispose of special waste.

1. Generators

Generators who treat, store or dispose of special waste are required to keep records of the volume or weight of each type of special waste handled. They are to report annually by March 1 the volume or weight of type of special waste treated, stored or disposed of on-site or off-site for the preceding year, the methods and practices used to minimize the toxicity of wastes that were disposed of and the volume or weight of waste shipped for purposes of treatment, recycling, storage or disposal between facilities mange or operated by the same operator. See 49-860(C).

2. Shippers

Shippers required to comply with the special waste manifest procedures must report annually by March 1 a shipping description and the volume or weight of each type of special waste shipped during the preceding year and information regarding the facility to which each special waste was shipped. A.R.S. § 49-860(A).

3. Facilities

Facilities that receive from off-site a special waste for treatment, storage or disposal must report annually by March 1 the shipping descriptions, volume or weight, information relating to the generator and methods and practices for treatment, storage and disposal of each special waste received during the preceding year. See A.R.S. § 49-860(B).

D. Importation Ban

Special waste facilities owned by the State, a county or a municipality are forbidden from accepting wastes designated as special in Arizona from out-of-state for treatment, storage or disposal. A.R.S. § 49-867.

E. Enforcement

ADEQ may inspect special waste facilities, but must also provide an opportunity for a representative of

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the owner or operator of the facility to accompany the inspector and must provide the facility owner or operator with a copy of the inspection report within 30 days of the inspection. A.R.S. § 49-865. Under limited conditions, the ADEQ Director may order the installation of monitoring and pollution control devices at a special waste facility. A.R.S. § 49-866.

ADEQ is authorized to issue compliance orders if the Director has reasonable cause to believe that a person is violating a special waste law or regulation. A.R.S. § 49-862(A). Any final agency order issued pursuant to the special waste provisions of state law is appealable to Superior Court. A.R.S. § 49-868. The Attorney General, at the request of the ADEQ Director, may apply to the Superior Court to enjoin anyone violating an administrative order or engaged in activity that causes an imminent and substantial endangerment to public health or the environment. A.R.S. § 49-862(B) & (C).

Persons who violate state special waste statutes or rules are subject to civil penalties of up to $10,000 per day for each violation. A.R.S. § 49-861(B). A person who knowingly violates a special waste law can is subject to punishment as a class 6 felony. A.R.S. § 49-861(A). A conviction can result in a fine of up to $1,000,000 for corporate violations. A.R.S. § 13-803(A)(1).

Any person subject to regulation under Arizona environmental laws who has been convicted of a felony involving special waste laws or who has been subject in any civil proceeding to an injunction, decree, judgment or permanent order of any state or federal court involving the violation of a special waste law must file a certificate of disclosure with ADEQ pursuant to A.R.S. § 49-109. Certificates are required to be filed annually after the person first becomes subject to the disclosure requirement. A.R.S. § 49-109(E). Corporations may submit annual 10-K forms in lieu of a certificate of disclosure. A.R.S. § 49-109(G).

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CHAPTER 5

HAZARDOUS WASTE REGULATION

I. INTRODUCTION TO HAZARDOUS WASTE REGULATION

Congress passed the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. § 6901 et seq., in 1976 to respond to growing public concern about the disposal of hazardous wastes. RCRA broadly established that "the generation of hazardous waste is to be reduced or eliminated as expeditiously as possible. Waste that is nevertheless generated should be treated, stored, or disposed of so as to minimize the present and future threat to human health and the environment." 42 U.S.C. § 6902(b). Accordingly, Congress directed EPA to establish a "cradle-to-grave" regulatory regime to control the generation, transportation and treatment, storage and disposal of hazardous wastes.

Arizona followed the federal lead, enacting the Arizona Hazardous Waste Management Act (HWMA), 49 A.R.S. § 49-920 et seq., which grants ADEQ authority to regulate hazardous wastes. See A.R.S. § 49-922(A). ADEQ chose to adopt, by reference and with minor modifications, the bulk of the federal RCRA regulations in effect as of June 30, 1990. See, e.g., A.A.C. R18-8-260. ADEQ maintained essentially the same numbering system as the federal system, so, for example, the federal regulations at 40 C.F.R. § 261.5 and the state regulations at A.A.C. R18-8-261.5 contain the same language.

Hazardous waste regulation conceptually may be broken into several segments: (1) program scope, determined by identifying the presence of hazardous waste; (2) regulations applicable to generators of hazardous waste; (3) regulations applicable to transporters of hazardous waste; and (4) regulations applicable to owners and operators of hazardous waste treatment, storage and disposal (TSD) facilities. Each of these four segments are briefly profiled below. A detailed analysis follows in the succeeding sections.

A. Determining Whether a Material Is a Hazardous Waste Subject to Regulation Under RCRA and the HWMA.

Under HWMA and RCRA, the first step in determining whether one is subject to hazardous waste regulation is determining whether a material is a hazardous waste. The process begins by determining whether a material is

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a "solid waste." RCRA and HWMA define "hazardous waste" as a subset of "solid waste."

The RCRA regulations have provided a more precise definition of solid waste than the statute. A solid waste is defined by the regulations as any "discarded material" not expressly excluded by the regulations. § 261.2(a)(1). A material is considered "discarded" if it is "abandoned", "recycled" in certain ways, or considered an "inherently waste-like material." Examples of wastes excluded from the definition of solid waste are domestic sewage, certain wastes discharged to a publicly-owned sewage treatment works, discharges of industrial wastewater subject to regulation under the Clean Water Act, and certain secondary materials that are reclaimed or reused.

Once it is determined that a waste is a "solid waste", the generator must determine if that waste is hazardous. § 261.11. This is done by first determining whether, as a solid waste, it is excluded from regulation under a second set of exclusions found in § 261.4(b). (Note that under one set of exclusions, § 261.4(a), a "waste" is excluded from the definition of "solid waste"; under a second set of exclusions, § 261.4(b), a "solid waste" is excluded from the definition of "hazardous waste".) Examples of solid wastes not considered hazardous are household wastes, certain agricultural wastes, and certain mining and utility wastes.

If the solid waste is not excluded from regulation, it must be determined if the waste is hazardous. Hazardous waste is defined by statute as:

> a solid waste, or combination of solid wastes, which because of its quantity, concentration or physical, chemical or infectious characteristic may
>
> (A) cause or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness or
>
> (B) pose a substantial or potential hazard to human health or the environment when improperly treated, stored, transported or disposed of, or otherwise managed.

42 U.S.C. § 6903(5). A similar definition is provided in the HWMA, A.R.S. § 49-921.5.

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Again, the regulations implementing RCRA provide a far more precise definition of hazardous waste. To determine if a waste is hazardous, one first determines whether the waste is "listed". Subpart D of 40 C.F.R. Part 261 contains lists of wastes and discarded commercial products that EPA has identified as hazardous. These have also been adopted as state regulations. See A.A.C. R18-8-261.A.

If the waste is not listed, the next step is to determine if the waste exhibits a hazardous characteristic. This can be done either by testing the waste using EPA approved methods or by applying knowledge of the hazardous characteristics of the waste based on its constituents. Under either of these methods, it must be determined if the waste is hazardous by exceeding any of the thresholds for "ignitability", "corrosivity", "reactivity" or "toxicity". §§ 261.20 through 261.24.

A more detailed discussion of hazardous waste identification procedures and recycling options is provided in Part II of these materials.

B. Regulations Applicable to Hazardous Waste Generators

Under HWMA and RCRA, a generator of solid waste must determine if the solid waste is hazardous. § 261.11. If a hazardous waste is generated, then the generator must comply with regulations applicable to generators of hazardous waste, i.e., 40 C.F.R. § 262; A.A.C. § R18-8-262.

First the generator must determine the level of regulation to which he is subject. The regulations establish three levels of generators: (1) the "large quantity generator," which produces more than 1,000 kg of hazardous waste in a calendar month; (2) the "small quantity generator," which produces between 100 and 1,000 kg of hazardous wastes in a calendar month; and (3) the "conditionally exempt small quantity generator," which produces no more than 100 kg of hazardous waste in a calendar month. These levels are lower for "acutely" hazardous wastes.

The large quantity generator is subject to the full set of generator regulations. The small quantity generator can accumulate waste on site longer than the large quantity generator and is subject to reduced reporting and storage requirements, but is otherwise subject to full regulation. See § 262.34; § 262.44. The conditionally exempt small quantity generator is exempt from most regulation, but still must make the

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hazardous waste determination described above, must not exceed accumulation amount and time limits, and must properly dispose of the wastes. See § 261.5.

Hazardous waste generators are required to meet the following general types of requirements: (1) make a hazardous waste determination for each solid waste generated on the property; (2) obtain an EPA identification number; (3) use manifests for all hazardous waste shipped offsite; (4) prepare appropriate "Land Ban" certifications; (5) comply with all pretransport regulations; and (6) comply with recordkeeping and reporting requirements. A more detailed explanation of the generator requirement is found in Part III of these materials.

C. Regulations Applicable to Hazardous Waste Transporters

Hazardous waste transporters are also subject to RCRA's "cradle to grave" regulation of hazardous waste. Transporters may not accept hazardous wastes from a generator unless it is accompanied by a hazardous waste manifest. § 263.20(a). Very precise regulations provide for the subsequent handling of the hazardous waste and the manifest. In addition, the transporter is required to deliver the entire amount of hazardous waste that it accepted from a generator to a designated TSD facility listed on the manifest or an alternate designated facility (but only if the waste cannot be delivered to the designated facility because of an emergency), or the next designated transporter, or the place outside the United States designated by the generator. § 263.21. If the hazardous waste cannot be delivered as directed, the transporter must contact the generator. Finally, the transporter is subject to recordkeeping requirements similar to those applicable to generator. § 263.22.

In addition to requirements under RCRA, hazardous waste transporters are regulated by the federal Hazardous Materials Transportation Act (HMTA), 49 U.S.C. § 1801 et seq. These requirements, as well as a more detailed discussion of RCRA and HWMA requirements, will be found in Part IV of these materials.

D. Regulations Applicable to Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities

Generally, permits must be obtained prior to the construction and operation of any facility for the treatment, storage or disposal (TSD) of hazardous waste. EPA has adopted two sets of regulations applicable to

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owners and operators of TSD facilities. Under 40 C.F.R. § 265, EPA regulates "interim status" facilities, i.e., those facilities which have applied for a permit but for which a permit has not yet been issued. Permitted facilities are regulated under 40 C.F.R. Part 264. The reason for the two different sets of regulations is that the permitting process for a TSD facility is extremely complex and can take years to complete. Therefore, there are hundreds, if not thousands, of facilities in the country which have applied for a TSD permit, but which are awaiting permit approval.

Owners and operators of TSD facilities are also part of the RCRA "cradle to grave system." RCRA considers the "owner" as "the person who owns a facility or part of a facility" and "operator" as "the person responsible for the overall operation of facility." § 260.10. Owners and operators of all TSD facilities are required to obtain permits from EPA. When one person owns a facility but another person operates it, it is the operator's duty to obtain the permit and the owner must also sign the permit application. § 270.10(b).

Many of the regulations mirror those applicable to hazardous waste generators who have stored hazardous waste onsite for extended periods. The regulations generally govern waste analysis, inspection requirements, personnel training, preparedness and prevention regulations, contingency plan and emergency procedures, a manifest system, recordkeeping, and reporting, and groundwater monitoring requirements. 40 C.F.R. Part 265, subparts A-F.

Very stringent requirements are applicable to TSD facilities that cease operation (referred to in regulatory parlance as "closure"). Owners and operators are required to develop a closure plan prior to closure. § 265.112. The plan must provide for disposal or decontamination of equipment, structures, and soils that are contaminated with hazardous wastes. § 265.114. The object of closure is to close the facility to minimize the need for further maintenance and control, minimize or eliminate, "to the extent necessary to protect human health and the environment, postclosure escape of hazardous waste or constituents to the environment." § 265.111. If such migration of hazardous constituents cannot be limited, postclosure care of the facility is required. Owners and operators are also required to demonstrate financial assurance -- the financial capacity to undertake closures and post-closure care, if necessary.

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Specific regulations regarding the operation of TSD facilities which utilize containers, tank systems, surface impoundments, waste piles, land treatment, landfills, incinerators, thermal treatment, or chemical, physical and biological treatment, are covered by other regulations.

Further detail on closure, postclosure, groundwater monitoring and corrective action is provided in Part V of these materials.

E. The Land Ban

In 1984, Congress passed the Hazardous and Solid Waste Amendments to prohibit the land disposal of untreated hazardous wastes. This program, known as the Land Ban or Land Disposal Restrictions (LDRs), operates as a separate, but related, regulatory regime for controlling hazardous wastes.

Principally, the Land Ban program forbids the land disposal of hazardous wastes unless they meet specified treatment standards, which are based on the "Best Demonstrated Available Technology" (BDAT). Generators of hazardous waste are required to certify that each shipment either meets the BDAT standard or certify to the designated treatment, storage or disposal facility the proper treatment standard. For some wastes, EPA has established a treatment method, rather than a numeric standard. These standards are designated by a five letter code, such as INCIN for incineration. Where a specific treatment standard is specified, only that treatment method is acceptable.

Because adequate treatment capacity may not be available when a BDAT standard is established, RCRA grants EPA leeway to establish "capacity variances," either on a national or case-by-case basis. A capacity variance allows the continued handling of the Land Banned waste during the variance. The duration of such variances is strictly limited, however.

The Land Ban program is discussed in more detail in Part VI of these materials.

F. Liability and Enforcement Issues

RCRA provides a broad array of sanctions for violations of statutory or regulatory requirements. These include administrative or judicial relief to date "imminent and substantial endangerment" under Section 7003; corrective action orders to remediate contamination; and civil and criminal penalties. These

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sanctions are discussed in more detail in Part VII of these materials.

II. DETERMINING WHETHER A MATERIAL IS A HAZARDOUS WASTE SUBJECT TO REGULATION UNDER RCRA AND THE HWMA

The RCRA and HWMA definitions of solid and hazardous waste are fundamental to the proper understanding of the scope and operation of the hazardous waste management program in Arizona. Because the Subtitle C regulations are limited to "hazardous wastes," which are defined as a subset of "solid wastes," the definitions limit the jurisdictional reach of Subtitle C by limiting the types of materials that are considered "wastes" or, if wastes, "hazardous wastes."

RCRA establishes a two-stage process for determining whether a material is a hazardous waste subject to regulation. To oversimplify somewhat, in the first stage one determines whether the material is a solid waste. If not, the material is not subject to RCRA Subtitle C regulation. If the material is a solid waste, one next determines whether it is excluded from regulation. If the material is not excluded, the material is a solid waste. In the second stage, if the solid waste is either listed as a hazardous waste in the Code of Federal Regulations (or Arizona Administrative Code if the Director exercises his authority under A.R.S. § 49-922) or exhibits a characteristic of hazardous waste (i.e., ignitability, corrosivity, reactivity or toxicity), the solid waste is a hazardous waste subject to Subtitle C regulation unless excluded. Material also may become a hazardous waste if it is "derived-from" or "mixed" with certain hazardous wastes.

In Shell Oil Co. v. EPA, 950 F.2d 741 (D.C. Cir. 1991), the U.S. Court of Appeals for the District of Columbia Circuit struck down the "mixture" and "derived from" rules as adopted in violation of the Administrative Procedure Act. The ramifications of this decision are discussed later in this Part of the materials.

OBSERVATION ON THE RELATIONSHIP OF STATUTES, REGULATIONS, PREAMBLES, POLICY STATEMENTS AND JUDICIAL DECISIONS

Before proceeding to the definition of solid and hazardous waste, it is useful to examine the relationship of statutes, regulations, preambles, policy statements and judicial decisions to each other. Each plays an important role in properly interpreting the

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Subtitle C program. Their diversity also makes the Subtitle C program one of the most complex administrative systems in existence. As is the case with complex systems, there are times when all parts of the system do not point in the same direction. When this happens, understanding which provisions are more authoritative than others provides guidance as to the proper answer.

The starting point for interpreting the Subtitle C program is the statutory language enacted by Congress or the Legislature. The statute is the primary moving force; it defines the problem, establishes mechanisms to address the problem and imposes limitations on those mechanisms. Statutory provisions are "law" in the purest sense.

Regulations are promulgated by EPA (or ADEQ at the state level) to implement the statutory provisions. Regulations may clarify statutory provisions and control agency action within the bounds permitted by the statute. Regulations have the force of law, but may not contravene the statute. If a regulation contravenes the statute, the regulation is subject to being invalidated in court. Although regulations are subordinate to the statute, courts often look to them for guidance on what a statutory provision means.

Preambles and policy statements, unlike regulations, do not have the force of law. Instead, they are statements of the agency's rationale for adopting regulations or statements of the agency's position on various issues that may arise. Preambles and policy statements are important because they frequently provide the clearest guidance on how the agency will respond to a given situation. Preambles and policy statements will usually bind the agency to its announced interpretation. Guidance documents, such as compliance manuals and EPA memoranda, also provide evidence of the agency's interpretation. Unlike preambles and policy statements, however, guidance documents do not bind the agency to its stated position.

Unlike statutes and regulations, which are expressions of positive law, judicial decisions primarily serve the function of interpreting what a statute or regulation "really" means. Thus, judicial decisions determine which of a statute's or regulation's several possible meanings is the correct meaning. Once a judicial decision has determined the correct meaning, that meaning is the definitive interpretation of the statute or regulation until the statute or regulation is amended or a contrary judicial decision is reached. A judicial decision, particularly by the United States or

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Arizona Supreme Court or a court of appeals, is thus the most authoritative source for determining legal requirements.

It is the interrelationship of statute, regulation, preamble and policy statement with judicial decisions that makes determining when a material is a solid or hazardous waste such a complex process.

A. Definition of Solid Waste

The first step in determining whether a material is a hazardous waste is to determine whether the material is a solid waste. RCRA defines solid waste as follows:

> The term "solid waste" means any garbage, refuse, sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility and other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations, and from community activities . . .

42 U.S.C. § 6903(27); see also A.R.S. § 49-701(11) (similar Arizona definition). It is particularly important to note that the definition of solid waste is not limited to "solids" but also encompasses semisolids, liquids and contained gaseous matter. The statutory definition of solid waste is thus very broad.

The regulatory definition of solid waste, which is found in § section 261.2, is much more detailed. The regulations define solid waste as follows:

> A solid waste is any discarded material that is not excluded by § 261.4(a) or that is not excluded by variance granted under §§ 260.30 and 260.31.

§ 261.2(a)(1) (emphasis in original). The exclusions and the definition of "discarded material" are examined below.

1. Exclusions from the Definition of Solid Waste

As a matter of abstract legal theory, one should first determine whether a material is a solid waste before determining whether the material is excluded from the definition of solid waste. As a practical matter, however, it is frequently more time efficient to first

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determine whether a material is excluded from the definition of solid waste.

RCRA itself excludes "a solid or dissolved material in domestic sewage, or a solid or dissolved materials in irrigation return flows or industrial discharges which are point sources subject to permits under section 1342 of title 33, or source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1954, as amended," 42 U.S.C. § 6903(27), from the definition of solid waste.

The regulations expand the RCRA statutory domestic sewage exclusion to "[a]ny mixture of domestic sewage and other wastes that passes through a sewer system to a publicly-owned treatment works for treatment," § 261.4(a)(1)(ii), and adds four additional exclusions for in-situ mining techniques, pulping liquors, spent sulfuric acid and so-called "closed-loop" recycling. § 261.4(a). Of the eight regulatory exclusions, three are of particular interest: (1) the publicly owned treatment work ("POTW") exclusion; (2) the point source discharge regulated by Clean Water Act exclusion; and (3) the closed-loop recycling exclusion.

The POTW exclusion excludes from regulation under RCRA sanitary wastes from domestic residences that are discharged into a sanitary sewer system which is treated by a publicly owned treatment work. See Comite pro Rescate de la Salud v. Puerto Rico Aqueduct & Sewer Auth., 888 F.2d 180 (1st Cir. 1989), cert. denied, 494 U.S. 1029 (1990). Both the POTW and the point source discharge exclusions exist because Congress believed that these sources were sufficiently regulated under the Clean Water Act and that additional regulation under RCRA would be unnecessarily burdensome.

The closed-loop recycling exclusion provides that "[s]econdary materials that are reclaimed and returned to the original process or processes in which they were generated where they are reused in the production process" are not solid wastes, provided that (1) the entire process is enclosed "with pipes or other comparable enclosed means of conveyance," (2) reclamation does not involve controlled flame combustion, (3) the secondary materials are never accumulated in excess of twelve months, and (4) the reclaimed materials are not used to produce fuel or used in a manner that constitutes disposal. See 40 C.F.R. § 261.4(a)(8). The exclusion frees from regulation substances that are never exposed to the ambient environment and hence pose little threat to human health or the environment.

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2. Discarded Material

After determining that the material is not excluded from the definition of solid waste by any of the eight exclusions, the next step is to determine whether the material is "discarded" within the meaning of the regulations. Section 261.2 provides that a discarded material is "any material" which is abandoned, recycled, or considered "inherently wastelike."

a. Abandoned

Materials are considered abandoned if they are (1) disposed of, (2) burned or incinerated, or (3) accumulated, stored, or treated (but not recycled) before or in lieu of being abandoned by being disposed of, burned or incinerated. See § 261.2(b).

b. Recycled

A material may also be considered a solid waste if it is recycled in certain ways (or accumulated, stored or treated before such recycling), depending on the nature of the material. See § 261.2(c). The four ways in which a recycled material may be considered a solid waste are as follows:

(i) Used in a manner constituting disposal

Materials are used in a manner constituting disposal when they are "applied to or placed on the land in a manner that constitutes disposal" or used to produce products or contained in products that are applied to or placed on the land. See § 261.2(c)(1). This provision seeks to prevent disposal in the guise of "recycled" products such as asphalt or fertilizer which are then placed permanently on the land. In EPA's view, such practices are a little different from uncontrolled land disposal. There is an exception, however, for commercial chemical products listed in § 261.33 which are ordinarily applied to the land.

(ii) Burned for energy recovery

Materials which are (1) burned to recovery energy or (2) used to produce a fuel or contained in a fuel are also considered solid wastes. Once again, EPA's concern is that burning for energy recovery is frequently a sham for disposal activities. An exception exists for commercial chemical products listed in § 261.33 if they are fuels. See § 261.2(c)(2).

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(iii) Reclaimed materials

Unlike the two previous categories, not all materials that are reclaimed are automatically considered to be solid wastes. Instead, only certain types of secondary materials are solid wastes when reclaimed. See § 261.2(c)(3).

(A) Solid waste when reclaimed

The following materials are "solid waste" when reclaimed:

(1) Spent material - A spent material is "any material that has been used and as a result of contamination can no longer serve the purpose for which it was produced without processing." § 261.1(c)(1).

(2) Listed sludges - Certain sludges that are listed in sections 261.31 or 261.32 are considered solid wastes when reclaimed. See § 261.2(c)(3) & Table 1. A sludge is generally "any solid, semisolid, or liquid waste generated from a municipal, commercial, or industrial wastewater treatment plant, water supply treatment plant, or air pollution control facility, exclusive of the treated effluent from a wastewater treatment plant." See § 260.10.

(3) Listed by-products - By-products listed in §§ 261.31 or 261.32 are solid wastes if reclaimed. See § 261.2(c)(3) & Table 1. By-product is defined as "a material that is not one of the primary products of a production process and is not solely or separately produced by the production process . . . The term does not include a co-product that is produced for the general public's use and is ordinarily used in the form it is produced by the process." § 261.1(c)(3). It appears that a material is either a sludge or a by-product, but cannot be both. EPA has stated that the by-product category "includes most secondary materials that are not spent materials or sludges." See 50 Fed. Reg. 614, 618 (Jan. 4, 1985).

(4) Scrap metal - Scrap metal is "bits and pieces of metal parts . . . or metal pieces that may be combined together with bolts or soldering . . . which when worn or superfluous can be recycled." Id. § 261.1(c)(6).

(B) Materials that are not solid waste when reclaimed

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Unlisted sludges and by-products, even those exhibiting a characteristic of hazardous waste as discussed below, and commercial chemical products listed in section 261.33, are not solid wastes when reclaimed. See § 261.2 Table 1.

(iv) Speculative Accumulation

Any material that will be recycled is deemed a solid waste if it is "accumulated speculatively." See § 261.1(c)(8). A person may avoid speculative accumulation, however, by showing that the material is potentially recyclable, has a feasible means of being recycled and that at least 75 percent by weight or volume of the material accumulated during the previous calendar year has been recycled. Id. The purpose of the speculative accumulation rule is to prevent evasion of RCRA hazardous waste regulations by a mere claim that materials eventually will be recycled.

c. Inherently Wastelike Materials

Certain materials are deemed solid wastes regardless of how they are handled, the so-called "inherently wastelike materials." Other materials may be added to the list of inherently wastelike materials if they are (1) ordinarily disposed of, burned, or incinerated, or contain Appendix VIII toxics constituents not ordinarily found in the raw materials for which the materials substitute and (2) the material may pose a substantial hazard to human health in the environment when recycled. See § 261.2(d).

3. Direct Reuse Recycling Exceptions

If the material meets the "discarded material" criteria discussed above by being abandoned, recycled under certain circumstances, or being inherently wastelike, then the material is a solid waste unless excepted by § 261.2(e)'s provisions on "materials that are not solid wastes when recycled." Section 261.2(e) will exclude a material from the definition of solid waste if any of the following conditions are met:

a. the material is used or reused as an ingredient in an industrial process to make a product, providing that the materials are not being reclaimed;

b. the material is used or reused as an effective substitute for a commercial product; or

c. the material is returned to the original process from which it was generated without first being reclaimed. The material must be returned as a

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substitute for the raw material feedstock, and the process must use raw materials as the principal feedstock.

See 40 C.F.R. § 261.2(e)(1).

The § 261.2(e) direct reuse recycling exception is limited, however. Materials used in a manner constituting disposal, materials burned for energy recovery, materials accumulated speculatively and materials that are inherently wastelike are all excluded from qualifying under the direct reuse recycling exception. See § 261.2(e)(2).

B. American Mining Congress v. EPA

In American Mining Congress v. EPA, 824 F.2d 1177 (D.C. Cir. 1987) (AMC I), industry representative from the mining and petroleum industries challenged EPA's definition of solid waste outlined above. The industries contended that EPA had exceeded its regulatory authority under RCRA by seeking to regulate secondary materials used in industry's ongoing production processes. Such materials, industry contended, are not discarded and hence not "waste." See id. at 1178, 1180-81.

After comprehensively evaluating RCRA's language and legislative history, the District of Columbia Circuit held that

> Congress clearly and unambiguously expressed its intent that "solid waste" (and therefore EPA's regulatory authority) be limited to materials that are "discarded" by virtue of being disposed of, abandoned, or thrown away.

Id. at 1193 (footnote omitted). The court reasoned that RCRA's definition of solid waste was quite specific and indicated Congress' intent to limit the term's reach. The court also reasoned that by listing "other discarded materials" with garbage, sewage and sludges from waste and water treatment plants or air pollution control facilities (all of which are clearly discarded), Congress "meant to grant EPA authority over similar types of waste, but not to open up the federal regulatory reach of an entirely new category of materials, i.e., materials neither disposed of nor abandoned, but passing in a continuous stream or flow from one process to another." Id. at 1190 (footnote omitted).

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AMC I thus invalidates the regulatory definition of solid waste to the extent that definition includes "materials neither disposed of nor abandoned, but passing in a continuous stream or flow from one production process to another." EPA issued a proposed rule in 1988 giving its interpretation of the AMC I opinion. See 53 Fed. Reg. 519 (Jan. 8, 1988), but the rule was never finalized. In subsequent cases, both EPA and the District of Columbia Circuit have tended to view AMC I as applying only to "ongoing manufacturing or industrial process' within the 'generating industry," see, e.g., American Petroleum Inst. v. EPA, 906 F.2d 729, 741 (D.C. Cir. 1990) (emphasis in original), or to materials "destined for immediate reuse in another phase of the industry's ongoing production process," see, e.g., American Mining Congress v. EPA, 907 F.2d 1179, 1186 (D.C. Cir. 1990) (AMC II) (emphasis in original). The exact contours of the definition of solid waste as it applies to recycled materials, particularly recycled materials that are reclaimed, thus remains unclear. Perhaps the best interpretation is that materials clearly destined for immediate reuse are not subject to RCRA, materials that are clearly set aside for some period of time (even if not discarded) are probably subject to RCRA and materials falling between these two extremes may or may not be subject to RCRA.

C. The Definition of Hazardous Waste

The first and most important criterion determining whether a material is a hazardous waste is that the material must first be a solid waste. If the material is not a solid waste, it cannot be a hazardous waste. See § 261.3(a).

Once it is determined that the material is a solid waste under the definition of solid waste outlined above, whether the solid waste is also a hazardous waste is determined in one of four ways. First, the solid waste is a hazardous waste if it is listed as a hazardous waste in §§ 261.31, 261.32 or 261.33. Second, the solid waste is a hazardous waste if it exhibits a characteristic of hazardous waste, which includes ignitability, corrosivity, reactivity and toxicity. A solid waste may also become a hazardous waste by operation of the "derived-from" and "mixture" rules, which are designed to prevent dilution and surreptitious disposal of hazardous wastes, although the decision in Shell Oil Co. v. EPA may result in changes to this rule. See generally 950 F.2d 741 (D.C. Cir. 1991).

1. Exclusions

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As was the case with the definition of solid waste, as a practical matter it is easier to begin with the exclusions from the definition of hazardous waste rather than first determining whether the waste is hazardous and then determining whether it is excluded. The exclusions from the definition of hazardous waste are found in § 261.4(b). The most important of these exclusions follow:

a. Household wastes, which means "any material (including garbage, trash and sanitary wastes in septic tanks) derived from households (including single and multiple residences, hotels and motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds and date use recreation areas)." § 261.4(b)(1).

b. Petroleum-contaminated debris, provided that it only fails the toxicity characteristic for nonmetals and is subject to 40 C.F.R. Part 280 (the underground storage tank provisions). See § 261.4(b)(6). EPA has proposed to make this exemption permanent, see 58 Fed. Reg. 8504 (Feb. 12, 1993), and to temporarily extend it to petroleum contaminated debris from non-underground storage tank sources pending collection of additional data, see 57 Fed. Reg. 61542 (Dec. 24, 1992). The exemption would be limited to states with adequate enforcement authorities to address petroleum spills.

c. Bevill Amendment solid wastes, which include solid waste from the extraction and beneficiation of ores and minerals, certain solid wastes from the processing of ores and minerals, certain solid wastes from the combustion of fossil fuels and cement kiln dust and drilling fluids, and produced waters and other wastes from the development and production of oil, natural gas and geothermal resources. See § 261.4(b)(4), (7) & (8).

d. Process unit wastes, which include wastes found in process units or natural resource pipelines or conveyances are not subject to regulation until removed from the unit or the waste remains in the unit more than 90 days after the unit ceases operation. See § 261.4(c).

e. Non-terne plated used oil filters, which are drained and not mixed with wastes listed as hazardous pursuant to subpart C if the filters have been gravity hot-drained by an approved method. § 261.4(b)(15) (not yet adopted in Arizona).

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f. Chlorofluorocarbons destined for reclaiming, if removed from a totally enclosed heat transfer unit in a refrigeration system. § 261.4(b)(12) (not yet adopted in Arizona).

2. Listed Hazardous Wastes

If a solid waste is not excluded from the definition of hazardous waste by §§ 261.4(b) and is listed in §§ 261.31, 261.32 or 261.33 (with certain exceptions), the solid waste is hazardous waste (unless it is excluded or "delisted" pursuant to sections 260.20 and 260.22.) See § 261.3(a)(2)(ii)-(iv). Section 261.31 lists various hazardous wastes from nonspecific sources. Section 261.32 lists hazardous wastes derived from specific sources, such as wood preservation activities, inorganic pigments, primary copper, etc. Finally, § 261.33 lists various commercial chemical products, off-specification products, container and spill residues of commercial chemical products that become hazardous

> if and when they are discarded or intended to be discarded as described in § 261.2(a)2(i), when they are mixed with waste oil or used oil or other material applied to the land for dust suppression and road treatment, when they are otherwise applied to the land in lieu of their intended use or when the are contained with products that are applied to the land in lieu of their intended use, or when, in lieu of their intended use, they are produced for use as (or as a component of) a fuel, distributed for use as a fuel or burned as a fuel.

§ 261.33. Materials found in §§ 261.31, 261.32 or 261.33 are known as listed hazardous wastes.

Although as a general rule a solid waste listed in § 261.31, 261.32 or 261.33 will always be a hazardous waste, there are a few exceptions. First, a mixture of a solid waste and a listed hazardous waste will not be a hazardous waste if the listed hazardous waste was listed solely because it exhibits a characteristic of hazardous waste and (1) the mixture does not exhibit that characteristic or (2) the solid waste is excluded from regulation by the Bevill Amendment (§ 261.4(b)(7)) and the mixture does not exhibit the characteristic for which the hazardous waste was listed. See § 261.3(a)(2)(iii). Second, certain mixtures of solid wastes and listed hazardous wastes are excluded by § 261.3(a)(2)(iv).

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3. Characteristic Hazardous Wastes

In addition to being listed as a hazardous waste, a solid waste is a hazardous waste if it exhibits a characteristic of hazardous waste. There are four hazardous characteristics: ignitability, corrosivity, reactivity and toxicity. Each of these characteristics are examined in turn.

a. Ignitability

A solid waste exhibits the characteristic of ignitability if a representative sample

(i) is a liquid and has a flash point of less than 60 degrees Celsius,

(ii) is not a liquid and is capable under standard temperature and pressure, of causing fire through friction, absorption of moisture or spontaneous chemical changes, and when ignited, burns so vigorously and persistently that it creates a hazard.

(iii) is an ignitable compressed gas, or

(iv) is an oxidizer as defined in 49 C.F.R. § 173.151. See § 261.21.

b. Corrosivity

A solid waste exhibits the characteristic of corrosivity if a representative sample:

(i) is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5, or

(ii) is a liquid and corrodes steel at a rate greater than 6.35 mm per year at 55 degrees Celsius. See § 261.22.

c. Reactivity

A solid waste exhibits the characteristic of reactivity if a representative sample has any of the following properties:

(i) is normally unstable and readily undergoes violent change without detonating,

(ii) reacts violently with water,

(iii) forms a potentially explosive mixtures with water,

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(iv) when mixed with water generates toxic gases, vapors, or fumes in quantities sufficient to present a danger to human health or the environment,

(v) is a cyanide or sulfide bearing waste which when exposed to pH conditions between 2 and 12.5 can generate toxic gases, vapors or fumes in a quantity to be sufficient to present a danger to human health or the environment,

(vi) is capable of detonation or explosive reaction if subjected to a strong initiating source or heated under confinement,

(vii) is readily capable of detonation at standard temperature and pressure,

(viii) is a forbidden explosive as defined in 49 C.F.R. § 173.51 or a Class A or B explosive as defined in 49 C.F.R. §§ 173.53 or 173.88. See § 261.23.

d. Toxicity

A solid waste exhibits the characteristic of toxicity if, using various test methods described in Appendix II of the regulations (the "Toxicity Characteristic Leaching Procedure" or "TCLP"), the solid waste contains any of the contaminants listed in Table 1 at a concentration equal to or greater than the regulatory level given in that table. See § 261.24. Table 1 reads as follows:

TABLE 1 - MAXIMUM CONCENTRATION OF CONTAMINANTS FOR THE TOXICITY CHARACTERISTIC

EPA HW No.1	Contaminant	CAS No.2	Regulatory Level (mg/L)
D004	Arsenic	7440-38-2	5.0
D005	Barium	7440-39-3	100.0
D018	Benzene	71-43-2	0.5
D006	Cadmium	740-43-9	1.0
D019	Carbon tetrachloride	56-23-5	0.5
D020	Chlordane	57-74-9	0.03
D021	Chlorobenzene	108-90-7	100.0
D022	Chloroform	67-66-3	6.0
D007	Chromium	7440-47-3	5.0

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D023	o-Cresol	95-48-7	[4] 200.0
D024	m-Cresol	108-39-4	[4] 200.0
D025	p-Cresol	106-44-5	[4] 200.0
D026	Cresol		[4] 200.0
D016	2,4-D	94-75-7	10.0
D027	1,4-Dichlorobenzene	106-46-7	7.5
D028	1,2-Dichloroethane	107-06-2	0.5
D029	1,1-Dichloroethylene	75-35-4	0.7
D030	2,4-Dinitrotoluene	121-14-2	[3] 0.13
D012	Endrin	72-20-8	0.02
D031	Heptachlor (and its epoxide)	76-44-8	0.008
D032	Hexachlorobenzene	118-74-1	[3] 0.13
D033	Hexachlorobutadiene	87-68-3	0.5
D034	Hexachloroethane	67-72-1	3.0
D008	Lead	7439-92-1	5.0
D013	Lindane	58-89-9	0.4
D009	Mercury	7439-97-6	0.2
D014	Methoxychlor	72-43-5	10.0
D035	Methyl ethyl ketone	78-93-3	200.0
D036	Nitrobenzene	98-95-3	2.0
D037	Pentrachlorophenol	87-86-5	100.0
D038	Pyrdine	110-86-1	[3] 5.0
D010	Selenium	7782-49-2	1.0
D011	Silver	7440-22-4	5.0
D039	Tetrachloroethylene	127-18-4	0.7
D015	Toxaphene	8001-35-2	0.5
D040	Trichloroethylene	79-01-6	0.5
D041	2,4,5-Trichlorophenol	95-95-4	400.0
D042	2,4,6-Trichlorophenol	88-06-2	2.0
D017	2,4,5-TP (Silvex)	93-72-1	1.0
D043	Vinyl chloride	75-01-4	0.2

1 Hazardous waste number.

2 Chemical abstracts service number.

3 Quantitation limit is greater than the calculated regulatory level. The quantitation limit therefore becomes the regulatory level.

4 If o-, m-, and p-Cresol concentrations cannot be differentiated, the total cresol (D026) concentration is used. The regulatory level of total cresol is 200 mg/l.

* * * * *

An earlier version of the toxicity characteristic test, known as the Extraction Procedure Toxicity test or EP Toxicity, tested for only 14 of the

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40 contaminants now analyzed in the TCLP. Certain other procedures also varied.

4. The Mixture and Derived-From Rules

As promulgated in 1980, the mixture rule provided that a mixture of a solid waste and a listed hazardous waste is a hazardous waste, see § 261.3(b)(2), unless the listed hazardous waste (1) has been excluded under the § 260.20 and 260.22 delisting procedures; (2) was listed solely because it exhibits a characteristic of hazardous waste and the mixture does not exhibit that characteristic; or (3) the mixture is excluded by § 261.3(a)(2)(iv). Mixtures of a solid and a characteristic waste are hazardous if the mixture exhibits a hazardous characteristic. Mixtures of a characteristic waste and a solid waste excluded by the Bevill Amendment, § 261.4(b)(7), from regulation as a hazardous waste are excluded from regulation if the mixture does not exhibit any of the characteristics of the non-excluded characteristic waste, but only the characteristics of the excluded Bevill waste. See § 261.3(a)(2)(i).

As promulgated in 1980, the derived-from rule provided that, unless specifically exempted from the derived-from rule, "any solid waste generated from the treatment, storage, or disposal of a hazardous waste, including any sludge, spill residue, ash, emission control dust or leachate (but not including precipitation run-off) is a hazardous waste." See § 261.3(c)(2)(i). Materials reclaimed from solid wastes that are beneficially reused are not solid, and hence not hazardous wastes, unless the reclaimed material is burned for energy recovery or used in a manner constituting disposal. Id. Currently, the only wastes exempted from the derived-from rule are waste pickle liquor sludge and waste derived from the burning of any materials exempted from regulation by § 261.6(a)(3)(v)-(ix).

In Shell Oil Co. v. EPA, 950 F.2d 741 (D.C. Cir. 1991), the District of Columbia Circuit ruled on industry challenges to the mixture and derived-from rules that had been brought eleven years earlier. The court held that

> because the EPA has not provided adequate notice and opportunity for comment, we conclude that the mixture and derived-from rules must be set aside and remanded to the EPA.

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950 F.2d at 752. The court went on to state, however, that

> [i]n light of the dangers that may be posed by a discontinuity in the regulation of hazardous wastes, however, the agency may wish to consider reenacting the rules, in whole or part, on an interim basis under the "good cause" exemption of 5 U.S.C. § 553(b)(3)(B) pending full notice and opportunity for comment.

Id. Because of the procedural defect in the rules' promulgation, the District of Columbia Circuit did not address industry's substantive challenges to the rules. In ruling on EPA's subsequent petition for rehearing, the court also declined to address the retroactive effect of its holding vacating the rules and remanding them to EPA.

EPA promptly promulgated an interim final rule reinstating the mixture and derived-from rules for a one year period, see 57 Fed. Reg. 7628 (Mar. 3, 1992), which was subsequently extended. Simultaneously, EPA published a notice of proposed rulemaking announcing its intention to propose alternatives to the mixture and derived-from rules by April 28, 1992. See 57 Fed. Reg. 7636 (Mar. 3, 1992). In the notice, EPA invited comment on the appropriateness of retaining the existing mixture and derived-from rules and solicited possible alternative approaches.

In United States v. Goodner Brothers Aircraft, Inc., 966 F.2d 380 (8th Cir. 1992), cert. denied, 113 S. Ct. 967 (1993), the Eighth Circuit addressed the retroactivity question the District of Columbia Circuit had declined in EPA's petition for rehearing. The government argued that the rules remained in force because the State had incorporated them by reference in its rules. The Eighth Circuit declined to address this contention because the prosecution had been brought under the federal, and not the state, statute and regulations. Instead, the Eighth Circuit reasoned that since the District of Columbia Circuit had "vacated" the original mixture and derived-from rule, the rules were null and void ab initio and hence of no force. Accordingly, the Eighth Circuit held that a criminal conviction for improper waste disposal must be reversed and remanded for a new trial because the court could not determine whether the jury had relied on the invalidated mixture rule. Goodner thus stands for the proposition that the mixture and derived-from rules at the federal

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level were without force from 1980 until March 3, 1992, when EPA repromulgated them in interim final form.

5. Special Rules for Used Oil

Numerous special rules govern used oil. The most significant are the rebuttable presumption and the exemption for used oil that is recycled.

a. Rebuttable presumption

Used oil containing more than 1000 ppm total halogens is presumed to be a hazardous waste because of mixing with halogenated hazardous waste. § 261.3(a)(2)(v). The presumption may be rebutted by demonstrating that subpart D wastes are not present, that the oil in a metalworking oil containing chlorinated paraffins, or is contaminated by chlorofluorocarbons (CFCs) from refrigeration units, where the CFCs are destined for reclamation. Id. Arizona has yet to adopt these provisions as part of A.A.C. R18-8-261. The rebuttable presumption does appear in the A.A.C. R18-8-266 provisions on used oil burning for energy recovery.

b. Used oil that is recycled

Used oil that is recycled and is a hazardous waste solely because it exhibits a characteristic is not subject to the requirements of parts 260-268, but is regulated under part 279 (Used Oil Management). Recycled oil includes oil that is re-refined, reclaimed, burned for energy recovery or reprocessed. § 261.6(a)(4). Arizona has yet to adopt EPA's new part 279 program for used oil.

D. When Is a Hazardous Waste No Longer a Hazardous Waste?

1. General Rule

A hazardous waste is no longer a hazardous waste when it meets the following criteria:

a. In the case of any solid waste, it does not exhibit any of the characteristics of a hazardous waste identified in Subpart C.

b. In the case of the waste which is a listed waste under Subpart D, contains a waste listed under Subpart D or is derived from a waste listed in Subpart D, [the waste] also has been excluded from paragraph (c) under §§ 260.20 and 260.22 of [the regulations.]

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Characteristic wastes thus lose their status as hazardous wastes when they no longer exhibit any characteristic of hazardous waste. Listed hazardous wastes retain their status as hazardous wastes until delisted pursuant to § 260.20 and 260.22.

2. Delisting Provision

Sections 260.20 and 260.22 provide procedures to exclude (or "delist") a particular facility's waste from regulation as a listed hazardous wastes. In order to delist its waste, the facility must show that (1) its waste "does not meet any of the criteria under which the [class of wastes] was listed as a hazardous or acutely hazardous waste" and (2) the Administrator has "a reasonable basis to conclude" that no other factors would warrant retaining the waste as hazardous. See § 260.22(a). Delisted wastes may still be hazardous wastes if they exhibit a characteristic of hazardous waste. Id.

Similar provisions exist to exclude wastes regulated by virtue of the "mixture rule," provided the demonstration is made for the mixture as a whole. A slightly higher standard applies to wastes listed due to ignitability, corrosivity, reactivity or toxicity. The petitioner must show that the waste does not meet any of the four criteria "using any applicable methods," § 260.22(c)(1), in addition to showing no other factors exist justifying retention. § 260.22(c). Even more stringent standards govern the delisting of toxic and acutely hazardous wastes. See, e.g., § 260.22(d) & (e). A delisted hazardous waste may still be a hazardous waste if it exhibits a characteristic of hazardous waste. Id.

E. Proposed Hazardous Waste Identification Rule

In 1992, EPA proposed and then withdrew the Hazardous Waste Identification Rule (HWIR), 57 Fed. Reg. 21450 (May 20, 1992). EPA had proposed HWIR in response to the District of Columbia Circuit's invalidation of the mixture and derived-from rules in Shell Oil and the Chemical Manufacturers Association's earlier petition to establish concentration-based exclusion levels in the Subtitle C program. In the HWIR, EPA proposed to amend the existing RCRA Subtitle C regulations radically to provide methods for wastes to exit the hazardous waste management program. EPA proposed three principal options for consideration: the Concentration-Based Exemption Criteria (CBEC) option; the Enhanced Criteria Option (ECHO); and certain Contingent Management Exemptions. EPA ultimately withdrew the rule in the

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face of heavy criticism from the states and environmental groups.

The CBEC option would have established a set of numeric criteria at which RCRA Subtitle C jurisdiction would end for listed hazardous wastes. If a waste contains hazardous constituents at concentrations at or below these levels, management requirements for the wastes would be left to the RCRA Subtitle D program and the States. The ECHO approach would have expanded the existing toxicity characteristic from its current 39 heavy metal and hazardous organic constituents to as many of the Appendix VIII hazardous constituents as possible. Wastes determined to be hazardous under the ECHO approach would be subject to all applicable Subtitle C regulations to the same extent that characteristic hazardous wastes are currently subject to Subtitle C regulations. EPA also proposed a third option, which EPA characterized as "contingent management exemptions," that would recognize that the current mismanagement assumptions used in developing the RCRA Subtitle C program do not always accurately reflect waste disposal practices. The contingent management exemptions would apply to wastes that exceed CBEC or ECHO levels, but are lower than a second, higher set of constituent-specific exemption levels. These wastes would be conditionally exempt from Subtitle C regulations so long as certain management practices were met.

Although EPA ultimately withdrew the HWIR, EPA has convened a working group made up of industry and environmental representatives to assess alternative ways of defining hazardous waste. The HWIR thus may have been the first step in radically rethinking the existing RCRA hazardous waste definition.

III. REGULATIONS APPLICABLE TO HAZARDOUS WASTE GENERATORS

If a waste is determined to be a hazardous waste pursuant to the procedures outlined in Part II above, the waste is a hazardous waste subject to regulation under RCRA and the HWMA. Accordingly, the generator of that waste must comply with a number of regulatory requirements.

A. Waste Determinations and Analyses

1. Waste Determinations, 40 C.F.R. § 262.11

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A generator is required to determine that its wastes are not hazardous wastes under the procedure outlined in Part II above.

2. Waste Analyses, 40 C.F.R. § 268.7(a)(4) (land disposal restrictions)

a. General Requirements

The generator of a hazardous waste must test the waste or a waste extract developed using the Part 268, Appendix 1 test method, or use knowledge of the waste to determine whether the hazardous waste is restricted from land disposal. § 268.7(a). Special requirements apply as follows: hazardous wastes listed in Part 268 or RCRA § 3004(d) must be tested as follows: (i) liquid wastes (as determined by Method 9095) must be tested on the basis of the whole waste (no extract) or knowledge of the waste; (ii) liquid wastes containing PCBs and liquid or nonliquid wastes containing HOCs must be tested on the basis of the whole waste (no extract) or knowledge of the waste; (iii) wastes listed in Section 268.43 must be tested on the basis of the whole waste or treatment residual (no extracts), with compliance determined by grab samples unless otherwise noted in Table CCW; and (iv) special requirements apply to lab packs. See § 268.7(a)(7)-(8).

b. Recordkeeping requirements

If the generator determines that the waste is restricted solely due to knowledge of the waste, the generator must retain all supporting data in its on-site files. If the generator's determination is based on a test of the waste or waste extract, all waste analysis data must be retained on-site in files. § 268.7(a)(4). § 268.7(a)(5).

The generator also must retain on-site a copy of all notices, certifications, wastes analysis data and other documentation for at least 5 years from the date that waste type was last sent for treatment, storage or disposal. The file retention period is extended during unresolved enforcement actions. § 268.7(a)(b).

3. Generator Treatment Analysis Requirements

If the generator is managing a "restricted waste" under Part 268 in tanks or containers and treating it to meet Part 268, Subpart D standards, § 268.7(a)(4), the generator must meet the treatment analysis requirements under the Land Ban program. These requirements include:

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a. development and implementation of a written waste analysis plan which (i) describes procedures to comply with treatment standards; and (ii) is kept on-site in Generator's records. § 268.7(a)(4).

b. The waste analysis plan must meet the following requirements: (i) the plan must be based on chemical and physical analysis of a representative sample of the hazardous waste, must contain information on treatment that meets all Part 268 land disposal requirements, including testing frequency. § 268.7(a)(4)(i); (ii) must be filed with the Regional Administrator or State (which has received authorization for the Part 268 program) 30 days prior to treatment activity. Delivery must be verified.

c. Additional requirements apply if the facility is a RCRA treatment facility. See § 268.7(b) et seq.

B. Determination of Generator Status

1. Generator Status

Once a generator determines that it has generated a hazardous waste, the generator must determine its "generator status." The regulations establish three levels of generators: (1) large quantity generators, which generate more than 1000 kg of hazardous waste per month; (2) small quantity generators, which generate 100 to less than 1000 kg per month; and (3) conditionally exempt small quantity generators, which generate less than 100 kg a month of hazardous waste.

The determination of what level of regulation applies is made on a calendar month basis. For example, if a generator produces 99 kg of hazardous waste in January, that waste is conditionally exempt. If, in February, it produces 101 kg, that waste is subject to the small quantity generator regulations. If, in March, it generates 1,001 kg, that waste is subject to full regulation. Thus, the same generator can be subject at different times to different levels of regulation.

Also, more stringent regulation is applied to "acute" hazardous wastes identified at §§ 261.31, 261.32 and 261.33(e) of the regulations. If a generator produces more than 1 kg of acute hazardous waste in a calendar month, or more than 100 kg of residue, contaminated soil, waste, or other debris resulting from a spill of an acute hazardous waste, that waste is subject to full regulation. § 261.5(e). In addition,

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acute hazardous waste is subject to more stringent accumulation and storage limits. § 261(f).

It is important to keep in mind the point at which a waste is generated. Many commercial processes are "closed," meaning they reuse the same chemicals over and over again. The regulations provide that a waste generated in a

> product or raw material storage tank, a product or raw material transport vehicle or vessel, a product or raw material pipeline, or in a manufacturing process unit or an associated non-waste-treatment-manufacturing unit, is not subject to regulation. . . . until it exits the unit in which it was generated, or unless . . . [it] remains in the unit more than 90 days after the unit ceases to be operated. . . ."

§ 261.4(c). Thus, even though wastes are accumulated in a process tank over several months, they are not counted until they are removed.

2. Consequences of Generator Classification

The large quantity generator is subject to the full set of generator requirements. The small quantity generator can accumulate wastes on site longer than the large quantity generator and is subject to reduced reporting and storage requirements, but is otherwise subject to full regulation. See §§ 262.34; 262.44. The conditionally exempt small quantity generator, on the other hand, is exempt from most of the hazardous waste management regulations, but still must make the hazardous waste determination described above in II.A, must not exceed the accumulation amount and time limits, and must properly dispose of its wastes.

a. The Conditionally Exempt Small Quantity Generator

The conditionally exempt small quantity generator (CESQG) must comply with the hazardous waste determination requirements of § 262.11, set forth above in Part II.A. The CESQG's wastes will remain exempt from hazardous waste regulation so long as the generator complies with the requirements of §§ 261.5(f)-(g) and (j). These sections permit the CESQG to accumulate acute hazardous waste or less than 100 kg of hazardous waste on-site per calendar month, so long as no more than 1000 kgs of hazardous waste, 1 kg of acute

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hazardous waste, or 100 kg of debris contaminated with acute hazardous waste is accumulated on-site at any one time. §§ 261.5(f)(2); 261.5(g)(2). Moreover, the CESQG is only permitted to dispose of the wastes by sending it to a permitted or interim status facility; a solid waste landfill permitted by the State to manage municipal or industrial waste pursuant to the Arizona Solid Waste Management Act, A.R.S. § 49-701 et seq.; or a facility which will beneficially reuse or legitimately recycle or reclaim the waste. §§ 261.5(f)(3); 261.5(g)(3). Special rules apply to CESQG wastes mixed with used oils. Essentially, these mixtures are regulated under the rules pertaining to used oils, see Part 266.

b. Large and Small Quantity Generators

Both large and small quantity generators are subject to essentially full regulation, although small quantity generators have longer accumulation periods and reduced requirements. The discussion that follows tracks the large quantity generator requirements. Special requirements applying to small quantity generators will be noted where appropriate.

C. EPA ID Number, Manifesting and Certification Requirements

1. EPA ID Number

A hazardous waste generator must obtain an EPA ID number. § 262.12(a). The generator may not offer hazardous waste to a transporter or TSD facility that does not have an EPA ID Number. § 262.12(c).

2. Manifest System

a. General provisions

A hazardous waste generator must complete a manifest for the shipment off-site of all hazardous wastes unless the generator is a small quantity generator (100 to 1,000 kg/mo hazardous waste) and the waste is reclaimed pursuant to a contractual agreement meeting certain specified requirements.

Manifests are obtained from (1) the consignment (receiving) state; (2) generator (source) state; or (3) anywhere else in that order. § 262.21. The generator is responsible for preparing the manifest. The generator must have a sufficient number of copies for the generator, each transporter, the owner or operator of the designated treatment, storage or disposal facility, plus one copy to be returned to the generator

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by the designated facility. § 262.22. Special rules apply to water or rail shipments. See § 262.23(c)-(e).

The manifest must be signed by hand by the generator and the transporter's representative upon delivery to the transporter. The generator retains one copy; the rest of the copies are given to the transporter. § 262.23(a)-(b). The generator also keeps the copy of manifest returned from the designated facility for its files.

Within 45 days following the end of the month of shipment, the generator must forward to ADEQ a copy of the signed manifest received from the designated facility (or an Exception Report under § 262.42, if necessary).

b. Exception reporting

If the generator does not receive a copy of the signed manifest from the owner or operator of the designated TSD facility within 35 days of delivery of the hazardous waste to the initial transporter, the generator must contact the designated facility. § 262.42(a)(1). If the generator has not received the signed manifest copy within 45 days, the generator must file an exception report with ADEQ. The exception report must include the following information:

(i) a legible copy of the manifest for which the confirmation of delivery is missing;

(ii) a cover letter signed by the generator or its authorized representative explaining efforts to locate the hazardous waste and the results of those efforts. § 262.42(a)(2).

3. Land Ban Certification Requirements

The Land Ban certification requirements are applicable to all hazardous wastes regulated by RCRA § 3004(d) and 40 C.F.R Part 268. These wastes include: (i) solvent wastes listed in § 268.30;(ii) dioxin containing wastes listed in § 268.31; (iii) California list wastes listed in § 268.32; (iv) First third wastes listed in § 268.33; (v) Second third wastes listed in § 268.34; (vi) Third Third wastes listed in § 268.35, and newly identified wastes. The Land Ban program is discussed in detail in Part VI.

a. Exemptions

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Certain wastes or circumstances are exempt from the Land Ban certification requirements. These include: (i) wastes for which an extension has been granted pursuant to § 268.5; (ii) wastes for which an exemption has been granted pursuant to a petition under § 268.6; (iii) waste generated by conditionally exempt small quantity generator (less than 100 kg/mo. of hazardous; less than 1 kg/mo. acutely hazardous waste); (iv) farmers disposing of waste pesticides under § 262.51; (v) wastes that are hazardous only because they exhibit a characteristic and are prohibited by this Part 268, if they are disposed in an injection well (40 C.F.R. § 144.6(a)) and exhibit no prohibited characteristic at the time of injection; (vi) wastes listed as hazardous after November 8, 1984 for which EPA has not promulgated LDR regulations. § 268.1(e)(3).

b. Requirements if a waste is restricted and does not meet Part 268, Subpart D treatment standards

If a hazardous waste is a restricted waste and does not meet the Part 268, Subpart D treatment standards, the generator must provide the following certification and information to the TSD facility with each shipment: (i) EPA Hazardous Waste Number; (ii) corresponding treatment standards and applicable prohibitions in § 268.32 or RCRA § 3004(d); (iii) corresponding treatment standards for wastes F001-F005, F039 and wastes prohibited pursuant to § 268.32 or RCRA § 3004(d). Other waste treatment standards may be referenced by waste subcategory, treatability group(s) and CFR section and paragraph. Where specified by § 268.42, the appropriate 5-letter code must be used; (iv) manifest number of the hazardous waste; (v) waste analysis data, where available.

c. Certification and information requirements if hazardous waste is restricted and can be land disposed without additional treatment

If the hazardous waste is a restricted waste and can be land disposed without additional treatment, the generator must provide the following information: (i) the same information required above; and give the following certification, signed by an authorized representative:

> I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and

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testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR Part 268 Subpart D and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA section 3004(d). I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification, including the possibility of a fine and imprisonment.

§ 268.7(a)(2)(ii). Different provisions will apply if the restricted hazardous waste is exempted or subject to a variance. See § 268.7(a)(3); 268.7(a)(4).

D. Packaging, Labeling and Marking Requirements

The generator must package the hazardous waste in accordance with DOT regulations at 49 C.F.R. §§ 173, 178, 179. § 262.30. The packages must be labelled in accordance with DOT regulations at 49 C.F.R. § 172, and marked as follows: (i) each package must be marked pursuant to 49 C.F.R. 172; (ii) Mark each container of less than 110 gallons with "Hazardous Waste" pursuant to 49 C.F.R. 172.304:

HAZARDOUS WASTE - Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or the U.S. Environmental Protection Agency.

Generator's Name and Address:_____.
Manifest Document Number:_____.

§ 262.32. In addition to these requirements, the generator must placard or offer initial transporter appropriate placards pursuant to 49 C.F.R. § 172, Subpart F. § 262.33.

E. Accumulation Requirements

1. General Rule

a. Large quantity generators

A generator may accumulate hazardous waste on-site for 90 days or less if:

(i) The hazardous waste is placed in either containers that comply with Part 265, Subpart I, or tanks that comply with 40 C.F.R. 265, subpart J

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(except §§ 265.197(c) and 265.200). § 262.34(a)(1).

(ii) The date upon which each period of accumulation begins is clearly marked and visible for inspection on each container. § 262.34(a)(2).

(iii) The containers and tanks are clearly labeled or marked with the words "Hazardous Waste."

(iv) The generator must keep a written log of inspections conducted pursuant to §§ 265.174 and 265.195. R18-8-262(D) See Section IV.B.1.d infra (containers) and Section IV.B.2. infra (tank systems).

A generator may obtain a 30 day extension of the 90 day limit on how long wastes may be accumulated on site "due to unforeseen, temporary, and uncontrollable circumstances" at the discretion of ADEQ. § 262.32(b). Generators who choose to accumulate wastes onsite must comply with the waste analysis provisions of § 268.7(a)(4), discussed supra in Section I.B.2. § 262.34(a)(4).

b. Small quantity generators

A small quantity generator is allowed to accumulate wastes on-site for up to 180 days, provided

(i) the quantity of waste never exceeds 6000 kg;

(ii) the generator complies with Part 265, Subpart I (except § 265.17a) or Subpart J (except § 265.201) as appropriate;

(iii) the generator complies with the dating and labeling requirements in II.E.1.a. above; and

(iv) the generator meets the emergency preparedness requirements of § 262.34(d)(5), which includes an emergency coordinator, fire extinguishers, etc.

See § 262.34(d). The 180 day period may be extended to 270 days if the generator must transport its waste over 200 miles to an off-site TSD facility.

2. Accumulation Area Performance Standards

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In order to qualify for the on-site accumulation provisions, the generator must maintain its accumulation area in accordance with the standards for either containers (such as drums) or tanks. EPA recently introduced an additional accumulation unit, the "containment building." Arizona has yet to adopt this new type of accumulation unit into its state program.

a. Container system standards

The generator must replace a container if it is not in good condition or begins to leak. Alternatively, the hazardous waste may be transferred to a tank. § 265.171. Wastes must be compatible with, and not react with, the container or liner. § 265.172. The containers must be kept closed, except when necessary to add or remove waste. Containers may not be handled in a manner that may cause it to rupture or leak. § 265.173. Finally, the generator must inspect the accumulation area at least weekly for leaks or deterioration caused by corrosion or other factors. Damaged, leaking or corroded containers must be repaired or replaced. § 265.174.

Containers holding ignitable or reactive wastes must be located 15 meters from facility property line. § 265.176. Incompatible wastes may not be placed in the same container; in an unwashed container that previously held an incompatible waste; and must be separated from such incompatible wastes by means of a dike, basin, wall or other device § 265.177.

b. Tank systems standards

A tank system, if not provided with adequate secondary containment, must have its integrity certified by a registered, independent professional engineer. This assessment must be based on factors enumerated in § 265.191(b). If the tank system is found to be unfit, the generator must implement appropriate response actions. § 265.191(d).

New tank systems (post-RCRA) must meet performance and design standards listed in § 265.192., and all tank systems must meet the secondary containment standards of § 265.193(b), unless certain other conditions are met. The generator must also comply with certain general operating practices, including (i) hazardous wastes that may cause the system to corrode or fail may not be placed in the system. § 265.194(a); (ii) overflow and spill prevention practices must be implemented; (iii) Spill prevention controls must be

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put in place; (iv) Overfill prevention devices; and sufficient freeboard must be maintained. § 265.194(b)

In addition, the generator must conduct a daily inspection (on operating days) of: (i) overfill/spill control for good working order; (ii) above-ground portions of the tank system for corrosion or release; (iii) data from monitoring and leak detection equipment; (iv) accessible portions of the tank system and secondary containment units for signs of leakage. (May also include remedy requirements and notice to ADEQ if release); (v) Cathodic protection systems inspection, if present.

Spill response measures in case of leak, spill, or system unfit for use must include: (i) cessation of use and flow prevention; (ii) removal of wastes; (iii) containment of visible releases; (iv) Notification and reports as outlined in § 265.196(d); and (v) Closure or repair.

3. Requirements for Handling Ignitable, Reactive or Incompatible Wastes

Ignitable, reactive or incompatible wastes must be kept separated from sources of ignition or reaction. While such wastes are handled, smoking must be confined to specially designated areas. The area where these wastes are found must have "No Smoking" signs posted conspicuously. § 265.17(a).

Where specifically required by other RCRA or HWMA provisions, ignitable, reactive or incompatible wastes must be handled to avoid: 1) explosive situations, 2) generation of flammable fumes or gases, 3) release of uncontrolled toxics in threatening quantities, 4) damage to structural components of facility, and 5) similar threats. § 265.17(b).

F. Emergency Preparedness and Planning Requirements

1. Preparedness and Prevention Requirements (Part 265, Subpart C)

A generator's facility must be maintained and operated to minimize the possibility of fire, explosion or unplanned release. § 265.31. A generator is also required to maintain certain emergency equipment, as necessary, at its facility in order to minimize the damage or danger to human health and the environment if an incident occurs. The regulations specify the following types of equipment, unless none of the wastes handled at the facility would require the equipment:

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(i) an internal alarm or communications system. § 265.32(a).

(ii) a device to summon external aid. § 265.32(b).

(iii) portable fire extinguishers and other fire equipment (including special foams, etc.), spill control equipment and decontamination equipment. § 265.32(c).

(iv) adequate water quantity and pressure to operate the equipment. § 265.32(d).

(v) Proper maintenance and testing of emergency equipment must be conducted. § 265.33.

In addition to the required equipment, the generator is also required to ensure that all employees involved in hazardous waste handling must have immediate access personally or through another employee to an internal alarm. If there is ever only one employee at the facility during operations, the employee must have immediate access to external aid. § 265.34. The generator also must ensure that aisle space adequate to allow movement of personnel and response equipment in the areas containing hazardous waste is maintained. § 265.35.

The generator is required to make appropriate arrangements with local police, fire, and emergency response teams to facilitate their responding to an emergency at the facility. These agreements should familiarize the response units with the layout of the facility, the properties and hazards of the facility's hazardous wastes, provide information on personnel working areas and access to those areas, plus identify possible evacuation routes for facility personnel.

The generator is also required to designate by agreement a primary response authority to a specific police and fire department and to prepare back up/support agreements with other response units as necessary. § 265.37(a)(2). The generator can also enter agreements with State emergency response teams, contractors and suppliers. § 265.37(a)(3). Finally, the generator should make arrangements to familiarize local hospitals with possible injuries and illnesses related to wastes. § 265.37(a)(4).

If state and local agencies refuse to make these arrangements, then the generator must document their actions in the facility's operating record in order to demonstrate compliance with the RCRA and HWMA emergency preparedness planning requirements. § 265.37(b).

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2. Contingency Plan (Part 265, Subpart D)

The RCRA and HWMA regulations require each large quantity generator to develop a RCRA contingency plan. The contingency plan will outline the generator's response plan to emergencies that may occur at the facility.

a. Plan Scope and Purpose

Each generator required to prepare a contingency plan must design the plan to minimize hazards to human health and the environment from fire, explosion or unplanned release. § 265.51(a).

The plan must be implemented whenever a fire, explosion or release of hazardous waste or its constituents which could threaten human health or the environment. § 265.51(b).

b. Plan Contents

The contingency plan must describe actions the generator will take to comply with the plan purpose (§ 265.51) and emergency procedure requirements (§ 265.56). § 265.52(a). The generator may use an SPCC plan or other previously existing emergency or contingency plan if the prior plan is revised to incorporate hazardous waste management issues. § 265.52(b).

The contingency plan must outline agreements with police, fire and emergency response personnel reached pursuant to the preparedness requirements (Section A) of Party 265, Subpart C, § 265.52(c), and must include an updated list of names, addresses and phone numbers (office and home) of all persons qualified to act as emergency coordinator (see § 265.55). One person must be designated as primary emergency coordinators; others, if any, should be listed in the order they will assume responsibility. § 265.52(d).

The contingency plan must include an updated list of all emergency response equipment and communication systems, including their location and a physical description of each item on the list. The plan must briefly outline capabilities of each item on the list. § 265.52(e). The plan should also layout primary and secondary evacuation routes for facility personnel if there is a possibility of evacuation. The evacuation signals that the facility will use must be described. § 265.52(f).

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c. Distribution of Plan

A copy of the contingency plan should be kept at the facility, and sent to all policy, fire departments, emergency response teams and hospitals that may be called upon to provide emergency services. § 265.53.

d. Amendment of Plan

The plan must be amended whenever there is any change in applicable regulations, the plan fails in an emergency, the facility changes operations in a manner that increases the risk or changes the type of response action, the emergency coordinator list changes or the emergency equipment list changes. § 265.54.

e. Emergency Coordinator

At all times there must be an employee present or on call who can serve as emergency coordinator. The emergency coordinator must be familiar with facility operations and activities; the contingency plan; the hazardous wastes present at the facility and their characteristics; and the location of all records. § 265.55 The emergency coordinator must have authority to commit resources to carry out the contingency plan. § 265.55.

3. Emergency Procedures

Whenever there is an imminent or actual emergency, the emergency coordinator or designee must: activate the facility's internal alarm systems; and notify state and local authorities if their help will be needed. § 265.56(a).

Whenever there is a release, the emergency coordinator must: identify the character, source, amount and real extent of released materials by observation or records; and assess both direct and indirect health and environment hazards. § 265.56(b)(c). If the emergency coordinator, based on the above factors, determines that there is a threat to human health on the environment outside of the facility, the emergency coordinator shall:

(i) if evacuation is necessary, notify local authorities and be available to assist them. § 265.56(d)(1).

(ii) immediately notify ADEQ and either the OSC or NRC (800/424-8802). The report must include: name and telephone number of reporter; name and address of facility; time and type of

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incident; name and quantity of materials involved to the extent known; extent of injuries; and possible hazards to human health and the environment. § 265.56(d)(2).

(iii) take all reasonable steps to prevent occurrence, recurrence or spread of fire, explosion or releases, including process shut down. If the facility is shut down, the emergency coordinator must monitor for additional problems due to pressure buildup, leaks, gas generation, etc. § 265.56(e)-(f).

Immediately following an emergency, the emergency coordinator must provide for treating, storing or disposing of recovered waste, contaminated soil and water, etc. § 265.56(g). The emergency coordinator must also ensure that:

(i) no incompatible wastes are present or handled until after cleanup is completed; and (ii) all emergency equipment is cleaned and fit for intended use. § 265.56(h). The emergency coordinator must notify ADEQ and local authorities that the conditions of 6(a) and (b) are met before operations may be resumed in the affected areas. § 265.56(i).

There are also recordkeeping requirements that must be met. First, the emergency must be documented in the facility records. § 265.56(j). Second, the emergency coordinator must submit to ADEQ a report within 15 days of the incident that includes:

(i) name, address and telephone number of operator;
(ii) name, address and telephone number of facility;
(iii) date, time and type of incident;
(iv) name and quantity of materials involved;
(v) extent of injuries;
(vi) an assessment of actual or potential hazards to human health and the environment, where applicable; and
(vii) estimated quantity and disposition of recovered material resulting from the incident.

§ 265.56(j)(1)-(7).

G. Personnel Training

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Facility personnel must successful complete a program of classroom instruction or on-the-job training that ensures compliance with the hazardous waste regulations. The training must cover all positions on a list of waste handlers/supervisors that the generator is required to prepare. § 265.16(a)(1). The training program must be directed by a person trained in hazardous waste management procedures. The course must include contingency plan implementation and must ensure that facility personnel are familiar with emergency procedures, equipment and systems, including (where applicable):

(i) procedures for use, inspection, repair and replacement;
(ii) parameters for auto-feed shutoffs;
(iii) communications or alarm systems;
(iv) response to fires or explosions;
(v) response to groundwater contamination; and
(vi) shutdown of operations.
§ 265.16(a)(2)-(3).

Facility personnel must complete the training program within six months after the program is in place or from the date of employment. Employees hired after this may not work in unsupervised positions until trained. § 265.16(b). Facility personnel responsible for hazardous waste handling must have an annual review of the material presented in the training program.

H. Recordkeeping Requirements

RCRA and the HWMA establish a variety of contingency planning and emergency preparedness recordkeeping requirements. These include:

(i) a document listing job title for each position related to hazardous waste management, and name of employer filling position, must be maintained.
(ii) written job description for each position in (a), including skill, education or other qualifications and duties (description may conform to existing descriptions due to union contracts, etc.).
(iii) Written description of the type and amount of introductory and continuing training given to each person listed in (i) above.
(iv) Records documenting training and job experience given to personnel listed in (i) above.

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(v) Training records on current personnel kept until closure; former employees for three years. Records may be transferred within the company. § 265.16(e).

IV. Recordkeeping Requirements

The regulations established pursuant to RCRA and the HWMA establish extensive recordkeeping requirements. These records vary between records that must be kept continuously, records that are periodically updated, and occasional records that are required to be kept in the facility's files.

1. Continuously Updated Records

Records that are required to be kept continuously include the following:

a. Hazardous waste manifests. Generators are required to maintain copies of all hazardous waste manifests given to a transporter for a period of three years, or until a signed copy of the manifest is received from the designated TSD facility. The signed copy of the original manifest must be retained for three years from date delivered to the initial transporter. Manifests must also be retained during unresolved enforcement action or at the request of ADEQ.

b. Land Ban certifications.

c. Exception reports. Exception reports must be retained for three years from the date the report was due. This period is extended during unresolved enforcement proceedings.

d. Contingency Plan.

e. Emergency Coordinator list. The generator is required to maintain a constantly updated list of emergency coordinators.

f. Emergency equipment list. The generator must keep the list of emergency equipment continuously up-to-date.

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g. Emergency notifications. In the event that the emergency coordinator is required to make a notification to ADEQ, the National Response Center or the EPA On-Site Coordinator, a copy of that notification must be immediately placed in the facility's files.

h. Accumulation times. Accumulation times recorded on containers or tanks in the accumulation areas (or in supporting documentation) must be kept constantly up-to-date.

2. Periodically Updated Records

a. Inspection log of accumulation area. The inspection log for the accumulation area must be updated either daily (for tank system during operations) or weekly (for containers). The inspection log should be kept in the facility's files in order to demonstrate compliance with the inspection requirements.

b. Annual Reports. The facility's annual report must be maintained in the facility's files. The annual report must include the following information:

(i) EPA ID Number, name and address of facility;
(ii) calendar year covered by the report;
(iii) ID Number, name and address of TSD facilities to which waste was shipped;
(iv) a description, EPA waste number, DOT hazard class and quantity of wastes shipped to TSD facilities broken down by the EPA ID Number of the TSD facility;
(v) description of efforts to reduce volume and toxicity of wastes ("waste minimization");
(vi) a list of changes in volume and toxicity of hazardous wastes generated from those reported in previous years;
(vii) certification of information in the annual report.

3. Documents Retained in Files or Occasionally Filed

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a. Contingency Plan.

b. Waste analysis plan. This plan is required for generators treating wastes on site in order to meet Land Ban requirements.

c. Documentation of emergency incidents.

d. Notices to ADEQ of emergency incidents.

e. Personnel training plans. The personnel training plan is required by the emergency preparedness regulations discussed above.

f. Personnel training records.

g. Agreements with police, fire, emergency response teams.

h. Waste determinations and waste analyses. These must be retained for three years from the date the waste was last sent, and the period is extended during any unresolved enforcement action.

i. Manifests.

j. Land Ban certifications.

A. Closure Requirements

A generator that has maintained a hazardous waste accumulation area must close that area in a manner that (i) minimizes the need for further maintenance; (ii) controls, minimizes or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous wastes; (iii) complies with applicable closure requirements for a tank system (established in RCRA Part 265).

V. REGULATIONS APPLICABLE TO TRANSPORTERS OF HAZARDOUS WASTE

The transportation and handling of hazardous materials and toxic waste has generated growing concern over the risks presented to human health and the environment, while at the same time, it is recognized that modern society is dependent upon such material for a variety of industrial, commercial and consumer uses. Jersey Cent. Power & Light Co. v. Lacey, 772 F.2d 1103,

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1104 (3d Cir. 1985), cert. denied, 475 U.S. 1013 (1986). The "mixed blessing of technical progress and enhanced public sensitivity to environmental issues" has lead to increasing federal, state and local regulation of the transportation of hazardous materials. Id.

A. The Resource Conservation and Recovery Act

1. Background and Objectives

The EPA regulates the transportation of hazardous waste primarily under authority of RCRA. RCRA establishes a "cradle-to-grave" regulatory program which identifies wastes as hazardous, tracks the shipment of hazardous wastes through a manifest system, and certifies through a permit system that performance standards for safe treatment, storage and disposal of hazardous wastes have been met. As part of the "cradle-to-grave" regulatory program, RCRA requires EPA to establish standards to protect human health and the environment from injury resulting from the transportation of hazardous wastes. 42 U.S.C. § 6923(a).

2. Applicability

RCRA applies to "solid waste" and a subset of solid waste designated as "hazardous waste." Under RCRA, "transporter" means "a person engaged in the off-site transportation of hazardous waste by air, rail, highway or water." 40 C.F.R. § 260.10. Off-site transportation includes both intrastate and interstate commerce and covers shippers and common carriers of hazardous waste, as well as private companies that transport hazardous waste off-site. In short, RCRA covers all transportation of hazardous waste other than on-site transportation. "On-site" is defined as:

> [T]he same or geographically contiguous property which may be divided by public or private right-of-way, provided the entrance and exit between the properties is at a cross-roads intersection, and access is by crossing as opposed to going along, the right-of-way. Non-contiguous properties owned by the same person but connected by a right-of-way which he controls and to which the public does not have access, is also considered on-site property.

§ 260.10. Accordingly, anyone who transports hazardous waste off-site, even a few feet down a public road, is considered a RCRA transporter and must comply with the RCRA transporter regulations.

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The transporter regulations are set forth at §§ 263.10 et seq. EPA is required to coordinate with DOT to ensure that RCRA's transporter requirements are "consistent" with the hazardous materials regulations under the Hazardous Materials Transportation Act. 42 U.S.C. § 6923(b). EPA has incorporated by reference DOT regulations on labeling, marking, placarding, and handling hazardous materials. See § 263.10(a) note. The regulations provide that before transporting or offering hazardous waste for transport, a generator must package, label, mark and placard the material in accordance with the HMRs. § 262.30 et seq.

3. EPA Identification Numbers

The first aspect of RCRA's regulatory program for transporters is that each transporter must obtain an EPA identification number before shipping hazardous waste. § 263.11(a). RCRA prohibits generators from offering hazardous waste to transporters who do not have such a number. § 262.12(c). EPA identification numbers can be obtained from EPA using EPA Form 8700-12. In emergency situations that require the immediate transportation of hazardous waste off-site, RCRA allows an EPA regional office to issue an identification number over the telephone. EPA will subsequently provide the transporter or generator with Notification Form 8700-12 to be completed and returned within ten days of its receipt. EPA will then issue a final identification number.

4. The Manifest System

The core of RCRA's regulatory program for transporters of hazardous waste is the so-called "manifest system." A "manifest" is a shipping document that identifies all hazardous wastes contained in the shipment. The purpose of the manifest system is to track hazardous waste from its point of generation to its point of ultimate disposal.

A transporter may not accept hazardous waste from a generator unless the waste is accompanied by a manifest signed by the generator. § 263.20(a). After accepting the waste but before it is transported off-site, the transporter must sign and date the manifest and return one signed copy to the generator. § 263.20(b). The manifest must remain with the hazardous waste at all times during transport. Once the hazardous waste is delivered to another transporter or to a treatment, storage, or disposal ("TSD") facility as designated on the manifest, the initial transporter must date the manifest and obtain the signature of the person accepting the waste. One copy of the manifest must be

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retained by the transporter and the remaining copies are given to the next transporter or the designated facility. Id. Transportation of hazardous waste by water or rail may be exempt from certain manifest procedures. Similarly, hazardous waste generated by a "small quantity generator," i.e., persons who generate greater than 100 kilograms but less than 1,000 kilograms of hazardous waste in a calendar month, is also generally exempt from the manifest requirements. § 263.20(e)-(h). Under Arizona law, a copy of the manifest must be sent to ADEQ within thirty (30) days of the end of the month that the shipment is delivered. A.A.C. R-18-8-263.C.

Hazardous waste must be delivered according to the instructions on the manifest. There are only four possible sites for proper delivery: (1) the facility designated on the manifest; (2) an alternate designated facility, if the waste cannot be delivered because of an emergency at the facility; (3) the next designated transporter; or (4) the place outside the United States designated by the generator. § 263.21(a). If for some reason the material cannot be delivered in accordance with the instructions on the manifest, the transporter must contact the generator for further instructions and revise the manifest accordingly. § 263.21(b). The transporter must not redirect the waste on his own and if the generator cannot be contacted, the transporter should return the waste to the generator.

5. Recordkeeping Requirements

Transporters must keep copies of manifests signed by generators, other transporters and owners or operators of TSD facilities for at least three years from the date the manifest was accepted by the initial transporter. § 263.22(a). Generators must retain a copy of each manifest for three years or until receipt of a signed copy from the designated facility accepting the hazardous waste. § 262.40.

6. Becoming a Generator or TSD Facility

Under some circumstances, a transporter may become subject to RCRA's generator standards in § 262. For example, if the transporter mixes hazardous wastes of different DOT shipping descriptions by placing them into a single container or if the transporter imports hazardous waste from a foreign country, the generator regulations apply. § 263.10(c).

Similarly, a transporter who stores or treats hazardous waste may trigger the applicability of the TSD standards, 40 C.F.R. §§ 264, 265 and 268, and the TSD

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permitting requirements under § 270. A transporter may store hazardous waste only if it is held at a transfer facility for no longer than ten days, is accompanied by a manifest, and is stored in containers meeting DOT requirements. § 264.1(g)(9). A "transfer facility" means "any transportation related facility including loading docks, parking areas, storage areas and other similar areas where shipments of hazardous waste are held during the normal course of transportation." § 260.10.

7. Discharge During Transport

If hazardous waste is spilled or discharged, which includes during transport, the transporter must take immediate action to protect human health and the environment, including notifying state and local authorities and containing the discharge. "Discharge" includes "the accidental or intentional spilling, leaking, pumping, pouring, emitting, emptying, or dumping of hazardous waste into or on any land or water, § 260.10, § 263.30(a). The transporter is also required to clean-up the discharge so that it no longer presents a hazard to human health or the environment. § 263.31. A transporter who has discharged hazardous waste must immediately notify the DOT National Response Center by telephone at 1-800-424-8802 if required by 49 C.F.R. § 171.15.

If a federal, state or local official determines that immediate removal of discharged hazardous waste is necessary, that official may authorize the removal of the waste by transporters who do not have an EPA identification number and without the preparation of a manifest. § 263.30(b). If the spill involves etiologic agents, the transporter may alternatively notify the Center for Disease Control at (404) 633-5313. As noted above, written reports on this spill must also be submitted to DOT within thirty days of the incident. § 263.30(c); 49 C.F.R. § 171.16(a).

8. Enforcement

Failure to comply with RCRA's transporter requirements can result in civil penalties up to $25,000 per day. Criminal penalties up to $50,000 a day and two years imprisonment may be imposed against persons who "knowingly" transport hazardous waste without a manifest, transport hazardous waste to an unlicensed disposal facility, or omit or alter information on a hazardous waste manifest. 42 U.S.C. § 6928; see also United States v. Sellers, 926 F.2d 410 (5th Cir. 1991) (midnight dumper of hazardous waste sentenced to forty-one months imprisonment for waste disposal without

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a permit); United States v. Greer, 850 F.2d 1447 (11th Cir. 1988) (criminal conviction for improper dumping); United States v. Hayes International Corp., 786 F.2d 1499 (11th Cir. 1986) (criminal conviction of transporter and shipper for knowingly transporting hazardous waste to unlicensed facility and failing to use a manifest). Even larger penalties, up to $1 million for an "organization," can be imposed for knowingly placing another person in imminent danger of death or serious injury. 42 U.S.C. § 6928(e).

Section 7003 of RCRA allows EPA to sue in federal court whenever the "handling, storage, treatment, transportation, or disposal" of hazardous waste "may present an imminent or substantial endangerment to health or the environment." 42 U.S.C. § 6973(a) (emphasis added). Alternately, EPA may issue administrative orders "as may be necessary to protect public health and the environment." Id. These orders are backed by the threat of civil fines for failure to comply.

Perhaps the most imposing aspect of RCRA is the citizen's suit provision found in section 7002. 42 U.S.C. § 6972. This provision allows any person, including private citizens, to bring a private right of action against any past or present transporter under section 7003, and to recover attorney fees if successful. One commentator has opined:

> Presumably, under this authority [§ 6972], any aggrieved individual could compel a non-negligent transporter to clean up a leaky abandoned dump to which it brought waste, even if the transporter's practices were acceptable at the time of disposal.

Miller & Gutter, Liability of Transporters of Hazardous Materials Under RCRA and CERCLA, 32 Fed. Bar News & J. 292, 293 (Sept. 1986).]

B. The Hazardous Materials Transportation Act

1. Background and Objectives

The principal federal laws regulating the transportation of hazardous materials are the Hazardous Materials Transportation Act and the Hazardous Materials Transportation Uniform Safety Act (collectively "HMTA"), 49 U.S.C. §§ 1801 et seq.. Congress enacted Hazardous Materials Transportation Act in 1975 in order broaden federal regulatory control over the interstate shipment of hazardous materials and to replace conflicting state

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and local regulations concerning hazardous materials transportation with a set of uniform, national regulations. S. Rep. No. 1192, 93d Cong., 2d Sess. 37 (1974). The Act also consolidated authority to administer the federal regulatory program in the Department of Transportation ("DOT").

In 1990, Congress amended the Hazardous Materials Transportation Act by enacting the Hazardous Materials Transportation Uniform Safety Act. Pub. L. No. 101-615, 104 Stat. 3244 (1990). The amendment is intended to strengthen the federal hazardous materials program in a number of areas, including through the designation of highway routes for shipping hazardous materials, the development a uniform safety permit program, and the creation of a grant program for training emergency response personnel to facilitate clean-up of hazardous materials transportation accidents. S. Rep. No. 101-449, 101st Cong., 2d Sess., reprinted in 1990 U.S. Code Cong. & Admin. News 4595.

2. Scope of Coverage

That Congress intended HMTA have broad regulatory applicability is evident from the definition of the statute's key terms. For example, the terms "transport" and "transportation" mean "any movement of property by any mode, and any loading, unloading, or storage incidental thereto." 49 U.S.C.A. App. § 1806(15). The term "commerce" is defined as "trade, traffic, commerce, or transportation within the jurisdiction of the United States (A) between a place in a State and any place outside of such State, or (B) which affects trade, traffic, commerce, or transportation described in subparagraph (A)." Additionally, the 1990 amendments to HMTA provide that the Secretary of DOT "shall issue regulations for the safe transportation of hazardous materials in intrastate, interstate, and foreign commerce." 49 U.S.C.A. app. § 1804(a)(1) (emphasis added). 49 U.S.C.A. app. § 1802(2). Such expansive definitions arguably cover every shipment of hazardous materials in the United States.

For purposes of HMTA, the term "hazardous material" covers a much larger universe than hazardous wastes or hazardous substances. HMTA's regulations define "hazardous material" as "a substance or material, including a hazardous substance, which has been determined by the Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and which has been so designated." 49 C.F.R. § 171.8. DOT maintains a list of designated hazardous materials

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called the "Hazardous Materials Table." 49 C.F.R. § 172.101. Materials considered hazardous range from cotton and cigarette lighters to explosives and radioactive materials. Id.

> The term "hazardous substance" means:
>
> [A] material, including its mixtures and solutions, that --
>
> (1) Is listed in the Appendix to § 172.101 of this subchapter;
>
> (2) Is in a quantity, in one package, which equals or exceeds the reportable quantity (RQ) listed in the Appendix to § 172.101 of this subchapter; . . . .

49 C.F.R. § 171.8. The appendix to § 172.101 lists materials and their corresponding reportable quantities which are designated as hazardous substances under the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA"). Thus, CERCLA hazardous substances are regulated as hazardous materials under HMTA if listed in 49 C.F.R. § 172.101 and if packaged in a quantity meeting the reportable quantity requirements as set forth in the same section.

Hazardous waste is also regulated under HMTA. "Hazardous waste" means "any material that is subject to the Hazardous Waste Manifest Requirements of the U.S. Environmental Protection Agency specified in 40 C.F.R. Part 262." 49 C.F.R. § 171.8. Part 262 references the listed and characteristic hazardous wastes regulated under the Resource Conservation and Recovery Act. HMTA's regulations prohibit transporting or offering for transportation hazardous waste, unless the hazardous waste is handled in accordance with the labeling, marking, and placarding requirements under HMTA. 49 C.F.R. § 171.3.

Taken in sum, HMTA regulates the transportation and handling of a broad range of hazardous materials, including hazardous substances and hazardous wastes. Environmental managers and professionals should therefore be familiar with and have a working knowledge of HMTA's hazardous materials regulations.

3. Hazardous Materials Regulations

Pursuant to section 1804 of HMTA, DOT has promulgated regulations for the transportation of hazardous materials that apply to persons who offer hazardous materials for transport ("generators" or

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"shippers"), accept hazardous materials for transport ("transporters"), and manufacture, repair or test containers used for hazardous materials ("container manufacturers"). The regulations, commonly referred to as the "hazardous materials regulations," ("HMRs"), 49 C.F.R. §§ 171-180, comprise the heart of HMTA's regulatory scheme. The HMRs are frequently overlooked among the myriad of other federal regulations governing the handling of hazardous materials and wastes. Outlined below are some of the more significant regulations.

The basic requirement of HMTA is that "[n]o person may offer or accept a hazardous material for transportation in commerce within the United States unless that material is properly classed, described, packaged, marked, labeled, and in condition for shipment as required [by the HMRs] . . . ." 49 C.F.R. § 171.2. The marking, labeling and packaging requirements generally apply to all forms of hazardous materials transportation. Additional requirements may apply depending upon the mode of transport being used. See, e.g., 49 C.F.R. § 174 (carriage by rail); 49 C.F.R. § 175 (carriage by aircraft); 49 C.F.R. § 176 (carriage by vessel); 49 C.F.R. § 177 (carriage by public highway).

a. Shipping Papers

Through the use of "shipping papers," the HMRs mandate disclosure regarding the contents of each shipment of hazardous materials. The term "shipping paper" generally refers to a bill of lading or similar shipping document which contains information required by 49 C.F.R. §§ 172.202-.204. The required information usually includes: the proper shipping name, a description, the hazard class, the identification number, and the total quantity (by weight or volume) of the hazardous material being shipped. 49 C.F.R. § 172.202. Regulations effective October 1, 1991, require that the packing group for the material also be included in the shipping paper. See 55 Fed. Reg. 52401, 52583 (1990) (to be codified at 49 C.F.R. § 172.202).] Additionally, the shipping paper must contain emergency response information or the means of appropriate reference to such information, and a telephone number for the purpose of obtaining more specific handling and mitigation information about the material being transported. 49 C.F.R. § 172.604, § 172.606.

The most interesting aspect of the shipping paper regulations is the requirement that the shipper certify on the shipping paper that the material being offered for transportation is being shipped in

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accordance with the HMRs. Specifically, the shipping paper must contain either one of the following declarations:

> (1) This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according the applicable regulations of the Department of Transportation.
>
> (2) I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked and labeled, and are in all respects in proper condition for transport by [mode of transportation] according to the applicable international and national governmental regulations.

49 C.F.R. § 172.204(a). The certification required by this section must be printed on the shipping paper and legibly signed by the shipper. Exceptions to the shipper certification do exist:

(1) Except for a hazardous waste, no certification is required for hazardous materials offered for transportation by motor vehicle and transported:

> (i) In a cargo tank supplied by the carrier, or
>
> (ii) By the shipper as a private carrier except for a hazardous material that is reshipped or transferred from one carrier to another.

(2) No certification is required for the return of an empty tank car which previously contained hazardous materials and which has not been cleaned or purged.

49 C.R.R. § 172.204(b). It is the shipper's responsibility to provide the transporter with the shipping paper containing the required information. 49 U.S.C.A. app. 1804(g).

b. Hazard Classification

Before shipping hazardous materials, a generator must determine the hazard class of the material being

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transported. The hazardous class is the category of hazard assigned to a material under the definitional criteria of 49 C.F.R. Part 173. Previously, the HMRs contained sixteen separate hazard classes (e.g., radioactive materials, flammable liquids, corrosive solids, etc.). Recent revisions to the HMRs consolidated classification to nine numbered hazard classes. 49 C.F.R. § 171.8. Although a material may satisfy the defining criteria from more than one hazard class, it is generally assigned only one hazard class. Id. The hazard class assigned to a particular material is important because it determines which labeling, marking, and packaging requirements will apply for the shipment.

c. Marking and Labeling

Each person who offers a hazardous material for transportation is required to mark each package, freight container, and transport vehicle containing the hazardous materials in a manner prescribed by 49 C.F.R. §§ 172.300-.338. Marking simply requires that the proper shipping name and identification number of the hazardous material be indicated on each package or container. 49 C.F.R. § 172.301. More specific requirements may apply depending on the type of material being transported. See 49 C.F.R. §§ 172.302-.338. Similarly, each person who offers a package or freight container containing hazardous materials for transportation is required to label it with a DOT approved label. 49 C.F.R. § 172.101, 172.400-.450.

d. Placarding

Shipments of regulated hazardous materials must be placarded in accordance with the HMRs set forth at 49 C.F.R. § 172.500-.560. As a general rule, each transport vehicle containing 1,001 pounds of a hazardous material must be placarded on each side and each end with placards approved by DOT. 49 C.F.R. § 172.504. If a placard is required, it must conform with DOT specifications concerning size, color and content. See generally 49 C.F.R. § 172.504, § 172.519.

e. Emergency Response Information

Shippers and transporters of hazardous materials are required to provide and maintain "emergency response information" during transportation and at the facilities where hazardous materials are loaded or stored for transportation. 49 C.F.R. § 172.600. The requirement is intended to ensure that information necessary to assist in the mitigation of an incident involving

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hazardous materials is readily available. At a minimum, the following information must be provided:

(1) The basic description and technical name of the hazardous materials;

(2) Immediate hazardous to health;

(3) Risk of fire or explosion;

(4) Immediate precautions to be taken in the event of an accident or incident;

(5) Immediate methods for handling fires;

(6) Initial methods for handling spills or leaks in the absence of fire; and

(7) Preliminary first aid measures.

49 C.F.R. § 172.602(a).

f. Packaging

HMTA provides specific and very detailed requirements for appropriate packaging of hazardous materials. Transporting hazardous materials that are not prepared for shipment in accordance with the packaging regulations at 49 C.F.R. Part 173 is prohibited. The packaging regulations are incredibly detailed. Consequently, generators and shippers may unknowingly be using packages or containers that do not conform with DOT specifications. Standard requirements for the preparation of all hazardous materials for transportation are set forth at 49 C.F.R. § 173, Subpart B. Specific regulations for packaging of the various hazard classes of material are contained in 49 C.F.R. § 173, Subparts C-O.

g. Incident Reporting

If an accident involving hazardous materials occurs during transport, the transporter must report the incident to the proper authorities. Notice by telephone must be given to DOT. The notification should occur at the "earliest practical moment" after an incident in which, as a direct result of hazardous materials:

1. A person is killed; or

2. A person receives injuries requiring hospitalization; or

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3. Estimated carrier or other property damage exceeds $50,000; or

4. An evacuation of the general public occurs lasting one or more hours; or

5. One or more major transportation arteries or facilities are closed or shut down for one hour or more; or

6. The operational flight pattern or routine of an aircraft is altered.

49 C.F.R. § 171.15. Reporting is also required if a spill or suspected contamination occurs involving radioactive materials. Id. The DOT can be notified by telephone at 800-424-8802. For incidents involving etiological agents, contact the Center for Disease Control at 404-633-5313 or DOT at 202-267-2675. Within thirty (30) days of the date of discovery of each incident involving any of the circumstances listed above, the transporter must file a written report with DOT using DOT Form F 5800.1. 49 C.F.R. § 171.16.

4. HM-181: Alignment with International Transportation Regulations

Recently, DOT adopted HM-181, a comprehensive revision of the HMRs with respect to hazardous communication, classification and packaging requirements. 55 Fed. Reg. 52,401 (1990). HM-181 became effective October 1, 1991, and is the culmination of many years of work to revamp the HMRs which DOT acknowledges were unnecessarily complex and difficult to use. "[T]here is a need to amend the HMR to address deficiencies related to safety, complexity of the regulations, inflexibility of packaging standards and incongruities between the HMR and the international regulations for hazardous material transport." Id. at 52,403. Consequently, HM-181 contains an objective system of hazard classification that DOT believes is more precise than the subjective hazard class definitions found in the prior regulations. A new format and the use of "performance standards" rather than design based specifications for packaging are intended to make the HMRs more "user friendly." Id. Finally, the new rules are an attempt to eliminate the "dual compliance" costs that industry has had to shoulder in order to comply with both United States and international regulations for hazardous materials transportation. Id. at 52,404.

Implementing HM-181 will occur over several separate time periods. First, the continued use of DOT

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specification packaging will be allowed until October 1, 1996, five years from the effective date of the new regulations. DOT believes that the five-year period will give shippers and transporters who possess a large inventory of packages or containers meeting current regulations sufficient time to adjust to the new regulations and gradually convert their inventories. Id. at 52,408

A three-year transition period is provided for container manufacturers to replace packages and containers rendered obsolete by the new rules. Thus, in three years container manufacturers will have to produce packaging that satisfies performance oriented standards instead of the former design-based specifications. Id. at 52,409. Finally, a two-year transition period is established for all other aspects of HM-181. Changes in hazard classification, hazard communication and packaging of materials hazardous by inhalation will be enforced beginning on October 1, 1993. Id.

During the transition period, a shipper has the option of using either the same packagings that were authorized by 1990 HMRs or the new packagings implemented by HM-181. The shipper can also choose to classify and describe hazardous materials using either the classification criteria and hazardous communication provisions in the old rules or in HM-181. Id. Care should be taken to ensure that the hazard communication requirements used in a particular shipment are consistent. For example, if a material is described on the shipping paper in accordance with the old regulations, then the package markings, labels and placards must also conform with the prior rules. Similarly, if the material is described in accordance with the new regulations, then the markings, labels, and placards must also conform to the new requirements.

5. Employee Training

The 1990 amendments to HMTA provide that within 18 months of November 16, 1990, DOT shall issues regulations which require training to be given by all "hazmat employers" to their "hazmat employers." A "hazmat employer" means a person:

(A) (i) who transports in commerce hazardous materials,

(ii) who causes to be transported or shipped in commerce hazardous materials, or

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(iii) who reconditions or tests containers, drums, and packages represented for use in the transportation of hazardous materials; and

(B) who utilizes 1 or more of its employees in connection with such activity.

The term also includes an owner-operator of a motor vehicle which transports in commerce hazardous material. 49 U.S.C.A. app. § 1802(6). A "hazmat employee" means an individual employed by a hazmat employer and who in the course of employment directly affects hazardous materials transportation safety as determined by DOT regulation. 49 U.S.C.A. app. § 1802(5). At a minimum, the term includes an individual who during the course of employment --

(A) loads, unloads, or handles hazardous materials;

(B) reconditions or tests containers, drums, and packages represented for use in the transportation of hazardous materials;

(C) prepares hazardous materials for transportation;

(D) is responsible for the safety of the transportation of hazardous materials;

This training must cover the "safe loading, unloading, handling, storing and transporting of hazardous materials and emergency preparedness for responding to accidents or incidents involving the transportation of hazardous materials." 49 U.S.C.A. app. § 1805(b). According to the amendments, hazardous materials generators and transporters must commence training their employees within six months following the date on which DOT issues hazardous materials training regulations. The training must be completed within a reasonable time, after which hazmat employers must certify that their hazmat employees have received the training and have been tested on appropriate transportation areas of responsibility. 49 U.S.C.A. app. § 1805(b).

6. Registration

In the process of drafting the 1990 amendments to HMTA, concerns were raised that DOT lacked sufficient information about shippers, transporters, and container manufacturers to properly administer and enforce the

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Act. S. Rep. No. 101-449, 101st Cong., 2d Sess. 29 (1990), reprinted in 1990 U.S.C.C.A.N. 4595, 4623. Consequently, the amendments require that a "registration statement" be filed by certain shippers, transporters and container manufacturers. 49 U.S.C.A. app. § 1805. Mandatory filing is required for persons who transport or who cause to be transported extremely hazardous materials; hazardous materials in bulk packages or containers with a capacity of 3,500 gallons or more than 468 cubic feet; or 5,000 lbs. of hazardous materials for which a placard is required. Id. § 1805(c)(1)(A)-(C). DOT has discretionary authority to require the filing of a registration statement from all other transporters, shippers, or container manufacturers. Id. § 1805(c)(3). Persons who are required to file a registration must do so by March 31, 1992.

DOT is currently drafting regulations to implement the registration requirements. It is clear that a registration statement, at a minimum, will be required to include the registrant's name and place of business, a description of the activity carried out for which a registration statement is required, and the state or states in which a person carries out such activities. Id. § 1805(c)(7). Persons required to file a registration statement under this section are prohibited from transporting or shipping hazardous materials unless the registration statement has been filed. Id. § 1805(f).

7. Enforcement

Any person who knowingly violates any order or regulation under HMTA is subject to civil penalties up to $25,000 for each offense. If the violation is continuing, each day constitutes a separate offense. 49 U.S.C.A. app. § 1809. The 1990 amendments consider a person to have acted knowingly if such person had actual knowledge of the violation, or if a reasonable person acting under the circumstances and exercising due care would have such knowledge. Id.

Criminal penalties may be imposed against anyone who knowingly tampers with or removes a marking, label, placard or hazardous description required under the HMRs or who willfully violates any provision or regulation under HMTA. Upon conviction, a person may be fined under Title 18, U.S.C., which currently subjects individuals to fines of up to $250,000 and corporations up to $500,000, or imprisoned for not more than five years, or both. 49 U.S.C.A. app. § 1809; see also U.S. v. Allied Chemical Corp., 431 F. Supp. 361 (W.D. N.Y. 1977) (knowing violation of hazardous materials

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regulations punishable by both criminal and civil penalties).

Additionally, the 1990 amendments to HMTA also appropriate money for stepped-up enforcement by DOT. DOT is authorized to employ an additional 30 hazardous materials safety inspectors to improve administration and enforcement of the Act. 49 U.S.C.A. app. § 1813 note.

C. Additional Federal Regulation

In addition to the authority it possesses under HMTA, DOT has independent authority to regulate the transportation of hazardous materials under numerous other federal laws. The Federal Aviation Act, 49 U.S.C.A. app. §§ 1301 et seq., includes authority for the regulation of hazardous substances transported by air. Id. § 1421(a). The Federal Railroad Safety Act authorizes DOT regulation of hazardous materials shipped by rail. 45 U.S.C. § 431. Pipelines transporting hazardous liquids and gases are regulated by DOT under authority of the Natural Gas Pipeline Safety Act, 49 U.S.C. § 1672, and the Hazardous Liquid Pipeline Safety Act, 49 U.S.C. § 2002.

Hazardous materials transported via public highway are regulated by DOT pursuant to the Motor Carrier Safety Act, 49 U.S.C.A. app. §§ 2501 et seq. A motor carrier who transports hazardous materials that must be placarded under HMTA is required to comply with the motor carrier safety regulations in 49 C.F.R. Parts 390-97. These regulations establish safety standards for motor carriers including driver qualifications, controlled substance testing, driving rules, hours of service, equipment maintenance, etc. The Motor Carrier Act, 49 U.S.C.A. § 10927 note, authorizes DOT to establish minimum levels of financial responsibility that must be maintained by operators of motor vehicles transporting hazardous materials. These levels are designed to ensure that motor carriers are capable of paying for damages resulting from transportation accidents involving hazardous materials. Thus, carriers must obtain insurance coverage for personal injury, public liability and environmental restoration. 49 U.S.C.A. § 10927(a)(1) note. For persons transporting extremely hazardous materials, the minimum level of coverage is $5 million. 49 C.F.R. § 387.9. Motor carriers transporting all other hazardous materials must maintain at least $1 million in coverage. Id.

EPA is authorized by the Toxic Substances Control Act, 15 U.S.C. § 2601 et seq., to regulate the commercial distribution of chemical substances that

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present "an unreasonable risk of injury to health or the environment." Id. at § 2605(a). The Emergency Planning and Community Right To Know Act, 42 U.S.C. §§ 11001 et seq., contains reporting and notification requirements for releases of hazardous chemicals and extremely hazardous substances.

The Nuclear Regulatory Commission ("NRC") has authority under the Atomic Energy Act, 42 U.S.C. §§ 2011 et seq., to regulate the distribution and use of radioactive materials. Id. § 2073. NRC coordinates its responsibility with the programs established by DOT. See 44 Fed. Reg. 38,690 (1979). The Occupational Health and Safety Administration ("OHSA") is required by federal law to set mandatory occupational safety and health standards applicable to business affecting intrastate commerce. 29 U.S.C. § 657(8). As part of this mandate, OHSA has promulgated transport workplace regulations that affect the transportation of certain hazardous materials. See 29 C.F.R. §§ 1910.101-.120. Finally, the Interstate Commerce Act, 49 U.S.C. § 10,521, gives the Interstate Commerce Commission ("ICC") authority to regulate hazardous materials, but the ICC has generally deferred to DOT. See 45 Fed. Reg. 78,246 (1980); Akron, Canton, Youngstown R.R. v. ICC, 611 F.2d 1162 (6th Cir. 1979), cert. denied, 449 U.S. 830 (1980).

D. State Regulation

In Arizona, the regulation of hazardous materials transportation is shared and coordinated between the Arizona Department of Environmental Quality ("ADEQ") and the Arizona Department of Transportation ("ADOT"). ADOT and ADEQ have had a limited role in regulating hazardous materials transportation because Arizona, like most other states, has adopted the federal regulations. State regulation is becoming more important, however, as evidenced by enactment of the Omnibus Hazardous Waste Act of 1991 ("H.B. 2121"). Among the specific environmental concerns of the landmark law are additional transportation and licensing requirements for hazardous and "special" waste. Before discussing H.B. 2121, the other aspects of state hazardous materials transportation regulation are summarized below.

1. Regulation by ADOT

ADOT, through its Motor Vehicle Division ("MVD"), regulates the safe operation of motor vehicles, including motor vehicles transporting hazardous materials. A.R.S. §§ 28-2401 et seq. Accordingly, MVD has adopted the federal motor carrier safety and

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hazardous materials regulations as they pertain to the transportation of hazardous materials. A.A.C. R-17-4-435. MVD is currently in the process of adopting the October 1, 1989 editions of the federal regulations. Any violation of the statute or rules, may result in the suspension of the vehicle's registration, suspension of a driver's license, or the imposition of a civil penalty. A.R.S. § 28-2406. Violations may also constitute a misdemeanor under A.R.S. § 28-2408.

Transporters of hazardous material are required to maintain adequate levels of insurance. A.R.S. §§ 28-1232 et seq. requires every operator of a motor vehicle used for the commercial transportation of hazardous materials, hazardous substances or hazardous waste to carry insurance with coverage corresponding to the federal regulations. Thus, $5 million in coverage is generally required for operators transporting extremely hazardous materials. A.R.S. § 28-1233. Coverage in the amount of $1 million is required for the transportation of all other hazardous materials and oil as listed in the Hazardous Materials Table. Id. MVD may also require such persons to certify the existence of financial responsibility in the form and at times as MVD deems necessary. Id. A violation of the financial responsibility requirements may constitute class 3 misdemeanor. Moreover, if a person fails to fulfill the financial responsibility requirements and the person's vehicle is involved in an accident, such person is guilty of a class 1 misdemeanor. A.R.S. § 28-1237.

Finally, MVD requires that placarded vehicles transporting hazardous materials be operated only by persons who possess a "Hazardous Materials Endorsement" on their commercial driver's license. A.R.S. § 28-416.01. A chauffeur license issued prior to January 2, 1990 is acceptable instead of an endorsement until April 1, 1992.

2. Regulation by ADEQ

Under the Hazardous Waste Management Act, A.R.S. §§ 49-921 et seq., ADEQ generally has been delegated the authority to administer the RCRA program. As part of the program, the director of ADEQ is required to establish rules and regulations for the transportation of hazardous waste which are consistent with the HMRs. A.R.S. § 49-922.B.3. ADEQ has also adopted by reference the federal hazardous waste transporter regulations at 40 C.F.R. § 263. A.A.C. R-18-8-263.

3. Hazardous Waste Regulation

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H.B. 2121 makes several additions to existing state laws governing the generation and transportation of hazardous waste. First, fees for transporting hazardous waste are required beginning January 1, 1992. Generators transporting hazardous waste must pay $10 per ton of hazardous waste generated. If a facility to which the hazardous waste is shipped is owned by the generator, the generator is not required to pay the fee. A.R.S. § 49-931. A fee of $40 per ton is required from the owner of a disposal facility, unless the generator also owns the disposal facility. Hazardous waste that is retained for disposal on-site is subject to a $4 per ton fee. The disposal fees may be reduced in half for generators that certify compliance with the pollution prevention planning requirements of H.B. 2121. See A.R.S. §§ 49-961 et seq.

H.B. 2121 also amends Arizona's hazardous waste provisions with respect to enforcement. A.R.S. § 49-923 now provides for administrative penalties of up to $1,000 a day for failure to respond to a compliance order. In addition, the civil penalties for violating hazardous waste laws and regulations have increased from $10,000 to $25,000 per day of violation. A.R.S. § 49-924.

4. Transporter Licensing Requirements

For waste transporters, perhaps the most significant aspect of H.B. 2121 is the requirement that they obtain a license to transport hazardous and special waste as prescribed in A.R.S. § 28-2421, §28-2422. Each applicant for a license must file a certificate of insurance with the Director of ADEQ indicating that the applicant has adequate financial responsibility in the amounts required by A.R.S. § 28-1233. The transporter license is valid for one year and must be accompanied by a vehicle identification decal for each motor vehicle that the licensee uses to transport hazardous or special waste. The license fee is $100 and each vehicle identification decal will cost $25. The license and decal are nontransferable.

By July 31, 1992, DOT is required to issue hazardous waste licensure rules. A.R.S. § 28-2421.A. No later than September 1, 1992, ADOT must issue rules for the transportation of special waste. A.R.S. § 28-2422.A.

The transporter licensing requirements also provide that a person who "knowingly" transports hazardous waste without a license is guilty of a class 6 felony. A.R.S. § 28-2421.H. Knowingly transporting

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special waste without a special waste license also constitutes a class 6 felony. A.R.S. § 28-2422.H.

E. Local Regulation

As with state regulations, local regulations frequently incorporate and adopt the applicable federal regulations governing the transportation of hazardous materials. In Arizona, local political subdivisions have generally adopted the federal requirements. The federal regulations are supplemented by three additional categories of local hazardous materials transportation regulations.

1. Permit Requirements

The first category of local regulations can be classified as permit requirements. For example, the cities of Phoenix and Tucson both require permits for transporting hazardous materials through city boundaries. In Phoenix, motor vehicles involved in the intrastate shipment of hazardous materials must obtain a permit in order to transport hazardous materials on designated routes within the municipality. Phoenix, Az. Code § 20-4.2 (1990). Applicants for such permits must certify that their vehicles meet all DOT requirements. Motor vehicles involved only in interstate shipment of hazardous materials must comply with the federal regulations and must register with the Division of Fire Prevention. Id. More specific requirements may apply depending on the type of hazardous material being transported through the city.

In Tucson, each person who transports hazardous materials or materials required to be placarded according to DOT requirements through the city must obtain an annual, nontransferable permit. A permit application must include the following information:

1. A description of the hazardous materials likely to be transported during the next twelve (12) months.

2. Proof that the applicant has obtained liability insurance as required by 49 C.F.R. 7387.

3. A showing that the carrier or shipper has selected a route which complies with 49 C.F.R. 397.9, which requires that motor vehicles containing hazardous materials avoid routes through or near heavily populated areas, places where crowds are

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assembled, tunnels, narrow streets or alleys.

4. Such other information as may be deemed necessary by the fire chief or police chief.

Tucson, Az. Code § 13-11 (1986). Applicants for the permit are also required to submit a fee which is assessed according to the number of vehicles used to transport hazardous materials through the city during the year. Id.

2. Operating Requirements

A second category of local regulations regulates how vehicles hauling hazardous materials are operated. Vehicles transporting hazardous materials through Tucson must operate at all times with headlights and taillights on and in good repair. Additionally, transporters must not create a hazard to the public by the location or condition of their vehicles which contain hazardous materials and shall prominently display on their vehicles proof of payment of any applicable city fees as required by the fire chief. Tucson, Az. Code § 13-13 (1986). In Phoenix, vehicles hauling hazardous materials are required to operate only on "major" streets where practicable. If other streets must be used, persons hauling the materials must obtain approval from the chief of fire prevention or the chief of police. Vehicles containing hazardous materials must not be parked unattended except in certain designated areas. Phoenix, Az. Code § 20-5 (1990); see also Tempe, Az. Code § 19-169 (1986).

3. Reporting Requirements

Political subdivisions may also require that local authorities be notified of accidents involving hazardous materials. For example, in Tucson, incidents involving the release or spill of hazardous materials or traffic accidents involving vehicles transporting hazardous materials must be reported immediately to the Fire Department. Tucson, Az. Code § 13-14 (1986).

VI. REGULATIONS APPLICABLE TO OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE AND DISPOSAL FACILITIES

The fourth aspect of the RCRA and HWMA "cradle-to-grave" regulation of hazardous waste is control over their treatment, storage and disposal. Jurisdiction is asserted over facilities engaged in this type of activity, commonly referred to as TSD

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facilities, by requiring them to obtain a RCRA treatment, storage or disposal permit (also known as a Subpart B permit). These materials will outline which facilities are required to obtain a RCRA TSD permit, certain exemptions for common processes, such as elementary neutralization, and then outline some of the general requirements applicable to TSD facilities. A detailed description of the specific performance standards each type of TSD facility is required to meet is beyond the scope of these materials.

A. Facilities Covered by the RCRA Treatment, Storage and Disposal Regulations

1. Covered Facilities

The RCRA and HWMA regulations broadly state that "[t]he standards of this part apply to owners and operators of all facilities which treat, store, or dispose of hazardous waste, except as specifically provided otherwise in this part or Part 261 of this Chapter." § 264.1(b). Special provisions apply if the method of waste disposal is by underground injection. See § 144.14.

Covered facilities are divided into two groups: interim status facilities and permitted facilities. Interim status facilities are facilities handling or disposing hazardous wastes pending receipt of a RCRA TSD permit. They are regulated by Part 265 (A.A.C. R-18-8-265). Permitted facilities have received their RCRA TSD permit and are regulated by Part 264 (A.A.C. R18-8-264). As a general matter, the regulations under Parts 264 and 265 parallel each other, but Part 6 264 requirements are more stringent.

2. Excluded Facilities

The RCRA and HWMA regulations do not apply to the following types of facilities or activities:

(i) a municipal or industrial solid waste landfill permitted, licensed, or registered by the state, if the only hazardous waste the facility treats, stores or disposes of is conditionally exempt small quantity generator waste;

(ii) a facility managing recyclable materials described in § 261.6(a)(2) and (3) (except to the extent requirements of Parts 264 or 265 are referred to in § 261.6;

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(iii) generators accumulating wastes on site in compliance with § 262.34;

(iv) farmers disposing of waste pesticides from their own operations pursuant to § 262.70;

(v) totally enclosed treatment facilities, as defined in § 260.10;

(vi) elementary neutralization units or wastewater treatment units, as defined in § 260.10;

(vii) persons engaged in treatment or containment activities during immediate response to any of the following situations:

(A) a discharge of a hazardous waste;

(B) an imminent and substantial threat of a discharge of a hazardous waste;

(C) a discharge of a material that when discharged becomes a hazardous waste.

Owners and operators of a facility other wise regulated under Parts 264 and 265 must comply with Subparts C and D of Parts 264 or 265 (whichever is applicable). In any event, the exemption provided by (vii) only continues through immediate response activities; thereafter, a RCRA TSD permit must be obtained.

(viii) transporters storing manifested waste at a transfer facility for ten days or less;

(ix) the addition of absorbent material to a waste in a container or waste to an absorbent material in a container, provided this occurs at the time waste is first added to the container.

B. Integration with RCRA Generator and Transporter Requirements

Owners and operators of TSD facilities, like other members of the hazardous waste management system, are required to obtain an EPA ID number for their facility. TSD facilities, like generators, also are required to perform waste analyses, based upon a representative sample of the waste, before the waste may be treated, stored or disposed.

1. Manifests

TSD facilities are also required to participate in the manifesting system -- only hazardous waste accompanied by a manifest may be accepted from a

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transporter for treatment, storage or disposal, unless the TSD facility prepares an "unmanifested waste report" for submission to the State. § 264.76; 265.76. The manifest must designate the TSD facility as the "designated" facility or alternate facility. Upon receipt, the TSD operator must sign the manifest and give at least one copy of the signed manifest to the transporter. Another copy of the signed manifest must be sent to the generator of the waste within 30 days of receipt. Finally, the TSD facility must retain a copy of the manifest for at least three years. Slightly different rules apply to shipments by rail or water.

The TSD facility must also note any discrepancies in the manifest before accepting the shipment. These discrepancies should be noted in the "discrepancies" section of the manifest before the signed copy is given to the transporter or sent to the generator. The generator is required to attempt to resolve significant manifest discrepancies by contacting the generator. § 264.72(b); 265.72(b).

2. Emergency Preparedness and Planning Requirements

RCRA TSD facilities are subject to the same emergency preparedness and planning requirements as large quantity generators that operate accumulation areas. Please refer to that discussion for information on these requirements. In addition, TSD facilities are required to train facility personnel, § 264.16, 265.16, and develop a comprehensive inspection program for the facility to prevent releases or threatened releases of hazardous wastes and to prevent threats to human health, § 264.15; 265.15.

C. Overview of TSD Specific Requirements Generally Applicable to All Facilities

1. Operating record

The operator of a TSD facility is required to maintain an operating record. § 264.73 265.73. The operating record must include the following general types of information:

(i) description of all wastes received;
(ii) location of wastes within facility;
(iii) waste analysis, testing and similar data;
(iv) reports of emergency incidents;
(v) inspection reports;
(vi) closure cost estimates;

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(vii) certification that a waste minimization program is in place; and

(viii) Land Ban certifications.

2. Annual Reports

TSD facilities are required to complete and submit an annual report to ADEQ. In general, the annual report must list the generators from which hazardous wastes were received, and the types of hazardous wastes. The report also must include information on the facility's waste minimization programs.

3. Groundwater Protection, Corrective Action and Closure Requirements

Groundwater protection and cleanup are fundamental elements of the hazardous waste program established by Congress in RCRA, as amended by the 1984 Hazardous and Solid Waste Amendments. Section 3004 of RCRA requires owners and operators of facilities, that treat, store, or dispose of hazardous waste to comply with standards established by EPA that are "necessary to protect human health and the environment." Section 3005 provides for implementation of these standards under permits issued to owners and operators by EPA or authorized States. Section 3005 also provides that owners and operators of existing facilities that comply with applicable notice requirements may operate until a permit is issued or denied. This statutory authorization to operate prior to permit determination is commonly known as "interim status." Owners and operators of interim status facilities also must comply with standards set under Section 3004.

Both RCRA and the HWMA through their implementing regulations, require owners and operators of TSD facilities to meet three types of obligations which will be briefly addressed in this paper:

(1) Groundwater monitoring capable of determining the facility's impact on the quality of groundwater in the uppermost aquifer;
(2) Corrective action obligations requiring owners and operators to clean up releases from historical waste management practices;
(3) Closure and post-closure obligations that must be met for a facility to be taken out of use.

These three obligations are key implementing portions of RCRA which assure compliance with the twin policy goals for TSD facilities: (1) protecting groundwater from present and future consequences through monitoring and closure requirements; and (2) correcting

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past contamination that occurred at a waste management facility.

The 1984 Hazardous and Solid Waste Amendments ("HSWA") to RCRA were designed to address several deficiencies in pre-HSWA groundwater monitoring and cleanup requirements, and also sought to minimize reliance on land disposal. EPA had established, prior to 1984, a three level groundwater monitoring program, where responses (corrective action) would be triggered if necessary. These standards applied to permitted land disposal facilities. Congress' concern in 1984 was not so much with the concept, but with the scope of application and with several exemptions. For example, groundwater monitoring and response requirements developed by EPA only applied at the time of permitting. For interim status facilities, groundwater monitoring was required but no cleanup of detected contamination was necessary. It was thought that up to 8 years might pass before final permitting, requiring corrective action, would occur at some interim status facilities. Congress and the public interest groups became concerned that many RCRA interim status TSD facilities would end up as Superfund sites requiring public funds to clean up. Congress decided to close loopholes by statutory amendment instead. New requirements in the 1984 amendments included landfill liners, leachate collection and groundwater monitoring systems, financial liability guarantees, and additional operating, closure, and cleanup obligations.

A prominent Congressional finding in the introduction to the 1984 Amendments stated that "reliance on land disposal should be minimized or eliminated, and land disposal, particularly landfill and surface impoundment, should be the least favored method of managing hazardous wastes." H. R. Rep. No. 1133, 98th Cong., 2d Sess. 5 (1984). The RCRA amendments included a phased-in schedule requiring hazardous wastes to be treated before disposal, with the goal of eventually banning land disposal of hazardous wastes that have not been treated.

Regulations are required to prohibit the land disposal of all hazardous wastes that have not first been treated to minimize their toxicity, unless an interested party demonstrates that "to a reasonable degree of certainty, . . . there will be no migration of hazardous constituents from the disposal unit or injection zone for as long as the wastes remain hazardous." 42 U.S.C. § 6924(d).

D. Groundwater Monitoring

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Standards for interim status facilities were first issued in 1980. See 45 Fed. Reg. 33154 (May 19, 1980). Standards for permitted facilities were originally issued in 1982. See 47 Fed. Reg. 32274 (July 26, 1982).

Both sets of standards establish programs for protecting groundwater from releases of hazardous wastes from certain landfills, surface impoundments, and land treatment units, and, in the case of permitting standards, to waste piles. See §§ 264.90(a)(2) & 265.90(a).) Facility owners and operators are required to sample groundwater at specified intervals and to use a statistical procedure to determine whether or not hazardous wastes or constituents from these units are contaminating groundwater.

Once groundwater contamination is suspected, the strategy requires an analysis to determine the nature of the contamination. This information is used to assess the problem, determine the appropriate remedy, determine when the remedy is effective, and ensure that no new problems arise during the time the remedy is being applied.

1. Interim Status Groundwater Monitoring

Interim status requirements include general standards that apply to several types of facilities. The interim status general standards (Part 265) include groundwater monitoring requirements (Subpart F).

Subpart F groundwater monitoring is required of owners or operators of a surface impoundment, landfill, land treatment facility and some waste piles used to manage hazardous waste. The purpose of these requirements is to assess the impact of a facility on the groundwater beneath it. Monitoring must be conducted for the life of the facility, except at disposal facilities, which must continue monitoring for up to 30 years after the facility has closed. § 265.90(b).

An owner or operator need not implement a groundwater monitoring program or operate such a system if it "can demonstrate that there is a low potential for migration of hazardous waste or hazardous waste constituents from the facility via the uppermost aquifer to water supply wells (domestic, industrial, or agricultural) or to surface water." § 265.90(c). A waiver from the groundwater monitoring requirements is also available under § 265.90(e) for surface impoundments used to neutralize certain corrosive wastes and which contains no other hazardous wastes.

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The interim status groundwater monitoring program consists of:

1) Development and installation of a monitoring system;
2) Background monitoring;
3) Routine monitoring and evaluation;
4) Conducting assessments; and
5) Reporting requirements.

The groundwater monitoring program typically requires a monitoring system of four wells to be installed, one upgradient from the waste management unit and three downgradient. § 265.91. (These are the minimum requirements.) The downgradient wells must be placed so as to intercept any waste migrating from the unit, should such a release occur. The upgradient wells must provide data on groundwater that is not influenced by waste coming from the waste management unit. (In other words, upgradient wells shall provide the necessary background data.) If the wells are properly located, comparison of data from upgradient and downgradient wells should indicate if contamination is occurring.

Once the wells have been installed, the owner or operator monitors to establish background concentrations for selected chemicals. These data form the basis for all future data comparisons. The three sets of parameters for which background concentrations are established are: 1) drinking water parameters; 2) groundwater quality parameters; and 3) groundwater contamination parameters. § 265.92.

Following the establishment of background levels, routine monitoring begins. Routine monitoring examines groundwater for elevated levels of indicator constituents which suggest that contamination may be occurring. The wells must be sampled for the groundwater contamination indicator parameters (semi-annually) and for groundwater quality indicator parameters (annually). § 265.92(d). Drinking water parameters are not monitored routinely. The results of routine monitoring are compared to the background values and tested statistically to determine if significant increases (or decreases in the case of pH) have occurred in the indicator parameters. An outline of a groundwater quality assessment program capable of more detailed investigation of possible contamination must be kept on file in case the original testing demonstrates a difference in indicator parameters. § 265.93. If comparisons show a difference, an assessment program must be instituted.

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Only when contamination is suspected does the owner or operator implement a groundwater assessment program to determine if hazardous waste is actually entering groundwater. The assessment program requires the owner or operator to determine what is contaminating the groundwater, the extent of contamination, and the rate of the contaminant migration. § 265.93(d)(4). If the results of the groundwater assessment (submitted to the regulatory authority) show no contamination by hazardous wastes, then the owner or operator resumes routine monitoring for the indicator parameters. § 265.93(d)(6). However, if the assessment shows hazardous waste contamination, then the owner or operator must continue assessing the extent of groundwater contamination quarterly until the facility is closed or further monitoring is required as a result of the permitting process. If the assessment was instituted during the period after a facility is closed (during post-closure care), the owner or operator need not continue assessing groundwater contamination beyond the initial assessment.

2. Permitted Facilities Groundwater Monitoring

The general standards for permitted facilities (Part 264) also include groundwater monitoring requirements (Subpart F). § 264.90, et seq. The groundwater monitoring requirements for permitted TSD facilities differ from those for interim status TSD facilities in that they are implemented through permit conditions rather than through the owner's or operator's interpretation of the regulations. See §§ 264.91-96. The specific requirements an owner or operator must comply with are developed for each facility by permit writers, based on their "best engineering judgment" (BEJ) and the requirements of Part 264. Such requirements are then incorporated into the facility's operating permit. For example, groundwater monitoring requirements are found in Part 264 but the actual parameters that must be monitored for are specified in each permit. Thus, although the technical requirements for permits are discussed here, each facility's permit must be consulted for the requirements an owner or operator must abide by.

The permitting standards are more extensive than the general management practices detailed in the interim status standards since they compel the owners or operators of the different waste management methods to design their management units to prevent the release of hazardous waste.

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Subpart F of Part 264 contains the requirements for the groundwater monitoring and response programs for permitted hazardous waste units at RCRA treatment, storage and disposal facilities, excluding those units exempted by § 264.90(b). The requirements of this Subpart define a general set of responsibilities that the owner or operator must meet. There is some flexibility in how the monitoring and response programs may be designed. The groundwater protection requirements for permitted facilities are somewhat more specific than those found under interim status although they apply to the same TSDs (surface impoundments, waste piles, land treatment units and landfills). They also differ by requiring the owner or operator to clean up any groundwater contamination.

Section 264.90 uses the term "regulated unit" in defining that portion of the facility that is subject to the requirements of Subpart F. A regulated unit is any solid waste management unit of the above types that has received hazardous waste after July 26, 1982.

Section 264.90(b)(4) allows the regulatory authority to issue a waiver from the groundwater protection requirements if the owner or operator can demonstrate that there is no potential for migration of liquid from the regulated unit to the uppermost aquifer during the active life of the regulated unit and, where applicable, during the post-closure care period as well. A qualified geologist or geotechnical engineer must certify the necessary demonstration.

Very few waivers from the groundwater monitoring requirements have been granted due to insufficient data and analysis submittals and the scarcity of sites that could meet the requirements. In addition, although attempts are sometimes made to circumvent the site assessment requirements with models, actual site characterization that includes obtaining geologic logs, using geophysical methods and the sampling, measurement, and analysis of groundwater is typically essential.

Regulations in Parts 264 (Subpart F) and 270 establish a progressive sequence of groundwater monitoring requirements for land-based hazardous waste treatment storage, or disposal facilities. At specified points in the sequence, the owner or operator of any facility known or suspected to be leaking must analyze groundwater for Appendix VIII hazardous constituents to determine the nature and extent of the contamination.

Under the requirements of Subpart F, the regulatory authority establishes in the facility permit the elements of a monitoring and response program.

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Section 264.91 informs the owners or operators of regulated units subject to this Subpart that they must institute one of three types of monitoring or response programs set forth in Subpart F -- a detection monitoring program, a compliance monitoring program, or a corrective action program, the specifics of which are either governed by other sections of Subpart F or by the facility permit itself. The permit may contain all three programs and specify the conditions under which each will be used at the waste management unit or units at a given facility.

The last three sections of Subpart F (i.e., §§ 264.98 264.99 and 264.100) set forth the specific elements of each type of groundwater monitoring and response program: detection, compliance and corrective action.

Determination of groundwater flow rate and direction is an explicit requirement of the detection and compliance monitoring programs, and is implicitly required for the corrective action program. If hazardous constituents from a regulated unit have not reached groundwater at the time of permit consideration, the owner or operator may receive a detection monitoring program permit. Detection monitoring is conducted to determine if hazardous wastes are leaking from a TSD. Detection activities are similar to those outlined under interim status, including background monitoring and semi-annual monitoring for indicator parameters. Again, there typically will be three downgradient wells and one upgradient well. Monitoring is conducted at a compliance point specified in the permit. This point is located at the hydraulically downgradient edge of the waste management area, best envisioned as an imaginary line of the outer limit of one or a group of disposal units which extend down. The indicator parameters and constituents that must be monitored are specified in the permit.

Where no groundwater contamination has been detected prior to permit issuance, the operating standards of Subpart F of Part 264 require the owner/operator to sample for selected indicator parameters under a detection monitoring program.

If hazardous constituents are detected at the compliance point, the owner or operator must institute a compliance monitoring program. § 264.91(a)(1). (Notification to DEQ is required for statistically significant increases of hazardous constituents. § 264.98(h).) In the compliance monitoring program, analysis for hazardous constituents listed in Appendix VIII to Part 261 is required. § 264.99. The regulatory

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authority will then set "groundwater protection standards" based on the hazardous constituents found in this analysis. §§ 264.92, 264.93, 264.99(a). The compliance monitoring program focuses on measuring increases in constituents for which groundwater protection standards were set. The groundwater protection standards can be background levels, the values of Table 1 of Part 264.94, or alternate concentration limits ("ACL") established by the regulatory authority. § 264.94.

When setting the groundwater protection standard in a facility permit, the regulatory authority must define the time period over which it will apply. In § 264.96, the regulations specify that the compliance period is the number of years equal to the active life of the waste management area, including any waste management activity prior to permitting, and the closure period. The regulations require that once an owner or operator is engaged in corrective action, the compliance period may be extended beyond the active life of the waste management area until the owner or operator can demonstrate that the groundwater protection standard has not been exceeded for a period of three consecutive years.

If the level of a constituent exceeds a groundwater protection standard, the owner or operator must undertake corrective action. § 264.100. The objective of the corrective action program is to bring the facility contaminating groundwater into compliance. This is achieved by the owner's or operator's removing the hazardous waste constituents from the groundwater or treating the groundwater in place. The permit details the specific actions to be taken to remove the contamination.

The rules allow a facility to continue or resume detection or compliance monitoring, as appropriate, after statistically significant increases in monitoring parameters or the concentration of particular constituents have been detected, provided that the owner or operator successfully demonstrates that a source other than a unit within the facility has caused the increase or that an apparent increase resulted from error in sampling, analysis, or evaluation. A mechanism for remaining in compliance monitoring (rather than entering corrective action) is provided under § 264.99(j). Within the time frame necessary to establish a corrective action program, the owner or operator can demonstrate under § 264.99(j) that entering corrective action is inappropriate.

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If a plume of contamination has entered groundwater prior to permit issuance, the permit application rules for land-based hazardous waste units requires the owner or operator to conduct a scan for Appendix VIII constituents. § 270.14(c)(4). If the scan detects hazardous constituents, the owner or operator must submit all data needed to establish a compliance monitoring or corrective action program. §§ 270.14(c)(7), (c)(8).

The standards for corrective action in § 264.100 also require owners and operators to implement a groundwater monitoring program that "may be based on the requirements of compliance monitoring under § 264.99 and must be as effective as that program in determining compliance with the groundwater protection standard . . . and in determining the success of the corrective action program. . .". § 264.100(d). Semi-annual progress reports to the regulatory agency are required. § 264.100(g).

E. Corrective Action

Corrective action is cleanup. Where a release of hazardous waste to an environmental medium occurs at a hazardous or solid waste management unit at a TSD facility, RCRA requires appropriate corrective action.

1. Jurisdictional Issues

The limits of jurisdiction over cleanups under the RCRA Subtitle C and HWMA programs are determined first by the definition of "hazardous waste."

A second concept for determining cleanup requirements is the "hazardous constituent," which is any one of the constituents identified in Appendix VIII to 40 C.F.R. Part 261. These are either the characteristics that led EPA to list a waste as hazardous or they are those related to determining if a waste is hazardous due to a toxicity characteristic. § 260.10.

Section 3004(u) provides that all RCRA permits -- including those issued for storage units and for post-closure care -- must require "corrective action for all releases of hazardous waste or constituents from any solid waste management unit at [the] . . . facility . . . regardless of the time at which the waste was placed in such unit." 42 U.S.C. § 6924(u) (emphasis added). These permits also must contain enforceable assurances that the permittee will complete the cleanup. Furthermore, the regulatory agency has the authority to require corrective action beyond the facility's

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boundaries if there has been a release of hazardous waste or hazardous waste constituents from a permitted facility.

RCRA creates a groundwater detection or compliance monitoring system for TSD facilities involving a background, upgradient well and three downgradient wells. §§ 264.97(a)(2), (b) and (c). If a statistically significant increase in a contaminant is observed, notice must be provided to the regulatory agency which triggers compliance monitoring. §§ 264.98(h), 264.99. Ground water protection standards are set at background levels, at maximum contaminant levels for fourteen specific hazardous constituents, or at alternate concentration limits determined by the EPA to be protective of human health and environment based on site-specific circumstances. When it is determined that the groundwater protection standard has been exceeded, corrective action for permitted facilities pursuant to § 264.100 is triggered. All interim status facilities, including landfills, surface impoundments, land treatment units and waste pile units that receive hazardous waste after July 26, 1982, are subject to Subpart F standards concerning corrective action for groundwater. 42 U.S.C. § 6925(i).]

Section 3008(h) of RCRA allows EPA to issue administrative enforcement orders to owner/operators of interim status treatment, storage, and disposal facilities, requiring corrective action or other measures necessary to respond to releases of hazardous waste from such facilities. 42 U.S.C. § 6928(h). Section 3008(h) provides that the Administrator may issue an order or commence a civil action "as he deems necessary to protect human health or the environment" when there has been a release of a hazardous waste into the environment. Such orders may also revoke or suspend authority to operate under Section 3005(e) of RCRA and/or assess penalties of up to $25,000 a day for noncompliance with a previous corrective action order. EPA has the authority to issue an order to an interim status facility requiring corrective action or such other response measure deemed necessary to protect human health or the environment, if EPA determines there is or has been a release of hazardous waste into the environment from the facility. 42 U.S.C. § 6928(h).

The order must state with reasonable specificity the nature of the required corrective action or response and a date by which compliance is required. These orders can be issued to require corrective action such as repairing of liners or pumping to remove a plume of contamination. These corrective action orders also may suspend or revoke interim status.

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In a situation where there has been a release of hazardous waste from a facility, the government can sue to have the court order the facility to correct the problem and take any necessary response measures. The court can also suspend or revoke a facility's interim status as a part of its order. Civil penalties up to $25,000 per day can be imposed for failure to comply with an order. The EPA contends that its interim status corrective action authority allows it to issue orders pertaining to releases from solid as well as hazardous wastes. 50 Fed. Reg. 28,716 (1985).

Corrective actions may involve removing the hazardous waste constituents or in situ (in place) treatment. § 264.100(b). The method of treatment is specified in a "corrective action" modification to the facility permit. A groundwater monitoring program to evaluate the effectiveness of the corrective action also must be developed and implemented. § 264.100(d). Corrective action also must remove or treat in situ any contamination between the permit point of compliance and the down-gradient facility boundary and even beyond the facility boundary, if necessary, to protect public health and the environment. § 264.100(e) and (f). Corrective action may be discontinued if compliance monitoring proves the groundwater standards are not exceeded for three consecutive years. § 264.100(f).

Corrective action for groundwater contamination is required whenever hazardous constituents from a regulated unit exceed background or drinking water standards, whichever is higher, or alternate concentration limits between the compliance point and the facility boundary. With respect to soil contamination, detection and corrective action, standards under RCRA Section 3004(u) apply.

A TSD facility can be subject to obligations if (1) there has been a release of hazardous waste or hazardous constituents from any solid waste management unit ("SWMU") at that TSD facility and (2) the TSD facility is seeking a permit under RCRA Subtitle C. §§ 264.101; 271.1(j); see also 42 U.S.C. § 6924(a),(u). It does not matter when the waste was placed in the SWMU.

Definitions are important in determining jurisdiction. "Facility" is defined to include the entire site under the control of the owner or operator engaged in hazardous waste management. § 260.10. A "solid waste management unit" ("SWMU") covers any discernible unit from which hazardous constituents may migrate, including units intended for management of solid waste as well as those for hazardous waste. A SWMU also includes certain areas at facilities which

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have become contaminated by routine, systematic or deliberate releases of wastes. A SWMU does not cover areas where wastes were not placed in the unit or spills, unless the spill is "linked" to the SWMU.

The "permit" requirement also is broadly construed. It applies to facilities seeking post-closure permits (any unit closing after January 26, 1983). These corrective action standards also apply to regulated units that received wastes after July 26, 1982 which are located at facilities that closed before January 26, 1983, even though these facilities do not need to obtain post-closure permits and otherwise would not be covered. The "permit" requirement and permit-based corrective action does not apply to units which ceased receiving hazardous waste by July 26, 1982. If a permit was issued to a facility before the November 8, 1984 effective date of HSWA, then RCRA Section 3004(u) corrective action obligations will kick in when a new permit is issued or when a permit modification occurs.

Section 3004(v) of RCRA states that corrective action will be required only where necessary to protect human health and the environment. 42 U.S.C. § 6924(v). For groundwater, corrective action is required typically only when the release exceeds the Subpart F groundwater protection standards. The facility either must complete corrective action before its permit is issued or it must accept a permit with schedules of compliance and assurances of financial responsibility where corrective action cannot be completed prior to permit issuance. Corrective action can cover all media. Case by case decisions are made where standards have not been issued governing the extent of corrective action.

The EPA has interpreted its corrective action authority broadly. In the summer of 1985, EPA initiated a national information gathering program to discover virtually any soil or groundwater contamination at any facility (defined to be the entire area of an industrial plant and not just the immediate area around a RCRA unit) that was seeking a permit. See 50 Fed. Reg. 28,712 (1985). EPA uses its authority to require owners and operators to clean up "releases" from historical waste management practices. Release is broadly defined in a similar way to CERCLA, and it includes continuing and past releases.

The corrective action program has been developed by statute and by a series of three significant regulatory developments. The initial regulatory codification of the 1984 HSWA amendments was set forth at 50 Fed. Reg. 28,702 (July 15, 1985). These

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regulations were upheld for the most part in United Technologies Corp. v. EPA, 821 F.2d 714 (D.C. Cir. 1987). With respect to corrective action, it added § 264.101, which set forth EPA's implementation of Section 3004(u). Another regulation setting forth the corrective action program to be utilized after permitting of hazardous waste land disposal facilities was promulgated at 52 Fed. Reg. 23,447 (1987).

Finally, the requirements for corrective action beyond the facility boundary were developed at 52 Fed. Reg. 45,788 (December 1, 1987).

Regulated units and facilities operating under TSD permits must take corrective action beyond the facility boundary "where necessary" to protect human health and the environment unless it can be demonstrated that the TSDF owner or operator was unable to obtain the necessary permission to undertake such action, despite best efforts to secure such permission. 42 U.S.C. § 6924(v). Financial assurance is required for corrective action beyond the facility boundary. These requirements were included, expanded and clarified in EPA's December 1, 1987 amendments to the regulations.

2. Implementation of Corrective Action

A corrective action requirement results in a RCRA facility assessment ("RFA") by the agency to determine whether an owner or operator must perform a RCRA facility investigation ("RFI") to characterize the nature and extent of contaminant migration. The RFA identifies actual or potential releases from solid waste management units. The agency will specify permit conditions or issue a corrective action order requiring the owner or operator to investigate certain releases (an RFI) or to undertake interim corrective measures. The RFI characterizes the nature, extent and migration of the release. Interim measures generally are required if there is an immediate threat, and actions can be taken to stabilize, control or limit further releases. The RFI typically has a compliance schedule imposed by permit or enforcement order.

The results of the RFI determine the need for corrective measures. If required by the agency, the owner or operator must perform a corrective measures study (CMS) and propose appropriate corrective measures. The CMS identifies appropriate corrective measures and studies their likely effectiveness and feasibility. The measures taken must eliminate threats to public health and the environment and must meet applicable health and environmental standards under various environmental laws including RCRA. The agency specifies the corrective

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measures after review of the owner/operator's proposal, and the owner or operator must then demonstrate financial assurance to conduct such corrective measures and subsequently implement those measures.

Most corrective actions must achieve "background" standards or Safe Drinking Water Act MCLs for groundwater quality. A permit holder may apply for an alternate concentration limit to be set by the agency at higher than normal background levels. § 264.94(b). The permit applicant must demonstrate that the hazardous constituents detected in groundwater will not pose a substantial presence or potential threat to health or the environment at alternate concentration limits. A health risk assessment is required if human exposure is possible at the waste management boundary.

3. 1990 Proposed Corrective Action Rule

The EPA has outlined general policy considerations in its Proposed Corrective Rule, 55 Fed. Reg. 30798 (July 27, 1990). Proposed § 264.525(d) sets media cleanup standards. EPA's draft correction action rule outlines the process for selection of a cleanup standard. § 265.525. First, corrective action is required to achieve four specific goals: first, it shall be "protective of human health and the environment"; second, it shall attain the media cleanup standards; third, it shall control the source of the release of the relevant pollutants into the environment; and, fourth, it is required to comply with specified waste management standards. § 525(a).

a. Media Cleanup Standards

According to the proposed rules, media cleanup standards are to be set on a case-by-case basis, with concentration levels of permissible hazardous constituents specified for groundwater, surface water, air and soils as appropriate to protect human health and the environment. As a starting point, EPA uses conservative risk-assessment based levels focusing on human health protection. For known or suspected carcinogens, corrective action is to use a cleanup level equivalent to a $1x10^{-6}$ excess upperbound lifetime cancer risk as a point of departure. The media cleanup standard ultimately selected must present a final risk somewhere between $1x10^{-4}$ and $1x10^{-6}$. For noncarcinogens (systemic toxicants), corrective action shall achieve media cleanup standards set at the concentration to which the human population (including sensitive subgroups) could be exposed on a daily basis over a lifetime without significant risk of adverse effect. These cleanup levels based on human health protection

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may be modified if "a lower concentration level is required to protect environmental receptors." § 264.525(d)(ii).

Furthermore, EPA also may consider in setting the media cleanup standards the effect of multiple contaminants in the medium, other site-specific exposure to contaminated media and the selected remedy's reliability, effectiveness, practicability and other relevant features. EPA specifies that the cumulative risk from multiple contaminants may not exceed 1.10^{-4}.

If the hazardous waste is discharging into a sensitive ecosystem, clean up beyond the level required to protect human health may be required.

A more stringent clean up standard may also be imposed if the local population is exposed to the contaminant from off-site sources. For example, if the local population is exposed to lead contamination from off-site sources, the on-site lead clean up level could be higher.

Finally, the EPA considers the available treatment techniques in arriving at the appropriate clean up level. A reliable technique that cleans to a risk level of $1x10^{-5}$, for example, may be preferred over an experimental clean up technique which has the potential of producing a risk level of $1x10^{-6}$.

Aside from the considerations associated with the remedy, EPA may depart from the risk-assessment based media cleanup standard in five situations. First, where a maximum contaminant level has been established under the Safe Drinking Water Act for a particular hazardous constituent, those shall be considered in establishing the cleanup standard. § 264.525(d)(1)(iv).

Second, where background concentrations of a hazardous constituent (either naturally occurring or from sources other than the facility's solid waste management units) exceed the risk-assessment based standards, cleanup to background typically is sufficient. EPA can require cleanup below background only if necessary to protect human health and the environment and the cleanup is pursuant to an area-wide cleanup required under some environmental authority.

Third, where background contamination (by natural occurrence or sources other than the facility's SWMUs) by any substances have affected the relevant medium such that remediation of the hazardous constituents released from the facility's SWMU would achieve no significant reduction in health or relevant

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environmental risk, EPA can completely or partially waive the requirement to remove the released hazardous constituents from the effect medium.

Fourth, EPA also can waive the media cleanup standards where the hazardous constituents are present in a groundwater medium that is not a current or potential drinking water source and is not hydraulically connected with higher quality groundwaters or surface waters where the hazardous constituents would pose a degradation problem. However, Arizona classifies all of its aquifers for drinking water use.

Fifth, EPA can waive the media cleanup standard for a nondrinking water groundwater medium if the cleanup is technically impracticable.

b. Point of compliance

In any cleanup, it is not merely the standard which cleanup much achieve that is significant, but the point at which compliance with the standard shall be measured. The proposed corrective action rule delineates the selection of those compliance points for different media. For groundwater, the general rule is that the MCS shall be achieved "throughout the contaminated groundwater." Where waste is left "in place," EPA may move the compliance point to the "boundary of a waste management area encompassing the original source(s) of the release." § 264.525(e)(1)(i). For air, MCS compliance is to be measured at the location of the hypothetical "most exposed individual," unless EPA determines a point closer to the source of the release should be selected as necessary to protect human health and the environment. § 264.525(e)(1)(ii). Compliance with the surface water MCS is to be measured where the released hazardous constituents enter the surface water. If contamination already has accumulated in sediments, EPA may establish compliance points in the sediments. § 265.525(e)(1)(iii). Finally, soil cleanup levels are to be measured at any point direct contact exposure to the soils may occur. § 264.525(e)(1)(iv). EPA decides on a case-by-case basis the amount and period of sampling required to demonstrate MCS compliance. § 264.525(e)(2-3). Corrective action for releases that have migrated off-site is required unless EPA is convinced "that despite the owner/operator's best efforts, she is as a result [of inability to obtain permission of other land owners/occupiers] unable to achieve medial cleanup standards or levels beyond the facility boundary." § 264.525(e)(1)(v).

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c. Corrective Action Management Units (CAMUs) and Temporary Units (TUs)

Part of the 1990 corrective action proposal was promulgated in final form on February 16, 1993. See 58 Fed. Reg. 8658. A CAMU is an area, designated in a Part 264, Subpart S corrective action order, that may include one or more regulated units and uncontaminated areas, that will be used for the handling and/or disposal of remedial action wastes. § 264.552. A TU is a temporary tank or container storage area used for storage or treatment of hazardous remediation wastes which may be subject to alternative design, operating or closure standards in lieu of Part 264 requirements. § 264.553. CAMUs and TUs may be used by a facility undergoing corrective action to manage remedial hazardous wastes without triggering Land Ban requirements. CAMUs and Tus thus increase flexibility and lower costs of remedial action. They cannot be used for managing "as generated wastes" -- wastes generated from ongoing production processes or industrial activities.

Arizona has yet to adopt the CAMU and TU concept as part of its state program.

4. Superfund's Role in RCRA Corrective Actions

EPA's policy has been to defer placing a site on the Superfund National Priorities List if the site could be addressed by RCRA corrective action. EPA has developed two exceptions to this general policy.

First, EPA will place a RCRA TSD facility on the NPL when the owner/operator of a site is considered unable to pay for addressing the contamination of the RCRA regulated site. The criteria for such a determination are set forth at 53 Fed. Reg. 30,002 (August 9, 1988).

Second, EPA will place a RCRA facility on the NPL when it determines that the owner/operator is unwilling to perform corrective action. These criteria are set forth at 53 Fed. Reg. 30,005 (August 9, 1988).

F. Closure and Post-Closure Requirements

Closure is the period when wastes are no longer accepted, during which owners or operators of TSD facilities complete treatment, storage and disposal operations, apply final covers to or cap disposal units, and dispose of or decontaminate equipment, structures

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and soil. Post-closure, which applies only to disposal facilities, is the 30-year period after closure during which owners or operators of disposal facilities conduct certain monitoring and maintenance activities to preserve and look after the integrity of the disposal system.

The purpose of the closure and post-closure requirements is to ensure that all facilities are closed in a manner that (1) minimizes the need for care after closure and (2) controls, minimizes, or eliminates the escape of waste, leachate, contaminated rainfall or waste decomposition products to ground or surface waters and the atmosphere.

For an interim status facility, §§ 265.110-.120 contain the closure (and post-closure) requirements. The closure (and post-closure) requirements for permitted TSD facilities appear at §§ 264.110-.120. In addition parts 264 and 265 each contain additional closure and post-closure requirements for particular types of facilities. See, e.g., § 264.228 (Closure and Post-Closure for Surface Impoundments). These are discussed in greater detail later in this paper.

1. Closure for TSD Facilities

An owner or operator must develop a plan for closing the facility and keep it on file at the facility until closure is completed and certified. The plan must include, pursuant to §§ 264.112(b), 265.112(b), the following:

(A) A description of how each hazardous waste management unit of the facility will be closed;
(B) A description of how final closure of the facility will be conducted;
(C) An estimate of the maximum amount of hazardous waste ever on-site during the life of the facility;
(D) A description of the steps needed to decontaminate equipment, structures, or soil;
(E) A description of all activities taken during the closure period to ensure that the closure is in compliance with the regulations;
(F) A schedule for closure of each hazardous waste management unit and for final closure of the facility; and
(G) An estimate of the expected year of final closure.

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Permitted facilities must submit their closure plans, with their permit applications and approval of the plan by the regulatory authority, as a condition of the RCRA permit. § 264.112(a). An opportunity to comment on the plan is afforded to the public. Following the comment period, the regulatory authority must make a decision to approve, modify or disapprove the plan. Closure activities occur according to a timetable outlined in the regulations.

Interim status facilities must retain their closure plans on-site for inspection and the plans must be furnished to the regulatory authority upon request. § 265.112(a). For interim status TSD facilities, the closure plan and the post-closure plan must be submitted to the regulatory authority for approval at least 180 days before closure is expected to begin. § 265.112(d). The plan may be amended at any time during the active life of the facility. Furthermore, the plan must be amended whenever design and operation changes occur which affect the closure plan.

An owner of a permitted TSD facility must notify the regulatory authority in writing at least 60 days prior to the date on which he expects to begin closure. § 264.112(d). Owners of an interim status facility must submit their closure plans at least 180 days prior to the date they expect to begin closure. If the interim status facility closure plan has been previously approved, owners must submit their closure plans only 60 days prior to the date closure is expected to begin. § 264.112(d).

All hazardous waste must either be treated, disposed of, or removed from the facility in accordance with the closure plan. Unless the regulatory authority approves a request for an extension, the owner or operator must initiate closure within 90 days after receiving the final volume of hazardous wastes (or for interim status TSD facilities, within 90 days after agency approval of the closure plan if that time period is longer) and must complete closure within 180 days after receipt of that final volume (or for interim status TSD facilities, within 180 days after agency approval of the closure plan if that time period is longer). §§ 264.113, 265.113. After closure is completed, the owner of the TSD facility and a registered professional engineer must sign a certification that the facility was closed in accordance with the closure plan. §§ 264.115, 265.115.

2. Post-Closure Care for Disposal Facilities

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Owners of hazardous waste disposal facilities must also have a written post-closure plan (§§ 264.118, 265.118) that includes the following required elements:

(1) Groundwater monitoring and reporting activities;
(2) Maintenance activities and monitoring of waste containment systems to ensure the integrity of the final cover or containment systems used and the function of any monitoring equipment;
(3) The person or office to contact regarding the facility during the post-closure care period; and
(4) Security provisions.

Like the closure plan, owners of interim status TSD facilities must submit the post-closure plan to the regulatory authority at least 180 days prior to beginning closure. § 265.118(e). A post-closure plan is kept at the facility until post-closure care begins. This plan may be amended at any time, and an amendment is required if there is any change that affects the plan. Post-closure plans are submitted and reviewed in the same manner as closure plans.

The post-closure period lasts for 30 years from the date of closure, during which the owner of a disposal facility must continue maintenance of containment structures, groundwater monitoring, and maintenance of the monitoring equipment. §§ 264.117, 265.117.

The regulations further require that the owner of a disposal facility submit to the environmental regulatory authority and the local land authority a record of the type, location, and quantity of waste disposed of within the facility. This survey plat of the disposal location serves the purpose of presenting a record of the TSD that can be referenced in future years. Finally, the fact that the land has been used to manage hazardous wastes must be noted on the deed to the facilities' property to notify potential purchasers of the property that the land was used to manage hazardous waste. §§ 264.119, 265.119.

3. Requirements for Specific Facility Types

Closure of container storage units (Subpart I) includes additional specific requirements set forth at § 264.178. All contaminated equipment, structures and soils at the facility must be removed or decontaminated. Section 3008(h) orders can be used as needed.

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With respect to closure of tank systems (Subpart J) used to treat or store hazardous waste, all hazardous waste must be removed and soils, structures and equipment must be decontaminated or removed, (§ 264.197; R18-8-264.M) unless all contaminated soils cannot be practically removed or decontaminated. Then post-closure care must be performed pursuant to § 264.310 (landfills). See also A.R.S. § 49-1008. ("Closure of an underground storage tank shall be accomplished in a manner which prevents future releases of regulated substances.")

Closure of surface impoundments (Subpart K) requires either (a) removal or decontamination of wastes and contaminated soils, structures and equipment [for storage impoundments], or (b) closing it as a landfill by covering the impoundment (five feet thick) and complying with 30-year post-closure care requirements [for disposal impoundments]. § 264.228.

Waste piles (Subpart L) are similarly treated. If all wastes and soils, equipment and structures cannot be removed or decontaminated, it is closed essentially as a landfill with 30 years of post-closure care. § 264.258.

Land treatment units (Subpart M) are subject to closure and post-closure. Migration of hazardous waste and hazardous constituents into groundwater must be controlled. Contaminated runoff into surface water and all emissions of contaminants must be prevented. A vegetative cover shall be established. Post-closure care is required until hazardous constituents in treatment zone soils do not exceed background. § 264.280. The groundwater monitoring requirement can be avoided once hazardous constituents in the treatment zone are returned to background, and monitoring shows no migration beyond the treatment zone. §§ 264.280(e); 264.90(b)(3).

Landfills (Subpart N) must be covered and closed so that pollutant movement and infiltration of the landfill by water is controlled and erosion is minimized. Any landfill not certified as closed prior to January 26, 1983 requires a post-closure permit, with 30 years of post-closure maintenance and monitoring. § 264.310.

Incinerators (Subpart O) must have all hazardous waste and residues removed, including the ash, scrubber water and any sludge. No post-closure permits are required. § 264.351.

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A miscellaneous Unit (Subpart X), aside from general closure requirements, is subject to post-closure care if it is a disposal unit, or if it has contaminated soils or groundwater that cannot be completely removed or decontaminated during closure. § 264.603.

VII. LAND BAN

A. Summary of the Hazardous and Solid Waste Amendments of 1984 and the Land Disposal Restrictions Framework

1. Statutory Requirements

The Hazardous and Solid Waste Amendments (HSWA), enacted on November 8, 1984, prohibit the land disposal of hazardous wastes. Specifically, the amendments specify dates when particular groups of hazardous wastes are prohibited from land disposal unless "* * * it has been demonstrated to the Administrator, to a reasonable degree of certainty, that there will be no migration of hazardous constituents from the disposal unit or injection zone for as long as the wastes remain hazardous" (RCRA sections 3004(d)(1), (e)(1), (g)(5); 42 U.S.C. 6924(d)(1), (e)(1), (g)(5)).

The amendments also require EPA to set "* * * levels or methods of treatment, if any, which substantially diminish the toxicity of the waste or substantially reduce the likelihood of migration of hazardous constituents from the waste so that short-term and long-term threats to human health and the environment are minimized" (RCRA section 3004(m)(1), 42 U.S.C. 6924(m)(1)). Wastes that meet treatment standards established by EPA are not prohibited and may be land disposed. In addition, a hazardous waste that does not meet the treatment standard may be land disposed provided the "no migration" demonstration specified in RCRA sections 3004(d)(1), (e)(1) and (g)(5) is accepted by EpA.

For the purposes of the restrictions, HSWA defines land disposal "* * * to include, but not be limited to, any placement of such hazardous waste in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, salt bed formation, or underground mine or cave" (RCRA section 3004(k), 42 U.S.C. 6924(k)).

The land disposal restrictions are effective when promulgated unless the Administrator grants a national capacity variance from the otherwise-applicable date and establishes a different date (not to exceed two years beyond the statutory deadline) based on "* * * the

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earliest date on which adequate alternative treatment, recovery, or disposal capacity which protects human health and the environment will be available" (RCRA section 3004(h)(2), 42 U.S.C. 6924(h)(2)). The Administrator may also grant a case-by-case extension of the effective date for up to one year, renewable once for up to one additional year, when an applicant successfully makes certain demonstrations (RCRA section 3004(h)(3), 42 U.S.C. 6924(h)(3)). A case-by-case extension can be granted whether or not a national capacity variance has been granted.

The statute also allows treatment of hazardous wastes in surface impoundments that meet certain minimum technological requirements (or certain exceptions thereto). Treatment in surface impoundments is permissible provided the treatment residues that do not meet the treatment standard(s) (or applicable statutory prohibition levels) are "* * * removed for subsequent management within one year of the entry of the waste into the surface impoundment" (RCRA section 3005(j)(11)(B), 42 U.S.C.6925(j)(11)(B)).

In addition to prohibiting the land disposal of hazardous wastes, Congress prohibited storage of any waste which is prohibited from land disposal unless "* * * such storage is solely for the purpose of the accumulation of such quantities of hazardous waste as are necessary to facilitate proper recovery, treatment or disposal" (RCRA section 3004(j), 42 U.S.C. 6924(j)).

2. Applicability to Injected Wastes

As noted above, disposal of hazardous wastes in injection wells is subject to the provisions of HSWA. The injection of hazardous wastes is controlled by two statutes, RCRA and the Safe Drinking Water Act (SDWA). The regulations governing injection of these wastes have been codified along with other regulations of the Underground Injection Control (UIC) program under the SDWA in parts 124, 144, 145, 146, 147, and 148 of the Code of Federal Regulations.

3. Solvents and Dioxins

Effective November 8, 1986, HSWA prohibited land disposal (except by deep well injection) of solvent-containing hazardous wastes numbered F001-F005 listed in 40 C.F.R. 261.31 and dioxin-containing hazardous wastes numbered F020-F023 and F026-F028 (RCRA sections 3004(e)(1), (e)(2), 42 U.S.C. 6924(e)(1), (e)(2)). In response to this mandate, EPA promulgated a final rule (51 FR 40572) on November 7, 1986, implementing RCRA section 3004(e). This rule established the general

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framework for the land disposal restrictions program, and established treatment standards for the F001-F005 solvent wastes and F020-F023 and F026-F028 dioxin-containing wastes.

4. California List Wastes

Effective July 8, 1987, the statute prohibited further land disposal (except by deep well injection) of the following listed or identified wastes (RCRA section 3001) set out in RCRA sections 3004(d)(1) and (d)(2) (42 U.S.C. 6924(d)(1), (d)(2)):

(A) Liquid hazardous wastes, including free liquids associated with any solid or sludge, containing free cyanides at concentrations greater than or equal to 1,000 mg/l.

(B) Liquid hazardous wastes, including free liquids associated with any solid or sludge, containing the following metals (or elements) or compounds of these metals (or elements) at concentrations greater than or equal to those specified below:

(i) Arsenic and/or compounds (as As) 500 mg/l;

(ii) Cadmium and/or compounds (as Cd) 100 mg/l;

(iii) Chromium (VI and/or compounds (as Cr VI)) 500 mg/l;

(iv) Lead and/or compounds (as Pb) 500 mg/l;

(v) Mercury and/or compounds (as Hg) 20 mg/l;

(vi) Nickel and/or compounds (as Ni) 134 mg/l;

(vii) Selenium and/or compounds (as Se) 100 mg/l; and

(viii) Thallium and/or compounds (as Tl) 130 mg/l.

(C) Liquid hazardous waste having a pH less than or equal to two (2.0).

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(D) Liquid hazardous wastes containing polychlorinated biphenyls (PCBs) at concentrations greater than or equal to 50 ppm.

(E) Hazardous wastes containing halogenated organic compounds (HOCs) in total concentration greater than or equal to 1,000 mg/kg.

On July 8, 1987, EPA promulgated a final rule (52 F.R. 25760) implementing RCRA section 3004(d). This rule established treatment standards for California list wastes containing PCBs and certain HOCs, and codified the statutory prohibition on liquid corrosive wastes. The statutory prohibition also is in effect for the California list wastes containing free cyanides, metals, and the California list dilute HOC wastewaters.

5. Disposal of Solvents, Dioxins and California List Wastes in Injection Wells

Section 3004(f) of RCRA required that the Administrator prohibit the disposal of solvents, dioxins and California list wastes in deep wells, effective August 8, 1988, unless such disposal had been determined to be protective of human health and the environment for as long as the wastes remained hazardous, or unless a variance had been granted under RCRA section 3004(h). On July 26, 1988, EPA established effective dates for the prohibition on injection of solvents and dioxin wastes (53 FR 28118). In another regulation, effective August 6, 1988 and published August 16, 1988 in the Federal Register, EPA established effective dates for the prohibition on injection of California list wastes (53 FR 30908).

6. Scheduled Wastes

HSWA required EPA to prepare a schedule by November 8, 1986, for restricting the land disposal of all hazardous wastes, including underground injection wastes, listed or identified as of November 8, 1984, in 40 C.F.R. part 261, excluding solvent- and dioxin-containing wastes and California list wastes covered under the schedule set by Congress. The schedule, based on a ranking of the listed wastes that considers their intrinsic hazard and their volume, ensures that prohibitions and treatment standards are promulgated first for high volume hazardous wastes with high intrinsic hazard before standards are set for low volume wastes with low intrinsic hazard. The statute further requires that these determinations be made by the following deadlines:

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(A) At least one-third of all listed hazardous wastes by August 8, 1988;

(B) At least two-thirds of all listed hazardous wastes by June 8, 1989; and

(C) All remaining listed hazardous wastes and all hazardous wastes identified as of November 8, 1984, by one or more of the characteristics defined in 40 C.F.R. part 261 by May 8, 1990.

Furthermore, if EPA failed to set a treatment standard by the statutory deadline for any hazardous waste in the first or second third of the schedule, should such waste be disposed in a landfill or surface impoundment, that unit must meet the minimum technological requirements specified in RCRA section 3004(o) for new facilities (RCRA section 3004(g)(6)). (Note: In the August 17, 1988 First Third final rule, EPA interpreted the term "such facility" in section 3004(g)(6) to refer to the individual surface impoundment or landfill unit.) In addition, prior to disposal in such unit, the generator was required to certify to the Administrator that he had investigated the availability of treatment capacity and had determined that disposal in such landfill or surface impoundment was the only practical alternative to treatment currently available to the generator. This restriction on the use of landfills and surface impoundments that met the minimum technological requirements applied until EPA set a treatment standard for the waste, or until May 8, 1990, whichever was sooner. These requirements were collectively referred to as the soft hammer provisions. Other forms of land disposal, including underground injection, were not similarly restricted, and could continue to be used for disposal of untreated wastes until EPA promulgated a treatment standard, or until May 8, 1990, whichever was sooner.

If EPA fails to set a treatment standard for any scheduled hazardous waste by May 8, 1990, the soft hammer provisions are superseded by the hard hammer. (Note: It is EPA's interpretation that the hard hammer applies to characteristic wastes. See 54 FR 48489.) These wastes are automatically prohibited from all forms of disposal on May 8, 1990, unless the wastes are the subject of a successful "no migration" demonstration (RCRA section 3004(g)(5), 42 U.S.C. 6924(g)(5)). (Note: RCRA section 3004(h)(2) permits extensions of the effective date such as national capacity extensions or case-by-case extensions beyond the hard hammer date.)

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On May 28, 1986, EPA promulgated the schedule for setting treatment standards for the listed and identified hazardous wastes (51 FR 19300). All wastes that are identified as hazardous by characteristic are scheduled in the Third Third. This schedule is incorporated in 40 C.F.R. 268.10, 168.11 and 268.12.

For the scheduled wastes, the statute does not provide different deadlines for restriction of wastes that are injected underground versus disposed of in surface land units. EPA did, however, propose and promulgate First Third regulations for surface disposed and injected wastes on separate dates. The First Third final rule, promulgated on August 8, 1988, and published in the Federal Register on August 17, 1988 (53 FR 31138), set out the conditions under which wastes included in the first one-third of the schedule of restricted hazardous wastes may continue to be land disposed (other than by injection). Final regulations prohibiting deep well injection of certain First Third wastes were published on August 16, 1988 (53 FR 30908) and on June 14, 1989 (54 FR 15416).

The Second Third final rule, promulgated on June 8, 1989, and published in the Federal Register on June 23, 1989, (54 FR 26594) established treatment standards and prohibition effective dates for land disposal and underground injection for certain wastes. In addition, EPA promulgated treatment standards and effective dates for certain First Third soft hammer wastes, Third Third wastes and newly listed wastes.

The Third Third rule promulgated the conditions under which Third Third wastes may continue to be land disposed. It also promulgated treatment standards for some First and Second Third restricted hazardous wastes, five newly listed wastes (i.e., listed after November 8, 1984), promulgated alternate treatment standards for lab packs, and revised the treatment standards for petroleum refining wastes (EPA Hazardous Waste No. K048-K052). The Third Third rule applies to all forms of land disposal, including deep well injection.

7. Newly Identified and Listed Wastes

RCRA requires EPA to make a land disposal prohibition determination for any hazardous waste that is newly identified or listed in 40 C.F.R. part 261 after November 8, 1984, within six months of the date of identification or listing (RCRA section 3004(g)(4), 42 U.S.C. 6924(g)(4)). However, the statute does not provide for an automatic prohibition of the land disposal of such wastes if EPA fails to meet this deadline.

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B. Regulatory Framework

The November 7, 1986, final rule (51 FR 40572) established the regulatory framework for implementing the land disposal restrictions program. Some changes to the framework were made in the July 8, 1987, final rule (52 FR 25760) that prohibited the land disposal of California list wastes, and in the August 17, 1988, First Third final rule. Some additional changes were promulgated in the Third Third rule, particularly with respect to characteristic wastes. Regulations specifying how the framework applies to injected wastes were promulgated July 26, 1988 (53 FR 28118). The following discussion summarizes the major provisions of the land disposal restrictions.

C. Applicability

The land disposal restrictions apply prospectively to the affected wastes. In other words, hazardous wastes land disposed after the applicable effective dates are subject to the restrictions, but wastes land disposed prior to the effective dates are not required to be removed or exhumed for treatment (51 FR 40577). However, if these wastes or contaminated media are excavated and removed, these wastes are subject to the land disposal restrictions. Similarly, only surface impoundments receiving restricted wastes after the applicable deadline are subject to the restrictions on treatment in surface impoundments contained in 40 CFR 263.4 and RCRA section 3005(j)(11). Also, the storage prohibition applies to wastes placed in storage after the effective dates.

The provisions of the land disposal restrictions apply to wastes produced by generators of greater than 1,000 kilograms of hazardous waste per calendar month, as well as small quantity generators of 100 to 1,000 kilograms of hazardous waste (or greater than 1 kilogram of acute hazardous waste) in a calendar month. However, wastes produced by small quantity generators of less than 100 kilograms of hazardous waste (or less than 1 kilogram of acute hazardous waste) per calendar month are conditionally exempt from RCRA, including the land disposal restrictions (see 40 CFR 268.1).

The land disposal restrictions apply to all facilities subject to RCRA, including both interim status and permitted facilities. The requirements of the land disposal restrictions program supersede 40 CFR 270.4(a), which currently provides that compliance with a RCRA permit constitutes compliance with subtitle C of RCRA. Therefore, even though the requirements may not be specified in the permit conditions, all permitted

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facilities are subject to the restrictions. Moreover, the land disposal restrictions are material conditions or requirements of the interim status standards that may be enforced in either a criminal or civil action. Although EPA attempted to clarify this point in the June 4, 1987 correction notice (54 FR 21010, item #1, and 21016, item #27), EPA's correction has been viewed as imprecise in that it characterized part 265 as requirements of persons managing wastes pursuant to part 268. Although EPA believes that this point is already established, EPA clarified in the Third Third rule that the part 268 provisions should be characterized as material conditions or requirements of part 265. Therefore, EPA modified part 265.1(e) accordingly.

1. Treatment Standards

By each statutory deadline, EPA must establish the applicable treatment standards under 40 CFR part 268 subpart D for each restricted hazardous waste (RCRA section 3004(m)(1)). After the applicable effective dates, restricted wastes may be land disposed only if they meet the treatment standards, or it has been demonstrated to a reasonable degree of certainty, that there will be no migration of hazardous constituents from the disposal unit or injection zone for as long as the wastes remain hazardous. If EPA does not promulgate treatment standards by the statutory deadlines, such wastes are prohibited from land disposal (with the exception of First and Second Third scheduled hazardous wastes, which were subject to the soft hammer provisions of RCRA section 3004(g)(6) until May 8, 1990).

At present, a treatment standard is based on the performance of the best demonstrated available technology (BDAT) to treat the waste (51 FR 40578). EPA may establish treatment standards either as specific technologies or as performance standards based on the performance of BDAT. Compliance with performance standards may be monitored by measuring the concentration level of the hazardous constituents (or in some circumstances, indicator pollutants) in the waste, treatment residual, or in the extract of the waste or treatment residual. When treatment standards are set as performance levels, the regulated community may use any technology not otherwise prohibited (such as impermissible dilution) to treat the waste to meet the treatment standard. Thus, treatment is not limited to only those technologies considered in determining the treatment standard. However, when treatment standards are expressed as specific technologies, such technologies must be employed.

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2. National Capacity Variances From the Effective Dates

EPA has the authority to grant national capacity variances from the statutory effective dates, not to exceed two years, if there is insufficient alternative protective treatment, recovery or disposal capacity for the wastes (RCRA section 3004(h)(2)). To make capacity determinations, EPA compares the nationally available alternative treatment, recovery, or protective disposal capacity at permitted and interim status facilities which will be in operation by the effective date with the quantity of restricted waste generated. If there is a significant shortage of such capacity nationwide, EPA will establish an alternative effective date based on the earliest date such capacity will be available. During the period such a capacity variance is in place, if the waste is disposed in a landfill or surface impoundment, such disposal may only be in a unit meeting the minimum technological requirements of RCRA section 3004(o) (53 FR 31186 and 40 C.F.R. 268.5(h)(2)). It should be noted, however, that if a waste subject to a national capacity variance is treated to meet the applicable treatment standards, the land disposal restrictions allow such waste to be disposed in a subtitle C landfill or surface impoundment regardless of whether the unit meets minimum technological requirements. Note, however, that independent RCRA provisions may require such wastes to be disposed in units meeting minimum technological requirement.

3. Case-By-Case Extensions of the Effective Date

EPA will consider granting up to a one-year extension (renewable only once) of a prohibition effective date on a case-by-case basis. The requirements outlined in 40 C.F.R. 268.5 must be satisfied, including a demonstration that adequate alternative treatment, recovery, or disposal capacity for the petitioner's waste cannot reasonably be made available by the effective date due to circumstances beyond the applicant's control, and that the petitioner has entered into a binding contractual commitment to construct or otherwise provide such capacity. If a waste is placed in a surface impoundment or landfill during the period that such a case-by-case extension is in place, such unit must meet the minimum technological requirements of RCRA section 3004(o).

4. "No Migration" Exemptions From the Restrictions

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EPA has the authority to allow the land disposal of a restricted hazardous waste which does not meet the treatment standard provided that the petitioner demonstrates that there will be no migration of hazardous constituents from the disposal unit or injection zone for as long as the waste remains hazardous (40 C.F.R. 268.6). If a petition is granted under 40 C.F.R. part 268, it can remain in effect no longer than ten years for disposal in interim status land disposal units, and for no longer than the term of the RCRA permit for disposal in permitted units (40 C.F.R. 268.6(h)).

However, for injected wastes, 40 C.F.R. 148.20 (promulgated on July 26, 1988, see 53 FR 28118) outlines in detail EPA's requirements for "no migration" petitions for hazardous waste injection facilities. Briefly, a petitioner is required, through modeling, to demonstrate that there is no migration of hazardous constituents from the injection zone for as long as the waste remains hazardous. This demonstration can be made in one of two ways: the use of flow and transport models to show that injected fluids will not migrate vertically out of the injection zone for a period of 10,000 years; or, use of geochemical modeling to show that the waste is transformed so it will become nonhazardous at the edge of the injection zone. Also, a showing must be made that the well was in compliance with the substantive area of review, corrective action, and mechanical integrity requirements of part 146.

5. Variances From the Treatment Standards

EPA established the variance from the treatment standard to account for those wastes that cannot be treated to meet the applicable treatment standards, even if well-designed and well-operated BDAT treatment systems are used, or if treatment technologies are inappropriate for the waste (40 C.F.R. 268.44). This variance is somewhat analogous to the fundamentally different factors variance in EPA's Clean Water Act effluent limitations guidelines regulations. Among other things, petitioners must demonstrate that the waste is significantly different from the wastes evaluated by EPA in establishing the treatment standard, and the waste cannot be treated to the level or by the method specified by the treatment standard, or that such standard or method is inappropriate for the waste (51 FR 40605). This variance procedure can result in the establishment of a new treatability group and corresponding treatment standard that applies to all wastes meeting the criteria of the new waste treatability group. A site-specific variance from the treatment standard may also be granted administratively

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(without rulemaking), but the variance has no generic applicability to other wastes at other sites (53 FR 31199).

6. Exemption for Treatment in Surface Impoundments

Wastes that would otherwise be prohibited from one or more methods of land disposal may be treated in a surface impoundment that meets certain technological requirements (40 C.F.R. 268.4(a)(3)) as long as treatment residuals that do not meet the applicable treatment standard (or statutory prohibition levels where no treatment standards are established) are removed for subsequent management within one year of entry into the impoundment and the wastes are not placed into any other surface impoundment. The owner or operator of such an impoundment must certify to the Regional Administrator that the technical requirements have been met and must also submit a copy of the waste analysis plan to the Regional Administrator that shows the waste analysis plan has been modified to provide for testing of treatment residuals in accordance with § 268.4 requirements.

7. Storage of Prohibited Wastes

Storage of prohibited wastes in tanks and containers is prohibited except where storage is solely for the purpose of accumulating sufficient quantities of wastes to facilitate proper treatment, recovery, or disposal (40 C.F.R. 268.50). A facility that stores a prohibited waste for more than one year bears the burden of proof that such storage is solely for this purpose. Id. EPA bears the burden of proof if it believes that storage of a restricted waste by a facility for up to one year is not for the purpose of accumulating sufficient quantities to facilitate proper treatment, recovery, or disposal. Id.

8. The "Soft Hammer" Provisions

First and Second Third wastes for which EPA did not promulgate treatment standards by their respective effective dates could continue to be disposed of in landfill and surface impoundment units until May 8, 1990. Such land disposal could occur only if certain demonstrations were made, and provided technology requirements of RCRA section 3004(o) (see 53 FR 31181, August 17, 1988). Other types of land disposal were not similarly restricted (e.g., underground injection). On May 8, 1990, wastes for which EPA has not established treatment standards are prohibited from land disposal (including underground injection). This prohibition is

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referred to as the hard hammer. Effective May 8, 1990, therefore, the soft hammer provisions are no longer in effect.

VIII. LIABILITY AND ENFORCEMENT UNDER THE HAZARDOUS WASTE MANAGEMENT PROGRAM

A. Liability for Cleanup Under RCRA

Persons subject to RCRA regulation are potentially liable for violations of RCRA under several sections of the statute. Section 7003 permits EPA to seek injunctive relief (or to issue an Administrative Order) when the "handling, storage, treatment, transportation or disposal of any solid waste or hazardous waste may present an imminent and substantial endangerment to health or the environment". Any person contributing to such activities may be required immediately to stop "or to take such other action as may be necessary." The imminent and substantial endangerment standard of Section 7003 means a threatened or potential harm and does not require proof of actual harm.

Any past or present generator who has contributed or who is contributing to such storage, treatment, transportation or disposal is strictly liable under Section 7003. Any past or present owner/operator of a disposal facility who has contributed or is contributing to disposal is also liable under Section 7003, if the past or present disposal may present an imminent and substantial endangerment to health or the environment.

RCRA's liability provisions apply to contamination of groundwater, even when the wastes were disposed of years before by an individual who no longer owns the property where the disposal occurred. In United States v. Price, 523 F. Supp. 1055 (D.N.J. 1981), aff'd, 688 F.2d 204 (3d Cir. 1982), the court addressed the position of defendant owners under RCRA who did not create the hazardous condition. Nevertheless, the court found the owners may be held responsible, apparently because as purchasers they should have made inquiry and as owners they had a duty to abate.

> As sophisticated investors, they had a duty to investigate the actual conditions that existed on the property or take it as it was. They deliberately chose the latter course. Moreover, they became aware in the summer of 1979 that toxic chemicals had been dumped at the landfill, but they have done nothing to

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> abate the hazardous condition that exists. Under these circumstances, the defendants may be held responsible to stop the continued leaking of contaminations from the site.

Id. at 1073 (citations omitted). Thus it appears that § 7003 of RCRA creates an implied duty to investigate if the purchaser wishes to avoid cleanup liability. Thereafter, it imposes a duty to take reasonable action to abate the imminent and substantial hazard.

RCRA also authorizes EPA to impose corrective action obligations (an innocuous sounding term with expensive consequences) for any release of hazardous waste into the environment upon the owner/operator of a waste disposal facility seeking a full RCRA permit, regardless of the time at which waste was placed in the facility. For interim status facilities, RCRA allows EPA to order corrective action for any release into the environment. See 42 U.S.C. §§ 3004(u) & 3008(h). "Corrective action" requires a cleanup to EPA's satisfaction.

Section 3004(u) allows EPA to require corrective action for all releases of hazardous waste constituents from "waste management units" regardless of when the waste was placed in the units. This includes releases resulting from placement of waste in a waste management unit by a previous owner or operator of the facility. It was a significant expansion of EPA's authority to require corrective actions at all solid waste management units at facilities seeking a RCRA treatment, storage, or disposal permit, as distinguished from limiting the remedial measures to hazardous waste management units only. An owner or operator of a closed facility thus may be subject to EPA authority to clean up these facilities even though that owner or operator was not the party responsible for the activity that originally subjected the property to regulation.

Section 3004(v) allows EPA to require owners and operators of permitted hazardous waste facilities to clean up contamination that has migrated beyond the property boundary. Owners or operators of any disposal facility may be required, pursuant to Section 3013 of RCRA, to impose monitor, analyze, test and report to EPA on the nature and extent of hazards that EPA suspects.

Congress intended that the requirements of CERCLA and RCRA to be cumulative, according to the United States Court for the District of Arizona, which stated, in Mardan Corp. v. C.G.C. Music, Ltd., 600 F. Supp. 1049 (D. Ariz. 1984), aff'd, 804 F.2d 1454 (9th

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Cir. 1986) "[t]hat CERCLA was intended to operate independently of and in addition to RCRA as indicated by the first clause of Section 107 of CERCLA which provides: 'Notwithstanding any other provision or rule of law . . . [liability may be established].'"

The 1984 RCRA amendments also added a new cause of action to the citizen suit provisions in Section 7002. Now there is a private right of action against any person whose handling of any solid or hazardous waste has contributed or is contributing to an "imminent and substantial endangerment" to human health or the environment. This provision allows private citizens to act as private attorneys general to abate public nuisances under the authority of RCRA. There are certain notice requirements that must be met. Citizen suits are also available where a violation of RCRA occurs but there is no "imminent and substantial" danger. RCRA § 7002(a)(1)(A). Again, certain notice requirements must be met.

B. Penalties for Noncompliance

Failure to comply with hazardous waste regulations can constitute violation of both federal and state law. The penalties for noncompliance under federal and state law differ in several important aspects. However, the penalties can be substantial under both.

Under § 3008 of RCRA, a generator can be fined up to $25,000 per day for each violation of a requirement of the regulations. RCRA also contains criminal penalties for "knowingly" violating the Act. Examples of criminal acts are knowingly transporting hazardous waste without a permit; knowingly treating, storing or disposing of a hazardous waste without a permit or in violation of a permit condition; and knowingly omitting material information or making false material statements or representations to the EPA. A generator who commits criminal acts can be subject to a fine of up to $50,000 per day of each violation, or imprisonment up to two years, or both. Higher penalties are provided for second violations. The heaviest penalties under RCRA are reserved for persons who place another person "in imminent danger of death or serious bodily injury." These persons are subject to penalties of up to $250,000 or imprisonment up to 15 years, or both. An organization convicted of these acts can be subject to a fine of up to $1 million. Further details on criminal sanctions are provided elsewhere in these materials.

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Under HWMA, ADEQ has the authority to issue compliance orders if it determines that any provision of HWMA or the accompanying regulations are being violated. A.R.S. § 49-923.A. ADEQ can also obtain injunctive relief in state superior court. § 49-923.B. In addition, civil penalties of up to $10,000 per day of violation can be assessed. § 49-94.A. Also, criminal penalties are provided for intentionally or recklessly generating, transporting, treating, storing or disposing of hazardous wastes in violation of the law. § 49-925.A.

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CHAPTER 6

REGULATION OF USED OIL

I. ARIZONA REGULATION

In 1990, the Arizona legislature enacted a comprehensive program governing the management of used oil. See A.R.S. §§ 49-801 through 815 (the "1990 Program"). In doing so, the legislature stated that millions of gallons of used oil are generated in Arizona each year and that such used oil is a valuable resource that can be burned for energy recovery, thereby preserving virgin petroleum products. Laws 1990, Chapter 331, § 4. The legislature also noted that despite the value of used oil for energy recovery, significant quantities of used oil are improperly disposed of or handled by means that pollute the water, land and air and endanger the public health, safety and welfare. Id. Finally, the legislature pronounced its general policy that used oil should be collected and recycled to the maximum extent possible by means that are economically feasible and environmental sound. Id. The 1990 Program attempts to balance these general purposes and goals.

A. RELATIONSHIP TO FEDERAL LAW

The statute provides that if the provisions of Arizona law are more stringent than those of pertinent federal law, the provisions of Arizona law shall apply. A.R.S. § 49-802.C.

B. DEFINITION AND SCOPE

The 1990 Program generically defines "used oil" as "oil that has been refined from crude oil and that has been contaminated by physical or chemical impurities as a result of use." A.R.S. § 49-801.A.9. Except as discussed below, the 1990 Program does not apply to hazardous waste or hazardous waste fuel. A "hazardous waste fuel" is a hazardous waste that is burned for energy recovery in an industrial furnace or boiler that is not regulated as a hazardous waste incinerator under the Federal Solid Waste Disposal Act as amended, or the State Hazardous Waste Management Program. See A.R.S. § 49-801.A.3. Hazardous waste fuel includes fuel produced from hazardous waste by processing, blending, or other treatment. Id.

Used oil that is "used oil fuel" is regulated under the 1990 Program, rather than as a hazardous waste

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fuel, if the used oil fuel meets either of the following criteria:

1. Exhibits a characteristic of a hazardous waste, provided that it is not mixed with a hazardous waste.

2. Contains hazardous waste generated as a household waste or by a small quantity generator in a business classified as Standard Industrial Code No. 5541 (gasoline service stations) or 7538 (general automobile repair shops) under the federal office of management and budget standard classification manual.

A.R.S. § 49-802.8. "Used oil fuel" means used oil that is to be burned for energy recovery, including fuel produced from used oil by processing, blending or other treatment. A.R.S. § 49-801.A.9.

The 1990 Program provides that used oil fuel containing more than 1,000 parts per million of total halogens is presumed to have been mixed with halogenated hazardous waste and shall be regulated as a hazardous waste fuel unless this presumption is rebutted by demonstrating that the used oil does not contain a hazardous waste. A.R.S. § 49-801.B. Used oil fuel containing more than 4,000 parts per million of total halogens is regulated as a hazardous waste fuel. Id. If the provisions of the 1990 Program are more restrictive than the hazardous waste regulations in a particular situation, the 1990 Program applies.

C. PROHIBITED PRACTICES

The 1990 Program provides that used oil may not be used or disposed of by any of the following methods:

1. Discharge into sewers or waters of the state, except pursuant to a permit issued by appropriate regulatory authorities.

2. Incineration except at a facility authorized to incinerate hazardous waste. (Burning for energy recovery is not considered incineration for purposes of the 1990 Program, unless the Arizona Department of Environmental Quality ("ADEQ") determines by rule-making that the purpose of the burning is for destruction of listed or characteristic hazardous waste, rather than energy recovery. A.R.S. § 49-803.A.2.).

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3. Disposal on land unless permitted or approved by ADEQ.

4. Dispersal as a dust suppressant or contact herbicide.

A.R.S. § 49-803.A. One exception to the above prohibitions is that used oil that is not a hazardous waste and that is generated by an individual farm or ranch during normal agricultural or ranching activities may be reused for weed control or dust suppression, if the reuse occurs on the property owned or managed by the individual farming or ranching entity. A.R.S. § 49-803.B.

D. TRANSPORTER STANDARDS

The 1990 Program defines "transporter" as a person who transports used oil or used oil fuel in Arizona and, with limited exceptions, requires that each transporter be registered as a hazardous waste transporter under the Federal Solid Waste Disposal Act, as amended. A.R.S. § 49-804.A. The 1990 Program imposes several other obligations on transporters of used oil, including:

1. The transporter must complete a separate manifest for each transport vehicle operated by the transporter for each day on which a vehicle is operated and for each load of used oil transported if more than a single load is transported in a day.

2. The transporter must submit a copy of the generator's copy of the manifest to ADEQ within 45 days of each shipment.

3. Before initiating the first shipment of used oil fuel to a burner[1] or marketer[2], a transporter must obtain a one-time written and signed notice from the burner or marketer certifying the following:

   a. The Burner or marketer has provided ADEQ with a notice of the location and

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[1] The definition of a "burner" and restrictions imposed on burners in the 1990 Program are discussed in Section I.E. herein.

[2] The definition of "marketer" and restrictions imposed on marketers in the 1990 Program are discussed in Section I.D. herein.

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general description of that person's used oil fuel management practices.

b. If the recipient of the shipment is a burner and the used oil duel is off-specification used oil[3], the burner will burn the off-specification used oil, only in an industrial furnace or boiler which is regulated by the Federal Solid Waste Disposal Act, as amended.

See A.R.S. § 49-804.8.

Transporters must submit an annual report to ADEQ by March 1 of each year setting forth the shipping descriptions of used oil transported during the preceding year, the volume of used oil transported, and the marketer or burner to whom the used oil was transported. See A.R.S. § 49-805.

A transporter of used oil generated in another state but shipped to a generator, storage facility, marketer or burner in Arizona must comply with the transporter requirements in the 1990 Program. A.R.S. § 49-804.E. A transporter of used oil generated in another state is exempt from the transporter requirements in the 1990 Program, however, as long as the used oil is not shipped to a generator, marketer, burner, or storage facility in Arizona. A.R.S. § 49-806.A. In addition, total shipments of used oil of twenty gallons or less in containers of five gallons or less by the generator of the used oil also are exempt from the transporter restrictions set forth in the 1990 Program. A.R.S. § 49-806.C.

E. MARKETERS STANDARDS

The 1990 Program defines "marketers" to include all of the following:

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[3] The 1990 Program defines "off-specification used oil fuel" as oil fuel which exceeds any of the allowable levels for the following constituents or properties:

a. Arsenic -- 5 parts per million maximum.
b. Cadmium -- 2 parts per million maximum.
c. Chromium -- 10 parts per million maximum.
d. Lead -- 100 parts per million maximum.
e. polychlorinated biphenyls -- 2 parts per million maximum.
f. Flashpoint -- 100°F minimum.

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1. A generator who markets used oil fuel directly to a burner.

2. A person who receives used oil from a generator or & marketer and who produces, processes or blends used oil fuel from these used oils, including a person who sends blended or processed used oil fuel to a broker or other intermediary.

3. A person who distributes but does not process or blend used oil fuel.

A.R.S. § 49-801.A.4.a. The 1990 Program provides that the following persons are not marketers:

1. A transporter who transports used oil fuel which is received only from generators, unless that transporter markets the used oil directly to a person in Arizona who burns it for energy recovery.

2. A transporter who markets to a person who burns some used oil fuel for purposes of processing or other treatment to produce used oil fuel for marketing.

3. A generator who transports used oil fuel from a facility under its control and at which the used oil is generated to another facility under its control at which the used oil fuel will be burned for energy recovery.

4. A person who operates a used oil collection center and receives household used oil from generators in shipments that do not exceed twenty gallons and that do not exceed five gallons in any single container, unless the person markets the used oil directly to a burner.

A.R.S. § 49-801.A.4.b.

A marketer may market used oil only if the marketer has provided written notification to ADEQ stating the location and general description of its used oil fuel management practices. A.R.S. § 49-807.A. A marketer also must obtain an identification number from the Environmental Protection Agency (the "EPA"). Id. A marketer who initiates a shipment of used oil fuel must prepare a manifest and send it with each shipment to the receiving facility. A.R.S. § 49-807.8. Among other items, the manifest must include the following information:

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1. Manifest number.

2. Names and addresses of the shipping and receiving facilities.

3. Description of the used oil fuel by United States Department of Transportation shipping name, hazard class and identification number.

4. Quantity of used oil shipped.

5. Certification by the marketer that the used oil in a shipment has been tested and is either on-specification or off-specification used oil.

A.R.S. § 49-807.B.

The marketer must submit all copies of the manifest to the receiving facility, which must sign and date the manifest, return two copies to the marketer, and send the original to ADEQ within 45 days. A marketer also must maintain an operating log and keep for three years for each shipment of used oil the name and address of the receiving facility, the quantity and type (i.e., on-specification or off-specification used oil fuel) of the used oil fuel delivered, the date of shipment, and a cross-record to the record of used oil analyses or other information used in determining whether the oil is on-specification or off-specification. A.R.S. § 49-807.F.

A marketer must submit an annual report to ADEQ setting forth the total volume of used oil fuel possessed at the beginning and end of the preceding calendar year, the total volume of used oil fuel received during the preceding calendar year, the total volume of used oil received from out-of-state marketers and generators, and the total volume of used oil sold during the preceding calendar year. A.R.S. § 49-807.G.

F. BURNER STANDARDS

The 1990 Program defines a "burner" as a person who owns or operates a facility that burns used oil fuel. A.R.S. § 49-801.A.1. Burners must notify ADEQ in writing of the name, address, location, and telephone number of each facility that burns used oil and provide a general description of its used oil fuel management practice. A.R.S. § 49-808.E. Owners and operators of space heaters, flame-producing weed control devices and agricultural frost protection devices are exempt from this notification requirement. Id. A burner of used

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oil fuel also must obtain a United States EPA identification number. A.R.S. § 49-808.I.

A burner may not burn off-specification used oil fuel except in the following devices:

1. Industrial furnaces identified as proper for burning off-specification used oil in the federal solid Waste Disposal Act, as amended.

2. Boilers that are designated as proper for burning off-specification used oil in the federal Solid Waste Disposal Act, as amended, and that meet either of the following criteria:

   a. Industrial boilers located on the site of the facility engaged in a manufacturing process where substances are transformed into new products, including the component parts of products, by mechanical or chemical processes.

   b. Utility boilers used to produce electric power, steam or heated or cooled air or other gases or fluids for sale.

A.R.S. § 49-808.A. The burning of off-specification used oil fuel always is prohibited, however, in hospitals, schools, and health care facilities. A.R.5. § 49-808.C. A burner may have to obtain an applicable clean air permit to construct and operate a burner facility. See A.R.S. § 49-808.D.

A burner must submit an annual report to ADEQ on or before March 1 of each year containing the following information for the preceding calendar year:

1. The total volume of used oil fuel received from marketers during the preceding calendar year.

2. The total volume of used oil fuel received from out-of-state marketers.

3. The total volume of on-specification used oil fuel received from marketers.

4. The total volume of off-specification used oil fuel received from marketers.

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5. The total volume of used oil generated by the burner at the site at which the burner operates.

6. The total volume of on-specification used oil fuel burned.

7. The total volume of off-specification used oil fuel burned.

A.R.S. § 49-808.L.

G. USED OIL FEES

A burner must pay a used oil fee of six cents for each gallon of on-specification used oil fuel burned that is not generated by the operations of the burner's business. A.R.S. § 49-814.A. A burner must pay a used oil fee of twenty cents for each gallon of off-specification used oil that is burned by the burner and that is not generated by the operations of the burner's business. A.R.S. § 49-814.B. A burner of on-specification used oil is entitled to a credit" of six cents per gallon or gallon equivalent against the total fee incurred by the burner for burning on-specification used oil for the use of each gallon or gallon equivalent of clean burning fuel by the burner. See A.R.S. § 49-814.A. Clean-burning fuel means ethanol, methanol, propane, natural gas, solar energy, geothermal energy or hydrogen. A.R.S. § 49-814.F.

H. ENFORCEMENT

The 1990 Program authorizes both civil and criminal penalties for violations of the program. More specifically, the 1990 Program authorizes civil penalties up to $10,000 per day of violation. See A.R.S. § 49-811. Knowing violations of the 1990 Program are Class 2 misdemeanors. See A.R.S. § 49-810. The 1990 Program also authorizes compliance orders and injunctive relief. See A.R.S. § 49-812.

II. FEDERAL REGULATION

A. REGULATION AND MANAGEMENT OF USED OIL

Two 1992 EPA rulings have resolved major issues in a longstanding debate concerning whether used oil destined for either disposal or recycling should be listed as a hazardous waste.

1. Used Oil Destined for Disposal. On May 20, 1992, EPA determined that used oil destined for disposal would not be listed as a

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hazardous waste under RCRA Subtitle C. 57 Fed. Reg. 21,524 (May 20, 1992). EPA's decision was based in part on a decreased threat to health and the environment resulting from the phase-out of leaded gasoline and a concomitant decrease in lead levels in used oil. Used oil which is contaminated by hazardous waste remains subject to regulation under RCRA subtitle C, governing disposal of waste exhibiting a hazardous waste characteristic.

2. Used Oil Destined for Recycling. Similarly, on September 10, 1992, EPA issued a decision that used oil destined for recycling would not be listed. 57 Fed. Reg. 42,566 (Sept. 10, 1992). The new rules, which prescribe extensive management standards and are codified at 40 CFR Part 279, supplant former 40 CFR Part 266, Subpart E.

The final rule sets out the following definition of "used oil."

> Used oil means any oil that has been refined from crude oil, or any synthetic oil, that has been used and as a result of such use is contaminated by physical or chemical impurities.

40 C.F.R. § 260.10. The definition includes synthetic oil products because they are used and managed in much the same way as petroleum-based oils. Used oil residues or sludge resulting from the storage, processing or re-refining of used oils are excluded from the definition because EPA believes concentrations of hazardous residues in these materials differ from those found in used oil, and therefore warrant additional study. EPA based its determination not to list recycled oil on the technical criteria for listing hazardous waste, the potential for management of used oil destined for recycling, and the likely impacts of management standards. EPA's ruling recognizes federal regulatory programs already in place to control the storage and transportation of used oil, to ensure against improper disposal or other releases to the environment, and to guard against burning of used oil containing toxic contaminants (discussed below). Nevertheless, EPA

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concluded that some additional regulation was necessary and that, if properly managed, used oil en route to be recycled will not pose a substantial threat to human health or the environment. EPA's regulatory approach therefore focuses on management standards which address potential hazards arising from improper handling or storage of used oil by various industry sectors, including used oil generators, transporters, processors, re-refiners and off-specification used oil burners.

Under the regulations, all used oil is presumed to be recyclable, with the result that the regulations are presumptively applicable to all used oil until such time as it is discarded or transported for disposal.

The regulation addresses management of used oil mixed with used oil-contaminated wastes. 57 Fed. Reg. at 41,581. Used oil mixed with a listed hazardous waste is subject to regulation as a hazardous waste in accordance with RCRA subtitle C. Used oil is not subject to hazardous waste regulation when mixed with a characteristic waste which does not exhibit hazardous waste characteristics, or when mixed with hazardous waste generated by conditionally exempt small-quantity generators under RCRA, although in the latter case additional requirements apply if the used oil is burned for energy recovery as a form of recycling. Used oil separated from mixtures with solids are subject to the recycling standards. Used oil mixed with ignitable solvents may be burned for energy recovery if no other hazardous waste characteristic, including the characteristic of ignitability, is demonstrated. The new regulation incorporates the rules governing used oil burned as fuel, formerly located at 40 C.F.R. 266, subpart E, and includes standards for those who sell on-specification used oil as fuel, and those who burn off-specification used oil for energy recovery.

As a result of the new rule, service station dealers become eligible for the exemption from CERCLA liability for recycled used oil. 57 Fed. Reg. at 41,583. The exemption is limited to generator liability under CERCLA section 107(a)(3) and transporter liability

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under section 107(a)(4), and does not include owner and operator liability under section 107(a)(1) and (2). To qualify for the exemption, a service station dealer must be in compliance with the following requirements: (1) the dealer must comply with the recycled used oil management standards, (2) the used oil must not be mixed with a hazardous substance, and (3) the dealer must accept "do-it-yourself" used oil for recycling. 57 Fed. Reg. at 41,583.

The following uses of used oil are conditionally exempt from regulation under the new rule: (1) distillation bottoms obtained through re-refining, when used for asphalt paving or roofing materials, (2) used oils which have been directly introduced into natural gas or crude oil pipelines, (3) generators who mix used oil with diesel fuel on-site to fuel their own vehicles are exempt from processing and re-refining requirements but must meet the generator requirements before mixing and the fuel specifications after mixing, (4) wastewater containing de minimis amounts of used oil, (5) used oil contaminated with PCBs and regulated under 40 CFR part 761, and (7) certain used oils used for dust suppression during the transport of coal which are regulated by 40 CFR part 279. 57 Fed. Reg. at 41,582-83.

The following briefly summarizes the management standards under the new rule:

- **Management Standards for Used Oil Generators.**

  A used oil generator is "any person, by site, whose act or process produces used oil or whose act first causes used oil to become subject to regulations." 40 C.F.R. § 279.1. Generators must adhere to the generator management standards, and may be subject to other management standards as well. Generators must store used oil in appropriate containers which are properly main-tained. Containers, tanks, and pipes used to introduce used oil into underground storage tanks must be labeled "used oil." 40 C.F.R. § 279.22(a), (b) and (c). Under most circumstances,

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generators must ensure that off-site shipments are handled only by transporters who have obtained EPA identification numbers. 40 C.F.R. § 279.24 (a) and (b).

- **Management Standards for Used Oil Collection Centers and Aggregation Points**

  The generator standards apply to "do-it-yourself used oil collection centers," "used oil collection centers," and "used oil aggregation points." 40 C.F.R. §§ 279.30, 279.31, 279.32. "Do-it-yourself" used oil collection centers accept used oil for recycling only for household "do-it-yourselfers." "Used oil collection centers" are facilities that accept and/or store used oil from used oil generators in quantities of no more than 55 gallons per delivery. They must be registered or licensed to manage used oil by state or local government. "Oil aggregation points" are owned by the same entity that generates the used oil delivered to the site, again in quantities which do not exceed 55 gallons per delivery.

- **Management Standards for Used Oil Transporters and Transfer Facilities**

  Used oil transporters are "persons who transport used oil, persons who collect used oil from more than one generator and transport the collected oil, and owners and operators of used oil transfer facilities." 40 C.F.R. § 279.40. The management standards do not apply to on-site transportation or to transport of 55 gallons or less to a used oil collection center or aggregation point, and to transport by "do-it-yourselfers" to collection centers.

  Transporters must obtain an EPA identification number. 40 C.F.R. § 279.42.

  Transporters may deliver used oil only to one of four types of facilities:

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(1) Another used oil transporter, provided that the transporter has obtained an EPA identification number,

(2) A used oil processing/re-refining facility which has obtained an EPA identification number,

(3) An off-specification used oil burner facility which has obtained an EPA identification number, or

(4) An on-specification used oil burner facility.

The regulations contain requirements for notice and action in the event of discharge. Transporters are required to ensure that the used oil being transported does not contain hazardous waste by testing its halogen content.

Transportation-related "transfer facilities," such as loading docks or parking areas where used oil is stored for more than twenty-four hours but less than thirty five days, are subject to storage, labeling, tracking and response release requirements.

- **Management Standards for Used Oil Processors and Refiners**

These requirements apply to owners and operators of facilities that process used oil. Processing is defined as follows:

> Processing means chemical or physical operations designed to produce from used oil, or to make used oil more amendable for production of, fuel oils, lubricants, or other used oil-derived products. Processing includes, but is not limited to: blending used oil with virgin petroleum products, blending used oils to meet the fuel specification, filtration, simple distillation, chemical or

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physical separation and re-refining.

40 C.F.R. § 279.50.

Processors and re-refiners must obtain EPA identification numbers. Facilities are subject to specific maintenance and operation requirements, including contingency and emergency management planning. Used oil must be tested for halogen content to ensure it does not contain hazardous substances, and must be stored in appropriate and well-maintained containers.

- **Management Standards for Used Oil Marketers**

  Marketers include any person who conducts either of the following activities:

  (1) directs a shipment of off-specification used oil from their facility to a used oil burner; or

  (2) first claims that used oil that is to be burned for energy recovery meets the used oil fuel specifications set forth in § 279.11.

  Marketers must obtain EPA identification numbers and must comply with notice, tracking, and used oil testing requirements. In addition, marketers are subject to management standards applicable to generators, processors or re-refiners, or burners of off-specification used oil for energy recovery as appropriate.

- **Management Standards for Used Oil Burners Who Burn Off-Specification Used Oil for Energy Recovery**

  Off-specification used oil fuel may be burned only in specified boilers and industrial furnaces. Notice, analysis, tracking, and management requirements apply.

3. Applicability in Arizona. States such as Arizona, which have been authorized to

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administer and enforce the RCRA program for hazardous wastes within the state, must, to the extent the new rules are more stringent than existing state law, develop equivalent authorities by no later than July 1, 1994. To the extent Arizona requirements are already similar to those in the new federal rule, Arizona may continue to administer and enforce its standards, although EPA may not do so until it has assessed the state requirements against the federal rules to determine that they meet the requirements for authorization.

In addition to the recent EPA announcements described above, there are several existing regulatory programs that impact used oil generators, transporters, collectors and recyclers. These programs include the following:

B. RCRA SUBTITLE C

As discussed above, used oil that exhibits a characteristic of a hazardous waste is regulated as a hazardous waste in accordance with all applicable Subtitle C regulations. Similarly, used oil mixed with a listed hazardous waste is a listed hazardous waste and must be handled in accordance with Subtitle C requirements. Used oil mixed with a characteristic hazardous waste is a hazardous waste if the mixture exhibits a hazardous waste characteristic.

C. TOXIC SUBSTANCES CONTROL ACT

Section 6(e) of the Toxic substances Control Act ("TSCA") (15 U.S.C. §§ 2601 to 2671) requires that EPA regulate the use, manufacture and disposal of PCBs. A common use of PCBs, a viscous oil, was as an insulating material for electrical equipment. TSCA and regulations thereunder control the disposal of PCBs, including the disposal of used oil containing PCBs.

D. CLEAN WATER ACT

The Clean Water Act (33 U.S.C. §§ 1251 to 1387) regulates the storage of petroleum, including used oil, at on-shore and off-shore facilities that have the potential to discharge oil into navigable waterways and have underground storage tank capacities greater than 42,000 gallons or aboveground storage tank capacities of more than 660 gallons in a single tank or an aggregate of greater than 1,320 pounds. See 40 C.F.R. Part 112. These facilities are subject to the SPCC regulations set

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forth in 40 C.F.R. Part 112 and discussed elsewhere in this manual.

E. SAFE DRINKING WATER ACT

The Underground Injection Control ("UIC") Program adopted pursuant to the provisions of Part C Of the Safe Drinking Water Act regulates the under-ground injection of fluids through wells. See 40 C.F.R. Parts 144 to 148. As discussed elsewhere in this manual, the terms "fluid" and "well" are broadly defined under the regulations. See 40 C.F.R. 144.3. The UIC Program provides that no owner or operator of a well may conduct any injection activity in a manner that allows the movement of any fluid containing any contaminant into underground sources of drinking water if the presence of that contaminant may cause a violation of any primary drinking water standard. See 40 C.F.R. § 144.12. This prohibition applies to any underground injection of used oil. In addition, there are certain permitting requirements under the UIC Program for the injection of hazardous waste, including used oil that is a hazardous waste.

F. Department of Transportation Regulations

The United States Department of Transportation regulates the transportation of hazardous materials in commerce pursuant to the Hazardous Materials Transportation Act ("HMTA") (49 U.S.C. §§ 1801 to 1819) and regulations promulgated pursuant to HMTA. See 49 C.F.R. Parts 171 to 179. Used oil may meet the definition of hazardous material in certain situations and, therefore, be subject to the HMTA regulations for identification and classification, packaging, marking, labeling, shipping papers, placarding, record keeping, notification and incident response.

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CHAPTER 7

REQUIREMENTS FOR AND REGULATION OF HAZARDOUS SUBSTANCE CLEANUP UNDER "SUPERFUND" LAWS

Subchapter 7.1

FEDERAL AND STATE SUPERFUND LAW IN ARIZONA

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FEDERAL AND STATE SUPERFUND LAW IN ARIZONA

I. INTRODUCTION

A. Enactment of CERCLA

In 1980, Congress passed a forty-three page statute called the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (also known as CERCLA or Superfund), out of a concern over the need to clean up abandoned hazardous substance sites. 42 U.S.C. §§ 9601 to 9675. To accomplish its goals, CERCLA included four principal components: (1) an information-gathering, reporting and inventory system to define the universe of hazardous substance problems in the environment, minus some exemptions; (2) a Fund (the "Superfund") to help finance costly cleanups; (3) provision of the federal government (principally the U.S. Environmental Protection Agency) with the authority and tools needed to respond and cleanup, and (4) the power to impose the costs and responsibility for such cleanups on the responsible parties made liable for the hazardous substance problem.

CERCLA also resulted in establishing the Agency for Toxic Substance and Disease Registry within the Public Health Service, an agency that, as of late, has become a prominent player in the policy and science of health risk assessments at contaminated sites.

In 1986, CERCLA was reauthorized and amended by the additional 168 pages of the Superfund Amendments and Reauthorization Act of 1986, referred to as SARA or, by those who have felt its wrath, "Hurricane SARA." SARA changed several of CERCLA's provisions, and dramatically increased the size of the Fund. With SARA, Congress hoped to improve the Environmental Protection Agency's (EPA) ability to deal with hazardous waste sites.

There is a huge body of case law interpreting CERCLA/SARA. One of the better compendiums for initial research efforts is the Outline of RCRA/CERCLA Enforcement Issues and Holdings, published twice yearly by the Chemical Waste Litigation Reporter.

B. Enactment of WQARF

Arizona's analog to CERCLA is the Water Quality Assurance Revolving Fund ("WQARF"), which is a component of the 1986 Arizona Environmental Quality Act. A.R.S. §§ 49-281 to 49-287. Although WQARF and CERCLA are quite similar, WQARF as enacted in 1986 was substantially less comprehensive with regard to its administration and enforcement. Amendments to WQARF adopted in 1992 (H.B.

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2073) were designed to increase the utility of the WQARF program by providing the Arizona Department of Environmental Quality (ADEQ) with increased enforcement and settlement authority while at the same time creating mechanisms for settlement and incentives for responsible parties to settle. These amendments were intended primarily to remedy the defects in the original WQARF statute and program, which had proven to be of limited utility in achieving enforcement-lead cleanups at contaminated sites.

The 1992 WQARF amendments are discussed in detail below. The intent and impact of these amendments only can be appreciated in the context of the overall federal and state Superfund programs. A discussion of the Superfund programs is provided in Sections II through VIII of this paper. Specific amendments to WQARF passed in 1992 are noted as appropriate in the comprehensive discussion of issues contained in those sections.

Because WQARF funding for ADEQ-lead cleanup action is quite limited (historically only about $5 million per year) when compared to the expense of an average CERCLA National Priorities List (NPL) site (cleanup costs at least $30 million), ADEQ can and should be expected to push "enforcement lead" cleanups at WQARF sites. ADEQ's goal will be to force, through litigation, potentially responsible party (PRP) funding of cleanups through the enhanced WQARF (and CERCLA) settlement procedures. A recently approved ADEQ settlement in the West Central Phoenix WQARF site is representative of ADEQ's intent to seek settlements that either (1) obtain funds for cleanup related work from PRPs; or (2) obtain a commitment by a PRP to perform either a portion or all of the cleanup at the affected site.

As discussed below, CERCLA and WQARF are two comprehensive and often overlapping programs, either or both of which may apply to a particular site where contamination with hazardous substances exists. Parties potentially responsible for cleaning up hazardous substance contamination, and their counsel, need to understand the intricacies of both the CERCLA and WQARF programs because ADEQ could take enforcement action under either of these programs. In the wake of the 1992 WQARF amendments increasing ADEQ's enforcement authority and creating explicit settlement authority, it is unclear if ADEQ will alter its past practice of relying primarily on CERCLA to force cleanup of contaminated sites. Recently, different ADEQ personnel have provided somewhat inconsistent statements regarding whether the Department will continue to use CERCLA as its primary enforcement tool, or will instead use the recently strengthened WQARF program. Until this uncertainty is resolved, parties

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involved at contaminated sites need to be familiar with both the federal and state Superfund statutes, the regulations implementing those statutes, judicial decisions on significant issues under both statutes, and the policies and practices of the administrative agencies (EPA and ADEQ) that implement those statutes. A detailed discussion of these topics is provided in Sections II through VIII below.

The State recently hired an experienced litigator to spearhead its anticipated focus on "enforcement lead" cleanups. As noted above, ADEQ probably will continue to use both CERCLA and WQARF, enforcing the statutes (it hopes) in a manner that will avoid the problems of Colorado v. Idarado Mining Co., 916 F.2d 1486 (10th Cir. 1990). ADEQ can make the WQARF program work, but believes it must demonstrate a commitment to enforcement that exceeds the "study" oriented process of the past five years.

The groundwater contamination problems of Arizona's urban and rural areas will be addressed over the next five years, through CERCLA, WQARF; the aquifer protection permit program, or private toxic tort litigation. The role ADEQ can play was enhanced significantly by the 1992 WQARF amendments.

A responsible party for a WQARF site who has significant assets must be represented by experienced Arizona Superfund counsel. Handling Superfund exposure always is expensive; it is frighteningly expensive in the hands of the inexperienced who neither understand Superfund nor the state-based political realities that impact the WQARF program.

II. CERCLA AND WQARF SCOPE AND KEY DEFINITIONS

WQARF will be discussed in detail herein where it differs significantly from CERCLA.

A. General Authority

In general terms, CERCLA gives the President, or EPA as his delegee, authority to take response and/or enforcement actions, including ordering responsible others to take response actions, whenever a release or threat of release of a hazardous substance, pollutant or contaminant to the environment presents an imminent threat to public health, welfare or the environment. Both fund-lead and enforcement options are provided for hazardous substance response, while only fund-lead options are created by CERCLA for nonhazardous pollutants and contaminants. 42

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U.S.C. §§ 9604; 9606. CERCLA also attaches liability to parties with responsibility for a facility or site. 42 U.S.C. § 9607(a). WQARF also similarly empowers the Director of ADEQ. Ariz. Rev. Stat. §§ 49-282, 283 and 287. The following statutory definitions are critical to interpreting and understanding CERCLA and WQARF:

1. Release: "Release" is broadly defined to include "any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment (including the abandonment or discarding of barrels, containers, and other closed receptacles containing any hazardous substance or pollutant or contaminant) . . . ." 42 U.S.C. § 9601(22); see also A.R.S. § 49-281(4) (same definition in WQARF except WQARF does not include the parenthetical).

Some courts have construed a "release" to include the gradual seepage or leaching of hazardous substances from storage areas or spills. See, e.g., State of New York v. Shore Realty Corp., 759 F.2d 1032, 1045 (2d Cir. 1985); Emhart Indus., Inc. v. Duracell Int'l Inc., 665 F. Supp. 549, 574 (M.D. Tenn. 1987). Under this theory, a property owner may be liable for migration of pollutants from a site even though the owner did not actively dispose of any hazardous substances or take any other affirmative action (this is sometimes referred to as "passive disposal"). See, e.g., Nurad, Inc. v. Hooper & Sons Co., 966 F.2d 857 (4th Cir. 1992); Graybill Terminal Co. v. Union Oil Co. of California, No. 92-0238-K (LSP) (S.D. Cal. 1993).

a. Exclusions: CERCLA specifically excludes four categories from CERCLA releases: (1) any release which results in exposures to persons solely in a workplace, with respect to a claim that may exist against the employer of such persons, (2) emissions from most mobile source (and pipeline pumping station) engine exhaust, (3) releases of certain nuclear materials, and (4) normal fertilizer applications. 42 U.S.C. § 9601(22); see also A.R.S. § 49-281(4) (same exclusions in WQARF).

2. Environment: "Environment" is defined as any navigable waters, the waters of the contiguous zone, certain ocean waters, and "any other surface water, ground water, drinking water supply, land surface or subsurface strata, or ambient air within the United States or under the jurisdiction of the United States." 42 U.S.C. § 9601(8). This definition is so broad that at first blush it might appear to include virtually all areas and resources within the United States. The WQARF definition is very similar, though it does not mention ocean waters

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and it is limited to the environment within or bordering on Arizona. § 49-201.13.

EPA has given some indication that these are a few locations it will not consider to be the "environment." EPA does maintain that a hazardous substance may be released into the environment even if it remains entirely on plant or facility grounds. 50 Fed. Reg. 13,462 (April 4, 1985). However, a spill of a hazardous substance onto a concrete floor of an enclosed manufacturing plant which does not leave the building is not a release into the environment, although it may constitute a threatened release. Id. Certain parts of your facility are not the environment. Cf. The Fertilizer Institute v. EPA, 936 F.2d 1303 (D.C. Cir. 1991).

Additionally, CERCLA precludes EPA from utilizing CERCLA to respond to a release "from products which are part of the structure of, and result in exposure within, residential buildings or business or community structures . . . ." 42 U.S.C. § 9604(a)(3). This section has been interpreted to exclude response actions to remove asbestos from the interior of buildings from CERCLA coverage. See First United Methodist Church of Hyattsville v. United States Gypsum Co., 882 F.2d 862 (4th Cir. 1989). But see Prudential Ins. Co. of America v. United States Gypsum, 711 F. Supp. 1244 (D.N.J. 1989).

3. Hazardous Substance: To define "hazardous substance," Congress adopted a "list of lists" which incorporates by reference every hazardous compound or substance designated under other environmental statutes. "Hazardous substance" includes:

(A) any substance designated pursuant to Section 1321(b)(2)(A) of Title 33,

(B) any element, compound, mixture, solution, or substance designated pursuant to Section 9602 of Title 42,

(C) any hazardous waste having the characteristics identified under or listed pursuant to Section 3001 of the Solid Waste Disposal Act (42 U.S.C. § 6921),

(D) any toxic pollutant listed under Section 1317(a) of Title 33,

(E) any hazardous air pollutant listed under Section 112 of the Federal Clean Air Act (42 U.S.C. § 7412); and

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(F) any imminently hazardous chemical substance or mixture with respect to which EPA has taken action pursuant to Section 7 of the Federal Toxic Substances Control Act (15 U.S.C. § 2606).

42 U.S.C. § 9601(14); see also A.R.S. § 49-201(16) (incorporating the same "list of lists" into WQARF).

CERCLA's "list of lists" includes over 700 hazardous substances. See 40 C.F.R. Part 302.

Significantly, CERCLA does not require any particular concentration level for finding a hazardous substance. Thus, any traceable amount of a hazardous substance is sufficient for the finding of a release. See Eagle-Picher Indus., Inc. v. EPA, 759 F.2d 922, 927-31 (D.C. Cir. 1985); United States v. Conservation Chem. Co., 619 F. Supp. 162, 238 (W.D. Mo. 1985).

In limited contexts, courts have shown a willingness to invoke some form of CERCLA threshold for hazardous substances. One such context arises when determining (in cost recovery actions) whether response costs caused by a release of hazardous substances were justified. Although agreeing with the general position that there is no quantitative requirement before a listed hazardous substance is covered by CERCLA, the United States Court of Appeals for the Fifth Circuit has held that some "standard of justification" is appropriate in determining whether a release or threatened release of a hazardous substance has caused the incurrence of response costs. See Amoco Oil Co. v. Borden, Inc., 889 F.2d 664, 668-671 (5th Cir. 1989). The court ruled that a factual inquiry should be conducted into the circumstances of each case, focusing on whether the particular hazard created by the release or threatened release justified any response actions. Id. at 670. Looking to CERCLA cleanup guidelines, which incorporate legally applicable or relevant and appropriate requirements ("ARARs"), the court held: "While not the exclusive means of justifying response costs, we hold that a plaintiff who has incurred response costs meet the liability requirement as a matter of law if it is shown that any release violates, or any threatened release is likely to violate, any applicable state or federal standard including the most stringent." Id. at 671. Thus, this court was willing to require a minimum threshold showing (i.e., violation of an applicable regulatory standard) before holding that a release or threatened release of hazardous substances justified the incurrence of response costs. The reasoning in Amoco has been explicitly disapproved in several subsequent district court decisions in other circuits. See United States v. Alcan Aluminum Corp., 755 F. Supp. 531, 538-39 (N.D.N.Y. 1991). Nevertheless, at least one other circuit court has

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held that a defendant, although technically jointly and severally liable for response costs because it contributed some small portion of hazardous substances to a site requiring cleanup, may avoid having to pay any response costs whatsoever if it can demonstrate that any pollutants it contributed did not contribute to the overall release that required response actions to be undertaken at the site (e.g., where the pollutants contributed by the defendant are at or below background contamination and cannot concentrate). See United States v. Alcan Aluminum Corp., 990 F.2d 711 (2d Cir. 1993).

* **WQARF:** In Arizona, the Director of ADEQ may specifically designate additional hazardous substances not listed under CERCLA if the Director determines that the substance "represents an imminent and substantial endangerment to public health." A.R.S. § 49-201(16)(f). To date, the Director has not added any substances to those listed under CERCLA.

a. Exclusions: CERCLA's definition of "hazardous substance" specifically excludes petroleum, various forms of natural gas, and synthetic gas useable for fuel.

The petroleum products exception is of particular concern because petroleum products typically contain constituents (i.e., benzene, toluene, ethylbenzene and xylene or BTEX components) that are separately listed as hazardous substances. To avoid rendering the petroleum exclusion a nullity, a federal appellate court found that a release of gasoline, which contained benzene, toluene, xylene, ethyl-benzene and lead (which are listed as hazardous substances) fell within the petroleum exclusion because all of the potentially hazardous substances contained in the gasoline are "indigenous components" of crude oil. The court avoided the question of whether additives to gasoline would fall outside the scope of the exclusion. (Although lead was technically an additive, the court held that it was also "indigenous" and therefore met the exclusion.) Wilshire Westwood Assoc. v. Atlantic Richfield Corp., 881 F.2d 801 (9th Cir. 1989); see also Niecko v. Emro Marketing Co., 769 F. Supp. 973, 981-82 (E.D. Mich. 1991) (gasoline is not a hazardous substance under CERCLA even though it contains benzene, toluene and xylene because those substances are inherent, indigenous components of gasoline and thus fall within the petroleum exclusion).

Courts interpreting CERCLA's petroleum exclusion have held that the exclusion will not apply if the petroleum contains contaminants not normally found in petroleum, or contains contaminants found in greater concentrations than would normally be expected. See,

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e.g., Cose v. Getty Oil Co., 34 Env't Rep. Cas. (BNA) 1308, 1311-12 (E.D. Cal. 1991) (petroleum exclusion does not include hazardous substances that are added to petroleum or that increase in concentration solely as a result of contamination of the petroleum during use); Southern Pacific Transportation Co. v. California (Caltrans), 34 Env't Rep. Cas. (BNA) 1188, 1191 (C.D. Cal. 1991) (used petroleum products are within scope of petroleum exclusion provided CERCLA-listed hazardous substances have not been added during use or increased in concentration by its use); United States v. Alcan Aluminum Corp., 755 F. Supp. 531, 539 (N.D.N.Y. 1991) (petroleum exclusion does not apply to releases of oil contaminated through use with hazardous substances not naturally found in oil). These opinions are consistent with EPA's interpretation of the petroleum exclusion. See, e.g., Memorandum from Francis S. Blake, EPA General Counsel, to J. Winston Porter, Assistant Administrator for Solid Waste and Emergency Response, "Scope of the CERCLA Petroleum Exclusion Under Sections 101(14) and 104(a)(2)" (July 31, 1987) (hazardous substances such as benzene that are indigenous to crude oil and fractions thereof are included within the term "petroleum," as are hazardous substances normally mixed with or added to crude oil or fractions thereof during the refining process; however, hazardous substances added to petroleum or increasing in concentration solely as a result of contamination during use are not petroleum and thus may constitute hazardous substances under CERCLA).

* **WQARF:** Petroleum, natural gas, and synthetic gas useable for fuel were not excluded from WQARF's definition of "hazardous substance" when WQARF was enacted in 1986. In 1989, WQARF was amended to exclude petroleum, including crude oil or any fraction of crude oil, which is liquid at sixty degrees Fahrenheit and 14.7 pounds per square inch absolute. A.R.S. § 49-281(3); see also A.R.S. § 49-1001(11) (defining "petroleum" for purposes of the underground storage tank program).

CERCLA also provides that any solid waste which Congress has suspended from regulation under RCRA cannot be a hazardous waste under CERCLA. This includes solid waste from the extraction, beneficiation, and processing of ores and minerals (i.e., mining wastes), cement kiln dust, and wastes generated primarily from the combustion of coal or other fossil fuels such as fly ash, bottom ash, slag waste, and flue gas emission control waste. See 42 U.S.C. § 9601(14).

However, various courts have held that excluded wastes can still be hazardous substances under CERCLA if they are listed, or have constituents that are listed, under one of the other environmental statutes. See

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Eagle-Picher Indus., Inc. v. EPA, 759 F.2d 922, 930 (D.C. Cir. 1985); State of Idaho v. Bunker Hill Co., 635 F. Supp. 665, 673 (D. Idaho 1986); United States v. Union Gas Co., 586 F. Supp. 1522, 1524-25 (E.D. Pa. 1984); United States v. Metate Asbestos Corp., 584 F. Supp. 1143, 1146-47 (D. Ariz. 1984). One recent case, however, held that mining wastes do not constitute hazardous substances under CERCLA even though they contain constituents that are listed as hazardous substances under CERCLA or other environmental statutes referenced in the CERCLA definition of "hazardous substances." See United States v. Iron Mountain Mines, Inc., 36 Env't Rep. Cas. (BNA) 1525 (E.D. Cal. 1993) (reaffirming earlier decision published at 812 F. Supp. 1528).

4. Pollutant or Contaminant: "The term 'pollutant or contaminant' shall include, but not be limited to, any element, substance, compound, or mixture, including disease-causing agents, which after release into the environment and upon exposure, ingestion, inhalation, or assimilation into any organism, either directly from the environment or indirectly by ingestion through food chains, will or may reasonably be anticipated to cause death, disease, behavioral abnormalities, cancer, genetic mutation, physiological malfunctions (including malfunctions in reproduction) or physical deformations in such organisms or their offspring . . . ." 42 U.S.C. § 9601(33). Petroleum and natural gases are specifically excluded from the definition. Id.

* **WQARF:** ADEQ can respond under WQARF in certain circumstances to the release of "pollutants," as described later in this paper. "Pollutant" is broadly defined as a long list of virtually all-encompassing generic terms (i.e., fluids, contaminants, substances, chemicals, rock, sand, even heat, and the definition concludes with a catchall for "any other liquid, solid, gaseous or hazardous substances"). A.R.S. § 49-201.23

5. Facility: "Facility" is broadly defined as "(A) any building, structure, installation, equipment, pipe or pipeline . . . , well, pit, pond, lagoon, impoundment, ditch, landfill, storage container, motor vehicle, rolling stock, or aircraft, or (B) any site or area where a hazardous substance has been deposited, stored, disposed of, or placed, or otherwise come to be located; but does not include any consumer product in consumer use or any vessel." 42 U.S.C. § 9601(9) (Emphasis added.).

Courts have interpreted "facility" broadly enough to include roadside sites where transporters disposed of hazardous substances. See, e.g., United States v. Ward, 618 F. Supp. 884, 895 (E.D.N.C. 1985). Several courts

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have gone so far as to state that "facility" includes any site where hazardous substances have been found. See, e.g., Tanglewood East Homeowners v. Charles-Thomas, Inc., 849 F.2d 1568, 1573 (5th Cir. 1988); United States v. Mottolo, 695 F. Supp. 615, 622 (D.N.H. 1988). However, because neither a "consumer product in consumer use" nor a "vessel" can be considered a facility, an electric transformer which contained PCBs was held not to be a facility because it was a consumer product. See Elec. Power Bd. of Chattanooga v. Westinghouse Elec. Corp., 716 F. Supp. 1069, 1079-80 (E.D. Tenn. 1988).

Responsible parties are liable for the costs of cleaning up contamination caused by the release of a hazardous substance at a "facility." Additionally, "facility" owners and operators have special reporting and recordkeeping duties under CERCLA.

* **WQARF**: WQARF's definition of facility is significantly more limited, as it includes "any land, building, installation structure, equipment, device, conveyance, area, source activity or practice from which there is, or with reasonable probability may be, a discharge." A.R.S. § 49-201.15 (emphasis added). "Discharge" is defined as "the direct or indirect addition of any pollutant to waters of the state from a facility." § 201.10. As a result, except in emergencies (as discussed below), WQARF jurisdiction typically requires a reasonably likely potential of impact on waters of the state.

III. REPORTING REQUIREMENTS

A. Notification of a Reportable Quantity Release

There are a number of ways that EPA becomes aware of a hazardous substance release that it might address under CERCLA. The most important is as follows:

Any person in charge of a vessel, an offshore facility, or an onshore facility must immediately notify the National Response Center (1-800-424-8802) of a non-federally permitted release of a reportable quantity of a hazardous substance. This reporting obligation arises as soon as such person has actual knowledge of such a release. 42 U.S.C. § 9603(a). A similar provision exists under WQARF, requiring notice to ADEQ. (Under WQARF, if the release is in compliance with a federal or state permit, reporting is not required, but compliance with a state permit is no defense to the federal reporting requirement.) A.R.S. § 49-284(A). "Facility," as discussed above, is broadly defined and includes all

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structures and areas where hazardous substances have come to be located. The term "vessel" applies to watercraft and transportation on water. 42 U.S.C. § 9001(28). These reporting provisions are aimed at making certain that the appropriate federal, state, and local government authorities are immediately alerted of any releases of hazardous substances that may require rapid (or longer term) response.

1. Reportable Quantities: The CERCLA and WQARF release reporting requirement focuses on the "reportable quantity" for each hazardous substance. EPA must "promulgate regulations establishing that quantity for each hazardous substance the release of which shall be reported pursuant to section 9603" of CERCLA. 42 U.S.C. § 9602(a).

EPA's regulations at 40 C.F.R. § 302.4 set forth the list of hazardous substances and the reportable quantities for each substance. The reportable quantities begin at one pound and range up to 5,000 pounds for such substances as hydrochloric acid and carbon tetrachloride. For mixtures and solutions, EPA has provided that a reportable incident occurs only when there is a release of a component hazardous substance in the mixture or solution in its reportable quantity. For unlisted hazardous wastes exhibiting the characteristics of ignitability, corrosivity, or reactivity, EPA has set a reportable quantity of 100 pounds. 40 C.F.R. § 302.5. If a reportable quantity is not set for a hazardous substance, then the reportable quantity is one pound. 42 U.S.C. § 9602(b). EPA has a Reportable Quantity Adjustment Methodology it employs from time to time to raise or lower the RQ for a particular substance. See 54 Fed. Reg. 35986, 35989-91 (Aug. 30, 1989).

To maintain consistency with regulations under Section 311 of the Clean Water Act, EPA has adopted a 24-hour period for measuring whether a reportable quantity has been released. 40 C.F.R. § 302.6(a). Thus, as soon as a person in charge of a vessel or facility has knowledge that the amount of a hazardous substance released within a 24-hour period equals the reportable quantity for that substance, the reporting requirements of Section 9603(a) are triggered.

EPA, in its 1989 reporting rule for radionuclides, had defined "release" broadly as follows: "the placement of an RQ of a hazardous substance in an unenclosed structure would constitute a "release" regardless of whether an RQ of the substance actually volatilizes into the air or migrates into surrounding water or soil." 54 Fed. Reg. 22524, 22526 (May 24, 1989). EPA defined an unenclosed containment structure as "any surface impound-

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ment, lagoon, tank, or other holding device that has an open side with the contained materials directly exposed to the ambient environment." Id. at 22526 n.3.

In The Fertilizer Institute v. EPA, the D.C. Circuit ruled that "EPA's interpretation of CERCLA's reporting requirements cannot be reconciled with CERCLA's express terms." 936 F.2d 1303, 1309 (D.C. Cir. 1991). The court reasoned that:

> Rather than defining a release as the movement of a substance from a facility into the environment (as does CERCLA), the EPA defines a release as the placement of a substance into a facility that is exposed to the environment. For the EPA's interpretation to come within CERCLA's meaning, the exposure of a substance to the environment must be equivalent to the release of that substance into the environment. But this is not so. A simple example exposes the flaw in the EPA's analysis: a company could place a non-volatile substance into an open-air storage container and the consequences of the open-air storage would be no different from those that would occur if the company had placed the substance to a closed container.

Id. at 1309-10 (emphasis added).

The court also rejected EPA's "threat of release" rationale, reasoning that Congress's omission of a threatened release provision from the notice requirements while allowing response actions for threatened releases shows that "Congress's failure to subject threatened releases to the reporting requirement was intentional." Id. at 1310. Accordingly, the court held that "nothing less than the actual release of a hazardous material into the environment triggers [CERCLA's] reporting requirement." Id.

* **WQARF**: The Director of ADEQ is required to "establish reportable quantities for those hazardous substances for which such quantities have not been established under Section 102 of CERCLA (42 U.S.C. § 9602)." A.R.S. § 49-284(B).

2. Exclusions From Release Reporting Requirement: The following releases are excluded from the release reporting requirement:

(1) for both CERCLA and WQARF, federally permitted releases and also, for WQARF only, state

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permitted releases. 42 U.S.C. § 9603(a); A.R.S. § 49-284(A);

(2) for CERCLA only, consumer products in consumer use or any vessel, 42 U.S.C. § 9601(9);

(3) for both CERCLA and WQARF, certain workplace exposures, 42 U.S.C. § 9601(22); A.R.S. § 49-281(4);

(4) for both CERCLA and WQARF, most vehicle engine exhaust emissions, id.;

(5) for both CERCLA and WQARF, certain releases of source, byproduct, or special nuclear material, id.;

(6) for both CERCLA and WQARF, normal application of fertilizer, id.;

(7) for CERCLA, application of a pesticide registered under FIFRA or the handling and storage of such a pesticide by an agricultural producer;, 42 U.S.C. § 9603(e), and perhaps also to a more limited extent under WQARF as no liability under WQARF exists for any responsible party who can show the release was caused solely by "the application of a pesticide product" registered under FIFRA and applied according to label, A.R.S. § 49-283(D)(5);

(8) for CERCLA only, any release required to be reported under Subtitle C of RCRA and which has been reported to the National Response Center, 42 U.S.C. § 9603(f)(1);

(9) for CERCLA only, any release specifically exempted from reporting under Subtitle C of RCRA, id.;

(10) for CERCLA only, continuous releases, stable in quantity and rate: (1) for which facility notice was given, or (2) for which notice of release was given, for a long enough period to establish the continuity, quantity, and regularity of the release (Note: "Continuous release" notice must be given at least annually and whenever there is a statistically significant increase; see discuss below) 42 U.S.C. § 906(f)(2);

(11) for CERCLA only, any release of natural gas, natural gas liquids, liquified natural gas, synthetic gas usable for fuel, 42 U.S.C. § 9601(14);

(12) for CERCLA and WQARF, certain releases of petroleum, crude oil, or any fraction thereof

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unless otherwise listed (see detailed discussion of petroleum exclusion at II.A.3.a.). 42 U.S.C. § 9601(14); A.R.S. § 49-281.3.

3. Continuous Release Reporting. A concept recognized under CERCLA that reduces reporting obligations under CERCLA, but unavailable under WQARF, a continuous release is a release of a hazardous substance that is "continuous" and "stable in quantity and rate" under the regulatory definitions of these terms. 40 C.F.R. § 302.8.

A continuous release may be a release that occurs 24 hours a day, such as a radon release from a rock pile, or a release that occurs during a certain process, such as benzene released during the production of polymers, or a release that occurs intermittently, such as the release of a hazardous substance from a tank vent each time the tank is filled. Some releases resulting from malfunctions may also qualify for reduced reporting as continuous releases under section 103(f)(2) if they are incidental to normal plant operations or treatment processes, are stable in quantity and rate, and either (1) occur without interruption or abatement or (2) are routine, anticipated, and intermittent. For example, releases from malfunctions that may qualify for reduced reporting include fugitive emissions from valves that occur at different rates over the course of a production cycle.

The determinative question of whether any release, including a malfunction, qualified for reporting under section 103(f)(2) is whether the release satisfies the definitions of continuous and stable in quantity and rate. Releases must be sufficiently predictable and regular so that the person in charge can provide a full description of the release to government authorities. Upon receipt of continuous release information, government officials will evaluate the risk associated with the release and determine the need for a response action. The detailed requirements of the specific regulations must be followed. 40 C.F.R. § 302.8.

The reporting requirements for continuous releases of CERCLA hazardous substances are:

(1) Initial notification by telephone to the NRC, SERC, and LEPC; and initial written notification to the EPA Regional Office, SERC, and LEPC;

(2) A one-time written follow-up report to the EPA Regional Office;

(3) Immediate notification of a statistically significant increase to the NRC, SERC, and LEPC; and

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(4) Written notification to the EPA Regional Office of any other changes in the release.

A statistically significant increase (SSI) is any release of a hazardous substance that exceeds the upper bound of the normal range. The normal range is defined to include all the releases of a hazardous substance reported or occurring over any 24-hour period under normal operating conditions during the preceding year. Only those releases that are both continuous and stable in quantity and rate may be included in the normal range.

4. Penalties: Failure to comply with Section 9603(a) may result in criminal penalties including fines of up to $250,000 for individuals ($500,000 for corporations) or imprisonment for up to three years (or up to five years in the case of a second or subsequent conviction), or both. 42 U.S.C. § 9603(b); 18 U.S.C. § 3623.

* **WQARF:** Non-reporting subjects the violator to a maximum civil penalty of $10,000. A.R.S. § 49-284(C).

B. Facility Notification

Another way that EPA becomes aware of releases of hazardous substances into the environment is under the facility notification provisions of Section 9603(c). Subject to the exceptions detailed below, this section required notification to EPA, within 180 days of December 11, 1980, of facilities where RCRA hazardous wastes (which constitute one subset of the broad universe of "hazardous substance" as defined by CERCLA, as noted above) have been treated, stored, or disposed of. The persons identified below must notify EPA by identifying the facility, specifying the amount and type of any hazardous substance to be found there, and listing any known, suspected, or likely releases of hazardous substances from the facility. 42 U.S.C. § 9603(c). EPA uses this information to learn the locations of old disposal sites and to conduct HRS scoring to determine whether a site should be added to the NPL (see discussion at IV.B.2 & IV.B.3). There is a debate as to whether this CERCLA provision imposed a one-time notification obligation that terminated in June 1981 (180 days after December 11, 1980) or, as EPA contends, imposes a continuing obligation to report the discovery of hazardous waste facilities.

1. Who Must File: Unless exempted, the following persons or entities must file a facility notification with EPA:

(1) those who presently own or operate such a facility;

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(2) those who owned or operated such a facility at the time of disposal; and

(3) those who accepted hazardous substances for transport and selected such a facility for treatment, storage, or disposal.

42 U.S.C. § 9603(c).

2. Exclusions from Facility Notification Requirements: The following are excluded from facility notification requirements:

a. Facilities handling wastes specifically excluded from the RCRA regulatory definition of hazardous waste (40 C.F.R. § 261.4(b)), including household waste and certain mining wastes;

b. Facilities handling wastes excluded from the CERCLA definition of "hazardous substance" (42 U.S.C. § 9601(14)), including petroleum and natural gas;

c. Facilities exempted from reporting under the terms of § 9603(c) itself:

(1) hazardous waste management facilities operating pursuant to a RCRA permit or interim status;

(2) facilities where pesticide products registered under FIFRA were used, handled or stored by an agricultural producer (this does not include sites where pesticide wastes were disposed of);

(3) facilities holding hazardous waste solely as a result of stoppages during the transportation of hazardous waste (e.g., depots, terminals, etc.);

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d. Facilities that EPA has excluded from reporting requirements as a matter of enforcement policy:

(1) facilities at which less than 55 gallons of hazardous waste have been disposed;

(2) facilities where hazardous waste handling occurs in the normal course of business and incidental leakage or spillage has occurred (e.g., occasional pipeline leaks), unless major or long term leaks or spills have occurred and transformed the facility into a de facto disposal facility;

(3) treatment or storage facilities from which all hazardous wastes have been removed;

(4) facilities where hazardous waste is present in product storage tanks, vessels or vehicles;

(5) facilities where generators store hazardous waste on-site for 90 days or less in compliance with applicable RCRA regulations;

(6) facilities qualifying as totally enclosed treatment facilities under RCRA;

(7) wastewater treatment tanks and neutralization tanks;

(8) facilities where farmers dispose of pesticide residues on-site in accordance with 40 C.F.R. § 262.51;

e. Facilities that already have submitted comparable information under RCRA, including those that submitted notification under RCRA Section 3010 and those that submitted a Part A permit application but did not qualify for interim status.

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See 46 Fed. Reg. 22152 (April 15, 1981).

3. Penalties: "Any person who knowingly fails to notify [EPA] of the existence of any such facility shall, upon conviction, be fined not more than $10,000, or imprisoned not more than one year, or both." 42 U.S.C. § 9603(c). However, any such person is not entitled to any limitation of liability or to any defenses to liability contained in Section 9607. Id.

C. SARA Title III: Emergency Planning and Community Right-to-Know

The Emergency Planning and Community Right-To-Know Act of 1986 contains a set of requirements focusing on emergency planning and notification relating to hazardous substances. See 42 U.S.C. §§ 11001 to 11050. Other text materials dealing with SARA Title III detail the specific scope of this statute and its state analog.

IV. RESPONSE: REMOVAL AND REMEDIAL ACTIONS

Obviously neither EPA nor ADEQ can respond to every release of hazardous substances into the environment. Both agencies must set priorities for their funds and allocation of agency resources. These priorities are culled from the inventories of releases the agencies keep on file.

EPA's database is known as "CERCLIS," an acronym for the Comprehensive Environmental Response Compensation and Liability Information System. ADEQ has a database referred to as "ACIDS," short for Arizona CERCLA Information Data System.

A. Response Authorities

EPA may respond whenever "(A) any hazardous substance is released or there is a substantial threat of such a release into the environment, or (B) there is a release or substantial threat of release into the environment of any pollutant or contaminant which may present an imminent and substantial danger to the public health or welfare . . . ." 42 U.S.C. § 9604(a)(1). CERCLA authorizes EPA to choose from two principal alternative courses of action:

Alternative A: EPA may take response actions, and the costs of such actions may, subject to various requirements, be paid from the $8.5 billion Fund. Those

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costs incurred in response to hazardous substances (but not nonhazardous substances) may then be recouped in a cost recovery action against any potentially responsible parties under Section 9607 ("Fund-lead response").

Alternative B: Instead of conducting a response action and bringing a cost recovery action, EPA may, in certain circumstances with respect to imminent or substantial endangerment from hazardous substances, have an action for injunctive relief brought under Section 9606 to require potentially responsible parties to undertake the response action themselves. 42 U.S.C. § 9606. Instead, EPA also may issue an order requiring a person to respond to the release or threat of release of a hazardous substance which may result in an imminent and substantial endangerment ("enforcement-lead response"). ADEQ also can seek injunctive relief under WQARF, see A.R.S. § 49-287(D)(2), but does not have the right to use CERCLA's injunctive relief authority. See Colorado v. Idarado Mining Co., 916 F.2d 1486, 1492-98 (10th Cir. 1990). ADEQ has attempted to overcome this limitation by filing actions that combine CERCLA cost recovery claims with actions seeking injunctive relief under WQARF (see A.R.S. § 49-287(D)(2)). (For recent examples of complaints of this type, see State of Arizona v. Esco, No. CIV 93-0937 PHX EHC (D. Ariz. May, 1993); State of Arizona v. United Industrial Corp., No. CIV 93-0950 PHX RGS (D. Ariz. May, 1993).) ADEQ may also pursue "enforcement lead" by issuing a remedial action order under A.R.S. § 49-287(D)(3), but it is less effective than a federal CERCLA order as a coercive measure due to the availability of pre-enforcement judicial review. See A.R.S. § 49-287(E).

1. Authorized Uses for Fund Monies: Money in the Fund generally may be used to pay for:

(1) government response costs;

(2) claims by any other person for response costs carried out in accordance with the Federal National Contingency Plan and approved and certified;

(3) assessment of natural resource damages and, eventually, reimbursement of natural resource damages but only if all remedies to collect from responsible parties have been exhausted;

(4) abatement action costs;

(5) studies on persons exposed to hazardous substances;

(6) purchase and maintenance of response equipment;

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(7) training, development, and education costs;

(8) grants to groups who may be affected by a release listed on the NPL;

(9) costs of acquiring real estate needed for remedial action;

(10) research, development, and demonstration costs;

(11) reimbursement of local government costs for temporary emergency measures; and

(12) awards of up to $10,000 to individuals for information leading to arrests and convictions under CERCLA.

42 U.S.C. § 9611.

EPA has great discretion in determining what type of response to undertake. EPA's response may include:

(1) a removal action;

(2) a remedial action; or

(3) "any other response measure consistent with the national contingency plan which [EPA] deems necessary to protect the public health or welfare or the environment."

42 U.S.C. § 9604(a)(1). Whatever the response, it must be consistent with the National Contingency Plan (NCP) (discussed below at IV.B.). Id.

a. Removal Action: Generally, removal actions are emergency, short term actions taken to prevent or minimize damages that might otherwise occur. This may include actions to "monitor, assess, and evaluate the release or threat of release" and actions to dispose of materials after removal. Some examples of removal actions may include "security fencing or other measures to limit access, provision of alternative water supplies, [and] temporary evacuation and housing of threatened individuals . . . ." 42 U.S.C. § 9601(23).

EPA determines whether a removal action is appropriate based on the following factors:

(1) location of nearby populations, animals, or food chains;

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(2) location of nearby drinking water supplies or sensitive ecosystems;

(3) hazardous substances or pollutants or contaminants in containers that may pose a threat of release;

(4) high levels of hazardous substances or pollutants or contaminants in the soil at or near the surface that may migrate;

(5) weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released;

(6) threat of fire or explosion;

(7) availability of other federal and state response mechanisms; and

(8) other factors or situations that may pose a threat to public health or welfare or the environment.

40 C.F.R. § 300.415(b)(2). Any removal action undertaken by EPA "should, to the extent practicable, contribute to the efficient performance of any long term remedial action . . . ." 42 U.S.C. § 9604(a)(2).

b. Remedial Action: Remedial action means "those actions consistent with permanent remedy taken instead of or in addition to removal actions . . . to prevent or minimize the release of hazardous substances . . . ." 42 U.S.C. § 9601(24) (emphasis added). Remedial action may take many forms, including "storage, confinement, perimeter protection using dikes, trenches or ditches, clay cover, neutralization, cleanup of released hazardous substances or contaminated materials, recycling or reuse, diversion, destruction, segregation of reactive wastes, dredging or excavations, repair or replacement of leaking containers, collection of leachate and runoff, onsite treatment or incineration, provision of alternative water supplies, and any monitoring reasonably required to assure that such actions protect the public health and welfare and the environment." Id. In extreme situations, remedial action may include "permanent relocation of residents and businesses and community facilities where the [EPA] determines that . . . such relocation is more cost-effective than and environmentally preferable to the transportation, storage, treatment, destruction, or secure disposition offsite of hazardous substances or may otherwise be necessary to protect the public health or welfare." Id. See also 40 C.F.R. § 300.430.

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* **WQARF:** WQARF does not explicitly distinguish between "removal" and "remedial" actions, although emergency response provisions enacted in 1992 (and discussed further below) seem aimed at what under CERCLA would be considered removal actions (and in fact specifically reference the federal regulations governing removal actions). See A.R.S. § 49-282.02. WQARF refers instead to "remedial actions" and defines them as "those actions . . . reasonable and necessary in the event of the release or threat of release of hazardous substances into the environment such that the waters of the state are or may be affected . . . ." A.R.S. § 49-281(5). Such remedial actions may include monitoring and evaluating the release, disposing of removed material, or providing an alternative drinking water supply. A.R.S. § 49-281(5). Remedial actions shall:

(1) assure the protection of public health and welfare and the environment;

(2) provide for the control, management or cleanup of the hazardous substance so as to allow the maximum beneficial use of the waters of the state; and

(3) be cost effective.

A.R.S. § 49-282(D). As noted above, the only recognition in WQARF of a possible distinction between what CERCLA refers to as "removal" and "remedial" actions occurs in the emergency response provision added in 1992, which defines "emergency" actions by reference to those portions of the NCP setting the parameters for appropriate removal actions. A.R.S. § 49-282.02(C).

As originally enacted in 1986, WQARF allowed ADEQ to take remedial action in the event of a release or threat of a release of "any pollutant which may present an imminent and substantial danger to the public health or welfare." A.R.S. § 49-287(F). By implication, this authority was limited to those actions where a release or a threat of a release affected waters of the state, since the definition of "remedial actions" refers to actions reasonable and necessary in the event of a release that affects or may affect waters of the state. A.R.S. § 49-281(5). The 1992 amendments to WQARF added an emergency response section specifically allowing ADEQ to use state funds in the event of a release or a threat of a release of a hazardous substance or pollutant that presents an emergency to public health or the environment. ADEQ need not demonstrate any potential effect on waters of the state to utilize state monies pursuant to this new emergency response section. The only prerequisites are that ADEQ make a written finding that an emergency exists within ten days of first incurring remedial action costs,

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and that emergency actions funded pursuant to the new section be completed within one year of this written determination. A.R.S. § 49-282.02(A). ADEQ may recover all reasonable remedial action costs incurred in responding to an emergency caused by a release or threat of a release of a hazardous substance in a civil action brought against any responsible party. The WQARF strict, joint and several liability scheme does not apply to emergency responses to releases or threats of releases of pollutants, however; the State may recover such costs against parties allegedly responsible for the release "only to the extent otherwise permitted by statute or the common law and not pursuant to this article." A.R.S. § 49-282.02(B).

The amended WQARF statute attempts to provide some guidance for when an "emergency" exists by reference to federal guidelines governing when (and to what extent) removal actions (i.e., short-term actions designed to minimize immediate threats) are appropriate under CERCLA. A.R.S. § 49-282.02(C) (specifically referring to 40 C.F.R. §§ 300.415(b)(2) and 300.415(d)).

Furthermore, pursuant to A.R.S. § 49-286, if the Director determines that a drinking water source is being or about to be rendered unusable for drinking without treatment due to a nonhazardous substance disposed of before August, 1986, the Director may order the person otherwise responsible to A.R.S. § 49-283 to perform the least costly alternative of the following to provide drinking water: (1) provide an alternate water supply; (2) mix or blend, if economically practicable; (3) treat (presumably at the wellhead), if economically and technically practicable (4) other mutually agreeable measures. This provision arguably could create landowner liability for some purchasers of property that has caused groundwater contamination by nonhazardous substances.

c. Abatement ("Enforcement-Lead") Actions and Orders: Under certain circumstances, EPA may require the Attorney General to proceed with an abatement action. "[W]hen [EPA] determines that there may be an imminent and substantial endangerment to the public health or welfare or the environment because of an actual or threatened release of a hazardous substance from a facility, [EPA] may require the Attorney General . . . to secure such relief as may be necessary to abate such danger or threat . . . ." 42 U.S.C. § 9606(a). The United States district court in the district in which the threat occurs has jurisdiction "to grant such relief as the public interest and the equities of the case may require." Id. EPA may also issue any orders that may be "necessary to protect public health and welfare and the environment." Id. On March 16, 1993, EPA made public

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draft § 106 administrative orders to be used by EPA regions as models when issuing a § 106 order at a particular site. There are two model orders: one for situations where the recipient has negotiated an agreement with EPA, and one where the recipient has not agreed in advance with EPA on the scope of the order. See "Model Administrative Order on Consent for Removal Actions" (OSWER Directive Number 9833.06) and "Model Unilateral Administrative Order for Removal Response Activities" (OSWER Directive Number 9833.07).

* **WQARF:** The Director may take abatement actions if there is a release or threatened release of a hazardous substance which may present an imminent and substantial danger to the public health or welfare. A.R.S. § 49-287(D)(1). In the alternative, ADEQ may issue a remedial action order requiring a party to abate a release or threat of a release. A.R.S. § 49-287(D)(3). The Arizona Attorney General also may request a temporary restraining order or an injunction in these circumstances. A.R.S. § 49-287(D)(2). Any remedial action order issued under A.R.S. § 49-287(D)(3) is final and enforceable unless the recipient moves to quash the order in Superior Court within 30 days. A.R.S. § 49-287(E). A party who complies with a remedial action order but who later demonstrates that the required actions were arbitrary and capricious or otherwise not in accordance with law, or that the party is not a responsible party under A.R.S. § 49-283, may recover from the State the costs of complying with the order. Id.

i. Imminent and Substantial Endangerment: The term "imminent and substantial endangerment" is not defined in CERCLA. However, courts have generally construed EPA's authority under Section 9606(a) to be extremely broad. See, e.g., B. F. Goodrich Co. v. Murtha, 697 F. Supp. 89, 95-97 (D. Conn. 1988); United States v. Conservation Chem. Co., 619 F. Supp. 162, 192-97 (W.D. Mo. 1985); United States v. Reilly Tar & Chemical Corp., 546 F. Supp. 1100, 1109-10 (D. Minn. 1982) ("while the risk of harm must be 'imminent' for the Administrator [of EPA] to act, the harm itself need not be. Thus, for example, the Administrator may invoke this section when there is an imminent likelihood of the introduction into drinking water of contaminants that may cause health damage after a period of latency".).

ii. Reimbursement: Any person who complies with an EPA order under Section 9606(a) may petition EPA for reimbursement from the Fund within 60 days after completion of the required action, plus interest. 42 U.S.C. § 9606(b)(2)(A). A petitioner may obtain reimbursement if it establishes "by a preponderance of the evidence that it is not liable for response costs

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under section 9607(a) and that costs for which it seeks reimbursement are reasonable . . . ." 42 U.S.C. § 9606(b)(2)(C). If the petitioner is liable under section 9607(a), it may still recover its "reasonable costs of response to the extent that it can demonstrate . . . that [EPA's] decision in selecting the response action ordered was arbitrary and capricious or otherwise not in accordance with law." 42 U.S.C. § 9606(b)(2)(D).

iii. Penalties: "Any person who, without sufficient cause, willfully violates, or fails or refuses to comply with any order of [EPA under Section 9606(a)] may . . . be fined not more than $25,000 for each day in which such violation occurs or such failure to comply continues." 42 U.S.C. § 9606(b)(1). If any person who is liable fails without sufficient cause to properly provide removal or remedial action upon order, such person can be held liable for punitive damages "at least equal to, and not more than three times" the amount of any costs paid for from the "Superfund" due to failure to take proper action by the recipient of the order. 42 U.S.C. § 9607(c)(3).

Because there is no right to preenforcement review of CERCLA orders, see 42 U.S.C. § 9613(h), EPA's current preference is to "generally issue a Section 106 [§9606] order before referring a Section 106 civil judicial case. . . . A Section 106 administrative order will generally take less time to prepare and serve than referral and filing of a Section 106 complaint. Also, violation of a Section 106 order will set up a punitive damages action under Section 107 [§9607] and/or a penalty action under Section 106." U.S. EPA Memorandum Dated February 24, 1989 from Edward E. Reich and J. Winston Porter to Regional Administrators, et. al., re: Guidance on CERCLA Section 106 Judicial Actions."

* **WQARF:** A willful violation of an ADEQ order issued under A.R.S. § 49-287(D)(3) subjects the violator to a maximum civil penalty of $5,000 per day. A.R.S. § 49-287(H). Additionally, a responsible party who fails, without sufficient cause, to properly provide remedial action on order of ADEQ may be liable for treble damages. A.R.S. § 49-287(I). The WQARF order is far less significant, however, because of the right to immediate judicial review. A.R.S. § 49-287(E).

d. Limitations on Response: Unless EPA determines that a release or threat of release "constitutes a public health or environmental emergency" and that "no other person with the authority and capability to respond to the emergency will do so in a timely manner," EPA shall not respond to the release or threat of release of the following:

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(1) a naturally occurring substance in its unaltered form, or altered solely through naturally occurring processes or phenomena, from a location where it is naturally found (e.g., radon gas);

(2) from products which are part of the structure of, and result in exposure within, residential buildings or business or community structures (e.g., asbestos); or

(3) releases into public or private drinking water supplies due to deterioration of the system through ordinary use.

42 U.S.C. § 9604(a)(3)-(4).

* **WQARF**: WQARF does not contain the same limitations on response.

1. WQARF: Sources and Uses of WQARF Funds:

a. Authorized Sources of WQARF Funds: The Water Quality Assurance Revolving Fund ("WQARF") consists of monies from the following sources:

(1) Monies appropriated by the legislature.

(2) Fertilizer license fees allocated under section 3-272, subsection B, paragraph 2.

(3) Pesticide registration fees allocated under section 3-351, subsection D, paragraph 2.

(4) The surtax on environmentally hazardous products pursuant to section 42-1141.

(5) The tax on water use pursuant to section 42-1552.

(6) Water quality assurance fees collected under section 45-616.

(7) Industrial discharge registration fees collected under section 49-209.

(8) Individual permit registration fees collected under section 49-242.

(9) Solid waste landfill registration fees pursuant to section 49-747.

(10) Manifest resubmittal fees collected under section 49-922.01.

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(11) Hazardous waste facility registration fees collected under section 49-929.

(12) Hazardous waste resource recovery facility registration fees collected under section 49-930.

(13) Monies obtained as civil or criminal penalties imposed under this chapter.

(14) Monies recovered from responsible parties as remedial action costs.

(15) Fees received to reimburse ADEQ for the costs of reviewing proposed remedial action plans under A.R.S. § 49-285(B) (ADEQ's approval of a proposed remedial action is presumptively sufficient, although not necessary, to the finding of "substantial compliance" with ADEQ remedial action requirements that is a necessary prerequisite to a party being able to maintain a private cost recovery action against responsible parties).

A.R.S. § 49-282(A).

Mining Activities Subject to Cap In A.R.S. § 49-282(A): Notwithstanding any other law, a person engaging in mining is not required to pay the fees and taxes described in A.R.S. § 49-282(A)(2)-(12) in excess of the lesser of:

(1) $10,000 in a calendar year per individual mining site.

(2) $25,000 in a calendar year per mining entity.

A.R.S. § 49-282.01(A).

b. Authorized Uses of WQARF Funds: Funds from WQARF may be used for the following purposes:

(1) to provide state matching monies or to meet other obligations under Section 9604;

(2) for reasonable and necessary costs incurred in remedial actions if a responsible party cannot be determined or identified;

(3) for reasonable and necessary costs incurred in remedial actions if a responsible party has failed or refused to undertake remedial action after being ordered to do so;

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(4) for reasonable and necessary costs of monitoring, assessing, identifying, locating and evaluating the effect of a release on the waters of the state;

(5) for reasonable and necessary costs of conducting site investigations, feasibility studies, health effect studies and risk assessments related to a release that has or may pose a threat to the waters of the state;

(6) for reasonable and necessary costs of administering the fund;

(7) for the costs of the water quality monitoring program described in A.R.S. § 49-225; or

(8) for emergency response use as prescribed in A.R.S. § 49-282.02.

See A.R.S. § 49-282(C).

B. The 1990 National Contingency Plan, 40 C.F.R. Part 300

The National Contingency Plan (NCP), dated March 8, 1990, sets forth procedures and standards for the cleanup of hazardous substance sites. In general terms, the NCP dictates EPA's course of action after it is notified of a release. The NCP establishes the framework for removal and remedial site evaluations, the Hazard Ranking System (HRS), the National Priorities List (NPL), and requirements for remediation and removal.

1. Site Evaluations:

a. Discovery or Notification of a Release: A release may be discovered through:

(1) a report of a release containing reportable quantities as required by § 9603(a);

(2) facility notification as required by § 9603(c);

(3) investigation by government authorities;

(4) notification of a release by a federal or state permit holder pursuant to its permit;

(5) incidental observations reported by government agencies or the public;

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(6) submission of a citizen petition requesting a preliminary assessment in accordance with § 9605(d); and

(7) other sources.

40 C.F.R. § 300.405(a). Generally speaking, reports of releases are processed through the National Response Center ("NRC"). The NRC then forwards the information to the appropriate On-Scene Coordinator ("OSC").

The OSC may initiate a removal site evaluation or a remedial site evaluation, depending upon which is appropriate under the circumstances. 40 C.F.R. § 300.405(f).

i. Removal Site Evaluation: A removal site evaluation consists of a removal preliminary assessment ("removal PA") and, if appropriate, a removal site inspection ("removal SI"). 40 C.F.R. § 300.410(a). The removal site evaluation, if appropriate, shall be undertaken by the lead agency as promptly as possible. 40 C.F.R. § 300.410(b). The removal PA should be based on "readily available information" and may include: (a) identification of the source and nature of the release or threat of release; (b) evaluation by public health agencies of the threat to public health; (c) evaluation of the magnitude of the threat; (d) evaluation of factors necessary to make the determination of whether a removal is necessary; and (e) a determination of whether a non-federal party is undertaking proper response. 40 C.F.R. § 300.410(c)(1). A removal PA of releases from hazardous waste management facilities may include collection or review of data such as site management practices, information from generators, photographs, analysis of historical photographs, literature searches, and personal interviews. 40 C.F.R. § 300.410(c)(2).

It is obvious that a PRP can impact whether EPA takes removal action by providing information suggesting removal by EPA contractors is not necessary or by taking response action before EPA.

If more information is needed after the removal PA, a removal SI may be performed. The removal SI may include off-site or on-site inspections, depending upon safety considerations. 40 C.F.R. § 300.410(d).

Under certain circumstances, a removal site evaluation must be terminated. Some examples include instances when the OSC or lead agency determines that there has been no release, or that if there has been a release, it has not been from the requisite vessel or facility. 40 C.F.R. § 300.410(e).

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If the lead agency determines that a removal action is appropriate, then such action should be initiated as soon as possible. 40 C.F.R. § 300.415(b)(3). However, if the removal site evaluation indicates that a removal action is not required, but that a remedial action might be necessary, the lead agency must, as appropriate, initiate a remedial site evaluation pursuant to 40 C.F.R. § 300.420. 40 C.F.R. § 300.410(h).

ii. Remedial Site Evaluation: Similar to a removal site evaluation, a remedial site evaluation may consist of a remedial preliminary assessment ("remedial PA") and a remedial site inspection ("remedial SI"). 40 C.F.R. § 300.420(a). The lead agency must perform a remedial PA on all sites listed in CERCLIS. (CERCLIS stands for the CERCLA Information System, which is EPA's data base that inventories and tracks releases that either have been or need to be addressed by the Superfund program.) The purpose of a remedial PA is to: (a) eliminate from further consideration those sites that pose no threat to public health or the environment; (b) determine if there is any potential need for removal action; (c) set priorities for site inspections; and (d) gather data to facilitate evaluation of the release pursuant to the Hazard Ranking System ("HRS"). 40 C.F.R. § 300.420(b)(1). A remedial PA consists of a review of existing information about a release, including information on the pathways of exposure, exposure targets, and the source and nature of the release and may include an off-site or on-site reconnaissance. 40 C.F.R. § 300.420(b)(2). If the remedial PA indicates that a removal action is warranted, the lead agency is required to initiate removal evaluation pursuant to 40 C.F.R. § 300.410. 40 C.F.R. § 300.420(b)(3).

If a PRP sees its site on CERCLIS, it knows a remedial PA will be performed. By preparing a package of information early in the process, the PRP can impact EPA's determination of whether a significant threat exists and can begin to impact EPA's thinking as to how the threat should be addressed.

A remedial SI may be performed for essentially the same reasons as a remedial PA. See 40 C.F.R. § 300.420(c)(1). A remedial SI should build upon the information collected in the remedial PA and may involve both on-site and off-site investigations and sampling. 40 C.F.R. § 300.420(c)(2). If the remedial SI indicates that a removal action is appropriate, the lead agency must initiate a removal site evaluation pursuant to 40 C.F.R. § 300.410. 40 C.F.R. § 300.420(c)(3).

2. Hazard Ranking System: Section 105(a)(8) of the Comprehensive Environmental Response, Compensation

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and Liability Act ("CERCLA"), requires the EPA to develop a national inventory of hazardous waste sites, ranked by priority with the most hazardous sites at the top of the list. This list is the NPL. Listing on the NPL is a prerequisite for federally financed remedial actions, but not removal actions.

Congress enacted a two-step procedure for developing the NPL. First, the EPA is required to adopt criteria for determining priorities among releases or threatened releases throughout the United States for the purpose of taking removal or remedial actions. In developing these criteria, the EPA is required to consider the relative risk or danger to human health and the environment, the potential for contamination of drinking water supplies, the ability of states to assume a share of the cleanup costs, and other factors specified in section 105(a)(8)(A). Second, the EPA is required to employ these factors in designating at least four hundred of the "highest priority facilities" on the NPL and in updating this list on an annual basis.

The HRS is a mathematical scheme that attempts to objectively evaluate sources, pathways, and receptors to determine if a site should be placed on the NPL. See 40 C.F.R. Part 300, Appendix A. The HRS evaluates four separate exposure pathways: air, groundwater, surface water, and soil. The degree of endangerment is assessed in terms of the total volume of waste material, the total volume of waste material, the toxicity of the hazardous substances, the estimated population and the proximity of the release to human populations or sensitive environmental areas. Sites which receive a score of 28.5 or more on the HRS are proposed for the NPL. See 55 Fed. Reg. 51532, 51569 (Dec. 14, 1990). Although EPA admits that the HRS provides, at best, a rough estimate of the hazards posed by a site, courts have upheld the use of the HRS. See, e.g., Eagle-Picher Indus., Inc. v. EPA, 759 F.2d 905 (D.C. Cir. 1985).

Scoring is performed on a pathway by pathway basis, with the sums of all pathways cumulate and are subject to a mathematical formula to determine if they score 28.5. The key factors for each exposure pathway are (1) likelihood of release; (2) waste characteristics and (3) targets in the area.

A chart summarizing the HRS pathway scoring follows:

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GROUND WATER MIGRATION PATHWAY

Likelihood of Release	X	Waste Characteristics	X	Targets
Observed Release or Potential to Release Containment Net Precipitation Depth to Aquifer Travel Time		Toxicity/Mobility Hazardous Waste Quantity		Nearest Well Population Resources Wellhead Protection Area

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SURFACE WATER MIGRATION PATHWAY

Likelihood of Release **Overland Flow/Flood Component**	**Drinking Water Threat**	
Observed Release or Potential to Release	**Waste Characteristics** X Toxicity/Mobility[1]/ Persistence Hazardous Waste Quantity	**Targets** Nearest Intake Population Resources
	+	
	Human Food Chain Threat	
By Overland Flow X Containment Runoff Distance to Surface Water By Flood Containment Flood Frequency	**Waste Characteristics** X Toxicity/Mobility[1]/ Persistence/ Bioaccumulation Hazardous Waste Quantity	**Targets** Food Chain Individual Population
	+	
or	**Environmental Threat**	
Likelihood of Release: **Ground Water to Surface Water Component** Observed Release or Potential to Release Containment Net Precipitation Depth to Aquifer Travel Time	**Waste Characteristics** X Ecosystem Toxicity/ Mobility[1]/Persistence/ Bioaccumulation Hazardous Waste Quantity	**Targets** Sensitive Environments

[1] **Mobility is only applicable to the Ground Water to Surface Water Component.**

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AIR MIGRATION PATHWAY

Likelihood of Release	X	Waste Characteristics	X	Targets
Observed Release or Potential to Release		Toxicity/Mobility Hazardous Waste Quantity		Nearest Individual Population Resources Sensitive Environments

Gas
- Gas Containment
- Gas Source Type
- Gas Migration Potential

Particulate
- Particulate Containment
- Particulate Source Type
- Particulate Migration Potential

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SOIL EXPOSURE PATHWAY

Resident Population Threat

Likelihood of Release X	Waste Characteristics X	Targets
Observed Contamination	Toxicity Hazardous Waste Quantity	Resident Individual Resident Population Workers Resources Terrestrial Sensitive Environments

+

Nearby Population Threat

Likelihood of Release X	Waste Characteristics X	Targets
Attractiveness/ Accessibility Area of Contamination	Toxicity Hazardous Waste Quantity	Population Within 1 Mile Nearby Individual

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* **WQARF:** WQARF also contains a procedure for ranking state Superfund sites and allows the Director to adopt CERCLA by reference. To determine site priorities, the Director shall consider the following factors:

(1) population, environmental, and welfare concerns at risk;

(2) routes of exposure;

(3) amount, concentration, hazardous properties, environmental fate, such as the ability to bio-accumulate, persistence and probability of reaching the waters of the state, and the form of the substance present;

(4) physical factors affecting human exposure such as hydrogeology, climate and the extent of previous and expected migration;

(5) the extent to which a responsible party can be identified and the ability of that party to reimburse the fund for remedial action costs;

(6) the extent to which the amount of water available for beneficial uses will be preserved by a particular type of remedial action;

(7) the technical practicality and cost effectiveness of remedial actions applicable to a site; and

(8) the availability of other appropriate federal or state remedial action and enforcement mechanisms, including funding sources established under CERCLA, to respond to the release.

A.R.S. § 49-282(E); Ariz. Admin. Code R18-7-104.

3. National Priorities List (NPL): EPA is required to compile a list of hazardous waste sites ranked by priority called the National Priorities List (NPL). 42 U.S.C. § 9605(a)(8). "The NPL is the list of priority releases for long-term remedial evaluation and response." 40 C.F.R. § 300.425(b). EPA must update the NPL at least once a year. 40 C.F.R. § 300.425(d)(4).

EPA publishes its intent to list a site on the NPL before a final listing is made. PRPs must take advantage of the opportunity to submit comments to EPA if there is a good faith basis for challenging the proposed listing.

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a. Listing and Delisting of Sites: A release site may be included on the NPL if the release meets one of the following criteria:

(1) the release scores high enough on the HRS;

(2) a state (not including Indian tribes) has designated a release as its highest priority. (States may make only one such designation.); or

(3) the release satisfies all of the following criteria:

(i) the Agency for Toxic Substances and Disease Registry (ATSDR) has issued a health advisory recommending that people stay off the site.

(ii) EPA determines that the site poses a significant threat to public health; and

(iii) EPA anticipates that it will be more cost-effective to use its remedial authority than to use its removal authority to respond to the site.

40 C.F.R. § 300.425(c). The listing of a site on the NPL is subject to judicial review only in the United States Court of Appeals for the District of Columbia Circuit, and an application for review must be filed within 90 days after EPA promulgates an NPL listing. 42 U.S.C. § 9613.

Once no further response is appropriate, a release may be delisted from (or recategorized on) the NPL. Before delisting a release site, EPA shall consult with the state and consider, in consultation with the state, whether any of the following criteria has been met:

(i) responsible parties or other persons have completed cleanup;

(ii) all appropriate Fund-financed response under CERCLA has been implemented, and no further cleanup by responsible parties is appropriate; or

(iii) the remedial investigation shows that the release poses no significant threat to public health or the environment and that remedial action is not necessary.

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40 C.F.R. § 300.425(e). Further discussion regarding delisting procedures may be found at 52 Fed. Reg. 33,446 (Sept. 3, 1987).

b. Deferring Cleanups Elsewhere: Deferral moves sites qualifying for the NPL out of the Superfund program. CERCLA section 105(a)(8)(B) directs EPA to list priority sites "among" the known releases or threatened releases of hazardous substances, pollutants, or contaminants, and section 105(a)(8)(A) directs EPA to consider certain enumerated and "other appropriate" factors in doing so. Thus, as a matter of policy, EPA has the discretion not to use CERCLA to respond to certain types of releases. Where other authorities exist, placing the site on the NPL for possible remedial action under CERCLA may not be appropriate. Therefore, EPA may choose to defer certain types of sites from the NPL even though CERCLA may provide authority to respond. EPA has justified deferral, not on an environmental basis, but on the basis that, because another cleanup authority exists, it is appropriate to defer to that authority.

EPA has developed a Superfund deferral policy as part of the NCP and HRS under CERCLA. The policy indicates situations where EPA will exercise its discretion not to list sits on the NPS that otherwise qualify for listing.

In the September 8, 1983, NPL rule, EPA announced that

> as a matter of policy, EPA may choose not to respond to certain types of releases under CERCLA because existing regulatory or other authority under other Federal statutes provides for an appropriate response. Where these other authorities exist, and the Federal government can undertake or enforce cleanup pursuant to a particular proven program, listing on the NPL . . . does not appear to be appropriate.

48 Fed. Reg. 40658, 40661 (Sept. 8, 1983).

Initially, EPA limited deferral to certain releases of radioactive materials and releases from facilities with a treatment, storage or disposal permit or interim status pursuant to the Resource Conservation and Recovery Act (RCRA), Subtitle C. Id. at 40661-62.

In December 1988, EPA proposed broadening deferral "in cases where a Federal authority and its implementing program are found to have corrective action authority"

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and to sites where PRPs "enter into Federal enforcement agreements for site remediation under CERCLA." 53 Fed. Reg. 51394, 51415 (Dec. 21, 1988). EPA proposed expanding deferral to include sites addressed pursuant to RCRA Subtitle D (solid waste), RCRA Subtitle I (underground storage tanks), mining wastes which states were addressing through use of the Abandoned Mine Land Reclamation fund, pesticide sites and sites addressed by other Federal statutes with corrective action authority. Id. at 51116-17. EPA also requested comment on whether deferral should be extended to state authorities.

The February 11, 1991, update of the NPL noted that EPA's 1988 proposed expansion of the deferral policy to other federal and state authorities in addition to the Nuclear Regulatory Commission and RCRA Subtitle C was still pending. See 56 Fed. Reg. 5598, 5601 (February 11, 1991). The February 7, 1992, NPL update refers to the February 1991 update discussion of deferral policies. It thus appears that the expanded deferral program proposed in 1988 is still pending and has not been fully supplemented. Accordingly, deferral currently is limited to sites subject to RCRA subtitle C corrective action or Nuclear Regulatory Commission regulation.

EPA generally has stated that active RCRA facilities would not be placed on the NPL, with various exceptions. EPA also has chosen not to list sites that result from contamination associated with facilities licensed by the Nuclear Regulatory Commission (NRC), on the grounds that NRC has the authority and expertise to clean up releases from those facilities.

However, if EPA later determines that sites not listed on the NPL under CERCLA are not being properly responded to, it may consider placing them on the NPL. See 40 C.F.R. § 300.425. Sites owned by the federal government may be included on the NPL. See 50 Fed. Reg. 47,912 (November 20, 1985).

EPA has solicited comment on a broad policy to expand deferral to another Federal and State authorities (53 FR 51415, December 21, 1988); however, that broad policy is not currently in effect. EPA committed not to implement any part of an expanded deferral policy until public and Congressional concerns have been fully reviewed and analyzed. EPA and the Arizona Department of Environmental Quality previously reached an informal agreement generally that several state WQARF sites will not be placed on the NPL, but would be the subject of state-lead enforcement and cleanup. That informal deferral policy is now being reconsidered by Steve Johnson and Ed Fox of ADEQ, who have expressed a greater

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willingness to have WQARF sites placed on the NPL to take advantage of increased funding and enforcement capabilities.

c. Avoiding the NPL By Reducing the HRS Score Below 28.5: Another way a responsible party can seek to minimize the possibility of NPL listing of a site is to devise a remedy that will reduce the site's HRS score below 28.5. In the December 1990 final HRS rule, EPA announced that it would evaluate sites for potential inclusion on the NPL based upon current conditions, rather than initial conditions, in order to encourage responsible parties to take rapid action to reduce risks. See 55 Red. Reg. at 51568. Specifically, EPA stated:

> EPA will evaluate a site based on current conditions provided that response actions actually have removed wastes from the site for proper disposal or destruction in a facility permitted under the Resource Conservation and Recovery Act [RCRA], the Toxic Substance Control Act [TSCA], or by the Nuclear Regulatory Commission. HRS scoring will not consider the effects of responses that do not reduce waste quantities such as providing alternate drinking water supplies to populations with drinking water supplies contaminated by the site. In such cases, EPA believes that the initial targets factor would be used to reflect the adverse impacts caused by contamination of drinking water supplies; otherwise, a contaminated aquifer could be artificially shielded from further remediation.

55 Fed. Reg. at 51568. EPA gave the following additional examples of when it also would evaluate initial, rather than post-response, conditions:

> Similarly, if residents are relocated or if a school is closed because of contamination due to the site, EPA will consider the initial targets in scoring the site.

Id.

C. Information Gathering and Access

1. Action Authorized: Section 9604(e) authorizes EPA, or any officer, employee, or representative of EPA, to take the following actions "for the purposes of determining the need for response, or choosing or taking any response action under [CERCLA], or otherwise enforcing the provisions" of CERCLA:

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a. Access to Information: EPA may compel any person who has or may have information relevant to any of the following matters to furnish, upon reasonable notice, information relating to such matter:

(A) the identification, nature, and quantity of materials generated, treated, stored, or disposed of at a vessel or facility, or transported to a vessel or facility;

(B) the nature or extent of a release or threatened release of a hazardous substance or pollutant or contaminant at or from a facility or vessel; or

(C) information relating to a person's ability to pay for or to perform a cleanup.

42 U.S.C. § 9604(e)(2). Such a person must also either grant EPA access to all documents or records relating to such matters for inspection and copying or copy and furnish to EPA all such documents and records at the person's expense. Id.

At least one court has held that EPA may not enter a company and review all of its documents to determine which are relevant to EPA's investigation. Instead, the company is required to search its documents and produce all relevant documents for EPA's review. See Bunker Limited Partnership v. United States, 23 Env't Rep. Cas. (BNA) 2041 (D. Idaho 1985).

b. Conduct Site Inspections: EPA may enter any vessel, facility, establishment, or other place or property:

(A) where any hazardous substance or pollutant or contaminant may be or has been generated, stored, treated, disposed of, or transported from;

(B) from which or to which any hazardous substance or pollutant or contaminant has been or may have been released;

(C) where such release is or may be threatened; and

(D) where entry is required to determine the need for response or the appropriate response or to effectuate a response action.

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42 U.S.C. § 9604(e)(3). Several courts have interpreted this authority to allow EPA access to private property located adjacent to a cleanup site. See, e.g., United States v. Charles George Trucking Co., 682 F. Supp. 1260, 1273 (D. Mass. 1988).

c. Sample and Monitor: EPA may inspect and obtain samples from "any vessel, facility, establishment, or other place or property referred to in [§ 9604(e)(3)] or from any location of any suspected hazardous substance or pollutant or contaminant." 42 U.S.C. § 9604(e)(4)(A). If EPA obtains any samples, it must provide "the owner, operator, tenant, or other person in charge of the place from which the samples were obtained" with a receipt describing the samples, with a portion of the samples (if requested), and with a copy of the results of any analysis made of the samples. 42 U.S.C. § 9604(e)(4)(B).

2. Compliance Orders and Penalties: EPA may issue an order directing compliance with any request it has made regarding information or access. 42 U.S.C. § 9604(e)(5)(A). Such an order may only be issued after reasonable notice and opportunity for consultation has been given. Id. In certain instances, EPA may ask the Attorney General to commence a civil action compelling compliance with an EPA request or order. 42 U.S.C. § 9604(e)(5)(B).

A court may assess a civil penalty of up to $25,000 for each day that a person "unreasonably fails to comply" with an EPA request or order. 42 U.S.C. § 9604(e)(5)(B). See, e.g., United States v. Crown Roll Leaf, Inc., 17 Chem. Waste Lit. Rptr. 292 (D.N.J. Oct. 20, 1988) (in letter-opinion and order, court upheld EPA's imposition of civil penalties for a party's failure to provide EPA requested information in a timely fashion (six-month delay)).

* **WQARF:** ADEQ can issue a WQARF order requiring provision of information or access. A.R.S. § 49-288(E). Failure to comply with the order can lead to civil penalties of $5,000 per day for each day of noncompliance.

3. Confidentiality: Unless such information is entitled to protection under 18 U.S.C. § 1905, EPA shall make any records, reports, or information obtained under § 9604(e) available to the public. 42 U.S.C. § 9604(e)(7)(A). Any person not subject to 18 U.S.C. § 1905 who knowingly and willfully divulges or discloses protected information may be fined up to $5000 and imprisoned for up to one year. 42 U.S.C. § 9604(e)(7)(B).

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a. Protected Information: A person claiming confidentiality protection may designate the information which he believes is entitled to protection and submit such designated information separately from other information submitted. 42 U.S.C. § 9604(e)(7)(C). To be entitled to confidentiality protection, a person required to provide information must show each of the following:

(i) that such person has not disclosed the information to any other person, except as required under Title III of SARA, to government employees, to employees of government employees, or to a person who is bound by a confidentiality agreement, and that such person has taken reasonable steps to protect the confidentiality of the information and will continue to so;

(ii) the information is not required to be disclosed to the public under any other Federal or State law;

(iii) that disclosure of the information is likely to cause substantial harm to such person's competitive position; and

(iv) that the specific chemical identity of anything sought to be protected is not readily discoverable by reverse engineering.

42 U.S.C. § 9604(e)(7)(E).

b. Non-Protected Information: With respect to any hazardous substance, the following information shall not be entitled to confidentiality protection:

(i) the trade name, common name, or generic class or category of the substance;

(ii) the physical properties of the substance, including such things as its melting point, boiling point, and flash point;

(iii) the hazards to health and the environment posed by the substance;

(iv) the potential routes of human exposure to the substance;

(v) the location of disposal of any waste stream;

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(vi) any monitoring data or analysis of monitoring data pertaining to disposal activities;

(vii) any hydrogeologic or geologic data; and

(viii) any groundwater monitoring data.

42 U.S.C. § 9604(e)(7)(F).

* **WQARF:** ADEQ's authority under WQARF to gather information is similar, although not quite as broad, as EPA's authority under CERCLA. See A.R.S. §§ 49-287(J) & 49-288. Cf. 42 U.S.C. § 9604(e)(2), (3), and (4).

D. Investigations and Monitoring

EPA has authority to investigate virtually anything involving or potentially involving hazardous substances, pollutants or contaminants. If EPA "has reason to believe" that something involving hazardous substances, pollutants or contaminants has occurred, or may occur, EPA "may undertake investigations, monitoring, surveys, testing, and other information gathering as [it] may deem necessary or appropriate to identify the existence and extent of the release or threat thereof, the source and nature of the hazardous substances, pollutants or contaminants involved, and the extent of danger to the public health or welfare or to the environment." 42 U.S.C. § 9604(b)(1); A.R.S. § 49-287(J). EPA may also "undertake such planning, legal, fiscal, economic, engineering, architectural, and other studies or investigations as [it] may deem necessary or appropriate . . . ." 42 U.S.C. § 9604(b)(1).

E. Summary of Response Process for NPL Sites

1. Preliminary Assessment of Site: Before proceeding with a remedial investigation/ feasibility study, some type of preliminary site assessment is generally undertaken as previously mentioned.

2. Site Investigation: If the results of the PA indicate that further investigation is warranted, either a Screening Site Investigation (SSI) or a Listing Site Investigation (LSI) is conducted. An LSI is performed to gather sufficient information to "score" the site using the Hazard Ranking System (HRS). The HRS is a site evaluation methodology that EPA uses to estimate the relative hazards posed by different sites. It is a mathematical approach that attempts to

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objectively evaluate sources, pathways, and receptors to determine if a site should be placed on the NPL. Those sites that score above the HRS cutoff score of 28.5 are eligible to be placed on the NPL.

The lead agency (generally EPA or, in Arizona DEQ, for hazardous releases) initiates a preliminary assessment (PA) for all CERCLIS and zip ACIDS sites. There are lists of sites where hazardous substance releases are suspected. The goal of the preliminary assessment is to determine the urgency of the situation and to identify any non-federal parties ready, willing, and able to undertake proper response. EPA frequently will conduct an investigation of a site using contractors. This site investigation (SI) may involve limited sampling to better assess the potential for release or threat of release. In addition, these sampling results will expand the data base to value the appropriateness of placing a site on the National Priorities List.

3. Determination of Lead Agency and Public or Private Response: After a site is placed on the NPL, agency negotiations are initiated to determine which agency should act as the Lead Agency in the remedial process and which as the Support Agency. Those negotiations include EPA, DEQ and other Federal Agencies. The lead agency has the primary responsibility for coordinating a response action. Either EPA, DEQ, or another Federal agency (e.g., the Department of Defense for cases of hazardous waste sites on military bases) can serve as the lead agency. The lead agency is responsible for overseeing all technical, enforcement, and financial aspects of a remedial response.

The support agency plays a review and concurrence roles throughout the remedial process. When EPA or another Federal agency acts as the lead agency, DEQ usually serves as the support agency. When DEQ is the lead agency, EPA serves as the support agency.

Under CERCLA Section 104, any individual or company identified as potentially liable for a release of hazardous substances into the environment may conduct CERCLA response actions under agency supervision, if that party is qualified and otherwise capable. Either EPA or the State will oversee the PRP's work. PRPs typically participate in the remedy selection process by recommending their own preferred alternative to the lead agency at the conclusion of the remedial feasibility study and by submitting comments on the Proposed Plan and other information in the administrative record

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during the formal public comment period that is held before the final selection of a remedy for a site.

Once a site is listed on the NPL and a lead agency has been identified, the lead agency performs a Remedial Investigation and Feasibility Study (RI/FS), unless one or more PRPs agree to perform the RI/FS. During an RI/FS, the lead agency gathers information sufficient to support risk management decisions regarding which remedy appears to be most appropriate for a given site or an operable unit within a site.

4. The Concept of Operable Units: Operable Units (OUs) are discrete parts of an entire response action. An OU can be defined as a certain geographic portion of a site or an environmental medium at the site (e.g., soil remediation, upper aquifer remediation, source control measures, mitigation of contamination in off-site areas, or lower aquifer groundwater remediation). Operable units may also be comprehensive but temporary remedies (e.g., temporary caps across a site) that can provide interim protection of human health and the environment prior to final remediation.

The RI and FS for an operable unit usually are conducted concurrently, in an interactive manner. The data collected during the RI are used to develop remedial alternatives in the FS, and the alternatives identified in the FS determine the necessity of treatability studies or the collection of additional data in the RI.

5. Remedial Investigation (RI): A remedial investigation (RI) is designed "to collect data necessary to adequately characterize the site for the purpose of developing and evaluating remedial alternatives." 40 C.F.R. § 300.430(d). The focus of an RI is to assess the threat to human health or the environment posed by the hazardous substances through initial testing of the air, soil, and water. Id.

The purpose of the remedial investigation (RI) is to identify the nature, extent, and source of contamination and the threat posed to human health or welfare or the environment. It typically includes sampling and monitoring, including groundwater monitoring wells.

In characterizing the site, the lead agency identifies the source of contamination, potential routes of migration, and current and potential human and environmental receptors. The baseline risk assessment conducted during the RI identifies the contaminants of concern as well as exposure and toxicity information

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which data are used to determine the risks posed by the conditions at the site to human health and the environment.

6. Feasibility Study (FS): Using the data developed in the RI, a feasibility study is then performed "to ensure that appropriate remedial alternatives are developed and evaluated . . . ." 40 C.F.R. § 300.430(e)(1). The FS must develop alternatives "that protect human health and the environment by recycling waste or by eliminating, reducing, and/or controlling risks posed through each pathway by a site." 40 C.F.R. § 300.430(2). The number and type of alternatives to be analyzed is determined on a site by site basis. Id.

In developing and screening alternatives, the lead agency must "establish remedial action objectives specifying contaminants and media of concern, potential exposure pathways, and remediation goals." 40 C.F.R. § 300.430(e)(2)(i). The lead agency must also identify and evaluate potentially suitable technologies and assemble those technologies into alternative remedial actions. 40 C.F.R. § 300.430(e)(2)(ii)-(iii).

Treatability studies may occur. These are bench, pilot, or full-scale tests of a particular technology on samples of actual site wastes. Such studies are conducted to identify which technologies are suitable for addressing the waste to be treated.

In developing and screening the various remedial alternatives, the lead agency must consider each alternative's overall effectiveness, implementability, and cost. 40 C.F.R. § 300.430(e)(7). Once a limited list of viable alternatives has been compiled, a detailed analysis of each alternative is conducted based upon the following nine criteria:

(1) overall protection of human health and the environment;

(2) compliance with applicable or relevant and appropriate requirements ("ARARs") under federal and state law;

(3) long-term effectiveness and permanence of the remedy;

(4) reduction of toxicity, mobility, or volume through treatment;

(5) short-term effectiveness of the remedy;

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(6) implementability;

(7) cost;

(8) state acceptance; and

(9) community acceptance.

40 C.F.R. § 300.430(e)(9)(iii).

7. Public Comment and Final Decision: Before adopting any remedial action plan, EPA must publish notice of the proposed plan and the alternatives considered and allow a reasonable opportunity for public comment. 42 U.S.C. § 9617(a). EPA shall establish an administrative record upon which the selection of a response action is based, and the administrative record must be made available to the public at or near the facility at issue. 42 U.S.C. § 9613(k). Notice of the final remedial action plan adopted shall be published along with a discussion of any significant changes and a response to each of the "significant" comments, criticisms, and new data submitted by the public. 42 U.S.C. § 9617(b).

8. Record of Decision (ROD): EPA must establish an administrative record (commonly known as the record of decision ("ROD")) upon which it shall base the selection of a response action. 42 U.S.C. § 9613(k). The ROD serves as a basis for judicial review of EPA action and must be made available to the public. Id.

9. Remedial Design/Remedial Action (RD/RA): The ROD provides the framework for the transition into the next phase of the remedial process, Remedial Design (RD). Remedial Design is an engineering phase during which technical drawings and specifications are developed for the subsequent Remedial Action. These specifications are based upon the detailed description of the remedy and the cleanup criteria provided in the ROD.

After completion of the RD, the Remedial Action (RA) begins, during which the actual construction of the remedy, or implementation phase of site cleanup, occurs. When all phases of remedial activity at a site have been completed and no further remedial action is warranted, the site can be deleted from the NPL. Completed cleanup results are compared with the terms in the ROD to determine whether remediation goals have been fulfilled such that the site should be deleted from the NPL.

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F. State Participation In The Remedy Process

1. Required Participation By Statute: EPA must consult with the affected state or states before determining any appropriate remedial action under Section 9604(a). 42 U.S.C. § 9604(c)(2). In State of Alabama v. EPA, 28 Env't Rep. Cas. (BNA) 1681 (M.D. Ala. 1988), the court required EPA to reopen a ROD because the state was not given its right to comment on EPA's remedy selection.

Before providing any remedial actions pursuant to Section 9604, EPA must enter into a contract or cooperative agreement with the affected state(s) which provides adequate assurances that:

(1) the state(s) will assure all future maintenance of the response actions provided for the expected life of the actions;

(2) the state(s) will assure the availability of an acceptable hazardous waste disposal facility for any necessary offsite storage, destruction, treatment, or secure disposition of the hazardous substances; and

(3) the state(s) will pay or assure payment of either (i) ten percent of the costs of the remedial action (including future maintenance) or (ii) at least fifty percent of all response costs if the state(s) or a political subdivision thereof operated the facility at the time of any disposal of hazardous substances.

42 U.S.C. § 9604(c)(3).

Furthermore, EPA shall not undertake such remedial actions unless it first enters into a contract or cooperative agreement with the affected state(s) that provides adequate assurances that the state(s) will assure the availability of hazardous waste treatment or disposal facilities which (i) have a 20-year capacity for the period following entry of such contract or agreement, (ii) are readily available to the state(s), (iii) are acceptable to EPA, and (iv) comply with subtitle C of RCRA. 42 U.S.C. § 9604(c)(9).

2. Optional Participation:

a. By Application: States, political subdivisions, and Indian Tribes may apply to EPA to carry out response actions authorized under Section 9604. 42 U.S.C. § 9604(d)(1)(A). EPA may enter into a contract or cooperative agreement with such an entity if

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it determines that the entity is capable of carrying out the proposed response action. Id.

b. Consent Decree: If EPA proposes to select a remedial action under Section 9606 that does not attain all ARARs, then at least thirty days prior to the entry of any consent decree EPA must provide the state an opportunity to concur. 42 U.S.C. § 9621(f)(2)(A). If the state concurs, it may become a signatory to the decree. Id.

If the state does not concur in the selection, and desires to have the remedial action conform to all ARARs, it may intervene before the consent decree is entered. 42 U.S.C. § 9621(f)(2)(B). There are two possible outcomes of such an intervention:

(1) If the state establishes that the finding of EPA was not supported by "substantial evidence," the court may order that the remedial action be modified to conform to the ARARs, and the state may become a signatory to the decree.

(2) If the court determines that the remedial action need not conform to such ARARs, and the state pays or assures the payment of the additional costs to meet them, then the remedial action shall be so modified and the state shall become a signatory to the decree.

Id. EPA may conclude settlement negotiations with potentially responsible parties at any time without state concurrence. 42 U.S.C. § 9621(f)(2)(c).

Section 9621(f)(3) applies to proposed remedial actions at federal facilities. Although its provisions are very similar to those contained in Section 9621(f)(2), some differences do exist. See 42 U.S.C. § 9621(f)(3).

3. Additional Required Participation Under the 1990 NCP: Pursuant to 42 U.S.C. § 9621(f)(1), EPA was directed to "promulgate regulations providing for substantial and meaningful involvement by each State in initiation, development, and selection of remedial actions to be undertaken in that State." The regulations implementing this directive were issued by EPA in final form in March, 1990 and became effective April 9, 1990. 55 Fed. Reg. 8666 (March 8, 1990). The regulations amended existing regulations found at 40 C.F.R. Part 300.

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Congress mandated that the regulations include at least the following, and the details are set forth in the 1990 NCP:

(A) State involvement in decisions whether to perform a preliminary assessment and site inspection.

(B) Allocation of responsibility for hazard ranking system scoring.

(C) State concurrence in deleting sites from the National Priorities List.

(D) State participation in the long-term planning process for all remedial sites within the State.

(E) A reasonable opportunity for States to review and comment on each of the following:

(i) The remedial investigation and feasibility study (RI/FS) and all data and technical documents leading to its issuance.

(ii) The planned remedial action identified in the RI/FS.

(iii) The engineering design following selection of the final remedial action.

(iv) Other technical data and reports relating to implementation of the remedy.

(v) Any proposed finding or decision by EPA to exercise the authority of [Section 9621(d)(4)].

(F) Notice to the State of negotiations with PRP's regarding the scope of any response action at a facility in the State and an opportunity to participate in such negotiations and be a party to any settlement.

(G) Notice to the State and an opportunity to comment on EPA's proposed plan for remedial action as well as on alternative plans under consideration.

(H) Prompt notice and explanation of each proposed action to the state in which the facility is located.

42 U.S.C. § 9621(f)(1).

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G. Selection of Remedial Action

Section 9621 contains important guidelines that EPA must follow when selecting a remedial action to be carried out under Section 9604 or secured under Section 9606. Under Section 9621, EPA must select a remedial action that:

(1) is protective of human health and the environment;

(2) is cost effective; and

(3) utilizes permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable.

42 U.S.C. § 9621(b)(1).

1. Preferences: There is a statutory preference for remedial actions in which treatment that "permanently and significantly reduces the volume, toxicity or mobility of the hazardous substances, pollutants and contaminants" is emphasized. Id. The offsite transport and disposal of hazardous substances without such treatment is the least favored remedial action. Id.

Section 9621 was adopted as part of SARA to encourage effective treatment of hazardous substances and to discourage untreated land disposal, i.e., simply moving the substances from one location to another without reducing the long-term threat. To underscore the fact that treatment is preferred over untreated land disposal, if a remedial action results in any hazardous substances remaining at a site, then EPA must review the remedial action every five years to assure that human health and the environment are being protected. 42 U.S.C. § 9621(c).

CERCLA also encourages EPA to consider and implies a preference for alternative treatment technologies and resource recovery technologies. See 42 U.S.C. § 9621(b)(1). For example, an alternative may be selected even if it has never been achieved in practice at any other site. § 9621(b)(2). Section 9621(b)(1) requires EPA to consider at least seven specific criteria when assessing an alternative remedial action. See 42 U.S.C. § 9621(b)(1)(A)-(G). EPA may select an alternative remedial action that meets the general objectives of Section 9621 regardless of whether it has been previously successful and may take into account the degree of support for such alternative remedial action by interested parties. 42 U.S.C. § 9621(b)(2).

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2. Degree of Cleanup: Any remedial action undertaken under CERCLA must, at a minimum, attain a degree of cleanup "which assures protection of human health and the environment." 42 U.S.C. § 9621(d)(1). Such remedial actions must also be "relevant and appropriate" under the particular circumstances presented. Id.

a. ARARs: If any hazardous substance, pollutant or contaminant will remain onsite, then the remedial action must result in a level or standard of control for such hazardous substance, pollutant or contaminant which attains at least the following legally applicable or relevant and appropriate standards (ARARs):

> any standard, requirement, criteria, or limitation under any Federal environmental law, including, but not limited to, the Toxic Substances Control Act, the Safe Drinking Water Act, the Clean Water Act, the Marine Protection, Research and Sanctuaries Act, and the Solid Waste Disposal Act (RCRA); and
>
> any promulgated standard, requirement, criteria, or limitation under a State environmental or facility siting law that is more stringent than any Federal counterpart, and that has been identified to EPA by the State in a timely manner.

42 U.S.C. § 9621(d)(2)(A). A requirement under other environmental laws may be either "applicable" or "relevant and appropriate," but not both. Identification of ARARs must be done on a site-specific basis and involves a two-part analysis: first, a determination whether a given requirement is applicable; then, if it is not applicable, a determination whether it is nevertheless both relevant and appropriate.

i. Applicable requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal or State law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstances at a CERCLA site.

ii. Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under Federal or State law that, while not "applicable" to a hazardous substance, pollutant, contaminant, remedial

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action, location, or other circumstance at a CERCLA site, address problems or situations sufficiently similarly to those encountered at the CERCLA site that their use is well suited to the particular site.

The determination that a requirement is relevant and appropriate is a two-step process: (1) determination if a requirement is relevant and (2) determination if a requirement is appropriate. In general, this involves a comparison of a number of site-specific factors, including the characteristics of the remedial action, the hazardous substances present at the site, or the physical circumstances of the site, with those addressed in the statutory or regulatory requirement. In some cases, a requirement may be relevant, but not appropriate, given site-specific circumstances; such a requirement would not be ARAR for the site. In addition, there is more discretion in the determination of relevant and appropriate; it is possible for only part of a requirement to be considered relevant and appropriate in a given case. When the analysis results in a determination that a requirement is both relevant and appropriate, such a requirement must be complied with to the same degree as if it were applicable.

iii. To-be-Considered Material (TBCs) are non-promulgated advisories or guidance issued by Federal or State government that are not legally binding and do not have the status of potential ARARs. However, as described below, in many circumstances TBCs will be considered along with ARARs as part of the site risk assessment and may be used in determining the necessary level of cleanup for protection of health or the environment.

iv. Types of ARARs: There are several different types of requirements that CERCLA actions may have to comply with. The classification of ARARs below was developed to provide guidance on how to identify and comply with ARARs; however, some requirements may not fall neatly into this classification system.

- Ambient or chemical-specific requirements are usually health- or risk-based numerical values or methodologies which, when applied to site-specific conditions, result in the establishment of numerical values. These values establish the acceptable amount or concentration of a chemical that may be found in, or discharged to, the ambient environment.

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- Performance, design, or other action-specific requirements are usually technology- or activity-based requirements or limitations on actions taken with respect to hazardous wastes.

- Location-specific requirements are restrictions placed on the concentration of hazardous substances or the conduct of activities solely because they occur in special locations.

When determining whether or not any water quality criteria under the Clean Water Act are relevant and appropriate under the circumstances, EPA shall consider (i) the designated or potential use of the surface or groundwater, (ii) the environmental media affected, (iii) the purposes for which such criteria were developed, and (iv) the latest information available. 42 U.S.C. § 9621(d)(2)(B)(i). In limited instances, alternate concentration limits for hazardous constituents in groundwater may be established when the assumed point of human exposure is beyond the boundary of the facility. See 42 U.S.C. § 9621(d)(2)(B)(ii).

b. Developing Protective Remedies Using Risk Assessment, ARARs, and TBCs: CERCLA § 121 requires selection of a remedial action that is protective of human health and the environment. EPA's approach to determining protectiveness involves risk assessment, considering both ARARs and to-be-considered materials (TBCs). The risk assessment includes consideration of site-specific factors such as types of hazardous substances present, potential for exposure, and presence of sensitive populations. Acceptable exposure levels are generally determined by applicable or relevant and appropriate Federal and State environmental requirements, if available, and the following factors: (1) for systemic toxicants, concentration levels to which the human population (including sensitive subgroups) could be exposed on a daily basis without appreciable risk of significant adverse effects during a lifetime; (2) for known or suspected carcinogens, concentration levels that represent an excess upperbound lifetime cancer risk to an individual of between 10-4 (1 in 10,000) and 10-6 (1 in 1,000,000); (3) other factors related to exposure (such as multiple contaminants at a site or multiple exposure pathways) or to technical limitations (such as detection/quantification limits for contaminants.

The 1990 NCP sets forth a fairly precise method for selection of cleanup standards. It continues, the concept of the RI/FS investigation, and it formalizes

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the process for selection of the appropriate remedial alternative and its embodiment in a Record of Decision. 40 C.F.R. § 300.430 (1990). The final remediation goals are determined first by careful analyses of ARARs; use of human health risk assessments; examination of the appropriateness of maximum containment levels (MCLs) and goals (MCLGs) under the Safe Drinking Water Act, of water quality criteria under Section 303 and 304 of the Clean Water Act, and of alternate concentration limits under the Resource Conservation and Recovery Act; and through assessments of threats to habitats of non-human species. 40 C.F.R. § 300.430(e)(2)(i). Second, alternatives to achieve these goals, including innovative technologies, are developed. 40 C.F.R. §§ 300.430(e)(2)(ii) & (iii). The alternatives developed are colored by specific "expectations": (1) treatment shall be used where practicable, and engineering controls (i.e., containment) is appropriate only where there is a relatively low long-term threat or treatment is impracticable; (2) combinations of methods such as treatment, containment and institutional controls (i.e., restrictions on access and exposure potential) shall be used to develop alternatives for final remedy and for management during the remedial action time frame; (3) innovative technology shall be used when it offers significant, potential benefits of better performance, lesser impact or lower cost; and (4) usable groundwater shall be restored to its beneficial uses within a reasonable time frame whenever practicable. 40 C.F.R. § 300.430(a)(1)(iii). The remedy development process results in a range of alternatives, representing a number of viable alternatives to managing the cleanup. For source control response actions, a range of alternatives with a focus on treatment as a principal element is required, along with containment and no-action alternatives. 40 C.F.R. § 300.430(e)(3) (1990). For groundwater response, alternatives are to be developed that restore groundwater quality for beneficial use within a reasonable time frame. 40 C.F.R. § 300.430(e)(4) (1990).

Once all the alternatives are developed consistent with this guidance, a detailed analyses using nine criteria to compare the alternatives occurs. 40 C.F.R. § 430(e)(9)(iii). Two of the criteria are thresholds, in that the failure of any alternatives to comply results in a rejection of the alternative. 40 C.F.R. § 430(f)(A). These are the overall protection of public health and the environment and compliance with ARARs (unless a specific ARAR is waived). Id.

What exactly are these "threshold" cleanup levels that must be met in order to comply with the 1990 NCP?

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First, the ARARs are defined in two parts: (1) the applicable requirements, and (2) the relevant and appropriate requirements. Applicable requirements are those cleanup or control standards and other substantive requirements, criteria or limitations that were promulgated under federal environmental or state environmental or facility siting laws that specifically address a pollutant at the CERCLA site. 40 C.F.R. § 300.5 (1990). Relevant and appropriate requirements are those federal and state requirements which did not qualify as applicable, but which address sufficiently similar situations or problems so that their use is well suited. Id.; see also 40 C.F.R. § 300.400(g) (1990) (guidance on determining relevance and appropriateness). Any state ARARs must be timely identified, or their use is not required. 40 C.F.R. § 300.400(g)(4) (1990).

The 1990 NCP provides that advisories, criteria or guidance to-be-considered (TBC) that do not meet the definition of ARAR may be necessary to determine what is protective or may be useful in developing Superfund remedies. 40 C.F.R. § 300.400(g)(3) (1990). The ARARs preamble describe three types of TBCs: health effects information with a high degree of credibility, technical information on how to perform or evaluate site investigations or remedial actions, and policy. 55 Fed. Reg. at 8744 (March 8, 1990). EPA does not require by rule that TBCs should be cleanup standards because they are, by definition, generally neither promulgated nor enforceable so they do not have the same status under CERCLA as do ARARs. TBCs may, however, be useful in helping to determine what is protective at a site, or how to carry out certain actions or requirements. Thus, the development of health-based guidelines by the Arizona Department of Environmental Quality becomes extremely significant, as they would fall within the TBC category.

Because ARARs do not exist for every chemical or circumstance likely to be found at a Superfund site, EPA believes it may be necessary when determining cleanup requirements or designing a remedy to consult reliable information that would not otherwise be considered to be a potential ARAR. For example, when an MCLG or MCL does not exist for a particular contaminant, EPA intends that the lead or support agency use EPA-developed toxicity information such as cancer potency factors and reference doses for noncarcinogenic effects when developing preliminary remediation goals. Also, many action-specific ARARs have broad performance criteria. The technical information on how to implement such criteria may be contained in guidance documents only. The lead or support agency may need to consider these guidance documents in determining how to comply with the

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ARAR. Also, the lead or support agency may want to consider policy statements contained in advisories, criteria, or guidance when selecting or designing a remedy. Accordingly, even though the use of TBCs is not specifically discussed in CERCLA, EPA believes that their use is consistent with the statutory requirements to protect human health and the environment and to comply with ARARs.

Interestingly enough, SARA provided that "such remedial action shall require a level or standard of control which at least attains Maximum Contaminant Level Goals established under the Safe Drinking Water Act and water quality criteria established under §§ 304 or 303 of the Clean Water Act, where such Goals or criteria are relevant and appropriate under the circumstances of the release . . ."42 U.S.C. § 121(d)(2)(A). However, EPA only requires cleanup to the MCLG when it is above zero (i.e., for non-carcinogens). It uses the MCL where the MCLG is zero. Where no MCL exists and the MCLG is zero, cleanup is based on use of the risk range. 40 C.F.R. § 300.430(e)(2)(i).

In general, ARARs must be met as cleanup standards. Compliance with a specific ARAR will not be required if a waiver is invoked. 40 C.F.R. § 300.430(f)(1)(ii)(C) (1990).

The second threshold criterion is the requirement of overall protection of human health and the environment. 40 C.F.R. §§ 300.430(e)(9)(iii)(A) & (f)(1)(i)(A) (1990). In order for cleanup standards to meet this criterion, they must comply with the following factors: (1) for systemic toxicants, levels may not exceed those to which humans (including sensitive subgroups) can be exposed to over a lifetime without effect, allowing for a margin of safety; (2) for carcinogens, levels falling within a risk range of 10^{-4} to 10^{-6} must be met, using 10^{-6} as a point of departure; (3) detection/qualification limits; (4) inclusion of uncertainty factors; (5) "other pertinent information;" (6) whether multiple contaminants or pathways will result in a cumulative risk exceeding 10^{-4}; and (7) whether environmental threats exist, such as threats to sensitive or critical habitats. 40 C.F.R. § 300.430(e)(2)(i).

The two threshold criteria for cleanup in Arizona thus can be considered to be (1) a requirement that ARARs be met or waivers obtained, and (2) a requirement that thresholds be met for systemic toxicants, that cancer risks fall in the 10^{-4} to 10^{-6} risk range, and that undue risks to environmental considerations (i.e., habitat) be abated.

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Now that the cleanup standards and alternatives left meet the two threshold criteria, five "balancing" criteria are used to further differentiate among potential remedies. These include the preferences for (1) long-term effectiveness and permanence, (2) reduction of toxicity, mobility or volume through treatment, and (3) cost effective remedies. 40 C.F.R. § 300.430(f)(1)(B) (1990).

The requirement that a cleanup be "cost-effective" only means a cost-efficient method of achieving a cleanup goal, but it does not affect the selection of the cleanup standard. SARA Conference Committee Report at 245. The prior consideration regarding avoidance of disproportionate use of the Superfund monies on one particular site remains a ground for waiver of cleanup standards, but only for Superfund - financed cleanups under § 104. 42 U.S.C. § 9621(d)(4)(G).

The final two balancing criteria are implementability of the remedy and its short-term effectiveness. 40 C.F.R. § 300. 430(f)(1)(B) (1990). Then, two criteria can modify the remedial alternative selection: state acceptance and community acceptance. 40 C.F.R. § 300.430(f)(1)(C) (1990).

c. Exceptions to ARARs: EPA may select a remedial action that does not attain a level or standard of control at least equivalent to the ARARs if it finds that:

(A) such remedial action is only part of a total remedial action that will attain such ARARs when completed;

(B) compliance will result in greater risk to human health and the environment than alternative options;

(C) compliance is technically impracticable from an engineering perspective;

(D) the remedial action will attain an equivalent standard of performance through use of another method or approach;

(E) with respect to a state standard, requirement, criteria, or limitation, the state has not consistently applied (or demonstrated the intention to consistently apply) them in similar circumstances at other remedial actions within the State; or

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(F) in a remedial action undertaken solely under Section 9604 using the Fund, selection of a remedial action that attains such level of standard or control will not provide a balance between the need for protection of public health and welfare and the environment at the facility, and the availability of monies from the Fund to respond to other sites that may threaten public health or welfare or the environment, taking the relative immediacy of such threats into consideration.

42 U.S.C. § 9621(d)(4).

3. Off-Site Disposal: If EPA selects a remedial action that "does not permanently and significantly reduce the volume, toxicity, or mobility of hazardous substances, pollutants, or contaminants," then EPA may propose that the waste generated by or associated with such remedial action be disposed of through land disposal. 42 U.S.C. § 9621(d)(2)(C)(i). Any state standard, requirement, criteria, or limitation which could effectively result in the statewide prohibition of land disposals shall not apply unless each of the following conditions is met:

(i) The state standard is of general applicability and was adopted by formal means.

(ii) The state standard was adopted on the basis of legitimate considerations and was not adopted for the purpose of precluding onsite remedial actions or other land disposal for reasons unrelated to protection of human health and the environment.

(iii) The state arranges for, and pays the costs of utilizing, alternative disposal facilities.

42 U.S.C. § 9621(d)(2)(C)(ii)-(iii).

Any offsite transfer of a hazardous substance or pollutant or contaminant shall only be made to a facility which is operating in compliance with any applicable Federal law and all applicable state requirements. 42 U.S.C. § 9621(d)(3). Such hazardous substance or pollutant or contaminant may only be transferred to a land disposal facility if EPA determines that both of the following requirements are met:

(i) The unit to which the hazardous substance or pollutant or contaminant is transferred is not releasing any form of hazardous waste into the groundwater or surface water or soil.

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(ii) All such releases from other units at the facility are being controlled by a corrective action program approved under subtitle C of the Solid Waste Disposal Act (RCRA).

Id.

4. Permit Exemption: CERCLA § 121(e) exempts any response action conducted entirely on-site from having to obtain a Federal, State, or local permit, where the action is carried out in compliance with § 121.

In general, on-site actions need comply only with the substantive aspects of ARARs, not with the corresponding administrative requirements. That is, permit applications and other administrative procedures, such as administrative reviews and reporting and recording keeping requirements, are not considered ARARs for actions conducted entirely on-site. However, the Feasibility Study, the Proposed Plan, the Record of Decision, the Community Relations Plan, and the Administrative Record should demonstrate full compliance with all substantive requirements that are ARARs, unless a waiver is used.

Off-site actions must comply with all legally applicable requirements, both substantive and administrative. The concept of "relevant and appropriate" is not available for off-site actions.

* **WQARF**: The 1992 WQARF amendments created a limited exemption from otherwise applicable permit requirements. On-site remedial actions approved by ADEQ are not required to obtain any permit or approval that otherwise might be required by ADEQ (e.g., hazardous waste permits). A.R.S. § 49-290(A). On-site remedial actions approved by ADEQ also may be exempt from the requirement to obtain other state (i.e., non-ADEQ) or local permits or approvals in certain limited situations. The party seeking this exemption must make a written request to ADEQ, a request that ADEQ may grant only if it finds both that: (1) the requirement sought to be exempted does not arise out of any permit or regulatory program required pursuant to the laws of the United States; and (2) the requirement sought to be exempted presents a substantial impediment to effective performance of the remedial action selected by ADEQ. A.R.S. § 49-290(B). Discharge of wastewater to off-site publicly owned treatment works does not constitute "on-site" remedial activities that may be the subject of a permit exemption. Prior to exempting any local permit requirement, ADEQ must meet and confer with the party seeking the exemption and the remedial action

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coordinator appointed by the governmental entity whose permit or approval is sought to be exempted. A.R.S. § 49-290(D). (Each city, town and county must designate a remedial action coordinator to monitor and facilitate remedial actions within its jurisdiction, pursuant to A.R.S. § 49-290(F)). ADEQ's preemption decision must be in writing and may be appealed to Superior Court. A.R.S. § 49-290(E).

Requirements imposed by Title 45 (i.e., substantive water rights requirements imposed by the Arizona Department of Water Resources (ADWR)) may not be subject to exemption for WQARF cleanups. A.R.S. § 49-290(B); see also A.R.S. § 49-290.01(A). All ADWR permits must be obtained by a party conducting a remedial action. ADWR is required to expedite the processing and issuance of permits for remedial actions. A.R.S. § 49-290.01(A). If ADWR fails to issue or deny a permit within 120 days of receipt of a complete application, ADEQ may authorize the remedial action to proceed and the person conducting that action is not subject to penalties for failure to obtain the ADWR permit (although that person must comply with any generally applicable substantive requirements imposed by ADWR statutes or regulations). Id. In addition, a party conducting an approved remedial action who uses groundwater withdrawn in an active management area as part of an approved remedial action must pay the groundwater withdrawal fee for that water. Id. Finally, ADEQ and ADWR are required to enter into a memorandum of understanding establishing a procedure for expediting the review and issuance of permits under Title 45 when ADEQ has determined that delay in the issuance of a permit required by Title 45 will result in the continuance of an imminent and substantial endangerment to public health, welfare or the environment. A.R.S. § 49-290.01(B).

H. PRP Involvement In The Remedy Selection Process.

1. Provision of Information at the PA/SI Stage: Typically some PRPs become aware (i.e. through information requests or requests for access for sampling) that agency consideration to scoring a site for the HRS is occurring. The PRP should provide information even at this early stage to try to shape what will be done and the agency's perception of the problem.

2. Information Provided Regarding Site Listing: Again, a PRP may submit information that may start shaping agency perspectives on what should be done with respect to any remedial action.

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3. Controlling the RI/FS: PRPs may wish to conduct the RI/FS, where EPA approval and payment for oversight costs have been arranged. This provides the greatest opportunity to shape the development of the record relevant to remedy selection ARAR determination, and even risk assessment.

4. Commenting on the Proposed Remedial Action Plan: A PRP also may comment on a Proposed Remedial Action Plan proposed for public comment. The lead agency is required to make the proposed plan available for review, along with supporting analysis and data, for a period of not less than 30 calendar days to permit submission of comments. 40 C.F.R. § 300.430(f)(2). An opportunity for a public meeting to discuss the proposed plan also must be provided, but a PRP must be prepared to submit written positions with hard data and analysis as a backup to have any impact on the proposed plan. The hearing is not an adjudicatory one, and there is no right to confrontation or cross examination. The lead agency must respond in writing to all significant comments as part of its record of decision (ROD) selecting the remedy. Id.

5. Protecting the PRP in the Administrative Record: The regulations regarding establishment of the administrative record are set forth at 40 C.F.R. Part 300 Subpart 800. The lead agency generally is required, to include documents in the administrative record that form a basis for selection of the response action. The record is available for review during the RI/FS process, and a PRP may be served by staying abreast of record developments by review of the file prior to the official public comment period. If trends are noticed which would require time consuming data and information development by a PRP, beyond the 30 day comment period, a PRP can start the development of such scientific comment with its consultants long before the official comment period. This maximizes the PRP's chance of real impact on the proposed plan through the comment process.

Some attorneys believe that the prohibition against an adjudicatory hearing and the remedy selection level may violate due process and recommend that PRPs consider filing a written demand for an opportunity to present a case and cross-examine witnesses before an administrative law judge. Such a demand will be ignored by EPA, but it sets the stage for a potential due process challenge in the courts.

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I. Judicial Review of Remedy

Generally, no federal court shall have jurisdiction to review any challenges to response actions under Section 9604 or any order issued under Section 9606, except in the following actions:

(1) An action under Section 9607 to recover response costs or damages or for contribution.

(2) An action to enforce an order issued under Section 9606(a) or to recover a penalty for violation of such order.

(3) An action for reimbursement under Section 9606(b)(2).

(4) An action under Section 9659 (relating to citizen suits) challenging a response action taken under Section 9604 or secured under Section 9606.

(5) An action under Section 9606 in which the United States has moved to compel a remedial action.

42 U.S.C. § 9613(h). Several courts have interpreted Section 9613 to prohibit pre-enforcement judicial review of nonliability. See, e.g., Solid State Circuits, Inc. v. EPA, 812 F.2d 383, 386 (8th Cir. 1987); United States v. Dickerson, 660 F. Supp. 227, 232 (M.D. Ga.), aff'd, 834 F.2d 974 (11th Cir. 1987).

1. Scope of Review: EPA must establish an administrative record upon which to base the selection of any response action. 42 U.S.C. § 9613(k)(1). "In any judicial action under [CERCLA], judicial review of any issues concerning the adequacy of any response action taken or ordered by [EPA] shall be limited to the administrative record." 42 U.S.C. § 9613(j)(1). Supplemental materials may be considered by the court whenever allowed by otherwise applicable principles of administrative law. Id.

On March 8, 1990, EPA published the regulations entitled "Administrative Record for Selection of Response Action." See 40 C.F.R. §§ 300.800-.825. These regulations contain all relevant guidelines for how to prepare an administrative record, what it must contain, and where it must be located.

2. Standard of Review: Any EPA decision in selecting a response action will be upheld unless the party objecting to the decision can demonstrate, based

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on the administrative record, that the decision was "arbitrary and capricious or otherwise not in accordance with law." 42 U.S.C. § 9613(j)((2). If the court finds that the EPA decision violated this standard, then the court shall award (i) only the response costs or damages that are not inconsistent with the National Contingency Plan (NCP), and (ii) such other relief as is consistent with the NCP. 42 U.S.C. § 9613(j)(3). Finally, when the court is reviewing alleged procedural errors, it may only disallow costs or damages if the errors "were so serious and related to matters of such central relevance to the action that the action would have been significantly changed had such errors not been made." 42 U.S.C. § 9613(j)(4).

In United States v. Akzo Coatings of America, Inc., 949 F.2d 1409 (6th Cir. 1991), the state of Michigan and three environmental groups objected to EPA's remedy choice. The state sought de novo judicial review of the remedy and also alleged that ARARs had not been met. Issues on appeal directly raised the standard of review, including whether evidence outside the administrative record should be considered. The court reviewed case law and set forth the appropriate review standard:

> Aside from the Hardage [663 F. Supp. 1280 (W.D. Okla. 1987)] and Ottati & Goss [900 F.2d 429 (1st Cir. 1990)] courts, federal courts have consistently reviewed environmental remedies formulated under CERCLA on the basis of the administrative record under an arbitrary and capricious test. United States v. Wastecontrol of Florida, Inc., 730 F. Supp. 401 (M.D. Fla. 1989); In re Acushnet River & New Bedford Harbor, 722 F. Supp. 888 (D. Mass. 1989); United States v. Bell Petroleum Servs., Inc., 718 F. Supp. 588 (W.D. Tex. 1989); United States v. Seynour Recycling Corp., 679 F. Supp. 859 (S.D. Ind. 1987). Some courts, properly relying on the legislative history accompanying the statute, have also applied a three-part test of (1) fairness, 92) reasonableness, and (3) consistency with CERCLA's goals. See H.R. Rep. No. 253, Pt. 3 at 19, supra. This test is similar to the standards applied before the 1986 SARA amendments. United States v. Conservation Chemical Co., 628 F. Supp. 1334, 1337-38 (S.D. Ind. 1982). Review of consent decrees in our court has generally been conducted under similar standards. See United States v. Jones & Laughlin Steel Corp., 804 F.2d

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> 348, 351 (6th Cir. 1986); Williams v. Vukovich, 720 F.2d 909, 920-23 (6th Cir. 1986).
>
> We view the standard of fairness, reasonableness and consistency with the statute--our court's general test for consent decrees---coupled with the arbitrary and capricious standard of section 9613(j), to be the proper tests for EPA's proposed decree. We apply these tests to the administrative record before us, as did the district court. We must "consider whether the decision was based on a consideration of the relevant factors and whether there has been a clear error of judgment." Citizens to Preserve Overton Park v. Volpe, 401 U.S. 402, 416, 91 S. Ct. 8914, 823-24, 28 L.Ed.2d 136 (1971) (applying the arbitrary and capricious test of the Administrative Procedure Act, 5 U.S.C. § 706(2)(A)).

(Emphasis added).

Though judicial review of a proposed consent decree under CERCLA must be performed under the arbitrary and capricious test, with an evaluation on the fairness and reasonableness of EPA's decision, our review must be thorough and penetrating. One court, discussing its role in subjecting scientific evidence to the arbitrary and capricious standard of review has written:

> There is no inconsistency between the deferential standard of review and the requirement that the reviewing court involve itself in event he most complex evidentiary matters. . . . The close scrutiny of the evidence is intended to educate the court. It must understand enough about the problem confronting the agency to comprehend the meaning of the evidence relied upon and the evidence discarded; the questions addressed by the agency and those bypassed; the choices open to the agency and those made. The more technical the case, the more intensive must be the court's efforts to understand the evidence, for without an appropriate understanding of the case before it the court cannot properly perform its appellate function.

Ethyl Corp. v. EPA, 541 F.2d 1, 36 (D.C. Cir. 1975) (en banc). In sum, in evaluating the efforts of an agency charged with making technical judgments and weighing complex data, we must give a proper degree of deference to the agency's expertise; see Lile v.

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University of Iowa Hospital and Clinics, 886 F.2d 157 (8th Cir. 1989), yet also ensure that the agency has considered all of the relevant evidence in the record and has acted in the public interest.

Id. at 1426 (emphasis added). The court stated its role involved "searching for errors of procedure and for glaring omissions or mistakes which indicate that EPA has acted arbitrarily and capriciously." Id. at 1424. "Ours is the task of searching for errors of procedure, and serious omissions of substantive evidence, not the job of reformulating a scientific clean-up program developed over the course of months or years." Id. at 1425.

3. Cost Recovery Actions: Prior to SARA, a PRP ordered by EPA to clean up a site was faced with a dilemma. The PRP could either refuse to comply with EPA's order and risk substantial penalties, or it could comply with EPA's order and forfeit its right to challenge EPA's action in court. The enactment of Section 9606(b)(2) under SARA allows a PRP to seek reimbursement from the Fund for costs of response actions taken under certain circumstances.

Any person who complies with the terms of an EPA order may, within 60 days after completing the required action, petition EPA for reimbursement from the Fund. 42 U.S.C. § 9606(b)(2)(A). If EPA refuses to grant any part of the petition, the petitioner has 30 days from the receipt of such refusal to file an action against EPA in federal district court for reimbursement from the Fund. 42 U.S.C. § 9606(b)(2)(B).

To obtain reimbursement, the petitioner must prove by a preponderance of the evidence that it is not liable for response costs under Section 9607(a) and that such costs are reasonable in light of the action required by EPA's order. 42 U.S.C. § 9606(b)(2)(C). Finally, a court may award a party appropriate costs, fees, and other expenses in accordance with the Equal Access to Justice Act [28 U.S.C. § 2412(a) & (d)]. 42 U.S.C. § 9606(b)(2)(E).

4. Citizens Suits: Section 9659 allows any person to bring a civil action on his own behalf against:

(i) any person (including the United States) who is alleged to be in violation of any standard, regulation, condition, requirement, or order which has become effective pursuant to CERCLA; or

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(ii) any officer of the United States (including EPA) where there is an alleged failure of such officer to perform any non-discretionary act or duty under CERCLA.

42 U.S.C. § 9659(a).

The person bringing such a claim must provide EPA 60 days notice prior to the commencement of the suit or the action will be barred. 42 U.S.C. § 9659(d). See Regan v. Cherry Corp., 706 F. Supp. 145, 147-48 (D.R.I. 1989). The court may award costs of litigation to the prevailing or the substantially prevailing party whenever the court deems such an award appropriate. 42 U.S.C. § 9659(f).

Cabot Corp. v. EPA, 677 F. Supp. 823 (E.D. 1988) held that allegations of financial injury due to the remedy selection may not be raised in a citizen suit to create a right to pre-enforcement review. If irreparable harm to health or the environment is alleged to be the result of EPA's chosen response, pre-enforcement review by citizen suit may be available. See also Alabama v. EPA, 871 F.2d 1548 (11th Cir.), cert. denied 110 S. Ct. 538 (1989); Neighborhood Toxic Cleanup Emergency v. Reilly, 716 F. Supp. 838 (D.N.J. 1989).

* **WQARF:** WQARF does not contain a citizens suit provision.

J. Modification of the ROD

Although the general rule is that the best chance of affecting the selection of the remedy is by thorough participation throughout the process before a ROD is developed, a PRP may wish to petition to reopen the ROD should an adverse decision on some point occur or if new facts come to light. The National Contingency Plan contemplates amendments to the ROD and sets forth the procedure for modification:

To amend the ROD, the lead agency, in conjunction with the support agency, as provided in § 300.515(e), shall:

(A) Issue a notice of availability and brief description of the proposed amendment to the ROD in a major local newspaper of general circulation;

(B) Make the proposed amendment to the ROD and information supporting the decision available for public comment;

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(C) Provide a reasonable opportunity, not less than 30 calendar days, for submission of written or oral comments on the amendment to the ROD. Upon timely request, the lead agency will extend the public comment period by a minimum of 30 additional days;

(D) Provide the opportunity for a public meeting to be held during the public comment period at or near the facility at issue;

(E) Keep a transcript of comments received at the public meeting held during the public comment period;

(F) Include in the amended ROD a brief explanation of the amendment and the response to each of the significant comments, criticisms, and new relevant information submitted during the public comment period;

(G) Publish a notice of the availability of the amended ROD in a major local newspaper of general circulation; and

(H) Make the amended ROD and supporting information available to the public in the administrative record and information repository prior to the commencement of the remedial action affected by the amendment.

40 C.F.R. § 300.435(c)(2)(ii) (1991). This procedure is required only if the differences "fundamentally alter the basic features of the selected remedy with respect to scope, performance or cost." Id.

If the changes do not work a fundamental alteration of the basic features of the remedy, but they are nevertheless significant, then the lead agency only must make an explanation of the significant differences and supporting information publicly available in the administrative record and shall publish a brief notice summarizing the significant differences in a major local newspaper. § 300.430(c) (2)(i) (1991).

EPA is most receptive to reopening the ROD based on new information. EPA recognizes that new information may warrant rethinking a remedy selected for a site. In particular, the lead agency must consider consents submitted after the close of the public comment period "to the extent that the comments contain significant information not contained elsewhere in the administrative record file which could not have been submitted during the public comment period and which substantially support the need to significantly alter the response

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action." § 300.825(c). These comments and responses are placed into the administrative record file. Id.

If the lead agency either modifies or refuses to modify the selected remedy following a petition, the PRP has the option to seek judicial review:

> In the technical and still-developing field of environmental science, new data regarding the efficacy of various cleanup remedies continues to come forward. We can imagine a situation in which EPA enters into a consent decree embodying a proposed remedy, and only after this decree is filed with the court does a scientific study come forward discrediting the selected remedy because the agency reached erroneous conclusions, or perhaps because cutting-edge studies indicate that the proposal is technically flawed. In such a case, Congress cannot have intended, and sound principles of justice cannot allow a reviewing court to close its eyes and ears to the new evidence. Were the court to enforce the decree simply because the information available to EPA at the time the decree was filed indicated that the remedial plan was not arbitrary or capricious, the court would surely not be acting in the best interests of the public if in fact the new data clearly showed that the plan would fail in its purpose.

Akzo Coatings, 949 F.2d at 1429.

Given the recent developments with dense nonaqueous phase liquid pollutants (DNAPLs), it is obvious that many remedies originally selected in the ROD may prove unworkable. The PRP must review the progress towards and costs of the selected remedy, and should keep an ear open regarding new, more cost-effective methods of addressing these problems and regarding the propriety of the selected cleanup standards. Significant developments should be brought to EPA's attention in the form of a petition to reconsider the remedy or appropriate portions thereof.

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V. LIABILITY OF POTENTIALLY RESPONSIBLE PARTIES (PRPs)

A. CERCLA Liability Provisions

Liability for CERCLA response costs and natural resource damages may be imposed on any of the following four categories of persons (including corporations and government agencies):

(1) the current owner and operator of a vessel or facility;

(2) any person who owned or operated a facility at the time any hazardous substance was disposed of there;

(3) any person who arranged for the disposal or treatment of a hazardous substance owned or possessed by such persons at a facility owned or operated by another party or entity or for the transport of a hazardous substance owned or possessed by such person for disposal or treatment; and

(4) any person who accepts or accepted any hazardous substances for transport to a disposal or treatment facility or site selected by that person.

42 U.S.C. § 9607(a).

Such persons are often referred to as potentially responsible parties (PRPs).

A person under the statute is "an individual, firm, corporation, association, partnership, consortium, joint venture, commercial entity, United States government, State, municipality, commission, political subdivision of a state, or any interstate body." Id. at § 9601(21).

Section 9601 (20)(A) states:

> The term "owner Or operator" means . . . (ii) in the case of an onshore facility or an offshore facility, any person owning or operating such facility, and (iii) in the case of any facility, title or control of which was conveyed due to bankruptcy, foreclosure, tax delinquency, abandonment, or similar means to a unit or state or local government, any person who owned, operated or otherwise controlled activities at such facility immediately beforehand.

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Id.

A person who holds ownership title primarily to protect his security interest in the facility, but does not participate in its management, is not an "owner" for liability purposes. 42 U.S.C.A. § 9601(20)(A).

Section 9607(a)(1) prescribes liability for the current "owner and operator." Other sections use the phrase "owner or operator." See, e.g., 42 U.S.C.A. 9607(a)(2) (liability adheres to any person who , at the time of disposal, owned or operated a facility); 42 U.S.C.A. § 9601(20)(D) (defining the term "owner or operator"); 42 U.S.C.A. § 9601(37)(A) (defining the term "service station dealer" as any person who owns or operates a motor vehicle service station). Courts generally ignore the "and" in § 9607(a)(1), treating the language as though it actually reads "owner or operator." Addressing this issue in a footnote, the United States v. Fleet Factors Corp., 901 F.2d 1550 (11th Cir. 1990), court said "although the 'owner and operator' language of § 9607(a)(1) is in the conjunctive, we construe this language in the disjunctive in accordance with the legislative history of CERCLA and the persuasive interpretations of other federal courts." Id. at 1554 n.3 (citing Maryland Bank & Trust Company, 632 F. Supp. 573, 577-78 (D. Md. 1986); Guidice v. BFG Electroplating and Manufacturing Co., 732 F. Supp. 556, 561 (W.D. Pa. 1989); Artesian Water Co. v. Government of New Castle County, 659 F. Supp. 1269, 1280 (D. Del. 1987), aff'd, 851 F.2d 643 (3d Cir. 1988) (all three interpreting the statute in the disjunctive).

B. WQARF Liability Provisions

Although CERCLA and WQARF are similar in many respects, the approach to defining responsible parties is somewhat different. A.R.S. § 49-283 provides in relevant part:

A. For purposes of imposing liability under this article, and except as provided in subsections B, C and D, a person is deemed the party responsible for the release or threatened release of a hazardous substance if the person:

(1) Owned or operated the facility:

(a) When the hazardous substance was placed or came to be located in or on the facility.

(b) When hazardous substance was located in or on the facility but before the release.

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(c) During the time of the release or threatened release.

(2) Owned or possessed the hazardous substance and arranged, by contract, agreement or otherwise, for the disposal, treatment or transport for disposal or treatment of the hazardous substance.

(3) Accepted for transport to a disposal or treatment facility waste that contained a hazardous substance and either selected the facility to which it was transported or disposed of it in a manner contrary to law.

B. Notwithstanding the provisions of subsection A, a person that owns real property is not a responsible party if there is a release or threatened release of a hazardous substance from a facility in or on the property unless one or more of the following applies to that person:

(1) Was engaged in the business of generating, transporting, storing, treating or disposing of a hazardous substance at the facility or disposing of waste at the facility, or knowingly permitted others to engage in such a business at the facility.

(2) Permitted any person to use the facility for disposal of a hazardous substance.

(3) Knew or reasonably should have known that a hazardous substance was located in or on the facility at the time right, title or interest in the property was first acquired by the person and engaged in conduct by which he associated himself with the release. For the purpose of this paragraph, a written warranty, representation or undertaking, which is set forth in an instrument conveying any right, title or interest in the real property and which is executed by the person conveying the right, title or interest, or which is set forth in any memorandum of any such instrument executed for the purpose of recording, is admissible as evidence of whether the person acquiring any right, title or interest in the real property knew or reasonably should have known that a hazardous substance was located in or on the facility.

(4) Took action which significantly contributed to the release after he knew or reasonably should have known that a hazardous substance was located in or on the facility.

Under WQARF, an owner of real property on which a public utility easement is located is not responsible

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for any release caused by the act or omission of the public utility in carrying out the specific easement usage. A.R.S. § 49-283(C). This is of obvious relevance for landowners where the utility may have PCB transformers, for example.

C. The Basic Categories of CERCLA/WQARF Potentially Responsible Parties

The following is a list of the types of persons that have been considered PRPs under CERCLA, a discussion of some of the case law, and a discussion of how they may be treated under WQARF.

1. Current Owner: The present owner of a facility from which there has been a release or threatened release of a hazardous substance may be a PRP, regardless of when the release or threatened release occurred. See 42 U.S.C. § 9607(a)(1); A.R.S. § 49-283(A)(1); State of New York v. Shore Realty Corp., 759 F.2d 1032, 1043-44 (2d Cir. 1985); City of Philadelphia v. Stepan Chem. Co., 18 Envtl. L. Rep. (Envtl. L. Inst.) 20133 (E.D. Pa. 1987); United States v. Tyson, 17 Envtl. L. Rep. (Envtl. L. Inst.) 20527 (E.D. Pa. 1986).

In Shore, the owner of the contaminated site, Shore Realty, was incorporated for the purpose of purchasing and developing the property. Previous tenants, Applied Environmental Services, Inc. and Hazardous Waste Disposal, Inc. had contaminated the site. Shore Realty argued that section 9607(a)(1) could not have been intended to include all owners, and that Congress intended it to be limited by the words "at the time of disposal" found in section 9607(a)(2). Shore Realty argued it was not covered by section 9607(a)(1) because it neither owned the site at the time of disposal, nor caused the presence or the release of the hazardous waste at the facility. Shore, 759 F.2d at 1043. The court rejected Shore Realty's argument.

The Second Circuit held that section 9607(a)(1) unequivocally imposes strict liability on the current owner of a facility from which there is a release, without regard to causation. The court reviewed legislative history extensively, then concluded:

> [A]ccepting Shore's arguments would open a huge loophole in CERCLA's coverage. It is quite clear that if the current owner of a site could avoid liability merely by having purchased the site after chemical dumping had ceased, waste sites certainly would be sold, following the cessation of dumping, to new

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owners who could avoid the liability otherwise required by CERCLA.

Shore Realty, 759 F.2d at 1045.

The Ninth Circuit has adopted the Shore interpretation with little discussion. See State of Idaho v. Hannah Mining Co., 882 F.2d 392 (9th Cir. 1989) (citing Shore for strict owner liability without discussion); see also Levin Metals Corp. v. Parr-Richmond Terminal Co., 781 F. Supp. 1454 (N.D. Cal. 1991) (same).

Under CERCLA current owners are not liable if they qualify for the third party defense, as discussed later in this paper, but showing that a person is a current owner of a contaminated facility shifts the burden to the owner to establish a defense.

WQARF does not expressly state that the current owner is liable, but the implication is clear. First, any owner during the "time of the release or threatened release" is liable. A.R.S. § 49-283(A)(1)(c). Second, WQARF provides that an owner may not be liable if the owner had no reason to know that a hazardous substance was at the facility at the time of acquisition, implying current owners otherwise can be held liable. § 49-283(B)(3).

WQARF adds extra elements to what is required to make a case against the current owner, beyond what is required under CERCLA. Not only must a person be a current owner, the person also must have done one of the following (1) had a business that handled, or must have permitted others in business to handle hazardous substances at the facility, (2) had reason to know of contamination at the time of acquisition and associated himself with the release or (3) taken action which significantly contributed to the release after the owner should have been aware of the presence of a hazardous substance. A.R.S. § 49-283(B).

A 1992 amendment to WQARF clarified that an owner of land is not liable under WQARF if contamination present on that land is solely the result of migration from off-site. See A.R.S. § 49-283(E).

2. Former Owner: CERCLA restricts liability for former owners to those who owned the property "at the time of disposal." 42 U.S.C.A. § 9607(a)(2). Thus, prior ownership of a contaminated facility does not automatically create liability. In Shore, the court stated:

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> [S]ection 9607(a)(2)'s scope is more limited than that of section 9607(a)(1). Prior owners and operators are liable only if they owned or operated the facility 'at the time of disposal of any hazardous substance'; this limitation does not apply to current owners.

Shore, 759 F.2d at 1044. See also In re Diamond Reo Trucks, Inc., 115 B.R. 559 (W.D. Mich. 1990) (party which acquired and transferred land on the same day not subject to owner liability); Ruhl, "The Plight of The Passive Past Owner: Defining The Limits of Superfund Liability," 45 Sw. L.J. 1129 (1991).

There is no set length of time that a party must hold title before it will be considered an "owner." See United States v. Carolawn Co., 21 Env't Rep. Cas. (BNA) 2124 (D.S.C. 1984) (court stated that party that held title for one hour could be "owner" for liability purposes). However, as noted, merely owning property which has been previously contaminated may not be sufficient to create liability for disposal of hazardous substances. See Ecodyne Corp. v. Shah, 718 F. Supp. 1454 (N.D. Cal. 1989).

It is worth noting, however, that past owners of a facility who transferred ownership after they were aware of the hazardous substance problem may have liability for "arranging for disposal." See, e.g., Sanford Street Local Development Corp. v. Textron, Inc., 768 F. Supp. 1218, 1222-23 (W.D. Mich. 1991).

Furthermore, CERCLA provides that actual knowledge of a hazardous substance release (or threat) by an owner, who then transfers the property without disclosure, makes the third-party defense (discussed later in this paper) unavailable, and further that the owner is then held as liable under section 9607(a)(1). See 42 U.S.C. § 9601(35)(C). Thus an owner who finds out about a problem can be a CERCLA responsible party, even if he was not the owner at time of disposal, if he sells the property without disclosure.

Under WQARF, the potential scope of liability for past owners is not restricted to those past owners at the time of disposal. It includes past owners at any time the hazardous substance was located there through the time of release or threatened release. § 49-283(A). However, or noted above, there also must have been (1) a business of handling of hazardous substances at the facility, (2) reason to know of the contamination at the time the past owners acquired the facility and association with the release, or (3) significant

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contribution to the release by the past owner's action at a time of constructive or actual knowledge that a hazardous substance was present. § 49-283(B).

3. Current Operator: As noted above, courts have determined that 42 U.S.C. § 9607(a)(1) requires only that a person be a current operator or owner, not both. Operators include those who are in a position to control the property, the practices or the contamination at the property. United States v. Northeastern Pharmaceutical and Chemical Co., 810 F.2d 726 (7th Cir. 1986), cert. denied 484 U.S. 848 (1987); United States v. South Carolina Recycling and Disposal, Inc., 653 F. Supp. 984 (D.S.C. 1986), aff'd in part, vacated in part sub. nom. United States v. Monsanto Co., 858 F.2d 160 (4th Cir. 1988), cert. denied, 109 S. Ct. 3156 (1989).

Under WQARF, the current operator during the time of release or threatened release is liable. Since release can include continued migration of contamination, Stanley Works v. Snydergeneral Corporation, 781 F. Supp. 659 (E.D. Cal. 1990); Emheart Industries Inc. v. Duracell International Inc., 665 F. Supp. 549 (M.D. Tenn. 1987), the current operator of a contaminated facility is subject to potential WQARF liability.

What is unusual, however, is that current operator liability arguably may be broader than current owner liability under WQARF, since the additional element required under § 49-283.B that applies to owners does not appear to be a required element of liability for operators.

4. Former Operator: Under CERCLA, the operator at the time of disposal of a hazardous substance is liable. See, e.g., Kaiser Aluminum & Chemical Corp. v. Catellus Development Corp., 976 F.2d 1338 (9th Cir. 1992); Weyerhaeuser v. Koppers Co., 771 F. Supp. at 1410. Under WQARF, a former operator at any point from the time the hazardous substance came to be located at the facility through the time of release or threat can be liable. A.R.S. § 49-283(A)(1).

5. Transporters: Persons who transport hazardous substances to disposal or treatment facilities may be held liable for CERCLA costs and damages, if they select the destination. 42 U.S.C. § 9607(a)(4). Transporters of hazardous substances may also be held liable as "owners" or "operators" under certain circumstances. See 42 U.S.C. § 9601(20)(B), (C). See, e.g., Kaiser Aluminum & Chemical Corp. v. Catellus Development Corp., 976 F.2d 1338 (9th Cir. 1992) (contractor who

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excavated contaminated soil and placed it on uncontaminated portion of same property held liable under CERCLA as both an operator and a transporter). In a ruling on the scope of transporter liability under CERCLA, a district court held that the State of Arizona's administration of a manifest system for approving shipments of waste to specified disposal sites did not place total control over the disposal of hazardous wastes with the State and did not preclude the characterization of the transporter's activities as "site selection." Hassayampa Steering Committee v. Arizona, No. 89-0188-PHX-RCB, 21 Chem. Waste Lit. Rptr. 322 (D. Ariz. 1990).

Under WQARF, a transporter can become liable if it selects the destination facility, but the transporter also becomes liable, even if it does not select the facility, if the transporter "disposed of [waste that contained a hazardous substance] in a manner contrary to law." A.R.S. 49-283(A)(3).

6. Persons Who Arranged for Treatment or Disposal: A person who arranges for the disposal or treatment of a hazardous substance may be considered a PRP. 42 U.S.C. § 9607(a)(3). The elements of liability under Section 9607(a)(3) are as follows:

(1) defendant owned or possessed a hazardous substance;

(2) defendant, by contract, agreement or otherwise, arranged for the treatment or disposal, or arranged with a transporter for transport for treatment or disposal of such hazardous substance at a facility;

(3) there was a release or threatened release of a hazardous substance at the facility; and

(4) the release or threatened release caused the incurrence of response costs.

See United States v. Velsicol Chem. Corp., 28 Env't Rep. Cas. (BNA) 1265, 1266-67 (W.D. Tenn. 1988). See also United States v. BFG Electroplating and Mfg. Co., Inc., 19 Chem. Waste Lit. Rptr. 1325 (W.D. Pa. 1990); United States v. Parsons, 723 F. Supp. 757 (N.D. Ga. 1989).

The scope of "arranging for disposal" liability under CERCLA is the subject of a growing amount of litigation. See, e.g., California v. Summer del Caribe, Inc., 1993 U.S. Dist. LEXIS 5980 (N.D. Cal. 1993) (can manufacturer selling byproduct from the manufacturing process (solder dross) to metals reclamation facility may be liable for contamination occurring at the

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reclamation facility, on the theory that the purpose of the sale was to get rid of or treat a waste or byproduct); California v. Verticare, 1993 U.S. Dist. LEXIS 3062 (N.D. Cal. 1993) (pesticide manufacturer that distributed pesticide to an applicator can be liable under CERCLA as an arranger if it retains some indicia of ownership of pesticides and has some reason to know that the applicator's site is being poorly managed and that contamination may be occurring).

D. Application of Liability Principles to Specific Status or Activity

Essentially, for purposes of analyzing CERCLA or WQARF liability, all PRPs need to be evaluated against the tests for (1) owner liability, (2) operator liability (including the emphasis on actual control or, under some interpretations, the mere capacity to control what occurs at a facility, see U.S. v. Fleet Factors Corp., 901 F.2d 1550 (11th Cir. 1990), (3) arranging (for disposal or treatment) liability and (4) transporter liability. Below is a discussion of how these four types of PRP liability have been applied in the context of a particular status of entity and in relation to various common activities.

1. State and Local Governments: Under certain circumstances (those where the entity is an owner/operator, arranger, or transporter who selects the destination), a state or local government (political subdivision of the state) can be liable under CERCLA. See Pennsylvania v. Union Gas Co., 109 S. Ct. 2273, 2280 (1989) ("[T]he language of CERCLA as amended by SARA clearly evinces an intent to hold States liable in damages in federal court."). However, in United States v. New Castle County, 727 F. Supp. 854 (D. Del. 1989), the court declined to find a state government liable as an "operator" because the state did not exercise sufficient control over a site for which it had issued dumping permits.

a. Involuntary acquisition by state or local government: If a state or local government entity involuntarily acquires ownership of a facility through any circumstances, including bankruptcy, tax delinquency, or abandonment, then such entity is not an "owner or operator" for purposes of CERCLA liability. 42 U.S.C. § 9601(20)(D). In such instance, any person who "owned, operated or otherwise controlled activities at the facility immediately beforehand" is deemed the "owner or operator." 42 U.S.C. § 9601(20)(A).

2. Lenders: Lenders receive special treatment under CERCLA, beyond the standard

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owner/operator analysis: A person is not an "owner or operator" if he merely "holds indicia of ownership primarily to protect his security interest" in a vessel or facility but does not participate in the management of such vessel or facility. 42 U.S.C. § 9601(20)(A) (known as the "secured creditor" exemption). However, courts differ as to what amount of "management" will render a person liable as an owner or operator. See, e.g., In re Bergsoe Metal Corp., 910 F.2d 668, 672 (9th Cir. 1990) ("some actual management of the facility" is necessary for lender to have operator liability); United States v. Fleet Factors Corp., 901 F.2d 1550 (11th Cir. 1990). Under Fleet Factors, mere capacity by a bank to control what a borrower did fell outside the security interest exemption. A lender that acquires a facility through foreclosure also was found by the courts to become the owner of that facility for liability purposes. See United States v. Maryland Bank & Trust Co., 632 F. Supp. 573, 579 (D. Md. 1986). For a general overview, see Greenberg & Shaw, "To Lend or Not To Lend -- That Should Not Be The Question: The Uncertainties of Lender Liability Under CERCLA," 41 Duke L.J. 1211 (1992).

In response to significant pressure from the lending industry and Congress, EPA in 1992 promulgated a rule "clarifying" the scope of the "secured creditor" exemption. See 57 Fed. Reg. 18344 (April 29, 1992).

The new EPA lender liability rule offers substantial protection to lenders against liability for contamination they are innocent of causing. The secured creditor exemption provides an escape from traditional "owner/operator" liability analysis.

The rule clarifies the activities of the holder of a security interest that will and will not trigger liability as "participation in management" and who is entitled to take advantage of the exemption. It seeks to "overrule" Fleet Factors by stating that participation in management does not mean "the mere capacity, or ability to influence, or the unexercised right to control facility operations." The mere, unexercised capacity by a lender to influence the disposal of hazardous substances no longer triggers Superfund liability, according to EPA.

The rule creates a two-part test for what constitutes participation in management (and therefore Superfund liability) "while the borrower is still in possession of the vessel or facility." The first part of the test for participation in management is that the holder of the security interest:

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> exercises decision making control over the borrower's environmental compliance, such that the holder has undertaken responsibility for the borrower's hazardous substance handling or disposal practices.

The second part of the test for participation in management is that the holder:

> exercises control at a level comparable to that of a manager of the borrower's enterprise such that the holder has assumed or manifested responsibility for the overall management of the enterprise encompassing the day to day decision making of the enterprise with respect to (A) environmental compliance; or (b) all, or substantially all of the operational (as opposed to financial or administrative) aspects of the enterprise other than environmental compliance. Operational aspects of the enterprise include functions such as the functions of facility or plant manager, operations manager, chief operating officer, or chief executive officer. Financial or administrative aspects include functions such as the functions of credit manager, accounts payable/receivable manager, personnel manager, controller, chief financial officer or similar functions.

With respect to the borrower-lender relationship, the lender therefore is normally well-advised not to take control over (i) the borrower's environmental compliance or hazardous substance handling or disposal practices (even if the lender's actions do not result in a release of a hazardous substance) or (ii) substantially all of the operational management of the borrower's enterprise, other than environmental compliance. Involvement in financial and administrative aspects is protected, however.

The rule also provides that due diligence activities by the lender prior to loan origination, including requiring cleanup, will not trigger liability. A number of activities post-loan origination (during the life of the loan) are also specifically enumerated as insufficient to constitute participation in management, so long as they do not violate the two part test noted above.

Should foreclosure occur, a lender will be considered still to be within the security interest exemption if it diligently seeks to dispose of the property. The rule provides guidance on what should be

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done in order to qualify as a lender merely holding a security interest following foreclosure. The lender must accept "fair" offers from would-be buyers, or it runs the risk of losing its exemption from responsible party status.

Receivers acting for a lender are also protected by the rule, but trustees and other fiduciaries are explicitly not covered.

As noted above, the lender liability rule was adopted in part because of dissatisfaction within the lending community over the decision holding a lender liable as an owner of contaminated property in United States v. Fleet Factors Corp., 901 F.2d 1550 (11th Cir. 1990). Ironically, in a subsequent decision in the same case, Fleet Factors was held liable as an owner under CERCLA based on post-foreclosure actions taken by its agents at the site in question that aggravated environmental problems at the site (specifically, the moving of hundreds of leaking drums containing hazardous substances). See United States v. Fleet Factors Corp., 1993 U.S. Dist. LEXIS 6564 (S.D. Ga. 1993).

* **WQARF:** Under current WQARF rules, a lender who holds a note or security interest in a facility is not an owner or operator if the lender "makes or made no decision or takes or took no action that causes or caused or contributes or contributed to a release or threatened release of a hazardous substance from or at a facility." See Ariz. Admin. Code R18-7-102(6) and (7).

As noted in Section I.D, ADEQ has prepared a preliminary draft version of a lender liability rule under WQARF). This draft was circulated for public comment in September, 1992. As discussed in more detail in Section I, the draft proposal would exempt from owner liability under WQARF persons who hold indicia of ownership primarily to protect a security interest and do not participate in the management or operation of a facility. Participation in management does not include a mere capacity or ability to influence, the unexercised right to control operations, leasing activity prior to foreclosure, or loan workout activities (unless these latter two types of activities result in actual participation in management). In the case of security interests created after final lender liability rules are adopted, the lender must ensure a Phase I Environmental Assessment of the property is conducted at or immediately before the time the security interest is created.

If a person forecloses on secured property, that person may still be exempt from the definition of

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"owner" if the person does not contribute to or aggravate an existing release, takes such action as is reasonably necessary to prevent a release or further release, and sells the property in a reasonably expeditious manner.

A lender may be exempt from operator liability if that person does not participate in management of the facility. Although the draft rule is not entirely clear on this issue, the definition of participation in management summarized above probably also applies in the context of determining whether a lender is liable as an operator (i.e., actual participation in management is required, not merely a capacity to control).

The draft rule also sets forth the minimum requirements for an acceptable Phase I environmental assessment. As noted above, the draft rule contemplates that in the future, lenders can be exempted from the definition of "owner" only if they have a Phase I assessment of the property conducted at or before acquiring a security interest in that property. In order to be sufficient to allow a lender to continue to be exempt from the definition of "owner," the Phase I assessment must include: (1) a review of any chain of title documents or other documents regarding historical use of the property; (2) interviews with prior owners of the property and neighbors, as well as a review of any historical or aerial photographs; (3) a search to determine if any environmental liens have been recorded against the property being assessed; (4) a review of federal, state and local government records relating to the property (potentially including any documents submitted to those governments under other environmental laws); and (5) a visual inspection of the property and any improvements on the property.

3. Lessee: A lessee who maintains adequate control over and responsibility for the use of the property may be liable as the "owner" or "operator" of the property. See, e.g., United States v. South Carolina Recycling and Disposal, Inc., 21 Env't Rep. Cas. (BNA) 1577, 1581-83 (D.S.C. 1984). See also Helms & Jefferies, "Liabilities of Landlords and Tenants under CERCLA," 41 S.C.L. Rev. 815 (1990). Under WQARF, since owners or operators during the time of release may be held liable, tenants who lease property that has been contaminated by a prior owner or lessee may be subject to liability. A.R.S. § 49-281(3) provides, in relevant part, that

"Release" means any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting,

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escaping, leaching, dumping or disposing into the environment . . .

Under CERCLA, some federal courts have under similar circumstances interpreted "release" to include the migration of previously existing environmental contamination in the ground. State of New York v. Shore Realty Corp., 759 F.2d 1032 (2d Cir. 1985); Stanley Works v. Snydergeneral Corp., 781 F. Supp. 659 (E.D. Cal. 1990); Emheart Industries, Inc. v. Duracell International Inc., 665 F. Supp. 549 (M.D. Tenn. 1987). Thus, there is a basis on which an Arizona court may conclude that WQARF liability extends to a party that did not operate the property at the time of the initial release, but operates during the subsequent migration of the hazardous substance.

4. Lessor: The owner of property who leases property to a party that contaminates land may be held liable under CERCLA. See, e.g., United States v. Monsanto, 858 F.2d 160, 168 (4th Cir. 1988), cert. denied, 109 S. Ct. 3156 (1989); United States v. Argent Corp., 21 Env't Rep. Cas. (BNA) 1354, 1356 (D.N.M. 1984).

Courts construe CERCLA to impose strict liability on current landowners or those owning at the time of disposal, regardless of lease provisions allocating responsibility to the tenant. One of the first cases to address the issue was United States v. South Carolina Recycling & Disposal, Inc. (SCRDI), 653 F. Supp. 984 (D.S.C. 1984). Two defendants in SCRDI were absentee landlords. The lease prohibited waste storage on the premises, and the site-owners became aware of waste disposal activities only after its inception. Nevertheless, the court found it sufficient for liability that the defendants owned the site at the time hazardous substances were deposited there. Id. at 993. On appeal, see United States v. Monsanto, 858 F.2d 160 (4th Cir. 1988), the defendants asserted the innocent landowner defense. The court, affirming, found that the lease arrangement, together with acceptance of rent payments, was sufficient to establish a contractual relationship between the landlord and tenant. Further, the landlord knew the nature of the tenant's business, and could not avoid liability due to "willful or negligent blindness." Id. at 169. See also Weyerhaeuser Co. v. Koppers Co., Inc., 771 F. Supp. 1420 (D. Md. 199) (to hold lessor harmless based on a shallow cause-in-fact analysis is to completely undermine the strict liability provisions of CERCLA); United States v. Northernaire Plating Co., 670 F. Supp. 742 (W.D. Mich. 1987) (the lease contract precludes either landlord or tenant from invoking the section 9607(b)(3) defense).

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Landlord CERCLA liability has been at issue in the Ninth Circuit. In State of Washington v. Time Oil Co., 687 F. Supp. 533 (W.D. Wash. 1988), site-owner Time Oil claimed that a site occupant, Drexler, contaminated the property. Drexler was not Time Oil's tenant. Rather, a sublease (not clearly characterized in the opinion) existed. Therefore, Time Oil sought to claim the innocent-landowner defense. Nevertheless, for the purposes of liability, the court held that an indirect contractual relationship is sufficient. Id. at 533.

a. Advice for Leasing Activities: As a general rule, you must assume a landlord may be liable as the owner of leased premises for contamination caused by a tenant's operations, even though the landlord was in no way responsible for the tenant's activities. Consequently, it is helpful that a lease (a) permit the landlord to retain enough control over the leased premises and the tenant's operations to minimize risk of disposal practices; and (b) require the tenant to indemnify the landlord against any environmental losses it may suffer. It may be prudent for a landlord to include in its commercial lease program some of the following types of general inquiries to and obligations upon the tenant:

1. Before lease negotiation, the landlord should obtain detailed information concerning the tenant's use of hazardous or regulated substances, preferably through a questionnaire. The landlord should uncover what the tenant will be doing, what materials it is working with, and what permits are required and have been obtained. The landlord may conduct an independent background check on the history of the tenant's uses and environmental responsibility.

2. Tenant should have an obligation to use the leased premises in compliance with all applicable environmental laws and to obtain any necessary environmental permits for its business operations. The landlord can require the tenant's submittal of copies of permits and other authorizations.

3. The landlord may want to provide for the monitoring of environmental compliance during the lease term, including environmental audits. Monitoring serves a preventive function.

4. Tenant should have an obligation not to cause or permit the use, generation, storage or disposal of "hazardous or regulated substances" upon the leased premises, without obtaining the landlord's prior written consent, although it is

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rarely realistic to prohibit the use of hazardous or regulated substances.

5. Tenant should have an obligation to use any hazardous or regulated substances allowed on the leased premises by the landlord in compliance with all applicable environmental laws and to keep adequate records which fully disclose the nature and extent of such use to landlord and any regulatory agencies which impose recordkeeping requirements. The landlord may require the tenant's periodic reporting of the usage, storage, and disposal of hazardous or regulated substances.

6. Tenant should have an obligation to indemnify and hold harmless landlord for any losses whatsoever which may arise from environmental problems caused by the tenant's operations on the leased premises.

7. Tenant should have an obligation not to assign or sublet the premises to anyone who will use the leased premises in violation of the environmental provisions of the lease (with the landlord given an absolute right to withhold its consent to any such assignment or sublease).

8. The landlord should ask for the right (but not the requirement) to participate in any negotiations with the government and others concerned regarding the environmental condition of the property.

9. The landlord may require the tenant to provide a certificate of an expert that the premises are environmentally acceptable when the tenant leases.

5. Overview: Liability of Shareholders, Directors, Officers and Employees

a. Introduction: The basic premise of corporate existence is the separate identity and responsibility of the corporate entity. Shareholders, directors, officers and employees generally are not directly responsible to third parties for the obligations of a corporation and acts taken on its behalf.

Under today's far-reaching environmental legislation, however, the traditional protection afforded those involved with the corporate entity may be in danger. In 1980, the chief of the hazardous waste

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enforcement section of the Department of Justice stated that the "government is perfectly prepared to punish the innocent for the sins of the guilty" in this area. S. Rep. No. 848, 96th Cong., 2nd Sess. 121 (1980). A federal district court has gone so far as to declare that because of its strict liability scheme and broad categories of responsible parties, "CERCLA places no importance on the corporate form." United States v. Mottolo, 695 F. Supp. 615 (D.N.H. 1988). The Arizona Legislature also has indicated that it intends to deal more rigorously with parties liable under environmental statutes. Although it has abolished joint and several liability elsewhere, the Legislature continues to permit joint and several liability in the environmental context. A.R.S. § 12-2506(D)(2). If liability is "joint and several" a party can be held 100% legally responsible for damages, even though that party may have actually caused only a small percentage of damage.

One practical implication of the broad scope of enforcement authority granted by the Comprehensive Environment Response, Compensation and Liability Act ("CERCLA") and related federal and state environmental statutes is that if a corporation has insufficient financial resources to satisfy its environmental liabilities, parties seeking to impose liability on others will broaden the scope of their pursuit to include parent and successor corporations, and the shareholders, directors, officers and employees of the offending corporation. The following discussion will review the erosion in the environmental area of the traditional protections afforded individuals by the corporate form of conducting business.

b. Traditional and Emerging Concepts of Liability: Under traditional corporate law principles, the shareholders' exposure to liability for the acts of the corporation is usually limited to the value of their investment in the corporation. If the business is not successful, or unexpected events (fires, accidents, etc.) cause the corporation to fail, such shareholders lose no more than what they invested in the corporation.

The traditional common law (cases) concerning corporations require exceptional circumstances before courts disregard the protection of the corporate form (i.e. "pierce the corporate veil") and impose liability upon individuals involved in corporate ownership or management. Ordinarily, piercing the corporate veil is not an easy task. The presumption is that the corporate form should be respected as a means of encouraging investment, unless unusual circumstances warrant otherwise.

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Recently, however, to implement the broad remedial purposes behind federal and state environmental statutes, some courts appear to be adopting new standards of liability for officers, directors and shareholders, sometimes even avoiding the necessity of piercing the corporate veil before attaching individual liability. Under one approach, on occasion referred to as "following the tort", individual liability is based on the direct involvement of the individual director, officer or shareholder in the activities giving rise to environmental liability. Such "direct liability" is derived from the provisions of the environmental statutes. "Direct liability" does not occur simply because an individual is an officer, director, shareholder or employee, but because the individual participated in the activities giving rise to environmental liability. In a number of recent cases, federal courts have also held that corporate shareholders can be held directly liable for environmental contamination caused by their subsidiaries, in the same manner that individual shareholders may be found liable.

In addition, recent federal court decisions indicate that the requirements for piercing the corporate veil in the environmental context are less rigorous than they are in other situations.

6. Direct Liability of Officers, Directors and Employees. Officers, directors and employees are most likely found to be liable under the "direct liability" approach.

a. Responsible Parties Under CERCLA: Corporate officers and directors are neither expressly included nor expressly excluded from liability under CERCLA. The following persons are, however, potentially liable under CERCLA, 42 U.S.C. § 9607(a):

i. Current and former owners or operators;

(1) "Owner or Operator" includes any person owning, operating or chartering a vessel, and owning or operating an onshore or offshore facility where hazardous substance disposal occurs. The term does not include, however, a person, who, without,

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participating in management, holds indicia of ownership primarily to protect his security interest. 42 U.S.C. § 9601(20)(A).

ii. Any "person" who arranged for disposal, treatment or transportation for disposal of hazardous substances at sites owned by others.

(1) "Person" means any individual, firm or corporation, association, partnership, consortium, joint venture, commercial entity or any governmental unit or subdivision. 42 U.S.C. § 9601(21).

iii. Any "person" who transports hazardous substances to disposal or treatment facilities.

b. Basis for Imposing Direct Liability on Officers, Directors and Employees Under CERCLA: Officers, directors and employees may be liable for CERCLA violations caused by the corporation with which they are associated if they are found to have sufficient control over or actually participated in the disposal activities of the polluting corporation. See United States v. Northeastern Pharmaceutical and Chemical Company, 810 F.2d 726 (7th Cir. 1986), cert. denied, 484 U.S. 848 (1987). Liability is based on the mere authority to control such activities, rather than actual exercised control. United States v. Carolina Transformer Co., 978 F.2d 832 (4th Cir. 1992). Environmental liability is strict, without regard for negligence or fault. United States v. Mexico Feed & Seed, Inc., 980 F.2d 478 (8th Cir. 1992).

Recently, courts have indicated that operator liability could attach to anyone who is intimately involved in corporate operations or was in a position to prevent the contaminating disposal. Levin Metals, Corp. v. Parr-Richmond Terminal Co., 781 F. Supp 1454 (N.D. Cal. 1991), Kelley v. Thomas Solvent Co., 727 F. Supp 1532 (W.D. Mich. 1989).

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c. Potential For Liability Under WQARF: The liability provisions of Arizona's Superfund (WQARF) statutes are similar to the provisions found in CERCLA, and officers, directors and employees are likely to have personal liability under the same circumstances.

7. Liability of Shareholders.

a. Potential for Liability Under CERCLA: Shareholders are not expressly included or excluded from CERCLA liability. They are not considered "owners or operators" by virtue of this status as stock owners. Shareholders are potentially liable, however, where (1) their ability to control or actual participation in the waste disposal activities of the corporation give rise to the same "direct liability" which may be imposed on officers, directors, and employees; or (2) where the corporate veil can be pierced. Analytical Meas. v. Keuffel & Esser, 816 F. Supp. 291 (D.N.J. 1993).

The approach of the EPA and the United States in enforcing CERCLA is to seek to find shareholders liable under both approaches, if possible. See for example United States v. Nicolet, 712 F. Supp. 1193 (E.D. Pa. 1989).

b. Factors for Piercing the Corporate Veil: Several federal courts have stated that a uniform federal common law is appropriate for piercing the corporate veil in the context of CERCLA. See, for example, United States v. Kayser-Roth Corp., 724 F. Supp. 15 (D.R.I. 1989), aff'd, 910 F.2d 24 (1st Cir. 1990), cert. denied, 498 U.S. 1804 (1991); United States v. Nicolet, 712 F. Supp. 1193 (E.D. Pa. 1989).

In three recent cases, the federal courts applying the federal veil-piercing approach, identified the following factors regarding corporations which may justify disregarding the corporate form:

1. inadequate capitalization, in light of the purposes for which the corporation is organized,

2. extensive or pervasive control by the shareholder or shareholders,

3. intermingling of the corporation's properties or accounts with those of its owner,

4. failure to observe corporate formalities and separateness,

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5. siphoning of funds from the corporation,

6. absence of corporate records, and

7. non-functioning officers or directors.

In re United States v. Kayser-Roth Corp., 724 F. Supp. 15 (D. R.I. 1989), aff'd, 910 F.2d 24 (1st Cir. 1990), Cert. denied, 498 U. S. 1804 (1991); and United States v. Nicolet, 712 F. Supp. 1193 (E.D. Pa. 1989); Acushnet River & New Bedford Harbor Proceedings, 675 F. Supp. 22 (D. Mass. 1987).

c. Parent Corporation Liability: There is no basis under CERCLA to distinguish between the liability of an individual shareholder who actively participates in the management of a corporation and the liability of a corporate shareholder which so participates. United States v. Nicolet, 712 F. Supp. 1193 (E.D. Pa. 1989). Most federal cases have followed this approach and have applied the veil piercing analysis described in Section II.C.2 above. Veil piercing involves holding the parent liable as a CERCLA "owner."

However, in one recent case in which the shareholder was a parent corporation, the Fifth Circuit Court of Appeals applied a traditional veil-piercing analysis and found that a parent was not liable for the environmental wrongs of its subsidiary. Joslyn Manufacturing Co. v. T.L. James & Co., 893 F.2d 80 (5th Cir. 1990), cert. denied, 498 U.S. 1608 (1991). In this case, the court relied on the following evidence to decide that the corporate veil should not be pierced:

1. the subsidiary observed basic corporate formalities in its operations;

2. the subsidiary had separate books and records;

3. the daily operations of the two corporations were separate;

4. the two employees most actively involved in the day to day management of the subsidiary were not employed by the parent company;

5. the subsidiary owned its own property, which was not used by the parent;

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6. the subsidiary filed separate tax returns; and

7. the subsidiary paid its own bills and made its own arrangements for employee benefits.

A parent corporation can also be liable as an "operator" under CERCLA. The parent must actively be involved in the subsidiary's activities for this direct liability to attach. John S. Boyd Co. v. Boston Gas Co., 992 F.2d 401 (1st Cir. 1993).

d. General Factors Considered in Piercing a Subsidiary's Veil: The following factors may be considered by a court in determining whether to pierce the corporate veil of a subsidiary:

1. common stock ownership;

2. common officers and directors;

3. common business departments;

4. consolidated financial statements and tax returns;

5. parent financing the subsidiary;

6. parent incorporating the subsidiary;

7. inadequate capitalization;

8. parent use of subsidiary property;

9. commingled operations;

10. failure to observe corporate formalities;

11. parent payment of subsidiary expenses;

12. subsidiary receives all its business from parent; and

13. the parent's ability to hire, fire and control the actions of the subsidiary's employees.

In general, the key to avoiding liability under the veil piercing doctrine appears to be observing all corporate formalities, operating the subsidiary as a truly separate entity and limiting the parent's

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involvement in the day-to-day activities of the subsidiary.

e. The EPA's Position and the Emerging Trend: The EPA's position and the view expressed in a number of recent federal court cases is that parent corporations should always be liable if the subsidiary has inadequate resources to correct the environmental problem. See Light, Liability and the Corporate Form Under the Environmental Laws, 17 Chem. Waste Rptr., 199, 205 (1989). The EPA has expressed the view that holding shareholders and parent corporations liable promotes corporate responsibility and motivates the responsible parties toward settlement. These views have also been echoed in several recent cases.

f. Shareholder Liability Under WQARF: The WQARF statute does not address the issue of shareholder liability or of parent corporation responsibility for the environmental liability of subsidiary corporations, and the issue has not been before Arizona courts.

Under existing Arizona court decisions governing the liability of parent corporations for the actions of their subsidiaries, a parent corporation is not liable for the acts of a subsidiary except for where the subsidiary is a mere instrumentality, as evidenced by:

1. inadequate capitalization;

2. absence of independent activity;

3. action in the interest of the parent;

4. failure to observe corporate formalities; and

5. where the corporate form is being used to promote an injustice.

Walker v. Southwest Mines Dev. Co., 52 Ariz. 403, 81 P.2d 90 (1938); Standage v. Standage, 147 Ariz. 473, 711 P.2d 612 (Ct. App. 1985); United States v. ABC Sales & Service, Inc., 590 F. Supp. 561 (D. Ariz. 1984); Honeywell, Inc. v. Arnold Const. Co., 134 Ariz. 153, 654 P.2d 301 (Ct. App. 1982). These cases create a difficult burden for persons seeking to pierce the corporate veil of Arizona corporations in State Court.

However, due to the similarity between the CERCLA and WQARF statutes, shareholder liability in the WQARF context may be imposed under the same circumstances that

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liability would be imposed under CERCLA (i.e. direct liability and easier burden for piercing the corporate veil).

8. Liability of Successor Corporations.

Another important area of corporate liability under today's broad environmental statutes is successor liability. Environmental statutes typically do not specifically deal with the issue of successor liability. However, the determination of such liability may be critical because often, the entity that caused the hazardous waste discharge no longer exists or does not have assets sufficient to satisfy its liability. The courts have developed a doctrine, "successor liability," that imposes obligations on succeeding entities, and that doctrine has been applied in the CERCLA context.

Traditionally, nonenvironmental factors have determined whether a corporate transaction is structured as a stock sale or an asset purchase. The general benefits of an asset purchase include avoiding the assumption of liabilities and obtaining a step-up in tax basis in assets for tax depreciation purposes. Conversely, a stock purchase can provide the purchaser with the benefits of rights of contract rescission and related rights under federal and state securities laws, and of securing grandfathered contract rights or permits. Today, the potential for imposition of significant environmental liability on a successor corporation makes environmental concerns a very important factor in structuring a transaction.

a. Potential Successor Liability Under CERCLA: The EPA and federal courts generally follow the traditional common law rule that successor corporate liability may attach in a consolidation or merger. John S. Boyd Co. v. Boston Gas Co., 992 F.2d 401 (1st Cir. 1993); Smith Land & Improvement Corp. v. Celotex Corp., 851 F.2d 86 (3rd Cir. 1988) cert. denied 488 U.S. 1029 (1989). In Smith, the United States Court of Appeals for the Third Circuit acknowledged that CERCLA failed to address the issue of corporate successor liability. It noted, however, that it was consistent with the remedial policies behind CERCLA for successor corporations which merged with polluting predecessor corporations to be liable for costs of clean up caused by the actions of their predecessors. The Court noted that the expenses of clean up can be born by two sources: (a) the companies which produced or continued the hazardous condition; or (b) taxpayers. The Court concluded that Congress intended that successor corporations, not taxpayers, should bear the costs of clean up.

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The situation is different when there has been a sale of assets rather than a merger. There is no liability in an asset sale unless:

1. there is an express or implied agreement of the buyer to assume liabilities of the seller;

2. there is a de facto consolidation or merger;

3. the successor corporation is a mere continuation of the predecessor corporation;

4. the transaction was fraudulent or lacking in good faith.

United States v. Carolina Transformer Co., 978 F.2d 832 (4th Cir. 1992); Kleen Laundry & Dry Cleaning v. Total Waste Mgt., 817 F. Supp. 225 (D.N.H. 1993). See also United States v. Mexico Feed & Seed, Inc., 980 F.2d 478 (8th Cir. 1992).

Liability is most often found in the environmental context under the "mere continuation" exception. A corporation generally is considered the continuation of another when: (1) only one corporation remains; and (2) there is an identity of stock, stockholders and directors between the two corporations. Recently, however, courts have developed a new theory to find liability even though the traditional continuation factors may be absent. It is called the "continuity of enterprise" theory and considers a series of factors in determining whether one corporation is the successor to another, such as:

1. retention of the same employees;

2. retention of the same supervisory personnel;

3. retention of the same production facilities and location;

4. production of the same product;

5. retention of the same name;

6. continuity of assets;

7. continuity of general business operations;

8. whether the successor holds itself out as the continuation of the previous enterprise; and

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9. whether the transfer was the former corporation's business, was part of an effort to avoid existing or potential environmental liability.

United States v. Carolina Transformer Co., 978 F.2d 832 (4th Cir. 1992); United States v. Mexico Fed & Seed, Inc., 980 F.2d 478 (8th Cir. 1992); Allied Corp. v. Acme Solvents Reclaiming, Inc., 812 F. Supp. 124 (N.D. Ill. 1993).

The EPA has also argued for successor liability in situations where the successor corporation continues substantially the same business operations as its predecessor. EPA Memorandum, Liability of Corporate Shareholders and Successor Corporations for Abandoned Sites Under CERCLA (June 13, 1984). Applied liberally, this exception to the general rule of nonliability could result in successor liability in many asset purchase transactions.

b. Potential Successor Liability Under WQARF: WQARF and Arizona case law have not yet directly addressed the issue of environmental successor corporate liability. A traditional successor corporation analysis, however, would probably apply to successor liability issues in environmental litigation. Generally, the mere purchase of assets does not give rise to successor liability unless there is:

1. an express or implied agreement;

2. a merger or consolidation;

3. the mere continuation of the predecessor's business; or

4. fraud in the transaction.

See Valley Bank v. Malcolm, 23 Ariz. 395, 204 P. 207 (1922); A.R. Teeters & Assoc. v. Eastman Kodak, 172 Ariz. 324, 836 P.2d 1034 (App. 1992); Realty Exchange Corp. v. Cadillac Land & Dev. Co., 13 Ariz. App. 232, 475 P.2d 522 (1970).

In Arizona State Carpenters Health & Welfare Trust Fund v. Sanders, 162 Ariz. 116, 781 P.2d 594 (1989), which involved the question of whether a successor corporation was liable for its predecessor's collective bargaining agreement, the Arizona Supreme Court held that the successor corporation was a mere continuance of its predecessor, even though no assets were purchased, because:

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1. the business activities of the two companies were identical;

2. the new company dealt with the same types of customers;

3. both companies were owned and managed by the same person; and

4. both companies leased office space in the same building from the wife of their owner.

These factors are similar to those analyzed by the federal "continuity of enterprise cases" under CERCLA. The case suggests that the Arizona courts may take a liberal view of successor liability in future WQARF cases.

9. Summary and Suggestions for Minimizing Potential Liability of Shareholders, Directors, Officers and Employees.

Although theories of corporate liability in the context of CERCLA are still emerging, the general trend appears to be an overall loosening of the standards by which courts will impose liability upon (a) officers, directors and shareholders of corporations which violate environmental statutes; and (b) successor corporations that acquire the stock or assets of corporations which caused environmental problems. Due to the tremendous potential costs associated with liabilities under the CERCLA and WQARF statutes, corporations would be well advised to implement programs of environmental compliance and structure their acquisition transactions so as to obtain the maximum protection of the corporate form of doing business.

First, a number of steps can be taken to minimize the potential liability of a parent corporation for the obligations of its subsidiary:

A. The business purpose of the subsidiary, as set forth in the Articles of Incorporation, could include a statement of intent to comply with environmental laws;

B. The subsidiary should draft a careful business plan that would be designed to limit potential environmental liability;

C. The subsidiary should carefully observe corporate formalities in its transaction of corporate affairs, including holding regular shareholders' and

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directors' meetings and documenting actions taken by such directors and shareholders;

D. The parent and subsidiary should avoid the use of common directors, officers and employees;

E. From the beginning, the parent should provide the subsidiary with capital sufficient to meet the foreseeable obligations of the subsidiary;

F. From its inception, the subsidiary should operate independently to the extent possible and avoid direct day to day supervision by the parent corporation;

G. The subsidiary could require an acknowledgment from parties with whom it contracts that they are dealing with the subsidiary, as opposed to the parent corporation;

H. The parent and the subsidiary should keep separate books and bank accounts; and

I. The parent corporation should avoid siphoning off funds (paying itself special dividends, commingling funds, etc.) from the subsidiary's assets.

Second, a recommended method for shareholders, officers, directors and employees to help guard against personal liability under the environmental statutes is to implement a preventative program of statutory compliance. Companies may consider adopting a bylaw provision stating that the corporation intends to comply with all environmental laws and then carry through on this expressed intention by establishing an environmental compliance program for its officers, directors and employees. Environmental audits can be performed on a regular basis to determine compliance, and corporations should adopt procedures for promptly addressing any environmental problems that are identified. Perhaps most importantly, a corporation should carefully train all of its officers, directors and employees who will participate in their waste disposal activities to comply with all legal requirements.

Third, parties seeking to structure business transactions should be mindful of the potential risk of liability in acquisitions involving the purchase of stock, mergers and consolidations. Even in asset purchases, buyers will want to avoid taking title to contaminated property or expressly or impliedly assuming environmental liabilities. Buyers should require substantial environmental investigations as prerequisites to finalizing an acquisition in the hope

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of establishing an "innocent purchaser" defense. If environmental problems are discovered, the buyer should consider avoiding the transaction, carving out of the deal any contaminated property, or at least seek an appropriate offset to the purchase price. The buyer should also consider investigating the economic strength of the seller -- both before and after the proposed transaction -- and, if appropriate, the buyer should request an indemnification from the seller and personal guaranties from a corporate seller and its shareholders to support the seller's promises of indemnification set forth in the parties' contract.

10. Manufacturers: Manufacturers are generally not subject to liability for selling products that contain a hazardous substance so long as the products are sold solely for their use and not for disposal or treatment. See Edward Hines Lumber Co. v. Vulcan Materials Co., 685 F. Supp. 651, 656 (N.D. Ill. 1988), aff'd, 861 F.2d 155 (7th Cir. 1988). However, chemical manufacturers have been found liable under Section 9607(a)(3) (arranging for disposal) for contracting with pesticide formulators who have disposed of pesticide wastes. See, e.g., United States v. Aceto Agricultural Chem. Co., 27 Env't Rep. Cas. (BNA) 1388 (S.D. Iowa 1988).

11. Joint Venturers: Joint venturers may be held liable for CERCLA response costs. See, e.g., Edward Hines Lumber Co. v. Vulcan Materials Co., 861 F.2d 155, 158 (7th Cir. 1988); United States v. Consolidated Rail Corp., 729 F. Supp. 1461, 1468-69 (D. Del. 1990).

12. Beneficiaries of Trusts: The term "owner" not only includes those persons who hold title to property, but also may include those who possess some equivalent evidence of ownership, such as the beneficiary of a trust when the trust holds title to property. See United States v. Burns, 16 Chem. Waste Lit. Rptr. 1058 (D.N.H. 1988). See also, McReynolds, "The Unsuspecting Fiduciary and Beneficiary As "Owner or Operator" of A Hazardous Waste Facility Under CERCLA," 44 Baylor L. Rev. 71 (1992).

13. Trustees: A person holding legal title to a facility may be liable as the "owner" of the facility. Because a trustee often holds legal title to real property, it would appear that a trustee may incur CERCLA liability. See, e.g., United States v. Burns, 16 Chem. Waste Lit. Rptr. 1058 (D.N.H. 1988); United States v. Bliss, 16 Chem. Waste Lit. Rptr. 1061 (E.D. Mo. 1988); Rodosevich, "The Expansive Reach of CERCLA Liability: Potential Liability of Executors of Wills

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and Inter Vivos and Testamentary Trustees," 55 Alb. L. Rev. 143 (1991). The final lender liability rule does not address trustees or other fiduciaries. However, the preamble to the final rule states that EPA does not believe that a trustee is personally liable under CERCLA merely because it holds legal title to property, although the assets of a trust are available for cleaning up property held in trust.

In a recent case that has garnered national attention, a federal judge in District Court in Phoenix has ruled that a trustee may be liable as an owner under CERCLA where it has the power to control the use of trust property and knowingly allows such property to be used for the disposal of hazardous substances. Moreover, the court held that the trustee's liability may exceed the assets of the trust. See City of Phoenix v. Garbage Services Co., 1993 U.S. Dist. LEXIS 5970 (D. Ariz. 1993).

14. Estates: CERCLA is silent on whether a decedent's estate can be held liable for response costs. To date, apparently no court has addressed this issue. However, Arizona law suggests that a CERCLA or WQARF claim may be brought against a decedent's estate.

a. Arizona's Survival Statute: In Arizona, as in many other states, when a defendant dies, most claims against the defendant survive and may be brought against the defendant's estate. A.R.S. § 14-3110. Thus, a CERCLA or WQARF claim may be asserted against an estate.

b. Statute of Limitations: Hazardous substances may not be discovered on a site until long after the PRP's death. In Arizona, claims which arose prior to the decedent's death must be made within four months after publication of notice of decedent's death. A.R.S. § 14-3803(A). Similarly, claims arising after the decedent's death must be made within four months after the claim arises. A.R.S. § 14-3803(B). Claims by the federal government are not barred by state statutes of limitation. United States v. Summerlin, 310 U.S. 414 (1940); Phillips v. Commissioner of Internal Revenue, 283 U.S. 589 (1931). Consequently, federal government CERCLA claims may not be subject to Arizona's time limitations on bringing a claim against an estate.

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E. Nature of CERCLA/WQARF Liability

1. Strict Liability: Liability is strict. United States v. Kayser-Roth Corp., 724 F. Supp. 15, 19 (D.R.I. 1989) aff'd, 910 F.2d 23 (1st Cir. 1990), cert. denied, 111 S. Ct. 1957 (1991) (a responsible party is strictly liable for costs incurred for removal, remedial action, and natural resource damages.); State of New York v. Shore Realty Corp., 759 F.2d 1032, 1042 (2d Cir. 1985) (Congress intended that responsible parties be held strictly liable); United States v. Northeastern Pharmaceutical & Chemical Co. (NEPACCO), 579 F. Supp. 823, 844 (W.D. Mo. 1984) (strict liability applies). The traditional elements of tort culpability are absent from the statute, and do not apply. United States v. Monsanto Co., 858 F.2d 160, 168 (4th Cir. 1988).

2. Joint and Several: "Joint and several" terminology originated with respect to tortfeasors who acted in concert to commit a tort, and in that context it reflected the principle that all members of a "conspiracy" or partnership are equally responsible for the acts of each member in furtherance of such conspiracy. See Siebrand v. Gossnell, 234 F.2d 81, 92 (9th Cir. 1956) (under Arizona law, concert of action required for "joint tort"); Salt River Valley Water Users' Ass'n v. Cornum, 49 Ariz. 1, 9, 63 P.2d 639, 643 (1937) ("There must be concurrent action, a cooperation or concert in the accomplishment by the wrongdoer of the particular wrong in order to make them jointly liable."); Glen v. Chenowith, 71 Ariz. 271, 274, 226 P.2d 165, 167 (1951) (recovery denied against multiple assailants where no concert of action existed); White v. Arizona Eastern R.R. Co., 26 Ariz. 590, 593, 229 P. 101, 103 (1924) ("There must exist some community of purpose or wrong or fault to give rise to joint liability.")

CERCLA does not explicitly impose joint and several liability, instead merely providing that the terms "liable" and "liability" shall be construed as being the standard of liability that obtains under 33 U.S.C. § 1321 (the Clean Water Act). See 42 U.S.C. § 9601(32). However, 33 U.S.C. § 1321 itself does not explicitly impose joint and several liability, although courts interpreting it generally have imposed such liability. Therefore, CERCLA is on its face somewhat ambiguous with respect to the standard of liability that should apply under it.

Courts interpreting CERCLA, however, generally have imposed joint and several liability unless the harm caused by two or more persons acting independently is divisible and a reasonable basis for apportionment

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exists. See, e.g., O'Neil v. Picillo, 883 F.2d 176, 178-79 (1st Cir. 1989), cert. denied, 493 U.S. 1071 (1990); United States v. Monsanto Co., 858 F.2d 160, 171-73 (4th Cir. 1988), cert. denied, 490 U.S. 1106 (1989); United States v. Chem-Dyne Corp., 572 F. Supp. 802, 808-10 (S.D. Ohio 1983). [When Congress amended CERCLA in 1986, it explicitly approved this approach, citing specifically the Chem-Dyne holding. See H.R. Rep. No. 99-253(i), 99th Cong. 2d Sess. 74, reprinted in 1986 U.S. Code Cong. & Admin. News 2835, 2855-2856.] Utilizing this test, courts have been generally unwilling to find that defendants have shown that harm is divisible, especially where different types of waste commingle. See, e.g., O'Neil, 883 F.2d at 178-79 & n.4 (responsible parties rarely escape joint and several liability). A finding of indivisible injury is almost guaranteed where contaminants of different types become commingled. See, e.g., United States v. Kramer, 757 F. Supp. 397, 433-23 (D.N.J. 1991) (court rejects volumetric approach to apportioning liability based on amount of wastes contributed to a site because defendants contributed different wastes of differing toxicities); United States v. Western Processing Co., 734 F. Supp. 930, 942 (W.D. Wash. 1990) (injury not divisible because entire site had to be remediated to remove mixed hazardous waste, including defendant's arsenic contribution); United States v. Stringfellow, 661 F. Supp. 1053, 1060 (C.D. Cal. 1987) (harm indivisible because of synergistic effects of commingling different wastes); Chem-Dyne, 572 F. Supp. at 811 (rejecting volumetric approach to apportioning liability because toxicity and migratory potential of wastes contributed by various defendants varied). A volumetric approach generally is reasonable only if independent factors have no effect on the harm caused by a particular defendant's contribution. See, e.g., Kelley v. Thomas Solvents, 727 F. Supp. 1532, 1552-54 (W.D. Mich. 1989) (where two similar groundwater plumes coming from different directions and different facilities intermingled, they created a single indivisible harm in the form of contaminated groundwater).

A somewhat different approach was articulated in a 1992 decision by the United States Court of Appeals for the Third Circuit. See United States v. Alcan Aluminum Corp., 964 F.2d 252 (3d Cir. 1992). In Alcan, the Third Circuit held that a defendant was entitled to a hearing prior to the determination of liability at which it could attempt to prove that the harm caused by a multi-party release of hazardous substances is divisible (based on relative toxicity, migratory potential and synergistic capacity of the hazardous substances at issue), and that any damages are capable of reasonable apportionment. The court analogized this inquiry to the

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one that would normally take place in an action for contribution brought after a determination of liability, but concluded that this issue was best resolved at the initial liability phase since it involves precisely relative degrees of liability. The court conceded that the burden on defendants at any pre-liability hearing on divisibility was quite high. The court indicated that the analysis would be "factually complex" and would have to focus on the relative toxicity, migratory potential, and synergistic capacity of the hazardous waste at issue.

Significantly, however, the Alcan court stated that commingled waste is not synonymous with indivisible harm. Although conceding that some trace amounts of hazardous substances from its operations had become intermingled with other hazardous substances from other sources at a particular Superfund site, Alcan had argued that the concentrations of its wastes were below ambient levels and that it release thus could not have caused the incurrence of response costs. The Third Circuit remanded the case to the District Court for a hearing on this issue. The burden of proof is on a defendant to prove that the harm caused is divisible. Kelley v. Thomas Solvent Co., 714 F. Supp. 1439, 1448 (W.D. Mich. 1989). As a practical matter, proving that the harm is divisible when several parties have contributed wastes to a single site is very difficult.

Another case involving Alcan Aluminum Corp. as a defendant may evidence a willingness by courts in some cases to relax the effects of CERCLA's joint and several liability scheme. See United States v. Alcan Aluminum Corp., 990 F.2d 711 (2d Cir. 1993). The court in this case reiterated that commingling of wastes is not synonymous with indivisible harm. Furthermore, the court held that a defendant is not jointly and severally liable if it can prove that its wastes did not cause or contribute to the release that caused the incurrence of the response costs (i.e., that the wastes contributed no more than background contamination or caused harm divisible from that of other wastes at commingled sites). Defendants making these showings either can avoid paying response costs altogether, or can limit their responsibility to only those costs necessary to clean up the hazardous substances released by the defendants (as opposed to being jointly and severally liable for all response costs).

* **WQARF:** Unlike CERCLA, WQARF explicitly provides that liability is joint and several. In addition (also unlike CERCLA), WQARF explicitly provides that joint and several liability does not apply if a party can demonstrate by a preponderance of the evidence that a release

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or threatened release is divisible. A.R.S. § 49-285(D). Upon making such a showing, a person is liable only for that portion of the release for which the person is responsible. Id. There is a potentially significant distinction between the language of WQARF and the principles that have developed under CERCLA. As noted above, courts have interpreted CERCLA to impose joint and several liability unless responsible parties can prove that the harm caused is divisible. WQARF, however, refers to the divisibility of the "release or threatened release," rather than the divisibility of the harm. This focus on the release or threatened release of hazardous substances, rather than the resulting harm, might make Arizona courts more receptive to some of the arguments that federal courts have generally rejected (for example, that divisibility can be demonstrated by looking to the amount of hazardous substances sent by various parties to a single site). Because there is no Arizona case law interpreting WQARF, however, it is impossible to determine at this time whether the reference in WQARF to divisibility of releases (rather than divisibility of harm) will result in a different interpretation of WQARF than that given by federal courts to CERCLA, or will result in it being easier for responsible parties to demonstrate divisibility.

WQARF parallels CERCLA in that even if a responsible party cannot prove indivisibility (and thus is jointly and severally liable), courts retain the equitable power to apportion response costs after an adjudication of liability. See A.R.S. § 49-285(E).

Arizona precedent makes clear, however, that the facts of a given case will control the finding of whether a particular harm is indivisible. See, e.g., Potts v. Litt, 171 Ariz. 98, 100, 828 P.2d 1239, 1241 (Ct. App. 1991) (finding injury divisible in multiple collision case where accidents occurred thirteen days apart and plaintiff was treated by a chiropractor five times during those thirteen days); State v. Superior Court, 140 Ariz. at 368, 681 P.2d at 1387 (citing Cimino v. Alway, 18 Ariz. App. 271, 501 P.2d 447 (1972) as involving a divisible harm where a plaintiff's injuries suffered when paint cans fell on her foot in a store were aggravated by the subsequent malpractice of an attending physician).

Although no Arizona cases address imposition of joint and several liability on independent tortfeasors in an environmental litigation context, the analytical framework employed in the above cases would be applicable.

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In 1984, Arizona adopted its own version of the Uniform Contribution Among Tortfeasors Act ("UCATA"). A.R.S. § 12-2504 (West Supp. 1984); see 12 U.L.A. 63 (1975) (1955 version). The main focus of the original act was to create a right of contribution, and method of enforcement, for joint tortfeasors. Thus, UCATA states that "if two or more persons become jointly or severally liable in tort for the same injury to person or property or for the same wrongful death, there is a right of contribution among them even though judgment has not been recovered against all or any of them." A.R.S. § 12-2501(A). The Act further provides that this right of contribution exists "only in favor of a tortfeasor who has paid more than his pro rata share of the common liability, and his total recovery is limited to the amount paid by him in excess of his pro rata share." A.R.S. § 12-2501(B). Finally, the Act states that "[i]n determining the pro rata share of tortfeasors in the entire liability: (1) their relative degrees of fault are the basis for allocation[;] (2) if equity requires, the collective liability of some as a group constitutes a single share [; and] (3) principles of equity applicable to contribution generally apply." A.R.S. § 12-2502.

Three years later, the Arizona legislature amended UCATA to abolish joint and several liability. A.R.S. § 12-2506 (West Supp. 1987). Specifically, the statute was amended to include the following language:

> A. In an action for personal injury, property damage or wrongful death, the liability of each defendant for damages is several only and is not joint, except as otherwise provided in this section. Each defendant is liable only for the amount of damages allocated to that defendant in direct proportion to that defendant's percentage of fault, and a separate judgment shall be entered against the defendant for that amount. To determine the total amount of judgment to be entered against each defendant, the trier of fact shall multiply the total amount of damages recoverable by the plaintiff by the percentage of each defendant's fault, and that amount is the maximum recoverable against the defendant.
>
> . . .
>
> D. The liability of each defendant is several only and is not joint, except that:
>
> . . .

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2. Nothing in this section prohibits the imposition of joint and several liability in a cause of action relating to hazardous wastes or substances or solid waste disposal sites.

E. If a defendant is found jointly and severally liable pursuant to Section D, the defendant has the right to contribution pursuant to this chapter.

A.R.S. § 12-2506 (West Supp. 1991) (emphasis added).

Since the 1987 amendment to UCATA, no Arizona court has construed the language of A.R.S. § 12-2506(D)(2), but it certainly appears directly to apply to WQARF liability.

3. Retroactive: Generally, there is no perceived bar to retroactive application of CERCLA (a statute enacted in part to address a "gap" in RCRA relating to continuing hazards of past waste disposal sites). CERCLA has been interpreted as applying retroactively even though the statute does not explicitly state that it is to apply retroactively. Courts generally have held that the statute either is not retroactive in the constitutional sense because it applies to current and future effects of past conduct, or that it is constitutional even if it is deemed to be retroactive. See, e.g., United States v. Miami Drum Services, Inc., 25 Env't Rep. Cas. (BNA) 1469, 1476-78 (S.D. Fla. 1986). "Although CERCLA does not expressly provide for retroactivity, it is manifestly clear that Congress intended CERCLA to have retroactive effect." United States v. Northeastern Pharmaceutical & Chem. Co., Inc., 810 F.2d 727, 732-33 (8th Cir. 1986), cert. denied, 108 S. Ct. 146 (1987). Accord City of Philadelphia v. Stepan Chem. Co., 748 F. Supp. 283, 287 (E.D. Pa. 1990); Kelley v. Thomas Solvent Co., 714 F. Supp. 1439, 1443 (W.D. Mich. 1989). It is generally held that pre-enactment response costs are recoverable. See, e.g., United States v. Mottolo, 695 F. Supp. 615, 621 (D.N.H. 1988); United States v. Hooker Chem. & Plastics Corp., 680 F. Supp. 546, 557-58 (W.D.N.Y. 1988). But see United States v. Wade, 20 Env't Rep. Cas. (BNA) 1849, 1850-51 (E.D. Pa. 1984).

* **WQARF:** Unlike CERCLA, WQARF contains an explicit retroactivity provision providing that a responsible party may be held liable for remedial action costs for a release of hazardous substances even though the conduct that resulted in the release or the release

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itself occurred prior to August 13, 1986 (the effective date of the WQARF program). A.R.S. § 49-285(A).

F. Extent of Liability

1. Liability for Cleanup (Response) Costs: PRPs may be held liable under CERCLA for:

(1) all costs of removal or remedial action incurred by the United States or a state or an Indian tribe not inconsistent with the NCP;

(2) any other necessary costs of response incurred by any other person consistent with the NCP;

(3) damages for injury to natural resources, including the reasonable costs of assessing such injury; and

(4) the costs of any health assessment or health effects study carried out under 42 U.S.C. § 9604(i).

42 U.S.C. § 9607(a)(4) (Emphasis added). CERCLA makes responsible parties pay for cleanup performed in general accord with the NCP.

Furthermore, interest is recoverable on these damages at the same rate as interest on investments of the Fund. Id. Interest begins to accrue from the date a written demand for a specified amount is made, or the date of the expenditure concerned, whichever is later. Id.

Under WQARF, PRPs may be held "strictly, jointly and severally liable for such hazardous substance remedial action costs as are incurred" by the state, a political subdivision or any other person in a manner consistent with the WQARF rules. A.R.S. § 49-285.A. Remedial action is defined as "that which may be necessary to prevent, minimize or mitigate damage to the public health or welfare or to the waters of the state which may result from a release or threat of release of a hazardous substance that will or may affect waters of the state." § 49-281.5. The 1992 WQARF amendments also stated that remedial actions (and therefore costs for which a PRP may be liable) may include community information and participation costs.

What may constitute the removal or remedial action (or response) under CERCLA is outlined in the preceding discussion of the National Contingency Plan elements. Essentially under CERCLA, the NCP details how cleanup

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should be investigated and accomplished, and CERCLA makes certain parties responsible for that response.

Courts have interpreted the types of response costs which the government may recover from a PRP very broadly. Courts have allowed recovery for relocation costs, investigation costs, site security, EPA overhead costs, payroll expenses, pre-CERCLA costs, and prejudgment interest on such costs. See, e.g., United States v. Mottolo, 695 F. Supp. 615, 630-31 (D.N.H. 1988) (investigative, administrative, litigation, and pre-CERCLA costs recoverable); United States v. Northernaire Plating Co., 685 F. Supp. 1410, 1418-19 (W.D. Mich. 1988) (payroll expenses, overhead and allocation share of annual EPA costs).

2. Natural Resource Damages: An increasingly important additional element of liability is a PRP's exposure for natural resource damages. As an example of the potentially large scope of natural resource damages, a recently approved consent decree requires defendants to pay $42.2 million for natural resource damages to marine habitats in the Pacific Ocean as a result of discharges of DDT and PCBs through the Los Angeles sewer system. See United States v. Montrose Chemical Corp., No. CV 90-3122-AAH (C.D. Cal., consent decree approved April 26, 1993), reported in 7 Toxics L. Rep. (BNA) 1444 (May 5, 1993).

a. Overview: CERCLA imposes liability on PRPs for "damages for injury to, destruction of, or loss of natural resources, including the reasonable costs of assessing such injury, destruction or loss . . . ." 42 U.S.C. § 9607(a)(4)(C). CERCLA authorizes federal and state "trustees" for public lands to determine monetary damages due from injury, destruction, or loss of natural resources. 42 U.S.C. § 9607(f)(2)(A). Municipalities do not qualify as "states" under CERCLA, and thus have no authority to recover natural resource damages. See Borough of Rockaway v. Klockner & Klockner, 811 F. Supp. 1039 (D. N.J. 1993). Regulations pertinent to assessing natural resources damages are found at 43 C.F.R. Part 11, and are discussed in more detail below.

i. Natural Resources: "Natural resources" are defined as "land, fish, wildlife, biota, air, water, ground water, drinking water supplies, and other such resources belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by the United States . . . [,] any State or local government, any foreign government, any Indian tribe, or, if such resources are subject to a trust restriction on alienation, any member of an Indian tribe." 42

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U.S.C. § 9601(16). This definition does not include resources owned by private parties.

ii. Exceptions: There is no liability under Section 9607 for natural resources damages "where such damages and the release of a hazardous substance from which such damages resulted occurred wholly before December 11, 1980." 42 U.S.C. § 9607(f)(1). In addition, there is no liability under Section 9607(a)(4)(C) for natural resources damages if such damages were (i) identified as "an irreversible and irretrievable commitment of natural resources" in an environmental impact statement (or other comparable environmental analysis), (ii) the government authorized the adverse environmental impacts, and (iii) the facility or project "was otherwise operating within the terms of its permit or license . . . ." Id.

iii. Limitations: Except for actions for contribution or subrogation under Section 9613, any action for natural resources damages must be commenced within three years after the later of the following: (a) the date of discovery of the loss and its connection with the release in question, or (b) the date on which final regulations are promulgated under Section 9651(c). 42 U.S.C. § 9613(g)(1). However, for any facility listed on the NPL, any federal facility identified under Section 9620, or any vessel or facility at which a remedial action is "otherwise scheduled," an action for natural resources damages must be commenced within 3 years after completion of the remedial action (excluding operation and maintenance activities). Id.

Damages are payable only with respect to residual injury to natural resources that will remain following response action. 43 C.F.R. § 11.10.

iv. Types of Damages: Congress mandated that regulations for the assessment of natural resource damages be promulgated and specify: (1) standard procedures for simplified assessments requiring minimal field observation (known as Type A assessments); and (2) alternative protocols for conducting assessments in individual cases (known as Type B assessments). See 42 U.S.C. § 9651(c)(2). The regulations governing Type A and Type B assessments are contained in 43 C.F.R. Part 11.

v. Use of Monies Collected: All sums received as natural resources damages shall be used "only to restore, replace, or acquire" equivalent natural resources. 42 U.S.C. § 9607(f)(1). The preference is for restoration.

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Since the mid-1980s, the Department of Interior ("DOI") has been developing regulations under the authority of CWA/CERCLA that may be used to assess damages to natural resources and determine the monetary amount of such damages. A similar effort has recently been launched by the National Oceanic and Atmospheric Administration ("NOAA") pursuant to OPA authority.

b. Review of the Evolution of Natural Resources Damage Liability

i. Statutory Background: With the passage of the 1977 amendments to the CWA, federal law established the right of government agencies to sue for damages to natural resources caused by certain discharges of oil or hazardous substances. Pub. L. 95-217, § 58(g), codified at 33 U.S.C. § 1321(f)(4), (5). The CWA generally prohibited the discharge of oil or hazardous substances "into or upon the navigable waters of the United States, [and) adjoining shorelines which may affect natural resources belonging to, appertaining to, or under the exclusive management authority of the United States . . .." Id., § 1321(b)(1). The owner or operator of the facility responsible for the discharge would be liable for the "costs of removal of oil or hazardous substance [including) any costs or expenses incurred by the Federal Government or any State government in the restoration or replacement of natural resources damaged or destroyed as a result of a discharge of oil or hazardous substance in violation of [the Act)." Id. § 1321(f)(4).

Prior to 1980, there were no reported cases in which a natural resources "trustee" sought damages under this provision. Other than the fact that the law was relatively new, the limited scope of liability under the Act may have affected the ability to bring claims for natural resources damages. These limitations include the fact that liability was only for the discharge of oil to "navigable waters," which are defined under the Act to be "waters of the United States" and are further defined by regulation to include various surface water bodies within the United States. 40 C.F.R. § 116.3 (definition of navigable waters). Discharges to ground water or to the surface of the land which do not ultimately reach waters of the United States would not be covered by the Act. See, e.g., McClellan Ecological Seepage Situation v. Weinberger, 707 F. Supp. 1182, 1195-96 (E.D. Cal. 1988).

The natural resources provisions of the Clean Water Act were greatly expanded by the enactment of CERCLA in 1980. It is important to note that CERCLA

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substantially expanded the natural resources provisions of the Clean Water Act by extending liability to "releases" of "hazardous substances" into the "environment" (which would include land surface and ground water). The CWA provisions continued to play a role however, because petroleum was excluded from CERCLA coverage.

In addition to imposing liability for costs of removal or remedial actions and other necessary costs of response, CERCLA makes responsible parties liable for "damages for injury to, destruction of, or loss of natural resources, including the reasonable costs of assessing such injury, destruction, or loss resulting from such a release . . .." Id. § 9607(a)(4)(C). The statute defines "natural resources" as;

[L]and, fish, wildlife, biota, air, water, groundwater, drinking water supplies, and other such resources belonging to, managed by, held in trust, appertaining to, or otherwise controlled by the United States . . . any state or local government, any foreign government, any Indian tribe, or, if such resources are subject to a trust restriction on alienation, any member of an Indian tribe.

42 U.S.C. § 9601(16). CERCLA gives authority to recover for such damages to the United States government and to any state "for natural resources within the State or belonging to, managed by, or controlled by, or appertaining to such State" and to Indian tribes for natural resources under their jurisdiction. Id. § 9607(f)(1). While the statute protects natural resources owned or managed by a local government agency, case law has generally interpreted CERCLA to limit claims to those brought by the federal government, or an "authorized representative" of a state. Municipalities will not be considered natural resource trustees unless they have been so designated by the state. See Town of Bedford v. Raytheon Co., 755 F. Supp. 469 (D. Mass. 1991); City of New York v. Exxon Corp., 633 F. Supp. 609, 618-19 (S.D.N.Y. 1986); but see Mayor and Board of Aldermen v. Drew Chemical Corp., 621 F. Supp. 663 (D.N.J. 1985).

The statutory defenses provided under CERCLA are applicable to claims for natural resources damages. Thus, for instance, a potentially responsible party ("PRP") can escape liability by demonstrating that damages resulting from a release or threat of a release were caused solely by an act of God, act of war, or act or omission of a third party with whom the PRP does not have a contractual relationship. 42 U.S.C. § 9607(b). Other defenses, generally applicable to CERCLA as a

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whole, may also be available. See materials in other portions of this paper. In addition to these defenses, an entity defending against a natural resources damages claim may also escape liability if it can demonstrate that the damages complained of were addressed in an Environmental Impact Statement ("EIS") or similar environmental analysis, that the decision to grant a permit or a license covered by the EIS authorized such commitment of natural resources, and the facility or project in question was operating in compliance with that permit or license. Id. § 9607(f)(1). Also, recovery is not allowed under CERCLA for damages which result from a release of a hazardous substance, when the damages and the release "occurred wholly before December 11, 1980."

The damages that may be sought by natural resource trustees under CERCLA are for the injury to, destruction of, or loss of natural resources resulting from the release of a hazardous substance. Id. The statute provides that the measure of damages "shall not be limited by the sums which can be used to restore or replace such [natural] resources." Id. This measure of damages provision has been the subject of extensive litigation and rule development associated with the DOI regulations, discussed below. Also, the statute prohibits "double recovery" for the "same release and natural resource." Id. CERCLA requires that all sums recovered as damages must be used only to restore, replace, or acquire the equivalent of such natural resources. Id.

Section 301(c) of CERCLA requires the promulgation of regulations for the assessment of damages for injury to, destruction of, or loss of natural resources resulting from a discharge of oil or a release of a hazardous substance regulated by the CWA or CERCLA. The promulgation of these regulations was delegated by the President to DOI. Executive Order 12580, 52 Fed. Reg. 2923 (January 23, 1987). The regulations must include two different types of procedures:

> (A) [S]tandard procedures for simplified assessments requiring minimal field observation, including establishing measures of damages based on units of discharge or release or units of affected area [the so-called "Type A procedures"], and (B) alternative protocols for conducting assessments in individual cases to determine the Type and extent of short- and long-term injury, destruction, or loss [the "Type B procedures"]. Such regulations shall identify the best available procedures to determine such damages, including both direct and indirect injury, destruction, or loss and shall take into consideration factors

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including, but not limited to, replacement value, use value, and ability of the ecosystem or resource to recover.

42 U.S.C. § 9651(c)(2). Significantly, assessments performed by federal and state natural resource trustees in accordance with the Type A or Type B procedures receive the evidentiary status of the rebuttable presumption. Id. § 9607(f). Therefore, if a plaintiff trustee utilizes these regulations in determining damages, the defendant will carry the burden of discounting the assessment.

c. Overview of the DOI Rules:

Pursuant to CERCLA Section 301(c), DOI promulgated various rules for the assessment of natural resource damages. These include the Type B procedures, the general process for conducting natural resource damage assessments, and the alternative methodologies for conducting assessments in individual cases adopted August 1, 1986 (51 Fed. Reg. 27674); the Type A procedures for simplified assessments in coastal and marine environments adopted March 20, 1987 (52 Fed. Reg. 9042); minor amendments adopted February 22, 1988 to conform with amendments to CERCLA (53 Fed. Reg. 5166); and technical corrections adopted March 25, 1988 (53 Fed. Reg. 9769). These rules are codified at 43 CFR Part 11.

The following discussion of the DOI rule was adapted from the preamble to the proposed revisions to the DOI rule, 56 Fed. Reg. 19752 (April 29, 1991), and the final Type A rule, 52 Fed. Reg. 9042 (March 20, 1987). DOI recently extended the comment period on the proposed rules until September 7, 1993. See 58 Fed. Reg. 39238 (July 22, 1993).

The natural resources damage assessment rule provides an administrative process for conducting natural resource damage assessments in four phases. The first, or preassessment phase, begins with the notification of or detection by the natural resource trustee of a discharge or release. 43 C.F.R. § 11.20 et seq. The trustee performs a preassessment screen to determine that a CERCLA or CWA-covered incident has occurred and that resources of the trustee may have been affected. Id. § 11.25. The trustee makes a determination upon completion of the preassessment screen as to the appropriateness of further assessment actions. Provisions are made for emergency restoration as authorized by Section 111(i) of CERCLA. Id. § 11.21.

The second phase calls for the preparation of an Assessment Plan. Id. § 11.30 et seq. The level of

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detail contained in the Assessment Plan should be consistent with the rule's requirement for reasonable cost. The trustee must also comply with the rule's requirements for coordination with cotrustees, identification and involvement of the potentially responsible party, and public involvement in the development of the Assessment Plan. Also, the trustee must decide whether to conduct a Type A or Type B assessment. The trustee documents all decisions on the selection of both the scientific and economic methodologies to be used in the assessment in the Assessment Plan. The Assessment Plan must ensure that only the reasonable costs of assessment will be incurred. The trustee must provide for public involvement in the Assessment Plan with at least a 30-day review and comment period before implementing the Plan or making significant modifications.

The third phase, which lies at the heart of the natural resources damages process, is the Assessment phase, in which the damages to resources are calculated. This phase follows either the Type A or Type B assessment procedures. Both the Type A and Type B procedures follow the same three steps: the Injury Determination phase, the Quantification phase, and the Damage Determination phase.

The Type A procedure provides for simplified assessments of damages in coastal and marine (or deep-sea) environments. Id. § 11.40 et seq. DOI's decision to limit the initial Type A procedure to the coastal and marine environment was upheld in State of Colorado v. Dept. of Interior, 880 F.2d 481 (D.C. Cir. 1989). DOI has announced plans to develop similar procedures for the Great Lakes environment. See 57 Fed. Reg. at 16859.

The existing Type A rule uses a computer model referred to as the Natural Resources Damage Assessment Model for Coastal and Marine Environments ("NRDAM/CME"). There are specific data inputs listed in 43 C.F.R. § 11.41(c) for the Type A Assessment Plan which provide the incident-specific data required to use the NRDAM/CME. In the Injury Determination phase for the Type A assessment, the NRDAM/CME determines the pathway of contamination through a "physical fates" submodel. Natural resource injury is determined through the interaction of the physical fates submodel and the "biological effects" submodel. The Quantification phase, in which the effects of the discharge or release is determined, also utilizes the biological effects submodel. The baseline of the natural resources, contained in the NRDAM/CME data bases, and both the changes in services and resource recoverability are

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calculated. The NRDAM/CME performs the Damage Determination through the use of an economic damages submodel. The "economic damages" submodel incorporates use value methodologies to determine damages. An economic data base is contained in the NRDAM/CME that uses market and nonmarket prices for the services provided by the natural resources.

Type B assessments also follow three phases. 43 C.F.R. § 11.60 et seq. During the Injury Determination phase, the assessment focuses on determining that an injury to a natural resource has occurred and that the injury has resulted from the discharge of oil or release of a hazardous substance. Id. § 11.61(a). This phase includes a determination of the type of potentially injured resource, i.e., surface water, ground water, air, geologic or biological resource. Id. § 11.61(c). Having identified the resource, the trustee then determines whether an injury has actually occurred. Id. § 11.62. For instance, an injury will be deemed to have occurred if surface water met certain standards established under the Safe Drinking Water or the Clean Water Act prior to the release or discharge and now no longer meets those standards, or if the bed bank or shoreline sediments exhibit hazardous characteristics established under the hazardous waste laws. Id. § 11.62(b). Similar injury determination standards are established for groundwater and air resources. For biological resources, an injury will be deemed to occur if the concentration of oil discharged or hazardous substance released is sufficient to "Cause the biological resource or its offspring to have undergone at least one of the following adverse changes in viability: death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions . . . or physical deformations . . . .." Id. § 11.62(f)(i). Damages will also be considered to have occurred to biological resources if, for example, concentrations of the substances exceed appropriate levels for human consumption. The injury determination phase also includes requirements for testing and sampling, and for determination of the pathway of contamination.

The Quantification phase for Type B assessments focuses on identifying the services provided by the resource, determining the baseline level of such services that existed before the discharge or release, and quantifying the reduction in services resulting from the discharge or release. Id. § 11.70 et seq. For the purposes of the Quantification phase, "services" include provision of habitat, food and other needs of biological resources, recreation, other products or services used by humans, flood control, ground water recharge, waste

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assimilation, and other such functions that may be provided by natural resources. Id. § 11.71(e).

For Type B assessments, the Quantification phase is followed by the Damage Determination phase, which focuses on calculating the monetary compensation to be sought as damages for the injury to the natural resources. Id. § 11.80 et seq. The calculations are based on the information derived from the Quantification phase as to the extent of the injury sustained and the effects on the services provided by the resource. Id. The determination includes the calculation of restoration costs, which in turn may include "lost use" values, as explained below.

At the end of the damage assessment (whether a Type A or a Type B), the Post-assessment phase begins. These requirements include a Report of Assessment to act as the administrative record of the assessment, the establishment of an account for damage assessment awards, and the development of a Restoration Plan to ensure that all damage assessment awards are used for the restoration, rehabilitation, replacement, and/or acquisition of the equivalent of the injured resources. For Type A procedures, the NRDAM/CME provides a printed output that summarizes the mathematical computations performed to derive the damage amount. The printed output of the NRDAM/CME provides the documentation of the results of the assessment and is to be included within the Report of Assessment.

d. Judicial Review of the DOI Rules: The DOI damage assessment rules were challenged in the United States Court of Appeals in two separate, but parallel, cases. In State of Ohio v. United States Department of the Interior, 880 F.2d 432 (D.C. Cir. 1989), issues were raised that pertained to the administrative process and the Type B procedures established in the rule. In Colorado, supra, the Type A procedures were challenged.

The Ohio court upheld in part and invalidated in part certain aspects of the administrative process and the Type B procedures. The first key holding was that restoration costs are the preferred measure of damages. The original Type B rule required the trustee to use either the lesser of restoration costs or lost use value of the resources. The court held that CERCLA indicates a distinct preference for using restoration costs as the measure of damages, although the court acknowledged DOI's role in determining under what conditions the use of restoration costs as the measure of damages might not be appropriate.

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The Ohio court also held that all reliably calculated "lost use" values of injured natural resources should be recoverable, and that no specific hierarchy of methodologies be required in conducting those valuations. DOI's original rule had prescribed a ranking, or hierarchy, of economic valuation methodologies for determining use values, and limited the use of "nonuse" values to those situations where no direct uses could be found. The original rule categorized various values for an injured resource as "use" values (i.e., the "worth of natural resources to the people who use them") and "nonuse" or "option and existence" values (i.e., the "worth of natural resources beyond their use value"). As an example, the Grand Canyon has use values to hikers, rafters and tourists who pay money and expend time and energy to use the park. The Canyon also has option or intrinsic value to persons who never use the resource but who would pay to preserve the option of doing so or who simply value the Canyon's existence, regardless of whether they will ever use it. Cross, Natural Resources Damages Valuation, 42 Vanderbilt L. Rev. 269 (March 1989). The DOI rules allowed recovery for option and existence values only where the trustee could not determine a direct use value for a resource. Id., § 11.83(b)(2). The court held that even though option and existence values represent passive use of a resource, they ought to be recoverable in a damage assessment.

The Ohio court also asked DOI to clarify the scope of public ownership of natural resources covered by the rule. The preamble to the final Type B rule suggested that natural resource damage assessments should not cover privately-owned natural resources. However, the court understood the Department's oral argument to suggest that a substantial degree of government regulation, management, or other form of control over privately-owned natural resources could be sufficient to make the natural resource damage provisions apply to such resources in certain circumstances. The court construed CERCLA to mean that, while purely private resources are excluded from the natural resource damage provisions, some resources not owned by the government are encompassed by CERCLA's natural resource damage provisions. The court invited DOI to clarify its interpretation of the degree of management, regulation, control, or property interest that might make natural resources subject to the natural resource damage assessment rule.

The Colorado court upheld the Type A rules in response to a challenge that such rules were too restrictive in scope by only addressing damages to coastal marine environments. Id., 80 F.2d at 489.

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However, the Colorado court remanded the Type A rules to DOI for failure to include calculation of restoration replacement values. Id. at 490-91. The original Type A rules rely on use values as the manner of damages because "adequate data were not available to create a standardized model based on average values for restoration costs." 52 Fed. Reg. at 9051.

e. DOI Proposed Revisions: In April of 1991, DOI proposed major revisions to the Type B procedures to comply with Ohio. Future rulemaking efforts will address the Type A procedures remanded in Colorado.

i. Restoration Costs as the Measure of Damages: While CERCLA indicates a preference for using restoration costs as the measure of natural resource damages, the Ohio court suggested that there might be circumstances when some factor other than restoration costs could be the measure of damages. The court used the simple term "restoration" costs. CERCLA provides that sums recovered from natural resource damage claims must be used to restore, rehabilitate, replace, or acquire the equivalent of affected natural resources. The April 1991 proposal would use the phrase "restoration, rehabilitation, replacement, and/or acquisition of equivalent" as encompassing the full range of possible "restoration" actions a trustee might plan to take and, therefore, use to estimate the costs of the selected "restoration" action. The proposal recognized that, in many cases, trustees will take some combination of these actions, rather than only one. Some portion of this broader list--restoration, rehabilitation, replacement, or acquisition of the equivalent--will always be a part of the trustee's "restoration" activities, because some trustee actions will always be required beyond the trustee's normal management actions. Thus, there will always be some cost attributable to "restoration" or what the proposed revision calls restoration, rehabilitation, replacement, and/or acquisition of equivalent resources. On this basis, DOI does not propose to set out circumstances when some factor other than restoration costs should be the measure of damages as would have been allowable under the court's ruling.

In addition to recovering the costs of restoration, rehabilitation, replacement, and/or acquisition of equivalent resources, the trustee may also recover the value of the services lost to the public until the lost services are returned to baseline levels. The proposed revision of the Damage Determination phase would describe the values for which

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the public may be compensated, and the methodologies that may be used to estimate those values.

ii. Hierarchy of Valuation Methodologies: The original March, 1986 Type B rule stated that if the trustee determined that the market for the injured resource was "reasonably competitive," then the diminution of the market price attributable to the discharge or release should be used to estimate damages. If the market price methodology was not appropriate, then the rule stated that appraisals should be used to estimate damages. Only when neither the market price nor the appraisal methodologies were appropriate for the affected resources being assessed, did the rule allow the trustee to use nonmarket valuation methodologies.

The court ruled that the hierarchy, or ranked order, of valuation methodologies established in the original version of the rule incorrectly established a strong presumption in favor of the market price and appraisal methodologies. The court said that neither CERCLA nor its legislative history showed any Congressional intent to limit use values to market prices. The court said that the damage assessment rule should capture fully all aspects of the public loss.

In response to the court's ruling, the requirement for choice according to a hierarchy of valuation methodologies is being removed. The trustee may now select among the methodologies--or a combination of methodologies--to estimate the economic value of the services provided by the injured natural resources before the injury. In removing the hierarchy requirement for use of the various methodologies, DOI states that it is not implying that all valuation methodologies are equally reliable or applicable. Depending on the data available and the nature of the injury, different methodologies may be more or less reliable. The trustee will briefly state his rationale for his choice of any methodology in the Restoration and Compensation Determination Plan that is a part of the overall Assessment Plan.

In cases where the full value of a natural resources is captured by a competitively determined market price, DOI considers the market price methodology to be the most reliable valuation method. The mere presence of a competitive market does not, however, ensure the price will "capture fully" the value of the resource. Where the trustee determines that this is the case, the nonmarketed methodologies may be used. If nonuse values are significant, the only way to quantify these values explicitly is to use the contingent

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valuation methodology (CVM). Thus, for the case of a competitively-sold natural resource with significant nonuse values, the CVM, possibly used in conjunction with the market price methodology, could be used to estimate the value compensable to the public. When nonuse values are not significant, the most reliable valuation methodology to employ for competitively-sold natural resources may be the market price methodology.

Use value damages may be measured using valuation methodologies, known as "revealed preference" methodologies, that are based on observing changes in human behavior and/or actual market transaction data resulting from the injured natural resources. The most common revealed preference valuation methodologies are the market price methodology, land appraisals, factor income methodology, travel cost analysis, and hedonic price analysis. Generally, it is thought that if a value can be quantified using revealed preference methodologies, assuming the needed set of observable data is available, then it is a use value; if it cannot be quantified that way, then it is a nonuse value.

iii. Resource Values: Another issue upon which the Type B rule was remanded for revision was the limitation on the recovery of nonuse values. The Ohio court said that all reliably calculated values of the resource, including option and existence values, should be recoverable, keeping in mind the proscription in CERCLA that the trustee may not double count. The rule as it exists already allows for computation of use and nonuse values by various economic methodologies. Their use continues to be allowed under this proposal for valuation of lost services during the period of time between the spill or release and the recovery of the resource. The court decision upheld uses of the various economic methodologies already described in the rule. Thus, the revised rule continues its description of how these methodologies work.

The proposed revision would add a new term, compensable value, to stand for the combination of resource value determinations that will go to make up the damage claim in addition to restoration costs. Compensable value encompasses all of the public economic values associated with an injured resource, including use values and nonuse values such as option, existence, and bequest values. Natural resources have public economic value because of the variety of services they provide to the public. These services include "passive" or "nonconsumptive" uses. When natural resources are injured, the flow of services they provide is apt to be disrupted, thereby resulting in economic damage. Compensable value is a dollar measure of this damage.

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The concept of compensable value allows for many different reasons why the public may value natural resources--including reasons not represented by market prices. For example, some individuals might be willing to pay to avoid an injury to a favorite recreation area. Others may be willing to pay to avoid the loss associated with knowing wildlife were injured, even though they will never visit the injured area. This willingness to pay by people who will never visit the area is a nonuse value. It is the natural resource trustee who recovers on behalf of the public for those losses, rather than the individual person.

The rule subdivides compensable value into two parts: use values and nonuse values. Use values refer to economic values that arise because of direct public use of the resources or the services that a resource provides. Some examples of use values include on-site recreation such as hunting, fishing, and wildlife viewing; extractive uses of natural resources such as mining; use of renewable natural resources to produce products such as timber, fish, or agricultural products; uses of stream flows for irrigation, municipal and industrial water supplies, and for power generation; and transportation services provided by navigation over public waterways, lands, or airspace. Nonuse values are the difference between compensable value and use values. This concept of nonuse values is being used because there are many categories of nonuse values that have not been consistently defined. Included in the definition of nonuse values are the concepts commonly referred to as existence value, bequest value, preservation value, and intrinsic value, which are discussed in the preamble of the August 1986 Type B rule.

Although nonuse values can theoretically exist for any natural resource, they are most significant for irreversible or long-lasting changes to well-known, unique natural resources. For environments that quickly recover to the baseline condition following a discharge or release, nonuse values may not normally be significant. Also, an injury to a common natural resources with many substitutes (e.g., a typical small stream), may not generate large nonuse values, particularly for those residing outside the area where the injury occurred, even if the recovery takes a long time. However, a permanent injury to a unique resources (e.g., the Grand Canyon) may generate significant nonuse values, even for those residing in areas far removed geographically from the site where the injury occurred. Trustees might best substantiate their claims for lost nonuse values--particularly as they relate to persons who do not directly use the injured resource--by demon-

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strating irreversible, or very long-lasting adverse impacts to unique, widely-recognized natural resources.

iv. Scope of Public Ownership: In the April 1991 proposal, DOI also clarified the extent to which the damage assessment rule applies to resources that are privately owned. The proposed revision directs the trustee to state briefly the authority for asserting trusteeship in the Assessment Plan, and also in the Notice of Intent to Perform an assessment that is sent to the potentially responsible party. In describing the natural resources of concern to the trustee, the trustee will cite the relevant law providing the basis for the trusteeship. This authority statement with the Assessment Plan, which is available for public review and comment, will enable an early notice to the public as to the trustee's assertion of trusteeship. This statement in the Notice of Intent to Perform an Assessment will also serve to inform the potentially responsible party of the various agencies involved in an assessment and of their natural resource concerns.

On the issue of the scope of public ownership of natural resources, the court concluded that CERCLA excludes purely private resources from the natural resource damage provisions. The court based its analysis largely on the CERCLA definition of natural resources which includes resources "belonging to, managed by, held in trust by, appertaining to, or otherwise controlled by" a government entity. While the preamble to the final Type B rule states that "privately-owned natural resources are not to be included in natural resource damage assessments," DOI's oral argument in Ohio suggested that a substantial degree of government regulation, management, or other form of control over natural resources could be sufficient to make the natural resource damage provisions apply to such resources in certain circumstances. 54 Fed. Reg. at 27696. The court did not call for any changes in the rule itself, but suggested that it would be too narrow a reading of the statute to prohibit recovery for publicly-managed natural resources that were privately owned.

In response, DOI stated in the April 1991 proposal that it had not meant to suggest that recoveries under the rule hinge solely on ownership or exercise of a formal document transferring the property to a government entity. The Department used in its rule the CERCLA definition of natural resources that provides for various degrees of government regulation, management or other form of control over the natural resources to make the CERCLA natural resource damage provisions applicable. DOI confirmed this position in the preamble

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accompanying its July 22, 1993 extension of the comment period on the proposed revisions to the natural resource damages rule. See 58 Fed. Reg. at 39331.

* **WQARF:** WQARF, unlike CERCLA, does not give ADEQ the authority to bring an action to recover damages to the state's natural resources.

3. Exclusions From Superfund Liability: CERCLA does not provide for recovery of response costs or damages where those costs or damages resulted from the application of a pesticide registered under the Federal Insecticide, Fungicide, and Rodenticide Act ("FIFRA") [7 U.S.C. § 136 et seq.] or from a federally permitted release. 42 U.S.C. § 9607(i), (j). However, recovery under other applicable federal or state law for such costs or damages is not barred by CERCLA. See id. Similar exclusions exist under WQARF. A.R.S. § 49-283(D)(4) & (5) (the WQARF exclusion also applies to state-permitted releases). Where liability has been assumed by the federal post closure liability fund, see 42 U.S.C. § 9607(k), it is also excluded from CERCLA and WQARF. 42 U.S.C. § 9607(k); A.R.S. § 49-283(D)(6).

4. Caps on Liability: For any vessel, other than an incineration vessel, which carries any hazardous substance as cargo or residue, the liability cap is established at $300 per gross ton, or $5 million, whichever is greater. 42 U.S.C. § 9607(c)(1)(A). For any other vessel, other than an incineration vessel, liability is capped at the greater of $300 per gross ton or $500,000. 42 U.S.C. § 9607(c)(1)(B).

For any motor vehicle, aircraft, pipeline, or rolling stock, EPA is authorized to set a liability ceiling somewhere between $5 million and $50 million. 42 U.S.C. § 9607(c)(1)(C). For any other facility, liability is capped at the total of all costs of response plus $50 million for damages. 42 U.S.C. § 9607(c)(1)(D).

These limitations do not apply if the release or threatened release was the result of any of the three different forms of particularly egregious conduct on the part of the responsible party enumerated in 42 U.S.C. § 9607(c)(2).

G. Indemnification

No form of indemnification agreement or conveyance aimed at transferring one party's liability under Section 9607 to another party is effective. 42 U.S.C. § 9607(e)(1). However, "any agreement to insure, hold harmless, or indemnify a party to such agreement for any

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liability" under Section 9607 may be upheld. Id. See Conrad, "CERCLA Does Not Invalidate Contractual Allocations of Liability," 22 Envtl. L. Rep. (Envtl L. Inst.) 10045 (January, 1992).

H. Contribution

CERCLA explicitly allows any person to seek contribution from any other PRP. 42 U.S.C. § 9613(f)(1). Such an action for contribution may be brought at any time before, during, or after any action under Section 9606 or Section 9607. Id. The existence of settlements may affect a contribution action. See 42 U.S.C. § 9613(f)(2)-(3).

WQARF also provides that any person who is a defendant in an enforcement proceeding brought under Section 49-287 may join in the action of any other person who is or may be a responsible party. Following adjudication of liability and recovery of remedial action costs in an action brought under this article, any person held liable for such costs may bring a separate action to require any other person who is or may be a responsible party to contribute to the payment of such costs. A.R.S. § 49-285(C).

However, if any person in an action brought under WQARF establishes by a preponderance of the evidence that the release or threatened release referred to in this article is divisible, the person is liable only for his portion of the release. A.R.S. § 49-285(D).

1. Statute of Limitations: No action for contribution for any response costs or damages may be brought more than three years after (a) the date of any CERCLA judgment for such response costs or damages, or (b) the date of an administrative order of a de minimis settlement or a cost recovery settlement, or entry of a judicially approved settlement with respect to such response costs or damages. 42 U.S.C. § 9613(g)(3). See also A.R.S. § 49-282(G).

2. Factors Courts May Consider: In deciding contribution claims, "the court [applying CERCLA] may allocate response costs among liable parties using such equitable factors as the court determines are appropriate." 42 U.S.C. § 9613(f)(1). Similarly, under WQARF, a court retains equitable power of apportionment. A.R.S. § 49-285(F).

3. Methods of Apportionment: Apportioning response costs among PRPs is never easy. A few of the theories originally advanced include:

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a. Pro Rata Allocation: The pro rata approach divides the cost into as many equal shares as there are responsible parties. If there are X responsible parties, then each pays one share: the total of the damages divided by X. This concept of apportionment among joint tortfeasors has been adopted in a number of jurisdictions. See Early Settlers Insur. Co. v. Schweid, 221 A.2d 920, 923 (D.C. App. 1966); Zeller v. Cantu, 478 N.E.2d 930, 935 (Mass. 1985); Chilcote v. Von Der Ahe Van Lines, 476 A.2d 204, 213 (Md. 1984); Estate of Bayliss by Bowles v. Lee, 315 S.E.2d 406, 410-11 (W. Va. 1984).

b. Comparative Fault: Under a comparative fault approach, a percentage of the damages is paid by the party in proportion to that party's percentage of the "fault" or blame. This requires an investigation of each party's conduct and the degree of harm caused by that conduct. See Uniform Comparative Fault Act, § 2, 12 U.L.A. 47-48 (Supp. 1991).

c. Comparative Causation: Comparative causation allocates the costs of a hazardous site remedy among the responsible parties based on how much each party contributed to the problem and the required remedial costs. The initial focus is on the volume of hazardous substances for which each party is responsible. Cf. United States v. Chem-Dyne Corp., 572 F. Supp. 802, 811 (S.D. Ohio 1983); United States v. South Carolina Recycling and Disposal, Inc., 14 Env't Rep. Cas. (BNA) 20,272 (D.S.C. 1984).

d. The Gore Amendment Approach: Prior to the passage of CERCLA in 1980, Representative Gore introduced an amendment to the original House Bill which set forth a formula to apportion liability among defendants:

"To the extent apportionment is not established [by the defendant], the court may apportion the liability among the parties where deemed appropriate based upon evidence presented by the parties as to their contribution. In apportioning liability . . . the court may consider among other factors, the following:

(i) the ability of the parties to demonstrate that their contribution to a discharge, release, or disposal of a hazardous waste can be distinguished;

(ii) the amount of hazardous waste involved;

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(iii) the degree of toxicity of the hazardous waste involved;

(iv) the degree of involvement by the parties in the generation, transportation, treatment, storage, or disposal of the hazardous waste;

(v) the degree of care exercised by the parties with respect to the hazardous waste concerned, taking into account the characteristics of such hazardous waste; and

(vi) the degree of cooperation by the parties with Federal, State, or local officials to prevent any harm to the public health or the environment."

126 Cong. Rec. 26,781 (1980).

Although the Gore Amendment is not a part of CERCLA, some courts subsequently relied on legislative history, particularly the Gore Amendment, in apportioning liability in cases where the harm was indivisible. See United States v. A & F Materials Co., Inc., 578 F. Supp. 1249, 1255-57 (S.D. Ill. 1984); United States v. Stringfellow, 14 Envtl. L. Rep. (Envtl. L. Inst.) 20,385, 20,387-88 (C.D. Cal. 1984). But see United States v. The Western Processing Co., 20 Chem. Waste. Lit. Rptr. 314 (W.D. Wash. 1990) (rejecting A & F Materials use of Gore Amendment factors at liability phase).

* **WQARF**: A.R.S. § 49-285(F) authorizes a court to equitably apportion response costs among responsible parties in an action for contribution. Unlike Congress, the Arizona legislature sets forth six specific factors to govern a court's equitable apportionment. The six factors are those described in the Gore Amendment, set forth above.

i. Gore Approach By the Courts: Although the Gore Amendment was not part of the final bill that hurriedly passed in the last few days of 1980, a majority of the courts subsequently relied on legislative history, particularly the Gore Amendment, in apportioning liability in cases where the harm was indivisible. U.S. v. A & F Materials Co., 578 F. Supp. 1249, 1255-1257 (S.D. Ill. 1984); U.S. v. Stringfellow, 14 Envtl. L. Rep (Envtl. L. Inst.) 385, 387-88 (C.D. Cal. April 15, 1984).

During the 1986 debate on SARA, the House Committee on the Judiciary implicitly endorsed the Gore Amendment factors as "relevant criteria" for

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apportioning losses under the new contribution provision of CERCLA. H.R. Rep. No. 253, 99th Cong., 1st Sess., p.t. 3, at 19; 1986 U.S. Code Cong. & Admin. News 3038, 3042.

Subsequent to the passage of SARA, the Gore factors have found widespread appeal throughout the courts. In fact, presently there are very few courts which do not rely on, at least partly, the Gore factors in apportioning liability in contribution actions. See, e.g., Danella Southwest, Inc. v. Southwestern Bell, 775 F. Supp. 1227 (E.D. Mo. 1991); Weyerhaeuser Co. v. Koppers Co., 771 F. Supp. 1420 (D. Md. 1991); United States v. R.W. Meyer, Inc., 932 F.2d 568 (6th Cir. 1991); United States v. Tyson, 19 Chem. Waste Lit. Rptr. 1310 (E.D. Pa. 1989); Amoco Oil Company v. Borden, Inc., 889 F.2d 664 (5th Cir. 1989); United States v. Northernaire Plating Co., 20 Envtl. L. Rep. (Envtl. L. Inst.) 20200 (W.D. Mich. 1989).

In R.W. Meyer, supra, in holding the generator/lessee two thirds liable and the owner/lessor one third liable for the costs of cleanup, the court found the Gore factors to be instructive. The court recognized that the generator was the primary actor in allowing the contamination and thus bore the most responsibility. The landowner, however, also bore significant liability as it had constructed a defective sewer line which had contributed to the contamination and had "neither assisted nor cooperated with the EPA officials during their investigation and eventual cleanup of the . . . site." R.W. Meyer, 932 F.2d at 571.

In United States v. Tyson, supra, the court held that the owner/nonsettling party was responsible for 50% of all past and future response costs incurred in contribution action brought by the settling parties. The court framed the allocation around the Gore factors: (1) that the owner was aware of the hazardous condition before acquiring the site; (2) that the owner knowingly allowed hazardous substances to leach into the groundwater; (3) that the owner failed to notify regulators of the presence of the health hazard or to take steps to protect the public; (4) that the owner was a technically sophisticated company that had acquired the site to make money; and (5) that the owner repeatedly refused to cooperate with the government or with the other defendants, even after being judicially determined to be responsible party. Tyson, 19 Chem. Waste Lit. Rptr. at 1323.

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ii. Equitable Approach By The Courts Under SARA: Although courts today tend to focus on the Gore factors in allocating liability in contribution actions, the courts have also relied upon what they term other "equitable factors." The courts look to the state of the mind of the parties, their economic status, the benefits received by the parties from the contaminating activity and the amount of time each defendant used the property. See, e.g., Weyerhaeuser Co. v. Koppers Co., 771 F. Supp. 1420 (D. Md. 1991); United States v. R. W. Meyer, Inc., 932 F.2d 568 (6th Cir. 1991); United States v. Bell Petroleum Services, Inc., 32 Envt. Rep. Cas. (BNA) 1296 (W.D. Tex. 1990); Amoco Oil Company v. Borden, Inc., 889 F.2d 664 (5th Cir. 1989); South Florida Water Management District v. Montalvo, 1989 WL 260215 (S.D. Fla. 1989). The courts will also consider traditional common law equitable defenses such as unclean hands and caveat emptor as mitigating factors in deciding liability for response costs. See, e.g., Versatile Metals, Inc. v. Union Corp., 693 F. Supp. 1563 (E.D. Pa. 1988).

In Weyerhaeuser, supra, the court noted that the Gore factors should be considered in allocating damages in a contribution action. The court further stated that it should consider other equitable factors such as the benefits received by the parties from the contaminating activities and the knowledge and/or acquiescence of the parties in the contaminating activities. The court, in finding that the generator/lessee was the sole cause of the environmental damage, allocated a 60% share of the responsibility to it. The owner/lessor knew of and acquiesced in the activity which led to the environmental waste, and benefitted from the activity of the generator, aside from the rent paid under the lease. Consequently, the court allocated a 40% share to it. Weyerhaeuser, 771 F. Supp. at 1427.

In South Florida, supra, in a rare instance, the use of the Gore factors was expressly rejected. In allocating liability, the court however, looked to equitable factors. Deciding to allocate 25% of the liability to the current owner, and 75% to the prior operator, the court reasoned that the prior operator had directly caused the contamination at the site since its operation, despite using state of the art controls, generated spills and runoffs of chemicals. Because the operator had profited from the business causing the contamination, it was "equitable" that the operator should bear the burden of cleaning up the contamination. The court went on to note that it was likewise equitable for the current owners to pay some of the cleanup costs since they had purchased the property with knowledge of

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the operations being conducted there and the risks of contamination entailed in those operations.

I. Financial Responsibility

Under CERCLA, EPA is supposed to promulgate requirements that classes of facilities "establish and maintain evidence of financial responsibility consistent with the degree and duration of risk associated with the production, transportation, treatment, storage, or disposal of hazardous substances." 42 U.S.C. § 9608(b)(1). Specific financial responsibility requirements have been established for certain owners and operators of vessels. 42 U.S.C. § 9608(a)(1).

1. Releases from Facilities: In cases involving a release or threatened release from a facility, any claim authorized under Section 9607 or Section 9611 "may be asserted directly against any guarantor providing evidence of financial responsibility for such facility" only if the person liable is (i) in bankruptcy, (ii) in reorganization, or (iii) if jurisdiction cannot be obtained over the person liable and he is likely to be solvent at the time of judgment. 42 U.S.C. § 9608(c)(2). The guarantor shall be entitled to all rights and defenses that would have been available to the person liable if the action had been brought against such person or that would have been available to the guarantor if such liable person would have brought an action against the guarantor. 42 U.S.C. § 9608(c)(2). The total liability of a guarantor in such a direct action suit is limited to the aggregate amount of the monetary limits of the instruments obtained from the guarantor for the purpose of satisfying the requirement for evidence of financial responsibility. 42 U.S.C. § 9608(d).

2. Releases from Vessels: Direct actions may also be brought against the guarantor of a vessel in the case of a release or threatened release from such vessel. 42 U.S.C. § 9608(c)(1). However, the rights and defenses available to a guarantor in such an action are more limited than those available in a direct action involving a release from a facility. See id.

J. CERCLA and WQARF Liens

All costs and damages for which a person is liable to the United States under Section 9607(a) constitute a lien in favor of the United States upon all real property and rights to real property which (i) belong to such person and (ii) are subject to or affected by a removal or remedial action. 42 U.S.C. § 9607(1)(1).

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The lien arises at the later of the following:

(a) the time costs are first incurred by the United States; or

(b) the time that the person liable to the United States receives written notice of potential liability.

42 U.S.C. § 9607(l)(2). Such a lien continues until the person's liability is satisfied or becomes unenforceable due to the statute of limitations provided in Section 9613. Id.

The lien "shall be subject to the rights of any purchaser, holder of a security interest, or judgment lien creditor whose interest is perfected under applicable State law before notice of the lien has been filed . . . ." 42 U.S.C. § 9607(1)(3). The costs constituting the lien may be recovered in an in rem action in federal court. 42 U.S.C. § 9607(l)(4).

A special maritime lien is created in favor of the United States for "all costs and damages for which the owner or operator of a vessel is liable." 42 U.S.C. § 9607(m). The lien is on the vessel and is similar to the liens discussed in Section 9607(l).

The general CERCLA lien found at 42 U.S.C. § 9607(l) was held unconstitutional on due process grounds by the United States Court of Appeals for the First Circuit in Reardon v. United States, 947 F.2d 1509 (1st Cir. 1991).

* **WQARF:** The 1992 amendments to WQARF created a lien provision under that program. A.R.S. § 49-295. These amendments were drafted after the Reardon decision was announced, and attempt to avoid the unconstitutional aspects of the CERCLA lien. The WQARF lien is only for costs already incurred (except in cases where a party intends to alienate property subject to the lien, in which case ADEQ may secure a lien in the amount of estimated future response costs), and only affects the property subject to cleanup (not all real property owned by a responsible party). The lien may be established by the State upon a showing of probable cause. Normal rules of lien priority apply to any lien established under WQARF (i.e., the environmental lien does not take priority over pre-existing, perfected liens). At any time after establishment of an environmental lien, a party owning property subject to the lien may bring a motion to quash the lien in Superior Court. A party may also seek to substitute some other form of security in place of the continued existence of the environmental

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lien. A lien may not be placed on property used primarily for, or under construction primarily for use, in single or multi-family housing at the time the lien is recorded. Finally, environmental liens are foreclosed in the same manner as mortgages (which require judicial foreclosure).

VI. DEFENSES

A. Express Defenses

Congress prescribed only three express defenses in CERCLA. A PRP can avoid liability under Section 9607(a) if it can establish by a preponderance of the evidence that the release or threat of release, and the damages resulting therefrom, were caused solely by:

(i) an act of God;

(ii) an act of war;

(iii) an act or omission of a third party other than an employee or agent of the defendant, or than one whose act or omission occurs in connection with a contractual relationship, existing directly or indirectly, with the defendant, . . . if the defendant establishes by a preponderance of the evidence that (a) he exercised due care with respect to the hazardous substance concerned, taking into consideration the characteristics of such hazardous substance, in light of all relevant facts and circumstances, and (b) he took precautions against foreseeable acts or omissions of any such third party and the consequences that could foreseeably result from such acts or omissions or

(iv) any combination of the foregoing paragraphs.

42 U.S.C. § 9607(b). The same three express defenses are also available under WQARF. A.R.S. § 49-283(D)(1)-(3). WQARF also contains a pesticide application defense, a postclosure liability fund defense and a federally or state permitted release defense, as discussed elsewhere in this paper. A.R.S. § 49-283(D)(4)-(6).

An additional, "off-site migration" defense was added for owners by the 1992 WQARF amendments. It provides that a person, so long as that person is neither an arranger for disposal nor a responsible transporter for the hazardous substance, is not a responsible party with respect to a hazardous substance

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that is located on or beneath property that is owned or occupied by that person if the hazardous substance is present solely because it migrated from property that is not owned or occupied by that person. A.R.S. § 49-283(E). This provision is analogous to, but goes beyond, the third party defense, as it creates no requirement of due care on the part of the owner/occupier, nor is there a required absence of a "connected" contractual relationship with any other responsible party.

1. The Third Party Defense: The third party defense is the principal defense available under CERCLA and WQARF. The defendant must demonstrate that (1) the release, or threat thereof, and any related damages, are solely caused by the act or omission of a third party that did not occur in connection with a direct or indirect contractual relationship with the defendant, (2) that the defendant has exercised due care with respect to the hazardous substance and (3) that the defendant took precautions against foreseeable acts or omissions of these noncontractually related third parties.

The nature of the "in connection with the contractual relationship" requirement was recently explored in Westwood Pharmaceuticals v. National Fuel Gas Distribution Corp., 964 F.2d 85 (2d Cir. 1992). In an instructive decision, the court stated:

> We hold that the district court correctly held that the phrase "in connection with a contractual relationship" in CERCLA § 107(b)-(3) requires more than the mere existence of a contractual relationship between the owner of land on which hazardous substances are or have been disposed of and a third party whose act or omission was the sole cause of the release or threatened release of such hazardous substances into the environment, for the landowner to be barred from raising the third-party defense provided for in that section. In order for the landowner to be barred from raising the third-party defense under such circumstances, the contract between the landowner and the third party must either relate to the hazardous substances or allow the landowner to exert some

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element of control over the third party's activities.

Id. at 91-92.

In United States v. Hooker Chemicals & Plastics Corp., 680 F. Supp. 546 (W.D.N.Y. 1988), the court held that defendants' contractual relationship with the present landowner -- defendants had deeded the land to the City -- precluded defendant from raising the third-party defense of § 107(b)(3) since "[defendant] was able to control the acts of these subsequent purchasers because of the nature of its relationship with these defendants in this case." Id. at 558. In Shapiro v. Alexanderson, 743 F. Supp. 268 (S.D.N.Y. 1990), the court held that the contractual relationship clause of § 107(b)(3) does not embrace "all acts by a third-party with any contractual relationship with a defendant. Such a construction would render the language 'in connection with' mere surplusage." Id. at 271. The act or omission must occur in context so that there is a connection between the acts and the contractual relationship." Id. In Shapiro, the court described the "classical scenario" in which a landowner would be precluded from asserting a § 107(b)(3) defense: when the third party is operating a landfill pursuant to a contract with the owner. Id.

2. The "Innocent Purchaser" Defense: This is a subset of the third-party defense, that is derived from the definition of "contractual relationship" as that term is used in the third-party defense. The term "contractual relationship" as it is used in Section 9607(b)(3), is defined to include, but is not limited to, "land contracts, deeds, or other instruments transferring title or possession," unless the defendant acquired the real property after the disposal or placement of the hazardous substance on it and the defendant can prove one or more of the following circumstances by a preponderance of the evidence:

(i) At the time the defendant acquired the facility, the defendant did not know and had no reason to know that any hazardous substance which is the subject of the release or threatened release was disposed of at the facility; or

(ii) The defendant is a government entity that acquired the facility by escheat, or through involuntary transfer, or through eminent domain; or

(iii) The defendant acquired the facility by inheritance or bequest.

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42 U.S.C. § 9601(35)(A). The first (underlined) subpart is called the "innocent purchaser" defense.

The requirement contained in Section 9601(35)(A)(i) that the defendant had "no reason to know" of the hazardous waste disposal is met if, at the time of acquisition, the defendant undertook "all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice in an effort to minimize liability." 42 U.S.C. § 9601(35)(B). To make such a determination, the court shall consider "any specialized knowledge or experience on the part of the defendant, the relationship of the purchase price to the value of the property if uncontaminated, commonly known or reasonably ascertainable information about the property, the obviousness of the presence or likely presence of contamination at the property, and the ability to detect such contamination by appropriate inspection." Id.

If a property owner obtains actual knowledge of the release or threatened release of a hazardous substance, and then transfers ownership of the property without disclosing such information, then the innocent purchaser defense under Section 9607(b)(3) is unavailable to that transferor. 42 U.S.C. § 9601(35)(C).

* **WQARF:** WQARF's third-party defense also contains the same caveat that the act or omission of the third-party (that is alleged to be the sole cause) must not be "in connection with a contractual relationship, existing directly or indirectly" between the third-party and the party seeking to assert the third-party defense. A.R.S. § 49-283(D)(3). WQARF does not, however, include a definition of "contractual relationship." It may be that Arizona courts will interpret it to be the same definition as in CERCLA, or Arizona courts may enforce an "Arizona definition."

If CERCLA's definition is deemed incorporated by reference, then Arizona has a similar "innocent purchaser" defense. If not, Arizona's "innocent purchaser" defense is both more limited and more expansive than the CERCLA defense. A.R.S. § 49-283(B) provides as follows:

> a person that owns real property is not a responsible party if there is a release or threatened release of a hazardous substance from a facility in or on the property unless one or more of the following applies to that person:

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1. Was engaged in the business of generating, transporting, storing, treating or disposing of a hazardous substance at the facility or disposing of waste at the facility, or knowingly permitted others to engaged in such a business at the facility.

2. Permitted any person to use the facility for disposal of a hazardous substance.

3. Knew or reasonably should have known that a hazardous substance was located in or on the facility at the time right, title or interest in the property was first acquired by the person and engaged in conduct by which he associated himself with the release. For the purpose of this paragraph, a written warranty, representation of undertaking, which is set forth in an instrument conveying any right, title or interest in the real property and which is executed by the person conveying the right, title or interest, or which is set forth in any memorandum of any such instrument executed for the purpose of recording, is admissible as evidence of whether the person acquiring any right, title or interest in the real property knew or reasonably should have known that a hazardous substance was located in or on the facility.

4. Took action which significantly contributed to the release after he knew or reasonably should have known that a hazardous substance was located in or on the facility.

(Emphasis added.)

Although the third test above is analogous to and more favorable than the CERCLA "innocent purchaser" defense (in that an extra requirement exists that the landowner also must "associate himself with the release"), the "innocent purchaser" defense under WQARF does not aid a landowner who engages, or permits others to engage, in any business of "handling" a hazardous substance on the property. Under CERCLA, an innocent landowner is not barred from "handling" hazardous substances, which tend to be fairly ubiquitous, on his property.

There may not be much comfort to be gained from the fact that WQARF talks about the otherwise innocent landowner being engaged, or permitting others to engage, "in the business of generating, transporting, storing, treating or disposing of a hazardous substance at the facility." This provision was copied from the Minnesota Environmental Response and Liability Act, Minn. Stat. §§ 115B.01-115B.37 (1992). In Weber v. Gerads

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Development, 442 N.W.2d 807, 812 (Minn. App. 1989), the Court of Appeals of Minnesota stated,

> The trial court's interpretation requiring that a person be in the business of generating hazardous substances would defeat, or at least severely weaken, the overall intent of Superfund legislation. We note that few companies have as their primary business the generation of hazardous waste. Yet, many businesses, like Lantz, deal with hazardous waste incidentally, but in the normal course of business. Hazardous waste is no less hazardous because you deal with it infrequently rather than daily. Thus, we believe the legislature intended this section to apply to businesses, like Lantz, that generate hazardous waste incidental to their main purpose for being in business. Thus, we reverse the trial court's ruling under Superfund as applied to [the defendant who argued it was not in the business of generating hazardous substances].

The fourth test under A.R.S. § 49-283(B) does not appear, at first blush, much beyond the "due care" aspect of A.R.S. § 49-283(D)(3)(a) or 42 U.S.C. § 9607(b)(3)(a).

a. A Review of Some Federal Case Law: Innocent Purchaser Defense:

1. Wickland Oil Terminals v. ASARCO Incorporated, 19 Envtl. L. Rptr. (Envtl. L. Inst.) 20855 (N.D. Cal. 1988)

Asarco utilized property for smelting operations. Land was later sold to Wickland, which sought to develop it. Wickland was aware of the slag at the site and was advised that the slag contained lead and other heavy metals. Knew that acid caused slag to release lead. Had opportunity to drill test borings and take other samples, but did not.

Court ruled that failure to gather information in hands of buyer's own consultants was not "all appropriate inquiry". Furthermore, Wickland knew that hazardous substances had been "disposed of on, in or at

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the facility." Knowledge of the slag piles and the heavy metals they contained prevents finding Wickland an "innocent purchaser."

2. PVO Int'l, Inc. v. Drew Chem. Corp., 19 Envtl. L. Rptr. (Envtl.L. Inst.) 20077 (D.N.J. 1988)

Drew operated four manufacturing divisions at the property. In 1960s, moved Process Chemicals off-site to new facility. Sold other three divisions and property to PVO. PVO later sought to sell site.

"PVO's assumption of Drew's obligations under consent orders with the predecessor to DEP to waste water and air pollution, which were identified in the Asset Purchase Agreement, provide evidence that PVO 'had reason to know' of contamination." Court could not find this determinative on state of record, however.

3. United States v. Hooker Chems. & Plastics Corp., 680 F. Supp. 546 (W.D.N.Y. 1988)

United States and New York brought suit against Occidental Chemical Co., the successor to Hooker Chemical Company at Love Canal. OCC sought to claim the third party defense, contending that actions by various government agencies had caused the releases from Love Canal.

The court held OCC liable because it had a direct or indirect contractual relationship with the third party governments when it deeded the land to the governments.

4. State of Washington v. Time Oil Co., 687 F. Supp. 529 (W.D. Wash. 1988)

Time Oil owned property. Initially operated by National Oil, Time's subsidiary, which deposited a filtercake containing hazardous materials on the ground. Later property was subleased to Drexler, which spilled quantities of oil and other chemicals on the ground. Time sought to assert 3rd party and innocent purchaser defenses.

Court ruled that Time could not assert 3d party defense because it had a contractual relationship with both National Oil (it subsidiary) and Drexler (a sublessee). Court also rejected "innocent purchaser" defense because Time Oil, as lessor, allowed Drexler to run a "slopping operation." Time thus failed to exercise due care.

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5. United States v. Serafini, 706 F. Supp. 346 (M.D. Pa. 1988)

Parmoff had leased portion of land to City of Scranton for waste disposal. Hazardous substances deposited on land. Property sold to Empire defendants.

Court ruled that abandoned drums were on surface of site when sold to Empire defendants. Government contended that SARA requires inspection of the land and inquiry into past use. Court held it could not go so far, because not apparent that defendants' failure to inspect was inconsistent with good commercial or customary practice.

6. United States v. Monsanto Co., 858 F.2d 160 (4th Cir. 1988), cert. denied, 490 U.S. 1106 (1989)

Suit against site owners/lessors and generator defendants.

Court held that lease arrangements with operator (and acceptance of lease payments from subsequent incarnation of operator) established "contractual relationship." Court further ruled that failure to inspect property and operator's activities showed lack of "due care," preventing owner from claiming "innocent purchaser" defense.

7. United States v. Pacific Hide & Fur Depot, Inc., 716 F. Supp. 1341 (D. Idaho 1989)

Company disposed of 600 PCB capacitors. Two brothers ran business; third was involved except for building a cabin and sorting copper for a short period during one summer. Third brother later because director after operating business sold to Pacific. Corporation later dissolved and gave property to three brothers. One of the two operating brothers died; shares went to wife and children, who later received ownership interest in land. Other operating brother gifted shares to his children.

Court ruled that children who had received their ownership interest by gift without a connection to corporate operations were entitled to innocent landowner status. Court specifically rejected government's position that "at least some inquiry" is required in every circumstance. Same result reached with respect to wife of operating brother and third brother, who had no operational involvement and was absent during the period of disposal.

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8. In re Sterling Steel Treating, Inc., 94 Bankr. 924 (Bankr. E.D. Mich. 1989)

Beckers purchased property at bankruptcy auction. Also had prior dealings with Sterling and were aware of previous industrial use of property.

Court ruled that where Beckers had knowledge of previous use and area containing hazardous substances was open for inspection, failure to inspect showed lack of due care.

9. Westwood Pharmaceuticals, Inc. v. National Fuel Gas Distribution Corp., 737 F. Supp. 1272 (W.D.N.Y. 1990)

Property had been used for industrial purposes since 1866. Immediately past use was for a gas manufacturing plant. Tars and waste oils from gas operation were extracted in concrete separator pits and stored in tanks. Westwood (purchaser) had contractual right of access. Westwood began construction activities and discovered a number of areas of petroleum contamination.

Court ruled that National Fuel Gas (seller) might be able to claim third party defense even though it had contracted to sell property to Westwood. Court agreed that National Fuel Gas could present evidence on whether Westwood's construction was "in connection with" the sales contract.

10. Mesiti v. Microdo, Inc., 739 F. Supp. 57 (D.N.H. 1990)

Former owner can be liable for all costs of CERCLA response if current owner can successfully assert innocent landowner defense.

11. Westwood Pharmaceuticals, Inc. v. National Fuel Gas Corp., 767 F. Supp. 456 (W.D.N.Y. 1991), aff'd, 964 F.2d 85 (2d Cir. 1992)

Reconsideration of the District Court's prior ruling that a seller of property may assert a third party defense if it could show that the release of hazardous substances it had placed on the property was caused by a third party "not in connection" with any contractual relation between the seller and the third party.

Court reaffirmed its position. Innocent landowner defense is a lifting of the "in connection with" burden

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otherwise placed on all parties seeking to claim the third party defense. Third party defense remains otherwise available to non-innocent landowners (such as prior owners and operators, generators, etc.), if they can meet the criteria and the act of disposal was not "in connection with" any contractual relationship between that party and the party causing the release.

Thus, National Fuel is entitled to raise defense if it can show that Westwood's acts caused the release of the hazardous substances and that Westwood's construction on the property was not "in connection with" the contract for sale.

This is the "innocent seller" defense.

12. CPC Int'l, Inc. v. Aerojet-General Corp., 777 F. Supp. 549 (W.D. Mich. 1991)

Chemical manufacturing site owned by bankrupt company. Michigan Department of Natural Resources negotiated deal with Aerojet-General to purchase and remedy site through subsidiary. This was done, but subsidiary failed to operate purge wells and some additional migration occurred.

Court ruled that Aerojet's purchase of property from the bankruptcy trustee was an indirect contractual relationship with the source of contamination. This fact, plus knowledge of the contamination gained during negotiations with MDNR, precludes assertion of the third party defense.

B. Additional Affirmative Defenses

A PRP may successfully avoid liability by showing that EPA or any other plaintiff has failed to establish the elements of a prima facie case under CERCLA or WQARF. For example, a PRP may avoid liability if it can prove that the substance in question is not a "hazardous substance" or that there was no "release" or "threatened release." A PRP may also argue that the costs that the plaintiff is attempting to recover are not appropriate "response costs" under CERCLA because they were not "necessary" or not "consistent with the NCP." If EPA is attempting to impose Section 9606 liability, a PRP can assert that there is not an "imminent and substantial endangerment" to the public health, welfare or environment, although this is a difficult argument, as discussed elsewhere in this paper.

* **WQARF:** WQARF contains some additional express defenses. Liability may be avoided if a PRP establishes

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by a preponderance of the evidence that a release or threatened release is (a) subject to a federal or state permit and that the facility is in compliance with the permit; or (b) caused by the application of a product registered under FIFRA and applied according to label requirements. A.R.S. § 49-283(D)(4), (5). Liability may also be avoided if such liability has been assumed by EPA. A.R.S. § 49-283(D)(6). Finally, the 1992 WQARF amendments added a provision stating that a person is not a responsible party with respect to a hazardous substance located on or beneath property owned or occupied by that person if the hazardous substance is present solely because it migrated from property that is not owned or occupied by that person and that person is not otherwise a responsible party under A.R.S. § 49-282(A)(2) or (3). A.R.S. § 49-282(E). Compare OSWER Directive #9834.6, "Policy Towards Owners of Residential Property at [Federal] Superfund Sites," July 3, 1991 (EPA, as policy matter, generally will not enforce against residential owner in situation of off-site migration; non-residential owners not within policy.)

C. Statute of Limitations

An initial action for the recovery of the costs referred to in Section 9607 must be commenced:

(i) for a removal action, within 3 years after completion of the action, except that such cost recovery action must be brought within 6 years after the grant of a waiver under Section 9604(c)(1)(C) for continued response action; and

(ii) for a remedial action, within 6 years after initiation of physical on-site construction of the remedial action, except that, if the remedial action is initiated within 3 years after the completion of the removal action, costs incurred in the removal action may be recovered in the same action.

42 U.S.C. § 9613(g)(2).

One court has held that Section 9613(g) statutes of limitations do not apply to pre-SARA responses. United States v. Moore, 27 Env't Rep. Cas. (BNA) 1796 (E.D. Va. 1988).

In any action described in Section 9613(g), the court shall enter a declaratory judgment on liability for response costs or damages and such judgment will be binding in any subsequent actions to recover further response costs or damages. 42 U.S.C. § 9613(g)(2). Subsequent actions may be maintained to recover response

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costs at any time during the response action but must be brought no later than 3 years after completion of all response actions. Id.

No action based on rights subrogated pursuant to Section 9613 by reason of payment of a claim may be commenced more than 3 years after the payment of such claim. 42 U.S.C. § 9613(g)(4). The statute of limitations for actions to recover indemnification payments from a PRP is also 3 years. 42 U.S.C. § 9613(g)(5).

The time limitations contained in Section 9613(g) do not begin to run (i) against a minor until such minor reaches 18 years of age or a legal representative is appointed for such minor, whichever is earlier, or (ii) against an incompetent person until the earlier of the date his incompetency ends or the date on which a legal representative is appointed for such incompetent. 42 U.S.C. § 9613(g)(6).

Section 9658 provides for a separate statute of limitations for state law claims based on exposure to hazardous substances, pollutants or contaminants released into the environment from a facility. The statute changes the "commencement date" of the state statute of limitations to the later of the state designated commencement date or the federal commencement date. 42 U.S.C. § 9658(a)(1). The federal commencement date is defined as the date the plaintiff knew or should have known that the injury in question was caused by the applicable hazardous substance, pollutant or contaminant. 42 U.S.C. § 9658(b)(4)(A).

Section 9658 only applies if the threshold test is met, i.e., there must have been a "release" or "threatened release" from a "facility." See Electric Power Bd. of Chattanooga v. Westinghouse, 716 F. Supp. 1069 (E.D. Tenn. 1988). Furthermore, this statute does not apply to actions to remove asbestos from buildings, because Section 9604(a)(3)(B) excludes such actions from CERCLA coverage. See First United Methodist Church of Hyattsville v. United States Gypsum Co., 882 F.2d 862 (4th Cir. 1989).

* **WQARF:** The 1992 amendments to WQARF created for the first time a statute of limitations for cost recovery actions brought by a party other than the state. All such actions must be brought within three years of the completion of the remedial action or within six years of the initiation of on-site physical construction activities for the remediation, removal or disposal of hazardous substances, whichever is earlier. A.R.S. § 49-282(G). This is generally consistent with

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the CERCLA statute of limitations, although worded somewhat differently because WQARF does not distinguish between removal and remedial actions.

D. Rendering Care or Advice

No person shall be liable for costs or damages incurred as a result of actions taken or omitted while "rendering care, assistance, or advice in accordance with the [NCP] or at the direction of an on scene coordinator appointed under such plan, with respect to an incident creating a danger to public health or welfare or the environment as a result of any releases of a hazardous substance or the threat thereof." 42 U.S.C. § 9607(d)(1). This defense is unavailable to a person if the costs or damages were the result of the person's own negligence. Id.; see also A.R.S. § 49-282(F).

No state or local government shall be liable for costs or damages incurred "as a result of actions taken in response to an emergency created by the release or threatened release of a hazardous substance generated by or from a facility owned by another person." 42 U.S.C. § 9607(d)(2). This defense is inapplicable if the costs or damages were the result of gross negligence or intentional misconduct by the state or local government. Id.; see also A.R.S. § 49-282(G).

E. Equitable Defenses

There is a split of authority regarding the applicability of equitable defenses in CERCLA actions. Compare Smith Land & Imp. Corp. v. Celotex Corp., 851 F.2d 86, 90 (3d Cir. 1988) (equitable defense of "unclean hands" rejected) and Kelley v. Thomas Solvent Co., 714 F. Supp. 1439, 1451-52 (W.D. Mich. 1989) (equitable defenses of "laches" and "unclean hands" rejected) with United States v. Marisol, Inc., 725 F. Supp. 833, 844-45 (M.D. Pa. 1989) (motion to strike equitable defenses denied) and United States v. Moore, 703 F. Supp. 455, 462 (E.D. Va. 1988) (motion to strike equitable defenses of "unclean hands" and "estoppel" denied). See also, Karoly & Ream, "Equitable And Other Potential Defenses Under CERCLA," 1992 For The Defense 17 (Jan. 1992). Some courts have held that only statutory defenses are allowed under CERCLA. See, e.g., United States v. J. B. Stringfellow, 661 F. Supp. 1053, 1062 (C.D. Cal. 1987).

F. Constitutional Defenses

A PRP may assert a defense that CERCLA, or a particular application thereof, is unconstitutional.

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However, such defenses are generally unsuccessful. See, e.g., United States v. Cannons Engineering Corp., 720 F. Supp. 1027, 1050 (D. Mass. 1989) (CERCLA liability does not deny equal protection); United States v. Conservation Chem. Co., 619 F. Supp. 162, 214 (W.D. Mo. 1985) (CERCLA is not an ex post facto law because it does not contain any criminal penalties); State ex rel. Brown v. Georgeoff, 562 F. Supp. 1300, 1314 (N.D. Ohio 1983) (CERCLA is not unconstitutionally retroactive). But see Aminoil, Inc. v. EPA, 599 F. Supp. 69, 74 (C.D. Cal. 1985) (CERCLA may violate PRP's due process rights); Reardon v. U.S., 947 F.2d 1509 (1st Cir. 1991) (lien held unconstitutional).

G. Bankruptcy

Given the potentially enormous liability under CERCLA, responsible parties have looked to the federal bankruptcy laws to shield them from liability. Four issues under the federal Bankruptcy Code commonly arise in CERCLA actions.

1. Abandonment: Section 554(a) of the Bankruptcy Code provides that "[a]fter notice and a hearing, the trustee [of the bankruptcy estate] may abandon any property of the estate that is burdensome to the estate or that is of inconsequential value and benefit to the estate." 11 U.S.C. § 554(a). In Midlantic Nat'l Bank v. New Jersey Dep't of Envtl. Protection, 106 S. Ct. 755 (1986), the Supreme Court held that despite the right to abandon under Section 554(a), a trustee in bankruptcy cannot abandon property contaminated with hazardous waste if such abandonment would violate a state environmental statute or regulation.

Some courts have construed Midlantic broadly to serve as a prohibition of any abandonment of contaminated property. See, e.g., In re Wall Tube & Metal Products Co., 831 F.2d 118, 123 (6th Cir. 1987); In re Stevens, 68 B.R. 774, 783 (D. Maine 1987). Other courts have permitted abandonment by construing Midlantic narrowly. See, e.g., In re Smith-Douglass, Inc., 856 F.2d 12, 16 (4th Cir. 1988) (abandonment allowed where property does not pose a serious health threat).

2. Discharge of Cleanup Obligation: In another decision, the Supreme Court addressed the issue of whether a cleanup obligation could be discharged in bankruptcy. In Ohio v. Kovacs, 105 S. Ct. 705 (1985), the Court held that an obligation to clean up a site could not be discharged in bankruptcy, but a monetary obligation to pay for a cleanup could be discharged in

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bankruptcy. However, fines and penalties imposed under CERCLA cannot be discharged. Id. at 710.

3. Automatic Stays: Section 362 of the Bankruptcy Code provides that when a debtor files for bankruptcy, most judicial proceedings against the debtor are automatically stayed. 11 U.S.C. § 362. The purpose of the automatic stay is to give the debtor some "breathing room" to organize its affairs free from the pressures of litigation. However, there are several exceptions to the Bankruptcy Code's automatic stay provision.

One exception is that a proceeding is not stayed if it is a "proceeding by a governmental unit to enforce such governmental unit's police or regulatory power." 11 U.S.C. § 362(b)(4). Based on this exception, the Third Circuit in Penn Terra Ltd. v. Dep't of Envtl. Resources, 733 F.2d 267, 278-79 (3d Cir. 1984), held that the automatic stay provision did not bar the Pennsylvania Department of Environmental Resources from compelling a debtor to correct environmental damage, even though it would deplete the assets of the debtor.

Similarly, other courts have held that filing for bankruptcy does not relieve a debtor of its obligation to comply with environmental regulations or a consent decree. See United States v. Wheeling-Pittsburgh Steel Corp., 818 F.2d 1077, 1087 (3d Cir. 1987) (court held that debtor who filed for bankruptcy must comply with environmental regulations and consent decrees); Matter of Commonwealth Oil Refining Co., 805 F.2d 1175, 1186-87 (5th Cir. 1986), cert. denied, 107 S. Ct. 3228 (1987) (court held that debtor who filed for bankruptcy must comply with RCRA).

Finally, in United States v. Nicolet, Inc., 857 F.2d 202 (3d Cir. 1988), the Third Circuit held that cost recovery actions brought under Section 9607(a) of CERCLA are not stayed under Section 362(a) of the Bankruptcy Code. Id. at 210.

4. Priority of Response Costs: Once a cleanup has been completed, the government's claim for cost recovery may be treated as an administrative expense and may take first priority over other claims. In In re Wall Tube & Metal Products Co., 831 F.2d 118, 123 (6th Cir. 1987), the Sixth Circuit held that cleanup costs were an administrative expense because they were an "actual, necessary cost and expense of preserving the estate." As such, the government's claim was entitled to priority over other claims. The result is that an estate may be depleted by the government's cleanup costs, leaving nothing for other claimants.

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VII. SETTLEMENT

Once EPA determines that a response action is necessary, EPA may allow PRPs to carry out the response action in accordance with a settlement agreement. See 42 U.S.C. § 9622. To encourage settlement, EPA will issue notice letters to all PRPs and ask PRPs to respond by indicating their willingness and ability to undertake the response action. EPA has additional tools it may use to encourage settlements, such as moratoriums on EPA action, mixed funding of response actions, de minimis settlements, and covenants not to sue. Each of these tools is described below. See also Boomgaarden & Breer, "Surveying The Superfund Settlement Dilemma," 27 Land & Water L. Rev. 83 (1992).

A. Notice Letters and Questionnaires

EPA has broad statutory authority under 42 U.S.C. § 9604(e) to request relevant information from PRPs. Generally, EPA will issue one or more of the following:

(1) a hazardous materials questionnaire;

(2) a general notice letter;

(3) a RI/FS special notice letter; and

(4) a RD/RA special notice letter.

1. Questionnaire: An EPA questionnaire can take various forms. Generally, the questionnaire requests information concerning chemical and waste practices at a facility. EPA may send out questionnaires before, in conjunction with, or after notice letters are sent.

2. General Notice Letter: The general notice letter is used to inform PRPs of their potential liability for response costs, to begin or continue the process of information exchange, and to initiate the process of "informal" negotiations. Usually, EPA will send general notice letters to all parties for which there is sufficient evidence to make a preliminary determination of potential liability. EPA considers 30 days an adequate time to prepare a detailed response to a general notice letter.

Sometimes not all PRPs that are identified by EPA are sent a general notice letter. EPA may reserve the right to notify only the largest PRPs and put the burden on those PRPs to contact additional PRPs.

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A PRP should promptly respond to a general notice letter. Of course, it is not necessary, and it is almost always inadvisable, for a PRP to make any admission of liability in its reply letter to EPA.

3. Special Notice Letter: EPA may issue two types of special notice letters: (1) the RI/FS special notice letter, and (2) the RD/RA special notice letter. These notice letters differ from general notice letters in that they trigger various moratoriums on the commencement of certain actions by EPA. See 42 U.S.C. § 9622(e)(2)(A). EPA must use the special notice procedures when it determines that a period of negotiation would facilitate an agreement with PRPs and expedite remedial action. 42 U.S.C. § 9622(e)(1).

In a special notice letter, EPA should include the names and addresses of all PRPs, the volume and nature of substances contributed by each PRP, and a ranking by volume of the substances at the facility. 42 U.S.C. § 9622(e)(1). If this information is unavailable at the time the letter is issued, the information may be disclosed at a later time.

The primary purpose of the special notice letter procedures is to facilitate voluntary settlements through negotiation. Generally, EPA will send the RI/FS special notice letter to PRPs no later than 90 days prior to the scheduled date for initiating the RI/FS. Similarly, the RD/RA special notice letter will be sent to PRPs early enough to allow for the negotiation moratorium prior to the start of any formal response actions. 53 Fed. Reg. 5302-03 (Feb. 23, 1988). PRPs have 60 days to respond to a special notice letter in the form of a proposal to EPA for undertaking or financing the remedial action. 42 U.S.C. § 9622(e)(2)(B). The proposal must be made in good faith.

A typical special notice letter will contain the following elements:

(1) a notification of potential liability;

(2) a discussion about the special notice and subsequent negotiation moratorium;

(3) a discussion about the response activities to be conducted;

(4) a copy of a statement of work or work-plan and a draft administrative order on consent for the RI/FS;

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(5) a copy of a draft consent decree for the RD/RA;

(6) a discussion about what constitutes a "good faith offer" for conducting either the RI/FS or RD/RA;

(7) a release of available and appropriate site-specific information;

(8) a demand for payment of EPA costs incurred to date;

(9) a notification about the administrative record; and

(10) a deadline for response to the notice letter and the name of the EPA representative to contact.

53 Fed. Reg. 5305 (Feb. 23, 1988).

At the conclusion of the negotiation moratorium triggered by the special notice letters, EPA will either proceed with the RI/FS or RD/RA or sign a consent decree with the PRPs to conduct these studies. 53 Fed. Reg. 5306 (Feb. 23, 1988).

If EPA decides not to use the special notice procedures, it is required to notify PRPs in writing of that decision and the reasons why use of the procedures is inappropriate. 42 U.S.C. § 9622(a). Such a decision is not subject to judicial review. Id.

* **WQARF:** As originally enacted, WQARF did not contain specific authority for ADEQ to issue notice letters. This deficiency was remedied in the 1992 amendments. ADEQ now is authorized to issue notice letters requiring appropriate remedial actions. A.R.S. § 49-291(A). A party has 90 days from receipt of a notice letter to make a good faith written offer to conduct all or a portion of the requested remedial actions. A.R.S. § 49-291(B). ADEQ then decides whether to enter into negotiations with the recipient of the notice letter based on the good faith offer submitted by that party. The initial negotiation period lasts for 180 days after ADEQ decides to negotiate, but ADEQ can extend this period if necessary. Decisions by ADEQ to reject a good faith offer, or to terminate negotiations, must be in writing; such decisions are not subject to judicial review. Id.; see also A.R.S. § 49-291(C). Parties that fail to submit a good faith offer after receipt of a notice letter may be subject to a remedial action order issued under A.R.S. § 49-287(D), a judicial

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action to force cleanup by that party, or a judicial action to recover costs of cleanup if ADEQ conducts the necessary remedial action. A.R.S. § 49-291(D).

B. Settlement Procedures

EPA has the authority to negotiate settlements with PRPs "[w]henever practicable and in the public interest . . . in order to expedite effective remedial actions and minimize litigation." 42 U.S.C. § 9622(a). EPA and the United States Justice Department have developed and published a policy statement that establishes the guidelines for evaluating settlement proposals from PRPs. See 50 Fed. Reg. 5034 (Feb. 5, 1985). The Justice Department must review and approve any settlement agreements for remedial actions under Section 9606, and the agreement shall be entered in the appropriate United States district court as a consent decree. 42 U.S.C. § 9622(d)(1). EPA currently uses a model consent decree from which it will, with great reluctance, make some limited deviations. See Notice: Model CERCLA RD/RA Consent Decree, 56 Fed. Reg. 30, 996 (1991). The terms are onerous.

In addition to the use of general and special notice letters to encourage settlement, EPA has adopted the following procedures.

1. Nonbinding Allocations of Responsibility: If an RI/FS has already been completed for the site, EPA can further encourage settlement by providing PRPs with a "nonbinding preliminary allocation of responsibility" ("NBAR") which allocates the percentages of the total response costs among PRPs. 42 U.S.C. § 9622(e)(3)(A). These NBARs take into account the following factors:

(1) volume, toxicity, and mobility of hazardous substances at the site;

(2) strength of the evidence establishing responsibility;

(3) ability to pay;

(4) litigative risks of proceeding to trial;

(5) public interest considerations;

(6) precedential value; and

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(7) other inequities and aggravating factors that EPA may develop.

See id. See also 50 Fed. Reg. 5037-38 (Feb. 5, 1985).

NBARs are intended simply to promote settlement and do not bind EPA in any subsequent negotiations or litigation. In fact, an NBAR is not admissible evidence in any lawsuit. 42 U.S.C. § 9622(e)(3)(C).

* **WQARF:** The 1992 WQARF amendments authorize ADEQ to prepare NBARs. Preparation of a NBAR is at ADEQ's discretion, and the decision not to prepare a NBAR is not subject to judicial review. NBARs are not admissible evidence in any proceeding (judicial or otherwise) relating to status as a responsible party or liability for remedial action costs. A.R.S. § 49-296(A).

2. Mixed Funding Cleanup: SARA expressly authorized EPA to enter into "mixed funding" settlements with PRPs. 42 U.S.C. § 9622(b)(1). When EPA does provide mixed funding, however, it must make "all reasonable efforts" to recover the amount it paid from non-settling PRPs. Id.

EPA has issued interim guidance describing how it will evaluate mixed funding settlements under CERCLA. 53 Fed. Reg. 8279 (Mar. 14, 1988). EPA recognizes three types of mixed funding. The first is where the PRPs agree to conduct the response action, and EPA agrees to allow the PRPs to bring a claim against the Fund for a portion of their costs. This is called "preauthorization." The second type is known as a "cash-out" whereby the PRPs pay EPA for a portion of the response costs in lieu of conducting the response action. The third type of mixed funding is known as "mixed work" and involves a settlement agreement where EPA and the PRPs agree to conduct and pay for discrete portions of the response action. 53 Fed. Reg. 8279 (Mar. 14, 1988).

The primary factors EPA considers when determining whether to accept a mixed funding settlement include:

(1) the strength of the liability case against settlers and any non-settlers. This factor includes:

(a) litigative risks in proceeding to trial against settlers; and

(b) the nature of the case remaining against non-settlers after the settlement;

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(2) the government's options in the event settlement negotiations fail (e.g., if a state cost-share will be available for a Fund-lead action);

(3) the size of the portion or operable unit for which the Fund will be responsible (or the amount of the PRP's offer); and

(4) the good-faith negotiations and cooperation of settlers and other mitigating and equitable factors.

53 Fed. Reg. 8281 (Mar. 14, 1988).

EPA's decision is not subject to judicial review. 42 U.S.C. § 9622(b)(2).

* **WQARF:** The 1992 WQARF amendments specifically authorize mixed funding agreements. A decision by ADEQ not to enter into a mixed funding agreement is not subject to judicial review. A.R.S. § 49-296(B).

3. De Minimis Settlements: "Whenever practicable and in the public interest," EPA must promptly reach a final settlement with a PRP if such a settlement involves "only a minor portion of the response costs" at a facility and at least one of the following conditions is met:

(i) In comparison to other hazardous substances at the facility, the amount of the hazardous substances contributed by the PRP to the facility and the toxic or other hazardous effects of those substances are "minimal;" or

(ii) The PRP (a) is the owner of the property on or in which the facility is located, (b) did not conduct or permit the generation, transportation, storage, treatment, or disposal of any hazardous substance at the facility, (c) did not contribute to the release or threat of release of a hazardous substance at the facility through any act or omission, and (d) the PRP purchased the property without actual or constructive knowledge that the property was used for the generation, transportation, storage, treatment, or disposal of any hazardous substance.

42 U.S.C. § 9622(g)(1).

A PRP who has entered a de minimis settlement with EPA "shall not be liable for claims for contribution regarding matters addressed in the settlement." 42 U.S.C. § 9622(g)(5). A de minimis settlement does not discharge any other PRPs unless the settlement so

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provides, but it does reduce the potential liability of other PRPs by the amount of the settlement. Id. In June, 1987; August, 1989; and July, 1992, EPA published memoranda on de minimis settlements. 52 Fed. Reg. 24333 (June 30, 1987); 54 Fed. Reg. 34235 (August 18, 1989); 57 Fed. Reg. 29312 (July 1, 1992).

* **WQARF:** The 1992 amendments added a de minimis settlement provision to WQARF. ADEQ may enter into a de minimis settlement with a party, if in the public interest and not inconsistent with equitable proportionment and the factors set forth in A.R.S. § 49-285(F), if the settlement involves only a minor portion of total remedial action costs at a facility and, in the judgment of ADEQ, both of the following conditions are met: (1) the amount of the hazardous substances contributed by the party is minimal in comparison to the amount of other hazardous substances at the facility; and (2) the toxic or other hazardous effects of the hazardous substances contributed by the party are minimal in comparison to the toxic or other hazardous effects of other hazardous substances at the facility. A.R.S. § 49-293(A). Although similar on its face to the CERCLA de minimis provisions, the WQARF provisions are simpler and broader than the interpretation given to the CERCLA de minimis provision by EPA in various of its guidance documents.

Decisions by ADEQ not to enter into de minimis settlements are not subject to judicial review. A.R.S. § 49-293(B). Finally, covenants not to sue and contribution protection may be provided in de minimis settlements. A.R.S. § 49-293(C) & (D).

4. Covenants Not To Sue and Reopeners: EPA may provide any person with a covenant not to sue concerning any CERCLA liability to the United States, including future liability, if each of the following conditions is met:

(i) The covenant not to sue is in the public interest.

(ii) The covenant not to sue would expedite response action consistent with the NCP.

(iii) The person is in full compliance with a consent decree under Section 9606 for response to the release or threatened release concerned.

(iv) The response action has been approved by EPA.

42 U.S.C. § 9622(f)(1).

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EPA shall provide a covenant not to sue with respect to future CERCLA liability to the United States for a future release or threatened release to any person eligible for a covenant not to sue under Section 9622(f)(1) for the portion of remedial action which involves:

(i) the transport and secure disposition offsite of hazardous substances if EPA has rejected a proposed remedial action that is consistent with the NCP that does not include such offsite disposition and has then required offsite disposition; or

(ii) the treatment of hazardous substances so as to destroy, eliminate, or permanently immobilize the hazardous constituents of such substances such that neither the hazardous substances nor any byproducts of the treatment process pose any significant risk to public health, welfare, or the environment.

42 U.S.C. § 9622(f)(2).

A covenant not to sue concerning future CERCLA liability to the United States shall not take effect until EPA certifies that remedial action has been completed in accordance with CERCLA. 42 U.S.C. § 9622(f)(3).

In assessing the appropriateness of a covenant not to sue, EPA shall consider whether the covenant, or a condition in the covenant, is in the public interest based upon such factors as the following:

(i) The effectiveness and reliability of the remedy, in light of the other alternative remedies considered for the facility.

(ii) The nature of the risks remaining at the facility.

(iii) The extent to which performance standards are included in the order or decree;

(iv) The extent to which the response action provides a complete remedy for the facility.

(v) The extent to which the technology used in the response action is demonstrated to be effective.

(vi) Whether the Fund or other sources of funding would be available for any additional remedial actions that might eventually be necessary.

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(vii) Whether the remedial action will be carried out, in whole or in significant part, by the PRPs themselves.

42 U.S.C. § 9622(f)(4).

In determining how to limit a person's liability through a covenant not to sue, EPA "shall be guided by the principle that a more complete covenant not to sue shall be provided for a more permanent remedy undertaken by such parties." 42 U.S.C. § 9622(c)(1). Any covenant not to sue shall be subject to the satisfactory performance by such party of its obligations under the agreement. 42 U.S.C. § 9622(f)(5).

Except for covenants not to sue entered under Section 9622(f)(2) or relating to de minimis settlements, a covenant not to sue a person concerning future CERCLA liability to the United States shall include an exception to the covenant (a "reopener") that allows EPA to sue such person concerning future liability resulting from the release or threatened release that is the subject of the covenant where such liability arises out of conditions that are "unknown" at the time EPA certifies the remedial action as complete under Section 9622(f)(3). 42 U.S.C. § 9622(f)(6)(A). In extraordinary circumstances, EPA may forego inclusion of such an exception. See 42 U.S.C. § 9622(f)(6)(B); Addison, Reopener Liability Under Section 122 of CERCLA: From Here to Eternity, 45 Sw. L.J. 1081 (1991).

* **WQARF:** The 1992 amendments to WQARF authorize ADEQ to grant covenants not to sue in settlement agreements. A.R.S. § 49-292(B). Unlike CERCLA, such covenants take effect at the moment the settlement agreement becomes final (not when the remedial action is certified as complete). Id. Covenants not to sue with respect to future liability must contain a reopener for conditions not known to ADEQ at the time the covenant was executed. Id. Finally, execution of a covenant not to sue does not preclude ADEQ from suing a party from failing to comply with the terms of the settlement agreement of which the covenant is a part. Id.

5. Contribution Protection: EPA has been willing to include contribution protection clauses in settlement agreements with PRPs which allow a settling PRP the right to contribution against non-settling PRPs, while protecting the settlor from liability to other PRPs. See Mason, "Contribution, Contribution Protection and Nonsettlor Liability Under CERCLA: Following Laskin's Lead," 19 B.C. Envtl. Aff. L. Rev. 73 (1991). Section 9622(h)(4) provides that a PRP who has resolved its liability to the United States in a settlement with

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EPA "shall not be liable for claims for contribution regarding matters addressed in the settlement." 42 U.S.C. § 9622(h)(4).

* **WQARF:** The 1992 amendments to WQARF authorize ADEQ to grant contribution protection to parties that have resolved their liability to the state in judicially approved consent decrees. This protection extends both to claims for contribution and to claims for cost recovery. A.R.S. § 49-292(C). Although the new settlement provisions added in 1992 generally allow ADEQ to settle with responsible parties either through judicial consent decrees or through other types of non-judicial settlements (see A.R.S. § 49-292(A)), protection against contribution or cost recovery can be granted only in judicially approved consent decrees. All settlements entered as consent decrees must be subject to a 30 day public comment period prior to being submitted to the court for approval. A.R.S. § 49-292(G).

To date, ADEQ has entered into only one significant WQARF settlement requiring a settling party (Motorola) to perform future work at the site in question.

6. Response Action Contractors: Any person who enters into a written agreement with EPA, another federal agency, an authorized state, or any PRP carrying out a settlement agreement shall not be strictly, jointly, and severally liable under CERCLA. The contractor continues to be liable, however, for any injury or damage caused by his negligence or intentional misconduct. In addition, EPA can agree to indemnify a response action contractor against liability for negligence arising out of response action activities carried out for EPA, an authorized state, or a settling PRP.

* **WQARF:** A person is not liable for costs or damages incurred solely as a result of an action taken or omitted while rendering care, assistance or advice that is consistent with rules adopted by the director, is consistent with the national contingency plan or is under the director of an on-scene coordinator appointed pursuant to the National Contingency Plan and that is rendered with respect to a release or a threat of a release of a hazardous substance that creates a danger to public health or the environment. This subsection does not preclude liability for costs or damages that result from that person's negligence. A.R.S. § 49-283(F).

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A state or local government is not liable for costs or damages incurred has a result of an action taken in response to an emergency created by the release or threatened release of a hazardous substance that is generated by or from a facility owned by another person. This subsection does not preclude liability for costs for damages that result from gross negligence or intentional misconduct by this state or local government. For purposes of this subsection, reckless, willful or wanton misconduct constitutes gross negligence. A.R.S. § 49-283(G).

C. Enforcement

Any consent decree must contain stipulated penalties for violations of the decree not to exceed $25,000 per day. 42 U.S.C. § 9621(e)(2). Such stipulated penalties shall not affect the authority of the court to order compliance with the specific terms of the decree. Id.

Where the parties agree, a consent decree may provide for administrative enforcement. Id. A PRP who is a party to an administrative order or consent decree and who fails or refuses to comply with any term of the order or decree shall be subject to civil penalties in accordance with Section 9609. 42 U.S.C. § 9622(1).

D. Judicial Review of Settlements

Prior to an action being brought for cleanup costs, the responsible parties, one or all, may enter in to an agreement with the EPA apportioning liability for response costs. These consent decrees must be approved by the court before they will be effective. 42 U.S.C. § 9622(d)(1)(A). The courts, in determining the enforceability of consent decrees, have generally focused on whether the agreement is fair, adequate, reasonable and consistent with the Constitution and the mandate of Congress. In their analyses, courts are mindful of the strong public policy in favor of voluntary settlement of litigation. Consequently, where the parties have negotiated and reached a settlement, for the most part, courts have been reluctant to interfere so long as the settlement is reasonable, measured in light of all plausible interpretations. See, e.g., United States v. Rohm & Haas, 721 F. Supp. 666 (D.N.J. 1989); United States v. Acton Corp., 733 F. Supp. 869 (D.N.J. 1990); United States v. Vertac Chemical Corp., 756 F. Supp. 1215 (E.D. Ark. 1991).

In Rohm & Haas, supra, the court stated that before entering a consent decree under CERCLA, the court

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must satisfy itself that the proposed decree is fair, adequate and reasonable, and consistent with the Constitution and the mandate of Congress. The court held that its "core concern" in deciding whether to approve the consent decree is whether it furthers the public's interest as expressed in CERCLA, i.e., to expedite remedial action and minimize litigation. The court further held that where a money settlement is shown to bear a reasonable relation to some plausible estimate, or range of estimates, of the settling parties' volumetric contribution, CERCLA requires that such a settlement be accepted and entered as a consent decree. The court noted that it was not the court's assignment to embark on a fact finding mission, but rather to ensure that the settlement agreement is a reasonable compromise of litigation. Id. at 680.

In Acton Corp., supra, the court likewise noted that it should approve an entry of a consent decree only when it is fair, adequate, reasonable, and consistent with the Constitution and the mandate of Congress. In evaluating a proposed consent decree, the court stated that it should examine six factors: (1) the relative costs and benefits of litigating the case under CERCLA; (2) the risk of establishing liability on the part of the settlors; (3) the good faith efforts and adversarial relationship of the negotiators who drafted the settlement; (4) the reasonableness of the settlement ad compared to the settlor's potential volumetric contribution; (5) the ability of the settlors to withstand a greater judgment; and (6) the effect of the settlement on the public interest as expressed in CERCLA.

In addressing non-settling parties' claims that the consent decree was unfair because it allocated to them a share disproportionate to their volumetric contribution of waste to the site, the court noted that a PRP's liability under the settlement agreement may also depend on the toxicity of the waste. In approving the settlement, the court reasoned that it was beyond its appropriate scope of review to undertake a de novo examination of the liability allocation. Id. at 872-873.

In Vertac Chemical Corp., supra, the court stated that although money defendant had to pay under the CERCLA consent decree was only a small percentage of the total United States response costs and defendant was not a de minimis party, the consent decree was fair, reasonable and consistent with CERCLA objectives. The court found that: (1) the decree reflected good faith, arms' length negotiations with EPA; (2) the $1.84 million settlement represented about 50% of defendant's net worth; and (3) stringent limitations were imposed on

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defendant to ensure it would be able to meet its financial obligations under the decree. Id. at 1218.

* **WQARF:** In one recent case, a federal court issued an order approving a "cash out" settlement (i.e., a settlement where the PRP agreed to pay cash but not to perform additional work in the future) reached by ADEQ and a PRP in the West Central Phoenix WQARF site. ADEQ agreed to execute a cash out settlement in this case in order to fund its continuing response actions at the site. The order approving the settlement (authored by Judge Broomfield) provides a crisp synopsis of the standards that apply to judicial review of settlements under the WQARF program. See State v. Nucor Corp., No. Civ 91-1094 (D. Ariz., order dated September 15, 1992).

VIII. COST RECOVERY ACTIONS

A cost recovery action is an action filed under Section 9607 in which either the government or a private party attempts to secure from PRPs response costs expended to clean up a site.

A. Limited Prerequisites to a Private Party Cost Recovery Action

Private cost recovery actions may be brought under Section 9607(a)(4)(B).

1. Pre-Authorization Not Required: Although some early decisions held that government approval of a cleanup plan ("pre-authorization") was a necessary precondition to a private party cost recovery action, it is now fairly certain that no pre--authorization is necessary. See, e.g., Wickland Oil Terminals v. Asarco, Inc., 792 F.2d 887, 892 (9th Cir. 1986); Rockwell International Corp. v. IU International Corp., 702 F. Supp. 1384, 1387 (N.D. Ill. 1988).

2. NPL Listing Not Required: A site does not need to be listed on the NPL before a private party can bring a cost recovery action. See, e.g., State of New York v. Shore Realty Corp., 759 F.2d 1032, 1046 (2d Cir. 1985); United States v. Conservation Chem. Co., 628 F. Supp. 391, 405 (W.D. Mo. 1985).

3. Federal or State Activity Not Required: No federal, state, or local government action (such as the incurrence of response costs) need precede a private cost recovery action. See, e.g., Cadillac Fairview/California Inc. v. Dow Chem. Co., 840 F.2d 691,

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694 (9th Cir. 1988); City of New York v. Exxon Corp., 24 Env't Rep. Cas. (BNA) 1361, 1367 (S.D.N.Y. 1986).

4. Notice to PRPs Not Required: Although Section 9607 does not specifically address the issue, it is generally accepted that a private party seeking to recover its response costs need not first comply with the notice requirements of Section 9612(a) and notify other PRPs of the action. See, e.g., Walls v. Waste Resource Corp., 823 F.2d 977, 979-81 (6th Cir. 1987); Dedham Water Co. v. Cumberland Farms Dairy, Inc., 805 F.2d 1074, 1077-82 (1st Cir. 1986).

B. Elements of a Private Cost Recovery Action

1. Response Costs Incurred: The private party must have incurred some response costs to establish a prima facie case for recovery under Section 9607. This requirement has been construed broadly and courts have allowed recovery of the costs of evaluating and monitoring a release even if no further costs are incurred. See, e.g., Brewer v. Ravan, 680 F. Supp. 1176, 1179 (M.D. Tenn. 1988); Artesian Water Co. v. Government of New Castle County, 659 F. Supp. 1269, 1285 (D. Del. 1987), aff'd, 851 F.2d 643 (3d Cir. 1988).

2. Causation: A private party must demonstrate a causal connection between the release or threatened release and the incurrence of response costs. See, e.g., Artesian Water Co. v. Government of New Castle County, 659 F. Supp. 1269, 1282 (D. Del. 1987), aff'd, 851 F.2d 643 (3d Cir. 1988).

3. Substantial Consistency with NCP: Following promulgation of the 1990 NCP, plaintiffs in private cost recovery actions must prove that the costs they incurred were substantially consistent with the NCP. See also Cadillac Fairview/ California, Inc. v. Dow Chem. Co., 840 F.2d 691, 695 (9th Cir. 1988). The provisions of the NCP governing privately conducted cost recoveries are set forth in 40 C.F.R. § 300.700. See also Pusch, "Private Party Cleanup: Consistency Under the 1990 National Contingency Plan," 19 B.C. Envtl. Aff. L. Rev. 217 (1991).

C. Costs Recoverable

A private party may recover necessary costs of response. 42 U.S.C. § 9607(a)(4)(B). Because "response costs" are not defined in CERCLA, a fair amount of litigation has addressed what types of response costs are recoverable in a Section 9607(a)(4)(B) cost recovery action. The following is a representative sample of litigated areas.

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1. Recoverable Response Costs:

   a. site investigation;

   b. sampling and analysis;

   c. removal of hazardous substances;

   d. medical testing and monitoring of individual persons (split in authority on this issue);

   e. medical testing and screening to assess effect on public health;

   f. relocation (but not permanent relocation of business);

   g. supplying adequate water supply, if actual or threatened contamination exists;

   h. site security;

   i. constructing drum storage warehouses and remedying leaking drums;

   j. excavating contaminated sewer line and decontaminating building;

   k. costs of complying with RCRA;

   l. litigation costs (split in authority on this issue);

   m. future response costs consistent with the NCP; and

   n. attorneys fees (split in authority), see Barkett, "The CERCLA Attorney Fee Debate Heats Up," 7 Toxics L. Rep. (BNA) 1448 (May 5, 1993). The Ninth Circuit recently has ruled that attorneys' fees are not recoverable costs in a CERCLA action. See Stanton Road Associates v. Lohrey Enterprises, 984 F.2d 1015 (9th Cir. 1993).

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2. Nonrecoverable Costs:

a. medical monitoring costs of individuals (split in authority on this issue);

b. economic losses;

c. business losses related to suspension of business until cleanup completed;

d. personal injury and property damage; and

e. punitive damages.

D. Defenses

Courts disagree as to what defenses are available in private party cost recovery actions. Some courts have held that defendants in private cost recovery actions are limited to the three defenses listed in Section 9607 (acts of God, acts of war, and acts of third parties over whom the defendant had no control and whose acts could not reasonably have been foreseen). See, e.g., Artesian Water Co. v. Government of New Castle County, 659 F. Supp. 1269, 1297-98 (D. Del. 1987), aff'd, 851 F.2d 643 (3d Cir. 1988). Other courts have recognized equitable defenses such as waiver, laches, accord and satisfaction, res judicata, payment, and unclean hands. See, e.g., Mardan Corp. v. C.G.C. Music, Ltd., 600 F. Supp. 1049, 1056-58 (D. Ariz. 1984), aff'd on other grounds, 804 F.2d 1454 (9th Cir. 1986).

* **WQARF**: A private cost recovery action also exists under WQARF. A.R.S. § 49-285(A) holds PRPs liable for remedial action costs "incurred by this state, a political subdivision of this state or any other person in a manner consistent with the rules and procedures adopted under § 49-282, subsection E." (emphasis added). In order to preserve a right to maintain a private cost recovery action against responsible parties, a party conducting a remedial action must ensure that the remedial action "when evaluated as a whole" is in "substantial compliance" with the rules and procedures adopted pursuant to A.R.S. § 49-282(E). A.R.S. § 49-285(B) (note that the "substantial compliance" requirement applies to actions conducted by the State as well as to actions conducted by private parties). ADEQ approval of a proposed remedial action is not required in order to preserve a right to pursue private cost recovery, but such approval creates a presumption that the action is in substantial

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compliance with the rules and procedures adopted pursuant to A.R.S. § 49-282(E). Id. Parties seeking ADEQ's approval of a proposed remedial action must reimburse ADEQ for its costs in reviewing the proposed action (unless the Department waives such reimbursement); such costs constitute remedial action costs that ultimately may be recovered from responsible parties. Id.

Ariz. Admin. Code R18-7-108 and R18-7-109 set forth the requirements for the conduct of remedial actions.

E. Alternative Types of Relief Under Section 9607(a)(4)(B)

1. Injunctive Relief: Section 9607's private recovery cause of action does not provide for a private right of injunctive relief. See, e.g., Cadillac Fairview/California, Inc. v. Dow Chem. Co., 840 F.2d 691, 696-97 (9th Cir. 1988).

2. Natural Resources Damages: A private cost recovery action does not allow recovery for damages to natural resources because liability for such damages flows only to the United States government or a state. See 42 U.S.C. § 9607(f). (See discussion at V.C.1.)

3. Declaratory Relief: Section 9607(a)(4)(B) has been generally held to support a PRP's action for a declaratory judgment fixing the liability of other PRPs. A PRP must establish four elements to be entitled to a declaratory judgment against other PRPs on the issue of liability:

(i) the site at issue is a "facility" under CERCLA;

(ii) the defendants are PRPs under Section 9607(a);

(iii) a release or threatened release has occurred at the site; and

(iv) the plaintiff has incurred response costs.

See, e.g., Southland Corp. v. Ashland Oil, Inc., 696 F. Supp. 994, 999 (D.N.J. 1988).

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F. Government Cost Recovery Actions

1. Elements of Recovery: To establish liability under CERCLA, the federal government must establish the following:

(i) the site in question is a "facility;"

(ii) a "release" or "threatened release" of a "hazardous substance" from the site has occurred;

(iii) the release or threatened release has caused the government to incur response costs; and

(iv) the defendants fall within at least one of the classes of PRPs listed in Section 9607(a)(1)-(4).

United States v. Mottolo, 695 F. Supp. 615, 622-23 (D.N.H. 1988); United States v. Serafini, 28 Env't Rep. Cas. (BNA) 1162, 1164-66 (M.D. Pa. 1988).

2. Causation: Several defendants in government cost recovery actions have challenged liability on the basis that the government cannot prove that they caused the release of a hazardous substance. The courts generally have held that it is sufficient if the government can show that the hazardous substance released is like the hazardous substance placed there by the defendant. See, e.g., United States v. Bliss, 667 F. Supp. 1298, 1309-10 (E.D. Mo. 1987); United States v. Wade, 577 F. Supp. 1326, 1333-34 (E.D. Pa. 1983).

3. Amount of Hazardous Substance Released: Several defendants also have unsuccessfully challenged government cost recovery actions based upon the argument that the concentration of hazardous substances was so small that a response action was not necessary. Most courts have responded by stating that the government only has to prove that the waste contains an unspecified quantity of substance identified as hazardous under CERCLA. See, e.g., United States v. Wade, 577 F. Supp. 1326, 1340 (E.D. Pa. 1983); United States v. Carolawn Co., 21 Env't Rep. Cas. (BNA) 2124, 2126-27 (D.S.C. 1984). As noted above, however, the Third Circuit recently has ruled in a cost recovery action brought by the government that a defendant may not be liable for response costs if the amount of hazardous substances it released is less than background levels of contamination. See United States v. Alcan Aluminum Corp., 990 F.2d 711 (2d Cir. 1993).

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4. Costs Recoverable: The government may recover response costs so long as those costs are "not inconsistent with" the NCP. 42 U.S.C. § 9607(a)(4)(A). See also United States v. Mottolo, 695 F. Supp. 615, 630 (D.N.H. 1988).

5. August 1992 Proposed Rule: EPA recently proposed a rule clarifying the amount of costs it can recover from PRPs where EPA undertakes to clean up a site itself. See 57 Fed. Reg. 34742 (August 6, 1992). Under the proposal, EPA would be authorized specifically to recover from PRPs its direct costs, indirect costs (i.e., the cost of running the CERCLA program in general, including administrative management, enforcement and legal costs, and research and development costs), and interest. Significantly, EPA asserts that private parties must pay all of its costs, even if such costs are "unnecessary" or "unreasonable." See 57 Fed. Reg. at 34744. EPA's proposal in general, and this aspect of the proposal in particular, have come under heavy criticism from the regulated community. See, e.g., "EPA Proposed Rule on Superfund Cost Recovery: Streamlining or Steamrolling?," 7 Toxics L. Rep. (BNA) 450 (September 9, 1992).

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Subchapter 7.2

THE EVOLUTION OF ENVIRONMENTAL CLEANUP REQUIREMENTS

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I. ENVIRONMENTAL LAW HAS EVOLVED TO REQUIRE CLEANUP OF "SIGNIFICANT" CONTAMINATION

When the environmental renaissance of the late 1960s and early 1970s occurred, the public demand was for a "clean environment," free from the harmful effects of pollution. The goals of many of the environmental laws adopted at that time reflected the belief that society could return much of its environment to a pristine state in a relatively short period of time. Recurring advances in the laboratory's ability to detect minute quantities[1] of pollutants in our environment has focused attention on the amount of pollutants we are willing to tolerate in our environment. Most environmental professionals realize that eliminating all traces of pollution at today's detection limits, let alone tomorrow's, is not practicable.

Despite the realization among most environmental professionals that achieving "zero" levels of contamination is not feasible, much of the public, certainly the media, often the business community, some lenders, and even a large number of commercial attorneys performing due diligence for various transactions react adversely to test results that pollutants are present. An appropriate response is that pollutants are bound to be present where people have been; in some cases what we consider to be environmental contamination may be altogether naturally occurring[2] (i.e., radon); and, finally, that the right question to ask is whether a "significant" quantity of pollutants either requiring cleanup or some other response is present. (EPA asks this question at a CERCLA site when it requires cleanup. It wants to eliminate what it considers to be significant levels of pollutants in the environment.) This, of course, leads to the question: how do you define "significant?" Typically, significance is determined in the context of protection of public

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[1] Paustenbach, "Health Risk Assessment: Opportunities and Pitfalls," 14 Columbia J. of Environmental Law 379,383 (1989).

[2] The wonderful odor of pine forests in northern Maine is due to detectable levels of carcinogenic polycyclic aromatics. Furthermore, naturally occurring carcinogens are extremely common in most of the plants consumed by humans, posing natural cancer hazards that may be 10,000 times the significance of those posed by the artificial pesticide residues that may remain on the plants. Id.

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health, welfare and the environment. Combined scientific, economic and political factors affect the determination as to the level of pollution society accepts at a particular site. The sciences initially provide the theoretical framework. Politics and economics affect the result selected. (The impact of these two factors is minimal under CERCLA. As detailed later in this paper, these factors generally affect CERCLA sites more in terms of how cleanup will be achieved as opposed to the level to be achieved.) The reduction of these broad policy issues to standards attempting to reflect "significance" occurs occasionally in statutes, more frequently in regulations, quite commonly in agency "guidance" documents, and, to a much lesser extent, in common law, with the application to a particular fact situation typically being resolved on a case-by-case basis at the agency level, in private negotiations and sometimes in the courts.

In the United States, a critical question at any site of a hazardous substance release is whether cleanup is required and, if so, how much must be done. The question of the extent of cleanup required arises in a number of contexts. A site may be under the scrutiny of the regulatory process with an environmental agency. (The context of this paper focuses on the CERCLA process.) The responsible party may be required to characterize and remediate hazards to some standards with which the regulators must be satisfied.[3]

Even where regulators are not yet involved, the issue of "significant" pollution often arises. Commercial concerns arising from the transfer or financing of property interests frequently result in private party negotiations over the degree of cleanup required once a "significant" problem is discovered. A spill or leak discovered at a facility may lead the environmental staff to conduct its own cleanup.

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[3] Much time and money can be spent on the negotiation of cleanup standards. Orloff, "Risk Assessment: Fact and Fiction," 3 Law and the Environment 3 (1987). To the extent cleanup standards are better defined by statute and regulation so there is less to decide on a "case-by-case" basis, transactional costs associated with remediation may be minimized. On the other hand, the costs of complying with an excessively strict cleanup standard, which previously had been developed with certain assumptions that so obviously differ radically from the situation at hand, can dwarf any transactional costs that might be incurred in convincing EPA this cleanup standard should not apply in this situation.

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As a general rule for all contaminated sites, the following thought process should be followed: In order to answer the question of "how clean is clean," the party conducting the cleanup must consider a multitude of issues. First, what environmental laws, regulations or other requirements apply at this specific site? (With a CERCLA NPL site, the applicability of other environmental laws becomes important in the context of "ARARs.") The jurisdictional issues must be resolved before one can determine what cleanup procedures and levels will apply. Once the party conducting the cleanup decides which legal cleanup requirements apply, it must determine what procedures are required under the relevant environmental programs. Typically, a party first must investigate and determine the extent of contamination; then it must apply the standards the cleanup must achieve under each applicable environmental program; selection and implementation of a remedial alternative occurs; and finally the party must verify at the appropriate points of compliance (and with the requisite amount of data collection) that the requisite cleanup standards have been met.

II. TOXICOLOGY, RISK ASSESSMENT AND RISK MANAGEMENT: THE SCIENTIFIC UNDERPINNING OF CLEANUP STANDARDS AND THE DETERMINATION OF WHAT CONTAMINATION IS "SIGNIFICANT."

In order to determine cleanup standards, regulators who developed the cleanup program over the years have decided that remedy selection requires knowledge (or at least an estimation) as to whether there are levels of pollutants in a particular medium that would pose a "significant" risk of harm to public health or the environment. Assessment of risks generally is conceived to consist of the three steps of toxicity assessment (hazard identification and dose-response relationships), exposure assessment and the characterization of the resulting risks.[4] In the environmental remediation context, an additional key step is the source/release assessment, in which the amount and locations of the pollutants at issue must be determined.[5] These four steps typically occur at every

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[4] See generally EPA, Office of Health and Environmental Assessment, The Risk Assessment Guidelines of 1986 (EPA/600/8-87/045 August, 1987).

[5] Cohrssen & Covello, Risk Analysis: A Guide to Principles and Methods for Analyzing Health and Environmental Risks at 7 (1989); NTIS PB 89-137772.

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NPL site. Only when one knows the pollutants, their concentration and locations can one proceed with the toxicity and exposure assessment in order to characterize risk at a particular site in order to determine its significance.

For pollutants with a "toxic" or adverse effect on exposed organisms, a requisite step is the toxicity assessment. In order to determine a pollutant's toxicity, first it is necessary to determine what types of adverse effects the pollutant can have on affected organisms.[6] Once the hazards have been identified, one must ascertain the level at which the pollutant will produce the adverse effect in the exposed organism. A cleanup level generally needs to be no more stringent than the threshold level below which no adverse responses can be detected. Many pollutants have such a threshold level.[7] Other pollutants, particularly

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[6] A major question is what organisms will be considered in this toxicity assessment. Obviously human health is a principal consideration. If, however, we study the species of plant or animal most sensitive to the effects of this pollutant, a cleanup standard may evolve that potentially could be orders of magnitude more stringent than the current CERCLA standard required to protect human health. An example of this is the development of the aquatic and wildlife surface water quality standards for toxics under the Clean Water Act, which tend to be far more stringent than human, health-based drinking water standards. Under the requirements of Section 304(a)(1) of the Clean Water Act, acute and chronic toxic endpoints are developed using the latest data on the type and extent of adverse effects on organisms such as plankton, fish, shellfish, wildlife and plant life that can be expected from presence of pollutants in waters. See EPA Office of Water, Technical Support Document for Water Quality-Based Toxics Control at 2 (April 1990 Revised Draft).

[7] EPA Office of Emergency and Remedial Response, Risk Assessment Guidances for Superfund (hereinafter referred to as "RAGS") Vol. I Human Health Evaluation Manual (Part A) at 7-6 (Interim Final December, 1989; EPA/540/1-89/002). Thresholds are common for most non-carcinogenic effects. The threshold is expressed as a reference dose (RfD). Different RfDs may be set for one pollutant, such as levels for a permissible daily exposure over a lifetime (chronic RfD), for a shorter term exposure (subchronic RfD) or for developmental effects (developmental RfD). Each method of exposure (oral, dermal contact, inhalation, etc.) may have a different RfD

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carcinogens, are treated by the regulatory agencies as having the potential to produce possibly adverse effects at all levels. For these chemicals, any exposure will be associated with some degree of risk.[8] For the CERCLA program, EPA will not deviate from this assumption.

The relationship of dose to adverse response may be determined through experimental administration of varying doses to non-human organisms or by epidemiological studies. Few pollutants, however, have the type of data that allow easy determination of a dose response. Most pollutants have dose-response curves for human health extrapolated from a relatively few data points based on tests run on small numbers of animals.[9] The EPA generally uses a conservative "linearized multistage" model for its carcinogen risk assessments.[10]

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numeric value. Id. at 7-5 to 7-6.

[8] For purposes of determining cleanup requirements, EPA has adopted a hypothetical mechanism for cancer causation that assumes there is no threshold level for any carcinogen. EPA's regulatory position is that carcinogenesis has "essentially no level of exposure to such a chemical that does not pose a finite probability, however small, of generating a carcinogenic response." RAGS, Vol. 1 at 7-10. This assumption appears to be scientifically questionable although EPA believes such conservatism is appropriate. (Cf. S. M. Cohen & L. B. Ellwein, "Cell Proliferation in Carcinogenesis," 249 Science 1007 (August 31, 1990); M.A. Cleaves, "Assessment of Carcinogenic Risk and the Delaney Clause: The Search for A Better Standard," 2 Journal of Law and Health 173, 198-202 (1987-88). Furthermore, environmentalists have been criticized for the tendency to consider all carcinogens as equal hazards, when this is demonstrably not the case. Paustenbach, 14 Columbia J. of Environmental Law at 386-7.

[9] Stenzel, "A Proposal for a National Risk Assessment Clearing House," 14 Columbia J. of Environmental Law 549, 557-8 (1989).

[10] Latin, "Good Science, Bad Regulation and Toxic Risk Assessment," 5 Yale J. on Regulation 89, 99 (1988).

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One of the major problems with the dose-response aspect of risk assessment is that insufficient data exist for most pollutants to be able to create an accurate dose-response curve to use in prediction of risk. Typically, data derive from large dose administrations of chemicals in animal studies over short periods of time. Assumptions then must be made to draw a dose response curve and to extrapolate how that curve might look for humans exposed for lower doses over longer periods of time.[11]

Once the toxicity assessment (hazard identification and dose response determination) and source release assessments are complete, an assessment of the routes of pollutant transport to and exposure of the affected organisms is conducted.[12] This "exposure assessment" determines the magnitude, route and duration of contact by the exposed organisms with the pollutants.

There are at least four risk management approaches that can be used to set acceptable cleanup levels for pollutants. The most conservative approach, occasionally advanced by some environmental advocacy groups, is that cleanup should occur to a level of zero risk.[13] Generally, this means cleaning up so that no pollutants are left for which this party is responsible.[14] This is not the approach under CERCLA.

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[11] The data relied upon generally are developed based on administration of maximum tolerated doses to animals. The extrapolation to human exposure at low levels (usually 1000 or more times less than the animals dose) is fraught with the opportunity for predictive error. See Paustenbach, 14 Columbia J. of Environmental Law at 389-401.

[12] Whipple, "Fundamentals of Risk Assessment," 16 Environmental Law Reporter 10190, 10192-3 (1986).

[13] Leape, "Quantitative Risk Assessment in Regulation of Environmental Carcinogens," 4 Harvard Environmental L. Rev. 86, 88 n.7 (1980); 55 Fed. Reg. at 8716, 8716 (March 8, 1990).

[14] Cleanup to background is similar to cleanup to zero risk in pristine areas, but can be above "significant" risk levels in degraded areas. 55 Fed. Reg. 8666, 8717 (March 8, 1990). Some may consider cleanup to background to be a separate risk management approach, but

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A second approach requires elimination of significant risks, so that cleanup must occur to the point where the residual pollutants pose only a minimal, "insignificant" risk to public health or the environment.[15] This is the principal position of the U.S. Environmental Protection Agency implemented in the CERCLA remedial process.[16]

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it really does not focus on the degree of risk. It simply requires the party responsible to eliminate its contribution to any additional risk, without determining whether the remaining risk is acceptable.

[15] Cross, "Beyond Benzene: Establishing Principles for a Significance Threshold on Regulatable Risks of Cancer," 35 Emory L. J. 1 (1986); Latin, "The 'Significance' of Toxic Health Risks: An Essay on Legal Decision Making under Uncertainty," 10 Ecology L. Q. 339 (1982). The use of the "significant risk" concept can result in different determinations of how much risk is significant, depending on the regulatory program and the situation involved. The same agency may have defined acceptable human lifetime cancer risks at levels varying from one in 14,000 (FDA acceptable level due to PCBs in fish) in one case to one in one million (FDA acceptable levels for methylene chloride decaffeination). Baram, "Use of Comparative Risk Methods in Regulatory and Common Law," 13 Columbia J. of Environmental Law, 1, 16 (1987).

[16] One example is EPA's use of a risk range for cleanup of carcinogens for which no maximum contaminant levels have been set under the Clean Water Act. 40 C.F.R. § 300.430(e)(2) (1990). Environmentalists have responded negatively, with statements such as "[t]he environment will not be protected by the current practice of finding an acceptable level of harm from an environmental pollutant and then issuing rules allowing industry to pollute to that level." "EPA Critic Enters the Lion's Dean and is Showered by Wild Applause," N.Y. Times, Jan. 15, 1988, at B 6, col. 4 (remarks attributed to Barry Commoner). The following EPA response typifies EPA's position that CERCLA is not intended to clean up below what EPA considers to be insignificant risk levels:

> "CERCLA does not require the complete elimination of risk or of all known or anticipated adverse effects, i.e. remedies under CERCLA are not required to entirely eliminate potential

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A third risk management approach to setting cleanup standards is more technology dependent. It assumes that cleanup standards will be based on the capabilities of correct technology.[17] There are a number of variations on this approach, including the use of Best Demonstrated Available Technology (BDAT) developed under the RCRA land ban program and the Best Available Demonstrated Control Technology (BADCT) under Arizona's aquifer protection system. Feasibility is of course dependent to some extent on cost, and a technology that is so prohibitively expensive that no responsible party could afford to use it may not be a realistic basis for setting a cleanup level to be achieved. Generally, EPA's position under CERCLA is that considerations under this approach come into play only after the principal threshold criterion of eliminating significant risk has been applied. See 40 C.F.R. § 300.430(f)(1)(i)(B). Technical impracticability generally does not vitiate the requirement that elimination of significant risk be achieved.[18]

> exposure to carcinogens . . . . EPA's risk range of 10^{-4} to 10^{-6} represents EPA's opinion on what are generally acceptable levels." 55 Fed. Reg. 8666, 8716 (March 8, 1990).

[17] Environmental advocates embrace the concept of requiring cleanups to the limits of the best technology, as improvements in treatment technologies have created the ability to reduce pollutants to levels far below what EPA otherwise would consider to be an insignificant risk. 55 Fed. Reg. at 8701 (March 8, 1990); BNA Environment Reporter at 2480 (March 17, 1989) (August 2, 1988 Memorandum of "OMB Comments on NCP Preamble" revealed EPA's office of Emergency and Remedial Response felt that "10^{-7} should be the risk range boundary because certain treatment technologies are likely to attain a higher level of cleanup than 10^{-6}.")

[18] While technical impracticability can result in waiver of an "ARARs" requirement, 40 C.F.R. § 300.430(f)(1(ii)(C), the NCP provides no explicit waiver for the requirement that "[e]ach remedial action selected shall be protective of human health and the environment." Id. at § 300.430(f)(1)(ii)(A).

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A fourth risk management approach involved the use of "cost-benefit" analysis in setting cleanup standards. Generally, this involves a comparison of the benefits of achieving more stringent levels of cleanup to the costs of reaching each stricter level of cleanup. Environmental advocacy groups vehemently oppose cost-benefit analysis on a number of grounds, including an inherent distrust of the valuation placed on human health and the environment in such analyses.[19] Supporters can argue that all decisions involve some degree of cost-benefit analysis, even any decision to promote a "zero risk" approach for environmental cleanups.[20] Supporters of cost/benefit analyses ask whether the trade-offs in a particular case are appropriate.[21] Should society spend all of its efforts and funds on protecting one hypothetical human life from an environmental pollutant when the same amount of money spent on social programs might save a thousand times as many lives?[22] The EPA will consider to a limited extent cost/benefit (i.e., "cost-effective") analysis in determining cleanup, but only once the remedial options are shown to bring the risks within EPA's acceptable range.[23]

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[19] Sheridan, "How Clean Is Clean: Standards for Remedial Actions at Hazardous Waste Sites Under CERCLA," 6 Stanford Environmental L. J. 9, 37-38 (1986-87).

[20] All "zero risk" means is that no amount of cost can ever outweigh the potential loss of a human life due to environmental causes or the value of a purely pristine environment.

[21] Id. at 37.

[22] There may be significant concerns of environmental "elitism" raised if we decide saving an additional hypothetical life in a completely remote area is worth an additional $5 million from the public coffers when the same money might save fifty "real" lives in a publicly funded urban medical program for the poor and homeless.

[23] See 40 C.F.R. § 430(f)(1)(ii)(D). EPA's consistent cleanup philosophy is that cost should not be a consideration in the initial scientific determination of where the range of acceptable cleanup should be, but it

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The Arizona Department of Environmental Quality and the Arizona Department of Health Services (through its Office of Risk Assessment and Investigation) have developed recommended drinking water and soil health-based "guidelines" ("HBGLs") for selected pollutants. These HBGLs, which have been through a number of alterations since 1986, have been developed to provide guidance for regulators and consultants in environmental matters. The HBGLs for groundwater are based on the assumption that such water will be used for drinking. The HBGL is developed through a risk assessment calculation, which identifies hazards and either utilizes the no adverse effect threshold level or, for pollutants presumed to be without thresholds, a one-in-a-million (10^{-6}) excess cancer risks level, accompanied by various uncertain factors and conservative assumptions.

III. AN EXAMINATION OF THE HISTORICAL DEVELOPMENT OF CLEANUP STANDARDS AND REMEDY SELECTION UNDER CERCLA/SARA -- THE LEADING REGULATORY PROGRAM DRIVING BOTH THE EVOLUTION OF "HOW CLEAN IS CLEAN?" AND ADVANCES IN REMEDIAL TECHNOLOGY

In 1980, Congress enacted the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).[24] The statute was significantly amended in 1988 by the Superfund Amendments and Reauthorization Act of 1986.[25] Cleanup authority under CERCLA[26] extends

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should play a role in where, within that range, cleanup should reach. For example, EPA's selection of cleanup standards in its proposed RCRA corrective action rule allows a risk range of $1x10^{-4}$ to $1x10^{-6}$, with "practicability" as one of the factors that determines the endpoint selected within that range. Proposed 40 C.F.R. § 264.525(d)(1)(iii)(D), 55 Fed. Reg. at 30878 (July 27, 1990).

[24] Pub. L. No. 96-510, 94 Stat. 2767 (1980).

[25] Pub. L. 96-499, 100 Stat. 1628 (1986), codified at 42 U.S.C. § 9601, et seq.

[26] 42 U.S.C. §§ 9604; 9606 (1990).

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primarily to the "release"[27] or "threatened release" of "hazardous substances"[28] into the "environment."[29] The federal government can respond to a release of hazardous

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[27] "Release" is broadly defined to cover disposal and almost any movement of the pollutant into the environment (including the discarding of closed receptacles containing hazardous substances). There also are several important jurisdictional exclusions, including workplace and normal application of fertilizer. 42 U.S.C. § 9601(22) (1990). Reported decisions indicate that courts have given a very broad reading to the term "release" as defined in CERCLA. See, e.g., United States v. Conservation Chemical Co., 619 F. Supp. 162, 185-186 (W.D. Mo. 1985). Such broad interpretation serves CERCLA's goal of effecting rapid and efficient cleanup of hazardous waste spills. Thus, a wide variety of activities and occurrences have been found to constitute "releases" sufficient to impose liability. See, e.g., United Sates v. Metate Asbestos Corp., 584 F. Supp. 1143, 1149 (D. Ariz. 1984) (windblown asbestos fibers constitute a "release"). A number of courts have held that the leaching of hazardous substances into the soil constitutes a "release" under CERCLA. See, e.g., United States v. Tyson, Inc., 684 F. Supp. 822, 832-33 (D. Vt. 1988) ("the seepage and leaching from domestic septic systems that continues from earlier discharges constitute release(s)'"). See also Conservation Chemical, 619 F. Supp. at 185-186 (release "has been construed broadly" and occurs, inter alia, "when hazardous substances leach into soil and groundwater"); United States v. Bliss, 667 F. Supp. 1298, 1305 (E.D. Mo. 1987) (presence of hazardous substance in soil at facility constitutes release).

[28] "Hazardous substance" is defined as a list of other lists and a substance that falls into any one of the lists is a hazardous substance under CERCLA. 42 U.S.C. § 9601(14) (1990); United States. v. Nicolet Inc., 712 F. Supp. 1193, 1207 (E.D. Pa. 1989); Conservation Chemical, 619 F. Supp. at 222. There are two exclusions relating to petroleum/petroleum fractions and natural gas. 42 U.S.C. § 9601(14) (1990); Wilshire Westwood Assoc. v. Atlantic Richfield Corp., 881 F.2d 801 (9th Cir. 1989).

[29] "Environment" is broadly defined to include surface water, groundwater, soils and ambient air. 42 U.S.C. § 9601(8) (1990). A spill of a hazardous substance onto the concrete floor of an enclosed manufacturing plant which does not leave the building is not a release into the environment. 50 Fed. Reg. 13,462 (April 4, 1985).

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substances into the environment.[30] Parties responsible[31] for the release or threatened release of hazardous substances into the environment can be ordered to respond[32] and conduct appropriate "cleanup" or can be required to reimburse response costs meeting certain criteria that are incurred by any other person, including but not limited to response costs incurred by the federal and state governments.[33] The federal government also may respond under CERCLA to nonhazardous "pollutants or contaminants" if they "may present imminent and substantial damages to the public health and welfare."[34]

Under CERCLA, the federal government thus has two principal methods of addressing the cleanup of sites, sometimes referred to as "fund-lead" or "enforcement-lead" approaches. The cleanup can be funded entirely with government money from the so-called "Superfund." Where solvent responsible parties can be found, the federal government may cost-recover its expenses. The federal government may seek to conserve its "Superfund" or use the monies elsewhere when it believes that the enforcement option may prove successful. Under § 106 of CERCLA, the court or the federal government may order a responsible party to perform the cleanup in general accordance with the regulations promulgated under CERCLA.[35]

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[30] 42 U.S.C. § 9604.

[31] Certain past and the present owners and operators of any facility where the hazardous substance is located are liable, as well as hazardous substance transporters who select the disposal or treatment site and persons who arrange for disposal or treatment all may be liable. 42 U.S.C. § 9607(a). Defenses are limited. 42 U.S.C. § 9607(b).

[32] 42 U.S.C. § 9606(a).

[33] 42 U.S.C. § 9607(a).

[34] 42 U.S.C. § 9604(a)(1).

[35] The regulations, referred to as the National Contingency Plan, are set forth at 40 C.F.R. Part 300 (1990).

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As will be discussed later in this paper, Section 121 of SARA[36] and the most recent version of the federal regulations[37] implementing CERCLA/SARA provide a substantial framework for the determination of "how clean is clean" under this statute. In a nutshell, the minimum threshold of cleanup under CERCLA/SARA today involves adequate protection of human health (as defined, in significant part, by risk assessment) and the environment as well as the meeting of applicable or relevant and appropriate requirements under other federal and state environmental laws.[38] It is worth briefly reviewing the evolution of cleanup thresholds during the ten-year history of CERCLA/SARA, as it provides significant perspective on how regulatory concepts and bases for cleanup have evolved.

A. The Lack of Meaningful Cleanup Standards And Remedy Selection Guidance in the 1980 CERCLA Statute.

As originally enacted in 1980, CERCLA provided minimal guidance for the United States Environmental Protection Agency or any other parties to use in determining the level of cleanup that was required. There was limited guidance on the degree of cleanup for "fund-lead" responses. Section 104 of the statute, as adopted in 1980, placed a time and dollar limitation on the extent of the "fund-lead" response by the federal government, being the lesser of one million dollars or six months, unless one of two exceptions applied: (i) "continued response actions are immediately required to prevent, limit, or mitigate an emergency, and there is an immediate risk to public health, welfare, or the environment, which will not otherwise receive the appropriate response on a timely basis;" or (ii) the state and the EPA have already agreed on the appropriate remedial actions to be taken.[39] Section 106 was also less than specific regarding the extent of cleanup for "enforcement-lead" response. It indicated that relief

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[36] 42 U.S.C. § 9621 (1990).

[37] 40 C.F.R. Part 300 (1990); 55 Fed. Reg. 8666 (March 8, 1990).

[38] 40 C.F.R. § 430(f) (1990).

[39] 42 U.S.C. § 9604(c)(1) (1982).

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may be sought, "as may be necessary to abate such danger or threat . . .",[40] and it permitted EPA to issue § 106 orders "as may be necessary to protect public health and welfare and the environment."[41] There seemed to be little specific guidance in CERCLA's response authorities on what would be considered necessary to protect public health, welfare and the environment.

As enacted in 1980, CERCLA did require that EPA select remedial actions that were in accordance with a National Contingency Plan "to the extent practicable" and that provided for "cost-effective response which provides a balance between the need for protection of public health and welfare . . . and the availability of amounts from the fund . . . ."[42]

CERCLA did require that the National Contingency Plan ("NCP") that originally had been developed to direct response to oil and hazardous substance spills[43] be amended to cover cleanups under CERCLA.[44] CERCLA required that the new NCP address cleanup by providing "methods and criteria for determining the appropriate extent of removal, remedy, and other measures authorized. . ."[45] The legislative history of CERCLA failed to clarify the extent of cleanup required,[46] and it may have been that Congress simply was unable to resolve this issue in the last minute debates before passage in late 1980.

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[40] 42 U.S.C. § 9606(a) (1982).

[41] Id.

[42] 42 U.S.C. § 9604(c)(4) (1981).

[43] See 33 U.S.C. § 1321(c)(2).

[44] 42 U.S.C. § 9605 (1981).

[45] 42 U.S.C. § 9605(3) (1982).

[46] Brown, Superfund and the National Contingency Plan: How Dirty Is 'Dirty'? How Clean Is 'Clean'?", 12 Ecology L.Q. 89, 101 (1984).

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Shortly after enactment of the 1980 CERCLA statute, significant debate began on the issue of "how clean is clean." Few of the debates reached federal court, however, because EPA was able to obtain dismissals of any attempt to challenge cleanup remedy selections with pre-enforcement judicial review.[47] Early debates centered over the requirement in CERCLA § 105(7) that responses to Superfund sites be cost effective. 42 U.S.C. § 9605(7) (1981). Industry representatives argued that the government should not be allowed to require a cleanup to protect public health and the environment beyond the extent it was "cost-effective."[48] Industry wanted EPA to consider "cost-effective" to be something similar to cost-benefit analysis. Legislative history included reference to "considerations of the relationship between the costs and benefits of a particular response action."[49] Section 104(c)(4)[50] of CERCLA required EPA to balance the need for protection of public health, welfare, and the environment at a specific site with the need to preserve the limited Superfund monies for responses to other sites. This "fund balancing" limitation on government response actions under Section 104 was determined by EPA not to apply to sites where EPA sought to force responsible parties to cleanup pursuant to § 106. The failure to consider fund balancing on "enforcement-lead" sites as well as on "Fund-lead" sites was one of industry's early complaints on the "how clean is clean" issue.[51]

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[47] See, e.g., Lone Pine Steering Committee v. EPA, 777 F.2d 882 (3d Cir. 1985), cert. denied, 106 S. Ct. 1970 (1986).

[48] Chemical & Radiation Waste Litigation Reporter 265 (July, 1981).

[49] 126 Cong. Rec. 30,985 (remarks of Sen. Stafford).

[50] 42 U.S.C. § 9604(c)(4) (1981).

[51] Letter of May 13, 1981 from Theodore Garrett representing the Chemical Manufacturers' Association to Douglas MacMillen and Anthony Roisman, reprinted at 2 Chemical & Radiation Waste Litigation Reporter 276 (July, 1981).

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EPA took the position that a range of alternatives were to be considered in selecting the remedy for a Superfund site and Congress intended that the most cost effective response be selected among those which first met the threshold criteria of adequate protection of public health, welfare and the environment.

B. Remedy Selection And Cleanup Standards in the 1982 National Contingency Plan.

In 1982, EPA promulgated the first revised National Contingency Plan under CERCLA. 47 Fed. Reg. 31,180 (July 16, 1982); codified at 40 C.F.R. Part 300, (1983). Subpart F of the 1982 National Contingency Plan set forth the requirements on investigation and cleanup of a Superfund site.[52] Hazardous substance response actions were to be handled in a seven phase process. The first phase related to the discovery of a potential Superfund site and notification of the National Response Center.[53] The second phase involved EPA's preliminary assessment of the degree of hazard posed by the site and the potential for removal action.[54] The third phase involved any immediate action or "removal" that was required due to an emergency situation.[55] The fourth phase began to address the issue of "how clean is clean?" It required an evaluation and determination of the appropriate response to the Superfund site as a whole.[56] In the fifth phase, any removal that was required as a result of this process was planned.[57] In the sixth phase, the longer term remedial action was

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[52] 40 C.F.R. § 300.61-.71 (1983).

[53] 40 C.F.R. § 300.63 (1982).

[54] 40 C.F.R. § 300.64 (1983).

[55] 40 C.F.R. § 300.65 (1983).

[56] 40 C.F.R. § 300.66 (1983).

[57] 40 C.F.R. § 300.67 (1983).

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developed and carried out.[58] The seventh phase involved documentation of the actions taken, the cost thereof, and attempts to cost recover from responsible parties.[59]

After investigation of the Superfund site, the lead agency in charge of the Superfund site was to develop a limited number of alternative plans that included an emphasis on containment or transporting the hazardous substances to a new location (i.e., an interim status hazardous waste treatment, storage and disposal facility ostensibly regulated under the Resource Conservation and Recovery Act.)[60]

Aside from containment or relocation of the hazardous substances, EPA indicated "offsite measures" such as provision of permanent alternative water supplies, management of a plume or treatment of aquifer water might be necessary if migration of hazardous substances would pose threats "offsite."[61] Waste treatment constituting a long-term permanent solution was considered relatively uncertain and untested.[62] The lead agency was to implement the "lowest cost alternative that is technologically feasible and reliable and which effectively mitigates and minimizes damage to and provides adequate protection of the public health, welfare, or the environment."[63]

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[58] 40 C.F.R. § 300.68 (1983).

[59] 40 C.F.R. § 300.69 (1983).

[60] 40 C.F.R. § 300.68(e)(2) (1983).

[61] 40 C.F.R. § 300.68(e)(3).

[62] "Many of these direct treatment methods are not fully developed and the applications and process reliability are not well demonstrated." 40 C.F.R. § 300.70(b)(2)(ii) (1983).

[63] 40 C.F.R. § 300.68(j) (1983). Further limitations on the extent of cleanup could be placed if there were restrictions on the availability of monies from the Superfund. 40 C.F.R. § 300.68(k) (1983).

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On the issue of "how clean is clean," the 1982 NCP provided that the responses selected must be consistent with a "permanent remedy to prevent or mitigate the migration of a release of hazardous substances into the environment."[64] The 1982 NCP provided that the extent of cleanup depended on the "lead agency's selection of the remedial alternative which the agency determines is cost-effective (i.e., the lowest cost alternative that is technologically feasible and reliable and which effectively mitigates and minimizes damage to and provides adequate protection of public health, welfare and the environment."[65] § 300.68(j). The result was a case by case approach for each Superfund site relying on a "combined scientific and legal judgment as to the appropriate extent of remedy, based on the extent of hazard, existing federal and state standards and criteria, available technologies, and their relative costs, and financial capabilities of prospective defendants, the culpability of prospective defendants and relevant court precedents."[66] The degree of cleanup in the early years of the Superfund program thus became a negotiated standard.

The resulting degree of discretion regarding the level of cleanup at any site resulted in controversy during the Anne Gorsuch/Rita LaVelle tenures at EPA during the early Reagan administration. Several studies were performed on the effectiveness (or lack thereof) of the Superfund program under the 1982 NCP.[67] The largest criticisms levied related to the preference for transfer of hazardous substances from one problem location to another location which frequently became a hazardous

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[64] 40 C.F.R. § 300.68(a).

[65] 40 C.F.R. § 300.68(j) (1983).

[66] 47 Fed. Reg. 10,972, 10,978 (March 12, 1982).

[67] See "The Effectiveness of the Superfund Program CERCLA § 301(a)(1) Study, Final Report," EPA Office of Solid Waste and Emergency Response, December 1984; "Superfund Strategy," OTA-ITE-252, Office of Technology Assessment, April, 1985 and "Cleaning Up Hazardous Wastes: An Overview of Superfund Reauthorization Issues," GAO/RCED-85-69, General Accounting Office, March 29, 1985.

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waste site requiring remedial action itself[68] and the lack of objective cleanup standards to eliminate the possibility of "sweetheart deals."

C. The 1985 National Contingency Plan: A Shift Towards Remedy Selection Designed to Meet Quantitative Health and Environmental Criteria (The Birth of "ARARs").

In 1982, a lawsuit was brought by the Environmental Defense Fund and the State of New Jersey challenging the lack of cleanup standards in the original revision of the Superfund National Contingency Plan.[69] EPA then agreed to apply the health-based requirements of other federal environmental laws to Superfund cleanups. In a settlement agreement, it agreed to rewrite the National Contingency Plan. That settlement required EPA to include the following concepts in a revised NCP proposal: (1) use of relevant quantitative health and environmental standards and criteria developed by EPA under other programs in order to determine the extent of cleanup, and (2) the concept of response activities complying with federal, state and local environmental laws.[70]

The resulting November 20, 1985 revision of the NCP required that, for all remedial actions, the selected remedy must attain or exceed the federal applicable or relevant and appropriate requirements (ARARs) in environmental and public health laws, unless a waiver applied.[71] ARARs were to be determined on a

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[68] The preference for simply moving the problem from one location to another resulted in part from the 1982 NCP which provided that "[o]ffsite transport or storage, treatment, destruction or secure disposition offsite may be provided in cases where EPA determines such actions . . . are more cost-effective than other forms of remedial action . . ." 40 C.F.R. § 300.70(c)(1).

[69] EDF v. EPA, D.C. Cir., No. 82-2234; New Jersey v. EPA, D.C. Cir., No. 82-2238.

[70] See 50 Fed. Reg. 5862 (Feb. 12, 1985).

[71] See 40 C.F.R. § 300.68(i)(1) (1986). "Applicable" requirements were those federal requirements that would be legally applicable were a CERCLA response not occurring. "Relevant and appropriate" requirements were those federal

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site-by-site basis.[72] A list of potentially federal ARARs was published.[73] EPA also provided five limited circumstances in which ARARs could be waived.[74] A list of federal non-promulgated criteria, advisories and guidance, and state standards "to be considered" in the development of cleanup standards and selection of a remedial alternative, called TBCs, also was published.[75] While the focus of the 1985 NCP was on ARARs, EPA was to select a remedy that would "effectively" provide "adequate protection of public health and welfare and the environment."[76] Aside from ARARs, EPA was to consider a number of other "pertinent" federal criteria, advisories and guidance and state standards.[77]

EPA was to select the remedial alternative that achieved ARARs, qualified for a waiver, or, where no ARARs existed, was the "cost effective alternative" that adequately protected public health, welfare and the environment, taking into account cost, technology and

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requirements "designed to apply to problems sufficiently similar to those encountered at CERCLA sites such that their application is appropriate." 50 Fed. Reg. 47912, 47918 (Nov. 20, 1985).

[72] 50 Fed. Reg. at 47918.

[73] Id. at 47948-9.

[74] Id. at 47,912. The five waivers were for situations involving (1) interim remedies; (2) required fund balancing on Fund-lead sites only; (3) technical impracticability of meeting ARARs; (4) the meeting of ARARs causing significant adverse environmental impacts; and (5) strong public interest requiring expedited cleanup on an enforcement-lead site where litigation probably would not achieve the desired remedy. 40 C.F.R. § 300.68(i)(5) (1986).

[75] Id. at 47949-50.

[76] 40 C.F.R. § 300.68(i)(1).

[77] 40 C.F.R. § 300.68(i)(4) & (ii).

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reliability of the remedy.[78] Elimination, treatment or containment of contamination all were potentially appropriate alternatives, as well as restrictions on use of contaminated groundwater and actions to prevent direct contact with contaminants.[79] Off-site transportation still was permitted where cost-effective.[80] However, changes to the federal hazardous waste disposal law in 1984 and growing recognition by responsible parties that commingling one's contaminants at yet another site led to the possibility of paying for additional "orphan shares" Superfund's reliance on this cleanup option. The changes to the NCP successfully implemented the settlement of the lawsuit brought by the Environmental Defense Fund and the State of New Jersey against EPA. The process for determining the extent of remedial actions under the 1985 NCP now required a full remedial investigation/feasibility study (RI/FS) which would determine the character and extent of the release or threatened release and study the feasibility of various remedies.[81] The RI/FS preliminarily decided what federal and environmental and public health requirements would be considered "applicable" or "relevant and appropriate" to the Superfund site at issue and to what extent other federal criteria, advisories and guidance, should be considered relevant in selecting and implementing a remedial cleanup.[82] This was followed by initial screening of alternatives, detailed analysis of the remaining alternatives, selection of a remedy and preparation of the Record of Decision ("ROD").[83]

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[78] 40 C.F.R. § 300.68(i)(3) (1986).

[79] 40 C.F.R. § 300.68(j) (1986).

[80] 40 C.F.R. § 300.70(c) (1986).

[81] 40 C.F.R. § 300.68(d) (1986).

[82] 40 C.F.R. § 300.68(e) (1986).

[83] 40 C.F.R. § 300.68(g)-(i). See also EPA Office of Emergency and Remedial Response, Guidance on Preparing Superfund Decision Documents (Interim Final July 1989) (EPA/540/G-89/007).

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The 1984 Resource Conservation and Recovery Act Amendments responded to a congressional recognition of a problem with land filling of liquid hazardous waste. Congress had called for a "land ban" on deposition of future liquid waste.[84] While Congress was hearing testimony regarding the need to ban land disposal of liquid hazardous waste, it simultaneously heard that cleanups under the 1982 NCP had resulted in waste being transferred from the Superfund sites to leaking RCRA disposal sites.[85] This predisposed Congress to call for more "permanent treatment" solutions to Superfund sites, with less off-site transfer of waste to RCRA facilities, during the three-year debate on reauthorization of CERCLA.

D. Explicit Statutory Guidance Provided in the 1986 SARA Legislation On The Two Subjects of How Cleanup Is To Be Accomplished And What It Must Achieve.

In October, 1986, the debate discussed above ended when Congress passed and President Reagan signed the Superfund Amendments and Reauthorization Act (SARA).[86] SARA directly addressed the previous criticism of CERCLA by specifically setting forth "cleanup standards" for remedial actions.

SARA first addressed the Congressional concern with EPA's response at some early Superfund sites where critics felt the solutions tended to be short term or simply moved the problem from one place to another. SARA established explicit preferences for treatment (as opposed to containment or removal) that resulted in permanent and significant reduction in the volume,

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[84] See RCRA §§ 3004(d)(1), (e)(1), (g)(5); 42 U.S.C. §§ 6924(d)(1), (e)(1), (g)(5). See also, 51 Fed. Reg. 40572 (Nov. 7, 1986) (EPA first "third" land ban regulations).

[85] Hearings Before the Subcommittee on Commerce, Transportation and Tourism of the House Committee on Energy and Commerce on Reauthorization of Superfund, 99th Cong., 1st Sess., Serial No. 9937 at 661 (1985).

[86] Pub. L. No. 96-499, 100 Stat. 1628 (1986), codified at 42 U.S.C. § 9601 et seq.

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toxicity and mobility of the contaminants.[87] SARA made offsite transport and disposal the "least favored remedial action where practicable treatment technologies are available."[88] SARA also required EPA to prefer the increased use of permanent solutions and alternative treatment or resource recovery technologies with long-term effectiveness.[89] EPA was permitted to select a remedy meeting these preferences even if the remedy had never been achieved in practice at a similar site.[90] If EPA selected a remedy that did not meet these preferences, it was required to publish a justification.[91] Finally, if EPA selected a remedy that left contaminants on site (containment), EPA was required to conduct a site review at least every five years to determine if further protection of human health and the environment was required.[92]

These provisions amounted to a statutory repudiation of EPA's preference for containment or off-site transport exhibited during the early years of the Superfund program. SARA went even further to limit the possibility contaminants could be transferred offsite to a disposal or treatment facility that itself would cause further problems. First, SARA prohibited offsite transfer except to facilities that were in compliance with all applicable federal and state environmental requirements. Second, transport offsite to a land disposal facility was prohibited unless that facility's releases already were subject to a corrective action (cleanup) program approved by EPA and the specific unit to which transfer would occur itself did not have a release.[93]

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[87] 42 U.S.C. § 9621(b)(1).

[88] Id.

[89] Id.

[90] 42 U.S.C. § 9621(b)(2) (1987).

[91] 42 U.S.C. § 9621(b)(1) (1987).

[92] 42 U.S.C. § 9621(c).

[93] 42 U.S.C. § 9621(d)(3).

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For those remedial actions that are conducted on site, § 121(d)(2)(A) now sets forth specific cleanup standards. While SARA still requires at a minimum "protection of human health and the environment",[94] Superfund now provides that "any standard, requirement, criteria, or limitation under any Federal environmental law" or any timely-identified, more stringent, State environmental or facility siting standard, requirement, criteria or limitation that "is legally applicable to the hazardous substance or pollutant or contaminant or is relevant and appropriate under the circumstances of the release or threatened release" must be met.[95] While, prior to SARA, EPA required compliance with federal ARARs, now the state standards can be ARARs for CERCLA remedial actions when they are promulgated, more stringent than federal standards, and identified by the state in a timely manner.[96] EPA has promulgated guidance documents on how ARARs are to be determined.[97]

SARA modified somewhat the five circumstances in the 1985 NCP in which a specific ARAR need not be attained. Four of the original waivers were essentially codified, and two new waivers added. These waivers, which by statute apply to on-site remedial activities, must be invoked for each ARAR that will not be attained; the waivers apply only to attainment of ARARs and not to any other CERCLA statutory requirements for remedial

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[94] 42 U.S.C. § 9621(d)(1) (1987).

[95] 42 U.S.C. § 9621(d)(2)(A) (1987).

[96] If the remedy selected requires disposition of waste associated with the site cleanup by way of land disposal in any state that otherwise has an ARAR that could prohibit land disposal statewide, that ARAR does not apply unless three conditions are met. First, the ARAR prohibiting statewide land disposal must be generally applicable and adopted by formal means; second, it must have been adopted due to relevant scientific considerations and not for prohibiting onsite remedial or other land disposal for non-public health and non-environmental reasons; third, the state must pay the incremented costs of a different solution. 42 U.S.C. § 9621(d)(2)(c).

[97] 52 Fed. Reg. 32496 (August 27, 1987); CERCLA Compliance With Other Laws Manual, OSWER Directive 9234.1-01 (August 8, 1988).

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actions, such as protection of human health and environment.

EPA is allowed to approve a remedial action that does not attain the ARAR in any of the following six circumstances: (a) the remedial action selected is part of a total remedial action that will attain the desired standard when completed (the interim remedy waiver); (b) compliance with the requirement proposed would result in greater risk to human health and the environment than alternative options; (c) compliance with the requirement proposed would be technically impracticable from an engineering perspective; (d) an alternative remedial action will attain a standard of performance equivalent to the ARAR, through use of a different method or approach; (e) with respect to a state ARAR, the state has not consistently applied its own ARAR in similar circumstances to other remedial actions; and (f) for "fund-lead" actions, the standard proposed to comply with the ARAR would not provide a balance between the need for protection of public health, welfare and environment at the facility under consideration when balanced with the availability of fund money for responses at other sites.[98]

If EPA proposes selection of a remedial action under a CERCLA § 106 consent decree that would fail to attain the ARAR, EPA must provide an opportunity for the state within which the site is located to concur or not concur. If the state does not concur and wishes to enforce a particular standard, the state may intervene as a matter of right before entry of the consent decree in the action under § 106 of CERCLA and seek to have the decree modified. If the court does not accept the state's position, the state may pay the additional costs and have its cleanup standard applied.[99] EPA similarly must give the state an opportunity to challenge the selection of a remedial action at a federal facility.[100] The state's challenge to EPA's selection of remedies for "enforcement-lead" sites and at federal facilities succeeds only if the state can prove that EPA's findings

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[98] 42 U.S.C. § 9621(d)(4).

[99] 42 U.S.C. § 9621(f)(2).

[100] 42 U.S.C. § 9621(f)(3).

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supporting the selected remedy are not supported by substantial evidence.[101]

E. The 1990 National Contingency Plan: Risk Assessment and "ARARs" Define The Threshold Levels of Cleanup; Balancing Criteria and Preferences Determine Which of the Remedies Meeting These Levels Will Be Selected

In the fall of 1988, EPA again was sued with respect to its failure to timely revise the National Contingency Plan to comport with SARA. In connection with its settlement of that case, on March 8, 1990, EPA promulgated the latest revision of the NCP, which includes further guidance on the determination of ARARs.[102] In the 1990 NCP, EPA described the goal of a Superfund cleanup is the selection of "remedies that are protective of human health and the environment, that maintain protection over time, and that minimize untreated waste."[103]

The 1990 NCP sets forth a fairly precise method for selection of cleanup standards. It continues, with some modifications to the process, the concept of the RI/FS investigation, and it formalizes the process for selection of the appropriate remedial alternative and its embodiment in a Record of Decision.[104] The final remediation goals are determined first by careful analyses of ARARs; use of human health risk assessments; examination of the appropriateness of maximum containment levels (MCLs) and goals (MCLGs) under the Safe Drinking Water Act, of water quality criteria under Section 303 and 304 of the Clean Water Act, and of alternate concentration limits under the Resource Conservation and Recovery Act; and through assessments of threats to habitats of non-human species.[105] Second, alternatives to achieve these goals, including

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[101] 42 U.S.C. §§ 9621(f)(2)(B) & (3)(b).

[102] 55 Fed. Reg. 8666, 8741 (March 8, 1990).

[103] 40 C.F.R. § 300.430(a)(1)(i).

[104] 40 C.F.R. § 300.430 (1990)

[105] 40 C.F.R. § 300.430(e)(2)(i).

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innovative technologies, are developed.[106] The alternatives developed are colored by specific "expectations": (1) treatment shall be used where practicable, and engineering controls (i.e., containment) is appropriate only where there is a relatively low long-term threat or treatment is impracticable; (2) combinations of methods such as treatment, containment and institutional controls (i.e., restrictions on access and exposure potential) shall be used to develop alternatives for final remedy and for management during the remedial action time frame; (3) innovative technology shall be used when it offers significant, potential benefits of better performance, lesser impact or lower cost; and (4) usable groundwater shall be restored to its beneficial uses within a reasonable time frame whenever practicable.[107] The remedy development process results in a range of alternatives, representing a number of viable alternatives to managing the cleanup. For source control response actions, a range of alternatives with a focus on treatment as a principal element is required, along with containment and no-action alternatives.[108] For groundwater response, alternatives are to be developed that restore groundwater quality for beneficial use within a reasonable time frame.[109]

Once all the alternatives are developed consistent with this guidance, a detailed analyses using nine criteria to compare the alternatives occurs.[110] Two of the criteria are thresholds, in that the failure of any alternatives to comply results in a rejection of the alternative.[111] These are the overall protection of

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[106] 40 C.F.R. §§ 300.430(e)(2)(ii) & (iii).

[107] 40 C.F.R. § 300.430(a)(1)(iii).

[108] 40 C.F.R. § 300.430(e)(3) (1990).

[109] 40 C.F.R. § 300.430(e)(4) (1990).

[110] 40 C.F.R. § 430(e)(9)(iii).

[111] 40 C.F.R. § 430(f)(A).

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public health and the environment and compliance with ARARs (unless a specific ARAR is waived).[112]

What exactly are these "ARARs" cleanup levels that must be met in order to comply with the 1990 NCP? First, the ARARs are defined in two parts: (1) the applicable requirements, and (2) the relevant and appropriate requirements. Applicable requirements are those cleanup or control standards and other substantive requirements, criteria or limitations that were promulgated under federal environmental or state environmental or facility siting laws that specifically address a pollutant at the CERCLA site.[113] Relevant and appropriate requirements are those federal and state requirements which did not qualify as applicable, but which address sufficiently similar situations or problems so that their use is well suited.[114] Any state ARARs must be timely identified, or their use is not required.[115]

The 1990 NCP provides that advisories, criteria or guidance to-be-considered (TBC) that do not meet the definition of ARAR may be necessary to determine what is protective or may be useful in developing Superfund remedies.[116] The ARARs preamble describe three types of TBCs: health effects information with a high degree of credibility, technical information on how to perform or evaluate site investigations or remedial actions, and policy.[117] EPA does not require by rule that TBCs should be cleanup standards because they are, by definition, generally neither promulgated nor enforceable so they do not have the same status under CERCLA as do ARARs. TBCs may, however, be useful in helping to determine what is protective at a site, or

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[112] Id.

[113] 40 C.F.R. § 300.5 (1990).

[114] Id.; see also 40 C.F.R. § 300.400(g) (1990) (guidance on determining relevance and appropriateness).

[115] 40 C.F.R. § 300.400(g)(4) (1990).

[116] 40 C.F.R. § 300.400(g)(3) (1990).

[117] 55 Fed. Reg. at 8744 (March 8, 1990).

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how to carry out certain actions or requirements. Thus, the development of health-based guidelines by the Arizona Department of Environmental Quality becomes extremely significant, as they would fall within the TBC category.

Because ARARs do not exist for every chemical or circumstance likely to be found at a Superfund site, EPA believes it may be necessary when determining cleanup requirements or designing a remedy to consult reliable information that would not otherwise be considered to be a potential ARAR. For example, when an MCLG or MCL does not exist for a particular contaminant, EPA intends that the lead or support agency use EPA-developed toxicity information such as cancer potency factors and reference doses for noncarcinogenic effects when developing preliminary remediation goals. Also, many action-specific ARARs have broad performance criteria. The technical information on how to implement such criteria may be contained in guidance documents only. The lead or support agency may need to consider these guidance documents in determining how to comply with the ARAR. Also, the lead or support agency may want to consider policy statements contained in advisories, criteria, or guidance when selecting or designing a remedy. Accordingly, even though the use of TBCs is not specifically discussed in CERCLA, EPA believes that their use is consistent with the statutory requirements to protect human health and the environment and to comply with ARARs.

Interestingly enough, SARA provided that "such remedial action shall require a level or standard of control which at least attains Maximum Contaminant Level Goals established under the Safe Drinking Water Act and water quality criteria established under §§ 304 or 303 of the Clean Water Act, where such Goals or criteria are relevant and appropriate under the circumstances of the release . . ."[118] However, EPA only requires cleanup to the MCLG when it is above zero (i.e., for non-carcinogens). It uses the MCL where the MCLG is zero. Where no MCL exists and the MCLG is zero, cleanup is based on use of the risk range.[119]

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[118] 42 U.S.C. § 121(d)(2)(A).

[119] 40 C.F.R. § 300.430(e)(2)(i).

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In general, ARARs must be met as cleanup standards. Compliance with a specific ARAR will not be required if a waiver is invoked.[120]

The second threshold criterion is the requirement of overall protection of human health and the environment.[121] In order for cleanup standards to meet this criterion, they must comply with the following factors: (1) for systemic toxicants, levels may not exceed those to which humans (including sensitive subgroups) can be exposed to over a lifetime without effect, allowing for a margin of safety; (2) for carcinogens, levels falling within a risk range of 10^{-4} to 10^{-6} must be met, using 10^{-6} as a point of departure; (3) detection/qualification limits; (4) inclusion of uncertainty factors; (5) "other pertinent information;" (6) whether multiple contaminants or pathways will result in a cumulative risk exceeding 10^{-4}; and (7) whether environmental threats exist, such as threats to sensitive or critical habitats.[122]

The two threshold criteria for cleanup in Arizona thus can be considered to be (1) a requirement that ARARs be met or waivers obtained, and (2) a requirement that thresholds be met for systemic toxicants, that cancer risks fall in the 10^{-4} to 10^{-6} risk range, and that undue risks to environmental considerations (i.e., habitat) be abated.

Now that the cleanup standards and alternatives left meet the two threshold criteria, five "balancing" criteria are used to further differentiate among potential remedies. These include the preferences for (1) long-term effectiveness and permanence, (2) reduction of toxicity, mobility or volume through treatment, and (3) cost effective remedies.[123]

The requirement that a cleanup be "cost-effective" only means a cost-efficient method of achieving a cleanup goal, but it does not affect the selection of

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[120] 40 C.F.R. § 300.430(f)(1)(ii)(C) (1990).

[121] 40 C.F.R. §§ 300.430(e)(9)(iii)(A) & (f)(1)(i)(A) (1990).

[122] 40 C.F.R. § 300.430(e)(2)(i).

[123] 40 C.F.R. § 300.430(f)(1)(B) (1990).

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the cleanup standard.[124] The prior consideration regarding avoidance of disproportionate use of the Superfund monies on one particular site remains a ground for waiver of cleanup standards, but only for Superfund - financed cleanups under § 104.[125]

The final two balancing criteria are implementability of the remedy and its short-term effectiveness.[126] Then, two criteria can modify the remedial alternative selection: state acceptance and community acceptance.[127]

IV. IMPACTING REMEDY SELECTION UNDER CERCLA/SARA

The U.S. Environmental Protection Agency has tremendous power to force a potentially responsible party (PRP) to implement EPA's determination of an appropriate remedy at a federal Superfund site. The federal Superfund (or CERCLA) program is designed to address releases of hazardous substances to the environment. 42 U.S.C. § 9601, et seq.

Once EPA determines what is appropriate in terms of cleanup to address hazardous substance releases at a site being addressed under CERCLA, EPA can place the burden of that cleanup on the shoulders of a PRP through "fund-lead" or "enforcement-lead" activities. Under the "fund-lead" option, EPA may use federal funds to implement its cleanup plan, generally through the use of expensive government contractors. 42 U.S.C. § 9604. EPA subsequently may recover through litigation all of those funds, plus EPA's oversight costs, from any jointly and severally liable responsible party. Id. at § 9607. Under the "enforcement-lead" option, EPA frequently will order a PRP to implement the EPA cleanup plan, which order is backed up by $25,000 per day of civil penalties for noncompliance and additional penalty exposure of three times the cleanup cost for unjustified failure to comply. Id. at § 9606. EPA also has the enforcement option of seeking injunctive relief requiring PRPs to carry out the EPA cleanup plan,

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[124] SARA Conference Committee Report, at 245.

[125] 42 U.S.C. § 9621(d)(4)(G).

[126] 40 C.F.R. § 300.430(f)(1)(B) (1990).

[127] 40 C.F.R. § 300.430(f)(1)(C) (1990).

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although the "injunctive" avenue of "enforcement-lead" relief is far less common today than it was in the early days of the program.

A PRP's ability to challenge EPA's selection of a remedy under CERCLA is quite limited, as the 1986 SARA amendments to the 1980 CERCLA statute eliminated most rights to challenge EPA's choice until EPA brings a court action to enforce against the PRP. 42 U.S.C. § 9613(h). Where challenges can be made, they are limited to review of the administrative record. Id. at § 9613(j)(1). Finally, that challenge on the basis of the record must establish that EPA's choice of remedy was arbitrary, capricious or not in accordance with law, a difficult showing to make. Id. at § 9613(j)(2).

As a result, a PRP is hamstrung in its effort to challenge EPA's selection of a remedy that may be drastic overkill, or that uses a far more expensive method to handle the problem than the one the PRP has suggested that would achieve the same level of cleanup. Usually the key disputes either center around the degree of cleanup or the methods and time to achieve it. Many PRPs feel they are virtually powerless to have any impact on EPA's actions for which the PRPs will be forced to pay.

PRPs are not completely powerless, even where CERCLA is involved. There are options available to a PRP once it realizes the government is going to be able to hold it liable for a cleanup. What are the options?

First, a PRP should frequently consider the possibility of avoiding EPA's use of its onerous CERCLA/SARA powers to force what the PRP considers to be an excessive or inappropriate cleanup. The biggest expenses associated with federal CERCLA cleanup usually are associated with long term remedial response. EPA only may allocate funds for remedial action where sites have been determined to be a national priority (i.e., placed on the National Priorities List). Among the options discussed in this paper are taking care of the problem so that it does not qualify as a sufficiently significant problem to be addressed under federal Superfund and the possibility of handling the problem under another environmental program and seeking deferral from National Priority List (NPL) status.

Second, should NPL status become inevitable, a PRP may seek to bring data and options to EPA's attention in the administrative record, and may use its consultants to affect EPA's thinking on the remedy. PRPs may submit information for the administrative record. The most impact a PRP may have is by obtaining EPA approval to

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conduct the Remedial Investigation/Feasibility Study (RI/FS), which requires reimbursement of EPA oversight contractor costs. Id. at § 9604(a)(1). If EPA conducts the RI/FS with its own contractor, the PRPs may provide official comment after EPA has evaluated alternatives and selected a proposed remedial action plan.

Third, the PRP is entitled to judicial review of the selected remedy, although such review is limited as previously mentioned.

Finally, a PRP's ability to seek modification of the selected remedy, after a final decision made, provides one final option for altering EPA's choice of remedy.

So what does a PRP do? First, a PRP must determine its involvement at a hazardous substance site. If the PRP will have a significant share of the liability, the PRP and its counsel should explore all of the options set forth above. As a general rule, avoiding NPL status is advisable. Should it occur, early and intense participation in EPA's process is critical. Literally millions of dollars have hinged on simple questions relating to the remedy, such as whether carbon adsorption air pollution control devices are required on VOC stripping towers or whether a certain assumption is correct in the risk assessment that sets the cleanup standard. A major PRP only can affect these decisions by early, educated and continued involvement, by using the assistance of a technically oriented lawyer not afraid to negotiate and by making a record on such issues with the aid of qualified attorneys and consultants.

There are always at least two key issues to be negotiated which have huge dollar impacts: the level of cleanup required and the method and timing by which such level is to be achieved. Educated participation in the process by a combined legal/technical team can make a difference of millions of dollars. While everyone bemoans the transactional costs associated with CERCLA, there is no doubt that the payoff easily can exceed the transactional costs of participation when the issue is remedy selection.

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Subchapter 7.3

ENVIRONMENTAL DUE DILIGENCE

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ENVIRONMENTAL DUE DILIGENCE

I. OVERVIEW

The most important aspect of environmental considerations for real property acquisition or a significant business transaction is the environmental "due diligence" requirement that applies to any acquisition of title or possessory interest in real property, whether it be by direct purchase of real estate, acquisition of controlling interest in a company, purchase of assets or other form of acquisition. The "due diligence" concept will apply to commercial, residential and industrial purchases, to leases and to other forms of contractual relationships that result in some form of ownership or possessory interest (and thus potential liability under the federal and state Superfund laws).

An environmental due diligence investigation prior to entering into a contractual relationship that will create an ownership or possessory interest in property (and with it potential environmental liability) has considerable benefits, including the following: first, it discloses the environmental risks associated with the acquisition of an ownership or possessory interest in a particular parcel of property or a specific business; second, it makes the so-called "innocent purchaser" defense available under federal and state hazardous substance statutes in the event contamination is discovered after the purchase is consummated; and third, where the "innocent purchaser" defense is unavailable for one reason or another, environmental due diligence makes available the possibility of de minimis settlements and minimal required contributions towards any monies needed to clean up an environmental problem.

This is not intended as an exhaustive guide to due diligence on every property. The most effective inquiry is one which is tailored to the specific, prospective transaction. An environmental lawyer should help determine, on a case by case basis, the appropriate scope of a due diligence inquiry.

The key to avoiding liability or other losses is the exercise of what is appropriately known as environmental due diligence. Properly understood, environmental due diligence involves both risk assessment and risk management. It mean more than a written enumeration of the environmental hazards associated with any situation or transaction. It also requires implementation of procedures or solutions designed to minimize or manage those risks so that they are brought to and kept at an acceptable level.

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You should not confuse a consultant's report on the potential for Superfund liability with the completion of the risk investigation, let alone completion of the due diligence process. Numerous non-Superfund statutes, regulations, and common law can create tremendous liability and other problems for property owners and businesses or individuals. There are numerous, significant pollution problems that are not hazardous substance releases creating specific Superfund liability. For example, leaking fuel tanks, aquifer protection and asbestos can result in costs easily exceeding a million dollars even though superfund may be entirely inapplicable. Furthermore, the absence of required permits for a business or the failure to adhere to procedures mandated by environmental regulation can lead to the closing of a business and enforcement actions with real consequences such as imprisonment and million-dollar-per-violation penalties.

II. CONDUCTING ENVIRONMENTAL DUE DILIGENCE

What constitutes sufficient diligence and appropriate risk management only can be determined in the context of a particular transaction or situation. For example, acquisition of real property by purchase or foreclosure typically leads to an environmental "assessment," which primarily focuses in a retrospective fashion on problems resulting from past actions at or near a particular location. Financing of existing business operations or a corporate expansion, on the other hand, requires a due diligence study which is more prospectively oriented. Typically termed an environmental "audit", its focus also must be on the present and future ability of the business to meet the requirements of environmental laws and regulations in a timely and cost-effective fashion.

Adequate diligence also is required prior to retention of any consultant to handle such critical issues as (1) whether the environmental concerns for the situation or transaction are primarily retrospective, prospective, or both; (2) whether steps need to be taken to maximize confidentiality of the investigation; and (3) whether the consultant selected is sufficiently knowledgeable and appropriate in light of the particularized environmental concerns. The importance of proceeding carefully in the due diligence process, of course, must be appropriately balanced with the need to proceed in a timely, cost-effective fashion.

The investigation process merely identifies reasonably discoverable potential problems. The attorney, consultant and client then should develop appropriate solutions or procedures to minimize

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potential adverse consequences. The greater the client's financial commitment to the proper risk management process, the less likely it is that the client later will encounter an unwelcome environmental "surprise." Regardless of the degree of the client's environmental consciousness, however, it is always inevitable that cost and timing play a factor in the selection of auctions to minimize identified risks. Furthermore, because the environmental laws as well as society's knowledge of environmental hazards are continually evolving, risk always remains present. Any professional practicing in this area should keep abreast of significant developments as due diligence requires a perpetual refining of the investigative and risk management thought process.

III. SUPERFUND CONSIDERATIONS IN ENVIRONMENTAL DUE DILIGENCE

The starting point for understanding environmental due diligence is the Superfund program. Liability for a hazardous substance release into the environment generally is placed on the following categories of responsible parties: current owners and operators of contaminated facilities, certain past owners and operators, transporters and those who arranged for disposal or treatment of their hazardous substances (also known as generators). Little more than mere ownership, whether legal or equitable, of a facility may be sufficient to create liability, so Superfund due diligence requires an investigation prior to the creation of the ownership interest.

Under federal law, current owners or operators of real property (or "facility") and owners or operators at the time of disposal are prima facie responsible for hazardous substance contamination on the owned or occupied facility. 42 U.S.C. § 9607(a). Under Arizona law, the net of potential liability extends further to those owners or operators at any time the hazardous substance was at the facility through the time of release or threatened release. A.R.S. § 49-283.A. An additional element of the prima facie case under Arizona law is a showing that the owner also met one of four tests: (1) was engaged in the business of generating, transporting, storing, treating or disposing of a hazardous substance at the facility or disposing of waste at the facility or knowingly permitted others to engage in such a business at the facility; (2) permitted any person to use the facility for hazardous substance disposal; (3) knew or should have known that a hazardous substance was located in or on the facility when right, title or interest was acquired and engaged in conduct associating the owner with the release; or (4) took

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action which significantly contributed to the release after the owner knew or reasonably should have known that a hazardous substance was located in or on the facility. A.R.S. § 49-283.B.

Once a prima facie case has been made, Superfund defenses are extremely limited. From the standpoint of someone seeking to acquire property or a business, a key provision is the so-called "innocent landowner" or "innocent purchaser" defense, which is a subset of the "third party" defense. This defense exists in both federal and state Superfund laws. A second key provision is the "de minimis" settlement authority currently found in both the federal and Arizona Superfund statutes.

In order for an owner or operator of a facility to qualify for the third party defense, the defendant must prove first that the release or threatened release is solely due to "an act or omission of a third party." Furthermore, a defendant must prove

> "(a) he exercised due care with respect to the hazardous substance concerned, taking into consideration the characteristics of such hazardous substance, in light of all relevant facts and circumstances, and
>
> (b) he took precautions against foreseeable acts or omissions of any such third party and the consequences that could foreseeably result from such acts or omissions."[1]

This alone constitutes a significant rationale for the "due care" exercise that is necessarily part of environmental due diligence. A defendant can never qualify for the innocent landowner defense unless discovered hazards are properly managed.[2]

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[1] 42 U.S.C. § 9607(b) (3). See also A.R.S. § 49-283.D.3.

[2] See United States v. Sharon Steel Co., No. 86-09241 (D.C. Utah, 2/13/88); United States v. Monsanto Co., 858 F.2d 160 (4th Cir. 1988).

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The third party defense, however, generally is unavailable to a Superfund defendant if the act or omission of the third party occurred "in connection with a contractual relationship, existing directly or indirectly, with" the defendant.[3]

"Contractual relationship" only is defined in the federal Superfund and it "includes, but is not limited to, land contracts, deeds or other instruments transferring title or possession. . . . "[4] Any legal instrument transferring title or possession will be a sufficient contractual relationship under federal superfund to defeat the "third party" defense, unless the defendant qualifies for the federal "innocent landowner" exception to the "contractual relationship" rule: The defendant must have acquired the facility on which the hazardous substance was released after the disposal or placement of the hazardous substance on, in, or at the facility, and the defendant must establish one or more of the following by a preponderance of evidence:

> "(i) At the time the defendant acquired the facility the defendant did not know and had no reason to know that any hazardous substance which is the subject of the release or threatened release was disposed of on, in or at the facility. [This provision is the so-called federal "innocent landowner" defense.]
>
> (ii) The defendant is a government entity which acquired the facility by escheat, or through any other involuntary transfer or acquisition, or through the exercise of eminent domain authority by purchase or condemnation.
>
> (iii) The defendant acquired the facility by inheritance or bequest." 42 U.S.C. § 601(35).

A similar provision exists in the state Superfund, although there are some significant

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[3] 42 U.S.C. § 9607(b)(3); A.R.S. § 49-283.D.3.

[4] 42 U.S.C. § 9601(35).

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differences in the State's "innocent landowner" defense. Responsible parties under state Superfund theoretically may include all facility owners from the time the hazardous substance came to be located there through the entire chain of title to the present owner. The owner of a facility is, however, not responsible:

> (1) unless he was engaged in the business of generating, transporting, storing, treating or disposing of a hazardous substance or waste at the facility or knowingly permits others to do so, or
>
> (2) unless he permits a person to use the facility for hazardous substance disposal, or
>
> (3) unless he knows or reasonably should have known that a hazardous substance was located in or on the facility at the time right, title or interest in the property was first acquired, AND he "engaged in conduct by which he associated himself with the release,"

or

> (4) he "took action which significantly contributed to the release after he knew or should have known that a hazardous substance was located in or on the facility."[5]

[This third provision is the Arizona "innocent landowner" provision and it includes an extra prong of "association" not found in the federal Superfund law.)

While the "third party defense" expressly requires proper risk management ("due care"), the "innocent landowner" defense also requires proper risk assessment (investigation) before title or possession is transferred. While the state Superfund provides no further guidance on what constitutes adequate investigation, the federal law does:

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[5] A.R.S. § 49-283.B.

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> "To establish that the defendant had no reason to know . . . the defendant must have undertaken, at the time of acquisition, all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or custom in an effort to minimize liability."[6]

Additional factors to consider are set forth in the federal law:

> "[T]he court shall take into account any specialized knowledge or experience on the part of the defendant, the relationship of the purchase price to the value of the property if uncontaminated, commonly known or reasonably ascertainable information about the property, the obviousness of the presence or likely presence of contamination at the property, and the ability to detect such contamination by appropriate inspection."[7]

The due diligence standard necessarily is to be determined on a "case by case" basis, and it is likely to become increasingly stringent over time as the degree of awareness of environmental hazards increases.

Attorneys should advise their clients that there is a practical limitation to the efficacy of the "innocent landowner" defense: a client might be forced to incur substantial transaction costs over a multi-year period before it will get its actual "day in court" to prove its entitlement to the defense. In 1986, Congress recognized this problem and addressed it by the addition of an option for early settlement for such landowners. Under federal Superfund law, when EPA determines that a settlement is "practicable and in the public interest," the Agency shall, "as promptly as possible," seek to reach a "final" settlement with a de minimis PRP by consent decree or administrative order, if the

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[6] 42 U.S.C. § 9601(35).

[7] Id.

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settlement "involves only a minor portion of the response costs at the facility concerned."[8]

Federal law authorizes settlement with de minimis land owners where the defendant:

> (i) is the owner of the real property on or in which the facility is located;
>
> (ii) did not conduct or permit the generation, transportation, storage, treatment, or disposal of any hazardous substance at the facility;and
>
> (iii) did not contribute to the release or threat of release of hazardous substances at a facility through any action or omission."[9]

Even if your client does not qualify for innocent landowner because the "due diligence" was less than perfect, those due diligence efforts should help qualify for an early de minimis settlement. See also A.R.S. § 49-293.A (WQARF de minimis settlement provision.)

IV. EPA'S LANDOWNER LIABILITY GUIDANCE

The vagueness of the "all appropriate inquiry" standard to qualify for the "innocent landowner" defense led to repeated requests that EPA further clarify the subject. The result was a long-awaited EPA guidance document on landowner liability.[10] The guidance, in the form of a memorandum from EPA headquarters to its regional offices and attorneys explaining the EPA's position, generally reiterates the types of inquiries

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[8] 42 U.S.C. § 9662(g)(1).

[9] Id.

[10] "EPA Guidance on Landowner Liability Under Section 107(a)(1) of CERCLA [42 U.S.C. § 9607(a)(1)], De Minimis Settlements Under Section 122(g)(1)(B) of CERCLA [42 U.S.C. § 9622(9)(1)(B)2, and Settlement With Prospective Purchasers of Contaminated Property," 54 Fed. Reg. 34235 (August 18, 1989).

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outlined in the federal statutory provisions quoted above.[11]

For all who had hoped for a better defined list of steps to take, after which one could be reasonably certain that the due diligence standards had been met, the guidance is not very helpful. There remains a great deal of uncertainty as to how much inquiry is enough.

EPA's guidance emphasizes the de minimis settlement provision, rather than the innocent landowner defense. In other words, innocent landowners will be given an opportunity to settle with the agency prior to or in the early stages of the multi-year Superfund process at a particular site in exchange for a grant to government of access to the site, cooperation in providing information to the government, and, in many cases, a relatively minor cash payment. Proving innocence by litigation is discouraged.

The guidance sets forth information that the landowner should provide to EPA with its proposal to EPA for the de minimis settlement. The landowner will be required to provide EPA with the following:

(a) All evidence demonstrating the lack of actual or constructive knowledge of the landowner at the time of acquisition regarding hazardous substance disposal;

(b) All affirmative steps taken by the landowner to determine the previous ownership and uses of the property;

(c) Information regarding the condition of the property at the time of purchase;

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[11] Under EPA's guidance, a landowner who demonstrates that it conducted "all appropriate inquiries," which is standard under the innocent landowner defense, will not be deemed to have "constructive knowledge" of the hazardous substance release. What constitutes "all appropriate inquiry," the guidance states, is to be determined on a case-by-case basis of what is reasonable under all the circumstances. The guidance combines portions of the innocent landowner and de minimis provisions in the federal statute in order to create a settlement policy that rewards those landowners who have practiced environmental due diligence.

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(d) All documentation and evidence of representations made at the time of sale regarding prior uses of the property;

(e) The purchase price of the property and the fair market value of comparable property at the time of acquisition; and

(f) Information regarding any specialized knowledge on the part of the landowner which may be relevant.

Furthermore, the landowner must submit evidence that he has exercised due care (appropriate management of the identified risks), including a list of all measures taken by the landowner to abate the threat of harm and to prevent foreseeable acts of third parties.

The guidance document classifies landowners into four categories. First, there is a landowner who can make a "thoroughly convincing demonstration" so that the government agrees there is a "very high probability" that the innocent landowner defense could be established at trial. In such a case, EPA only will require that the landowner provide access and a commitment to due care during the EPA-directed response action.[12]

Second, there is a landowner who can demonstrate that it is "likely" that the innocent landowner defense can be established, although the demonstration is not "thoroughly convincing." That second level landowner must negotiate a level of cash consideration to be provided to EPA, along with access and due care assurances.

Third, there is a landowner who cannot demonstrate eligibility for a de minimis landowner settlement, but who may be eligible for a de minimis settlement using the same criteria that apply to generators and other defendants. This third category of settlement depends upon the amount and toxicity of the hazardous substances

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[12] The guidance does create one additional problem. In order to enter into a de minimis settlement, EPA appears to require that a notice of the environmental contamination be recorded in the chain of title for the property, as well as the statement that EPA makes no representation about the appropriate use of the property. This could interfere with the transfer of the property, and it makes settlement much less attractive.

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contributed by the settlor to the facility, and is discussed in a separate guidance document.[13]

The fourth category of landowner is one who simply does not qualify for any form of de minimis settlement.

V. SELECTION OF THE ENVIRONMENTAL DUE DILIGENCE PERSONNEL

A due diligence inquiry usually requires the talents of an environmental consultant and an environmental lawyer. Some portions of the due diligence inquiry only can be performed by a lawyer, while others must be done by a consultant. Other tasks should be performed jointly. The final report, whether oral or written, generally should be prepared with precautions taken as necessary to maximize privilege and confidentiality.

If the initial level of inquiry reveals evidence that the site is or may be contaminated, it will be reasonable to investigate further. Generally, it would be reasonable to cease inquiry if further investigation indicates either that the previously discovered warning sign either is not a problem or is a problem that can be managed in an acceptable fashion (considering cost and other factors).

Simple real estate transactions involving innocuous properties or minimal purchase price may dictate one level of due diligence. Major business acquisitions, may dictate a more expansive effort. Because of the costs involved, however, the level of effort in any due diligence study must consider a variety of factors other than transaction size. One factor is the extent to which purchaser and counsel are comfortable with the scope and reliability of the seller's representations and disclosure regarding environmental matters. You must also consider the extent to which known or unknown problems can be adequately covered by indemnifications and warranties, assuming that the seller has the assets to make such promises meaningful.

The environmental lawyer will assist the client and the consultant in determining the goals and selecting appropriate methods for the environmental assessment. The lawyer will work with the consultant at all stages of the due diligence inquiry. The consultant

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[13] 52 Fed. Reg. 24333 (June 30, 1987).

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may initially be retained through the lawyer and may be required to report only to the lawyer, to maximize confidentiality of the investigation.[14] The lawyer periodically will review the results to date of the due diligence inquiry to determine the need for obtaining additional information in light of the risks identified. As information becomes available during the due diligence inquiry, the environmental lawyer may provide assistance in drafting the legal documents transferring title or possession as appropriate.

It generally is important to retain an environmental consultant in the following acquisitions: (a) transactions involving substantial environmental risks or where substantial uncertainty exists as to what the environmental risks may be, and (b) transactions involving substantial values (million dollar plus range). The costs for an initial investigation by a consultant are usually from $2,000 to $5,000, with greater costs to be incurred if significant soil or water testing is required. The consulting firm selected should be able to provide scientific and technical professionals with a wide enough range of skills to cover all possible environmental problems that may be encountered during the due diligence inquiry.

VI. THE DUE DILIGENCE INVESTIGATION

There are several steps that should be taken by a prospective purchaser to reduce the chances of environmental liability due to acquisition of real property. First, inquiry must be made into the background of any property, its history of use and the possibilities for environmental problems. This usually is performed by a consultant, although some organizations initiate the inquiry "in-house" in order to make a preliminary assessment prior to retaining a consultant. Generally this so-called "Phase One" inquiry involves a review of documents that relate to environmental issues, an inspection of the site and surrounding areas, and interviews with persons knowledgeable about the site's environmental history. If this research turns up evidence of potential problems then a purchaser should proceed to the "Phase Two," which usually means testing for the presence of

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[14] Retention of the consultant through the seller's lawyer may be advisable for Phase 2 investigations and for situations wherein contamination is strongly suspected. The client, however, must be committed to correcting any transgressions before the lawyer initiates the investigation.

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pollutants and contaminants. A risk evaluation is made and a written report prepared at the conclusion of the inquiry, which helps document that "due diligence" was performed. In a complicated transaction, as more problems turn up, you may see a "Phase Three" or "Four." These generally involve further definition or resolutions of previously identified problems.

Throughout this inquiry, a prospective purchaser should be concerned with whether acquisition is appropriate for the price to be paid, in light of the risks revealed by the environmental inquiry. An environmental "due diligence" inquiry should investigate the potential on and off-site sources of contamination, whether there are any observable indications of a contamination problem, and it should assess the potential risks and monetary costs associated with these contamination-related risks. A careful balance must be maintained between the value of the transaction, the possibility of liability, and the extent of that liability.

A. PHASE ONE INVESTIGATION: DOCUMENT REVIEW, INTERVIEWS AND SITE VISITS

Phase One of an environmental assessment involves research and non-invasive site investigations. Generally no testing for chemicals, sampling or drilling is performed in Phase One. A Phase One study often includes the activities described below, although the appropriateness of such activities, and the inclusion of other types of research and review, will depend on the particular acquisition at issue:

1. Investigation of the History of the Use of Property. The title search provides some information, but "ownership" does not equate with "use," and the focus must be on the use of the property. Knowledge of the past and present uses of a property provides a basis for estimating the types and quantities of potential pollutants and contaminants that may be present. Among the commonly used sources of information to determine past uses of, and potential problems associated with, a property are the following: (a) municipal or county records, including assessor's records and building permit records; (b) historical series of aerial photographs. These are often very useful in determining historical property usage; (c) interviews with knowledgeable persons in the area, including government officials, neighbors, past owners of the property, etc. These interviews often turn up information not contained in the public record; (d) the owner from whom the property is being purchased should be asked to supply information on the following subjects: (i) present and

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past property ownership and uses; (ii) site map; (iii) description of past and present waste disposal practices; (iv) past and present environmental conditions on or under the property; (v) the nature of past and present adjoining land uses and facilities; (vi) environmental regulatory compliance information; (vii) environmental impairment liability and comprehensive general liability insurance coverage that may apply should problems be discovered; (viii) whether the owner has significant environmental liabilities at other locations; (ix) if applicable, the owner's knowledge regarding third parties potentially liable for contribution auctions in the event of liability for environmental problems.

2. Check of Superfund-Type Lists. There are government lists of sites known or suspected to be contaminated by hazardous or other substances. Due diligence would include checking to see whether the property to be acquired is at or near a site on those lists.

3. Check of Regulatory Agency Files. This review should cover: (a) permits issued for past and present facilities located at or near the property in question; (b) past or present enforcement actions; (c) existence of notifications and reports required by regulatory agencies; (d) agency inspection reports; (e) citizen or employee complaints.

This list is not exhaustive and should be tailored to known and probable uses of the property. Information discovered at one stage of document review may necessitate further inquiry or requests.

4. On-Site Physical Inspection. The next step in a typical "Phase One" due diligence investigation is a "walk-through" of the property by a knowledgeable professional. Firsthand observance of the physical condition of the property, structures and land can provide useful clues as to the possible presence of a hazardous waste problem. This review considers the current activities on the property in terms of hazardous substance usage and fuels management; waste management practices; and local hydrogeologic conditions.

The purpose of a site walk-through is to identify any visually obvious sources of possible contamination. Among the more recurrent danger signs are the following: (a) discolored soil; (b) stained asphalt or concrete; (c) odors; (d) disturbed surface areas, which may indicate subsurface disposal; (e) evidence of underground tanks or sumps; (f) storage areas containing drums; (g) trash, waste or surface impoundments; (h)

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leaking pipes, electrical equipment, containers, or transformers; (i) evidence of wells in the area; (j) dead or dying vegetation; and (k) floor drains, sumps, dry wells or septic tanks (determine their discharge points).

Also, the interior of site buildings should be inspected to determine whether there may be signs of such hazardous substances as asbestos or electrical 'equipment containing PCBs. Although a site walk-through is indispensable to a due diligence inquiry for an operating commercial or industrial facility, it is no less important where the property to be acquired is vacant land, since such sites may have been used for disposal of hazardous safe substances by neighboring property owners or occupants.

5. Off-Site Inspection. The concern here is with migration of hazardous substances or other pollutants onto an owner's property from adjacent land. Such a migration potentially can, even in the absence of fault, create liability for a landowner. It certainly will interfere with financing and marketability.

If the business to be acquired contains an operating facility which regularly disposes of its hazardous waste off-site, the regulatory compliance status of the off-site disposal facility should be reviewed as all hazardous waste generators may be jointly and severally liable without fault for the liability associated with releases.

B. PHASE TWO INVESTIGATIONS: SAMPLING, TESTING AND ANALYSIS

The need for sampling, testing and analysis will vary from site to site, depending in part upon the nature of the information disclosed in the earlier phases of the inquiry. If, during the course of Phase One of the due diligence inquiry, no evidence of contamination has been discovered, a Phase Two often is considered unnecessary, inasmuch as it arguably would be inconsistent with "good commercial or customary practice in an effort to minimize liability."[15] However, if the earlier obtained due diligence data are equivocal, or if they confirm the existence of contamination, or if the size of the transaction requires more certainty, then some soil and perhaps groundwater sampling and analysis probably should be performed. Since this is

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[15] CERCLA § 101(35)(B), 42 U.S.C. § 9601(35)(B).

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increasingly expensive, the parties to the transaction should discuss the advisability and extent of this work and, if they agree that it should be performed, the parties should allocate costs between themselves in advance.

Various forms of testing can be performed to supplement or verify the results of the initial investigation, including soils and groundwater sampling, portable photoionization equipment, radar to scan for buried drums or abandoned underground tanks, and tank or leak testing. Radon testing also may be appropriate. Radon issues are increasingly significant in Arizona.

Sellers frequently are averse to soil and groundwater sampling and analysis. The discovery, of contamination can kill the sale and force the seller to report the findings to government authorities.

C. DUE DILIGENCE REPORTS

Another important decision is how to prepare the findings of the inquiry. It may be preferable to have the findings reported orally before creating a written document. Remember a written report may be used against the land owner in future litigation.

Generally a written report documenting the due diligence inquiry and the conclusions reached should be prepared. The environmental consultant prepares a draft of the report, which usually should be reviewed by an environmental lawyer before it is finalized. The report should include a "risk evaluation" of any actual or suspected contamination so that the parties can bargain for and allocate those risks as appropriate.

The written report sets forth the methods used and the information obtained during the assessment. There may be areas of concern which were not fully investigated. If so, the report probably should indicate what these are. The written report should represent, to the best of the investigator's knowledge, the environmental conditions for the facility in question, the extent of environmental problems on the property, and potential liabilities.

The primary goal is to qualify the purchaser as an "innocent purchaser." To of this end, the due diligence report should demonstrate that a commercially reasonable inquiry was conducted in light of all the facts and circumstances.

The report frequently should be marked "confidential: attorney-client privilege" in order to

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facilitate protection from discovery by third parties in litigation or otherwise, providing of course that steps have been taken to preserve these privileges.

D. REACTION TO THE RESULTS OF THE DUE DILIGENCE INQUIRY

The final stage of due diligence has more to do with business judgment and legal considerations than with qualifying for innocent purchaser status. The purchasers and sellers must first evaluate and allocate the risks discovered. This could mean adjusting the purchase price or terms of the deal. This may mean no purchase at all.

VII. GENERAL COMMENTS FOR LANDLORDS

You need to consider what your tenants may be doing at a particular piece of property once you have acquired it. An owner who leases a property or building together may be assuming tremendous liabilities for the waste, particularly in situations where the tenant has few assets. United States v. Argent Corp., 14 E.L.R. 20616 (D.N.M., May 4, 1984). The lease agreement should contain language regarding compliance with applicable environmental laws and regulations. If the tenant may have insufficient assets to cover response costs, an owner may want to consider the following additional protections: (1) Regular inspections of the premises by a qualified investigator to detect improper waste management at an early stage; (2) Requiring tenants to complete an environmental questionnaire on an annual (or some other) frequency setting forth the waste management practices and environmental compliance efforts. Such reports from the tenant may include copies of waste manifests; (3) Occasional soil and groundwater testing, particularly if significant quantities of hazardous substances are used on site.

VIII. CONDUCTING AN ENVIRONMENTAL AUDIT FOR AN EXISTING BUSINESS

In today's society, sooner or later someone will be around to check on compliance and environmental permits. Both the U.S. Environmental Protection Agency and the Arizona Department of Environmental Quality (or Attorneys General) have investigators. If your business is regulated under the AEQA or various hazardous substance laws, the potential civil and criminal penalties are significant. It generally is in a business best interest to be ready for the governmental inspection and enforcement auction before it happens.

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In view of the potential sanctions, steps should be taken by most businesses for assuring compliance, or, at least, for determining whether and how potential noncompliance problems that exist need to be addressed. One option is commencing an ENVIRONMENTAL AUDIT.

An ENVIRONMENTAL AUDIT provides a method for determining the status of compliance at a business or a facility. It focuses on identification of actual or potential compliance problems, determination and communication to management of the status of operations, investigation of the appropriate resolutions for these problems, and reduction of the risk of inadvertent violations and agency enforcement actions.

A "Phase One" environmental audit is similar to a "Phase One" environmental assessment. It usually consists of an examination of a facility's operating records and environmental practices to gather information about its compliance with federal, state and local environmental regulatory requirements. By conducting such an audit, focusing on potential liabilities, a company can obtain the necessary information to achieve certain goals: (1) the minimization of liability exposure of the corporation, its officers, and employees; (2) the identification of problems and advice to management regarding the issue and the approach being taken to solve the problem; (3) the assessment (and minimization) of potential penalties and damages; (4) the development of defenses and mitigating circumstances; (5) the minimization of potential adverse publicity; (6) increased marketability of the property or business; (7) improved risk management and planning ability; and (8) better relations with environmental agencies.

The benefits of an environmental audit are real and substantial. The consequences of violating pollution control laws can be severe, and a violator is no longer certain of a "grace period" in which it may come into compliance without a sanction. Environmental liabilities also can cause problems with the Securities and Exchange Commission (SEC). The specters of toxic tort litigation and strict, joint and several liability for hazardous waste pollution under the Comprehensive Environmental Response, Compensation, and Liability Act are added incentives for investigation and careful management of was the disposal practices at all facilities.

Environmental auditing entails some risk as well as benefits. Because auditing produces information on a company's environmental control efforts and problems, the audit could be a potent weapon in the hands of

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someone whose interests are adverse to those of the company.[16] As a result, lawyers frequently legal counsel to maximize confidentiality.

The need to report potential liabilities to a government agency is also a risk of any environmental audit. Under certain laws, such as CERCLA and the Clean Water Act, and regulations of the Securities and Exchange Commission, various environmental matters must be disclosed to government agencies. In such instances, it is normally beneficial to recognize and appropriately manage such reportable items before a crisis develops. Another potential risk lies in documenting incorrect deficiencies. If the final report's recommendations to bring the facilities into compliance are ignored, inaction could prove detrimental in future legal proceedings.

The audit team frequently is composed of: (1) The attorney, who provides legal guidance and with whom client discussions receive the stamp of "attorney-client privilege," and who can protect confidential, sensitive or noncompliance matters from premature discovery by outside parties. This limits legal exposure and help protect the company's legal rights; (2) Either "in-house" environmental staff or an environmental consulting firm, familiar 'with the relevant industry and regulator practices and current environmental regulations; (3) One or more company representatives familiar with the property to be audited,, able to procure such information and able to act as a liaison for the outside attorney and consultant.

A. REACTION TO THE AUDIT

While a primary objective of the environmental audit is the identification and quantification of existing and potential risks throughout the firm, it should be remembered that the decision to institute an environmental audit also should be a decision to do

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[16] An audit report documenting violations of pollution control statutes could make an enforcement case for EPA or a state or local agency or a private group suing under the ubiquitous citizen suit provisions of pollution control laws. An audit report could document that corporate officials knew of violations, opening both the corporation and the officials to criminal liability under a number of environmental statutes. Damaging information in an audit report could be ammunition for the SEC in an enforcement action, for people trying to block a merger or acquisition, or for dissident shareholders.

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something about the problems discovered. It may be costly to correct the problems and, upon learning of them, the company conceivably may be forced to reveal some information to a government agency, which in turn may be forced to take an enforcement auction. But the company that reports its own violations and is in the process of correcting them is likely to get the benefit of whatever enforcement discretion the agency has, and avoids the risk of criminal liability for knowing violations. Criminal prosecution is a possible price of having the agency discover the violation some time after it was uncovered by the company's own agents.

IX. CONFIDENTIALITY OF INTERNAL ENVIRONMENTAL AUDITS

A. Introduction

In light of today's strict federal and state environmental regulations and penalties, many businesses will find it in their best interest to conduct an internal environmental audit to identify potential problems. The rests of such an investigation usually will be intended for internal use, but the danger exists that outside parties may try to use the findings of the audit against the business that conducted it. Accordingly, it is important to take steps to protect the confidentiality of internal environmental audits. As discussed below, confidentiality may be preserved under a number of different approaches.

B. Protection from Discovery During Litigation

1. The Attorney/Client Privilege

The attorney-client privilege protects confidential communications between the attorney and client, not the underlying facts, Fed. R. Evid. 501; A.R.S. Rules of Evid., Rule 501. The privilege recognizes that sound legal advice and advocacy serves public ends and that such advice or advocacy depends on the lawyer being fully informed by the client. Martin v. Lauer, 686 F.2d 24 (D.C. Cir. 1982), on remand, 562 F. Supp. 503, aff'd in part, rev'd in part 740 F.2d 36.

a. Attorney Conducting the Investigation

To secure this privilege, a lawyer should conduct the environmental audit for the purpose of providing legal advice. As a general rule, an audit will be perceived as "legal" in nature when there is a high degree of attorney involvement because of the increased chance that protected, attorney/client communications will occur. The attorney should be given formal authorization by the client to conduct his

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investigation in his capacity as a lawyer. The audit should be conducted for the purpose of legal advice, not to provide technical solutions. The written authorization should state that the investigation is confidential, that the lawyer may interview all company employees, and that the lawyer may hire expert consultants. Employees should be instructed to cooperate with the attorney so that he may provide accurate legal advice. The information sought and communicated should be within the scope of the employee's duties.

Finally, the document submitted by the lawyer to the company should be in the form of a legal memorandum containing appropriate legal analysis and legal recommendations.

b. Attorney/Client Communication

Environmental audits should consist of communication between the lawyer and the client because it is the communication that is privileged. Communications between an attorney and a corporation's key officers and employees within the "control group" are clearly privileged, but communications with lower level employees are subject to a qualified privilege available only if the employee is directed by the corporation to communicate in confidence to the corporate legal staff, the opposing party is not caused undue hardship, and the corporation's interest in confidentiality outweighs the opposing party's need. Samaritan Foundation v. Superior Court, 114 Ariz. Adv. Rep. 8 (Ct. App. 1992). Former employees also may qualify for the privilege. In re Coordinated Pretrial Proceedings in Petroleum Products Antitrust Litigation, 658 F.2d 1355 (9th Cir. 1981).

c. Maintaining Confidentiality

The environmental audit should be kept confidential through restricted access. Employees should be told to keep the audit process confidential, and any files and documents involved should be clearly labeled as confidential and segregated from nonconfidential materials. Employees who are interviewed should be told that the attorney does not represent them individually.

d. Avoid Waiver of Attorney/Client Privilege

Care should be taken not to waive the attorney/client privilege by voluntary production of documents or by other inadvertent actions. Disclosure to government agencies may constitute a waiver with

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regard to other parties. If the government agency seeking the information will agree, the company should retain custody of its records while allowing access to the information. If possible a nondisclosure agreement should be obtained if the audit must be disclosed to an outside party. If a company delays an audit when the government is asking questions requiring investigation, the government could appoint special counsel to investigate, and the subsequent confidentiality than if the company had performed the audit internally.

2. The Attorney Work Product Doctrine

a. Work in Anticipation of Litigation

The public policy behind the privilege is to enable an attorney to effectively and efficiently serve his client by allowing him the freedom to put in writing the fruits of his mental processes without fear of its mandatory disclosure. Hickman v. Taylor, 329 U.S. 495, 511 (1947). Materials prepared in anticipation of litigation are eligible for this qualified privilege, although the required degree of immanency of the litigation is not certain. Fed. R. Civ. P. 26(b) (3); A.R.S. Rules of Civ. Proc., Rule 26(b)(3). However, in Upjohn, the Supreme Court upheld application of the privilege in au circumstance where "anticipated litigation" was no more than a remote possibility. See 449 U.S. 383. In Upjohn an internal legal audit was conducted at a time when no litigation or governmental investigation was underway and Upjohn had no reason to believe that any potential litigant had any knowledge of the facts that could provide a basis for litigation. See id. See also Campbell, Protecting the Confidentiality of Environmental Audits, 14 ALI-ABA Course Materials Journal 81, 87 (February, 1990).

The attorney work product doctrine may be available even if the attorney-client privilege has been waived. In re Sealed Case, 676 F.2d 793 (D.C. Cir. 1982). The written authorization to the attorney to perform the environmental investigation should state that the audit is in anticipation of litigation. Under this doctrine, the lawyer's analysis, including opinions, legal theories, and thoughts ("opinion work product"), will receive more protection than written documents and tangible items prepared in anticipation of litigation ("fact work product").

b. Avoid Waiver of Work Product Privilege

The work product protection should be guarded by not voluntarily disclosing audit findings to outsiders. The material should be marked "privileged

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and confidential" and segregated from nonprivileged material. The privileged information should not be accessible to noninvolved employees. Production to the government may constitute a waiver with regard to other parties. If possible, a nondisclosure agreement should be obtained before disclosing information to outside parties.

If privileged documents are produced in error during the course of large scale discovery, and the party promptly seeks to recover the documents and had taken precautions against their discovery, a court may find that the privilege has not been waived. Transamerica Computer Co. v. International Business Machines Corp., 573 F.2d 646 (9th Cir. 1978).

Because the attorney work product doctrine is a qualified privilege, rather than an absolute privilege, the privilege may be overcome by an opposing party in litigation if it can show substantial need for "fact work product" and that it will suffer undue cost or inconvenience if forced to obtain the information elsewhere. Fed. R. Civ. P. 26(b)(3).

3. Privilege for Self-Evaluation

This privilege is not universally accepted. It exists, if at all, where there is an internal review process that serves an important public interest, where disclosure would stifle candid review, and where the self-evaluation is for internal purposes. At least two states have codified the privilege. Neb. Rev. Stat. § 71-2048; Wis. Stat. Ann. § 146.38.

4. Arizona's Zlaket Rules

Arizona's recently adopted "Zlaket rules" change significantly the procedure related to civil pretrial discovery and are designed to promote immediate full disclosure of the facts relating to litigation. The new rules generally require all parties to make full disclosure of all relevant facts known to them within 40 days after the Answer to a Complaint. However, the Zlaket rule's mandatory disclosure is not intended to abrogate existing privileges or to compel disclosure of any fact or document previously not discoverable. See Jones & Napolitano, The Great Experiment: Arizona's Newly Enacted Rules of Discovery and Arbitration, 28 Arizona Attorney 18 (1992).

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C. Protecting from Disclosure to the Government

1. Government Authority to Compel Disclosure

The Environmental Protection Agency (EPA) has taken the position that it has broad authority to request the results of audits, but as a matter of public policy to encourage self-assessment has expressed that it will not routinely request environmental audit reports. Rather, the authority to request will be exercised on a case-by-case basis, and is to be limited to the specific information needed. EPA Environmental Auditing Policy Statement, 51 Fed. Reg. 25,004 (1986).

Companies should scrutinize requests by governmental agencies for internal environmental information, and provide disclosure only when it is within the agency's statutory or regulatory authority. In some instances it may be advisable to seek a court's determination as to whether the disclosure request is within the agency's authority. Under some circumstances, the government may not enter a company facility without a warrant, and if it appears that a warrant may be required, an attorney should be consulted before entry is permitted.

2. Constitutional Privilege Against Self-Incrimination

Under some circumstances, the privilege against self- incrimination under the United States Constitution may be invoked by an individual to prevent disclosure of environmental audit information. The privilege does not apply, however, to protect corporations, and only protects against incrimination of criminal activity. United States v. Allied Towing Corp., 12 E.R.C. 1305 (4th Cir. 1978).

D. Protecting Against Government Disclosure to the Public

Through the Freedom of Information Act, similar state statutes, or other means, outside parties may attempt to gain access to private audits obtained by governmental agencies. Several steps can be taken to help protect against disclosure by a governmental entity to the public. These steps include obtaining a nondisclosure agreement from the government, marking information produced to the government as confidential, requesting the government to notify you of third party requests for distribution of information, and seeking judicial review of the government's decision to disclose information. Also, a company should review the law

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under which it is required to make the disclosure to determine whether the law provides any specific mechanisms for protecting the information from subsequent public disclosure.

E. Arizona Courts: The Excel Case

In a 1989 Arizona case, a defendant corporation hired an expert, at the advice of its criminal defense lawyers, to conduct an environmental audit. The Arizona Attorney General subpoenaed the expert requesting a copy of the final report. The Arizona Court of Appeals vacated the trial court's finding in favor of the confidentiality of the environmental audit under the work product doctrine. State ex rel. Corbin v. Superior Court, 161 Ariz. 181; 777 P.2d 679 (1989). The Arizona Supreme Court, on July 11, 1989, vacated the appellate court's decision as it related to the work product doctrine, finding that the doctrine applied because the expert prepared its report based on instructions by legal counsel. State ex rel. Corbin v. Superior Court, 161 Ariz. 188; 777 P.2d 686 (1989).

F. Proposed Arizona Legislation

In response to Excel, the Arizona legislature in its 1989 session considered legislation to protect the confidentiality of environmental audits. The resulting statutory privilege would have been in addition to the work product doctrine and the attorney client privilege. Under the proposed statute, disclosure of environmental audit information could have been compelled only after confidential review by a judge. The proposed statute was not enacted, and a similar bill is not anticipated in the near future, especially in light of the Supreme Court's decision vacating Excel.

G. Summary

Assertion of the "attorney-client privilege" is one method of protecting the findings of environmental audits. To apply:

1. The attorney should hire the environmental consultant for the purpose of helping the attorney provide legal advice;

2. The findings of the audit should be communicated by the attorney to the client in the context of providing legal advice; and

3. Care should be taken not to inadvertently waive the privilege.

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The "attorney work product" doctrine also can be used to protect the confidentiality of environmental audits. To apply:

1. The audit should be performed in anticipation of litigation and at the request of an attorney; and

2. The privilege should not be inadvertently waived.

If a government agency requests confidential environmental information, a company may wish to investigate the authority of the agency to compel the disclosure of that information. If criminal activity may be involved, individuals might be able to assert the privilege against self-incrimination. To protect against further government disclosure to the public, the company may desire to obtain a nondisclosure agreement from the agency that is involved.

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CHAPTER 8

UNDERGROUND STORAGE TANK REGULATION

Underground storage tanks, known as USTs, are considered to be one of the major sources of groundwater contamination in the country. Due to generally inadequate construction, most pre-1984 installed USTs will eventually leak (the saying in the regulatory community is that there are two kinds of older USTs: those that have leaked, and those that will leak). Many of these tanks are petroleum tanks found at the corner gas station, the local car wash and at businesses across Arizona that installed their own fuel stations.

EPA estimates that there are between 2.5 and 5 million USTs. EPA, Underground Storage Tanks; Technical Requirements, Proposed Rule, 52 Fed. Reg. 12662, 12664 (Apr. 17, 1987). The Arizona Department of Environmental Quality ("ADEQ") has identified 22,000 USTs in Arizona of which approximately 2,100 have had reported leaks or discharges. EPA estimates that 1.4 million of these tanks are covered by the UST regulations, and 95% of the regulated tanks contain petroleum. Witkin, The EPA 's New Underground Storage Tank Regulations, Practical Real Estate Lawyer 89, 90 (Mar. 1989). Twenty to thirty percent of all USTs are thought to be leaking into the ground and groundwater. Once groundwater is impacted, cleanup costs frequently run in the vicinity of $200,000 to $400,000, and up.

Title VI of the 1984 Hazardous and Solid Waste Amendments to Subtitle I of the Resource Conservation and Recovery Act (RCRA) added new provisions to Subtitle I regarding USTs. 42 U.S.C. § 6901, et seq. Unlike the main body of RCRA, these provisions apply to useful materials, not just wastes. In 1986, Arizona adopted its own UST law. A.R.S. § 49-1001, et seq. (formerly § 36-3301(6)). It closely parallels the RCRA UST requirements, and is administered by ADEQ. In 1989 and 1990, significant amendments were made to the law.

(1) Applicability of UST Regulations.

RCRA defines a UST as "any one or combination of tanks (including underground pipes connected thereto) which is used to contain an accumulation of regulated substances, and the volume of which . . . is ten per centum or more beneath the surface of the ground." 42 U.S.C. § 6991(1); A.R.S. § 49-1001.17. A "regulated substance" is defined as any substance regulated under

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§ 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), 42 U.S.C. § 9601, et seq., but excludes those materials regulated as hazardous wastes under Subtitle C of RCRA. Also, the definition of regulated substance includes petroleum, which in turn is defined to include "crude oil or any fraction thereof. . . ." § 6991(2)(B). Excluded from the definition of UST, and therefore from the regulations, are home heating oil tanks, septic tanks and otherwise regulated pipelines. 42 U.S.C. § 6991(1)(A). Similarly, if the tank is used on a farm (a track of land devoted to the production of crops or the raising of animals, 53 Fed. Reg. 37117) or for a residence, was used to store motor fuel for non-commercial purposes and had a capacity of not more than 1100 gallons, then the tank would not need to comply with any of the federal or state regulatory requirements. 42 U.S.C. § 6991(1)(A); A.R.S. § 49-1001(17). Arizona law also excludes tanks situated in an underground area such as a basement, cellar or mine if the tank is on or above the surface of the floor.

(2) General Requirements.

RCRA requires EPA to promulgate regulations regarding leak detection systems, release reporting, record keeping requirements, performance standards and proper closure of tanks. EPA has done so by adoption of the federal UST Regulations, 40 C.P.R. § 280. Arizona has not yet promulgated its own UST regulations but has incorporated the federal requirements.

The regulations distinguish "new" from "existing" tanks. Any tank for which installation commenced on or before December 22, 1988 is deemed an existing tank; tanks installed after that date must meet requirements for new tanks. The regulations require that all tanks and piping meet significant new performance and safety standards, but existing tanks are given a ten year "phase-in" period (until December 1998) to make required modifications. Depending on the age and condition of the existing tanks, some changes, such as leak detection system installation, must be made before 1998.

In brief, the new tank performance standards require tanks and piping have the following:

1. Corrosion protection;

2. Leak detection systems; and

3. Spill/overfill prevention systems.

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In addition, any new tanks must meet proper installation requirements including complying with a "code of practice" as described in the regulations. 42 U.S.C. § 6991(b)(d); A.R.S. § 49-1006. The tank owner or operator must also follow a prescribed procedure for certifying that the installation of the tank has met the necessary "code of practice." 40 C.F.R. § 280.20.

Specific requirements have also been imposed regarding the upgrading of existing UST systems. 40 C.F.R. § 280.21. These require that not later than December 22, 1998, all existing UST systems must either meet the new UST system performance standards of 40 C.F.R. § 280.20 (upgrade to meet the interior lining, cathodic protection, and spill and overfill prevention equipment requirements) or cease operation and close pursuant to the closure requirements of the regulations. If upgrading is chosen, it must be done either by installing an interior lining or through the use of cathodic protection, or a combination of both. Piping must also be upgraded. In addition, the spill and overfill prevention equipment requirements applicable to new UST systems also apply to existing systems. (The phase in schedule is discussed in detail in subparagraph C below).

A. Definition Of Owner/Operator

Federal and state law imposes responsibility for USTs on "owners" and "operators." The term "operator" means "any person in control of, or having responsibility for, the daily operation" of the UST. 42 U.S.C. § 6991(4); A.R.S. § 49-1001(8). "Owner" is defined as "a person who owns an underground storage tank used for storing, using or dispensing regulated substances and which has been in use from and after November 8, 1984, or with respect to tanks no longer in use, the person who owned a tank immediately before the discontinuation of its use." A.R.S. § 49-1001(01). Arizona law also provides that a person who owns or owned property at the time a UST is located on the property is the owner of the UST if (1) ADEQ is unable to identify the person who owned or operated the UST immediately before the discontinuation of its use after using all reasonable efforts to do so and (2) the person engages in activity with respect to the UST that is subject to regulatory requirements. A.R.S. § 49-1001.01.A.

Arizona law excludes from the definition of owner any person who holds indicia of ownership (e.g., a mortgage) primarily to protect a security interest in either the UST or the property on which the UST is located, provided the person does not participate in the management of the UST and is not otherwise engaged in

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petroleum production, refining or marketing. A.R.S. § 49-1001.01.B. In order to qualify for this exemption, however, the person must exercise due diligence prior to acquiring possession or control of the property or the UST. A.R.S. § 49-1001.01C. Thus, for example, a person who holds a mortgage on the property would not normally be liable as an owner, assuming due diligence, but a petroleum marketing firm that sells USTs to gasoline stations and retains a security interest in the USTs to secure payment would be treated as an owner.

The interpretation of "owner" under Arizona law is significant because ADEQ has concluded in at least one case that a person who purchases property after a UST has been removed could not be held liable by ADEQ for clean up costs necessitated by leaks from the UST before its removal. "It is the owner of the UST that is liable for corrective action to remediate a release, not a subsequent landowner." In re The Village Center Partnership, Amended Decision and Order, Docket No. D-14-89.

B. Notice Requirements

The owner of any regulated UST must notify the designated state agency (in Arizona's case, ADEQ) of the age, size, type, location and uses of such tanks. By November 9, 1985, all owners of USTs were to notify EPA or the appropriate state agency of the existence of a tank through use of EPA notification forms. 40 C.F.R. § 280.22; A.R.S. § 49-1002. A copy of a sample notification form is attached as Appendix A. Owners of tanks taken out of operation before January 1, 1974 are exempt from giving notice, regardless whether the tank was removed from the ground or not. Owners of tanks taken out of operation after January 1, 1974 but before November 8, 1984 were to provide information about the tanks to the EPA or State, unless the tank had been removed from the ground. Owners of tanks taken out of operations after November 8, 1984 must also notify EPA or the state. A.R.S. § 49-1002.C, D and E. Any owner who installs a new tank must notify ADEQ within 30 days. 40 C.F.R. § 280.22; A.R.S. § 49-1002.F.

C. UST Technical Requirements

Significant new general operating requirements are also imposed by the regulations. 40 C.F.R. § 280.30. This includes ensuring that releases due to spill and overflow do not occur, ensuring that releases due to corrosion are prevented for as long as the UST system is in use, ensuring that the UST system is made of a material that is compatible with the substance stored in the UST, and ensuring that repairs of the UST will

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prevent releases due to structural failure or corrosion. Any repairs must be conducted in accordance with the applicable code of practice. 40 C.F.R. § 280.30, .31, .32, and .33. Also, owners and operators of a UST are required to comply with reporting and recordkeeping requirements.

Two of the three technical requirements for existing tanks, corrosion protection and spill/overflow prevention, do not need to be met until December 22, 1998. 40 C.F.R. § 280.21.

With regard to the other technical requirement, leak detection and prevention, compliance with this requirement is being phased in for existing USTs depending on their age:

If the tank is this old:	It must have leak detection by December 22 of:
25# or unknown	1989
20 - 24	1990
15 - 19	1991
10 - 14	1992
under 10	1993

Additionally, all USTs must have had release detection for pressurized piping by December 22, 1990. 40 C.F.R. § 280.40(c).

To comply with the leak detection requirement, a UST owner/operator must utilize the following:

(1) Monthly Monitoring Inventory: The tank must be checked at least once a month using one (or a combination) of the following methods:

* Automatic tank gauging
* Monitoring for vapors in the soil
* Interstitial monitoring
* Monitoring for liquids on the ground water
* Other approved methods

-or-

(2) Monthly Inventory Control With Annual Tank Tightness Testing: Tank contents must be measured daily (and compiled monthly). Additionally, an engineering consulting firm must conduct a tank tightness test every year (cost ranging from $1,500 to $3,000 per test). This method can be used only until December 22, 1998.

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By December 22, 1990, the piping connected to the tank must also comply with leak protection standards, unless the piping is "suction piping," which must comply by December 22, 1989 if the tank is over 25 years old. 40 C.F.R. § 280.41(b).

The three technical compliance requirements do not apply to a UST system that contains a de minimis concentration of regulated substances. The preamble to the federal regulations state that EPA has not set a specific percentage threshold as the de minimis cutoff, but instead EPA will determine whether a tank's concentration is de minimis on a case-by-case basis.

In addition, any new tanks must meet proper installation requirements. The faster all tanks and piping are brought up to regulatory compliance, the greater the reduction in potential liability for damages caused by leaks.

D. Requirements In Event of a Release.

Owners and operators must report to ADEQ within 24 hours (or another reasonable time period if specified by ADEQ) the release or suspected release of regulated substances from a UST. Any release, no matter how small must be reported. "Release" means a spill, leak, discharge, escape or disposal of regulated substance from a UST into the subsurface soil, groundwater or surface water. A release is suspected if released regulated substances are discovered at the UST site or the surrounding area, unusual operating conditions (such as sudden product loss or the unexplained presence of water in the tank), or monitoring results from release detection methods indicate that a release may have occurred. A.R.S. § 49-1004.A. This reporting is not required if the "unusual conditions" or the release detection are due to defective equipment. 40 C.F.R. § 280.50; A.R.S. § 49-1001.15. The initial notice may be made either orally or in writing but must be followed within 14 days by a written report to ADEQ specifying the details of the release and the corrective action taken. A.R.S. § 49-1004.C.

In addition to reporting releases or suspected releases, the owner or operator is also required to take immediate action to prevent the further release of a regulated substance, and also identify and mitigate any fire, explosion or vapor hazards. 40 C.F.R. § 280.61; A.R.S. § 49-1005. Further actions are prescribed by the regulations, including site characterization, free product removal, investigations for soil and groundwater cleanup, and preparation and execution of a corrective action plan.

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ADEQ has issued guidance documents setting forth detailed requirements for corrective actions which should be consulted in the event of a release. These include the following:

LUST Notification and Permit Checklist (Feb. 12, 1990)
LUST Quarterly Monitoring Report Checklist (Nov. 20, 1990)
Free Product Removal Checklist

In addition to subjecting the owner or operator to civil penalties, the failure to follow the reporting and corrective action requirements can result in ADEQ reducing the amount of reimbursement under the UST Assurance Account, discussed in greater detail later.

E. UST Closure

A persistent problem in the past was the abandonment of existing USTs while they still contained regulated substances. The UST regulations address this by mandating closure requirements. Different regulations are applied for temporary closure, permanent closure or changes in service. A UST may be temporarily closed for a period of up to 12 months. A UST not used for a period of 12 months or longer must be permanently closed. 40 C.F.R. § 280.70 and .71. The regulations incorporate the procedures prescribed in American Petroleum Institute publications on the cleaning, removal and disposal of USTs.

Permanent closure requires that ADEQ be given 30 days' advance notice of closure, that the tank be emptied and cleaned, and that either it be removed or filled with an inert material such as sand. The owner or operator must also conduct an assessment of the site to determine whether any further corrective action or remediation is required. 40 C.F.R. § 280.71 and 280.72; A.R.S. § 49-1008.

The regulations provide, however, that the owner or operator of a UST system permanently closed before December 22, 1988 did not need to close the tank in accordance with the current state and federal regulations if ADEQ determined that the tank is not a current or potential threat to human health and the environment. The preamble to the regulations indicates that this exception also applies to tanks abandoned before December 22, 1988. 40 C.F.R. § 280.73.

If ADEQ determines, however, that "releases from the UST may, in [its judgment], pose a current or potential threat to human health and the environment,"

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ADEQ may order the owner or operator to assess the excavation zone and subsequently close the UST in accordance with the new regulations. No action generally is required unless and until such an order is received from ADEQ. 40 C.F.R. § 280.73.

F. Financial Responsibility

Finally, to ensure that owners and operators of USTs can comply with the new standards, financial responsibility requirements have been established. 40 C.F.R. §§ 280.90 to 280.111. Essentially, owners and operators must prove that they have sufficient funds to cleanup any leaks and to compensate third parties for damages suffered as a result of a leak. For most owners, this means that they must have at least $1 million per occurrence insurance coverage. 40 C.F.R. § 280.93. The owner or operator of a UST in operation after October 26, 1990 also must file with ADEQ a statement of financial responsibility containing evidence that the owner or operator is financially capable of taking actions required by law, such as remediation, in the event of a release. A.R.S. § 49-1006.A. The amount of required financial responsibility varies with the nature and size of the facility.

On September 16, 1992, ADEQ adopted rules specifying in detail the amount and type of evidence required to establish financial responsibility for petroleum USTs. A.A.C. R18-12-300 et seq. Only one person, either the owner or operator is required to demonstrate financial responsibility but both are liable in the event of noncompliance.

The rules provide that a person must provide evidence of financial responsibility by certain deadlines depending on the status of the owner. The following deadlines are established in R18-12-301A:

1) Within 180 days of the effective date of the rule for all petroleum marketing firms owning 13 or more USTs at more than one facility; all petroleum marketing firms owning 100 or more USTs regardless of the number of facilities; all other petroleum UST owners that report a tangible net worth of $20 million or more. (This deadline was March 16, 1993.)

2) By December 31, 1993 for all other petroleum UST owners, excluding all local government agencies.

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3) All local government entities: one year from the date EPA promulgates final rules providing additional mechanisms for financial responsibility. EPA promulgated these rules at 58 Fed. Reg. 9026 (Feb. 18, 1993) with an effective date of March 22, 1993. (Thus, this deadline is March 22, 1994.)

There are numerous ways in which an owner or operator may demonstrate the required financial responsibility including financial test of self worth (self-insurance), R18-12-305; guarantees, R18-12-306; surety bond, R18-12-308; letter of credit, R18-12-309; insurance and risk retention group, R18-12-307; trust fund, R18-12-312, state assurance fund (if available) R18-12-301B. Any one or combination of the foregoing may be used.

The amount of required financial responsibility per occurrence varies depending on the status of both the owner and operator. R18-12-303A. The required financial responsibility in the aggregate is determined by the number of USTs owned or operated. R18-12-303B. The aggregate amount of coverage is the maximum amount available on an annual basis, regardless of the number of occurrences in any one year. The following table summarizes the required coverages:

Owner/Operator	Per Occurrence	Aggregate
Petroleum marketing facility or averaging more than 10,000 gallons per month throughput of petroleum	$1 million	____
All other owners or operators	$500,000	____
1-100 petroleum USTs	____	$1 million
101 petroleum USTs or more	____	$2 million

(3) Enforcement and Corrective Action.

A. Government Enforcement.

Enforcement provisions for leaking USTs authorize EPA to review facility records, conduct inspections including tank testing, issue administrative orders or commence civil suits. Civil sanctions include a penalty

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of up to $25,000 per tank per day for failure to adhere to a compliance schedule and a civil penalty of $10,000 for failure to meet the notification requirements. 42 U.S.C., § 9006. Similarly, A.R.S. § 49-1011 authorizes ADEQ to review facility records and documents and conduct inspections while A.R.S. § 49-1013 allows ADEQ to issue administrative orders requiring compliance, backed up by $25,000 per day civil penalties. Violations of the act, as opposed to an order, are subject to $10,000 per tank per day civil penalties.

Arizona law also provides that ADEQ may take corrective action with respect to a release of petroleum if ADEQ determines that the action is necessary to protect health, safety or the environment, or if ADEQ cannot locate the owner or operator of the tank which is subject to the corrective action. A.R.S. § 49-1017.A. ADEQ can also take corrective action if the financial assurance requirements were not sufficient to cover the corrective action costs, and expenditures from the UST revolving fund are necessary to ensure effective corrective action, or if the owner or operator refuses to comply with an administrative order to do so. If ADEQ takes corrective action, the owner and operator are liable for all direct costs incurred including the cost of the corrective action itself and associated investigations, enforcement and litigation. A.R.S. § 49-1017.C.

Section 205 of the Superfund Amendments and Reauthorization Act (SARA) authorizes a UST clean-up program similar to the EPA's clean-up program for abandoned hazardous waste sites. EPA or a state may undertake corrective action with respect to any release of petroleum into the environment from a UST only if such action is necessary to protect the environment or public health. To initiate such an action, the following criteria must be met: (A) the owner or operator of the tank concerned cannot be located; (B) a situation exists which requires prompt remedial action to protect the environment or human health; (C) remedial action at the UST site exceeds the amount of insurance coverage available and expenditures from the new $500 million Leaking Underground Storage Tank Trust Fund are necessary for an effective corrective action; and (D) the owner or operator of the tank has failed or refused to comply with an order from the EPA or a state to comply with the remedial action regulations. 42 U.S.C. § 6991b(h)(2); A.R.S. § 49-1017. Once the remedial action has been completed, EPA or a state may file an enforcement action against the owner or operator of the UST concerned to recover the costs incurred. 42 U.S.C. § 6991; A.R.S. § 49-1017.D.

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B. Private Causes of Action.

Arizona law also provides a cause of action to recover reasonable costs on behalf of anyone who undertakes corrective action for a release of petroleum from a UST or who pays for corrective action undertaken by the state to cure such a release. A.R.S. § 49-1019. The statute provides for methods of apportioning liability for causing or contributing to the release of the petroleum. In apportioning liability for a petroleum release, a court is directed to consider the ability of the parties to demonstrate that their contribution can be distinguished; the amount of petroleum involved; the degree of toxicity of the petroleum; the degree of involvement by the parties in generating, transporting, treating, storing, or disposing of the petroleum; the degree of care exercised by the parties, and the degree of cooperation by the parties with government officials. A.R.S. § 49-1019.C.

(4) UST Revolving Fund

The 1990 amendments to the Arizona UST Act created the Arizona Underground Storage Tank Revolving Fund, which is divided into three separate accounts designated as the regulatory account, the assurance account, and the loan account. A.R.S. § 49-1015.A.

A. Regulatory Account.

Money from the regulatory account may be used to provide state matching monies, for reasonable and necessary costs of taking corrective actions, and for costs of recovering expenses of corrective actions. A.R.S. § 49-1015.C.

B. Assurance Account.

ADEQ may use money in the assurance account to provide partial coverage of corrective action costs to reimburse ADEQ for costs incurred by ADEQ in taking corrective actions and to pay for reasonable and necessary costs incurred by ADEQ for costs of administering the assurance account. A.R.S. § 49-1051.B. To the extent that money is available in the assurance account, ADEQ must also provide partial coverage to persons applying for coverage of costs incurred after September 15, 1989 for a corrective action initiated to respond to a release from a UST. A.R.S. §§ 49-1052.A-C. The Department must establish criteria for determining priority between applications. A.R.S. §§ 49-1052.A-C.

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There are two options for payment under the assurance account. The first option requires a $5,000 deductible and provides reimbursement up to $145,000 for releases or suspected releases reported to ADEQ before December 31, 1991, and $130,000 for those reported after that date. The second option requires a $25,000 deductible but provides reimbursement up to $225,000 for releases or suspected releases reported to ADEQ before December 31, 1991, and $200,000 for those reported after that date.

Although the UST Revolving Fund has existed for several years, ADEQ could not disburse any funds because there were no rules to administer the account. The necessary rules became effective on September 16, 1993. R18-12-601 et seq. The rules relating to the assurance account establish the following requirements:

(1) The environmental consultant or contractor who conducts a cleanup after the effective date of the rules must have minimum qualifications. R18-12-601. Consultants must provide verifiable documentation of successful supervision of three UST corrective actions within the past five years, and have a bachelor's degree from an accredited college or university in the physical sciences or related field or have a relevant professional registration. Contractors must satisfy the same experience requirement and possess a valid license, if required by the Registrar of Contractors. The rules also state that consultants and contractors may apply for prequalification on forms provided by ADEQ. R18-12-602. Consultants and contractors involved in a cleanup prior to the date the rules are certified are not required to satisfy these qualifications. R18-12-601B.

(2) The applicant must submit an application for reimbursement on forms provided by ADEQ. The rules set forth in detail the contents of the application. R18-12-604. A copy of the form currently in use is attached as Appendix B. The following information is required:

(a) Information about the applicant, including financial statements and income tax returns.

(b) Information about the UST and the facility where the UST was or is located.

(c) A summary of the costs for which reimbursement is requested with complete and

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detailed supporting documentation, including all invoices and proof of payment.

(d) Information about the person(s) who performed the corrective action services.

(3) The costs incurred and the work performed must be reasonable. ADEQ will determine whether a cost is reasonable based upon the results of periodic surveys of consultants and contractors that it conducts. R18-12-605.

(4) All applicants will be prioritized based primarily, but not exclusively, upon financial need and the potential threat posed to the environment by the release which was cleaned up. R18-12-606. The priority will be used to determine when a claim is paid, not the amount.

(5) The amount of reimbursement is subject to reduction depending upon the degree of compliance or noncompliance by the owner or operator with all applicable rules and statutes at the time the release was discovered. R18-12-608. A copy of the ADEQ form used to calculate the reduction in reimbursement is attached in Appendix C.

(6) If applicants are dissatisfied with the final reimbursement determination by ADEQ, they have the right to appeal. R18-12-609 and 610.

(7) There are also provisions allowing ADEQ under very limited conditions to make advance payments directly to consultants and contractors in the event an applicant cannot afford to pay for the cleanup and then wait for reimbursement. R18-12-607.

ADEQ anticipates that not all applicants will be paid immediately due to insufficient money in the assurance account. In cases where applications score equally (based primarily upon threat to the environment and financial need), payment will be made according to the date the application is received by ADEQ. In cases where applications score equally and are submitted on the same date, the one with the earlier date of corrective action for which coverage is sought shall receive the higher priority for payment.

ADEQ started accepting applications beginning April 13, 1992. The submission deadline in order to be considered for payment in the first round was April 30, 1992. ADEQ continued to accept applications after April 30th and will announce deadlines for future rounds.

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ADEQ has recently begun issuing payment to those owners and operators who submitted applications for reimbursement in the first round.

C. Loan Account.

Subject to availability, the Arizona Department of Environmental Quality may lend up to $100,000 but not less than $5,000 from the loan account to an owner or operator of a UST for any of the following purposes:

1. Any actions necessary to meet tank performance standards.

2. Corrective actions in connection with activities described in paragraph 1.

3. Paying a specified portion of corrective action costs.

A.R.S. § 49-1071.A. The Department must establish criteria for determining priority between loan applications. A.R.S. § 49-1071.C. The term of any loan from the loan account may not exceed 10 years. A.R.S. § 49-1071.E. ADEQ has not yet promulgated the necessary rules to administer the Loan Account.

D. Funding

The 1990 amendments to Arizona's UST Act also imposes a UST tank tax on owners and operators of certain USTs. A.R.S. § 49-1031, et seq. The tax is composed of a one time tax of $100 per UST and an annual tax measured by the quantity of regulated substances placed in a UST during any calendar year. The "flow through" tax is levied at a rate of one cent per gallon of regulated substance placed in a UST during any calendar year and is due on or before March 31st for the preceding year. A.R.S. § 49-1031.A.

ABOVE GROUND STORAGE TANK REGULATION

In contrast to underground storage tanks, there are no comprehensive statutory or regulatory programs that govern above ground storage tanks. There are, however, federal, state and local restrictions on the storage of certain types of materials in above ground tanks. For example, special restrictions apply to the storage of hazardous substances and petroleum products. Thus, while there are no regulations governing above ground storage tanks per se, storage of certain materials in above ground storage tanks may subject the tank to special restrictions.

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The need to regulate above ground storage tanks was demonstrated very dramatically in the January 2, 1988 collapse of a 4,000,000 gallon above ground storage tank owned by Ashland Oil Company in Pennsylvania. The collapse of the tank resulted in 3.8 million gallons of diesel fuel being spilled, 750,000 gallons of which was spilled into the Monongahala River.

1. Federal Restrictions.

The EPA established the Spill Prevention Control and Countermeasures ("SPCC~) Regulations, 40 C.F.R. 112 pursuant to its authority under the Clean Water Act, 33 U.S.C. § 1251 et seg. The SPCC regulations establish requirements relating to certain above ground storage tanks. In particular, the regulations apply to owners and operators of nontransportation related on shore and off shore facilities engaged in storing, processing, refining, transferring, distributing or consuming oil and oil products and which are located in such a way that they could reasonably be expected to discharge oil in harmful quantities into or upon the "navigable waters of the U.S. For purposes of the regulations, oil is defined as "oil of any kind or in any form, including but not limited to petroleum, fuel oil, sludge, oil refuse and oil mixed with waste other than dredged oil." 40 C.F.R. § 112.2. Further, EPA interprets this definition to include crude oil, refined petroleum products and nonpetroleum products such as vegetable and animal oil. (56 Fed. Reg. 54612, Oct. 22, 1991) As in the case of other Clean Water Act programs, which will be discussed in greater detail later in the course, the definition of navigable water is very expansive and includes such things as the Salt River and its tributaries, and desert washes.

The SPCC regulations apply only to those facilities where there are (1) underground storage tanks with a facility capacity in excess of 42,000 gallons and (2) above ground storage tanks at facilities where the total facility capacity is in excess of 1320 gallons or where there are above ground storage tanks, any one of which has a capacity of greater than 660 gallons. In October 1991, EPA proposed to exempt underground storage tanks from the applicability of the SPCC regulations but indicated that bunkered tanks, partially buried tanks and tanks in subterranean vaults would still be considered above ground tanks for the purposes of the SPCC program. Thus, in view of the Arizona definition of underground storage tanks as any tank that is at least 10% underground it is possible that a tank could be considered an underground storage tank for purposes of Arizona's UST Act but an above ground storage tank

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for purposes of the SPCC regulation and subject to both regulatory programs.

A. Notice

EPA regulations require owners and operators subject to the SPCC program to provide notice to EPA of the number and size of above ground tanks, the total above ground capacity and the distance to the nearest navigable water of such facilities. 40 C.F.R. 112. The rules also require that such notice be provided prior to the operation of any new facility.

B. Spill Prevention

The SPCC program provides that owners and operators of such facilities must have a written Spill Prevention Control and Countermeasure Plan. 40 C.F.R. 112.3. The plan must be prepared within six months of the facility beginning operations and must be certified by a registered professional engineer. Copies of the plan must be maintained at the facility, or if the facility is attended less than 8 hours a day, must be maintained at a centralized field office. The EPA Regional Administrator may grant an extension to the six month requirement but the applicant must provide a full explanation of the cause for the delay and a proposed time schedule for compliance.

Further, whenever there is a change in a facility's design, construction, operation or maintenance which materially affects the facility's potential for the discharge of oil into navigable waters of the U.S. or adjoining shorelines, the Spill Prevention Control and Countermeasure Plan must be amended. In addition, the plan must be reviewed every three years and it must be amended within 6 months of that review if (1) a more effective prevention and control technology has been developed which significantly reduces the likelihood of a spill and (2) such technology has been field proven at the time of the review. 40 C.F.R. 112.5.

The contents of the Spill Prevention Control and Countermeasures Plan must include the following types of information: history of spills within the last 12 months, prediction of direction of flow and total quantity of oil which could be discharged, appropriate containment and diversionary structures to prevent the discharged oil from reaching navigable waters of the U.S. (e.g., dikes, berms, retaining walls, curbing, drainage systems, retention ponds, etc.) and an oil spill contingency plan. 40 C.F.R. 112.7 and 9. Regulations proposed by EPA in October 1991 will also

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require the plan to include emergency notification procedures, the name of the spill response coordinator, lists of available equipment and personnel, a vulnerability analysis which includes an estimate of the areas most likely to be affected and an indication of such things as population centers, wetlands, wellheads, endangered species, drinking water supplies and sensitive ecosystems, and a fault tree analysis which projects various spill scenarios.

C. Spills

In the case of certain discharges or spills, the SPCC program requires that notice be provided to the EPA Regional Administrator within 60 days. The notice must include the cause of the spill, the name of the facility, the corrective action taken, preventive measures instituted and other relevant information. 40 C.F.R. 112.4. This notice provision is required if there is any single spill of 1,000 gallons into a water of the United States or the adjoining shoreline or in the event that there is a discharge of oil in harmful quantities. A discharge of oil in harmful quantities is defined as any discharge that results in levels in excess of water quality standards, which causes a film or sheen on the surface or discoloration of the water or adjoining shoreline or causes a sludge to be deposited beneath the surface of the water or upon adjoining shorelines.

D. Civil Penalties

Failure to abide by the SPCC regulations subjects the owner and operator to civil penalties of up to $5,000 per day per violation. 40 C.F.R. 112.6. Prior to such penalties being imposed, however, the owner or operator must be given appropriate notice and an opportunity for hearing. 40 C.F.R. 114.1.

E. Limits of Liability

Finally, the SPCC regulations provide certain maximum liability limits in the event that removal actions are conducted by the United States government as a result of a release or discharge of oil from a fixed onshore facility.

Tank Capacity	Above Ground Tank Limit	Below Ground Tank Limit
10 barrels	$4,000	$5,200
11-170	$60,000	$78,000
171-500	$150,000	$195,000
501-1,000	$200,000	$260,000

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The foregoing limits are not applicable if the discharge was due to willful negligence or willful misconduct within the knowledge of the owner or operator. 40 C.F.R. 113.4.

Besides the special restrictions on above ground storage tanks containing oil, there are special federal limitations on the storage of volatile organic liquids (i.e. liquid petroleum). All tanks used to store liquid petroleum must meet minimum equipment standards. 40 C.F.R. § 60.110(b). There are also special inspection and monitoring requirements to ensure that volatile organic compounds ("VOCs") are not released. Id.

2. Arizona Restrictions.

Arizona does not have a comprehensive program to regulate above ground storage tanks. It does, however, restrict the storage of hazardous substances. The Solid Waste Management Act governs the storage of hazardous substances. A.R.S. § 49-701. The restrictions in the Solid Waste Management Act are similar to the federal restrictions on the storage of hazardous substances set forth in The Resource Conservation and Recovery Act (RCRA) which will be discussed in other sections.

During the 1991 legislative session, a bill was introduced in the Arizona House of Representatives (HB 2496) that would have instituted a comprehensive above ground storage tank program similar to the UST program. If passed, the bill would have imposed on the owners and operators of above ground storage tanks, requirements very similar to the requirements imposed on owners and operators of USTs. The bill failed to pass the Arizona Legislature, however, the fact that such a bill was introduced indicates that there may be future attempts to institute in Arizona an above ground storage tank program similar to the UST program.

3. Local Restrictions.

Local regulations, including county and city requirements, also restrict the storage of certain materials in above ground storage tanks. For example, the City of Phoenix has several restrictions on the storage of certain materials in above ground storage tanks. A person must obtain a permit from the Phoenix Fire Department before storing any material that produces conditions "hazardous to life or property." Phoenix Fire Code, Art. I, Sec. 1-19.1 (1990). The Phoenix Fire Code specifically lists several materials that require a permit before storing, including: compressed gasses, flammable and combustible liquids,

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hazardous chemicals and liquefied petroleum gases. Phoenix Fire Code, Arts. VIII, XVI, XX and XXIII (1990). To receive a permit, the Fire Department must inspect and approve the receptacles and storage places to be used. Phoenix Fire Code, Art. I, Sec. 1-19.2 (1990).

Phoenix also restricts the storage of materials in above ground storage tanks by limiting the areas where a person can store materials. In general, a person can only store flammable materials within areas zoned as Light Industrial or Industrial. Phoenix Zoning Ord., Chap. 6, Sec. 627 and 628 (1991). There are provisions, however, that allow a person to sometimes store materials within a Commercial Intermediate District or a Commercial District. Phoenix Zoning Ord., Cap. 6, Sec. 623 and 624 (1991). For example, a service station owner can store propane at a service station that is within an area zoned as a Commercial Intermediate District.

Many smaller cities and towns which have not adopted their own fire code have adopted or at least follow the Uniform Fire Code. That Code also contains limitations on above ground storage tanks containing flammable liquids. Article 79, Division V. The Uniform Fire code establishes restrictions on the locations of above ground tanks storing flammable liquids and minimum clearance from property lines, public rights of way and important buildings. The Code specifies distances and spacing between adjacent tanks on the same property and minimum requirements for supports, foundations and anchorage. The Code also contains provisions requiring drainage dikes and walls in order to prevent the accidental discharge of liquid from endangering adjacent tanks, adjoining property or reaching waterways.

519924

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Notification for Underground Storage Tanks

STATE USE ONLY

ID NUMBER

DATE RECEIVED

A. Date Entered Into Computer _____
B. Data Entry Clerk Initials _____
C. Owner Was Contacted to Clarify Responses. Comments

State Agency Name and Address
ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY

TYPE OF NOTIFICATION

☐ A. NEW FACILITY ☐ B. AMENDED ☐ C. CLOSURE

____ No. of tanks at facility ____ No. of continuation sheets attached

INSTRUCTIONS

Please type or print in ink all items except "signature" in section V. This form must be completed for each location containing underground storage tanks. If more than five (5) tanks are owned at this location, photocopy the following sheets, and staple continuation sheets to the form.

GENERAL INFORMATION

Notification is required by Federal law for all underground tanks that have been used to store regulated substances since January 1, 1974, that are in the ground as of May 8, 1986, or that are brought into use after May 8, 1986. The information requested is required by Section 9002 of the Resource Conservation and Recovery Act, (RCRA), as amended.

The primary purpose of this notification program is to locate and evaluate underground tanks that store or have stored petroleum or hazardous substances. It is expected that the information you provide will be based on reasonably available records or in the absence of such records, your knowledge, belief, or recollection.

Who Must Notify? Section 9002 of RCRA, as amended, requires that, unless exempted, owners of underground tanks that store regulated substances must notify designated State or local agencies of the existence of their tanks. Owner means—

a) in the case of an underground storage tank in use on November 8, 1984, or brought into use after that date, any person who owns an underground storage tank used for the storage, use, or dispensing of regulated substances, and

b) in the case of any underground storage tank in use before November 8, 1984, but no longer in use on that date, any person who owned such tank immediately before the discontinuation of its use.

c) if the State agency so requires, any facility that has undergone any changes to facility information or tank system status (only amended tank information needs to be included).

What Tanks Are Included? Underground storage tank is defined as any one or combination of tanks that (1) is used to contain an accumulation of "regulated substances," and (2) whose volume (including connected underground piping) is 10% or more beneath the ground. Some examples are underground tanks storing: 1. Gasoline, used oil, or diesel fuel, and 2. industrial solvents, pesticides, herbicides or fumigants.

What Tanks Are Excluded? Tanks removed from the ground are not subject to notification. Other tanks excluded from notification are:

1. farm or residential tanks of 1,100 gallons or less capacity used for storing motor fuel for noncommercial purposes;
2. tanks used for storing heating oil for consumptive use on the premises where stored.
3. septic tanks;
4. pipeline facilities (including gathering lines) regulated under the Natural Gas Pipeline Safety Act of 1968, or the Hazardous Liquid Pipeline Safety Act of 1979, or which is an intrastate pipeline facility regulated under State laws;
5. surface impoundments, pits, ponds, or lagoons;
6. storm water or waste water collection systems;
7. flow-through process tanks;
8. liquid traps or associated gathering lines directly related to oil or gas production and gathering operations;
9. storage tanks situated in an underground area (such as a basement, cellar, mineworking, drift, shaft, or tunnel) if the storage tank is situate upon or above the surface of the floor.

What Substances Are Covered? The notification requirements apply to underground storage tanks that contain regulated substances. This includes any substance defined as hazardous in section 101 (14) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), with the exception of those substances regulated as hazardous waste under Subtitle C of RCRA. It also includes petroleum, e.g., crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute).

Where To Notify? Send completed forms to:

Arizona Department of Environmental Quality
UST Section, Facility Reporting Unit
P.O. Box 600, Room 4050
Phoenix, Arizona 85001-0600

When To Notify? 1. Owners of underground storage tanks in use or that have been taken out of operation after January 1, 1974, but still in the ground, must notify by May 8, 1986. 2. Owners who bring underground storage tanks into use after May 8, 1986, must notify within 30 days of bringing the tanks into use. 3. If the State requires notification of any amendments to facility send information to State agency immediately.

Penalties: Any owner who knowingly fails to notify or submits false information shall be subject to a civil penalty not to exceed $10,000 for each tank for which notification is not given or for which false information is submitted.

I. OWNERSHIP OF TANK(S)

Owner Name (Corporation, Individual, Public Agency, or Other Entity)

Street Address

City State ZIP Code

County

Phone Number (Include Area Code)

II. LOCATION OF TANK(S)

If required by State, give the geographic location of tanks by degrees, minutes, and seconds. Examples Lat. 42, 36, 12 N Long. 85, 24, 17W

Latitude _____ Longitude _____

(If same as Section I, mark box here ☐)

Facility Name or Company Site Identifier, as applicable

Street Address (P.O. Box not acceptable)

City State Zip code

County Municipality

EPA Form 7530-1 (Revised 2-87)

III. TYPE OF OWNER	IV. INDIAN LANDS	
☐ Federal Government ☐ Commercial ☐ State Government ☐ Private ☐ Local Government	Tanks are located on land within an Indian Reservation or on other trust lands. ☐ Tanks are owned by native American nation, tribe, or individual. ☐	Tribe or Nation: _____

V. TYPE OF FACILITY

Select the Appropriate Facility Description

____ Gas Station	____ Railroad	____ Trucking/Transport
____ Petroleum Distributor	____ Federal - Non-Military	____ Utilities
____ Air Taxi (Airline)	____ Federal - Military	____ Residential
____ Aircraft Owner	____ Industrial	____ Farm
____ Auto Dealership	____ Contractor	____ Other (Explain) _____

VI. CONTACT PERSON IN CHARGE OF TANKS

Name	Job Title	Address	Phone Number (Include Area Code)

VII. FINANCIAL RESPONSIBILITY

I have met the financial responsibility requirements in accordance with 40 CFR Subpart H ☐

Check All that Apply

☐ Self Insurance	☐ Guarantee	☐ State Funds
☐ Commercial Insurance	☐ Surety Bond	☐ Trust Fund
☐ Risk Retention Group	☐ Letter of Credit	☐ Other Method Allowed Specify _____

VIII. CERTIFICATION (Read and sign after completing all sections)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true,accurate, and complete.

Name and official title of owner or owner's authorized representative (Print)	Signature	Date Signed

EPA estimates public reporting burden for this form to average 30 minutes per response including time for reviewing instructions, gathering and maintaining the data needed and completing and reviewing the form. Send comments regarding this burden estimate to Chief, Information Policy Branch PM-223, U.S. Environmental Protection Agency, 401 M Street, Washington D.C. 20460, marked "Attention Desk Officer for EPA." This form amends the previous notification form as printed in 40 CFR Part 280, Appendix I. Previ editions of this notification form may be used while supplies last.

IX. DESCRIPTION OF UNDERGROUND STORAGE TANKS (Complete for each tank at this location.)

Tank Identification Number	Tank No.____	Tank No. ____	Tank No.____	Tank No. ____	Tank No. ____
1. Status of Tank (mark only one) — Currently in Use					
Temporarily Out of Use (Remember to fill out section X.)					
Permanently Out of Use (Remember to fill out section X.)					
Amendment of Information					
2. Date of Installation (mo./year)					
3. Estimated Total Capacity (gallons)					
4. Material of Construction (Mark all that apply)					
Asphalt Coated or Bare Steel					
Cathodically Protected Steel					
Epoxy Coated Steel					
Composite (Steel with Fiberglass)					
Fiberglass Reinforced Plastic					
Lined Interior					
Double Walled					
Polyethylene Tank Jacket					
Concrete					
Excavation Liner					
Unknown					
Other, Please specify					
Has tank been repaired?					
5. Piping (Material) (Mark all that apply) — Bare Steel					
Galvanized Steel					
Fiberglass Reinforced Plastic					
Copper					
Cathodically Protected					
Double Walled					
Secondary Containment					
Unknown					
Other, Please specify					
6. Piping (Type) (Mark all that apply)					
Suction: no valve at tank					
Suction: valve at tank					
Pressure					
Gravity Feed					
Has piping been repaired?					

Tank Identification Number	Tank No.____	Tank No.____	Tank No. ____	Tank No. ____	Tank No. ____
7. Substance Currently or Last Stored In Greatest Quantity by Volume					
Gasoline	☐	☐	☐	☐	☐
Diesel	☐	☐	☐	☐	☐
Gasohol	☐	☐	☐	☐	☐
Kerosene	☐	☐	☐	☐	☐
Heating Oil	☐	☐	☐	☐	☐
Used Oil	☐	☐	☐	☐	☐
Other, Please specify	☐	☐	☐	☐	☐
	____	____	____	____	____
	____	____	____	____	____
Hazardous Substance	☐	☐	☐	☐	☐
CERCLA name and/or,	____	____	____	____	____
CAS number	____	____	____	____	____
Mixture of Substances	☐	☐	☐	☐	☐
Please specify	____	____	____	____	____
	____	____	____	____	____
X. TANKS OUT OF USE, OR CHANGE IN SERVICE					
1. Closing of Tank					
A. Estimated date last used (mo./day/year)	____	____	____	____	____
B. Estimate date tank closed (mo./day/year)	____	____	____	____	____
C. Tank was removed from ground	☐	☐	☐	☐	☐
D. Tank was closed in ground	☐	☐	☐	☐	☐
E. Tank filled with inert material	☐	☐	☐	☐	☐
Describe	____	____	____	____	____
	____	____	____	____	____
	____	____	____	____	____
	____	____	____	____	____
	____	____	____	____	____
F. Change in service	☐	☐	☐	☐	☐
2. Site Assessment Completed	☐	☐	☐	☐	☐
Evidence of a leak detected	☐	☐	☐	☐	☐

XI. CERTIFICATION OF COMPLIANCE (COMPLETE FOR ALL NEW AND UPGRADED TANKS AT THIS LOCATION)

Tank Identification Number	Tank No. ____	Tank No. ____	Tank No. ____	Tank No. ____	Tank No. ____
1. Installation					
A. Installer certified by tank and piping manufacturers	☐	☐	☐	☐	☐
B. Installer certified or licensed by the implementing agency	☐	☐	☐	☐	☐
C. Installation inspected by a registered engineer	☐	☐	☐	☐	☐
D. Installation inspected and approved by implementing agency	☐	☐	☐	☐	☐
E. Manufacturer's installation checklists have been completed	☐	☐	☐	☐	☐
F. Another method allowed by State agency. Please specify.	☐	☐	☐	☐	☐

2. Release Detection (Mark all that apply)	TANK	PIPING	TANK	PIPING	TANK	PIPING	TANK	PIPING	TANK	PIPING
A. Manual tank gauging	☐		☐		☐		☐		☐	
B. Tank tightness testing	☐		☐		☐		☐		☐	
C. Inventory controls	☐		☐		☐		☐		☐	
D. Automatic tank gauging	☐		☐		☐		☐		☐	
E. Vapor monitoring	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
F. Groundwater monitoring	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
G. Interstitial monitoring double walled tank/piping	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
H. Interstitial monitoring/secondary containment	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
I. Automatic line leak detectors	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
J. Line tightness testing		☐		☐		☐		☐		☐
K. Other method allowed by Implementing Agency. Please specify.	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
	_____		_____		_____		_____		_____	

3. Spill and Overfill Protection					
A. Overfill device installed	☐	☐	☐	☐	☐
B. Spill device installed	☐	☐	☐	☐	☐

OATH: I certify the information concerning installation that is provided in section XI is true to the best of my belief and knowledge.

Installer:

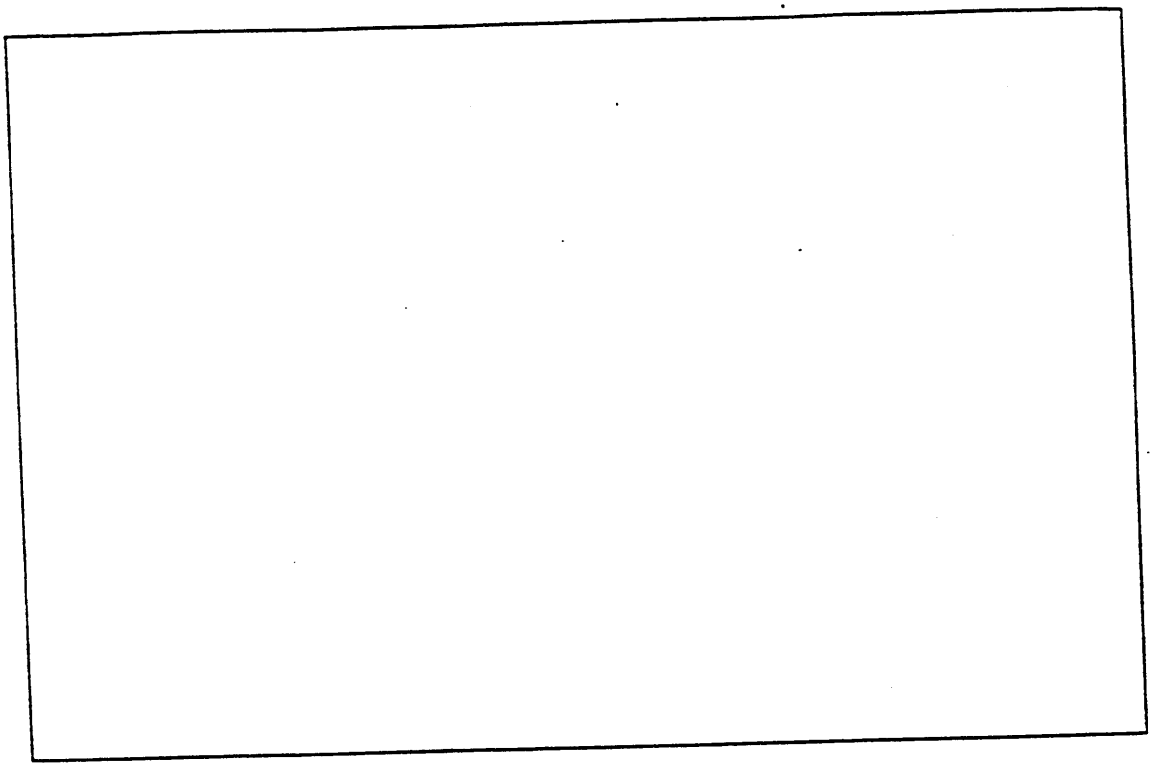
Name	Signature	Date
_____	_____	_____

Position	Company
_____	_____

FACILITY ID # _____

NOTIFICATION FOR UNDERGROUND STORAGE TANKS
ARIZONA SUPPLEMENTAL INFORMATION SHEET

1. Draw a facility map identifying the tanks and associated piping, including major structures (building, roads, etc.). Indicate North on your drawing.



2. Do you have any additional comments? _____

_____

_____

_____

_____

_____

UST STATE ASSURANCE FUND
Application for Reimbursement

Mail to: ARIZONA DEPARTMENT OF ENVIRONMENTAL QUALITY
ATTN: UST SAF Administrator, P.O. Box 600, Phoenix, AZ 85001-0600

Date submitted _____/_____/_____

1. APPLICANT INFORMATION

   A. Name of applicant: _____

   B. Mailing address: _____

   _____

   C. Applicant telephone number: (_____) _____

   D. Applicant is: *(Describe the applicant's status as an eligible entity for partial coverage of costs. Check as many as apply.)*

   ☐ facility owner ☐ facility operator

   ☐ tank system owner ☐ owner of land on which tank is located

   ☐ voluntary remediater ☐ other, explain _____

   E. Is the facility where the release occurred on Indian reservation? ☐ Yes ☐ No

   F. Contact person and title: _____

   G. Contact person telephone number: (_____) _____

2. WARRANT INFORMATION

   A. Name or names to appear on the payment warrant:

   _____

   B. Address where warrant is to be sent:

   _____

   _____

   C. The social security number or employer identification (federal tax) number of the payee:

   S.S.N. _____ E.I.N. _____

3. SITE INFORMATION

   A. ADEQ facility identification number: _____

   B. Leaking Underground Storage Tank (LUST) file no.: 4715. _____

   C. Facility name: _____

   D. Site address: _____

   _____

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APPLICANT NAME _____ LUST FILE NO.4715. _____

4. **APPLICATION SPECIFIC INFORMATION**

A. This application is for *(check only one of the following choices):* ☐ Reimbursement ☐ Pre-approval of funds

Proof of payments must accompany any claim for reimbursement (or assignment of payment, if applicable).

For pre-approval of funds, a statement must be submitted certifying that the detailed estimate is accurate and complete to the applicant's best information and belief. Also, a copy of the work plan which was used to develop the detailed estimate must be submitted.

B. Request covers work performed during the following time period: From ____/____/____ to ____/____/____

C. Identify the corrective action(s) for which this application applies:

☐ Phase I - Preliminary site assessment, initial response, abatement measures and free product removal

☐ Phase II - Soil and groundwater investigation

☐ Phase III - Soil and groundwater remediation

☐ Phase IV - Verification monitoring and sampling

D. 1. Is this the first request for reimbursement of corrective action expenses incurred in response to this release? D1 _____

2. If the answer to D1 is no, how many previous requests for reimbursement have been submitted for this release? D2 _____

3. What was the total amount of all corrective action expenses incurred for this release? D3 _____

a. Amount previously submitted D3a _____

b. Amount previously reimbursed D3b _____

4. Has the deductible been met prior to this submittal? D4 _____

E. Enter the grand total for corrective actions listed on page 3, Line 6-O, Recap of Service Provider Invoices, submitted with this request. All expenses must be documented by invoices, purchase orders, etc. E _____

F. Enter the deductible amount you have chosen: (either $5,000 or $25,000) F _____

G. Enter the total cost of the project *(This estimate should include the costs associated with this claim, prior costs disclosed above and anticipated costs to complete the project.)* G _____

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APPLICANT NAME _____ LUST FILE NO.4715. _____

Complete a separate cost sheet (page 3) for each consultant, contractor or tester. Photocopy page as necessary. Total the expenses for each consultant, contractor or tester by cost category and enter the grand total on page 2, Line 4E. A separate Invoice Checklist must be attached to each invoice identifying the phase of work, the work report date, title and author to which the invoice relates, the method of remediation utilized, and the appropriate cost category (A through N below).

5. **IDENTIFY THE PREQUALIFIED CORRECTIVE ACTION SERVICES PROVIDER FIRM OR QUALIFIED INDIVIDUAL(S) FOR CORRECTIVE ACTION WORK CONTRACTED FOR OR PERFORMED AFTER 9/21/92**

   A. Name: _____

   B. Service provider is: ☐ Consultant ☐ Contractor ☐ Tester

   C. List prequalification number (if applicable) or attach required qualification application(s) of service provider for corrective action work contracted or performed after 9/21/92:

   _____

   D. Name of project contact individual: _____

   E. Project contact telephone number: _____

6. **RECAP OF SERVICE PROVIDER INVOICES**

   List all costs being submitted for this application *(not previously submitted costs)* and document by work invoices, purchase orders or other proof of expenditure as appropriate, including proof of payment. *(See the reverse side of the Invoice Checklist for the detail requirements.)* Total all expenses for this service provider for the following:

A. Personnel costs	A _____
B. Excavation costs	B _____
C. Drilling costs	C _____
D. Field analysis costs	D _____
E. Laboratory analysis costs	E _____
F. Soil/aquifer tests costs	F _____
G. Tank/piping/system test costs	G _____
H. Vehicles costs	H _____
I. Direct purchases	I _____
J. Lease or rental costs	J _____
K. Purging, removal, transport, disposal of UST system	K _____
L. Administrative/General (Indirect)	L _____
M. Permit fees and professional services costs directly related to any required permit application	M _____
N. Other directly related expenses	N _____
O. Enter grand total for all categories here. This total must equal the total of all invoices being submitted for this service provider under this application. Combine the total listed here for this service provider with any other totals for other service providers and enter on page 2, Line 4E. Page 2, Line 4E should contain the total amount you are claiming in this application.	O _____

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APPLICANT NAME _____ LUST FILE NO.4715. _____

7. **FINANCIAL INFORMATION - FOR-PROFIT ENTITY**

***NOTE:** This page needs to be filled out even though you are submitting financial statements. For-Profit entities should complete all sections of the application except Nos. 8 and 9.*

Owner, Operator, Volunteer *(but not agent)* Name _____

Company Name _____

Company Address _____

_____

A. Attach copies of your most recently filed federal and state income tax return identified by firm name and address.

B. Attach copies of the most recent year-end financial statements for the firm, including profit and loss statement, balance sheet, and all prepared notes and schedules to the financial statements including all of the following. Please list:

		Most Recent Year Amount
1. Total revenues	B1	$_____
2. Total expenses	B2	$_____
3. Profit after tax *(if applicable)*	B3	$_____
4. Intangible assets	B4	$_____
5. Total assets	B5	$_____
6. Total liabilities	B6	$_____
7. Current year-end net worth	B7	$_____
8. Prior year-end net worth	B8	$_____

C. For sole proprietorships, a personal financial statement of the owner.

D. For partnerships and S corporations, the personal financial statement(s) and tax return(s) of owners of 20 percent or more of the firm.

NOTE: The Arizona Department of Environment Quality (ADEQ) may request additional financial information if required to establish financial need (Arizona Administrative Code [A.A.C.] R18-12-604(E)(5)). If the applicant firm is a wholly owned subsidiary, ADEQ will determine financial need based on the financial statements of the parent corporation (A.A.C. R18-12-604(F)).

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APPLICANT NAME _____ LUST FILE NO.4715. _____

8. FINANCIAL INFORMATION - NON-PROFIT ENTITIES

NOTE: Non-profit entities should fill out all sections of the application except Nos. 7 and 9.

Name _____

Address _____

City, State, Zip Code _____

A. Attach copies of the most recently filed federal and state income tax returns.

B. Attach copies of your most recent year-end statement of revenues and expenses, balance sheet, and all prepared notes and schedules to the financial statements, including all of the following. Please list:

			Most Recent Year Amount
1.	Total revenues	B1	$_____
2.	Total expenses	B2	$_____
3.	Total net operating excess or (loss)	B3	$_____
4.	Current year-end restricted fund balances	B4	$_____
5.	Prior year-end restricted fund balances	B5	$_____
6.	Current year-end unrestricted fund balance	B6	$_____
7.	Prior year-end unrestricted fund balances	B7	$_____

9. FINANCIAL INFORMATION - POLITICAL SUBDIVISION

NOTE: Political Subdivisions should fill out all sections of the application except Nos. 7 and 8.

Name _____

Address _____

City, State, Zip Code _____

A. Attach copies of your most recent year-end certified financial report with all prepared notes and schedules.

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APPLICANT NAME _____ LUST FILE NO.4715. _____

10. **CERTIFICATION STATEMENT**

Instructions: This certification statement is to be signed by an individual acting for the owner, operator, a designated representative of an owner or an operator, a volunteer, or a political subdivision. The individual signing this certification has sufficient authority to bind the applicant(s) to decisions made on his or her behalf.

I hereby certify that I, _____, have authority to act on behalf of
(Name - Please print or type)

_____. I further certify that I have reviewed the attached invoices or
(Tank owner - Please print or type)

work plan cost estimates in the amount of $ _____, and to my best information and belief, all information provided in this application and attachments, including the amounts represented therein, are accurate and complete.

If authorizing direct payment to a third party, identify to whom the payment is to be made:

Name: _____

Address: _____

City, State, Zip Code: _____

Print or type applicant name _____

Applicant signature _____

Title _____

Date _____

Sworn to and subscribed this _____

day of _____, 19_____

_____
Notary Public

My commission expires _____

County of _____ State of _____

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APPLICANT NAME _____ LUST FILE NO. 4715._____

INVOICE CHECKLIST

1. **PHASE OF WORK** *(Indicate the phase of work from the list below which best describes the activities charged under this invoice. Encourage your corrective action service provider to submit invoices by phase, with only one phase per invoice):*

- ☐ Phase I: Initial site assessment, abatement measures and free product removal
- ☐ Phase II: Soil and groundwater investigation
- ☐ Phase III: Soil and groundwater remediation
- ☐ Phase IV: Verification monitoring and sampling

List the work report date, title and author submitted to ADEQ to which this invoice relates:

_____

2. **METHOD OF REMEDIATION** *(Check the remediation method from the list below which best describes the cleanup charged under this invoice. Use only one method for each invoice.):*

Soil Excavation:
- Bioremediation (EBR) _____
- Landfarming (ELF) _____
- Peroxidation (EPO) _____
- Thermal oxidation (ETO) _____
- Vapor extraction (EVE) _____
- Aeration (EXA) _____
- Disposal (EXD) _____
- Incineration (EXI) _____
- Other *(explain)* _____

Groundwater Pump and Treat:
- Airstripping (PTA) _____
- Bioremediation (PTB) _____
- Catalytic (PTC) _____
- Granular carbon (PTG) _____
- Ultraviolet (PTU) _____
- Other *(explain)* _____

Soil Insitu:
- Bioremediation (IBR) _____
- Vapor extraction (IVE) _____
- Other *(explain)* _____

Groundwater Insitu:
- Air sparging (IAS) _____
- Bioremediation (IBG) _____
- Other *(explain)* _____

3. **COST CATEGORIES** *(Categorize all charges for this invoice by task. Total all categories on this page to ensure they match the total listed on the invoice. **These totals must match for the invoice to be considered for reimbursement.** Use a separate checklist page for each invoice submitted.)*

A.	Personnel costs	A	$_____
B.	Excavation costs	B	_____
C.	Drilling costs	C	_____
D.	Field analysis costs	D	_____
E.	Laboratory analysis costs	E	_____
F.	Soil/aquifer tests costs	F	_____
G.	Tank/piping testing costs	G	_____
H.	Vehicles costs	H	_____
I.	Direct purchases	I	_____
J.	Lease or rental costs	J	_____
K.	Costs for purging, removal, transport, disposal of UST systems	K	_____
L.	Administrative/General (Indirect)	L	_____
M.	Permit fees and professional services costs directly related to any Department required permit application	M	_____
N.	Other expenses	N	_____
O.	*Enter on this line the grand total for all categories listed on the invoice attached. Combine the total for the specific corrective action service provider from the bottom of this page with other totals from other invoice checklists for that same service provider. Enter on page 3. Use a separate page 3 for each corrective action service provider.*	O	$_____

For the claimant's convenience, A.A.C. R18-12-605.E. is printed below:

In determining the reasonable cost of a given corrective action service, and for purposes of meeting the deductible and evaluating claims for reimbursement, the Director shall consider both financial reasonableness and technical reasonableness. Documentation of financial reasonableness shall be considered adequate if it includes all of the following:

1. Hourly labor rate, time and cost for each labor classification utilized in the corrective action service.

2. Equipment rate, time and cost for each equipment classification utilized in the corrective action service.

3. Itemized material costs expended in the corrective action service.

4. Subcontractor services itemized and documented as in paragraphs 1. through 3. of this subsection.

5. The applicant shall identify all amounts referenced in paragraphs 1. through 4. of this subsection to a report of work performed on file with the Department.

6. The invoice amount supported by copies of cancelled checks, if available, or financial institution statements. If neither copies of cancelled checks nor financial institution statements are available, a certification statement, by invoice, from the vendor.

SAF REDUCTION IN REIMBURSEMENT
Violation Checklist: Page 1

REGULATORY CITATION	VIOLATIONS	LIKELY IMPACT POINTS	LACK OF DUE CARE POINTS
	NOTIFICATION REQUIREMENTS		
ARS 49-1002 (40CFR 280.22)	Failure to notify the Deparment of the existence of all known UST systems or to provide complete certification of all required information on Notification forms.	3	3
	TANK PERFORMANCE STANDARDS/GENERAL OPERATING REQUIREMENTS		
ARS 49-1009 (40CFR 280.20)	Installation of an UST system which is not designed to prevent releases due to corrosion or structural failure for the operational life of the system; installation after December 22, 1988, of an UST system that fails to meet accepted industry codes and standards for design and construction, or improper installation of an UST system.	3	3
ARS 49-1009 (40CFR 280.32)	Installation or use of an UST system which is made of or lined with materials which are not compatible with the regulated substance stored in or dispensed from the UST system.	3	3
(40CFR 280.21)	Failure to meet all standards for upgrading an UST system after December 22, 1998.	3	3
(40CFR 280.30)	Failure to take actions to prevent spills or overfills, or to report, investigate, and clean up any spill or overfill.	3	3
(40CFR 280.31)	Failure to properly operate, maintain, test, or inspect a cathodic protection system, or to maintain every record of cathodic protection system inspections.	2	2
(40CFR 280.33)	Failure to repair and/or replace an UST system or parts of an UST system in accordance with accepted codes and standards and/or manufacturer's specifications.	2	3
(40CFR 280.33)	Failure to ensure that repaired UST systems are tightness tested within 30 days of completion of repair.	2	3
(40CFR 280.33)	Failure to test cathodic protection system within 6 months of repair of a steel UST system.	2	2
(40CFR 280.33)	Failure to maintain records of each repair to an UST system.	1	1
ARS 49-1009	Failure to perform or cause to be performed a tightness test to determine compliance, as required by the Department.	2	3

SAF REDUCTION IN REIMBURSEMENT
Violation Checklist: Page 2

REGULATORY CITATION	VIOLATIONS	LIKELY IMPACT POINTS	LACK OF DUE CARE POINTS
	RELEASE DETECTION & RECORDKEEPING REQUIREMENTS		
ARS 49-1003 (40CFR 280.40)	Failure to provide release detection which can detect a release from any portion of the tank that routinely contains product, or to close any UST system that cannot meet release detection requirements, by the required phase-in date.	3	3
ARS 49-1003 (40CFR 280.40)	Failure to install, calibrate, or maintain a release detection method in accordance with manufacturer's instructions.	3	3
ARS 49-1003 (40CFR 280.41)	Failure to apply a method of release detection as required for a petroleum UST system.	3	3
ARS 49-1003 (40CFR 280.42)	Failure to install double-walled tanks and secondary containment as required for hazardous substance USTs installed after December 22, 1988; failure to apply a method of release detection as required for a hazardous substance UST system.	3	3
ARS 49-1003 (40CFR 280.45)	Failure to maintain any records of release detection monitoring, including results of sampling, testing, or monitoring for release detection for at least one year.	2	3
ARS 49-1003 (40CFR 280.45)	Failure to maintain every record of release detection for at least one year; failure to retain results of tightness testing until next test is conducted.	1	1
ARS 49-1003 (40CFR 280.45)	Failure to document all release detection performance claims for 5 years after installation, where applicable.	1	1
ARS 49-1003 (40CFR 280.45)	Failure to document any or every calibration, maintenance, and repair of release detection for at least one year.	1	2
ARS 49-1003 (40CFR 280.45)	Failure to maintain manufacturer's schedule of required calibration and maintenance for 5 years.	1	2
	FINANCIAL RESPONSIBILITY		
ARS 49-1006 (40CFR 280.93)	Failure to maintain any financial responsibility assurance coverage; failure to meet the financial responsibility requirements for per-occurence and annual aggregate coverage in full; failure to establish evidence of financial responsibility consistent with the requirements of 40 CFR 280.90 through 40 CFR 280.111.	3	3
	FEES & TAXES		
ARS 49-1020	Failure to pay the annual tank fee	1	2
ARS 49-1032	Failure to file the annual tax return; failure to pay the tax.	1	2

SAF REDUCTION IN REIMBURSEMENT
Violation Checklist: Page 3

REGULATORY CITATION	VIOLATIONS	LIKELY IMPACT POINTS	LACK OF DUE CARE POINTS
	INSPECTION		
ARS 49-1011	Failure to furnish to the Department information relating to a UST system, as required by the Department.	2	3
ARS 49-1011	Failure to permit the Department to conduct monitoring and testing of a UST system or the surrounding soils, air, surface water or groundwater, as required by the Department.	3	3
	CLOSURE		
ARS 49-1008 (40CFR 280.70)	Failure to continue operation and maintenance of cathodic protection system in a temporarily closed UST system.	2	3
ARS 49-1008 (40CFR 280.70)	Failure to continue operation and maintenance of release detection in a temporarily closed UST system which contains a regulated substance.	3	3
ARS 49-1008 (40CFR 280.70)	Failure to permanently close or upgrade a temporarily closed UST system after 12 months of temporary closure.	1	2
ARS 49-1008 (40CFR 280.71)	Failure to notify the Department of a temporary or permanent closure, or change in service, 30 days in advance.	2	3
ARS 49-1008 (40CFR 280.71)	Failure to temporarily or permanently close an UST system, or accomplish a change in service, in a safe and secure manner which prevents the release of regulated substances; failure to remove all liquids and sludges from an UST system at closure; failure to remove an UST system from the ground or fill it with an inert material.	2	3
ARS 49-1008 (40CFR 280.72)	Failure to measure for the presence of a release where contamination is most likely to be present, before closure of an UST system, or change in service.	3	2
ARS 49-1008 (40CFR 280.73)	Failure to assess the excavation zone and close in accordance with 40CFR 280.70-74, as required by the Department, an UST system which was permanently closed before December 22, 1988.	3	2
ARS 49-1008 (40CFR 280.74)	Failure to maintain closure records or change in service records for at least 3 years.	2	2
	RELEASE REPORTING AND INVESTIGATION REQUIREMENTS		
ARS 49-1004 (40CFR 280.50)	Failure to report to the Department a suspected or confirmed release (including spills and overfills) within 24 hours of discovery of the release.	3	3
ARS 49-1004	Failure to report to the Department in writing, within 14 days of the 24	3	3
ARS 49-1004 (40CFR 280.52)	Failure to investigate and confirm a release using accepted procedures; failure to perform or cause to perform a tank test to confirm a release, as requested by the Department.	3	3

SAF REDUCTION IN REIMBURSEMENT WORKSHEET
Page 3: Violation Checklist

REGULATORY CITATION	VIOLATION DESCRIPTION	LIKELY IMPACT	LACK OF DUE CARE	WILFULL (6) KNOWING (5) NEGLIGENT (2)	TOTAL POINTS
Score each violation that applies to this claim		Circle the number of points from this column for each violation	Circle the number of points from this column for each violation	Circle only one of the three numbers of points from this column for each violation	Add points across for each violation, and down for the total violation points
NOTIFICATION REQUIREMENTS					
ARS 49-1002 (40CFR 280.22)	Failure to notify the Department of the existence of all known UST systems or to provide complete certification of all required information on Notification forms.	3	3	6 5 2	
TANK PERFORMANCE STANDARDS/GENERAL OPERATING REQUIREMENTS					
ARS 49-1009 (40CFR 280.20)	Installation of an UST system which is not designed to prevent releases due to corrosion or structural failure for the operational life of the system; installation after December 22, 1988, of an UST system that fails to meet accepted industry codes and standards for design and construction, or improper installation of an UST system.	3	3	6 5 2	
ARS 49-1009 (40CFR 280.32)	Installation or use of an UST system which is made of or lined with materials which are not compatible with the regulated substance stored in or dispensed from the UST system.	3	3	6 5 2	
(40CFR 280.21)	Failure to meet all standards for upgrading an UST system after December 22, 1998.	3	3	6 5 2	
(40CFR 280.30)	Failure to take actions to prevent spills or overfills, or to report, investigate, and clean up any spill or overfill.	3	3	6 5 2	
(40CFR 280.31)	Failure to properly operate, maintain, test, or inspect a cathodic protection system, or to maintain every record of cathodic protection system inspections.	2	2	6 5 2	
(40CFR 280.33)	Failure to repair and/or replace an UST system or parts of an UST system in accordance with accepted codes and standards and/or manufacturer's specifications.	2	3	6 5 2	
(40CFR 280.33)	Failure to ensure that repaired UST systems are tightness tested within 30 days of completion of repair.	2	3	6 5 2	
(40CFR 280.33)	Failure to test cathodic protection system within 6 months of repair of a steel UST system.	2	2	6 5 2	
(40CFR 280.33)	Failure to maintain records of each repair to an UST system.	1	1	6 5 2	
ARS 49-1009	Failure to perform or cause to be performed a tightness test to determine compliance, as required by the Department.	2	3	6 5 2	

SAF REDUCTION IN REIMBURSEMENT WORKSHEET
Page 4: Violation Checklist (continued)

RELEASE DETECTION & RECORDKEEPING REQUIREMENTS							
ARS 49-1003 (40CFR 280.40)	Failure to provide release detection which can detect a release from any portion of the tank that routinely contains product, or to close any UST system that cannot meet release detection requirements, by the required phase-in date.	3	3	6	5	2	
ARS 49-1003 (40CFR 280.40)	Failure to install, calibrate, or maintain a release detection method in accordance with manufacturer's instructions.	3	3	6	5	2	
ARS 49-1003 (40CFR 280.41)	Failure to apply a method of release detection as required for a petroleum UST system.	3	3	6	5	2	
ARS 49-1003 (40CFR 280.42)	Failure to install double-walled tanks and secondary containment as required for hazardous substance USTs installed after December 22, 1988; failure to apply a method of release detection as required for a hazardous substance UST system.	3	3	6	5	2	
ARS 49-1003 (40CFR 280.45)	Failure to maintain any records of release detection monitoring, including results of sampling, testing, or monitoring for release detection for at least one year.	2	3	6	5	2	
ARS 49-1003 (40CFR 280.45)	Failure to maintain every record of release detection for at least one year; failure to retain results of tightness testing until next test is conducted.	1	1	6	5	2	
ARS 49-1003 (40CFR 280.45)	Failure to document all release detection performance claims for 5 years after installation, where applicable.	1	1	6	5	2	
ARS 49-1003 (40CFR 280.45)	Failure to document any or every calibration, maintenance, and repair of release detection for at least one year.	1	2	6	5	2	
ARS 49-1003 (40CFR 280.45)	Failure to maintain manufacturer's schedule of required calibration and maintenance for 5 years.	1	2	6	5	2	
FINANCIAL RESPONSIBILITY							
ARS 49-1006 (40CFR 280.93)	Failure to maintain any financial responsibility assurance coverage; failure to meet the financial respons-ibility requirements for per-occurence and annual aggregate coverage in full; failure to establish evidence of financial responsibility consistent with the requirements of 40CFR 280.90 through 40CFR 280.111.	3	3	6	5	2	
FEES & TAXES							
ARS 49-1020	Failure to pay the annual tank fee.	1	2	6	5	2	
ARS 49-1032	Failure to file the annual tax return; failure to pay the tax.	1	2	6	5	2	

SAF REDUCTION IN REIMBURSEMENT WORKSHEET
Page 5: Violation Checklist (continued)

INSPECTION							
ARS 49-1011	Failure to furnish to the Department information relating to a UST system, as required by the Department.	2	3	6	5	2	
ARS 49-1011	Failure to permit the Deparment to conduct monitoring and testing of a UST system or the surrounding soils, air, surface water or groundwater, as required by the Department.	3	3	6	5	2	
CLOSURE							
ARS 49-1008 (40CFR 280.70)	Failure to continue operation and maintenance of cathodic protection system in a temporarily closed UST system.	2	3	6	5	2	
ARS 49-1008 (40CFR 280.70)	Failure to continue operation and maintenance of release detection in a temporarily closed UST system which contains a regulated substance.	3	3	6	5	2	
ARS 49-1008 (40CFR 280.70)	Failure to permanently close or upgrade a temporarily closed UST system after 12 months of temporary closure.	1	2	6	5	2	
ARS 49-1008 (40CFR 280.71)	Failure to notify the Department of a temporary or permanent closure, or change in service, 30 days in advance.	2	3	6	5	2	
ARS 49-1008 (40CFR 280.71)	Failure to temporarily or permanently close an UST system, or accomplish a change in service, in a safe and secure manner which prevents the release of regulated substances; failure to remove all liquids and sludges from an UST system at closure; failure to remove an UST system from the ground or fill it with an inert material.	2	3	6	5	2	
ARS 49-1008 (40CFR 280.72)	Failure to measure for the presence of a release where contamination is most likely to be present, before closure of an UST system, or change in service.	3	2	6	5	2	
ARS 49-1008 (40CFR 280.73)	Failure to assess the excavation zone and close in accordance with 40CFR 280.70-74, as required by the Department, an UST system which was permanently closed before December 22, 1988.	3	2	6	5	2	
ARS 49-1008 (40CFR 280.74)	Failure to maintain closure records or change in service records for at least 3 years.	2	2	6	5	2	
RELEASE REPORTING AND INVESTIGATION REQUIREMENTS							
ARS 49-1004 (40CFR 280.50)	Failure to report to the Department a suspected or confirmed release (including spills and overfills) within 24 hours of discovery of the release.	(3)	(3)	6	5	(2)	8
ARS 49-1004 (40CFR 280.52)	Failure to report to the Department in writing, within 14 days of the 24-hour report, the required information regarding a suspected release, including the nature of the release and corrective actions taken and planned.	3	3	6	5	2	
ARS 49-1004 (40CFR 280.52)	Failure to investigate and confirm a release using accepted procedures; failure to perform or cause to perform a tank test to confirm a release, as requested by the Department.	3	3	6	5	2	

SAF REDUCTION IN REIMBURSEMENT WORKSHEET
Page 6: Violation Checklist (continued)

CORRECTIVE ACTION							
ARS 49-1005 (40CFR 280.60)	Failure to take corrective actions in response to soil, surface water and groundwater, as required by the Department.	(3)	(3)	(6)	5	2	12
ARS 49-1005 (40CFR 280.61)	Failure to take immediate action to stop the release and identify hazards (within 24 hours).	3	3	6	5	2	
ARS 49-1005 (40CFR 280 53)	Failure to contain and immediately clean up a spill or overfill of petroleum that is less than 25 gallons.	2	3	6	5	2	
ARS 49-1005 (40CFR 280 53)	Failure to contain and immediately clean up a spill or overfill of a hazardous substance that is less than the reportable quantity.	2	3	6	5	2	
ARS 49-1005 (40CFR 280.62)	Failure to initiate free product removal as soon as practicable.	3	3	6	5	2	
ARS 49-1005 (40CFR 280.64)	Failure to submit a report on free product removal within 45 days of confirmation of release (or other time specified by the Department).	2	3	6	5	2	
ARS 49-1005 (40CFR 280.64)	Failure to submit a plan for automatic continuous free product removal within the time period specified by the Department.	2	3	6	5	2	
ARS 49-1005 (40CFR 280.63)	Failure to submit a site characterization report within the time period specified by the Department.	2	3	6	5	2	
ARS 49-1005 (40CFR 280.65)	Failure to determine the full extent of contamination, and characterize the contamination by constituents and concentrations.	3	3	6	5	2	
ARS 49-1005 (40CFR 280.65 & 40CFR 280.66)	Failure to submit any or every quarterly monitoring report subsequent to installation of groundwater monitoring wells, as specified by the Department.	2	3	6	5	2	
ARS 49-1005 (40CFR 280.66)	Failure to submit a corrective action plan as required by the Department.	2	3	6	5	2	
ARS 49-1005 (40CFR 280.66)	Failure to implement a corrective action plan as required by the Department.	3	3	6	5	2	

TOTAL VIOLATION POINTS: 20

Enter here and on Line 2 of Page 1 (Summary)

SAF REDUCTION IN REIMBURSEMENT WORKSHEET
Page 7: Noncooperation Checklist

Circle the score for each of the following elements of corrective action where the owner and operator failed to cooperate with the Department. Add scores across to determine the total points for noncooperation for this claim.

A. INITIAL RESPONSE/ ABATEMENT MEASURES	B. SITE CHECK/ INITIAL SITE CHARACTERIZATION	C. REMOVAL OF FREE PRODUCT	D. INVESTIGATIONS FOR SOIL, SURFACE WATER, AND GROUNDWATER CONTAMINATION	E. REMEDIATION OF CONTAMINATED SOIL, SURFACE WATER, AND GROUNDWATER	F. TOTAL POINTS FOR NON-COOPERATION Enter below and on Line 3, Page 1 (Summary)
(10)	10	10	(10)	10	20

SAF REDUCTION IN REIMBURSEMENT WORKSHEET
Percent of Reduction Table

A claim assigned 10 points or less will receive no reduction in reimbursement. A claim assigned 11 points will receive a 1% reduction. Each additional point assigned will result in an additional 1% of reduction. Claims which are assigned 110 or more points will receive a 100% reduction in reimbursement.

0 - 10 points = 0% reduction
11 points = 1% reduction

(each additional 1 point = 1% additional reduction)

109 points = 99% reduction
110 points = 100% reduction
>110 points = 100% reduction

NOTES

CHAPTER 9.1

SAFE DRINKING WATER ACT
42 U.S.C.A. § 300 et seq.

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I. Overview of the Safe Drinking Water Act

To protect the public from risks posed by drinking water contamination, the Safe Drinking Water Act, enacted in 1974, required the Environmental Protection Agency to establish (1) standards or treatment techniques for contaminants that could adversely affect human health and (2) requirements for monitoring the quality of drinking water supplies and for ensuring the proper operation and maintenance of water systems. To oversee the program, states assuming "primacy" (responsibility) would, with EPA's oversight, assess compliance with these standards and requirements and take enforcement action when warranted. If necessary, EPA would step in with its own enforcement, as detailed under the act's federal enforcement procedures.

Congress amended the act in 1986 to (1) establish deadlines to accelerate EPA's efforts to set standards, (2) establish a monitoring program for certain unregulated contaminants, (3) require EPA to issue criteria for determining which surface water systems must filter their supplies, (4) require disinfection of all public water systems and (5) develop corrosion control treatment requirements to minimize lead and copper deposits from plumbing materials such as lead pipes, solder, flux, or fittings. The act also gave EPA new authority to ensure timely and effective enforcement of all drinking water regulations.

Under the 1986 amendments, water systems must adhere to more stringent requirements for water treatment, monitoring, and reporting. According to EPA officials, many systems will have to install new equipment or modernize their infrastructure (i.e., their distribution, storage, treatment, laboratory, and monitoring facilities) to comply with some of the new standards, particularly the new filtration requirement. EPA estimates that compliance will cost water systems about $42.5 billion annually. Although compliance with the new drinking water requirements is expected to affect water systems of all sizes, small systems, which already account for more than 90 percent of current drinking water violations, will have greater difficulties because they lack the necessary financial and technical resources. EPA officials expect that the addition of new drinking water requirements will only exacerbate compliance problems for small systems.

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II. Regulation of Public Water Systems

The Safe Drinking Water Act regulates public water systems that regularly provide drinking water to more than twenty-five persons or to systems which have 15 or more service connections. 42 U.S.C. § 300f(4). By regulation EPA has divided public water systems into community; non-transient, noncommunity; and non-community water systems. Community water systems serve at least 15 service connections used by year-round residents or regularly serve at least 25 year-round residents (40 CFR 141.2). Non-transient, non-community water systems regularly serve at least 25 of the same people over six months of the year. Schools and factories which serve water to 25 or more of the same people for six or more months of the year are non-transient, non-community water systems. Transient non-community systems, by definition, are all other water systems, such as restaurants, campgrounds, gas stations, etc.

Water provided as drinking supply to the public generally must meet the SDWA standards. These standards are discussed in the next section. One of the major purposes of the SDWA also is to protect "potential as well as presently-used drinking water sources." 1974 U.S.C. C.A.N. at 6481. This occurs through the UIC program, wellhead and critical/sole source aquifer protection, and through enforcement mechanisms. These are discussed later in this paper.

III. SDWA Drinking Water Goals and Standards

Section 1412 of the Safe Drinking Water Act, as amended in 1986, requires EPA to publish Maximum Contaminant Level Goals (MCLGs) and promulgate National Primary Drinking Water Regulations (NPDWRs) for contaminants in drinking water which may cause any adverse effect on the health of persons which are known or anticipated to occur in public water systems. Under section 1401, the NPDWRs are to include Maximum Contaminant Levels (MCLs) and "criteria and procedures to assure a supply of drinking water which dependably complies" with such MCLs. Under section 1412(b)(7)(A), if it is not economically or technically feasible to ascertain the level of a contaminant in drinking water, EPA may require the use of a treatment technique instead of an MCL.

Under section 1412, EPA is to establish MCLGs and promulgate national primary drinking water regulations for 83 additional contaminants by June

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1989. EPA had regulated fewer than twenty contaminants prior to 1986. Furthermore, an additional 25 contaminants are to be regulated every 3 years, starting in 1991.

Under section 1401(1) (D) of the Act, NPDWRs are to contain "criteria and procedures to assure a supply of drinking water which dependably complies with such maximum contaminant levels; including quality control and testing procedures to insure compliance with such levels. . . .". In addition, section 1445 states that, "every person who is a supplier of water . . . shall establish and maintain such records, make such reports, conduct such monitoring and provide such information as the Administrator may reasonably required by regulation to assist him in establishing regulations. . . . in evaluating the health risks of unregulated contaminants or in advising the public of such risks." Section 1445 also required EPA to promulgate regulations requiring every public water system to conduct a monitoring program for unregulated contaminants.

Maximum Contaminant Level Goals ("MCLGs") are nonenforceable health goals. They typically are the ideal, not taking cost into consideration whatsoever. For carcinogens and other chemicals with no demonstrated safe threshold, the MCLG usually is set at zero. For systemic toxicants for which a no-adverse-effect level exists for humans, MCLGs are set at or below that level with an adequate margin of safety.

Maximum contaminant levels ("MCL") on the other hand are enforceable standards and represent the maximum permissible level of a contaminant in water delivered to any use of a public water system. 40 CFR § 141.2. MCLs must be set as close to the MCLG as feasible. Feasible means using the best technology, treatment techniques or other means which the administrator feels to be available after taking costs into consideration. 55 Fed. Reg. 30373.- "National interim primary drinking water regulations promulgated under paragraph (1) [by the EPA Administrator) shall protect health to the extent feasible, using technology, treatment techniques, and other means, which the Administrator determines are generally available . . . ." § 300g1(a)(2); As of January, 1991, sixty MCLs have been determined for various inorganic chemicals, organic chemicals, turbidity, midro-biologicals, and radioactivity.

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The state may issue a variance if it determines that a system cannot comply with an MCL despite application of the best available technology (BAT). BAT means the best technology, treatment or other means which EPA finds, after examination for efficacy under field conditions and not solely under laboratory conditions, are available taking cost into consideration. 40 CFR § 141.2. The state may not issue a variance where an unreasonable risk to health exists. Under section 1415, EPA must propose and promulgate its finding of the best available technology, treatment techniques, or other means available for each contaminant, for purposes of section 1415 variances, at the same time that it proposes and promulgates a maximum contaminant level for such contaminant. EPA's finding of BAT, treatment techniques, or other means for purposes of issuing variances may vary among systems, depending upon the number of persons served by the system or for other physical conditions related to engineering feasibility and costs of complying with MCLs, as considered appropriate by EPA.

Under section 1416(a), the State may exempt a public water system from any MCL or treatment technique requirement if it finds that (1) due to compelling factors (which may include economic factors), the system is unable to comply, (2) the system was in operation on the effective date of the MCL or treatment technique, or, for a newer system, that no reasonable alternative source of drinking water is available to that system, and (3) the exemption will not result in an unreasonable risk to health. Under section 1418(b), the State is to prescribe a compliance schedule and a schedule for implementation of any required interim control measures at the same time it grants an exemption.

Section 1412(c) of the SDWA also authorizes EPA to promulgate National Secondary Drinking Water Regulations (NSDWRs). A NSDWR is defined in section 1401(2) as "a regulation which applies to public water systems and which specifies the maximum contaminant levels which, in the judgment of the Administrator, are requisite to protect the public welfare." The NSDWR "may apply to any contaminant in drinking water which may adversely affect the odor or appearance of such water and consequently may cause a substantial number of persons served by the public water systems providing such water to discontinue its use, or which may otherwise adversely affect the public welfare." NSDWRs are not federally enforceable but instead offer additional guidance to water systems and States

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based upon odor, aesthetics, and appearance. NSDWRs may vary according to geographic and other circumstances. To date, NSDWRs have been established for 15 contaminants, including copper, fluoride, ph and total dissolved solids.

IV. The Importance of MCLs for Other Regulatory Programs

Primary drinking water regulations or MCLs have an impact on matters far removed from the Safe Drinking Water Act alone. The regulations promulgated under the Safe Drinking Water Act have significant implications on solid waste programs, hazardous waste classifications and state groundwater quality programs to name a few.

a. Hazardous Waste Determination:

The current MCLs for inorganics (other than nitrate and fluoride) are used as the principal means of identifying materials that are hazardous waste pursuant to EPA's Toxicity Characteristic Leaching Procedure (TCLP) test. (See 40 C.F.R. § 261.24 and § 141.11.) Waste is a toxicity characteristic hazardous waste if the material yields a leachate (when subjected to TCLP) that contains any of the above-referenced inorganics at a level that is greater than 100 times the primary drinking water standard for that inorganic.

b. Groundwater Protection:

Based on the proposed RCRA corrective action rule, proposed 40 C.F.R. § 265.521(a) (1), it is likely that the primary drinking water standards would be used as groundwater action levels, which would trigger the requirement for a Corrective Measures Study. It is also likely that these primary drinking water standards would be used as the cleanup standards for the six inorganics in groundwater and surface water that are current or potential sources of drinking water (see proposed 40 C.F.R. § 265.525(d) (1)(iv)).

c. Groundwater Standards:

Arizona statutes and regulations provide that all aquifers in the State of Arizona are considered to be "drinking water aquifers." Further, within one year of the EPA establishing primary drinking water standards, the Arizona Department of Environmental Quality (ADEQ) must adopt the MCL as the drinking water aquifer standard, unless ADEQ

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determines that there is no scientific evidence to support the standard. (A.R.S. § 49-223(A).) Due to the terrain and environmental setting in Arizona, groundwater already exceeds some of the proposed MCLs for certain inorganics. For example, some groundwater in Arizona already exceed the proposed MCL of 500 mg/1 for sulfate. (See excerpts of Draft Management Plans for Phoenix (May, 1988), Tucson (April, 1988) and Pinal County (April, 1988), attached as Exhibits A, B and C.)

d. Guidelines for Land Disposal of Solid Wastes (40 C.F.R. Part 241.204-1):

Under federal regulations, land disposal sites must conform with the most stringent applicable water quality standards under the Clean Water Act or the Safe Drinking Water Act. Absent such standards, the facility must provide adequate protection to surface and groundwaters used as drinking water supplies.

e. Criteria for Classification of Solid Waste Disposal Facilities and Practices (40 C.F.R. Part 257):

Federal regulations provide that "[a] facility or party shall not contaminate an underground drinking water source beyond the solid waste boundary . . . " (40 C.F.R. et seq. Part 257.3-4.) "Contaminate" means to exceed certain specified levels that are set forth in Appendix I, which are identical to the MCLs.

V. Underground Injection Control under the SDWA

a. Scope of the UIC Program

The Safe Drinking Water Act, passed by Congress in 1974, included provisions for the protection of existing and future underground sources of drinking water from contamination caused by the subsurface disposal of waste fluids into wells. All underground injection wells require an UIC permit unless authorized by rule. 40 C.F.R. § 144.31(a). "Underground injection" is defined as a "well injection," which is defined as:

> [T]he subsurface emplacement of "fluids" through a bored, drilled, or driven "well"; or through a dug well, where the depth of the dug well is greater than the largest surface dimension.

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40 C.F.R. § 144.4. "Fluid" is broadly defined as "any material or substance which flows or moves whether in a semisolid, liquid, sludge, gas or any other former state." Id. "Well" is defined as "a bored, drilled, or driven shaft, or a dug hole, whose depth is greater than the largest surface dimension." Id.

The EPA has defined five classes of underground injection systems:

Class I - Wells injecting hazardous or non-hazardous waste below the lower most underground source of drinking water.[1]

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[1] "Underground source of drinking water" is defined as an aquifer or its portion:

a. 1. Which supplies any public water system; or

2. Which contains a sufficient quantity of groundwater to supply a public water system; and

i. Currently supplies drinking water for human consumption; or

ii. Contains fewer than 10,000 mg/1 total dissolved solids; and

b. Which is not an exempted aquifer.

40 C.F.R. § 144.3. An aquifer or portion thereof which meets the criteria for an underground source of drinking water may be determined to be an "exempted aquifer" if it meets the following criteria:

a. It does not currently serve as a source of drinking water; and

b. It cannot now and will not in the future serve as a source of drinking water because:

1) It is mineral, hydrocarbon or geothermal energy producing, or can be demonstrated by a permit applicant as part of a permit application for a Class II or III operation to contain minerals or hydrocarbons that considering their quantity and location are expected to be commercially producible;

2) It is situated at a depth or location which makes recovery of water for drinking water purposes economically or technologically impractical;

3) It is so contaminated that it would be economically or technologically impractical to render that water fit for human consumption; or

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Class II - Wells injecting fluids associated with oil and gas production.

Class III -Wells injecting fluids for the purpose of mineral extraction.

Class IV - Wells injecting hazardous waste into or above an underground source of drinking water (these wells have been banned by amendments to the Safe Drinking Water Act).

Class V - All injection wells not covered by Classes I-IV.

Class V wells are the systems most commonly operated by industry and small commercial operators. These wells are generally shallow (inject into or above underground sources of drinking water) and a variety of waste fluids are disposed into them.

Common types of Class V injection wells include:

- Sump and separator systems in service station repair bays that discharge to dry wells or leach lines;

- Septic systems used for discharge of industrial and commercial wastewater into dry wells or leach lines; and

- Dry wells designed for drainage or storm water from industrial and commercial areas.

There are at least 170,000 Class V wells and perhaps as many as a million in the United States. Most of these are municipal and industrial drainage wells (58 percent); the remainder are sanitary waste disposal wells (25 percent), geothermal wells (6 percent) and fossil fuel recovery wells (5 percent). EPA has identified 31 subclasses. EPA now is seeking to identify a set of technical requirements and/or performance criteria by which to control

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4) It is located over a Class III well mining area subject to subsidence or catastrophic collapse; or

c. The total dissolved solids content of the groundwater is more than 3,000 and less than 10,000 mg/l and it is not reasonably expected to supply a public water system.

40 C.F.R. § 146.4

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these wells.

At the present time, injection into all Class V wells is authorized by rule unless EPA requires that the operator of the Class V well apply for a permit. See 40 C.F.R. §§ 144.24, 144.25(a).

Requirements applicable to Class V wells authorized by rule are minimal. Specifically, the owner or operator of a Class V well authorized by rule must submit inventory information to EPA. This information includes the following:

1. Facility name and location.
2. Name and address of legal contact.
3. Ownership of facility.
4. Nature and type of injection wells.
5. Operating status of injection wells.
6. Well specifications, including:
   a. Location of each well by Township, Range, Section and QuarterSection.
   b. Date of completion of the well.
   c. Identification and depth of the formation into which the well is injecting.
   d. Total depth of the well.
   e. Casing and cementing record, tubing size, and depth of packer.
   f. Nature of injected fluids.
   g. Average and maximum injection pressure at the wellhead.
   h. Average and maximum injection rate.
   i. Date of the last mechanical integrity test, if any.

40 C.F.R. § 144.26(a) (b). This submittal appears to be a onetime only requirement.

Many facilities operating Class V wells may actually be disposing of hazardous wastes into their systems. This activity may be the result of accidental spills, poor housekeeping, or intentional efforts to dispose of waste fluids. Such discharge is a violation of the Safe Drinking Water Act, and may be punishable by Federal fines and prison sentences.

In 1989, the EPA ordered seven Phoenix area automobile service companies to stop using underground wells for the disposal of industrial wastes. The companies allegedly had dumped oil, degreasing solvents, and other industrial wastes that exceed federal maximum contaminant levels for drinking

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water into wells.

b. Authorization by UIC Permit for Classes I-IV

As already stated, all underground injection wells require an UIC permit unless authorized by rule. 40 C.F.R. § 144.31(a). An application for an UIC permit for a new injection well must be submitted "a reasonable time before construction is expected to begin." 40 C.F.R. § 144.31(c)(2). If a facility or activity is owned by one person but is operated by another person, it is the operator's duty to obtain an UIC permit. 40 C.F.R. § 144.31(b). Applicants for an UIC permit must use an application form provided by EPA. 40 C.F.R. § 144.31(e).

EPA may issue a permit on an area basis, rather than for each well individually, if the wells are within the same well field, facility site, reservoir, project, or similar unit in the same state, the wells are operated by a single owner or operator, and the wells are used to inject something other than hazardous waste. 40 C.F.R. § 144.33(a).

Upon receipt of an application for an UIC permit for a new injection well, EPA must review the application for completeness within 30 days of its receipt. An application is effective on the date that EPA notifies the applicant that the application is complete. 40 C.F.R. § 124.3(f). If the application is for a major new UIC injection well,[2] the EPA must prepare and mail the applicant a project decision schedule no later than the effective date of the permit. 40 C.F.R. § 124.3(g). This schedule must specify target dates by which EPA intends to process the application. Id.

Once an application is complete, EPA must tentatively decide whether to prepare a draft permit or to deny the application. 40 C.F.R. § 124.6(a). If EPA decides to prepare a draft permit, the draft permit must be accompanied by a statement of basis or fact sheet. 40 C.F.R. § 124.6(e). A fact sheet is required for a major UIC facility or activity and shall include, when applicable:

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[2] The regulations do not define the term "major new UIC injection well." The term "major facility" is defined as any RCRA, NPDES, UIC, or 404 facility or activity classified as such by EPA. 40 C.F.R. § 124.1.

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1. A brief description of the type of facility or activity which is the subject permit.

2. The type and quantity of waste, fluids, or pollutants which are proposed to be or are being treated, stored, disposed of, injected, emitted, or discharged.

3. A brief summary of the basis for the draft permit conditions including references to applicable statutory or regulatory provisions and appropriate supporting references to the administrative record.

4. A description of the procedures for reaching a final decision on the draft permit.

40 C.F.R. § 124.8(b). A statement of basis is a brief description of the derivation of the conditions in the draft permit and the reasons for them. 40 C.F.R. § 124.7.

EPA must give public notice that a draft permit has been prepared. 40 C.F.R. § 124.10(a)(2). Public notice of the preparation of a draft permit must allow at least 30 days for public comment. 40 C.F.R. § 124.10(b).

During the public comment permit provided in this public notice of the draft permit, any interested person may submit comments and may request a public hearing. 40 C.F.R. § 124.11. EPA must hold a public hearing if, on the basis of requests, there is a significant degree of interest in the draft permit. 40 C.F.R. § 124.12(a)(1). EPA may also hold a public hearing if, in its discretion, such a hearing might clarify one or more issues involved in the permit decision. 40 C.F.R. § 124.12(a)(2).

c. Conditions Applicable to UIC Injections

The overriding standard applicable to all underground injection activities is that:

> No owner or operator shall construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant into underground sources

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> of drinking water, if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 C.F.R. Part 142 or may otherwise adversely affect the health of persons . . .

40 C.F.R. § 144.12. "Contaminant" is defined as "any physical, chemical, biological, or radiological substance or matter in water." 40 C.F.R. § 144.2.

VI. Sole Source/Critical Aquifers and Wellhead Protection

The EPA Administrator has the power to determine that an aquifer constituted the sole source of drinking water for a population and to approve state plans that would afford greater protection to these areas. Sole source aquifer designation was dependent upon a showing that the aquifer was a sole/principal drinking water source and that contamination of the aquifer would produce a significant danger to human health. Elements that are considered by the EPA in this designation include the physical attributes of the aquifer, the availability of alternative and future water sources, potential contamination sources, and possible economic regulatory impact. See 52 Fed. Reg. 32343, 32344 (1987). Tucson has a designated sole source aquifer.

The 1986 amendments to the SDWA provides for he designation of critical aquifer protection areas (CAPA). In order to apply for CAPA designation and to receive grants to carry out the CAPA protection program, the political subdivision must have jurisdictional control over the proposed CAPA and must be able to implement a program to protect the aquifer quality. CAPA designation allows a political subdivision to receive increased funds to use to protect the aquifer.

The wellhead protection provisions of the 1986 SDWA amendments were enacted to protect the areas surrounding public water supply wells. It required the states to submit wellhead protection programs to the EPA within three years of enactment of the amendments (by June 19, 1989). The provision also authorizes federal funding for the development and implementation of these programs. Arizona must identify potential contaminant sources within the wellhead protection area that may harm health.

VII. SDWA Enforcement

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The SDWA assigns primary enforcement responsibility to the states. 42 U.S.C. § 300g(2). In implementing the SDWA program, EPA and the states rely heavily on community water systems to demonstrate compliance with the program's requirements by periodically collecting water samples and having them tested in an approved laboratory. All but two states have assumed "primacy," or responsibility, for managing the program at the local level. The test results are then reported to the state, which analyzes the data to determine the water systems' compliance with monitoring requirements and water quality standards. The state, in turn, reports identified violations to EPA.

If a violation occurs, the state is responsible for taking enforcement action against the water system. The state gives priority to systems in "significant noncompliance" -- a designation based on the frequency and/or magnitude of violations. EPA is responsible for enforcing cases then the state does not act.

Section 1414(c) of the act requires the owner or operator of a public water system which fails to comply with an applicable maximum contaminant level or treatment technique requirement, testing procedure, or section 1445(a) monitoring requirement to give notice to the persons served by the water system. Owners and operators of public water systems for which variances or exemptions are in effect, or which fail to comply with a compliance schedule associated with a variance or exemption, must also give notice. Section 1445(a)(5) also requires public water systems to notify the persons served by the water system and the Administrator of he EPA of the availability of the results of monitoring for unregulated contaminants.

Federal enforcement under emergency provisions lay occur where EPA finds that the designated state and local authorities have not adequately protected drinking water, and a contaminant is present in, or about to enter, a public system. A contaminant is broadly defined to include "any physical, chemical, biological, or radiological substance or matter in water." 42 U.S.C. § 300f(6). EPA's emergency power under the SDWA applies when a contaminant "may present an imminent and substantial endangerment to the If persons." 42 U.S.C. § 300i(a).

EPA may file suit or issue orders to any person creating a public health hazard. Orders can

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require a landowner from where the threat arises to alert the public, remedy the situation or provide alternate water supplies. Failure to comply with an order can lead to $5,000 per day in civil penalties. 42 U.S.C. § 3001(a).

The emergency powers of the SDWA were utilized in United States v. Price, 523 F. Supp. 1655 (D.N.J. 1981), aff'd, 688 F.2d 204 (3d Cir. 1982). The federal government brought suit against the owners and former owners of property that had formerly been used as a landfill. In 1976, the landfill had been covered up. In November of 1979, the EPA determined that the landfill was a source of significant groundwater pollution.

The government was denied a request for injunctive relief, partly on the basis that only private water systems were involved. That part of the decision is inconsistent with Montgomery County v. EPA, 662 F.2d 1040, 1044 (4th Cir. 1981), where the court held "[t]he people in the area who rely on [private] wells are entitled to immediate protection from contamination and they should not be denied the safeguards provided by [SDWA] § 1424(e) . . . ."

The court in Price did state that the emergency provisions of the SDWA were broad enough to permit the government to require defendants to fund a diagnostic study of the pollution problem. 688 F.2d at 214. Similarly, the broad equity powers could permit landowners to be required to provide an alternate water supply and to remedy the contamination.

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CHAPTER 9.2

AQUIFER PROTECTION UNDER THE ARIZONA EVIRONMENTAL QUALITY ACT OF 1986

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I. OVERVIEW OF AQUIFER PROTECTION REGULATION AND PERMITS

In 1984, Arizona promulgated regulations governing discharges of pollutants to groundwater. These groundwater quality permit and groundwater quality standards regulations in effect were set forth in A.A.C. R9-20-202, et seq., and R9-21-401, et seq. Due to the passage of Arizona's Environmental Quality Act in 1986, the regulatory focus has shifted to aquifer protection, as opposed to groundwater protection. The statutory framework for this new permit program is set out in A.R.S. § 40-241, et seq. An aquifer is defined as an underground body of water that can yield usable quantities to a well or spring. Regulations define usable amount as just five gallons per day yield. A.A.C. R18-11-501.4.

The aquifer protection permit statutory requirements noted above were enacted in 1986 as part of the AEQA. At the time of enactment, the Division of Environmental Health Services within the Arizona Department of Health Services already had developed an analogous permit requirement under the Groundwater Discharge Permit regulations, A.A.C. R9-20-201, et seq. These regulations were promulgated on July 20, 1984. Existing facilities were required to file notices of disposal by January 20, 1985, and were to be permitted gradually. New facilities required a permit prior to operation.

The old regulations required groundwater quality permits pursuant to R9-20-202, et seq. and meeting groundwater quality standards at R9-21-401, et seq. Those regulations provided: "The disposal of any wastes or discharge of any pollutants such that groundwater quality may be affected, except as in compliance with [Groundwater Discharge Permit requirements and Groundwater quality Standards), shall be prohibited." A.A.C. R9-20-204. "Disposal" is defined in pertinent part as the "discharge, deposit . . dumping, spilling, leaking or placing of any wastes or pollutants into or on any land or water such that groundwater is or may be affected." A.A.C. R9-20-203.9. A "discharge" is the "addition, spilling, leaking, pumping, pouring, emitting or dumping of any pollutant into waters of the State from any point source." A.A.C. R9-20-204.7. (Emphasis added.)

A point source was defined for purposes of the 1984 regulations as:

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> [A]ny discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged.

A.R.S. § 36-1851.11. This definition is derived from the Federal Water Pollution Control Act. 33 U.S.C. § 1362.14.

"Unchanneled" and "uncollected" surface waters are generally not considered a point source under the federal law. See, e.g., Appalachian Power Co. v. Train, 545 F.2d 1351 (4th Cir. 1976). Polluted surface waters that are collected or channeled, in any manner, have been held to be point source discharges. See O'Leary v. Moyer's Landfill, Inc., 523 F. Supp. 642, 655 (E.D. Penn. 1981) ("surface runoff of contaminated water, once channeled or collected, constitutes discharge by a point source"); Sierra Club v. Abston Construction Co., Inc., 620 F.2d 41, 47 (5th Cir. 1980) (contaminated surface water, if collected or channelled, constitutes point source pollution). Shortly after the Groundwater Discharge Permit regulations were promulgated, litigation occurred over the scope and validity of these regulations. On May 2, 1985, the Arizona Department of Health Services and other defendants in litigation brought by the Arizona Chamber of Commerce entered into the following stipulation regarding the applicability of these regulations to "non-point sources":

> Defendants, as a matter of policy, rather than as a matter of law, will not apply Notice of Disposal requirements under the regulations to non-point sources of pollution without further rule making proceedings. A "non-point source" of pollution is a source that is not a "point source" within the meaning of A.R.S. § 36-1851(11).

The Aquifer Protection Permit regulations adopted in September, 1989 provide for two different types of permits: individual and general. General permits are issued by regulation, whereas individual

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permits are issued upon individual application by the discharging facility.

Discharge without a permit, or any violation of the laws, regulations and standards governing discharges to ground and groundwater, can subject the owner to substantial civil penalties, injunctive relief, significant criminal penalties and citizen suits. A.R.S. § 49-261, et seq. These include but are not limited to the $1,000,000 criminal penalties for corporations found to violate the regulatory scheme with intent and $25,000 per day civil penalties.

Existing facilities covered by a notice of disposal ("interim status") filed under the old regulations (pre 1986) are grandfathered into the new permit system, but they must submit an application for a permit to continue to operate as called for permitting by ADEQ. The director shall complete the issuance or denial of aquifer protection permits for all existing facilities on the following schedule:

1. By January 1, 1995, at least one-third of all facilities.

2. By January 1, 1998, at least two-thirds of all facilities.

3. By January 1, 2001, all permit facilities.

The failure by the director to issue or deny in aquifer protection permit for a facility within he time prescribed by this section does not excuse person from continuing to comply with all statutory and regulatory requirements applicable to hat person's facility.

Any person who discharges or who owns or operates a facility that discharges must comply with the AEQA aquifer protection requirements. A.R.S. § 9-241.A. Since discharge is broadly defined for purposes of aquifer protection ("addition of a pollutant from a facility either directly to an aquifer or to the land surface or the vadose zone in much a manner that there is a reasonable probability that the pollutant will reach an aquifer" - A.R.S. § 9-201.10), and since facility is defined as "any land, building, installation, structure, equipment, ice, conveyance, area, source, activity, or practice from which there is, or with reasonable probability may be a discharge," § 49-201.15, each facility must

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be examined to determine if it impacts groundwater and whether it needs a permit.

The previous paragraph sets forth one test to apply to determine if there is a regulated discharge, but there are other facility categories (2-12 below) that must obtain a permit even if they do not have a discharge. The following list summarizes who must obtain an aquifer protection permit:

Any facility that falls within one of the following categories must have a permit, unless exempted:

1. Any land, building, installation, structure, equipment, device, conveyance, area, source, activities or practice from which there is, or with reasonable probability may be, any addition of any pollutant (not just hazardous pollutants) either directly to the land surface or the vadose in such a manner that there is a reasonable ability that the pollutant will reach an aquifer. An aquifer is any geologic unit of rated material capable of yielding five gallons of water per day to a well or spring.

2. Surface impoundments.
3. Solid waste disposal facilities.
4. Injection wells.
5. Land treatment facilities.
6. Facilities which add a pollutant to a dome formation, salt bed formation, dry well or ground cave or mine.

7. Mine tailing piles and ponds.
8. Mine leaching operations.
9. Septic tank systems with a capacity of greater than two thousand gallons per day.

10. Groundwater recharge projects and underground storage and recovery projects.

11. Point source discharges to navigable waters.

12. Sewage or sludge ponds and waste water treatment facilities.

If you fall within one of the twelve previous categories, you then need to check the statutory and regulatory exemptions and any general permit provisions.

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The following classes of facilities are exempt by statute from the aquifer protection permit requirement:

1. Household and domestic activities.

2. Household gardening, lawn watering, lawn care, landscape maintenance and related activities.

3. The noncommercial use of consumer products generally available to and used by the public.

4. Ponds used for watering livestock and wildlife.

5. Mining overburden returned to the excavation site, including any common material which has been excavated and removed from the excavation site and has not been subjected to any chemical or leaching agent or process of any kind.

6. Facilities used solely for surface transportation or storage of surface water for beneficial use or groundwater. This exemption does not apply if effluent from any waste treatment facility that is regulated pursuant to sections 49-61 and 49-362 is added to the water after its original point of diversion.

7. Discharge to a community sewer system.

8. Facilities which are defined and required to obtain a permit to reuse reclaimed waste water.

9. Leachate resulting from the direct, natural infiltration of precipitation through undisturbed regolith or bedrock if pollutants are not added to the leachate as a result of any material or activity placed or conducted by man on the ground surface.

10. Surface impoundments used solely to contain storm runoff.

11. Closed facilities. However, if the facility ever resumes operation the facility shall obtain an aquifer protection permit and the facility shall be treated as a new facility.

12. Facilities using Central Arizona Project water for underground storage and recovery projects under title 45, chapter 3, article 2.

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13. Indirect groundwater storage and recovery projects permitted under title 45, chapter 3, article 2.

14. Facilities for the recharge or underground storage and recovery of water transported or stored in a facility which is exempt pursuant to paragraph 6.

15. Application of water from any source, including groundwater, surface waste or wastewater, to grow agricultural crops or for landscaping purposes, except as provided in section 49-247.

16. Discharges to a facility that is exempt pursuant to paragraph 6 if those discharges have NPDES permits.

"Closed facility" means a facility that ceased operation before January 1, 1986 and that was not, as of August 13, 1986 engaged in the activity for which the facility was designed and that was previously operated and for which there is no intent to resume operation.

In addition to the classes or categories of facilities listed by statute, the following classes or categories of facilities are covered by exemption or are otherwise not covered by the permit requirements in the September, 1989 aquifer protection permit regulations.

1. Facilities which treat, store, or dispose of hazardous waste and which have been issUed a permit or which have interim status, pursuant to the Resource Conservation and Recovery Act (P.L. 94-580; 90 Stat. 2796; 42 United States Code sections 6901 et seq.) or the rules adopted pursuant to A.R.S. § 49-922.

2. Underground storage tanks which contain regulated substances as defined in A.R.S. § 49-1001.8 (see the discussion of the UST statute).

3. Activities conducted pursuant to a remedial action order issued or a plan approved pursuant to A.R.S. §§ 49-281 through 49-287, and R18-7-101 through R18-7-110.

4. Any use of pesticides directly in the commercial production of plants and animals which is subject to the Federal Insecticide, Fungicide and Rodenticide Act (P.L. 92-416; 86 Stat. 975; 7 United States Code sections 135 et seq.), or A.R.S. §§ 49-

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301 through 49-309 and the rules adopted thereunder, or Title 3, Chapter 2, Article 6 of the Arizona Revised Statutes and the rules adopted thereunder.

5. Facilities for the disposal of solid waste, as defined in A.R.S. § 49-701.12, which are located in unincorporated areas and which only receive solid waste from four or fewer households.

6. Dry wells which are used solely to receive storm runoff, except those that drain areas in which hazardous substances are stored, used, loaded or treated.

7. The application of nitrogen fertilizers.

8. Animal feeding operations.

One interesting question is how DEQ can, by regulation, make the permit requirements not applicable to dry wells when the statute mandates that injection wells and dry wells receiving pollutants must be operated pursuant to a permit.

There are two kinds of permits: (1) individual and (2) general. Typically you must apply for and obtain an individual permit. A general permit should not require an individual application; you simply must meet the requirements of the rule that establishes the general permit.

The DEQ is authorized by statute to issue by rude a general permit for a defined class of facilities if all of the following apply:

1. The permitted facilities, activities or practices are large in number and the cost of issuing individual permits cannot be justified by any environmental or public health benefit that may be gained from issuing individual permits.

2. The facilities, activities or practices in the class are substantially similar in nature.

3. DEQ is satisfied that appropriate conditions under a general permit for operating the facilities or conducting the activity will not ziolate aquifer water quality standards or agricultural best management practices.

Aside from nitrogen fertilizers and animal feeding, covered later in this paper, DEQ also has rules that provide general permits for the following:

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(1) Certain sewage disposal systems with flows up to 20,000 gallons per day, so long as they comply with standard sewage system requirements and receive only ordinary sewage generally associated with toilet flushing, food preparation, laundry and personal hygiene (no odd chemicals!). The requirements are less stringent for flows under 2,000 gallons per day.

(2) Groundwater recharge or underground storage and recovery pilot projects with less than 10,000 AFA over two years injected, provided certain requirements are met.

(3) Agricultural applications of wastewater sludge meeting certain management practices.

(4) The discharge of wash water from sand and gravel operations, and placer mining operations, if only physical processes are employed and no hazardous substances, other than those naturally existing in the sand and gravel or the placer material, have been added or exposed during the processing or removal of the sand and gravel.

(5) Certain discharges from hydrostatic tests of drinking water distribution systems, and of certain other pipelines provided specified conditions are met.

(6) Facilities which, for purposes of water quality sampling, hydrologic parameter testing, well development or redevelopment, receive water, drilling fluids or drill cuttings from a well, if the discharge is to the same aquifer in approximately the same location from which the water supply was withdrawn originally.

(7) Injection wells, surface impoundments, and leach lines receiving discharge from only filter backwash from potable water treatment systems, condensate from refrigeration units, overflows from evaporative coolers, heat exchange system return water, or swimming pool filter backwash, where the discharge is less than 1,000 gallons per day.

(8) Lined evapotranspiration beds receiving sewage which are issued an Approval to Construct pursuant to R18-9-804 and 805, and which are inspected and leak tested by the Department or its designated representative during construction.

(9) Disposal of material that contains only uncontaminated soil, cement, bricks, or other

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similar inert material.

(10) Facilities used for transportation of water for beneficial use, or pumped from the groundwater, which contain effluent from any waste water treatment facility if certain conditions are met.

(11) Surface impoundments receive only filter backwash from potable water treatment systems, which are lined and properly operated.

DEQ may revoke a person's general permit and require the person to obtain an individual Aquifer protection Permit for any of the following reasons:

1. The person has failed to comply with the terms and conditions of the General Permit.

2. The discharge from a facility subject to a General Permit causes or contributes to the violation of an Aquifer Water Quality Standard.

DEQ may revoke a General Permit for all facilities within a specific geographic area if DEQ determines that the cumulative effects of the facilities subject to the general permit are such that any water quality standard may be violated due to geologic or hydrologic conditions.

II. OBTAINING A PERMIT

Pursuant to A.A.C. R18-9-107 and 124, an individual aquifer protection permit generally is to be issued within 180 days by the Department of Environmental Quality after the submission of the complete application. This time period can be extended if any of the following occur: (a) the initial application submittal is incomplete; (b) the Department schedules a public hearing; and (c) the Department decides it needs additional time to procure further information.

If the application is incomplete, the 180 day time period generally associated with issuance of the permit does not start until the application is complete. If a public hearing is held, a minimum of 90 additional days delay in issuance of the permit should be anticipated. Finally, if the Department decides additional information is required after the close of the public comment period, 90 days of additional time to make the final permit decision is available to the Department.

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The DEQ shall issue an individual aquifer protection permit to a person for a facility (other than a recharge project or an underground storage and recovery project) if the person demonstrates that either paragraphs 1 and 2 or paragraphs 1 and 3 will be met:

1. That the facility will be so designed, constructed and operated as to ensure the greatest degree of discharge reduction achievable through application of the best available demonstrated control technology, processes, operating methods or other alternatives, including, where practicable, a technology permitting no discharge of pollutants. In determining best available demonstrated control technology, processes, operating methods, or other alternatives, DEQ shall take into account site specific hydrologic and geologic characteristics and other environmental factors, the opportunity for water conservation or augmentation and economic impacts of the use of alternative technologies, processes or operating methods on an industry wide basis. However, a discharge reduction to an aquifer achievable solely by means of site specific characteristics does not, in itself, constitute compliance with this paragraph. In addition, DEQ shall consider the following factors for existing facilities:

(a) Toxicity, concentrations and quantities of discharge likely to reach an aquifer from various types of control technologies.

(b) The total costs of the application of the technology in relation to the discharge reduction to be achieved from such application.

(c) The age of equipment and facilities involved.

(d) The industrial and control process employed.

(e) The engineering aspects of the application of various types of control techniques.

(f) Process changes.

(g) Non-water quality environmental impacts.

(h) The extent to which water available for beneficial uses will be conserved by a particular type of control technology.

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2. That pollutants discharged will in no event cause or contribute to a violation of aquifer water quality standards at the applicable point of compliance for the facility.

3. That no pollutants discharged will further degrade, at the applicable point of compliance, the quality of any aquifer that already violates the aquifer quality standard for that pollutant.

DEQ has developed draft BADCT guidance documents for mines, landfills industrial waste streams, and wastewater treatment plants.

The DEQ shall issue a permit to a person for a recharge project or an underground storage and recovery project if the person demonstrates that the facility will be so designed, constructed and operated as to ensure that the project will not cause or contribute to the violation of any aquifer water quality standard at the applicable point of compliance for the facility. There is no BADCT requirement.

With respect to the following pollutants, the permit applicant for a new facility must meet BADCT criteria to limit discharges to the maximum extent practicable regardless of cost:

1. Any organic substance listed by the secretary of the department of health and human services pursuant to 42 United States Code § 241(b)(4), as known to be carcinogens or reasonably anticipated to be carcinogens.

2. Any organic substance listed in 40 Code of Federal Regulations § 261.33(e), regardless of whether the substance is a waste subject to regulation under the Resource Conservation Recovery Act (P.L. 94-580; 90 Stat. 2795).

3. Any organic toxic pollutant that the director lists by rule after determining that minute amounts of that pollutant in drinking water will present a substantial short-term or long-term human health threat.

If an individual permit is required for a new facility, planning must start up to one year in advance. A permit application must be filed at least 180 days prior to any discharge. Among the more significant requirements of the new aquifer protection regulatory program are the following:

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(A) Application for a permit requires a chemical, biological and physical analysis of past and future pollutant discharges from each facility.

(B) Each new facility must be designed, constructed and operated as to ensure the greatest degree of discharge reduction achievable through application of the best available demonstrated control technology, processes, operating method, or other alternatives, including, where practicable, a technology permitting no discharge of pollutants.

(C) Each applicant must demonstrate the financial capability to construct, operate, close and assure proper post closure care of each facility.

(D) Most applicants must submit a hydro-geologic study for each covered facility which will, among other things, assess existing and future water quality in the aquifer.

(E) Most facilities will be required to monitor groundwater quality.

(F) A contingency plan, a closure plan and a post closure monitoring and maintenance plan will be required for most facilities.

Every company with a potential discharge should conduct an evaluation to determine which of its facilities in Arizona will be impacted by the regulations and what that impact will be.

The DEQ will designate a point or points of compliance for each facility receiving a permit under this article. The point of compliance is the point at which compliance with aquifer water quality standards shall be determined. The point of compliance shall be a vertical plane downgradient of the facility that extends through the uppermost aquifers underlying that facility. The point of compliance must be so located as to ensure protection of all current and reasonably foreseeable future uses of the aquifer.

For pollutants that constitute "hazardous substances," the point of compliance is determined to be at the edge of the "waste management area." The "waste management area" includes the land area on which pollutants are or will be placed and any space taken up by any liner, dike, or other containing structure. The point of compliance for hazardous substances can, within certain limits, be

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moved 750 feet further down-gradient if it is technically impracticable to monitor at the edge of the waste management area or it is substantially less costly to monitor at an alternative point of compliance.

Summarized below are the manners in which aquifer quality limits ("AQLs") and alert levels are set in each permit.

AQUIFER QUALITY LIMITS

Method 1: AQL set equal to aquifer water quality standard (AWQS) or highest concentration detected during background sampling, if existing pollutant concentrations exceed the AWQS.

Method 2: AQL set equal to AWQS unless ambient water quality exceeds the AWQS. In that case, AQLs set at 2 standard deviations above the baseline mean concentration determined during ambient water quality monitoring.

Method 3: Set every AWL equal to an existing aquifer water quality standard, with no provision for allowing ambient water quality concentrations to alter that AQL.

Method 4: Set AQLs for most parameters equal to AWQSs, but reserve AQLs for a few parameters pending results of background sampling without indicating precisely how the AQLs for those parameters will be set.

Method 5: Set no AQLs and instead set discharge limits (i.e., limits on quantities, rates, concentrations, combinations, toxicity, and characteristics of pollutants).

Method 6: Set no AQLs or discharge limits whatsoever.

ALERT LEVELS

Method 1: Alert levels set at two standard deviations above mean ambient groundwater quality. If alert levels set in this fashion exceed AWQSs, the alert level is set at 70% of the AWQS. If ambient groundwater quality itself exceeds the

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AWQS, the highest value of pollutants observed becomes the alert level (as well as the AQL).

Method 2: Set alert levels at two standard deviations above baseline mean concentrations determined through background sampling. If ambient sampling indicates that a parameter is not present above detection limits, or a calculated alert level is below the practical quantitation limit (PQL), alert level is set equal to the PQL. PQLs for certain parameters are set out in the permit. If ambient sampling indicates that a calculated alert level is present above an AWQS, the alert level shall be set equal to the AWL established. In determining if an alert level is exceeded, quarterly data will be averaged with the previous three quarters' data for each parameter; only if the average exceeds the alert level has an exceedance occurred.

Miscellaneous Methods (Permit-Specific):

Aside from the permit requirement, the Arizona aquifer protection program prohibits violation of applicable water quality standards. Aquifer water quality standards are numeric primary drinking water standards. A.R.S. § 49-223. Narrative standards also have been developed. These generally prohibit impairment of uses of groundwater or the creation of a public health hazard. Use of or activities at any property may not cause these sets of standards to be violated.

All aquifers are initially classified as drinking water aquifers in which drinking water standards must be maintained. Aquifer reclassifications may be proposed by petitioning for a change from a drinking water to a non-drinking water use. Petitioning requires demonstration of "hydrologic isolation" of the aquifer (or portion thereof) to be reclassified. A cost benefit analysis demonstrating that the benefits to the public resulting from the degradation of water quality standards would significantly outweigh the cost also will be required.

If an aquifer was degraded by a nonhazardous substance disposed of prior to August 13, 1986, DEQ may order the responsible party to mitigate the harm

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if it would otherwise render a drinking water source unusable. Such mitigation can include providing an alternative water supply, mixing, blending or other treatment processes. "Responsible parties" are determined under A.R.S. § 49-283, which conceivably includes a subsequent purchaser of property who may have had nothing to do with the original contamination. DEQ can also include a permit condition requiring "remedial action" for a discharge of "hazardous substances" that occurred prior to the EQA's effective date of August 13, 1986.

III. RATIONALE FOR LEGISLATIVE ACTION ON BADCT IN 1994

When it was established in 1986, the aquifer protection permit ("APP") program was one of a series of interlocking statutory provisions designed to protect Arizona's groundwater supplies for potential future use as drinking water sources. Other provisions adopted in 1986: (1) provide for the presumptive adoption (as state numeric aquifer water quality standards for drinking water aquifers) of primary Maximum Contaminant Levels ("MCLs") adopted pursuant to the federal Safe Drinking Water Act (A.R.S. § 49-223); and (2) classify all aquifers in the state as drinking water aquifers, unless and until such aquifers are reclassified pursuant to statutory criteria (A.R.S. § 49-224). Together, these two provisions establish a legal presumption that all groundwater in Arizona is a potential drinking water source, and require that groundwater to be kept at a quality sufficient to allow for potential drinking water uses. The third component of the statutory groundwater protection system adopted in 1986 is the APP program, which regulates through a permit program facilities that have the potential to impact groundwater quality and render it unsuitable as a potential source of drinking water.

Practical experience over the last four years (since regulations implementing the APP program were adopted in 1989), however, has revealed the difficulty of administering the APP program under the statute as currently worded. The proposed statutory changes discussed below would allow the overall goal of the statute (protection of groundwater for possible future drinking water uses) to be met, while at the same time streamlining the permitting process and inserting into that process a level of certainty that currently does not exist.

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The problems existing under the current APP program center around the requirement that all applicants demonstrate that they will utilize the "best available demonstrated control technology, processes, operating methods or other alternatives, including, where practicable, a technology permitting no discharge of pollutants" (generally referred to as "BADCT"). See A.R.S. § 49-243.B.1. The problems created by this provision have both a substantive and a procedural component.

Substantively, the BADCT requirement poses an extraordinarily strict standard that is not required in order to protect groundwater for possible future use as drinking water. The BADCT requirement mandates discharge reduction for its own sake, unrelated to any threat to human health posed by the quality of water being discharged from a facility. Thus, if a facility proposes a design that allows drinking water quality discharges to migrate to the aquifer beneath the facility, but a better technology is available that would prevent such a discharge from occurring, the Arizona Department of Environmental Quality ("ADEQ") feels that the statute requires it to force the facility to install the "better" technology that would achieve "zero discharge." This results in the installation of expensive technology to reduce discharges even if such discharges pose an insignificant risk to human health. Such a policy is regulation for the sake of regulation, and can require significant expenditures of funds without any corresponding health benefit. It is also inconsistent with Arizona's statewide water policy of promoting safe recharge and with the fact that the Legislature exempted intentional recharge of high quality water from the BADCT requirement in the APP program. See A.R.S. § 49-243.C.

As an example of the potential undesirable effects of the BADCT requirement as it currently exists, consider a proposed new wastewater treatment plant. The applicant intends to utilize a denitrification technology costing $2 million and resulting in wastewater quality that poses no significant risk to public health and will ensure compliance with aquifer water quality standards at the point of compliance. However, if a technology costing $20 million exists that would reduce the level of nitrogen in the wastewater even further, and that technology has been implemented at some other facility somewhere in the country, ADEQ could force the treatment plant to implement the more expensive technology (at an additional cost of $18

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million) even though the public health benefits of doing so are minimal or nonexistent. Using the same example, ADEQ also could require the facility to line any wastewater ponds, at significant costs, even if the discharge reduction achieved by doing so produces no additional public health benefit.

Procedurally, the uncertain nature of the BADCT requirement has made planning facilities very difficult. Facility owners simply have no idea what BADCT will be for their facilities until they complete permit negotiations with ADEQ, since the nature of BADCT makes it impossible to define in advance what discharge control techniques will be required by ADEQ. This makes designing and budgeting for construction of a facility difficult, and creates a disincentive to plant expansion or relocation of new facilities in Arizona. Furthermore, the final determination of BADCT often depends heavily on which particular permit writer at ADEQ is assigned to an application, with the result that different permit conditions may be applied to similar facilities, an inequitable and illogical result.

A final procedural problem facilities have experienced under the current APP program is the length of time and the expense required to obtain a permit (which again is related primarily to the difficulty of determining BADCT). In several cases, it has taken in excess of two years and $1 million to obtain a permit. These sorts of costs and delays provide a further disincentive for the construction of new or expanded facilities in Arizona.

The specific components of the proposed APP legislative amendments are discussed below, with the existing BADCT statutory language set forth in regular print and the proposed changes in capital letters.

49-243. Information and criteria for issuing individual permit

. . .

B. The director shall issue a permit to a person for a facility other than a recharge project or an underground storage and recovery project if the person demonstrates that either paragraphs 1 and 2 or paragraphs 1 and 3 of this subsection will be met:

1. That the facility will be so designed, constructed and operated as to ensure the greatest degree of discharge reduction achievable TO

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ELIMINATE SIGNIFICANT RISKS TO PUBLIC HEALTH through application of the best available demonstrated control technology, processes, operating methods or other alternatives, including, where practicable, a technology permitting no discharge of pollutants THAT CAUSE A SIGNIFICANT RISK TO PUBLIC HEALTH. In determining best available demonstrated control technology, processes, operating methods or other alternatives the director shall take into account site specific hydrologic and geologic characteristics and other environmental factors, the opportunity for water conservation or augmentation and economic impacts of the use of alternative technologies, processes or operating methods on an industry-wide basis. However, a discharge reduction to an aquifer achievable solely by means of site specific characteristics does not, in itself, constitute compliance with this paragraph. In addition, the director shall consider the following factors for existing facilities:

(a) Toxicity, concentrations and quantities of discharge likely to reach an aquifer from various types of control technologies.

(b) The total costs of the application of the technology in relation to the discharge reduction to be achieved from such application.

(c) The age of equipment and facilities involved.

(d) The industrial and control process employed.

(e) The engineering aspects of the application of various types of control techniques.

(f) Process changes.

(g) Non-water quality environmental impacts.

(h) The extent to which water available for beneficial uses will be conserved by a particular type of control technology.

2. That pollutants discharged will in no event cause or contribute to a violation of aquifer water quality standards at the applicable point of compliance for the facility.

3. That no pollutants discharged will

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further degrade, at the applicable point of compliance, the quality of any aquifer that already violates the aquifer quality standard for that pollutant.

. . .

49-243.01. PROMULGATION OF RULES ESTABLISHING PESUMPTIVE BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY, PROCESSES, OPERATING METHODS OR OTHER ALTERNATIVES FOR CATEGORIES OF DISCHARGING FACILITIES

A. BY JANUARY 1, 1997, THE DIRECTOR SHALL ESTABLISH BY RULE PRESUMPTIVE BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY, PROCESSES, OPERATING METHODS OR OTHER ALTERNATIVES FOR FACILITIES IN THE FOLLOWING CATEGORIES, AT A MINIMUM:

1. MUNICIPAL WASTEWATER TREATMENT FACILITIES WITH A DESIGN AVERAGE DAILY FLOW UP TO ONE MILLION GALLONS PER DAY;

2. MUNICIPAL WASTEWATER TREATMENT FACILITIES WITH A DESIGN AVERAGE DAILY FLOW ABOVE ONE MILLION AND UP TO TEN MILLION GALLONS PER DAY;

3. MUNICIPAL WASTEWATER TREATMENT FACILITIES WITH A DESIGN AVERAGE DAILY FLOW ABOVE TEN MILLION GALLONS PER DAY;

4. **[Other facilities? We expect a variety of industries to propose BADCT rulemaking for their industry subcategory]**

IN DETERMINING OPTIMAL BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY, PROCESSES, OPERATING METHODS OR OTHER ALTERNATIVES FOR A CLASS OF FACILITIES, THE DIRECTOR SHALL TAKE INTO ACCOUNT THE FACTORS SET FORTH IN § 49-243.B.1.

B. UNLESS AN ALTERNATIVE DESIGN OR DESIGN ELEMENT IS APPROVED BY THE DIRECTOR PURSUANT TO SUBSECTION C, THE DIRECTOR SHALL ISSUE A PERMIT TO A NEW FACILITY IN A CATEGORY FOR WHICH PRESUMPTIVE BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY, PROCESSES, OPERATING METHODS OR OTHER ALTERNATIVES HAS BEEN ESTABLISHED BY RULE PURSUANT TO SUBSECTION A ONLY IF THE FACILITY INCORPORATES ALL OF THE DISCHARGE CONTROL MEASURES REQUIRED BY THE

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REGULATIONS APPLICABLE TO THAT CATEGORY OF FACILITIES. A FACILITY THAT PROPOSES TO IMPLEMENT ALL SUCH DISCHARGE CONTROL MEASURES SHALL BE DEEMED TO BE UTILIZING THE BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY, PROCESSES, OPERATING METHODS OR OTHER ALTERNATIVES.

C. A FACILITY IN A CATEGORY FOR WHICH PRESUMPTIVE BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY, PROCESSES, OPERATING METHODS OR OTHER ALTERNATIVES HAS BEEN ESTABLISHED BY RULE PURSUANT TO SUBSECTION A MAY REQUEST THAT THE DIRECTOR APPROVE A FACILITY DESIGN THAT DIFFERS FROM THAT REQUIRED BY THE REGULATIONS APPLICABLE TO THAT CATEGORY. THE DIRECTOR SHALL APPROVE THE PROPOSED ALTERNATIVE DESIGN IF THE APPLICANT DEMONSTRATES THAT THE ALTERNATIVE DESIGN, AS A RESULT OF SITE SPECIFIC CONDITIONS OR OTHER RELEVANT FACTORS, WILL REDUCE DISCHARGE TO A LEVEL SUFFICIENT TO ELIMINATE SIGNIFICANT RISKS TO PUBLIC HEALTH AND WILL COMPLY WITH THE REQUIREMENTS OF § 49-243.B.2 OR § 49-243.B.3.

D. THE DIRECTOR MAY ESTABLISH BY RULE PRESUMPTIVE BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY, PROCESSES, OPERATING METHODS OR OTHER ALTERNATIVES FOR CLASSES OF FACILITIES OTHER THAN THOSE MENTIONED IN SUBSECTION A. IN DETERMINING PRESUMPTIVE BADCT FOR ANY CATEGORY OF FACILITIES UNDER THIS SUBSECTION, THE DIRECTOR SHALL TAKE INTO ACCOUNT THE FACTORS SET FORTH IN § 49-243.B.1.

E. A PERSON OR GROUP OF PERSONS MAY PETITION THE DIRECTOR TO ESTABLISH BY RULE PRESUMPTIVE BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY, PROCESSES, OPERATING METHODS OR OTHER ALTERNATIVES FOR A CATEGORY OF FACILITIES FOR WHICH THE DIRECTOR IS NOT REQUIRED TO ADOPT RULES PURSUANT TO SUBSECTION A. ANY SUCH PETITION FOR RULE ADOPTION SHALL BE CONSISTENT WITH § 41-1033. THE PETITION FOR RULE ADOPTION MUST IDENTIFY THE CATEGORY OF FACILITIES AND CONTAIN A DESCRIPTION OF WHAT THE PETITIONER BELIEVES CONSTITUTES PRESUMPTIVE BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY, PROCESSES, OPERATING METHODS OR OTHER ALTERNATIVES FOR THAT CATEGORY OF FACILITIES. **[Need to consider establishing some sort of criteria, as to when ADEQ must initiate rulemaking in response to a request and when it may refuse to do so (e.g., a certain minimum number of facilities must be included in the category)]**

F. PRESUMPTIVE BEST AVAILABLE DEMONSTRATED CONTROL TECHNOLOGY, PROCESSES, OPERATING METHODS OR

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OTHER ALTERNATIVES FOR MUNICIPAL SOLID WASTE LANDFILLS SHALL BE DEMONSTRATED IF AN APPLICANT SATISFIES THE DESIGN CRITERIA SET FORTH IN 40 CODE OF FEDERAL REGULATIONS PART 258. THE DIRECTOR MAY APPROVE AN ALTERNATIVE DESIGN FOR A MUNICIPAL SOLID WASTE LANDFILL PURSUANT TO SUBSECTION C.

G. A FACILITY THAT HAS BEEN ISSUED AN AQUIFER PROTECTION PERMIT SHALL NOT BE REQUIRED TO OBTAIN A NEW OR MODIFIED PERMIT ON THE BASIS THAT RULES ESTABLISHING PRESUMPTIVE BEST AVAILABLE CONTROL TECHNOLOGY, PROCESSES, OPERATING METHODS OR OTHER ALTERNATIVES FOR THE CATEGORY ENCOMPASSING THE FACILITY BECOME EFFECTIVE AFTER THE DATE UPON WHICH THE FACILITY'S PERMIT BECOMES EFFECTIVE. ANY COMPLETE APPLICATION FILED BEFORE THE EFFECTIVE DATE OF ANY RULES ESTABLISHING PRESUMPTIVE CATEGORY REQUIREMENTS FOR A FACILITY SHALL BE PROCESSED BY ADEQ WITHOUT MODIFICATIONS BEING REQUIRED AS A RESULT OF THE ADOPTION OF SUCH RULES.

. . .

49-246. Criteria for issuing general permit

. . .

D. THE DIRECTOR SHALL BY RULE ESTABLISH GENERAL PERMITS REQUIRING IMPLEMENTATION OF BEST MANAGEMENT PRACTICES FOR FACILITIES THAT ARE COVERED BY A NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM GENERAL PERMIT FOR DISCHARGES OF STORMWATER. IN ESTABLISHING SUCH A GENERAL PERMIT, THE DIRECTOR SHALL FOLLOW THE PROCEDURES SET FORTH IN § 49-246.A.

Requiring Discharge Reduction to Eliminate Significant Risk

The proposed amendment to A.R.S. § 49-243.B changes the current statutory goal for optimal BADCT from no discharges to the aquifer (even where the discharges do not create a significant risk to public health) to a more logical environmental goal that sets optimal BADCT as the elimination of any significant risk to public health. The amendment confirms that there is nothing wrong with water migrating from a facility to the aquifer so long as the quality of the discharge poses no significant risk and is consistent with the potential use of the downgradient aquifer for drinking water. In fact, water quantity policy in Arizona is consistent with modifying the BADCT provision to encourage such safe, incidental recharge.

Regulation beyond the point where risk is

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significant is illogical, unjustified, and inconsistent with the emerging trend of environmental law (to structure programs to minimize significant risk), a trend reflected in ADEQ's ongoing comparative risk assessment. It is also inconsistent with Arizona water quantity policy, which seeks to promote aquifer recharge with high quality water.

Although no definition of "significant risk" is proposed, the phrase is intended to incorporate the type of risk analysis adopted in the Superfund cleanup standards, the Safe Drinking Water Act, the Resource Conservation and Recovery Act corrective action standards, and the new Clean Air Act hazardous air pollutant requirements. an appropriate definition of this term can be proposed.

Establishment of Presumptive BADCT by Rule for Specified Categories of Facilities

Proposed new A.R.S. § 49-243.01 requires ADEQ to establish presumptive BADCT by rule for specified classes of facilities (initially limited to various categories of wastewater treatment facilities). ADEQ may (at its discretion) adopt presumptive BADCT by rule for other categories of facilities, and a provision is included allowing parties to petition ADEQ to adopt presumptive BADCT through rulemaking for additional categories of facilities.

The concept of regulatory adoption of specific criteria flushing out a generic statutory requirement such as BADCT, as it applies to enumerated classes of facilities, is not uncommon in environmental law. For example, this approach has been adopted in the regulations implementing the Clean Water Act and Clean Air Act.

The proposed approach is designed to address some of the procedural problems with BADCT noted above. Setting forth presumptive BADCT in rules would create a level of certainty for applicants that currently does not exist. An applicant would know that if it designed to meet the specified criteria, it would satisfy the BADCT requirement. The proposed amendment also allows an applicant to petition ADEQ to approve an alternative design, if the applicant can justify the alternative design and demonstrate that it will not create significant risk. This provision allows for consideration of site-specific factors and accounts for the possibility that the presumptive BADCT promulgated

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through rulemaking may be inappropriate for particular facilities.

In addition, establishing presumptive BADCT through rulemaking will eliminate the current anomalous situation where similar facilities can be required to meet widely varying permit requirements.

Furthermore, establishing presumptive BADCT by rulemaking will eliminate the uncertainty regarding the substantive nature of BADCT that is currently faced by applicants. This will allow for faster, more inexpensive issuance of permits and will help reduce the disincentive to locate new or existing facilities in Arizona that is created by the existing statute.

Although it would be virtually impossible for ADEQ to develop presumptive BADCT by rulemaking for every conceivable category of discharging facility, it is reasonable to require the development of presumptive BADCT by rulemaking for some categories of facilities that are large in number and that have proven difficult to permit under the current APP program.

Finally, the amendment provides that presumptive BADCT for municipal solid waste landfills is equivalent to the minimum design criteria found in 40 C.F.R. Part 258 (although ADEQ is authorized to approve alternative designs). This amendment would help eliminate potential inconsistencies between the solid waste and APP programs.

General Permit for Certain Stormwater Discharges

The new federal stormwater NPDES program, enacted under the authority of the Clean Water Act, applies to facilities where contaminated storm runoff may exit the facility and ultimately reach a water of the United States. Because of the large number of facilities involved, EPA is in the process of issuing general permits to cover categories of facilities where the volume of individual facilities makes issuance of individual permits virtually impossible from an administrative standpoint. Because all point source discharges to navigable waters (a category that would include NPDES stormwater discharges) are required to obtain an APP (pursuant to A.R.S. § 49-241.B.10), these same facilities covered by the general permits being developed by EPA currently are required to obtain

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individual aquifer protection permits under Arizona law. As EPA has recognized by issuing general stormwater NPDES permits, the enormous volume of facilities discharging stormwater makes it virtually impossible to issue individual permits to all regulated facilities. Thus, the proposed amendment to A.R.S. § 49-246 requires ADEQ to prepare general permits for the classes of facilities covered by NPDES stormwater general permits. This will reduce the administrative burden on ADEQ, which is already having problems processing individual APP applications in a timely fashion.

IV. AQUIFER PROTECTION AND AGRICULTURE

Two programs under the 1986 EQA govern agricultural impacts on water quality in Arizona. The first is the Agricultural Best Management Practices Program, which is intended to regulate pollution from the use of nitrogen fertilizers and from concentrated animal feeding operations. The second is the Pesticide Contamination Prevention Program, which identifies pesticides which have contaminated or have the potential to contaminate groundwater in Arizona and regulates use to prevent further contamination.

V. AGRICULTURAL BEST MANAGEMENT PRACTICES

"Best management practices" means those methods, measures or practices to prevent or reduce discharges and include structural and nonstructural controls and operation and maintenance procedures. Best management practices may be applied before, during and after discharges to reduce or eliminate the introduction of pollutants into receiving waters. Economic, institutional and technical factors shall be considered in developing best management practices.

The DEQ was required to adopt by rule agricultural general permits consisting of best management practices for regulated agricultural activities. Regulated agricultural activities consist of the application of nitrogen fertilizers and concentrated animal feeding operations. A.R.S. § 49-247.

The terms and conditions of these agricultural general permits shall include agricultural best management practices which have been determined by DEQ to be the most practical and effective means - of reducing or preventing the discharge of pollutants by regulated agricultural activities.

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The draft regulations are extremely vague and essentially unenforceable except in egregious circumstances. They essentially hold a farmer to a narrative standard of "reasonably' minimizing impact to groundwater by causing no more discharge than economically necessary. Agricultural best management practices theoretically may vary within the state, according to regional and hydrogeologic conditions. Compliance with best management practices adopted by DEQ constitutes compliance with the aquifer protection permit requirement. If a person violates the applicable best management practices, DEQ may revoke the agricultural general permit for that person and require that the person obtain an individual aquifer protection permit. It will be very difficult for DEQ to prove any violations.

The statute required that these best management practices be developed in cooperation with two governor appointed advisory committees. The advisory committees deliberated at length to produce a set of proposed best management practices which they felt.would best suit the program objectives. These best management practices have been compiled into a best management practice manual.

During the development of these best management practices, substantial debate focused on whether best management practices should or should not be established by rule. It was ultimately decided that best management practices would be incorporated into rule. The rules are only a few lines long, however, and are very general. A guidance document, which is not intended to be in rule, was developed which describes the alternative technologies one could use to implement best management practices.

The Agricultural Best Management Practices Program consists of three basic elements. The first is the permit element where a fertilizer user or concentrated animal feeding operator is deemed the recipient of a general permit by DEQ. It is the obligation of the applicator or operator to conduct activities in accordance with best manage-ment practices to retain his or her general permit.

The second element is enforcement. An owner/ operator of a regulated agricultural activity who is found to be in violation of the provisions of the general permit (i.e., failure to meet best management practices) could be subject to revocation of the general permit plus penalties. This is

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unlikely. In order to continue the application of fertilizer or operation of a confined animal feeding operation after revocation, the owner/operator could have to secure an expensive individual permit.

The third element of the program is training and research. DEQ will be offering training to those people who assist the agricultural community and owner/operators of regulated agricultural activities with regard to best management practices.

VI. PESTICIDE CONTAMINATION PREVENTION

Pesticide Contamination Prevention is a program authorized by A.R.S. § 49-301, et seq., as a part of the 1986 Environmental Quality Act's effort to protect groundwater quality. It is designed to identify pesticides which have the capability to pollute groundwater in Arizona and to prevent future contamination by pesticides through modification or prohibition of use.

Two steps are required by statute in order to achieve these objectives. First, DEQ must identify those pesticides which have a potential to leach into groundwater in Arizona based on their chemical characteristics. Second, a monitoring program for soils and groundwater in Arizona is being developed for these potentially leaching pesticides to determine whether they have polluted or threaten to pollute groundwaters in the state.

Registrants of agricultural use pesticides in Arizona are required to submit data on the following chemical characteristics of active ingredients in their pesticide products:

- Water Solubility
- Vapor Pressure
- Henry's Law Constant
- Octanol Water Partition Coefficient
- Soil Adsorption Coefficient
- Hydrolysis Half-Life
- Photolysis Half-Life
- Soil Aerobic Metabolic Half-Life
- Soil Anaerobic Metabolic Half-Life

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o Field Dissipation

These data are compared to specific numeric values to determine whether the pesticides have the capacity to leach into groundwater. These specific numeric values, which have been adopted into rule, are: water solubility greater than 30 ppm, soil adsorption coefficient (kd) less than 5 and any dissipation half-life greater-than three weeks.

A pesticide is suspected of causing a leaching problem if chemical data indicate it is mobile an persistent. A mobile pesticide is one having a water solubility greater than 30 ppm or a kd less than 5. A persistent pesticide is defined as any pesticide with a dissipation half-life greater than three weeks. Pesticides which are both mobile and persistent are placed on a groundwater protection list.

DEQ has determined that there are 230 active ingredients found in all registered agricultural use products in Arizona. The 230 active ingredients are found in 934 registered agricultural use products. DEQ has received and reviewed data on 214 active ingredients and 105 have been determined appropriate for placement on the groundwater protection list.

In order to more accurately determine the mobility and persistence of the listed pesticides and to determine if these pesticides have migrated into groundwaters of this state, DEQ shall conduct soil and groundwater monitoring statewide in areas of this state where the pesticide is primarily used or where other factors, including physicochemical characteristics and use practices of pesticides, indicate a probability that the pesticide may migrate into the groundwaters of this state. The monitoring shall begin within one year after the pesticide is placed on the groundwater protection list.

If DEQ discovers a pesticide residue in the soil or groundwater during monitoring activities, it will initiate a formal enforcement review process. If the substance is a known toxin and if the concentration of the detected substance constitutes pollution or a threat to pollute groundwater, DEQ can cause the registration of any product containing that active ingredient to be cancelled. For any other substance or active ingredient detected, the registrant must demonstrate that the concentration found does not constitute a threat to pollute groundwater or that the use can be modified to

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prevent any further contamination in the future. Upon such a demonstration, DEQ may allow the continued registration of a pesticide.

The Pesticide Contamination Program also requires the reporting of sales and use of any agricultural use products which contain the active ingredients that are on the groundwater protection list. It is anticipated that these reports will enable DEQ to prioritize specific chemicals for monitoring. Reporting on use and sales of groundwater protection listed pesticides requires that the dealers and users of these pesticides are aware of which pesticides require reports.

The detection of a pesticide in soil or groundwater could result in restrictions on the use of the pesticide or the elimination of the pesticide from the market "altogether through registration cancellation. This is the primary enforcement mechanism available to OEQ.

If DEQ determines the pesticide meets any of the following conditions:

1. An active ingredient of a pesticide has been found at or below the deepest of the following depths:

(a) Eight feet below the soil surface.

(b) Below the root zone of the crop where the active ingredient was found.

(c) Below the soil microbial zone.

2. An active ingredient of a pesticide has been found in the groundwaters of this state.

3. The pesticide has degradation products or other specified ingredients which pose a threat to public health and which have been found under the conditions specified for active ingredients in either paragraph 1 or 2 of this subsection.

And if DEQ finds that the pesticide is carcinogenic, mutagenic, teratogenic or toxic to humans in concentrations found at depths specified above and the pesticide label cannot be modified to change the approved use and application of the active ingredient to ensure that it does not threaten to pollute the groundwaters of this state, DEQ shall notify the state chemist to cancel the registration of the pesticide.

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DEQ may allow the continued registration sale and use of a pesticide if DEQ determines there are not alternative products or practices that can be effectively used in substitution for the pesticide and the cancellation or modification will cause severe economic hardship on one more segments of the agricultural industry in this state.

VII. DRY WELL REGULATION

Dry wells are defined in A.R.S. § 49-331 as wells constructed and designed specifically for the disposal of storm water. Dry wells are installed at facilities without storm water sewers, and often because local governments require on-site retention and disposal of storm water runoff from precipitation events. Dry wells are used in several counties and may provide a conduit for contamination of groundwater in certain areas.

Dry wells fall within the category of facilities potentially requiring an aquifer protection permit. The draft regulations currently propose an "exemption" for the following types of dry wells:

> . . . Dry wells which are used solely to receive storm runoff, except those that drain areas in which hazardous substances are used, stored, loaded, or treated.

Dry wells not within this "exemption" apparently may need individual permits. One felony charge has been filed against a person who allegedly discharged into a non-exempt dry well without a permit. The EQA mandates permits for injection wells.

There is, however, a separate dry well statute apart from the aquifer protection requirements. A.R.S. §§ 49-331-336. All dry wells must be registered with the state, even if "exempt" from aquifer permit rules. § 49-332. Section 49-333 requires rules regarding the qualification and licensing of dry well drillers and provides discretionary authority to the DEQ for establishing standards for dry wells pertaining to their performance, operation, construction, design, closure, location and inspection. Section S 49-335 requires the DEQ to promulgate rules regarding administration and implementation of the dry well program. Section 49-334 provides enforcement and penalties for violation, and section 49-336 exempts dry wells used in conjunction with golf course

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maintenance.

DEQ is developing a separate dry well regulatory package, which will have five major components: (1) Registration of existing and new dry wells; (2) licensing of dry well drillers; (3) establishment of location, construction, design maintenance, and closure standards; (4) dry wells and the aquifer protection permit program; and (5) enforcement and penalty provisions. One proposal is that dry wells not "exempt" from the aquifer protection program will be issued general aquifer protection permits provided they comply with the following types of standard requirements:

a. Location - Setback requirements from underground storage tanks (USTs), chemical storage, loading or handling areas; vertical separation criteria from groundwater; and horizontal setback distances from domestic seepage pits, leach lines, water supply wells, and other dry wells.

b. Design - Requirements that dry wells are designed to provide a method for removal of contaminants and sediments before direct discharge into the vadose zone. operational rules may include measures to prevent siltation of the formation.

c. Maintenance - Guidelines will be proposed ensuring the removal and proper disposal of sediments from settling chambers when sediment accumulates to a certain depth or at appropriate time intervals.

d. Closure - Requirements for closure, soil sampling, and notification.

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NOTES

CHAPTER 9.3

SUMMARY OF STATE CONSTRAINTS ON CONTAMINATION OF GROUND WATER IN ARIZONA

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I. INTRODUCTION: THE HISTORICAL BACKGROUND OF ARIZONA'S ATTEMPTS TO LIMIT GROUND WATER CONTAMINATION

Ground water quality protection has been a significant legal issue in Arizona since the 1970s. Efforts to develop a ground water quality protection program began in the late 1970s and early 1980s. The limited statutory framework in the 1970s for control of ground water contamination was far from a model of clarity and unambiguous authority.

The state's ability to develop an effective ground water quality protection program under Arizona's initial statutory program, the Water Pollution Control Act (the "WPCA")[1] , was suspect, to say the least. One significant concern was with the equivocal delineation of authority between two separate entities responsible for enforcing the WPCA, the Water Quality Control Council (the "Council") and the Department of Health Services ("DHS"). Prior to 1986, both of these entities had some jurisdiction over water quality, with the boundaries of that jurisdiction ill-defined. The Council had no staff of its own, and the staff from the Division of Environmental Health Services within DHS served the Council's needs. As a result, there was uncertainty over the jurisdiction to be exercised by the "Council and that to be exercised by the Director of DHS over water quality matters. On this issue, the Arizona Attorney General stated that the WPCA was ambiguous and chat "it warrants legislative clarification."[2]

A key legal dispute throughout the late 19705 and well into the 19805 was whether DHS (through either its Director or through the Council) even was authorized to adopt a permit or approval program to regulate the disposal of wastes or pollutants into ground water from point or nonpoint sources. This was compounded by the ambiguity in the WPCA as to whether the Director of DHS or the Council should administer ground water quality permit and approval programs.

In 1984, the Council adopted ground water

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[1] Former Ariz. Rev. Stat. Ann. §§ 36-1851 to 36-1884 (1974 & Supp. 1985).

[2] See Ariz. Op. Att'y Gen. No. 77-102 (R76-495) (1977).

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quality standards after several years of negotiations with interested parties.[3] Reflecting Arizona"s interest in protection of ground water supplies, the goal of these strictly narrative standards was to maintain quality at levels protective of public health and current and projected uses while recognizing limitations imposed by technology.[4] The narrative standards prohibited pollutant discharge and disposal that caused public health hazards, that impaired past, present or future uses of ground water, or that caused toxic substance concentrations that posed hazards to public health or impaired foreseeable uses.[5]

The dispute continued, however, over which agency had authority to adopt a permit program to enforce these standards. The Director of DHS finally decided to exercise jurisdiction by adopting a water quality permit program in 1984. The Groundwater Quality Protection Permit Program, aimed at minimizing and correcting damage to the physical, chemical and biological character of ground water, was officially promulgated on July 20, 1984 by DHS.[6]

Shortly after the Groundwater Quality Protection Permit regulations were issued, litigation ensued over their scope and validity. Among the issues litigated were the Director's authority over point and nonpoint source discharges to ground water. On May 2, 1985, DHS and other defendants in litigation brought by the Arizona Chamber of Commerce entered into the following stipulation regarding the applicability of these regulations to "nonpoint sources":

> Defendants, as a matter of policy, rather than as a matter of law, will not apply Notice of Disposal requirements under the regulations to nonpoint sources of pollution without further rule making proceedings. A "nonpoint source" of pollution is a source" that is not a "point

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[3] Former Ariz. Admin. Code R9-21-401 to -407.

[4] Former Ariz. Admin. Code R9-21-101(B).

[5] Former Ariz. Admin. Code R9-21-403.

[6] Former Ariz. Admin. Code R9-20-201 to -208.

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source" within the meaning of A.R.S. § 36-1851(11).

The litigation continued with respect to DHS' authority and procedures used to implement the fledgling Groundwater Quality Protection Permit Program, and DHS received a favorable decision from the trial court. Plans to appeal by the Chamber of Commerce left continuing questions with respect to the validity of this DHS-administered program.

The litigation, combined with continuing concerns over ground water quality, resulted in several legislative proposals in 1985. Ground water protection bills were advanced by various interests, but a deadlock developed between these various interest groups. Much press attention was devoted to the issues of ground water protection legislation and the ongoing litigation.

As a result of this political pressure, the 1986 legislative session was fully expected to focus on development of ground water protection legislation. The likelihood that a ground water protection bill would pass the Legislature in 1986 was greatly enhanced, however, because of the impetus provided by the Common Cause Initiative, known as the Arizona Clean Water Pesticide Control Act. That Initiative was scheduled to be placed on the ballot in November, 1986.

The Common Cause Initiative was a comprehensive water quality management program proposed for the ballot for the 1986 general election, in reaction to the Legislature's seeming inability to reach a consensus on this issue. The Common Cause Initiative proposed: (a) to prohibit any person, facility,or activity from discharging, intentionally or accidentally, any substance to the ground or into the waters of the State and any construction, operation, or modification of any structure without a water quality permit; (b) to grant DHS broad authority to establish water quality standards, vadose zone standards, pretreatment standards, toxicity standards, and cleanup and remedy standards, all by administrative order without public notice or comment; (c) to consolidate all standard-setting, rule-making, administration, enforcement, and appellate review authority over water quality in DHS (thereby abolishing the conflict with the Council); (d) to create administrative penalties of $10,000 per day per violation, increase civil penalties to $25,000 per day per violation, and increase criminal penalties

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to $1,000,000 per day per violation for corporations, $150,000 per day per violation for individuals, and four years imprisonment; (e) to eliminate permit compliance as a defense; and (f) to authorize citizen suits for any alleged violation of a permit, regulation, or statute.

Although broad in scope, the Initiative had several problems and quickly drew criticism. It served its intended purpose, however, by forcing all sides of the debate to focus on the issue. The Initiative's lack of appeal for many interest groups eventually united these groups in 1986 in a commitment to find a compromise substitute.

The primary alternative bill to the Initiative was the Arizona Water Quality Protection and Restoration Act, also known as the Hawke Bill. It was known as the Hawke Bill because it was prepared by a committee under the leadership of Representative Larry Hawke (Republican) of Tucson. Representative Hawke had taken a great interest in the development of ground water protection legislation due to the keen interest of his Tucson constituency on this subject. In 1985, he had chaired the Joint Interim Committee on the topic of ground water protection, with the ultimate goal of developing legislation on this subject. A deadlock developed and no legislation was passed. Therefore, in the fall of 1985, at the request of Representative Hawke, an ad hoc committee was formed to develop compromise language on ground water protection. This working group included some industry representatives and members of several environmental public interest groups.

In January, 1986, Governor Bruce Babbitt appointed a negotiating panel of legislators, environmentalists, and business representatives to work on refinement of draft water quality legislation and to develop a final bill that would be acceptable to all sides. He made passage of this legislation one of his top priorities. Many political observers believed Rr. Babbitt's presidential ambitions also would be enhanced by such an effort.

Mr. Babbitt served as the panel's chairman. The group's other original members were:

Senate Majority Leader Robert Usdane
House Majority Leader Burton Barr
Senate Minority Leader Alfredo Gutierrez
Sen. John Hays, R-Yarnell

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Sen. Greg Lunn, R-Tucson
Sen. Ed Sawyer, D-Safford
Rep. Larry Hawke, R-Tucson
Rep. David Bartlett, D-Tucson
Rep. James Hartdegen, R-Casa Grande
Rep. Henry Evans, D-Tolleson
Pat Cantelme (Central Arizona Labor Council)
Jack Pfister (Salt River Project)
Roger Manning (Arizona Municipal Water Users Association)
Priscilla Robinson (Southwest Environmental Center)
David Baron (Center For Law In the Public Interest)
Phoenix attorney Jim Bush (currently with Fennemore Craig)
Jim Lincicome (Motorola)
Bob Moore (Agri-Business Council)

Later, the group evolved and became more "ad hoc" as additional participants either joined the group or substituted for those originally appointed by Governor Babbitt. The political process that led to this diverse group of interests working together on such far-reaching legislation was unusual, paralleled perhaps only by the process that resulted in the 1980 Groundwater Management Act to manage ground water withdrawals.

At the first meeting of the Governor's newly formed 19-member Water Quality Panel, Charles Anders, then Director of the Environmental Health Services Division within DHS, presented an outline comparing the positions of the present law, the Hawke bill, the 1986 DHS Position, and the Initiative. The long process to hammer out a legislative compromise then began. It culminated four months later, when the Arizona Environmental Quality Act (the "EQA") was signed into law by Governor Babbitt on May 13, 1986.[7] The EQA created the Arizona Department of Environmental Quality ("ADEQ") to oversee environmental laws,[8] consolidated and revised existing environmental

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[7] See Ariz. Rev. Stat. Ann. §§ 49-101 to 49-1103 (1988 & Supp. 1990).

[8] As noted above, authority to enforce environmental laws had previously been vested in the Arizona Department of Health Services and the Water Quality Control Council. The EQA abolished the Council.

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statutes, and added or substantially strengthened many programs.

As a desert state that relies heavily on ground water for everything from drinking water to irrigation, much of the focus of the EQA was on programs to protect ground water. Arizona currently has one of the more comprehensive state ground water protection programs in the country. The cornerstone of that protection is the aquifer protection permit ("APP") program, complemented by a state "Superfund" statute that also was enacted as part of the EQA. Numerous other statutes, regulations, or common law theories act to prevent contamination of ground water. This paper outlines the applicable programs and the manner in which they serve to protect ground water in Arizona.

II. AQUIFER PROTECTION PERMIT PROGRAM

A. Scope of coverage

Prior to passage of the EQA in 1986, Arizona statutes and regulations focused on the protection of "ground water." The EQA shifted this focus somewhat to a protection of "aquifers." An aquifer is defined by statute as a geologic unit containing sufficient saturated permeable material to yield usable quantities of water to a well or spring.[9] "Usable quantities" has been defined by regulation as five gallons per day.[10]

The scope of the APP program is relatively straightforward: "Unless otherwise provided by this article, any person who discharges or who owns or operates a facility that discharges shall obtain an aquifer protection permit from the director."[11] "Facility" is broadly defined to include any land, building, installation, structure, equipment, device, conveyance, area, source, activity or practice from which there is, or with reasonable probability may be, a discharge.[12] For purposes of the APP program, "discharge" is broadly defined to include the addition of a pollutant from a facility

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[9] Ariz. Rev. Stat. Ann. § 49-291(2) (1988).

[10] Ariz. Admin. Code R18-11-501(4) (1990).

[11] Ariz. Rev. Stat. Ann § 49-241(A) (1988).

[12] Id. § 49-201(15) (1988).

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either directly to an aquifer or to the land surface or the vadose zone in such a manner that there is a reasonable probability that a pollutant will reach an aquifer.[13] The "vadose zone" is the zone between the ground surface and any aquifer.[14] "Pollutant" is broadly defined to include all liquid, solid, gaseous or hazardous substances, and specifically includes mining wastes.[15] The scope of the APP program is thus very broad.

To supplement the general requirement that discharging facilities obtain aquifer protection permits, the EQA statutorily identifies eleven types of facilities that are categorically considered to be discharging facilities, and thus required to obtain a permit. Included among these facilities are surface impoundments (including holding, storage, settling, treatment or disposal pits, ponds and lagoons); mine tailings, piles, and ponds; mine leaching operations; point source discharges to navigable waters; sewage or sludge ponds and wastewater treatment facilities; solid waste disposal facilities; and facilities that add pollutants to salt dome formations, salt bed formations, dry wells, or underground caves or mines.[16]

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[13] Id. § 49-201(10) (1988).

[14] Id. § 49-201(30) (1988).

[15] Id. § 49-201(23) (1988). Specifically, the term pollutant means "fluids, contaminants, toxic wastes, toxic pollutants, dredged spoil, solid waste, substances and chemicals, pesticides, herbicides, fertilizers and other agricultural chemicals, incinerator residue, sewage, rubbish, sewage sludge, munitions, petroleum products, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded material, rock, sand, cellar dirt and mining, industrial, municipal and agricultural wastes or any other liquid, solid, gaseous or hazardous substances."

[16] Id. § 49-241(B) (1988). The other categorical discharging facilities are injection wells, land treatment facilities, septic tank systems with a capacity of greater than 2,000 gallons per day, and ground water recharge projects and underground storage and recovery projects. Id.

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Certain facilities are by statute exempt from the requirements of the APP program, including: mining overburden returned to the excavation site, including any common material that has been excavated and removed from the excavation site and has not been subjected to any chemical or leaching agent or process of any kind; discharges to community sewer systems; leachate resulting from the direct, natural infiltration of precipitation through undisturbed regolith or bedrock if pollutants are not added to the leachate as a result of any material or activity placed or conducted by man on the ground surface; surface impoundments used solely to contain storm runoff; and closed facilities (facilities that ceased operation before January 1, 1986 for which there is no intent to resume operations).[17] The director of ADEQ is empowered to identify by rule certain additional classes of facility that are exempt from the APP program.[18] ADEQ has exercised this authority by exempting the following additional classes of facilities: dry wells used solely to receive storm runoff (unless the wells drain areas in which hazardous substances are used); application of nitrogen fertilizers; animal feeding operations; activities conducted pursuant to remedial actions undertaken under the state Superfund program; and the use of pesticides directly in the commercial production of plants and animals, if that use is subject to the Federal Insecticide, Fungicide and

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[17] Id. § 49-250(B) (1988 & Supp. 1990). Other exempt facilities include household and domestic activities; household gardening and lawn care activities; livestock watering ponds; noncommercial use of consumer products generally available to the public; facilities used solely for purposes of transportation or storage of water for beneficial use (if effluent is not added to such water); facilities for the recharge or underground storage and recovery of water transported or stored in facilities used solely for the surface transportation or storage of water for beneficial use; facilities required to obtain a permit to reuse reclaimed wastewater; facilities using Central Arizona Project water for underground storage and recovery projects; indirect ground water storage and recovery projects; and application for water from any source to grow agricultural crops or for landscaping purposes. Id.

[18] Id. § 49-250(A) (1988).

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Rodenticide Act (7 U.S.C. § 135 et seq.).[19] As should be obvious from the broad scope of the APP program and the relatively narrow scope of the exclusions, numerous aspects of mining operations are subject to regulation under the APP program.

B. Permit Requirements

1. Individual Permit Requirements

Unless covered by a general permit (discussed below), every discharging facility must apply for an individual aquifer protection permit. In deciding whether to issue an individual permit, ADEQ considers the design and proposed operation of the discharging facility; existing and proposed pollutant control measures; hydrogeologic studies defining and characterizing the discharge impact area (such studies are generally required as part of the permit application); the use of water from aquifers in the discharge area; existing water quality in those aquifers; the characteristics of the pollutants discharged by the facility; any existing federal or state permits; and all other relevant information.[20] ADEQ also requires a summary of known past facility discharge activities.[21]

ADEQ will not issue a permit for any facility, other than a recharge project[22] an underground storage and recovery project, unless the applicant first demonstrates that the facility will be designed to ensure the greatest degree of discharge reduction achievable through application of the best available demonstrated control technology ("BADCT"), including, where practicable, a technology

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[19] Ariz. Admin. Code R18-09-102 (1990).

[20] Ariz. Rev. Stat. Ann. § 49-243(A) (1988).

[21] Ariz. Admin. Code R18-9-108(B)(4) (1990).

[22] Applicants for permits for recharge projects or underground storage and recovery projects face somewhat relaxed requirements. Such applicants will be issued permits if they demonstrate that the facility will be designed to ensure that the project will not cause or contribute to any violation of an aquifer water quality standard at the point of compliance for the facility. Ariz. Rev. Stat. Ann. § 49-243(C) (1988).

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permitting no discharge of pollutants.[23] In determining what constitutes BADCT, ADEQ must consider, inter alia, site-specific factors and the economic impacts of the use of alternative technologies on an industry-wide basis.[24] For existing facilities (those on which construction had begun before the effective date of the EQA and which are not closed facilities or previously closed facilities resuming operations), ADEQ must also consider, among other factors: the total cost of the application of the technology in relation to the discharge reduction to be achieved from that application; the age of the equipment and facilities involved; the industrial and control processes employed; the engineering aspects of the application of various types of control technologies; and the toxicity, concentrations, and quantities of discharge likely to reach an aquifer from various types of control technologies.[25]

In addition to demonstrating that it will employ BADCT at its facility, an individual applicant must demonstrate either that pollutants discharged will not cause or contribute to a violation of aquifer water quality standards at the applicable point of compliance, or that pollutants discharged will not further degrade, at the applicable point of compliance, the quality of any aquifer already violating aquifer water quality standards for the pollutant in question.[26]

For three special classes of pollutants, the requisite BADCT must limit discharges to the maximum extent practicable regardless of cost. These pollutants are: known or suspected carcinogens listed by the Secretary of the federal Department of Health and Human Services; organic substances listed in 40 C.F.R. § 261.33(e), regardless of whether substances are regulated under RCRA; and any organic toxic pollutant listed by ADEQ after determining that minute amounts of that pollutant in drinking water will present a substantial short-term or long-term human health threat.[27]

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[23] Ariz. Rev. Stat. Ann. § 49-243(B)(1) (1988).

[24] Id.

[25] Id.

[26] Id. § 49-243(B)(2)-(3) (1988).

[27] Id. § 49-243(D) (1988).

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Individual permit terms must include monitoring requirements, record-keeping and reporting requirements, contingency plan requirements, discharge limitations, compliance schedule requirements, post-closure plans, alert levels (the exceedence of which may require adjustments of permit conditions or implementation of contingency plans), and any other requirements ADEQ deems appropriate.[28] The requisite alert levels are based on site-specific conditions, and may be based on a pollutant that indicates potential appearance of another pollutant.[29] Alert levels may be measured at the point of release of the pollutant, the point of compliance (determined as described below), or at any intervening point.[30] Although not required by statute, ADEQ has mandated that permit applicants demonstrate and maintain the technical and financial capability necessary to comply with all permit conditions.[31]

ADEQ may include in an aquifer protection permit a requirement that a facility owner or operator undertake a remedial action to mitigate damage to the public or to waters of the state resulting from a discharge occurring before enactment of the EQA, if the previously discharged substance is a hazardous substance.[32] Individual aquifer protection permits (unless modified or revoked) are valid for specified terms not to exceed the operational life of the facility and any period the facility is subject to a post-closure plan.[33] ADEQ may modify an individual permit upon substantial changes to the permitted facility, discharges that violate an aquifer water quality standard, or changes in the applicable point of

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[28] Id. § 49-243(f) (1988).

[29] Ariz. Admin. Code R18-9-110(A)-(B) (1990).

[30] Id. R18-9-110(C) (1990).

[31] Id. R18-9-117 (1990).

[32] Ariz. Rev. Stat. Ann. § 49-243(G) (Supp. 1990). In Arizona, hazardous substances are defined to include substances designated pursuant to the Clean Water Act, CERCLA, RCRA, TSCA, and the Clean Air Act, as well as additional substances designated by rule by ADEQ. Ariz. Rev. Stat. § 49-201(16) (1988).

[33] Ariz. Admin. Code R18-9-118 (1990).

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compliance.[34] ADEQ may revoke an individual permit for noncompliance with permit conditions, or if the permitted activity either causes a violation of aquifer water quality standards or threatens to cause imminent and substantial endangerment to public health or the environment.[35]

a. BADCT

ADEQ has issued a draft document outlining BADCT considerations for four types of regulated activities: (1) landfills; (2) wastewater treatment plants; (3) industrial waste streams; and (4) mining activities.[36] The Mining BADCT Guidance Document, for example, recognizes that selection of the location for mining facilities is often dictated by location of ore and the conditions at a specific site. Essentially, the Guidance Document allows site-specific factors to be utilized as part of the necessary BADCT, but requires that the combination of site-specific conditions and technology reduce discharge to the same extent that the "optimal" technological control system would.[37] The Guidance Document outlines the factors to be considered in arriving at optimal design criteria for such mining facilities as liners, leachate collection systems, surface water diversions, tailings impoundments, tailings dam systems, dewatering and pumped mine water, and pits and other mine workings. The Guidance Document also recommends control features for chemical storage, processing areas, pipelines, and barrier or recovery wells, although these "recommended" features are not part of BADCT. In keeping with the EQA's requirement that ADEQ consider additional factors when determining BADCT for existing facilities, the Guidance Document distinguishes between BADCT for new and existing mining operations, and presents somewhat relaxed standards for determining BADCT for existing facilities.

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[34] Id. R18-9-121(C) (1990).

[35] Ariz. Admin. Code R18-9-121(F).

[36] See, e.g., ADEQ, BADCT Guidance Document for the Mining Category (July 1989).

[37] Discharge reductions achieved solely through site specific factors, however, will not satisfy BADCT requirements. See Ariz. Rev. Stat. Ann. § 49-243(B)(1) (1988).

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The other BADCT guidance documents contain similar information.

b. Point of compliance for individual permits

Every individual aquifer protection permit must specify one or more points of compliance where compliance with aquifer water quality standards is determined. The point of compliance is a vertical plane downgradient of the facility that extends through the uppermost aquifers underlying that facility.[38] The point of compliance is determined differently for different types of pollutants. For hazardous substances (which include substances designated under CERCLA, RCRA, TSCA, the CWA, and the CAA, or additional substances so designated by ADEQ), the point of compliance is the, limit of the pollutant management area, which in turn is defined as the limit projected in the horizontal plane of the area on which pollutants are or will be placed. The pollutant management area includes horizontal space taken up by liners, dikes, or other barriers designed to contain pollutants in the facility. Where a facility contains more than one discharging activity, the pollutant management area is described by an imaginary line circumscribing the various discharging activities.[39] An alternative point of compliance may be established if it is technically impracticable to monitor the boundary determined pursuant to the above procedure, or if the alternative point of compliance allows installation and operation of monitoring facilities that are "substantially less costly."[40] Alternative points of compliance must never be further downgradient than the property boundary, any existing or reasonably foreseeable drinking water source, or 750 feet from the edge of the pollutant management area (whichever distance is less).[41]

For pollutants that are not hazardous substances, the point of compliance must be located so as to ensure the protection of all current and reasonably foreseeable uses of the aquifer. This

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[38] Ariz. Rev. Stat. Ann. § 49-244 (1988).

[39] Id. § 49-244(1) (1988).

[40] Id. § 49-244(2).

[41] Id.

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determination shall be made taking into account the volume and characteristics of the pollutants, the practical difficulties associated with implementing pollution control requirements, and site-specific characteristics of the facility (among other factors).[42]

2. General Permits

General permits are issued through rulemaking for defined classes of facilities where: (1) the facilities are large in number and the cost of issuing individual permits cannot be justified by the environmental benefit of issuing individual permits; (2) the facilities are substantially similar in nature; and (3) ADEQ is satisfied that conditions contained in a general permit largely will meet the requirements applicable to individual permits.[43] The EQA authorizes ADEQ to issue general permits for classes of facilities that require the implementation of best management practices.[44] The statute specifically identifies five types of facilities for which best management practices may be established in general permits: on-site facilities for urban runoff; storm sewers; urban runoff; silvicultural activities; and septic tank systems with a capacity of 2,000 gallons per day or less.[45] ADEQ is authorized to establish best management practices for additional facilities (excluding categorical discharge facilities) that are located over a large geographic area and are substantially similar in nature, if the cost of issuing individual permits is not justified by the environmental benefit gained from issuing individual permits.[46]

ADEQ is required by statute to adopt an agricultural general permit consisting of best management practices for regulated agricultural activities, which consist of the application of nitrogen fertilizers and concentrated animal feeding

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[42] Id. § 49-244(3) (1988).

[43] Id. § 49-245(A) (1988).

[44] Id. § 49-246(A) (1988).

[45] Id. § 49-246(B) (1988).

[46] Id. § 49-246(C) (1988).

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operations.[47] ADEQ has, through rulemaking, exercised its discretion and issued additional general permits for the following activities, among others: sewage disposal systems; recharge pilot projects and underground storage and recovery pilot projects; agricultural application of wastewater sludge; certain discharges of wash water from sand and gravel operations and placer mining operations; and the disposal of material that contains only uncontaminated soil, cement, bricks, or other similar inert material.[48]

C. Distinction Between New &nd Existing Facilities

The regulations governing the APP program became effective as of September 27, 1989. Facilities that obtained a ground water quality protection permit, or had "interim status" under that program by virtue of filing a timely Notice of Disposal ("NOD") pursuant to the previously existing ground water quality protection program, are allowed to continue discharging, either in compliance with the terms of that permit or, for those facilities operating pursuant to an NOD, so long as the facility is not causing or contributing to the violation of any aquifer water quality standard.[49] Facilities beginning to discharge after September 27, 1989, and which did not have a permit or "interim status" under the previous program, must apply for an aquifer protection permit before beginning to discharge.

ADEQ has established a schedule for existing

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[47] Id. § 49-247(A) (Supp. 1990). This permit and its accompanying conditions were adopted through rulemaking completed in January 1991. See Ariz. Admin. Code R18-9-201 to -203 (1991). The general permit requires the use of best management practices to prevent contamination of ground water due to the conduct of regulated agricultural activities.

[48] Ariz. Admin. Code R18-9-126 through R18-9-129 (1990).

[49] Id. R18-9-103(A)-(C) (1990). The application for "interim status" under the previously existing regulatory program is referred to as a Notice of Disposal or "NOD." The NOD was filed by the operator of an existing facility and outlined the various activities of the facility that might affect ground water.

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facilities operating pursuant to "interim status" or a permit under the earlier regulatory program, and will proceed with the permitting process with those existing facilities by January 1, 2001. To date, most of ADEQ's focus has been on new facilities. ADEQ is now beginning to permit a few existing facilities, as well as those existing facilities undergoing "major modifications" (as defined in the statute).[50]

D. Miscellaneous Provisions

Temporary emergency waivers of compliance with permit conditions or water quality standards or discharge limitations may be granted in cases of equipment breakdown or to ensure adequate water supplies for domestic uses, so long as the waiver will not endanger human health or welfare.[51] Temporary individual aquifer protection permits may be issued for the operation of a facility to be used to remediate an accidental discharge of a pollutant, to prevent a discharge, or if circumstances that would not have been foreseen or controlled by the applicant do not allow the timely preparation and issuance of an individual aquifer protection permit. Some or all of the normal application requirements may be waived or postponed with respect to temporary permits. Temporary permits may not exceed one year in duration and cannot be renewed.[52]

ADEQ must publicly notice any "non-minor" action it is considering taking with respect to the panting or modifying of a permit.[53] ADEQ must conduct a public hearing on a proposed permit action if significant public interest exists or if significant issues have been brought to ADEQ's attention that have not been considered previously

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[50] Major modifications of a facility include physical changes or changes in methods of operations that result in a significant alteration in the volume or characteristics of pollutants discharged, or the addition of a process, structure, or piece of equipment that is physically separated from existing operations and that causes a discharge. Ariz. Rev. Stat. Ann. § 201(18) (1988).

[51] Id. § 49-251(A) (1988).

[52] Ariz. Admin. Code R18-9-119 (1990).

[53] Id. R18-9-124(A) (1990).

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in the permitting process.[54] ADEQ must respond to any written comments submitted during a written public comment period.[55]

Enforcement options available to ADEQ include compliance orders, requests for injunctive relief, civil penalties of up to $25,000 per day per violation, recovery of litigation costs, and possibly criminal sanctions (ranging from misdemeanors up to class 2 felonies for certain knowing or reckless violations that manifest an extreme indifference for human life).[56] In addition, a private cause of action is bestowed upon private citizens against either any person alleged to be violating a provision of the APP (or the water quality standards program discussed below), or against ADEQ for failing to perform a non-discretionary duty.[57]

III. AQUIFER WATER QUALITY STANDARDS

ADEQ must adopt, by rule, water quality standards for all waters in all aquifers to preserve and protect the quality of those waters for all present and reasonably foreseeable future uses.[58] In setting aquifer water quality standards, ADEQ must consider (but is not limited to) the following factors, among others: the protection of public health and the environment; the uses that have been made or with reasonable probability may be made of the aquifers; the requirements of the Clean Water Act and Safe Drinking Water Act; and any guidelines, action levels or numerical criteria adopted or recommended by the Environmental Protection Agency

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[54] Id. R18-9-124(F) (1990).

[55] Id. R18-9-124(I) (1990).

[56] See Ariz. Rev. Stat. Ann. §§ 49-261 to 49-263 (1988).

[57] Id. § 49-264 (1988). The enforcement provisions described above apply to alleged violations of the APP program or the water quality standards program described in the next two sections of this paper. Other environmental programs have differing enforcement provisions that will be described briefly in the discussion of those programs.

[58] Id. § 49-221(A) (1988).

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("EPA").[59]

A. Aquifer Classification

ADEQ has the responsibility of defining the boundaries of all aquifers in the state.[60] By statute, all aquifers in Arizona are initially classified as drinking water aquifers.[61] Aquifers may be reclassified as non-drinking water aquifers upon a showing that no drinking water use occurs, the aquifer is hydrologically isolated from other aquifers, and the benefits of allowing degradation below the standards established for drinking water aquifers outweigh the costs of allowing such degradation.[62] Operators of facilities whose discharges are solely responsible for creating an aquifer may petition to have the aquifer reclassified for a non-drinking water use if they can show that the water is not used as drinking water and the aquifer is hydrologically isolated from other aquifers.[63] To date, ADEQ has not reclassified any aquifers as non-drinking water aquifers, so all aquifers are protected as if they provide drinking water. This is very significant from an APP standpoint because discharging facilities under that program must ensure compliance with applicable aquifer water quality standards, and the applicable standards (as discussed below) depend upon the classification of the particular aquifer.

B. Setting Aquifer Water Quality Standards

Primary drinking water maximum contaminant levels ("MCLs") established by EPA prior to July 1, 1986 are statutorily adopted as aquifer water quality standards for drinking water aquifers.[64] Primary drinking water MCLs subsequently adopted by EPA must be adopted as drinking water aquifer water quality standards unless ADEQ finds that there is

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[59] Id. § 49-221(C) (1988).

[60] Id. § 49-224(A) (1988).

[61] Id. § 49-224(B) (1988).

[62] Id. § 49-224(C) (1988).

[63] Id. § 49-224(D) (1988).

[64] Id. § 49-223(A) (1988).

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"no scientific evidence" to support the MCL.[65] ADEQ is also given the authority to adopt numeric drinking water aquifer water quality standards for pollutants for which no MCL as been established by EPA. Such standards must be based on credible medical and toxicological evidence that has been subjected to peer review.[66] The public may petition ADEQ to adopt a drinking water aquifer water quality standard for a pollutant for which no MCL exists, if the pollutant is a toxic pollutant[67] that has been or may be detected in one of the state's drinking water aquifer and if there exists technical information on which to base a numeric standard.[68]

If an aquifer is reclassified to non-drinking water uses, primary MCLs remain the standards for all pollutants that were not the basis for reclassification. For pollutants that were the basis for reclassification, ADEQ must establish appropriate numeric standards that achieve the purpose of reclassification but minimize unnecessary degradation of the aquifer (by taking into account the long-term uses of the aquifer and the benefits of the activities resulting in discharges into the aquifer).[69]

ADEQ has currently established numeric drinking water aquifer water quality standards for ten inorganic chemicals.[70] Numeric drinking water aquifer water quality standards have been established for fifteen organic chemicals.[71]

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[65] Id.

[66] Id. § 49-223(B) (1988).

[67] Toxic pollutants are those that will cause significant adverse reactions if infested in drinking water. Significant adverse reactions are reactions that indicate a tendency to cause long lasting or irreversible damage to human health. Id. § 49-201(28) (1988).

[68] Id. § 49-223(C) (1988).

[69] Id. § 49-223(D) (1988).

[70] Ariz. Admin. Code R18-11-406(A) (1990). The inorganic chemicals are arsenic, barium, cadmium, chromium, lead, mercury, nitrate (as N), selenium, silver, and fluoride.

[71] Id. R18-11-406(B) (1990).

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Finally, ADEQ has established numeric drinking iDD aquifer water quality standards for certain radioactive materials, radionuclides, microbiological pollutants, and turbidity.[72]

In addition to the numeric standards discussed above, three narrative aquifer water quality standards exist. Discharges[73] shall not: (1) cause a pollutant to be present in a drinking water aquifer in a concentration that endangers human health; (2) cause or contribute to a violation of a surface water quality standard; or (3) cause a pollutant to be present in aquifer that impairs existing or reasonably foreseeable uses of water in that aquifer.[74]

IV. SURFACE WATER QUALITY STANDARDS

In addition to adopting aquifer water quality standards, ADEQ is required to adopt surface water quality standards for all navigable waters (as that term is defined in the Clean Water Act) in Arizona.[75] ADEQ may (but is not required to) adopt water quality standards for waters of the state other than navigable waters or waters in aquifers.[76] In setting all standards, ADEQ must consider, inter alia, the degree to which standards for one category of waters could cause violations of standards for

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[72] Id. R18-11-406(C)-(E) (1990).

[73] Defined for this program (and for all programs other than the APP program) as "the direct or indirect addition of any pollutant to the waters of the state from a facility." Ariz. Rev. Stat. Ann. § 49-201(10) (1988).

[74] Ariz. Admin. Code R18-11-405 (1990).

[75] Ariz. Rev. Stat. Ann. § 49-221(A) (1988).

[76] Id. § 49-221(B) (1988). "Waters of the state" is broadly defined to include "all waters within the jurisdiction of this state including all perennial or intermittent streams, lakes, ponds, impounding reservoirs, marshes, watercourses, waterways, wells, aquifers, springs, irrigation systems, drainage systems and all other bodies or accumulations of surface, underground, natural, artificial, public or private water situated wholly or partly in or bordering on the state." Id. § 49-201(31) (1988).

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other, hydrologically connected water categories.[77]

Arizona's current surface water quality standards (adopted in 1992) apply to all navigable waters (as that term is defined in the Clean Water Act). These surface water quality standards contain a narrative standard prohibiting the presence in navigable waters of pollutants in amounts or combinations that cause or contribute to a violation of an aquifer water quality standard.[78] Apart from this narrative standard, surface water quality standards do not apply to ground water because ground water generally is not within the scope of the term "navigable waters."[79]

V. REMEDIAL ACTIONS/STATE SUPERFUND

The extent to which Arizona's environmental programs focus on protection of its scarce water resources is evident by the title provided to the state equivalent of the federal Superfund program. This program is referred to as the Water Quality Assurance Fund ("WQARF") program,[80] and governs the undertaking of all "remedial actions." Remedial actions are those actions ADEQ determines are necessary in the event of the release or threatened release of hazardous substances into the environment such that waters of the state are or may be affected.[81] Waters of the state include ground water.[82] As noted above, hazardous substances include substances designated under CERCLA, RCRA, TSCA, the Clean Water Act, and the Clean Air Act, as

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[77] Id. § 49-221(C)(4) (1988).

[78] Ariz. Admin. Code R18-11-108(A)(7) (1992).

[79] See ADEQ, Water Quality Standards for Navigable Water Explanatory Statement, at 13 (1992) ("The term "navigable waters" does not include ground water.").

[80] See Ariz. Rev. Stat. Ann. §§ 49-281 through 49-287 (1988 & Supp 1993).

[81] Id. § 49-281(4) (1988). Remedial actions may include the provision of an alternative drinking water supply. Id.

[82] Id. § 49-201(31) (1988).

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well as substances so designated by ADEQ.[83] Thus, the scope of the WQARF program includes any release of hazardous substances into the environment that may affect ground water.

By statute, all remedial actions must, to the extent practicable, provide for the control, management, or cleanup of the hazardous substance released so as to allow the maximum beneficial use of waters of the state (including ground water).[84] In prioritizing among sites requiring remedial action, ADEQ must assess physical factors affecting human exposure, including the possibility that the released hazardous substance will reach an aquifer.[85] ADEQ must also make a determination as to the beneficial uses of the waters of the state, including ground water.[86] For remedial actions that may affect aquifers, the evaluation of beneficial use must include protection of drinking water pursuant to drinking water aquifer water quality standards adopted under the statutory program outlined above.[87] Any remedial action must comply with any drinking water aquifer water quality standards.[88] If there are no standards established for a particular hazardous substance that has been released, the remedial action must ensure cleanup to a level sufficient to prevent or abate imminent and substantial danger to human health or the environment.[89]

The WQARF program also contains provisions protecting against the release of certain non-hazardous substances. If ADEQ decides that a drinking water source is or is about to be rendered unusable without treatment because of a nonhazardous substance that was disposed before the effective date of the WQARF program, ADEQ may order that certain mitigation measures be undertaken. Mitigation measures may include: providing an

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[83] Id. § 49-201(16) (1988).

[84] Id. § 49-282(D)(2) (Supp. 1990).

[85] Ariz. Admin. Code R18-7-104(A) (1988).

[86] Id. R18-7-104(A)(6) (1988).

[87] Id. R18-7-109(A)(2) (1988).

[88] Id. R18-7-109(D)(2)(b) (1988).

[89] Id. R18-7-109(D)(3) (1988).

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alternative water supply; mixing or blending, if economically practicable; economically and technically practicable treatment before ingesting the water; or other mutually agreeable mitigation measures.[90]

The WQARF program has its own enforcement provisions. ADEQ may issue an abatement order with respect to releases or threatened releases; may ask the state attorney general to request a temporary restraining order or preliminary or permanent injunction; or take remedial action on his own initiative in cases of imminent and substantial danger to public health or welfare.[91] Remedial action costs incurred by ADEQ may be recovered from responsible parties.[92] Failure to comply with a remedial action order may result in civil penalties of up to $5,000.00 per day per violation.[93] In addition, punitive damages are available against such parties in an amount up to three times the amount of costs incurred by ADEQ.[94]

The water quality assurance revolving fund (used to pay for state-sponsored remedial actions) consists of funds received from various taxes and registration fees required by environmental statutes, as well as monies appropriated by the Legislature or obtained in enforcement actions.[95] Total annual fees paid into the fund by persons engaged in mining operations cannot exceed the lesser of $10,000 per individual mining site or $25,000 per mining entity.[96]

VI. STATE HAZARDOUS WASTE PROGRAM

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[90] Ariz. Rev. Stat. Ann. § 49-286(A) (1988).

[91] Id. § 49-287(D)-(F) (1988).

[92] Id. § 49-287(G) (1988).

[93] Id. § 49-287(H) (1988).

[94] Id. § 49-287(I) (1988).

[95] Ariz. Rev. Stat. Ann. § 49-282(A) (Supp. 1990).

[96] Id. § 49-282.01(A) (Supp. 1990). The mining operations referenced in this provision include exploration, extraction, beneficiation, and processing, including smelting and refining. Id. § 49-282.01(D)(2) (Supp. 1990).

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By statute, Arizona's hazardous waste regulations must be "equivalent to and consistent with" federal RCRA regulations.[97] ADEQ'S approach has been to largely adopt by reference federal regulations, with some minor modifications.[98] This includes both final and interim status standards for owners and operators of hazardous waste treatment, storage and disposal ("TSD") facilities.[99] Permits for all solid waste management units must contain ground water protection standards to protect ground water in the uppermost aquifer underlying the waste management area.[100] The federal closure performance standard is adopted, which requires facilities to be closed in a manner that minimizes or eliminates post-closure escape of hazardous waste to ground or surface water.[101] Surface impoundments used to treat, store or dispose of hazardous waste must possess a liner to prevent any migration of wastes to groundwater.[102] Similar requirements apply to hazardous waste stored or treated in piles[103] or disposed in landfills.[104] "Miscellaneous units" must be operated and closed in a manner protective of human health and the environment, which includes prevention of any releases that may result in the migration of waste constituents into ground water.[105]

EPA has recently proposed RCRA corrective action rules that would apply to all solid waste management units.[106] When finalized by EPA, these

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[97] Id. § 49-922(A) (Supp. 1990).

[98] See Ariz. Admin. Code R18-8-260 through R18-8-280 (1990).

[99] See id. R18-8-264 and R18-8-265 (1990) (adopting by reference, with minor modifications, federal regulations contained at 40 C.F.R. Parts 264 and 265).

[100] 40 C.F.R. § 264.92 (1990).

[101] Id. § 264.111 (1990).

[102] Id. § 264.221(a) (1990).

[103] Id. § 264.251(a)(1) (1990).

[104] Id. § 264.301(a)(1) (1990).

[105] Id. § 264.601(a) (1990).

[106] See 55 Fed. Reg. 30798-30884 (July 27, 1990).

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rules are likely to be adopted in Arizona with minor modifications. These proposed regulations would require that any time the presence of hazardous constituents in ground water exceeds an action level for that constituent (the MCL or other applicable standard), facilities with solid waste management units that may have released the constituent are required to conduct a corrective action study.[107] When contamination is confirmed, a remedy must be selected that satisfies the media cleanup standards proposed in the regulations. These media cleanup standards are health based.[108] Whatever the ultimate contours of the final RCRA corrective action rule, is likely that that rule, once adopted in Arizona, will provide another constraint on possible contamination of ground water from solid or hazardous waste management units.

VII. UNDERGROUND STORAGE TANK REGULATIONS

The EQA addresses underground storage tanks (those with at least ten percent of their volume underground) used to contain "regulated substances." Regulated substances include petroleum and hazardous substances under CERCLA, but specifically exclude hazardous waste as defined by RCRA.[109] Certain structures are specifically exempted from the definition of underground storage tank, including: septic tanks; pipeline facilities (including gathering lines) regulated under either the federal Natural Gas Pipeline Safety Act of 1968 or Hazardous Liquid Pipeline Safety Act of 1979, or comparable intrastate pipeline facilities; surface impoundments, pits, ponds, or lagoons; stormwater or wastewater collection systems; flow-through process tanks; liquid traps or associated gathering liners directly related to oil or gas production and gathering operations; storage tanks situated in underground areas (such as basements, cellars, mine workings, drifts, shafts or tunnels) if the storage tank is situated on or above the surface of the floor; and pipes connected to any of the above structures.[110]

Owners or operators of underground storage

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[107] Proposed 40 C.F.R. § 264.520(a); id. § 264.521(a).

[108] See proposed 40 C.F.R. § 264.525(d).

[109] Ariz. Rev. Stat. Ann. § 49-1001(13) (1990).

[110] Id. § 49-1001(17) (1990)

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tanks must notify ADEQ of any release or suspected release within twenty-four hours of its occurrence.[111] ADEQ is authorized to promulgate rules governing corrective actions to be taken in the event of releases of regulated substances from underground storage tanks. Such rules must include, inter alia, investigation and responses to ground water contamination.[112] ADEQ may undertake corrective action measures on its own initiative with respect to releases of petroleum.[113] Any such corrective action must be preceded by a study of the hydrogeologic characteristics of the site, the current and future uses of nearby ground water, and the potential effects residual contamination on nearby ground water.[114]

ADEQ is authorized to establish rules with respect to tank performance standards, release detection systems, and closure requirements. Until such rules are adopted, federal regulations on those subjects govern.[115]

VIII. ENVIRONMENTAL NUISANCE STATUTE

The EQA defines certain conditions as statutory environmental nuisances. One of these conditions is the "pollution or contamination of any

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[111] Id. § 49-1004(A)-(B) (1990).

[112] Id. § 49-1005(D)((1990). Until ADEQ adopts corrective action rules, corrective actions in response to releases from underground storage tanks must be accomplished in a manner consistent with federal regulations on this subject. Id. § 49-1005(E) (1990). These regulations require an investigation into possible ground water contamination and corrective action measures if such contamination is detected. See 40 C.F.R. §§ 280.65 and 280.66 (1990).

[113] Releases of "regulated substances" other than petroleum may be responded to only consistent with the remedial action provisions of WQARF. See Ariz. Rev. Stat. Ann. § 49-1019(D) (1990).

[114] Id. § 49-1017(B) (1990).

[115] Id. § 49-1003(A)-(B) (release detection requirements); id. § 49-1005(E) (corrective action); id. § 49-1009(C) (tank performance standards).

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domestic waters."[116] It is not clear whether "domestic waters" refers to waters within the boundaries of the state of Arizona or to waters used for domestic purposes (i.e., drinking water). No cases have construed this statute. Regardless of which construction is accurate, however, it is clear that the environmental nuisance statute allows enforcement actions to be taken against some activities that lead to the contamination of ground water. Anyone maintaining an environmental nuisance may be issued a cease and desist order by ADEQ.[117] Failure to comply with a cease and desist order may lead seeking an injunction in state court.[118] Finally, if an environmental nuisance exists on private property, certain state agencies (including ADEQ) may order the owner or occupant of the property to remove the nuisance within 24 hours at his or her own expense. If the owner or occupant fails to remove the nuisance, the state agency may do so (at the owner or occupant's expense).[119]

II. REGULATION OF DRY WELLS

Dry wells are defined as wells that are bored, drilled or driven shafts or holes whose depths are greater than their widths and that are designed and constructed specifically for the disposal of stormwater. Dry wells do not include class 1, 2, 3, or 4 injection wells as defined in the Federal Underground Injection Control Program.[120] In addition, the statutory requirements relating to dry wells do not apply to dry wells used in conjunction with golf course maintenance.[121]

All dry wells must be registered with ADEQ.[122] Construction of new dry wells, and modification of existing dry wells, may only be undertaken by persons who have been granted by ADEQ a dry well

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[116] Id. § 49-141(6) (1988).

[117] Id. § 49-142(A) (1988).

[118] Id. § 49-142(C) (1988).

[119] Id. § 49-143 (1988).

[120] Id. § 49-331(3) (1988).

[121] Id. § 49-336 (1988).

[122] Id. § 49-332 (1988).

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driller's license.[123]

ADEQ is authorized to adopt rules establishing standards for the performance, operation, construction, design, closure, location, and inspection of dry wells.[124] ADEQ has not yet adopted such rules. Until such rules are adopted, the only substantive regulation is the statutory requirement that no dry well be used for the disposal of hazardous substances (as defined in CERCLA or oil (as defined in the Clean Water Act).[125]

Violation of the statute relating to dry wells (or of any rule, once such rules are adopted) may lead to issuance of a compliance order by ADEQ. Parties against whom compliance orders are issued may request a hearing, the result of which may be appealed to state court.[126] Finally, ADEQ may file in action in state court seeking to enforce the provisions of the dry well statute, including an action seeking a temporary or permanent injunction.[127]

X. STATE REGULATION OF SOLID WASTE

A separate EQA program governs the regulation of solid waste. "Solid waste" is broadly defined to include any garbage, trash, rubbish, refuse, sludge from a waste treatment plant, water supply treatment plant or pollution control facility, and other discarded material, including solid, liquid, semisolid or contained gaseous material; however, he definition does not include domestic sewage or hazardous waste.[128] To a large extent, this program is aimed at landfills. ADEQ must review and approve plans for the construction of "public facilities"

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[123] Id. § 49-333(C) (1988).

[124] Id. § 49-333(A) (1988).

[125] Id. § 49-333(B) (1988).

[126] Id. § 49-334(A) (1988).

[127] Id. § 49-334(B) (1988).

[128] Id. § 49-701(11) (Supp. 1990).

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before such facilities can be operated.[129] A public facility is any site open to the general public for resource conservation or recovery or for the collection, source separation, storage, transportation, transfer processing, treatment or disposal of solid waste.[130]

The scope of ADEQ's solid waste program, however, goes beyond landfills or other public facilities. ADEQ is also authorized to promulgate rules establishing minimum standards for all storing, collecting, transporting, and disposing of garbage, trash, rubbish, manure and objectionable wastes.[131] Pursuant to this authorization, ADEQ has established rules governing the disposal of refuse.[132] Refuse is defined to include "all putrescible and nonputrescible solid and semisolid wastes . . . including . . . industrial wastes."[133] ADEQ must approve any method used for the disposal of refuse prior to the commencement of operations.[134] The rules set forth Six approved methods of disposal, and establish minimum standard for each method.[135] One such approved method is sanitary landfills. Such landfills, among other requirements, must be located so that seepage will not create a health hazard or nuisance, or cause pollution of any watercourse or water bearing strata.[136] This requirement applies to all refuse disposal facilities, even those that do not qualify as "public facilities."

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[129] Id. § 49-762(A) (1988). Similarly, ADEQ must approve any change in the method of operation of any public facility before that change is implemented. Id. § 49-762(B) (1988).

[130] Id. § 49-701(7) (Supp. 1990). The definition of public facility specifically states that it "includes a public solid waste landfill." Id.

[131] Id. § 49-761(A)(1) (Supp. 1990).

[132] See Ariz. Admin. Code R18-8-512 (1990).

[133] Id. R18-8-502(G) (1990).

[134] Id. R18-8-511 (1990).

[135] Id. R18-8-512 (1990).

[136] Id. R18-8-512(1)(a) (1990).

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In 1990, the Arizona Legislature amended the state's solid waste program to specifically provide that any facility designed to permanently store, treat, or dispose of solid waste cannot be issued an aquifer protection permit if any part of that facility is within 1/2 mile of a 100 year flood plain that has 100 year flows in excess of 25,000 cubic feet per second.[137] However, this prohibition does not apply to certain exempted facilities, including sites used solely for material produced in connection with a mining or mineral processing operation.[138]

ADEQ may issue administrative cease and desist orders to remedy violations of any of its rules relating to solid waste, or to prevent and abate public nuisances.[139] Civil penalties of up to $10,000 per day per violation were added in the 1990 amendments to the state's solid waste program, but currently apply only to violations of requirements relating to medical waste.[140]

XI. PESTICIDE CONTAMINATION PREVENTION PROGRAM

The Pesticide Contamination Prevention ("PCP") program is a comprehensive program requiring seller and/or users of pesticides to register those pesticides and submit to ADEQ information on their chemical properties and use. One of ADEQ'S duties under the PCP program is to establish a "groundwater protection list" of all pesticide "have the potential to pollute groundwater."[141] Users of pesticides on this list must report such use to ADEQ; dealers of listed pesticides must make quarterly reports of the sales of these pesticides to ADEQ.[142] ADEQ may remove a pesticide from the List if the agency determines (based on the testing discussed below or upon changes in use or labelling of the pesticide) that the pesticide has not polluted and does not threaten to pollute ground

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[137] Ariz. Rev. Stat. Ann. § 49-767(B)(2) (Supp. 1990).

[138] Id. § 49-767(C)(2) (Supp. 1990).

[139] Id. § 49-761(B)(2) (Supp. 1990).

[140] Id. § 49-768 (Supp. 1990).

[141] Id. § 49-305 (Supp. 1990).

[142] Id.

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water.[143]

In order to assess the hazards of pesticides with active ingredients exceeding numeric values for certain characteristics (e. g., water solubility) established by ADEQ, the Department is required to conduct soil and ground water monitoring to determine if these pesticides have migrated into ground water.[144] This monitoring must be conducted statewide in areas where the pesticides are primarily used or where other factors indicate a probability that the pesticide may migrate into the groundwater.[145] If the required testing detects the presence of an active ingredient of a listed pesticide at one or more of certain locations (e.g., eight feet below the soil surface; in ground water), ADEQ may take action regarding that pesticide. If the pesticide is carcinogenic, mutagenic, teratogenic, or toxic to humans in the concentrations detected, and if the pesticide label cannot be changed to alter use of the pesticide in order to ensure that it does not threaten to pollute ground water, the registration of that pesticide must be cancelled.[146] For other pesticides, the registrant is given the opportunity to demonstrate that the pesticides have not polluted and does not threaten to pollute ground water.[147] If such a showing is made, continued use of the pesticide may occur. Even if such a showing is not made, continued use of the pesticide may be allowed if there are no effective substitutes for the pesticide and prohibition or modification of its use would cause severe economic hardship to the agricultural industry.[148] In no event, however, will pesticide use be allowed that causes a violation of water quality standards at the applicable point of compliance.[149]

Other than ADEQ's ability to cancel the

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[143] Ariz. Admin. Code R18-6-105(C) (1990).

[144] Ariz. Rev. Stat. Ann. § 49-307(A) (Supp. 1990).

[145] Id.

[146] Id. § 49-309(A) (Supp. 1990).

[147] Id. § 49-309(A) (Supp. 1990).

[148] Id. § 49-309(C)(2) (Supp. 1990).

[149] Id. § 49-309(D) (Supp. 1990).

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registration of pesticides in certain conditions, the enforcement provisions of the PCP program are somewhat limited. Civil penalties of up to $10,000 per day per violation may be awarded in certain circumstances where registrants have failed to submit all the data required by ADEQ (this omission is known as a "groundwater protection data gap").[150]

XII. USED OIL REGULATIONS

A statute addressing the management of used oil was enacted by the Arizona Legislature in 1990. This statute governs oil that has been refined from crude oil and that has been contaminated by physical or chemical impurities as a result of use.[151] As a general matter, the statute does not apply to used oil that constitutes hazardous waste or hazardous waste fuel; however, used oil exhibiting a characteristic of hazardous waste and not mixed with other hazardous waste is covered by this statute (rather than being subject to regulation as hazardous waste fuel).[152]

The used oil management program imposes standards (including substantive standards and manifest requirements) on transporters, marketers, and burners of used oil. These requirements are fairly extensive. For purposes of ground water protection, however, the key provision of the new statute is the flat prohibition on disposal of used oil by discharge into sewers or waters of the state (unless authorized in a permit).[153] Except for permitted discharges, there are no exceptions to this prohibition. Thus, any disposal of used oil in such a manner that the oil might reach a water of the state (including ground water) may constitute a violation of this statute.

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[150] Id. § 49-304(A) (1988).

[151] Id. § 49-801(A)(8) (Supp. 1990).

[152] Id. § 49-802(A)-(B) (Supp. 1990). The used oil management program (rather than the hazardous waste program) also applies to used oil containing hazardous waste generated by a household or by a small quantity generator in certain businesses (those with standard industrial code numbers 5541 or 7538, which cover gasoline service stations and general automotive repair shops). Id. § 49-802 (B) (2) (Supp. 1990).

[153] Id. § 49-803(A)(1) (Supp. 1990).

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Knowing violations of the used oil statute may constitute criminal misdemeanors.[154] Violators are also subject to civil penalties of up to $10,000 per day per violation.[155] In addition, ADEQ has the authority to issue compliance orders and to seek temporary restraining orders or injunctions from state courts.[156]

XIII. CYANIDE LEACH OPERATIONS PROGRAM

The cyanide leach operations program was adopted by the State Mine Inspector in 1985. It is primarily aimed at ensuring the health and safety of persons working in and around cyanide leach operations. The program does, however, contain some substantive design requirements. Cyanide leach pads, solution ponds, and other areas containing cyanide solutions must have an impervious liner of a material that will prevent penetration by the cyanide solution.[157] An overflow safety pond must be constructed to receive and contain all potential overflow from the leach pad and pregnant solution pond.[158] All chemical solution spills must be directed into this overflow pond.[159] Although directed primarily at worker safety, these provisions also serve to prevent releases of cyanide solution to the environment that might potentially reach ground water.

XIV. SEWAGE SYSTEM REGULATIONS

Arizona's regulations governing wastewater collection and treatment apply to sewage systems, which are defined in the implementing regulations as any structures or facilities used to collect or conduct wastes to an ultimate point for treatment or disposal.[160] For purposes of this program, "wastes"

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[154] Id. § 49-810(A) (Supp. 1990).

[155] Id. § 49-811(A) (Supp. 1990).

[156] Id. § 49-812(A)-(C) (Supp. 1990).

[157] Ariz. Admin. Code R11-1-2231(A) (1990).

[158] Id. R11-1-2231(B) (1990).

[159] Id. R11-1-2213(B) (1990).

[160] Id. R18-9-802(J) (1990).

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are defined to include sewage, industrial wastes, and all other liquid, gaseous, solid, radioactive, or other substances that may pollute or tend to pollute any waters of the state (which include ground water).[161] ADEQ is required to (and has) promulgated rules requiring that plans and specifications for sewage systems be approved prior to construction,[162] as well as rules setting minimum standards for the design, construction, operation, and maintenance of such systems.[163]

As a general prohibition, no sewage or industrial wastes are permitted to flow into any waters, or upon or under any lands, of the state in any manner determined by ADEQ to be detrimental to the quality of the receiving body of water or lands.[164]

Individual disposal systems[165] (i.e., those handling the treatment or disposal of sewage from a single housing unit) are prohibited in certain conditions, one of which is where ground water conditions are such that individual disposal systems may cause pollution of a ground water supply.[166]

As noted above, ADEQ approval is necessary before commencing construction of a sewer system. Special requirements apply to requests for approval to construct septic tanks. Such requests must be accompanied by soil percolation data and an

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[161] Id. R18-9-802(L) (1990). The term "wastes" does not encompass agricultural irrigation and drainage water for which surface water quality standards have been adopted. Id.

[162] Ariz. Rev. Stat. Ann. § 49-361(1) (1988). These regulations are found at Ariz. Admin. Code R18-9-804 and -805 (1990).

[163] Ariz. Rev. Stat. Ann. § 49-362(A) (1988). These regulations are found at Ariz. Admin. Code R18-9-806 (1990).

[164] Ariz. Admin. Code R18-9-803(A) (1990).

[165] A disposal system is a system for disposing of wastes, by either surface or underground methods. Sd. R18-9-802(C) (1990).

[166] Id. R18-9-803(C)(2) (1990).

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identification of ground water in the area where construction is proposed.[167]

If ADEQ determines that any sewage or industrial waste treatment or disposal works is causing unsatisfactory conditions in a water or stream course or on or under any land into which effluent is being discharged, or is otherwise interfering with the uses of such water or land or creating a nuisance, the agency may require changes to be made in the operation of the sewage or industrial waste treatment works.[168]

Certain other general prohibitions apply to all sewage systems. No effluent from any waste treatment device may be discharged into any opening, either natural or artificial (including crevices or sinkholes), or into any rock formations, that will permit or contamination of ground water.[169] Nor may effluent from any waste treatment device be discharged into any well that is deep enough to penetrate water bearing strata.[170] These prohibitions apply to any waste treatment devices, regardless of their size or location.

XV. GROUNDWATER MANAGEMENT ACT

In 1980, Arizona adopted the Groundwater Management Act (the "GMA").[171] The GMA created the Arizona Department of Water Resources ("ADWR") to oversee management of ground water resources and to administer the provisions of the GMA. The key provisions of the GMA established four Active Management Areas ("AMAs") in which it was determined that active management of ground water resources was necessary.[172] The four existing AMAs center around Phoenix, Tucson, Prescott, and Pinal County.[173] ADWR may designate additional AMAs if any of several

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[167] Id. R18-9-804(B)(2)-(3) (1990).

[168] Id. R18-9-808 (1990).

[169] Id. R18-9-815 (1990).

[170] Id. R18-9-814 (1990).

[171] Ariz. Rev. Stat. Ann. §§ 45-101 to 45-2019 (1987 & Supp. 1990).

[172] Id. § 45-411(A) (1987).

[173] Id.

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circumstances exist, one of which is that the use of ground water results in actual or threatened water quality degradation.[174] ADWR has not yet designated any additional AMAs.

The goal for the three urban AMAs (Phoenix, Tucson, and Prescott) is to achieve "safe-yield" by January 1, 2025.[175] Safe-yield is statutorily defined as the attainment and maintenance of a long-term balance between the annual amount of ground water withdrawn in an AMA and the annual amount of natural and artificial ground water recharge in that AMA.[176] ADWR is to ensure attainment of safe-yield in the AMAs through the adoption of a series of management plans, with each plan imposing progressively stricter conservation requirements for agricultural, municipal, and industrial water users.[177] The GMA also establishes a system of grandfathered ground water rights, based on documented use in the five years prior to the adoption of the GMA (1975-80), and creates a permit program governing all withdrawals of ground water in the AMAs.[178]

The GMA is a comprehensive, complex program aimed primarily at the management of ground water from a quantity perspective. Certain of its programs, however, also incorporate ground water quality components. In addition, ADWR is to consult with ADEQ on water quality considerations in developing and implementing the required management plans.[179]

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[174] Id. § 45-412(A)(3) (1987).

[175] Id. § 45-562(A) (1987). The goal for the Pinal County AMA is to "allow development of nonirrigation uses . . . and to preserve existing agricultural economies in the active management area for as long as feasible, consistent with the necessity to preserve future water supplies for non-irrigation uses." Id. § 45-562(B) (1987).

[176] Id. § 45-561(7) (Supp. 1990).

[177] See id. §§ 45-564 to 45-578 (1987 & Supp. 1990).

[178] See id. §§ 45-461 to 45-482 (1987 & Supp. 1990) (creation of grandfathered ground water rights in active management areas); id. §§ 45-511 to 45-528 (1987) (ground water withdrawal permit system).

[179] Id. § 45-573 (1987).

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A. Management Plans in AMAs

Beginning with the second management plans for the AMAs (covering the period 1990-2000), ADWR must, in cooperation with ADEQ, include an assessment of ground water quality in each AMA, and may propose a program for ground water quality protection.[180] An identical requirement applies to the third (2000-2010) and fourth (2010-2020) management plans.[181] In completing the assessment of ground water quality required as part of the second management plans, ADWR studied six parameters, chosen because of their effects on water use and the availability of data regarding those parameters: total dissolved solids, sulfate, nitrate, metals, pesticides, and volatile organic compounds.[182] For the Phoenix AMA, this assessment found that most ground water reserves meet all applicable drinking water standards and are generally of very good quality.[183]

The second management plans also establish a ground water quality management program. This program includes a commitment to update the assessment of ground water quality every three years.[184] In addition, ADWR announced its intention to adopt rules to integrate water quantity and water quality management.[185] Finally, ADWR made a commitment to research incentives to promote the

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[180] Id. § 45-565(A)(6) (Supp. 1990).

[181] Id. § 45-566(A) (6) (Supp. 1990) (third management plan); id. § 45-567(A)(5) (Supp. 1990) (fourth management plan).

[182] See "Management Plan for the Second Management Period for the Phoenix Active Management Area," at 2 (Attachment No. I to First Order of Adoption, In the Matter of the Adoption of the Management Plan for the Second Management Period for the Phoenix Active Management Area (October 28, 1988)).

[183] Id.

[184] Id

[185] Id. at 2-3. The five areas that ADWR specifically targeted for rulemaking to integrate water quantity and water quality goals are: assured water supply; well construction and driller licensing; well spacing impacts analysis; ground water withdrawal permits; and recharge and underground storage and recovery projects. Id.

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withdrawal and use of poor quality ground water, and to establish an advisory committee to assist in water quality management.[186]

B. Artificial Recharge and Underground Storage and Recovery Projects

No recharge project may be operated except pursuant to a permit from ADWR.[187] "Recharge project" means facilities designed and constructed for the purpose of adding water to an aquifer.[188] No recharge project may proceed unless the applicant has obtained an aquifer protection permit from ADEQ; in cases where the project is exempt from the requirement to obtain an aquifer protection permit, ADEQ must determine that the project will not promote either the migration of a contaminant plume or the migration of a poor quality ground water area so as to cause unreasonable harm, and that the project is not located such that it will result in pollutants being leached to the ground water table so as to cause unreasonable harm.[189] ADWR may require ground water monitoring as a requirement of any recharge project permit.[190]

Similarly, underground storage and recovery projects may be operated only pursuant to a permit.[191] An underground storage and recovery project is a facility designed and constructed to store water underground prior to its use.[192] Precisely the same requirements apply to underground storage and recovery project permits as apply to recharge project permits. The applicant must obtain an aquifer protection permit from ADEQ; if exempt from that requirement, ADEQ must determine that the project will not promote either the migration of a contaminant plume or the migration of poor quality ground water, and that the project will not result in pollutants being leached to the ground water

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[186] Id. at 3.

[187] Ariz. Rev. Stat. Ann. § 45-652(A) (1987).

[188] Id. § 45-651(5) (1987).

[189] Id. § 45-652(B)(6)-(7),(C) (Supp. 1990).

[190] Id. § 45-652(G) (1987).

[191] Id. § 45-804(A) (1987).

[192] Id. § 45-802(6) (1987).

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table.[193] ADWR may impose as a permit condition a requirement to monitor the impact of the proposed underground storage and recovery project on ground water.[194]

C. Restrictions on Artificial Lakes

The GMA prohibits, with certain exceptions, the creation of certain artificial bodies of water. The prohibition applies to bodies of water located in an active management area (including lakes, ponds, lagoons, and swimming pools) that have surface areas greater than 12,320 square feet and that are filled for landscape, scenic, or recreational purposes.[195] There are numerous exceptions to this prohibition, including: bodies of water filled before January 1, 1987; bodies of water located in recreational facilities open to the public and owned by the United States, Arizona, or a political subdivision of Arizona; and swimming pools at hotels, motels, country clubs, or resorts (so long as the surface area is less than 43,560 square feet).[196] The GMA also allows artificial bodies of water to be filled with effluent, unappropriable storm water runoff, poor quality ground water, and ground water withdrawn as part of a remedial action.[197] The general goal of this program is to conserve ground water generally, particularly high quality ground water necessary for drinking and other related uses.

D. Poor Quality Ground Water Withdrawal Permits

The GMA establishes seven categories of permits governing allowable withdrawals of ground water in active management areas: dewatering permits, mineral extraction and metallurgical processing permits, general industrial use permits, drainage water permits, hydrologic testing permits, temporary permits, and poor quality ground water

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[193] Id. § 45-805(B)(5)-(6)(C) (1987) & Supp. 1990).

[194] Id. § 45-804(G) (1987).

[195] Id. § 45-131(1) (Supp. 1990).

[196] Id. § 45-132(B) (1987).

[197] Id.

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permits.[198] All of these permits are designed to minimize the withdrawal of ground water in active management areas, and particularly to preserve high quality ground water. This is especially true of the poor quality ground water withdrawal permit. This permit may be issued to non-irrigation users for the withdrawal of ground water of a quality so poor that it has no other beneficial use.[199] Any such withdrawal must be consistent with the management plan in effect at that time (including both the water quantity and water quality aspects of the applicable plan).[200]

E. Well Closure Requirements

The GMA creates a comprehensive system of well regulation, including registration requirements, permit requirements, permit or other approval requirements for drilling in certain areas, and requirements for licensing of well drillers.[201] Included in the regulations implementing the GMA's statutory program are requirements regarding the closure of wells. Several of these requirements are designed to protect against contamination of ground water. No materials containing organic or toxic matter may be used in the abandonment of a well.[202] Wells penetrating single or multiple aquifer systems with vertical flow components must be filled in a manner preventing fluid communication between aquifers.[203]

In addition to these closure requirements, ADWR has adopted a general prohibition against the use of any well as a disposal site for sewage, toxic industrial waste, or other materials that may pollute ground water, unless such use is authorized by the Arizona Department of Health Services.[204] Finally, if ADWR determines that application of minimum well construction standards would not

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[198] Id. § 45-512 (1987).

[199] Id. § 45-516(A) (1987).

[200] Id.

[201] See id. §§ 45-591 to 45-604 (1987 & Supp. 1990).

[202] Ariz. Admin. Code R12-15-816(D) (1990).

[203] Id. R12-15-816(C)(2) (1990).

[204] Id. R12-15-819 (1990).

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protect an aquifer, it may require that additional necessary steps be taken to protect the aquifer.[205]

F. Assured Water Supply Requirements

One significant limitation imposed by the GMA prevents the offering of subdivided or unsubdivided lands for sale or lease within active management areas without first obtaining a certificate of assured water supply from ADWR.[206] "Assured water supply" means that: sufficient ground water or surface water "of adequate quality" will be continuously available to satisfy all water needs of the proposed use for at least 100 years; such use is consistent with the applicable management plan for the active management area; and the applicant has demonstrated the financial capability to construct any delivery system and/or treatment works necessary to provide the water for the use.[207] The statute is silent regarding the benchmark against which "adequate quality" is to be measured in demonstrating an assured water supply.

ADWR has not yet adopted final regulations regarding assured water supply certification. The Department has, however, issued interim guidelines on this topic.[208] Interim Guideline 403 provides that a water supply for dry lot properties (those in which the lot buyer must drill a well or haul water to provide a water supply to each lot) are considered to be assured if the quality of water within the underlying aquifer is acceptable under any water quality standards for public supply systems adopted by the Arizona Department of Health Services; water supplies will be inadequate if contaminant levels exceed any standards for public supply systems.[209] The assured water supply requirements serve as a restriction on the use of poor quality ground water, and in some circumstances may provide a real incentive to remediate

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[205] Id. R12-15-821 (1990).

[206] See Ariz. Rev. Stat. Ann. § 45-576(A) (1987).

[207] Id. § 45-576(L) (1987).

[208] See Interim Information and Guidelines for Demonstration of Assured Water Supplies Within Designated Active Management Areas Pursuant to A.R.S. § 45-576 (September 8, 1982).

[209] Id. at 7-8.

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contaminated ground water.

XVI. COMMON LAW CAUSES OF ACTION

As numerous as they may be, Arizona's statutory and regulatory constraints on ground water contamination do not provide the only vehicles for addressing such contamination. Numerous common law theories of liability are potentially applicable to situations where contamination of ground water has occurred or is threatened. Potentially applicable common law causes of action include trespass, nuisance (both public and private), strict liability, negligence, waste, and inverse condemnation.

As yet, there is little or no reported Arizona case law applying these theories of liability in an environmental context. This paper will briefly address the elements of each cause of action that must be made out under Arizona law, and will (as appropriate) cite to leading cases from other jurisdictions applying the various theories in an environmental context.

A. **Trespass**

The common law tort of trespass developed to protect possessors of real property from physical entries onto that property that result in damages. Liability for trespass generally is predicated on an activity conducted by a defendant that is either intentional, reckless, negligent, or the result of some a dangerous (or extrahazardous) activity.[210] No Arizona cases directly address this point, but in the absence of contrary precedent Arizona courts generally follow the Restatement.[211] The Restatement of Torts recognizes liability for trespass based on activity that is intentional, reckless, negligent,

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[210] See, e.g., Hughes v. King County, 42 Wash. App. 776, ___, 714 P.2d 316, 318 (1986) intentional or negligent intrusion, or abnormally dangerous activity); Wilson v. Interlake Steel Co., 185 Cal. Rptr. 280, 282, 649 P.2d 922, 924 (Cal. 1982) (intentional, reckless, or negligent intrusion, or the result of extrahazardous activity).

[211] See, e.g., Webster v. Culbertson, 158 Ariz. 159, 162, 761 P.2d 1063, 1066 (1988).

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or the result of an abnormally dangerous activity.[212] This liability will attach in cases of trespass by a person or by a thing that is (or should be) within the person's control. Moreover, the Restatement explicitly recognizes that a trespass may be committed on, beneath, or above the surface of the earth.[213] The tort of trespass could cover instances where contaminants migrated from one piece of property to another piece of property, including any migration to adjacent ground water. Although no reported Arizona case law has addressed application of the common law tort of trespass to a case of ground water contamination, courts in other jurisdictions have recognized that this theory may apply to cases of environmental contamination.[214]

B. Nuisance

Nuisance is distinguishable from trespass because nuisance does not require a physical invasion of, or actual damage to, real property. A cause of action for nuisance may be maintained where activities conducted on one piece of property unreasonably interfere with the use or enjoyment of another piece of property, even absent some physical invasion. A common nuisance claim is for unreasonably loud noise generated on one parcel of property, where that noise interfere with another's use of his or her property (as a business, residence, etc.).

The tort of nuisance may be subdivided into two categories: private nuisance and public nuisance.

1. Private Nuisance

The Restatement defines a private nuisance as

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[212] See Restatement (Second) of Torts § 158 (1977) (intentional trespass); Id. § 165 (reckless, negligent, or abnormally dangerous activity).

[213] Id. § 159(1).

[214] See, e.g., Sterling v. Velsicol Chemical Corp., 647 F. Supp. 303, 317-19 (W.D. Tenn. 1986), aff'd in part and reversed in part on other grounds, 855 F.2d 1188 (6th Cir. 1988) (chemical corporation liable on numerous common law theories, including trespass, where toxic waste it had buried migrated onto adjacent property and into a source of community water supply).

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a nontrespassory invasion of another's the private use and enjoyment of land.[215] A private nuisance affects a single individual or a small number of individuals in the enjoyment of private rights not common to the public.[216] The nuisance must create an unreasonable interference with another person's use and enjoyment of property, and must cause damage of some sort.[217] Private nuisance may be a viable cause of action in cases of airborne emissions of pollutants that result in exposure to adjacent property owners, or cases where radiation emissions affect adjacent property owners.[218] Where pollutants migrate into ground water on adjacent property, thereby resulting in diminution of property value or injury to persons on the adjacent property, a claim of private nuisance may also be available.

2. Public Nuisance

A public nuisance is one affecting the rights enjoyed by citizens as part of the general public.[219] For a private citizen to be able to maintain a public nuisance action, however, he or she must in addition suffer some special or particular form of damage.[220] This special injury may take the form of injury to a private interest in land, or a particularized form of personal injury. Differing levels of exposure of individuals to hazardous materials, with differing adverse effects

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[215] Restatement (Second) of Torts § 821D.

[216] See Spur Industries, Inc. v. Del E. Webb Development Co.. 108 Ariz. 178, 183, 494 P.2d 700, 705 (1972).

[217] See Graeber v. City of Peoria, 156 Ariz. 553, 555, 753 P.2d 1209, 1211 (Ariz. Ct. App. 1988).

[218] See, e.g., Page County Appliance Center, Inc. v. Honeywell, Inc., 347 N.W.2d 171, 175-76 (Iowa 1984) (nuisance verdict upheld where computer emitted radiation affecting nearby business).

[219] Spur Industries, 108 Ariz. at 183, 494 P.2d at 795.

[220] See, e.g., Philiadelphia Electric Co. v. Hercules Co., 762 F.2d 303, 315-16 (3d Cir.), cert. denied, 474 U.S. 980 (1985).

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may satisfy the special injury requirement.[221] This situation could occur in a case of ground water contamination.

In cases of both public and private nuisance, the remedy awarded may be either damages or injunctive relief. To secure an injunction, plaintiffs must pass the traditional test utilized by courts in determining whether to grant injunctions: i.e., plaintiffs must demonstrate a likelihood of success on the merits and show that substantial and irreparable harm is likely to result if the injunction is not granted. Courts engage in a balancing of the equities in determining whether to grant injunctive relief. If a plaintiff can demonstrate that the equities are in its favor, it may be able to utilize the traditional common law tort theory of nuisance to enjoin activity resulting in contamination of ground water.

C. Strict Liability

Arizona has adopted the principles set forth in the Restatement regarding the imposition of strict liability for abnormally dangerous activities.[222] The Restatement provides that a person carrying on an abnormally dangerous activity is subject to liability for harm to another person, or to land or chattels of that person, resulting from the abnormally dangerous activity, even if the utmost care is exercised.[223] A person conducting what a court determines to be an abnormally dangerous activity, where that activity results in contamination of ground water, can clearly be held liable under principles of strict liability. In recent years, courts have proven willing to apply the doctrine of strict liability to parties conducting activities that resulted in contamination

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[221] Anderson v. W.R. Grace & Co., 628 F. Supp. 1219, 1233 (D. Mass. 1986) (special injury requirement met by allegations that plaintiffs suffered variety of illnesses as a result of exposure to ground water contaminated by defendants).

[222] See Correa v. Curbey, 124 Ariz. 480, 481, 605 P.2d 458, 459 (Ariz. Ct. App. 1979).

[223] Restatement (Second) of Torts § 519(1).

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of ground water.[224]

D. **Negligence**

Traditional common law negligence occurs where there is a duty of care owed, a breach of that duty, and damages proximately caused by that breach.[225] Although there are no reported Arizona cases upholding a negligence claim for activities resulting in the contamination of ground water, it is clear that such a claim could be made out in the appropriate circumstances. Courts in other jurisdictions have so held.[226]

E. **Waste**

The tort of waste occurs when there is an act constituting waste, done by one legally in possession of land, resulting in prejudice to the estate or interest of another in the land.[227] Waste can exist even in the absence of affirmative action by the party in possession; neglect or negligence that acts to the prejudice of the estate or interest of another in property can form the basis for an action in waste.[228] The most common situation where

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[224] See, e.g., Sterling v. Velsicol Chemical Corp., 647 F. Supp. 303, 311-16 (W.D. Tenn. 1986), aff'd in part and reversed in part on other grounds, 855 F.2d 1188 (6th Cir. 1988) (chemical company strictly liable for burying toxic waste); Exxon Corp. v. Yarema, 516 A.2d 990, 1005-06 (Md. Ct. Spec. App. 1986) (strict liability count upheld for contamination of ground water resulting from petroleum leaking out of underground storage tank).

[225] See, e.g., Markowitz v. Arizona Parks Board, 146 Ariz. 352, 354, 706 P.2d 364, 366 (1985).

[226] See, e.g., Exxon Corp. v. Yarema, 516 A.2d at 1005 (oil company had duty to neighboring landowners not to impair their ownership rights through ground water contamination; oil company knew that over 1,000 gallons of fuel had leaked from an underground storage tank, but took no measures to prevent the spread of contamination).

[227] Jowdy v. Guerin, 10 Ariz. App. 205, 208, 457 P.2d 745, 748 (1969).

[228] Id.; see also Curtis v. Tromble, 155 Ariz. 429, 430, 747 P.2d 590, 591 (Ariz. Ct. App. 1987) (failure of one lawfully in possession to exercise ordinary

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waste may occur is where a lessee engages in activities that result in contamination of the leased property. Clearly, activities done by one lawfully in possession of property (e.g., a lessee) that result in contamination of ground water beneath the property, thus diminishing the value of the property, could constitute waste. Reported Arizona case law on waste is very limited, and no cases have addressed the tort of waste in a case of ground water contamination.

F. Inverse condemnation

Like the federal Constitution, the Arizona Constitution provides that no private property shall be taken or damaged for public use without just compensation being paid.[229] This constitutional provision applies to actions taken by cities as well as the state.[230] Inverse condemnation is the name given to an action instituted by a private party to secure compensation for a taking of his or her property as a result (intended or unintended) of governmental activity. An action taken by the State of Arizona or a city resulting in ground water contamination severe enough to amount to a taking of property could conceivably support an action for inverse condemnation. An example of such activity might be maintenance of a municipal landfill that caused severe ground water contamination on adjacent private property.

XVII. COUNTY PROGRAMS

A. Maricopa County

The Maricopa County Health Code contains numerous provisions relating to ground water protection, some of which are modelled on state programs. No sewage, reclaimed wastewater, refuse, or other wastes are "permitted in" any waters of the county.[231] The design and location of any waste

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care for the preservation and protection of land constitutes permissive waste).

[229] Ariz. Const. art. II, § 7.

[230] See, e.g., City of Yuma v. Lattie, 117 Ariz. 280, 283, 572 P.2d 108, 111 (Ariz. Ct. App. 1977).

[231] Maricopa County Health Code, Chapter II, Section 1, Regulation 2(b) (1990). "Refuse" is all putrescible and nonputrescible solid and semisolid wastes,

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storage or disposal system must take into consideration proximity of wells or other sources of water supply.[232] Effluent from waste treatment devices may not be discharged into any well that penetrates water bearing strata, nor may such effluent be discharged into any opening in a rock formation that will or may permit contamination of ground water.[233] Cross connections between waste disposal or wastewater reclamation systems and potable water supplies may not be maintained in any manner that allows waste or reclaimed wastewater to enter the potable water supply.[234] Sewage system operations and industrial waste treatment works must not be operated so as to cause unsatisfactory conditions in waters or stream courses or under any land into which effluent is discharged.[235]

County regulations also address refuse disposal. As under state law, disposal of refuse is limited to certain approved methods, one of which is by sanitary landfill. Landfill operators must take all reasonable measures necessary to prevent the pollution of surface water or ground water.[236]

Certain Maricopa County well regulations consider ground water impacts. The Maricopa County Health Code prohibits the discharge of contaminated or polluted material directly into any well, or anywhere else on or in the ground, where it may or will penetrate an underlying water bearing strata or contaminate ground water.[237] Abandoned wells must

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including industrial wastes. Id. Chapter II, Section 1, Regulation 1(r). "Waters of the county" include ground water; the term is defined precisely the same as "waters of the state" in Ariz. Rev. Stat. Ann. § 49-201, with the exception that the geographical limits are provided by the boundaries of Maricopa County, not the State of Arizona. Maricopa County Health Code, Chapter II, Section 1, Regulation 1(bb).

[232] Maricopa County Health Code, Chapter II, Section 1, Regulation 2(d).

[233]

[234] Id. Chapter II, Section 1, Regulation 2(g).

[235] Id. Chapter II, Section 2, Regulation 3(e).

[236] Id. Chapter II, Section 4, REgulation 4(c)(5)(c).

[237] Id. Chapter V, Section 1, Regulation 7(a).

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be sealed to prevent the entry of any substance that night contaminate ground water.[238]

Finally, the Maricopa County Health Code adopts water quality requirements for water systems supplying drinking water. Based primarily on state standards, Maricopa County standards have been established for microbiological pollutants, nine inorganic chemicals, seven organic chemicals, turbidity, and radiochemicals.[239] In addition to the substances for which numeric standards have been adopted, numerous other substances or parameters (e.g., hardness) must be monitored for.[240]

B. Pima County

1. Pima County Health Code

Like Maricopa County, Pima County has adopted numerous regulations to protect ground water. Pima County regulations prohibit allowing sewage or industrial waste to flow into any water of the state in any manner determined to be detrimental to the quality of the receiving body of water or detrimental to human health.[241]

All water supply wells in Pima County must be regularly tested to determine the quality of the water.[242]

As in Maricopa County, no sewage or industrial waste is permitted to flow into any waters of the state located in Pima County.[243] Similarly, it is unlawful to pollute any waters of the county through improper design or maintenance of any individual

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[238] Id. Chapter V, Section 1, Regulation 8.

[239] Id. Chapter V, Section 1, Regulation 1, R9-8-221.

[240] Id.

[241] Pima County Health Code, § 8.44.090(a). The definition of "waters of the state" is adopted verbatim from the broad statutory definition in Ariz. Rev. Stat. Ann. § 49-201. See Pima County Health Code § 8.44.080(R).

[242] Pima County Health Code, § 8.48.030.

[243] Pima County Ordinance No. 1985-186, Section 3.1.

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sewage disposal system.[244] If septic tank systems are likely to cause pollution of ground water, other sewage disposal methods must be provided.[245]

2. Delegation Agreement with ADEQ

Effective February 15, 1991, a delegation agreement between Pima County and ADEQ delegates to the county program and enforcement authority over aspects of certain environmental programs. Some provisions of the delegation agreement directly relate to protection of ground water. For example, Pima County is given the opportunity to provide concept approval prior to ADEQ's processing of aquifer protection permit applications for facilities in Pima County.[246]

In addition, Pima County is delegated authority to approve plans and construction of drinking water facilities and to conduct compliance inspections for drinking water systems. The county has also been given limited wastewater facility planning and construction approval authority, but not compliance inspection authority. ADEQ specifically reserves the authority to approve plans for wastewater facilities where effluent reuse will occur.[247] Finally, the delegation agreement specifically recognizes that Pima County may promulgate and enforce drinking water standards that are more stringent than those adopted by ADEQ.[248]

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[244] Id. § 3.2.

[245] Id. § 3.3.

[246] "Delegation Agreement between Arizona Department of Environmental Quality and Pima County Department of Environmental Quality", Special Provision No. 1 (1991).

[247] Id. Special Provision 2(d).

[248] Id. Paragraph B(5), at 5.

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CHAPTER 10

CLEAN WATER ACT

I. INTRODUCTION

The Federal Water Pollution Control Act, also known as the Clean Water Act (CWA), 33 U.S.C. § 1251, et seq., prescribes the federal regulatory system governing water pollution. The Act had its origins prior to 1972, but in that year Congress made major overhauls to existing water pollution law, thereby establishing a system of standards, permits and enforcement meant to "restore and maintain the chemical, physical and biological integrity of the Nation's waters." 33 U.S.C. § 1251(a). The initial goals of the CWA were to (a) eliminate the discharge of pollutants into "navigable waters" by 1985; (b) achieve an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water by July 1, 1983; and (c) prohibit the discharge of toxic pollutants in toxic amounts. Id. § 1251(a)(1), (2) and (3). An additional goal, added in amendments passed in 1987, is to control nonpoint sources of pollution. Id. § 1251(a)(7).

As an initial matter, the CWA applies only to "navigable waters." The concept of "navigable waters," and, thus, the jurisdictional reach of the CWA, is extensively discussed in Part II of this paper. Of particular importance in Arizona is the interpretation that a "navigable water," for purposes of CWA jurisdiction, is not required to be navigable in fact. In Arizona, many water courses are not navigable, in fact. Nonetheless, those water courses may be treated as navigable waters, subject to the CWA.

The CWA program for attaining these lofty goals contains several components. The first two components, which are intertwined, are an operating permit system and a series of minimum national effluent standards for various categories of discharges. The Act makes these effluent discharge standards applicable to all "point sources." The Act also prohibits the "discharge of any pollutant by any person" unless the discharge is in compliance with a number of statutory requirements. The principal requirement is that a discharger obtain a National Pollutant Discharge Elimination System (NPDES) permit from the United States Environmental Protection Agency (EPA) or an authorized state. 33 U.S.C. §§ 1311, 1342. The NPDES permit applies the effluent standards to the point sources, ensuring that each point source's discharge complies with the appropriate effluent

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limitation and providing a ready basis for enforcement. The NPDES program is discussed in Part III of this chapter. The federal government implements the NPDES program in Arizona.

In addition to the NPDES permit system and implementation of effluent limitations, another component of the CWA requires states to develop water quality standards applicable to their surface waters. These water quality standards serve as a backstop to the effluent limitations, because Congress realized that there would be times when effluent limitations alone would not be sufficient to achieve water quality goals. Thus, where water quality standards will not be met, the CWA authorizes EPA or an authorized state to require additional effluent limitations or alternative effluent controls to achieve the water quality standards. 33 U.S.C. § 1312. The surface water quality standards are discussed in Part IV of this chapter.

Another recently added component of the CWA is its program on the management of nonpoint sources of pollution. This program requires the states to identify waters that require management of nonpoint sources of pollution, categorize the nonpoint sources that are contributing to the pollution of those waters and develop management plans to control nonpoint sources. 33 U.S.C. § 1329. The nonpoint source program is described in Part V of this chapter.

The CWA also prescribes special permit requirements for dredge and fill operations, 33 U.S.C. § 1344 (commonly called section 404 permits). The Section 404 permit program is discussed in detail in Chapter 11. Finally, the CWA contains special rules covering spills of oil or hazardous substances into waters of the United States. These rules are discussed in Part VI of this chapter. 33 U.S.C. § 1321.

II. JURISDICTIONAL REACH

The jurisdictional reach of the CWA traditionally has been limited to "navigable waters." This term is defined to mean "the waters of the United States, including the territorial seas." 33 U.S.C. § 1362(7).

This somewhat vague definition is not particularly clarified in the extensive legislative history of the Water Pollution Control Act Amendments of 1972 ("1972 Amendments"). Beyond expressing Congress's intent to regulate to the fullest extent possible, the legislative history does not provide much guidance on whether particular waters, such as small ponds or dry drainages, were intended to be within the scope of regulation.

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Several cases decided shortly after adoption of the 1972 Amendments explicitly rebutted contentions that the scope of the CWA extended only to waters that were navigable in fact. See, e.g., United States v. Ashland Oil and Transportation Co., 504 F.2d 1317 (6th Cir. 1974) (accidental discharge of oil to a tributary of a tributary of a tributary of a water navigable in fact was governed by the CWA; court focuses on tributary relationship and the need to protect tributaries in order to protect the navigable in fact waters into which they flow); United States v. GAF Corp., 389 F. Supp. 1379, 1383 (S.D. Tex. 1975) (in holding that disposal of chemical waste into underground waters that do not flow into or otherwise affect surface waters does not violate the CWA, court nevertheless notes that the definition of navigable waters "effectively excludes from consideration any concept of navigability, in law or in fact").

An example of an early court case is United States v. Phelps Dodge Corp., 391 F. Supp. 1181 (D. Ariz. 1975), which involved a criminal prosecution for unlawfully polluting navigable waters of the United States under 33 U.S.C. §§ 1311(a) (making it unlawful to discharge pollutants without a permit) and 1319(c)(1) (setting out penalties for violations of § 1311). The opinion does not set forth the nature of the pollution or a description of the polluted water. In the course of its discussion, however, the court stated:

> a legal definition of "navigable waters" or "waters of the United States" within the scope of the Act includes any waterway within the United States also including normally dry arroyos through which water may flow, where such water will ultimately end up in public waters such as a river or stream, tributary to a river or stream, lake, reservoir, bay, gulf, sea or ocean either within or adjacent to the United States.

Id. at 1187. The precise issue before the court was whether the CWA was void for vagueness; the court's statement regarding "normally dry arroyos" was made simply in the course of answering that inquiry in the negative. Nevertheless, this portion of Phelps Dodge has been cited with some frequency. See, e.g., United States v. Huebner, 752 F.2d 1235, 1239 (7th Cir.), cert. denied, 474 U.S. 817 (1985) (interpreting Phelps Dodge as holding that normally dry drainages can be wetlands subject to the CWA); United States v. Saint Bernard Parish, 589 F. Supp. 617, 620 (E.D. La. 1984) (CWA control extends to all waterways where any water flowing

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therein might end up in any water in which there is some public interest). The Phelps Dodge definition of navigable waters to include dry drainages seems to be predicated on the concept of drainages as tributaries of other regulated waters. To be regulated as a navigable water, the court required that water flowing through a normally dry drainage (presumably in response to storm events) ultimately end up in otherwise regulated waters or tributaries thereof.

As a result of expanding CWA jurisdiction, the CWA today has a potential impact on any parcel of land that has virtually any drainage from it or on which significant amounts of standing water may occur. The jurisdictional concepts discussed herein primarily are relevant in connection with determining whether an NPDES permit (Section 402) or a Dredge and Fill permit (Section 404) may be required for some activity involving discharging a pollutant or altering the bottom elevation of any water of the United States. The reach of the CWA can be much broader, however. The CWA is likely to exact regulatory consequences whenever storm water runoff or sewage exit a property, even where it contains no surface drainages or areas of ponding water.

A. The Definition of "Waters of the United States"

EPA's current regulations implementing the CWA for purposes of the Section 402 NPDES program and other CWA provisions were adopted in 1980. These regulations define "waters of the United States" as follows:

> (a) All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
>
> (b) All interstate waters, including interstate "wetlands;"
>
> (c) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, "wetlands," sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce including any such waters:
>
> (1) Which are or could be used by interstate or foreign travelers for recreational or other purposes;

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(2) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

(3) Which are used or could be used for industrial purposes by industries in interstate commerce;

(d) All impoundments of waters otherwise defined as waters of the United States under this definition;

(e) Tributaries of waters identified in paragraphs (a) through (d) of this definition;

(f) The territorial sea; and

(g) "wetlands" adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a) through (f) of this definition.

Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 C.F.R. 423.11(m) which also meet the criteria of this definition) are not waters of the United States. This exclusion applies only to manmade bodies of water which neither were originally created in waters of the United States (such as disposal area in wetlands) nor resulted from the impoundment of waters of the United States.

40 C.F.R. § 122.2. This definition appears in EPA's NPDES regulations. The last sentence of this definition (which limits the scope of the waste treatment system exclusion) has been suspended. See 45 Fed. Reg. 48620 (July 21, 1980).

The EPA regulations quoted above set forth seven categories of "waters of the U.S." The regulations also set forth one specific exclusion. This chapter contains a discussion of two of the more significant categories of waters of the U.S. for the state of Arizona. These categories are (1) other waters, the use, degradation or destruction of which would or could affect interstate or foreign commerce, and (2) tributaries of other waters of the U.S. The waste treatment system exclusion is also discussed, along with the concept of "fast land," which is a mechanism for eliminating jurisdiction over an area as a water of the U.S.

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Five categories of the waters of the U.S. in the above quote are not discussed at length in this paper. The first is the wetlands category, which is the subject of Chapter 11. The second is waters used or susceptible to use in interstate or foreign commerce. This category is fairly self-explanatory, and the areas of ambiguity are covered in the discussion of the category of "other waters that could affect interstate or foreign commerce." The third category includes actual waters that cross state lines (interstate waters), also a relatively straightforward concept. The fourth category not discussed at length in this paper covers impoundments of water that are otherwise waters of the U.S. If you impound a drainage that otherwise meets the waters of the U.S. test, the pond formed behind your impounding structure may constitute a water of the U.S., absent some effort to remove it from CWA jurisdiction. That effort might consist of the creation of "fast land," use of the waste treatment system exclusion, diversion of upstream inflow around the impoundment or some other method to escape CWA jurisdiction. The fifth and final "water of the U.S." not discussed in any detail herein is the territorial sea. Its absence in Arizona makes that a topic of minimal concern for environmental professionals in this state, although some interesting law has developed regarding how high on the seashore the CWA jurisdiction extends.

1. "Other Waters" Potentially Affecting Interstate Commerce

a. Industrial Use

Under EPA's regulations, regardless of its status as a tributary to other waters of the United States, a drainage or pond could itself be a water of the United States if it qualifies as an "other water . . . the use, degradation, or destruction of which would affect or could affect interstate or foreign commercial waters" including (but are not limited to[1]) waters used by interstate or foreign travelers for recreational or other purposes; waters from which fish or shellfish are or could be taken or sold in interstate or foreign commerce; or waters that are used or could be used for industrial purposes by industries in interstate commerce. See 40 C.F.R. § 122.2.

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[1] For example, courts have stated that waters used to irrigate crops that are sold in interstate commerce may have a sufficient effect on interstate commerce to warrant CWA jurisdiction, even though such waters are not mentioned in EPA's definition. See e.g., United States v. Earth Sciences, Inc., 599 F.2d 368, 375 (10th Cir. 1979).

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The mere fact that your client is engaged in interstate commerce is not sufficient to trigger the implementation of "other waters" jurisdiction. The potential for another industry engaged in interstate commerce to use the waters is required.

EPA initially took the fairly extreme position that the simple fact of a discharge into a water by an industry engaged in interstate commerce was sufficient to turn the receiving water into a water of the United States. See letter from Paul De Falco, Jr. (Regional Administrator, Region IX) to Louis Kossuth (Commissioner of Health, Arizona State Department of Health) at 1 (October 15, 1973) (if a discharge to an ephemeral or intermittent stream "originates from an industry engaged in interstate commerce and the discharge is an essential part of its operation, the discharge then affects interstate commerce"); EPA Memorandum from Robert V. Zener (Acting Deputy General Counsel) to Regional Counsel, Region IX (November 7, 1973) ("We agree generally that a discharge from an industry engaged in interstate commerce constitutes a discharge into navigable waters. To eliminate an industry discharging into an intermittent stream from the permit requirements of the Act would place that industry on an improved competitive footing by reducing its operating costs in comparison with competitors. Thus, an effect on interstate commerce could result.").

This early broad interpretation essentially would have shifted the focus of analysis from the nature of the water to the nature of the discharger. It had the potential of automatically turning every location into which an industry engaged in interstate commerce discharges effluent into a water of the United States.

Although EPA has never explicitly rescinded this early interpretation, it has taken numerous actions and made numerous statements that would have been unnecessary had the earlier interpretation continued to be controlling. While some uncertainty may remain, it appears that EPA has withdrawn from the extreme position that any discharge from an industry engaged in interstate commerce is sufficient to turn the receiving water into a water of the United States.

In 1979, EPA changed the regulatory definition waters of the United States to include waters that could be used by industries in interstate commerce, in addition to waters that were actually so used. See 44 Fed. Reg. 32854, 32858 (June 7, 1979). In the preamble to the final rules including the expansion of the definition, EPA stated:

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> These regulations are intended to broaden the definition of waters of the United States . . . . Waters will be considered to be waters of the United States not only if they are actually used, but also if they may be susceptible to use, for industrial purposes by industries in interstate commerce. Thus, the regulations now focus, not on the nature of the stream's users, but on the characteristics of the stream itself, and it will no longer be necessary to show actual industrial use for a stream to fall within the definition.

Id.

EPA went on to state that if any portion of a stream is used or susceptible to use by industries in interstate commerce, the entire stream is waters of the United States. See id. EPA used as an example a stream flowing into a small lake contained entirely on the property of Industry C, and from which there is no outflow. Two upstream users (Industries A and B) exist. All three industries use the stream for industrial purposes and discharge effluent into the stream. In this situation, the entire stream is a water of the United States. Industry C, according to EPA, needs an NPDES permit even though there is no downstream user. EPA stated:

> The question of actual or potential use downstream from the discharger (Industry C) is not relevant to the determination, since the character of the stream as a whole is clearly such as to be susceptible to use by an industry in interstate commerce.

Id.

EPA's decision to expand the definition of waters of the United States, and the reasons for that decision, are significant. EPA's new regulations strongly suggest that CWA jurisdiction extends to ephemeral waters and dry drainages susceptible to use by two or more industries engaged in interstate commerce. The examples given in the preamble implies that a "water" may be susceptible to use by industries in interstate commerce if waters therein are or may be impounded or otherwise used by the industries, or if the industries could discharge effluent into the "water." Under these principles, EPA might consider a natural dry drainage or small pond to be a water of the United States unless, for its entire area, it would be physically impossible for industries (existing or hypothetical) to use the

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drainage or pond for either the discharge of effluent or the impoundment of water for industrial purposes.

Under EPA's broadening interpretation of the definition of waters of the United States, however, the possibility of use of some drainage or pond area by other industries engaged in interstate commerce may be sufficient to transform it into a water of the United States.

United States v. Earth Sciences, Inc., 599 F.2d 368 (1979), is a fairly early case regarding the degree of impact on interstate commerce required. It involved the Rio Seco, a purely intrastate Colorado water that was concededly neither navigable in fact nor used to transport any goods or materials. Downstream from the pollutant discharge in question were two reservoirs that collected all stream flow to be used for recreation and agricultural irrigation. The court stated that CWA jurisdiction was appropriate where there is "at least some interstate impact" from a water. In this case, the evidence indicated that the Rio Seco supported trout and some beaver (presumably subject to hunting and fishing by interstate travelers); furthermore, the water collected in the reservoirs was used in agricultural irrigation and the resulting products were sold in interstate commerce. This was found to be a sufficient connection with interstate commerce to justify jurisdiction. The court did not state which of these two factors weighed most heavily in its analysis, nor did it indicate whether jurisdiction would be appropriate if only one of the factors were present.

b. Migratory Birds

EPA could attempt to demonstrate that a water (such as a drainage or pond) is utilized by migratory birds or endangered species and therefore should be considered a water of the U.S. EPA has periodically taken the position that use of a body of waters by migratory waterfowl that cross state lines or by endangered species may be sufficient, standing alone, to establish a connection to interstate commerce and transform that water into a water of the United States. See EPA General Counsel Memorandum on Clean Water Act Jurisdiction over Isolated Waters (September 12, 1985) (actual use of a water by migratory birds or endangered species supports CWA jurisdiction); but see Tabb Lakes, Ltd. v. United States, 715 F. Supp. 726, 729 (E.D. Va. 1988), aff'd without opinion, 885 F.2d 866 (4th Cir. 1989) (in dicta, court states that it has grave doubts that water now used, or seen as an expectant habitant for some migratory birds, can be declared to be such a

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nexus to interstate commerce as to warrant Corps jurisdiction under the CWA).

The Corps has interpreted EPA's position to be that CWA jurisdiction extends to waters providing "habitat" for migratory birds or endangered species. See 52 Fed. Reg. 41206, 41217 (November 13, 1986). See also Leslie Salt Co. v. United States, 896 F.2d 354, 360 (9th Cir. 1990), cert. denied, ____ U.S. ____, 111 S. Ct. 1089 (1991) (use of water "as habitat" by endangered species and migratory birds supports its status as a water of the United States). Even if some use of the drainage or pond by migratory birds or endangered species does occur, it may not rise to the level of "habitat" for those species. Thus, use by migratory birds or endangered species should not necessarily, on its own, support the assertion of CWA jurisdiction.

In State of Utah v. Marsh, 740 F.2d 799 (10th Cir. 1984), the court held that Utah Lake, the largest freshwater lake in the state, had a sufficient connection to interstate commerce to support jurisdiction. One of the many reasons supporting the holding was that the Lake was located on the flyway of several species of migratory waterfowl protected under international treaties. The court did not indicate whether the presence of migratory waterfowl alone would support jurisdiction. The fact that the court seemed satisfied that the lake was merely on the flyway of migratory birds (rather than being a habitat for such birds) would broaden the reach of the CWA if carried to its full implication.

2. Tributaries to Other Waters of the United States

A basis by which many drainages (and even ponds) can qualify as a water of the United States is as a tributary to another water that clearly meets the regulatory definition. This is the traditional theory by on which dry drainages in the arid Southwest have been identified as waters of the United States. See e.g., United States v. Texas Pipe Line Co., 611 F.2d 345, 346-47 (10th Cir. 1979) (upholding fine for unpermitted discharge of oil into an unnamed tributary to a tributary to a tributary of the Red River; fact that flow from the unnamed tributary would reach the Red River during significant rainfall was sufficient to justify CWA jurisdiction); United States v. Phelps Dodge Corp., 391 F. Supp. 1181, 1187 (D. Ariz. 1975) (CWA jurisdiction extends to "normally dry arroyos through which water may flow, where such water will ultimately end up in public waters such as a river or stream, tributary to a river or stream, lake, reservoir, bay,

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gulf, sea or ocean either within or adjacent to the United States"); EPA Memorandum from Robert M. Perry (Associate Administrator and General Counsel) to Frederic A. Eidsness, Jr. (Assistant Administrator for Water), "Legal Considerations Applicable to Changing the Definition of 'Waters of the United States'" at 8 (March 17, 1983) (identifying Phelps Dodge and Texas Pipe Line as tributary cases); EPA Memorandum, "Intermittent or Dry Streams as Navigable Waters" at 1 (December 5, 1973) (attached as Appendix A to Decision of the General Counsel No. 53, "In re City of Phoenix, Arizona" (December 17, 1976)) (a discharge into a dry creek bed does not constitute a discharge into a navigable water unless it flows into other navigable waters; where a dry wash flows only intermittently after a heavy rain or snow melt conditions, where it disappears before reaching other waters or crossing a state line, and where there is no use of the stream by interstate travelers or for interstate commercial purposes, the dry wash would not be a water of the United States).

EPA has on at least one occasion taken the position (at least in the abstract) that even an infrequent connection may suffice to qualify a dry wash as a water of the United States. See EPA Memorandum from Robert V. Zener (Acting Deputy General Counsel) to Irwin L. Dickstein (Director, Enforcement Division, Region VIII), "Intermittent or Dry Streams as Navigable Waters" at 2 (December 5, 1973) (even where dry wash would probably reach a water of the United States only once every several years, discharge of pollutants into that dry wash is a discharge of pollutants into navigable waters).

The Zener memorandum contemplated a situation where a normally dry wash carried water that reached a navigable water perhaps once every several years. No case law or readily available EPA documentation addresses where a tributary situation occurs only once every one hundred or every five hundred years. The principle outlined in the Zener memorandum may be that frequency of connection is irrelevant once the fact of connection has been established. If that is the case, virtually any drainage has some potential to be considered a water of the U.S. since a "Noah's Ark" flood might cause some surface connection to a water of the U.S.

In United States v. Phelps Dodge Corp., 391 F. Supp 1181 (D. Ariz. 1975), the court interpreted "waters of the United States" under the CWA to include "any waterway within the United States also including normally dry arroyos through which water may flow, where such water will ultimately end up in public waters such

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as a river or stream, tributary to a river or stream, lake, reservoir, bay, gulf, sea or ocean, either within or adjacent to the United States." The court does not set out the facts of the case, but this definition is clearly aimed at dry washes and brings them within the scope of "waters of the United States." Interestingly, this definition requires that water flowing through a normally dry wash must ultimately end up in a public water (river, stream, etc.). In other words, some outflow would seem to be necessary.

United States v. Texas Pipe Line Co., 611 F.2d 345 (10th Cir. 1979), involved a small (600 barrel) oil spill into an unnamed tributary that discharged into another tributary of the Red River. The unnamed tributary had a small amount of water in it at the time of the spill; it was unclear from the record whether the other streams (i.e., the second tributary and the Red River itself) were flowing at that time. The court held, however, that it made no difference whether the unnamed tributary was or was not at the time of the spill discharging continuously into a river navigable in the traditional sense. The significant factor was that flow did reach the Red River during significant rainfall. This was sufficient to render the watercourse into which the spill had occurred a water of the United States for purposes of the CWA. The court thus held that the unpermitted discharge violated the CWA, even in the complete absence of evidence in the record to show the effect on interstate commerce of the unnamed tributary.

Even in 1973, EPA suggested that the frequency of connection does not matter, so long as there is some possibility that the transfer of pollutants may occur. See also Texas Pipe Line, 611 F.2d at 347 (it makes no difference that a particular tributary was or was not at the time of a discharge of pollutants discharging into a traditional navigable water to which it is tributary, so long as a connection exists at some times).

3. The Tributary Rule and CWA Jurisdiction Over Groundwater

Most reported case law addressing the tributary status of non-perennial streams involve a tributary that typically is directly connected to a water of the United States. Several courts have held that the CWA does not grant jurisdiction over the discharge of pollutants to groundwater (as opposed to surface water). See e.g., Exxon Corp. v. Train, 554 F.2d 1310, 1317-31 (5th Cir. 1977); Kelley v. United States, 618 F. Supp. 1103, 1104-07 (W.D. Mich. 1985); United States v. GAF Corp., 389 F. Supp. 1379, 1383 (S.D. Tex. 1975) (disposal of

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pollutants into underground waters that do not flow into or otherwise affect surface waters is not the discharge of a pollutant under the CWA).

Where an underground discharge may directly affect surface waters, however, a few courts have expressed a willingness to at least consider the possibility that CWA jurisdiction exists. See e.g., Quivira Mining Company v. United States Environmental Protection Agency, 765 F.2d 126, 129-30 (10th Cir. 1985), cert. denied, 474 U.S. 1055 (1986) ("Quivira Mining"); United States Steel Corp. v. Train, 556 F.2d 822, 851-53 (7th Cir. 1977) (EPA does have authority to regulate discharges into deep wells, at least when the regulation is undertaken in conjunction with limitations on discharges into surface waters contained in an NPDES permit); McClellan Ecological Seepage Situation v. Weinberger, 707 F. Supp. 1182, 1193-1196 (E.D. Cal. 1988); Phelps Dodge, 391 F. Supp. at 1187 (scope of CWA control "must extend to all pollutants which are discharged into any waterway, including normally dry arroyos, where any water which might flow therein could reasonably end up in any body of water, to which or in which there is some public interest, including underground waters") (emphasis supplied).

Quivira Mining involved two mining companies that discharged pollutants from uranium mining facilities into gullies or arroyos. The court found that the two arroyos in question flowed for short distances from the discharge points. Neither was navigable in fact, but surface flow occurred at times of heavy rainfall and led to a surface connection with other navigable waters independent of any underground flow. In addition, waters in the two arroyos ultimately reached underground aquifers and after a lengthy period (perhaps centuries) moved toward eventual discharge to other surface waters. The court found that the two arroyos were waters of the United States for three reasons. First, during times of intense rainfall, there was a surface connection between the arroyos and other navigable in fact streams. Second, both arroyos flowed for a period after the time of discharge of pollutants into the waters. Third, flow continued regularly from the surface of the arroyos through underground aquifers and ultimately into navigable in fact streams. These three factors convinced the court that there was a sufficient impact on interstate commerce.

This opinion broadens CWA jurisdiction in several ways. The court's focus on the fact that the two arroyos flowed for a brief period after discharge lends some implicit support to EPA's suggestion that a water could be considered perennial based solely on constant

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discharge from an industrial source (as opposed to natural conditions). Of even greater concern is the court's acceptance of the notion that flow from a surface water through soil to groundwater, and then ultimately to another surface water, even if taking centuries, may be sufficient to convert the first surface water into a water of the United States.

In McClellan Ecological Seepage Situation v. Weinberger, 707 F. Supp. 1182 (E.D. Cal. 1988), the major question was whether the Act forbids discharge of pollutants from a point source to groundwater. The court concluded that such permits might be required if the discharge was to groundwater that has a "direct hydrological connection" to surface waters that themselves constitute waters of the United States. The court stated:

> The mere fact that the groundwater might ultimately be consumed or might be used for irrigation purposes . . . is not enough to bring the alleged discharges within the parameters of the NPDES program. Rather, [plaintiff] must establish that the groundwater is naturally connected to surface waters that constitute "navigable waters" under the Clean Water Act.

Some federal cases, as discussed above, have clearly intimated that where surface water from a particular watercourse reaches groundwater and then ultimately reconnects to another surface water that is a water of the United States, discharges to the initial watercourse may be regulated under the CWA as discharges to a water of the United States. See Quivera Mining; see also 55 Fed. Reg. 47990, 47997 (November 16, 1990) (in preamble to its final storm water discharge regulations, EPA states that because the rulemaking addresses only discharges to waters of the United States, discharges to groundwater are not covered "unless there is a hydrological connection between the ground water and a nearby surface water body").

B. The Waste Treatment Systems Exclusion

In response to industry concern about the overbreadth of EPA's definition of "waters of the U.S.," EPA first adopted the waste treatment system exclusion on June 7, 1979. Those regulations provided an exclusion for waste treatment systems, other than certain cooling ponds. EPA stated clearly that it was agreeing with commenters that industrial waste treatment systems should not be considered waters of the United States. See 44 Fed. Reg. 32854, 32858.

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On May 19, 1980, EPA issued final consolidated permit regulations under the Clean Water Act, including a definition of the term "waters of the United States" applicable to the NPDES permit program. The definition amended the previous definition of the term "navigable waters," which provided that ". . . waste treatment systems (other than cooling ponds meeting the criteria of this paragraph) are not waters of the United States." The definition of "waters of the United States" adopted on May 19, 1980, provided that:

> Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 C.F.R. § 423.11(m) which also meet the criteria of this definition) are not waters of the United States. This exclusion applies only to manmade bodies of waters which neither were originally created in waters of the United States (such as a disposal area in wetlands) nor resulted from the impoundment of waters of the United States.

45 Fed. Reg. 33418, 33424 (May 19, 1980).

The addition of new language concerning waste treatment systems created in waters of the U.S. resulted in an additional comment to the permit regulations by the Utility Water Act Group.

The utility industry explained in its comments to EPA that the sudden transformation of hundreds of utility treatment ponds into "waters of the U.S." as a result of the newly added final sentence to the waste treatment system exclusion was directly contrary to EPA's past interpretations and to the CWA. The utilities described, and provided aerial photographs of, large ponds for the treatment or retention of waste such as bottom and fly ash or scrubber sludge. The utilities pointed out that the discharge from such a pond, if any, would be subject to NPDES permitting requirements, and such ponds are also potentially subject to RCRA requirements and dredge-and-fill permit requirements when initially constructed.

On July 21, 1980, the EPA suspended the effectiveness of the last sentence beginning "This exclusion applies . . ." in the definition of "waters of the United States" quoted above. 45 Fed. Reg. 48620 (July 21, 1980). The EPA adopted the suspension at least in part in response to objections from industry representatives who argued that the language of the definition would require them to obtain NPDES permits for discharges into existing waste treatment systems that had been in existence for many years. The industry

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representatives asserted that the EPA has issued NPDES permits for discharges from, not into, these systems. Id. The EPA adopted the suspension because it agreed "that the regulation should be carefully re-examined and that it may be overly broad." Id. That suspension was reconfirmed on April 1, 1983 (48 Fed. Reg. 14153).

One court's interpretation of EPA's obligation to adhere to the suspension or else to remove it by rulemaking is set forth in West Virginia Coal Ass'n. v. Reilly, 728 F. Supp. 1276, 1288-93 (S.D.W.Va. 1989), 932 F.2d 964 (4th Cir. 1991). This case was affirmed on appeal in an unpublished decision.

The lawsuit arose from a challenge by the West Virginia Coal Association and others (the "Association") to an EPA Region III Policy for In-stream Treatment of Mine Wastewaters. That policy overruled, in part, EPA's suspension, even though no rulemaking has occurred since 1980 on this issue. The suit was filed in response to EPA's objections to the issuance of NPDES permits by the State of West Virginia to permit coal mines to employ instream wastewater facilities. Because judicial review of EPA policies or objections would normally be obtained in the United States Court of Appeals following final agency action, the issues litigated in the District Court and appealed to the United States Court of Appeals for the Fourth Circuit were largely phrased in terms of the District Court's jurisdiction to entertain the Association's suit.

The parties' arguments in the District Court turned on whether the case was ripe for decision by the District Court in light of the status of the EPA's policies and objections and whether the EPA had clearly exceeded its authority in promulgating the policies and making the objections thereby vesting jurisdiction in the District Court to review those actions. In its opinion, the District Court concluded that the case was ripe for adjudication but rejected the Association's arguments that the EPA had clearly exceeded its authority.

EPA, throughout its brief on appeal, characterized the policies overruling the suspension as "draft," and "not final." It asserts that its objections are not final denials of permits but are simply a preliminary stage in the permitting process.

In its brief filed on July 18, 1990, the EPA characterized the policies as follows:

> [N]either the in-stream treatment policies nor the related permit objectives are sufficiently final

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> to be fit for review . . . . The policy here is not "definitive" since it has been modified once already and is still undergoing review with EPA. Nor was the 1987 policy offered to the State on a take-it-or-leave-it basis; rather, the Morris letter indicates that the policy was offered as a proposal to serve as a basis for subsequent discussion.

Brief for Appellee William K. Reilly, Administrator of EPA at 25.

The Association responded that the EPA's policies and objections are definitive and have a direct impact on the members of the Association. The Association also argued that the issues posed are purely legal and ripe for adjudication. The Association also contended that the EPA lacks the authority to regulate by NPDES permit the use of in-stream treatment of mining wastewaters. First, the Association argued that the exclusive jurisdiction to grant permits for in-stream treatment facilities rests with the Secretary of the Army (Army Corps of Engineers) pursuant to § 404 of the Clean Water Act rather than with the EPA pursuant to § 402. Second, the Association asserted that the policies are inconsistent with the definition of waters of the United States contained in the applicable EPA regulations since wastewater treatment facilities are excluded from that definition. Third, the Association argued that the legislative history of the regulation defining waters of the United States demonstrates that it does not apply to tailings ponds. Fourth, the Association claimed that the EPA wrongfully interpreted and applied West Virginia law as supporting the policies and permit objections.

The EPA argued that the Court of Appeals need not reach these issues and should conclude that the District Court did not have jurisdiction to consider these questions since the policies did not conflict with an express statutory provision governing the EPA. In effect, the EPA argued that the District Court exceeded its jurisdiction in finding in the EPA's favor on the Associations' challenges. The EPA argued that these legal challenges should be left to a properly filed action reviewing the policies and objections after they become final.

The extent to which the waste treatment system exclusion applies to ponds that have been created in waters of the U.S. (i.e., those that cross any drainages that either are tributary or that could affect interstate commerce) and the extent to which EPA may limit the availability of this exclusion without undertaking rulemaking remains somewhat uncertain.

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C. "Fast Land" No Longer Constituting a Water of the United States

In a 1980 preamble, the EPA stated:

> When a portion of the Waters of the United States has been legally converted to fast land by a discharge of dredged or fill material, it does not remain waters of the United States subject to section 301(a). The discharge may be legal because it is authorized by a permit or because it was made before there was a permit requirement. In the case of an illegal discharge, the fast land may remain subject to the jurisdiction of the Act until the government determines not to seek restoration.

See 45 Fed. Reg. 85336, 85340 (December 24, 1980). Simply put, so long as fast land is legally created, it can result in the elimination of a portion of a water of the U.S. and CWA jurisdiction over that land. The filling of waters of the U.S. that created "fast land" prior to enactment of the CWA in 1972 occurred "before there was a permit requirement," and thus resulted in the legal creation of fast land and the elimination of waters of the United States (under the broad definition of that term adopted in 1972.)

EPA's preamble language quoted above concerning discharges creating fast land prior to the existence of a 404 permit requirement also applies to some discharges occurring after enactment of the amended CWA (i.e., after October 18, 1972). Application of the Section 404 program to the full reach of jurisdictional waters of the United States occurred in phases over a period of years. If Section 404 jurisdiction had not been extended to an area and fast land was created there "before there was a permit requirement," a legal conversion of what may have been waters of the United States to fast land has removed these former waters entirely from the jurisdiction of the CWA.

The Corps has implemented the Section 404 permit requirement in phases. Jurisdictional waters of the United States were broken down into three categories, and the applicability of Section 404 was extended to the three categories in stages over the period from 1972 to 1977. See 40 Fed. Reg. 31320, 31325-26 (July 25, 1975) (former 33 C.F.R. § 209.120(e)(2)).[2] To make clear that

[2] The phase-in of Section 404 jurisdiction to all waters of the United States was a result of a judicial decision striking down the Corps' initial decision to restrict the

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discharges to waters of the United states were proper if the discharges occurred before Section 404 jurisdiction was extended to particular categories of jurisdictional waters, the Corps has since 1977 issued a series of nationwide permits covering activities occurring prior to the date on which jurisdiction was first exercised over those particular categories of waters.

Fast land can be legally created pursuant to an exemption from the 404 program or through discharge activities authorized pursuant to an individual or general 404 permit.

For example, nationwide permit 26 authorizes discharges that do not cause the loss or substantial adverse modification of greater than ten acres of isolated waters or waters located above the headwaters. See 33 C.F.R. § 330.5(a)(26). This nationwide permit was adopted in its current form effective October 5, 1984. See 49 Fed. Reg. 39478, 39484 (October 5, 1984). Earlier versions of this nationwide permit had authorized discharges into such waters without imposing any upper acreage limitation or requiring predischarge notification. See 42 Fed. Reg. 37122, 37146 (July 19, 1977) (former 33 C.F.R. § 323.4-2(a)); 47 Fed. Reg. 31794, 31832 (July 22, 1982) (former 33 C.F.R. § 330.4(a)). Thus much fast land may have been legally created pursuant to this nationwide permit.

What about fast land that may not have been legally created? It still may be a water of the U.S. However, a recently-expired Regulatory Guidance Letter ("RGL") issued by the Corps indicated that, as a matter of general policy, district engineers should normally not pursue enforcement actions "against activities that were completed more than five years prior to discovery," although such enforcement is not completely prohibited. See Regulatory Guidance Letter No. 88-4, "Enforcement" (April 7, 1988), reprinted in W. Want, Law of Wetlands Regulation at App. 9-19 (1990). This RGL expired on December 31, 1990, and has not been renewed. See 56 Fed. Reg. 2408-17 (January 22, 1991) (summarizing RGLs currently in effect and not including RGL No. 88-4).

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scope of navigable waters under the CWA to waters meeting traditional test of navigability. See Natural Resources Defense Council v. Callaway, 392 F. Supp. 685 (D.D.C. 1975).

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III. POINT SOURCE POLLUTION CONTROL

A. NPDES Program

Arizona has not applied for authorization from EPA to administer the Clean Water Act Section 402 NPDES program for control of point source discharges of effluent to waters of the United States. Consequently, NPDES permits are issued to dischargers in this state by EPA Region IX. See 33 U.S.C. § 1342; 40 C.F.R. § 123.1. Similarly, the program for control of point source discharges of storm water will be administered in Arizona by EPA. Thus, discussion of the federal NPDES program is necessary.

The CWA prohibits the "discharge of any pollutant by any person" unless the discharge is in compliance with a number of statutory requirements. 33 U.S.C. § 1311(a). The principal requirement is that a discharger must obtain an NPDES permit from the EPA or an authorized state. 33 U.S.C. §§ 1311(a), 1342. A discharge of a pollutant is defined to include "any addition of any pollutant to navigable waters from any point source." Id. § 1362(12).

The jurisdictional reach of the CWA is limited to "navigable waters." This term is defined to mean "the waters of the United States, including the territorial seas." 33 U.S.C. § 1362(7). The interpretation of the term "waters of the United States" is extensively discussed in Part II of this chapter.

The term "pollutant" includes dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, and industrial, municipal and agricultural wastes discharged into water. 33 U.S.C. § 1362(6). "Point source" means "any discernible, confined and discrete conveyances. . . from which pollutants are or may be discharged." Id. § 1362(14). It includes all pipes, ditches, channels, wells, etc.

In determining whether an NPDES permit is necessary, the key jurisdictional facts are (1) a discharge of a pollutant (2) from a point source to (3) "waters of the United States." The key requirement of an NPDES permit is the effluent limitations which are imposed on a discharger. These limitations consist of restrictions on quantities, rates, and concentrations of pollutants and compliance schedules for the achievement of such restrictions. Id. § 1362(11). The effluent limitations are technology based and water quality based.

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1. Effluent Limitations

a. Technological Standards

Technology based effluent limitations are derived from standards formulated with reference to pollution control technology. Id. § 1314(b). The CWA imposes varying standards depending on the degree of harm associated with the type of discharge: conventional, toxic, nonconventional (neither toxic nor conventional) pollutants.

Conventional pollutants include biological oxygen demanding materials (BOD), suspended solids, fecal coliform, and pH. Id. § 1314(a)(4); 40 C.F.R. § 401.16. Toxic pollutants are defined as those pollutants which cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions or physical deformations in organisms exposed to such pollutants. Id. § 1362(13). A list of toxic pollutants can be found at 40 C.F.R. § 401.15. Nonconventional pollutants are those which are neither toxic nor conventional.

By March 31, 1989, known existing sources of conventional pollutants were to achieve effluent reductions in conventional pollutants that reflect the application of the "best conventional pollutant control technology" (BCPCT). Id. §§ 1311(b)(2)(E), 1314(a)(4) and 1314(b)(4)(B); 40 C.F.R. § 125.3(a)(2)(ii). In determining BCPCT technology, EPA must consider the reasonableness of the relationship between the cost of obtaining a reduction in effluent and the effluent reduction benefits derived, and the comparison of the cost and level of reduction of such pollutants from the discharge from publicly owned treatment works to the cost and level of reduction of such pollutants from a class or category of industrial sources. EPA must also consider the age of the equipment and the facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, and nonwater quality environmental impact. 33 U.S.C. § 1314(b)(4)(B); 40 C.F.R. § 125.3(d)(2).

Toxic pollutants, whether from new or existing sources, are subject to the effluent limitation based on "best available technology economically achievable" (the "BAT" standard). 33 U.S.C. § 1317(a)(2); 40 C.F.R. § 125.3(a)(2)(iii), (iv). In establishing the BAT standard for toxic pollutants, EPA must consider "the toxicity of the pollutant, its persistence, degradability, the usual or potential presence of the affected organisms in any waters, the importance of the

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affected organisms and the nature and extent of the effect of the toxic pollutant on such organisms, and the extent to which effective control is being or may be achieved under other regulatory authority." 33 U.S.C. § 1317(a)(2).

Nonconventional pollutants emanating from existing sources are also controlled through the application of BAT. Id. § 1311(b)(2)(B); 40 C.F.R. § 125.3(a)(2)(v). In setting the BAT standard for particular non-conventional industrial category, EPA is to consider "the total cost of application of technology in relation to the effluent reduction benefits to be achieved from such application" and must also consider "the age of the equipment and facilities involved, the process employed, the engineering aspects of the application of various types of control techniques, process changes, [and] non-water quality environmental impact . . . ." 33 U.S.C. § 1314(b)(1)(B); 40 C.F.R. § 125.3(d)(3).

There is a variance or modification process for these technology-based effluent limitations. In some instances, "fundamentally different factors" or "FDF" variances can be obtained by facilities that are in a fundamentally different situation than those considered in the development of effluent guide lines for the respective industrial categories. Id. § 1313(n); 40 C.F.R. §§ 125.30 to 125.32. EPA may also, with state concurrence, modify BAT requirements covering the discharge of specified nonconventional pollutants. As with the FDF variance, this is a permit-by-permit modification. Id. § 1311(g).

A permittee may also be able to obtain a relaxation, or modification of the effluent limitations in its permit so that the permit contains less stringent effluent limitations which were promulgated by EPA after issuance of the permit. Id. § 1342(o). Since no permit may be issued which contains a limit less stringent than an applicable effluent guideline (in the absence of an FDF variance), these provisions apply only to conditions imposed by "best professional judgment" in the absence of applicable effluent guidelines.

"New sources" are subject to special treatment under the CWA. New source performance standards are generally more stringent than standards for existing sources. As with the other technology-based effluent standards discussed above, these standards are established for industrial categories on a category-by-category basis and appear in the compilation of effluent guidelines in 40 C.F.R. parts 405 to 471. Under 33 U.S.C. § 1316, new source performance standards must reflect the more strict "best available demonstrated

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control technology" for nonconventional pollutants (BAT for toxics is the same regardless of source).

b. Water Quality Based Standards

The CWA also contains water quality based standards. The Act provides for a system of stream classifications and water quality standards to be developed by the states with EPA review and approval. 33 U.S.C. § 1313. Water quality standards include a designated use or uses for a particular body of water and water quality criteria for such waters based upon designated uses. Stream classifications include such uses as cold or warm water fisheries, public water supply, primary and secondary recreation purposes, and industrial and agricultural uses. Applicable water quality standards and criteria are set depending on the designated use. Arizona has adopted surface water quality standards at A.A.C. R18-11-101 et seq. These are discussed in detail in Part IV of this chapter.

2. Best Management Practices

The 1977 amendments to the CWA added authority for EPA to develop "best management practices" (BMPs) for inclusion in NPDES permits to control runoff, spillage, or leaks of toxic or hazardous pollutants from raw material storage areas which EPA determines are associated with or ancillary to the industrial manufacturing or treatment process. 33 U.S.C. § 1314(e). BMPs are to be developed for those classes or categories of point sources which are deemed to be potential significant contributors of toxic or hazardous pollutants.

3. Monitoring and Reporting.

Section 308 of the CWA (33 U.S.C. § 1318) authorizes EPA to require effluent monitoring and reporting of effluent data by permit holders. Monitoring requirements in NPDES permits are of critical importance because these requirements can be "triggers" for enforcement. If there is a discharge of pollutants from a point source on the property into navigable waters pursuant to a permit, discharge monitoring reports must be filed with appropriate agencies, which gives notice to the authorities of any violations of the permit.

Pursuant to 33 U.S.C. § 1318, NPDES permits typically include requirements for maintenance and proper installation of monitoring equipment, specify monitoring methods and frequencies adequate to provide reliable data regarding the volume of flow of pollutants

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discharged, concentrations of pollutants in the discharge, and must specify the test methodology to be used in analyzing the samples taken. 40 C.F.R. § 122.41(j)(l). The results of permit monitoring must be reported periodically to EPA or to a state permit-issuing authority. In addition to monitoring requirements imposed in NPDES permits, EPA representatives have the right to enter onto premises in which an effluent source is located for purposes of inspection of records or for taking effluent samples. Id. § 1318(a)(B); see 40 C.F.R. § 122.41(i).

4. Pretreatment Requirements.

Many properties have no discharge because their sewage and runoff enter into a municipal sewer system. Such properties do not need an NPDES permit. However, through the authority of 33 U.S.C. § 1317(b), EPA can regulate "indirect discharges", i. e., discharges to publicly owned treatment works ("POTW") which, after treatment, reach waters of the U.S. EPA has promulgated regulations which impose certain pretreatment limitations on new and existing non-domestic sources which introduce pollutants into a POTW. 40 C.F.R. part 403. EPA regulations also establish categorical pretreatment standards applicable to designated industrial operations. 40 C.F.R. parts 405 through 471. Generally, each municipality enforces pretreatment requirements in connection with administration of its sewer system.

An example of municipal enforcement of pretreatment regulations is found in the Phoenix City Code, Chapter 28, Article II, Section 28-6 et seq. The Code limits the use of public sewers. Many of those limitations are based directly on the need for the City to comply with its own NPDES Permit. The Code prohibits, for instance, the discharge to the sewer system of waters or wastes "containing a toxic, radioactive, poisonous or other substances in sufficient quantity to injure or interfere with any sewage treatment process, cause corrosive structural damage, constitute a hazard to humans or create any hazard to the sewage system or in the receiving waters of the sewage treatment plant. . . . Id. § 28-8(d).

In addition, parameters have been established for certain specific pollutants such as grease and oil, dissolved sulfides, cyanide, and heavy metals such as arsenic, barium, cadmium, lead and mercury. Id. § 28-8(g). The Code further prohibits the dilution of water or waste as a substitute for pretreatment. Id. § 28-8(h). Also, the Code forbids the discharge of water or

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waste that could "cause a violation of any categorical standard or pretreatment requirement." Id. § 28-8(i).

EPA also requires municipal dischargers to police their industrial contributors. A typical requirement in an NPDES Permit for a POTW is that the POTW develop a pretreatment permit program which is subject to review and approval by EPA. See 40 C.F.R. § 403.8. Deficiencies either in the requirements of the program or in the POTW's implementation of the program are subject to review and enforcement by EPA.

A.R.S. § 49-391, adopted in 1990, authorizes a city, town, county or sanitary district to adopt, amend or repeal any ordinances necessary to implement and enforce the pretreatment requirements under the CWA, and enforce the ordinances by imposing and recovering a civil penalty of not more than $25,000.00 for each violation. For continuing violations, each day may constitute a separate offense. In determining the amount of a civil penalty, the court shall consider the seriousness of the violation, the economic benefit, if any, resulting from the violation, any history of such violation, any good faith efforts to comply with the applicable requirements, the economic impact of the penalty on the violator, and such other factors as justice may require. A.R.S. § 49-391(C). In addition to the civil penalty described above, enforcement of such ordinances may include injunctive or other equitable relief. Id. § 49-391(D).

B. Storm Water Runoff Regulation

Large cities, many industries, and builders are required to file NPDES permit applications for storm water discharges under storm water discharge regulations promulgated November 16, 1990. 40 C.F.R. § 122.26. Storm water is defined to include "storm water runoff, snow melt runoff, and surface runoff and drainage." 40 C.F.R. 122.26(b)(13). The preamble to the regulation makes it clear that discharges of storm water: (1) directly to waters of the United States; (2) to a privately owned treatment works that discharges into waters of the United States; and (3) to a municipal separate storm sewer (not connected to a POTW) that discharges to waters of the United States are all covered discharges. 55 Fed. Reg. 47990, 47995 (Nov. 16, 1990). Discharges to retention basins that do not flow into waters of the United States, or discharges to a POTW are not subject to storm water permit requirements. Id. at 47996, 47998.

The storm water rule applies to both municipal storm sewers located in cities with a population

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exceeding 100,000 and storm water discharges associated with industrial activity, which includes the following classes of facilities:

o Facilities subject to effluent limitations guidelines, new source performance standards, or toxic pollutant effluent standards under the NPDES program.

o Facilities classified as standard industrial classification (SIC) Codes 24, 26, 28, 29, 31L, 32, 33, and parts of 34 and 37. These codes include lumber; paper mills; chemical; petroleum; rubber; leather tanning and finishing; stone, clay, and concrete; metal; enameled iron and metal sanitary ware; and ship/boat manufacturing facilities.

o Mineral processing facilities with SIC codes 10-14 including active and inactive mining operations and oil and gas exploration, production, processing or treatment operations or transmission facilities.

o Hazardous waste treatment, storage or disposal facilities.

o Landfills, land application sites and open dumps that receive or have received any industrial waste.

o Facilities involved in the recycling of materials, including metal scrapyards, battery reclaimers, salvage yards and automobile junkyards.

o Steam electric power generating facilities, including coal handling sites.

o Transportation facilities classified as SIC codes 40-45 and part of 51.

o Treatment works treating domestic sewage with a design flow of 1.0 mgd or more, or any treatment work required to have an approved pretreatment program.

o Construction activities including, clearing, grading and excavation activities except operations that result in the disturbance of less than five acres of total land area and that are not part of a larger common plan of development or sale.

o Facilities where materials are exposed to storm water and classified under SIC codes 20-39 and part of 42. These codes include food; tobacco; textile; apparel; wood kitchen cabinets; furniture; paperboard containers and boxes; converted paper/paperboard products; printing; drugs; leather; fabricated metal

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products; industrial and commercial machinery and computer equipment; electronic equipment; transportation equipment; measuring, analyzing, and controlling instruments and photographic, medical, and optical goods, and watches and clocks; glass; and certain warehousing and storage manufacturing facilities. 40 C.F.R. §§ 122.26(b)(14); 122.26(c).

In addition, the rule permits either EPA or an approved state to require an NPDES permit from any facility which they determine "contribute[s] to a violation of a water quality standard or is a significant contributor of pollutants to waters of the United States." Id. § 122.26(a)(v).

Dischargers of storm water associated with industrial activity are required to seek an NPDES permit in one of three ways. First, the discharger may apply for an individual permit. Second, dischargers may apply for a permit through a group application, which permits a number of similar facilities to join together for purposes of meeting the permit application's sampling and monitoring requirements. Third, dischargers may seek coverage under a promulgated storm water general permit. Id. §§ 122.26(c)(1); (c)(2); 122.28.

Under either the individual or group permit application, EPA requires extensive information, including site maps showing topography, drainage patterns, impervious areas, outfalls, areas of storage or disposal of regulated materials, existing structural control measures, etc.; certification that all outfalls have been tested or evaluated for the presence of non storm water discharges; information regarding leaks or spills of toxic or hazardous pollutants; quantitative data on nature of storm water discharge, including monitoring results for a number of pollutants. Group applicants are required to identify all the participants and to establish group similarity and sampling protocols. Group applications are also required to meet certain monitoring requirements with respect to the nine "precipitation zones." Id. § 122.26(c).

EPA is developing "general" storm water runoff permits which will apply to a category of activities. Two general permits applicable in Arizona were issued by EPA on September 9, 1992, one for construction activity and one for industrial activity. 57 Fed. Reg. 41176, 41236 (Sept. 9, 1992). For construction activities, a Notice of Intent ("NOI") must be filed two days prior to commencement of construction. 57 Fed. Reg. at 41218. For other industrial activities, the NOI is due two days prior to the commencement of the industrial activity at the facility. 57 Fed. Reg. at 41306.

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The NOI requires the following information:

- Facility name, address, SIC code

- Latitude, longitude of facility

- Operator's name, address and telephone number

- NPDES permit number for other discharges from facility

- Receiving water(s)

- Indication of existing quantitative information for discharges.

57 Fed. Reg. at 41240, 41306. Additional information is required for construction operations including an estimated timetable for major activities, estimated number of acres to be disturbed, and a certification that the storm water pollution prevention plan (a major requirement of the general permit discussed below) complies with state or local sediment and erosion plans. 57 Fed. Reg. at 41240.

There are two primary consequences of filing an NOI:

1. The facility goes on EPA's data base. EPA will probably conduct random audits of the facilities for which NOIs have been filed. EPA has the authority to require individual permits for any operations that appear to cause serious water quality violations.

2. The facility must prepare a "Stormwater Pollution Prevention Plan" in accordance with guidelines contained in the general permit rule. The facility must then implement the procedures and conduct self-inspections as required by the permit to evaluate the effectiveness of the Plan. The Plan is not required to be submitted to EPA or other agencies but must be available for inspection.

This program, with limited exceptions, applies to discharges composed <u>solely</u> of storm water. If a facility has an discharge which includes other types of water besides storm water, a number of complex inter-relationships with already existing law are brought into play which should be specifically considered before filing. As mentioned above, the requirement to file applies even when the discharge is to a municipally owned sewer or storm drain.

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This summary is necessarily extremely generalized, and there are certain limited exceptions for special cases. However, if you have operations that would appear to meet any of the descriptions set forth above, you should consult the rules and determine whether to make a filing.

C. Individual Control Strategies for Toxic Pollutants

1. Background

Section 304(l) (33 U.S.C. § 1314(l)) was added to the Clean Water Act in 1987 to address "toxic hot spots"--waters expected not to meet state surface water quality standards even after imposition of permit discharge limits representing pollutant reduction achievable using "best available technology." 133 CONG. REC. 1287 (Jan. 14, 1987) (Stmt. of Sen. Moynihan). The program is in part designed to impose substantive requirements on point source dischargers of toxic pollutants, and in part to generate information (without directly imposing substantive requirements) regarding waters that may be impaired for other reasons.

An essential concept in the § 304(l) program is the discharge from a "point source." A "point source" is broadly defined as "any discernible, confined and discrete conveyance, including but not limited to any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, or vessel or other floating craft, from which pollutants are or may be discharged." 33 U.S.C. § 1362(14). "Point source" does not include agricultural storm water discharges and return flows from irrigated agriculture. Id. Addition of pollutants to navigable waters from sources that do not qualify as point sources are considered to be "nonpoint source discharges."

2. State lists

Section 304(l) requires each state to prepare four separate lists. Three of these lists identify waters impaired by pollutants of different types or from different sources, and the fourth list identifies point source dischargers of toxic pollutants. States are required to develop for each source appearing on the fourth list an individual control strategy ("ICS") designed to reduce the discharge of toxic pollutants from that source. More specifically, the four lists are as follows:

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a. "(B) List": Also known as the "short list," this is the narrowest of the lists of waters. It identifies waters for which any surface water quality standard (narrative or numeric) adopted under 33 U.S.C. § 1313 will not be met due entirely or substantially to discharges of toxic pollutants from point sources. It does not cover waters impaired by non-toxic pollutants, or impaired by toxic pollutants from nonpoint source discharges. 33 U.S.C. § 1314(l)(1)(B).

b. "(A) (i) List": Also known as the "mini list," this list is broader than the "(B) List." It identifies waters that, after application of effluent limitations under the CWA, cannot reasonably be expected to attain or maintain numeric water quality standards for those toxic pollutants: (1) for which EPA has issued criteria documents, and (2) that can reasonably be expected to impair attainment of the designated uses of the water body because of discharges from point or nonpoint sources. 33 U.S.C. § 1314(l)(1)(A)(i).

c. "(A) (ii) List": Also known as the "long list," this is the broadest of the lists of waters. It identifies waters that, after application of effluent limitations under the CWA, cannot reasonably be expected to attain or maintain water quality that satisfies the goals of the CWA (protection of public health, public water supplies, agricultural and industrial uses; protection and propagation of a balanced population of shellfish, fish, and wildlife; and opportunity for recreational activities in and on the water). This list includes waters that fail to satisfy a narrative or numeric standard, due to the presence of toxic or non-toxic pollutants, which have been discharged from point or nonpoint sources. 33 U.S.C. § 1314(l)(1)(A)(ii).

d. "(C) List": Unlike the other three lists (which are lists of waters), this is a list of specific point sources that discharge toxic pollutants that are believed to be preventing or impairing water quality in waters appearing on any of the above three lists. Besides identifying the source, the list includes the amount of each toxic pollutant discharged by each source. This list is also known as the "source list" or the "facility list." 33 U.S.C. § 1314(l)(1)(C).

EPA had originally taken the position that the (C) List must include only point sources discharging toxic pollutants to waters appearing on the (B) List. 40 C.F.R. § 130.10(d)(3). This interpretation was overturned in Natural Resources Defense Council v.

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E.P.A., 915 F.2d 1314 (9th Cir. 1990) ("NRDC"), in which the court held that EPA must require states to include on the (C) List all point source dischargers of toxic pollutants to waters appearing on any of the other three lists. In response to this decision EPA issued an interpretive rule requiring that states include on their (C) list point sources discharging toxic pollutants to waters appearing on the (A)(i) and the (A)(ii) Lists, as well as on the (B) list. See 57 Fed. Reg. 33040 (July 24, 1992).

3. Individual control strategy requirements

For each point source appearing on the (C) List, a state must develop an individual control strategy (an "ICS") designed to reduce the discharge of toxic pollutants from that point source. The reduction may be in the form of effluent limitations imposed in NPDES permits or changes in ambient water quality standards. The reduction must be sufficient, in combination with existing controls on point and nonpoint sources of pollution, to achieve applicable water quality standards as soon as possible, but not later than three years after the ICS is established. 33 U.S.C. § 1314(l)(1)(D).

Consistent with its initial interpretation of the scope of the (C) List, EPA had originally concluded that an ICS need be developed only for point source dischargers of toxic pollutants to waters appearing on the (B) List. This interpretation also was before the court in NRDC. Although not overturning EPA's existing interpretation, the court "invited" EPA to reconsider whether its interpretation was too restrictive in light of the court's decision overturning EPA's interpretation of the proper scope of the (C) List. EPA has issued a proposed rule addressing the question of whether ICSs need to be developed for the sources that would be listed on the (C) List only because of discharges to waters listed on the (A)(i) or the (A)(ii) List. 57 Fed. Reg. 33051 (July 24, 1992).

4. Statutory role of EPA

Complete lists were to be submitted by states to EPA by February 4, 1989 (two years after the enactment of the 1987 amendments to the CWA). 33 U.S.C. § 1314(l)(1). EPA had 120 days from this date to approve or disapprove control strategies submitted by states. 33 U.S.C. § 1314(l)(2).

If a state failed to submit control strategies or if EPA disapproved any control strategies submitted by the state, EPA had one year to implement the listing and

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ICS requirements in that state after notice and opportunity for public comment. If such were to occur, EPA would be required to consider any navigable water for which any person submits a petition to EPA for listing. 33 U.S.C. § 1314(l)(3).

5. Arizona implementation of § 304(l) requirements

By July 1988, Arizona had submitted preliminary section 304(l) lists to EPA Region IX. Proposed individual control strategies were submitted in February of 1989. Supplementary filings completed Arizona's section 304(l) submissions by early July 1989.

EPA Region IX issued a "Notice of Approval and Disapproval" of Arizona's submission on July 31, 1989. EPA disapproved of certain waters appearing on Arizona's section 304(l) lists, and also added at least one water on its own initiative. Public comment on EPA's Notice was received, including petitions from the Natural Resources Defense Council and Arizona Center for Law in the Public Interest to add additional waters to one or more of the lists.

EPA Region IX issued its final decision for Arizona's Section 304(l) lists on November 30, 1990. United States Environmental Protection Agency Region IX, "Decision of the United States Environmental Protection Agency On Listings Under Section 304(l) of the Clean Water Act Regarding the State of Arizona" (Nov. 30, 1990). EPA did not change the (A) (ii) List, added seven waters to the (A) (i) List, and made changes to the (B) and (C) Lists. EPA on that same date issued a separate document responding to the public comments received about its 1989 "Notice of Approval and Disapproval." United States Environmental Protection Agency Region IX, "EPA Response to Comments and Petitions Regarding Listing DecisionS for Arizona Waters Under Section 304(l) of the Clean Water Act" (Nov. 30, 1990). Of the six sources appearing on the (C) List, however, EPA's final listing decision included an ICS for just one of those sources. Since that time EPA has developed ICSs for all but one of the sources, and the agency is involved in settlement negotiations with that source that may resolve the issue.

Prior to EPA's final listing decision of November 30, 1990, the Sierra Club brought a lawsuit seeking, among other things, to compel EPA to identify point sources discharging toxic pollutants believed to be impairing water quality on any waters listed on Arizona's (A) (i) and (A) (ii) Lists, add these sources to the (C) List, and develop ICSs for every source on

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the expanded (C) List. Both the Sierra Club and EPA have filed motions for summary judgment, which are pending before the court.

6. EPA Response to NRDC Decision

In 1989, EPA adopted rules implementing the § 304(l) statutory requirements. See 54 Fed. Reg. 246, 258 (Jan 4, 1989); 54 Fed. Reg. 23868 (June 2, 1989). As described above, certain aspects of these rules were overturned by the Ninth Circuit in the NRDC case. In response to the Court's decision, EPA issued an interpretive rule requiring that the (C) List developed by states include point sources discharging toxic pollutants to waters appearing on the (A) (i) and (A) (ii) Lists as well as on the (B) List. See 57 Fed. Reg. 33040 (July 24, 1992). At the same time, EPA issued a proposed rule addressing the question of whether ICSs need to be developed for the sources that would be newly listed on the (C) List. See 57 Fed. Reg. 33051 (July 24, 1992).

a. Interpretive rule

In the preamble to the revised final rule implementing § 304(l) EPA instructs the states to use existing, readily available information to identify waters on the (A)(i) and (A)(ii) Lists because they are impaired by point source discharges of toxic pollutants. States should then list any point sources believed to be discharging toxic pollutants to the listed waters. EPA will follow the procedures for approval or disapproval for the expanded (C) List. EPA contemplates that it will not be necessary for the states to revise their existing lists of waters because they have been developed using the procedures set forth in the statute and regulations. See 57 Fed. Reg. at 33042.

As a matter of policy guidance, EPA requested that states submit their revised (C) Lists by Sept. 21, 1992 (sixty days from publication of the rule). EPA indicated that it would review the new submissions according to the procedures set forth in 40 C.F.R. § 130.10(d)(8)-(10) by January 20, 1993, and, if necessary, implement the listing requirements in a state by January 20, 1994. See 57 Fed. Reg. at 33042.

Arizona's revised (C) List, identifying twelve additional point sources, was submitted to EPA on February 10, 1993. EPA has proposed approving the list as submitted. 58 Fed. Reg. 28570 (May 14, 1993).

In the rule, EPA also amends 40 C.F.R. § 123.46(a) to clarify that individual control strategies must be

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submitted to EPA for each point source identified on the (C) List which discharges toxic pollutants to waters identified on the (B) List. In other words EPA's interpretive rule does not require any additional ICSs to be developed by states. See 57 Fed. Reg. at 33043, 33049. In the future EPA may further amend this regulatory provision based upon comments received on the proposed rule regarding whether additional ICSs are necessary. See 57 Fed. Reg. at 33051.

The interpretive rule also modifies regulations under Section 303(d) of the Clean Water Act. (33 U.S.C. § 1313(d)). Section 303(d) requires the states to identify all waters for which effluent limitations are not stringent enough to meet water quality standards, regardless of whether the impairment is due to toxic pollutants or other contaminants. Once the waters are identified, EPA must establish Total Maximum Daily Loads (TMDLs) based upon a priority ranking. According to EPA regulations, the listed waters and TMDLs must be submitted to EPA for approval "from time to time." According to EPA, because Section 303(d) establishes a continuous process (whereas § 304(l) is a one-time requirement) the § 303(d) program offers a means by which problems identified by Section 304(l) can be addressed. See 57 Fed. Reg. at 33040, 33041.

EPA's interpretive rule requires states to submit under Section 303(d) their lists of impaired waters, pollutants causing impairment, and priority ranking, including waters targeted for TMDL development, every two years rather than from "time to time" as currently required. See 57 Fed. Reg. at 33043, 33050. The first such submission was due Oct. 22, 1992 and biennially thereafter on April 1 of every even-numbered year. See 57 Fed. Reg. at 33050. Arizona submitted its Section 303(d) list to EPA in November, 1992. See State of Arizona Water Quality Assessment Report for 1992 Clean Water Act Section 305(b) Report, Appendix D (October 6, 1992).

EPA's proposed rule, published the same day as the interpretive rule, would make clear that an ICS is required for each source on the (C) List that discharges to a water on the (B) List. EPA requests public comment on the following two options, the first of which is preferred: (1) that no new ICSs be developed for the facilities added to the (C) List as a result of EPA's interpretive rule; (2) that each state be given discretion to determine on a case by case basis whether ICSs should be established for newly-listed facilities on the (C) List. A third option, requiring ICSs for all newly listed point sources, will probably not be finalized without seeking further public comment,

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according to EPA. See 57 Fed. Reg. at 33051. EPA prefers the first option because it feels that the § 304(l) listing process undertaken by the states was credible, that the process has identified the great majority of waters and sources in need of ICSs, that water quality-based permits issued in the normal five-year permitting cycle will be at least as protective of water quality as ICSs, that the § 304(l) process is highly resource intensive and, if continued, would result in delay in issuing some permits needed to address non-toxic water quality problems. See 57 Fed. Reg. at 33055.

As part of the second option, EPA proposes to amend the definition of "Individual Control Strategy" to clarify that ICSs can be draft permits where the final permit will be issued within one year after the state submits the draft permit to EPA. 57 Fed. Reg. at 33057, 33059.

IV. ARIZONA SURFACE WATER QUALITY PROGRAM

A. Overview

Although authorized by the Arizona Environmental Quality Act, A.R.S. §§ 49-221 to 225, the Arizona surface water quality standards program has its basis in the federal CWA. The CWA requires states to establish ambient water quality standards for intrastate waters. Id. § 1313(a)(3). As discussed earlier in this paper, the jurisdictional reach of the CWA, which is limited by the Commerce Clause of the United States Constitution, extends to all "navigable waters." Navigable waters are defined to be "the waters of the United States, including the territorial seas." Id. § 1362(7). The EPA has broadly defined "waters of the United States" to include such areas as wetlands, prairie potholes, playa lakes, and all waters "the use, degradation, or destruction of which would affect or could affect interstate or foreign commerce." 40 C.F.R. § 122.2.

States are required to set water quality standards for "navigable waters" within their boundaries. While a program that did not cover at least these waters would not be federally approved, states are free to implement water quality programs that are more stringent or expansive than federal requirements. See 33 U.S.C. § 1370; 40 C.F.R. § 122.1(f). As discussed below, Arizona law requires that surface water quality standards be set for navigable waters as defined by the Clean Water Act and allows the Arizona Department of Environmental Quality (ADEQ) discretion to set standards for other waters of the State.

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B. Clean Water Act Surface Water Quality Standards Program

1. Overview and importance

The surface water quality standards program is aimed at restoring and maintaining ambient water quality in a state. This is done through standards developed by individual states and approved by EPA. The standards consist of two components: a designated use for a given water body and a numeric pollutant concentration or narrative standard that has been determined to be adequate to protect that designated use. See 33 U.S.C. § 1313(c)(2)(A).

States identify waters within their boundaries to which standards will apply (e.g., named lakes, specifically delineated segments of rivers) and designate one or more uses for those waters (e.g. domestic water supply, cold water fishery, agricultural irrigation). States then adopt numeric and narrative standards to protect the designated uses. See 40 C.F.R. § 131.10. Different numeric standards may be set for given pollutants depending upon the use to be protected. Thus, a more stringent standard may be set for protecting a domestic water source than for a water to be used only for agricultural irrigation.

Narrative standards apply to all waters regardless of designated uses, and address situations where numeric standards have not been set or are otherwise inadequate. Where a state adopts narrative criteria for toxic pollutants, the state must provide information about how it intends to determine compliance with the standard. 40 C.F.R. § 131.11(a)(2). A common narrative standard prohibits the presence in waters of pollutants in amounts or combinations sufficient to be toxic to humans, animals, plants or other organisms. See, e.g., A.A.C. R18-11-108(A)(5).

While the water quality standards program is only one of several separate programs under the Clean Water Act, it constitutes the basic level of water quality protection for other programs. For example, the limits in existing and future NPDES permits that control point source discharges of effluent to waters of the United States must be sufficient to meet the applicable state water quality standards. 33 U.S.C. § 1311(m)(2). Water quality based discharge limitations are established in NPDES permits if the technology-based limits alone will not ensure compliance with applicable water quality standards. Section 304(l) of the CWA provides for imposition of stricter limits on sources (through "individual control strategies") that have been

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identified as causing particular waterbodies not to meet surface water quality standards. 33 U.S.C. § 1314(l).

Surface water quality standards also:

(1) constitute the basic level of compliance that permits for industrial discharges must meet under the recently-adopted NPDES permit regulations for discharges of storm water, see 33 U.S.C. § 1342(p)(3);

(2) will be taken into account as state and federal governments develop nonpoint source pollution prevention programs, see 33 U.S.C. § 1329(a);

(3) will be considered in determining the level of cleanup required in any remediation involving surface water, whether undertaken under the auspices of a federal or a state remediation program; and

(4) For waters identified under 33 U.S.C. § 1313(d) of the CWA where technology-based effluent limitations will not be sufficient to achieve surface water quality standards, states must establish total maximum daily loads ("TMDLs") for all pollutants of concern at a level sufficient to maintain the applicable water quality standard. 33 U.S.C. § 1313(d)(1)(C). To date, a TMDL has been developed for only one water in Arizona. However, ADEQ has targeted several waters for TMDL development in the next two years, and has identified dozens more for which TMDLs will be developed in the future.

2. Federal statutory requirements

Within six months of the adoption of amendments to the CWA in 1972, states were required to adopt ambient water quality standards for intrastate waters. 33 U.S.C. § 1313(a)(3)(A). Such standards must be approved by EPA as being consistent with the CWA. If EPA does not approve the standards, it must notify the state of changes required to secure EPA approval. If those changes are not made, EPA has the authority to promulgate standards applicable to the state. Id.

States must review water quality standards at least once every three years ("triennial review"). Id. § 1313(c). Any revised or new standard must be approved by EPA. Id. Such standards must be established after considering a water's use and value for public water supplies, propagation of fish and wildlife, recreational purposes, and agricultural, industrial, and other purposes, including navigation. Id.

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The 1987 amendments to the CWA imposed a substantial new requirement. In the first triennial review subsequent to the adoption of the 1987 amendments, every state is required to adopt numeric standards for all "toxic pollutants" identified by EPA: (1) for which the Agency has published criteria documents (documents outlining the scientific basis for setting a numerical water quality standard for a particular substance, and generally suggesting ranges of appropriate numerical criteria to protect various uses); and (2) where "the discharge or presence of . . . [the toxic pollutant] in the affected waters could reasonably be expected to interfere with those designated uses adopted by the State, as necessary to support such designated uses." Id. § 1313(c)(2)(B). If criteria documents are not available, states must adopt standards based on biological monitoring or assessment methods. Id. "Toxic pollutants" are those pollutants that EPA believes cause death, disease, genetic mutations, behavioral abnormalities, or physiological malfunctions in any organism. 33 U.S.C. § 1362(13).

EPA has currently identified 126 toxic pollutants. 40 C.F.R. § 423, Appendix A. The agency has published criteria documents for most of these pollutants, at least with respect to certain uses (i.e., EPA has published criteria documents for human health protection for most of the 126 toxic pollutants, but has published criteria documents for protection of aquatic organisms and wildlife for a significantly smaller number of pollutants).

C. Arizona Surface Water Quality Standards Program

1. State statutory requirements

The Arizona Environmental Quality Act (EQA) provides that ADEQ must establish surface water quality standards for all navigable waters (as that term is defined in the CWA), and may establish water quality standards for all other "waters of the state." A.R.S. §§ 49-221(A) and (B). "Waters of the state" is a very broad term that includes all "bodies or accumulations of surface, underground, natural, artificial, public or private water situated wholly or partly in or bordering on the state." A.R.S. § 49-201(31).

In general, numeric standards may be adopted "if adequate information exists to do so." A.R.S. § 49-221(D). Numeric standards are expressed as a maximum allowable concentration of a pollutant in water. ADEQ must also adopt numeric standards for all toxic pollutants identified under the CWA. A.R.S. § 49-

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222(B). Thus, ADEQ arguably must adopt numeric standards for all 126 priority pollutants pursuant to state law (regardless of whether "adequate information exists to do so"). The CWA, in contrast, merely requires adoption of numeric standards for toxic pollutants for which EPA has published criteria documents and that can reasonably be expected to interfere with the uses designated for the State's waters. 33 U.S.C. § 1313(c)(2)(B). For toxic pollutants that have not been addressed by criteria documents, the CWA requires the state to adopt standards based on biological monitoring or assessment measures. Id.

ADEQ is also authorized to adopt any narrative standard that it "may deem appropriate." A.R.S. § 49-221(D). A narrative standard describes a goal or an effect, such as that navigable water be free from pollutants that cause an objectionable odor.

In setting standards, ADEQ must consider such factors as any unique physical, biological, or chemical properties of particular waters, and may consider other factors, such as the intermittent or ephemeral natural flow of certain waters or the varying sensitivities of local aquatic populations to toxic pollutants. A.R.S. §§ 49-221(C), 49-222 (C). ADEQ may not establish standards that are inconsistent with CWA.

2. 1992 Arizona Triennial Review

In 1992, Arizona completed its first triennial review of water quality standards since 1986. ADEQ began the triennial review process with the issuance of draft revised water quality standards in 1989, and issued several revised drafts over the following two years.

Because of intense interest among segments of the regulated community, ADEQ sponsored over a dozen public roundtable meetings to discuss various aspects of the proposed surface water quality standards. These meetings were attended by both the regulated community and environmentalists. ADEQ received extensive written and oral comments on various aspects of its draft regulations.

ADEQ formally proposed its revised surface water quality standards to the Governor's Regulatory Review Counsel ("GRRC") in March, 1991. The GRRC considers rules prior to their formal proposal and determines whether the probable benefits of the rule outweigh the probable costs of the rule. A.R.S. § 41-1052(C). A finding by the GRRC that benefits outweigh costs is a

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prerequisite to beginning the formal rule-making process. In order to assist the GRRC in making its decision, agencies must submit an economic impact statement detailing the probable costs and benefits of the proposed rule. When ADEQ submitted the revised surface water quality standards and accompanying economic impact statement to the GRRC, the GRRC refused to certify the rule because the economic impact statement was inadequate. ADEQ revised the economic impact statement and secured GRRC approval of the proposed surface water quality standards on May 7, 1991. ADEQ then initiated the formal rule-making processing, which culminated in certification of final rules by the Attorney General on February 18, 1992.

ADEQ then transmitted the final standards to EPA for approval. In March 1992, EPA approved the State's adoption of numeric criteria for toxic pollutants. Pursuant to its own regulations, EPA must approve a State's submission within 60 days or disapprove the submission (with accompanying explanation) within 90 days. See 40 C.F.R. § 131.21(a). Although these deadlines have long since passes, EPA has not yet approved the remaining portions of Arizona's new standards. As discussed further below, however, EPA has outlined the actions it is likely to take.

A citizen suit has been filed against EPA because it failed to completely approve or disapprove Arizona's standards within 90 days of their submission, as required by the Clean Water Act. See Defenders of Wildlife v. Browner, No. CIV 93-234TUC (D. Ariz., filed April 20, 1993). This suit seeks to compel EPA to immediately take final action approving or disapproving all portions of Arizona's standards. It is possible that a second lawsuit could be filed if plaintiffs are not satisfied with EPA's ultimate decision.

3. Key Aspects and Issues of Arizona's New Standards

a. Applicability

While ADEQ has discretion to develop standards for all "waters of the state" whether navigable or not (see A.R.S. § 49-221(B)), the new standards apply only to all "navigable waters". A.A.C. R18-11-102. The former standards applied more broadly to "waters of the state". See former A.A.C. R18-11-201(A)(14); 204; 205.

b. Effluent dominated waters

Arizona's former standards recognized a special class of waters consisting primarily of treated

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wastewater effluent (e. g., portions of the Salt River), and applied slightly relaxed standards to those waters for some pollutants. See former A.A.C. R18-11-304. The new standards create an independent designated use for this class of waters, "aquatic and wildlife (effluent dominated water)," and apply a completely separate (and generally less stringent) set of numeric standards to waters so designated.

Dischargers to effluent dominated waters (primarily municipal wastewater treatment plants) were concerned about proposals to add numeric chlorine and ammonia standards and increase the dissolved oxygen standard above its former 1.0 mg/l level. Standards for those substances are not required by the CWA or the EQA. With respect to effluent dominated waters, the new standards add a numeric chlorine standard, retain the current dissolved oxygen standard, and do not contain a numeric ammonia standard. A.A.C. R18-11-109.F and Appendix A.

c. Additional Use Designations

The new standards retain the seven designated uses for water listed in the previous standards, including domestic water sources; fully body contact (swimming); partial body contact (referred to as incidental human contact in the previous regulations); aquatic and wildlife (warm water fishery); aquatic and wildlife (cold water fishery); agricultural irrigation; and agricultural livestock watering. The new standards add three more uses, two of which reflect the unique environment of the arid Southwest: "fish consumption," "aquatic and wildlife (ephemeral)," and "aquatic and wildlife (effluent dominated water)." A.A.C. R18-11-104(B).

The fish consumption category is designed to protect humans from pollutants that may bioaccumulate in the tissue of fish or other aquatic organisms consumed by humans. The aquatic and wildlife (ephemeral) category is intended to recognize the large number of ephemeral streams (dry washes for much of the year) in Arizona that cannot support the type of aquatic ecosystem that the aquatic and wildlife warm and cold water fishery standards are designed to protect. Some environmentalists opposed adoption of this new designated use for ephemeral waters, based in part on the difficulty of establishing appropriate standards. Little is known about the aquatic ecosystems in such washes. ADEQ has designated very few streams in the state as ephemeral. See A.A.C. R18-11-104 and Appendix B.

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d. Exclusions

The former regulations contained several exclusions. For example, standards did not apply to wholly private waters or certain agricultural irrigation return systems. See former A.A.C. R18-11-211.

The new standards contain only two exclusions: certain waste treatment systems (also specifically exempted from the definition of navigable waters under the CWA), and certain process impoundments associated with the extraction, beneficiation, and processing of metallic ores. This latter exclusion applies only if any discharge from an excluded impoundment is regulated under the NPDES program. A.A.C. R18-11-103.

ADEQ considered and rejected additional exclusions for such impoundments as storm water detention basins and certain water reuse facilities. It intends to determine whether these types of facilities are regulated or not on a case by case basis.

e. Narrative standards

The water quality standards contain narrative standards prohibiting concentrations of pollutants that form sludge or bottom deposits, cause odorous conditions, produce off-taste or odor in the water or detectable off-flavor in fish or waterfowl, change the existing color of a water, result in undesirable aquatic life or the dominance of nuisance species, are present in an amount toxic to human, animal, plant or aquatic life, or cause a violation of an aquifer water quality standard. See A.A.C. R18-11-108(A). The regulations also require that navigable waters be kept free of oil, grease and other pollutants that cause film, scum or deposits on a shoreline or a bank. Id. at 108(B). These standards directly reflect the "zero discharge" and "fishable, swimmable" goals of CWA. These narrative standards are substantially similar to the former standards, although the standard prohibiting contribution to a violation of an aquifer water quality standard is new.

ADEQ has decided to postpone until the next triennial review adoption of standards that protect biological or physical integrity. ADEQ has given as its reason for this decision its inability at present to draft an enforceable standard for biological or physical integrity. Most environmental groups recommend the adoption of such standards.

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f. Biomonitoring

Numerous technical issues were debated concerning the appropriate test species and the precise parameters of a biomonitoring program, given the relatively recent nature and possible unreliability of biomonitoring tests. At one time, ADEQ proposed spelling out in great detail test methods and test species, as well as other technical issues such as frequency of testing and minimum confidence levels. ADEQ deleted these provisions from the final rule because it felt it lacked the legal authority to prescribe test methods for determining compliance with water quality standards in NPDES permits, given that EPA (and not the State) currently issues NPDES permits in Arizona. ADEQ also believed that prescribing test methods might conflict with the power of the Arizona Department of Health Services to license environmental laboratories (pursuant to A.R.S. § 36-495.01). See Arizona Department of Environmental Quality, Water Quality Standards for Navigable Waters Explanatory Statement, 157 (Jan. 10, 1992) (hereinafter ADEQ Explanatory Statement).

Enforcement of the narrative standard prohibiting toxic concentrations of pollutants will be achieved through biomonitoring. Effluent samples will be tested to determine their toxicity to test species. ADEQ is working on an implementation policy for biomonitoring. This policy will be a guidance documents (rather than a formal rule), and will outline how ADEQ plans to enforce the "no toxics in toxic amounts" narrative standard. ADEQ hopes to complete a draft of this policy by the end of 1993.

g. Numeric standards

In promulgating the new standards, ADEQ concluded that it lacks sufficient scientific information to set numeric criteria for a small number of the 126 toxic pollutants, and has not promulgated numeric standards for every use for some toxic pollutants. ADEQ has justified this decision based on the statutory provision requiring it to set numeric standards "if adequate information exists to do so." A.R.S. § 49-221(D). Some environmentalists, pointing to the separate statutory provision requiring numeric standards for all 126 priority pollutants, A.R.S. § 49-222(B), argued that some numeric standard must be set for every use for all 126 toxic pollutants, and that if inadequate information exists to derive a numeric standard, the standard should be set at zero.

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h. Anti-backsliding

The regulated community vigorously challenged ADEQ regarding the scientific basis for its development of numeric standards. This concern stemmed in large part from the anti-backsliding provisions of the CWA, which provide that an NPDES permit may not be renewed, reissued, or modified to incorporate less stringent effluent limitations than were contained in the previous permit. 33 U.S.C. § 1342(o). Thus, even if ADEQ were to conclude subsequently that some of the numeric standards set forth in its new regulations were unnecessarily strict, NPDES permits incorporating those standards arguably cannot be modified. This may be a significant concern because the new standards set numeric limitations for many toxic pollutants for the first time. ADEQ's proposed rules contained a provision stating that limitations in an NPDES permit could be relaxed if the State revised a water quality standard to be less stringent. ADEQ deleted this provision from the final rule because it felt it lacked the authority to prescribe discharge monitoring requirements in NPDES permits (because such permits are issued by EPA) and because it believed the proposed rule was redundant, given the statutory language of 33 U.S.C. § 1342(o) and EPA's interpretations of that language. See ADEQ Explanatory Statement at 159.

i. Antidegradation

ADEQ has interpreted federal antidegradation requirements (40 C.F.R. § 131.12) as prohibiting any degradation of the quality of navigable waters. If strictly enforced, this policy will prohibit any addition of a pollutant to a navigable water, even if the addition would not result in a violation of a numeric or narrative standard. A.A.C. R18-11-107.

Limited degradation is allowed in navigable waters where existing water quality is better than the applicable water quality standards. ADEQ must make certain findings before degradation is allowed, including that the quality of water for existing uses is protected and that lowering the water quality is "necessary to accommodate important economic or social development" in the local area. A.A.C. R18-11-107(C). In any case, certain "unique" waters, designated as such by ADEQ, are protected from degradation. Id. § 107(B).

Antidegradation analysis is conducted on a pollutant-by-pollutant basis. Id. § 107(A).

ADEQ is working on an antidegradation implementation policy explaining how it intends to

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enforce its antidegradation regulation. This implementation policy will be in the form of a guidance document, not a formal rule. ADEQ hopes to have a draft policy complete by the end of 1993.

j. Unique waters

Certain navigable waters of the state may be classified as unique waters if they are of exceptional recreational or ecological significance or if threatened or endangered species are known to be associated with the navigable waters. ADEQ may develop site-specific standards applicable to waters designated as unique. A.A.C. R18-11-112. In addition, unique waters are protected from any degradation, even if their water quality exceeds applicable standards. A.A.C. R18-11-107(D).

k. Riparian protection

Citing two recent gubernatorial Executive Orders designed to protect and increase riparian habitat in the state, some environmentalists argued that riparian areas should be afforded special protection, perhaps even by a new use designation. ADEQ concluded that riparian areas are fully protected by the standards as proposed, without adding a new use designation.

Many of the best riparian areas in Arizona exist along the banks of rivers that generally would be dry were it not for the discharge of treated wastewater. Citing what they viewed as unacceptably high costs of earlier versions of the draft revised standards, some municipalities threatened to cease the discharge of treated wastewater to navigable waters, thus threatening these habitats. As a result of this problem in Arizona and other southwestern states, EPA Region IX has developed a interim policy aimed at effluent dominated waters located in intermittent or ephemeral streams. EPA's policy recognizes that somewhat relaxed standards may be appropriate in such waters if the continued presence of the effluent provides a net environmental benefit when compared to the natural condition of the receiving stream (which in many cases will be a dry wash). See Guidance For Modifying Water Quality Standards and protecting Effluent Dependent Ecosystems (EPA Region 9 Interim Final Guidance, June, 1992), pp. 9-14.

l. Canals and municipal park lakes

Certain urban canals in Phoenix and Yuma are listed as navigable waters, subject to water quality standards. The designated uses of those canals include

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domestic water use, agricultural irrigation and agricultural livestock watering. See A.A.C. R18-11-109(A) and App. B. The new rules added only one additional canal (the Arlington Canal) to the list of navigable waters. ADEQ did not list additional canals because of the legal uncertainty over the status of canals. ADEQ stated that canals are clearly "waters of the state" to which water quality standards may be applied, and arguably are "navigable waters" with a sufficient nexus to interstate commerce to fall within the definition of "waters of the United States." ADEQ stated that it "will defer future action on the canal issue to a future triennial review." See ADEQ Explanatory Statement at 168, 171-172.

ADEQ also contemplated designating additional uses for the canals, such as aquatic and wildlife (either warm water fishery or cold water fishery) and some human contact uses (generally incidental human contact). ADEQ decided not to list additional designated uses for most of these canals, although some are assigned the designated use of domestic water source to protect public water supplies. Water is diverted out of these canals into municipal water treatment plants. See A.A.C. R18-11-104 and App. B.

The new standards list as regulated waters many municipal park lakes, most of which are assigned designated uses of aquatic and wildlife protection (generally warm water fisheries), human health protection (generally partial body contact), fish consumption (where appropriate), and in some cases agricultural irrigation. Id. The new standards allow routine physical or mechanical maintenance of canals and municipal park lakes. A.A.C. R18-11-117.

m. Mixing zones

The regulations allow ADEQ, upon application of an owner or operator of a point source, to establish a mixing zone in a navigable water for purposes of determining compliance of discharges with surface water quality standards. A.A.C. R18-11-114. A mixing zone is an area or volume of a navigable water where dilution of a discharge occurs. A.A.C. R18-11-101(30). Mixing zones are prohibited in ephemeral waters or where there is no water for dilution. Id. § 114(A). The mixing zone is established by administrative order, after public notice and hearing pursuant to state administrative procedures. Id. § 114(D). ADEQ denials of applications must be in writing and state the reasons for the denial. Any person adversely affected by an ADEQ order regarding a mixing zone may appeal the

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decision to an administrative law judge. Id. § 114(F) and (G).

Among the requirements applicable to a mixing zone are the following: (1) the length of the zone shall not exceed 500 meters in flowing streams; (2) a zone of passage must be provided of not less than 50 percent of the cross-sectional area of the river or stream; (3) the outfall must be designed to maximize initial dilution of the treated wastewater in the navigable water; (4) no mixing zone will be allowed if water quality standards outside the boundaries of the zone will be violated or if concentrations of pollutants within the proposed zone will be acutely toxic to aquatic life. Id. §§ 114(F), (I) through (K).

n. Site-Specific Standards

ADEQ's proposed standards contained a provision allowing it to replace the statewide standards contained in Appendix A of the rules with site-specific standards (more or less stringent than the statewide standards) tailored to a particular stream segment. See proposed A.A.C. R18-11-196 (April 17, 1991 proposed Rules). The proposed rule required development of a work plan to be approved by ADEQ and EPA, followed by a petition for rule making to adopt site-specific standards. Id. The Attorney General suggested that ADEQ might not have the authority to condition petitions for rule adoption in this manner. ADEQ withdrew the site-specific standards rule and stated that it will address the issue in the next triennial review. See Arizona Department of Environmental Quality, Addendum to Concise Explanatory Statement, p. 2 (1992). However, ADEQ representatives have indicated that the Department still believes it has the inherent authority to adopt site-specific standards for particular bodies of water through rule making.

The regulations authorized ADEQ to develop site-specific standards for effluent dominated waters. A.A.C. R18-11-113(B).

o. Natural background

The regulations provide that where a concentration of a pollutant exceeds water quality standards due solely to naturally occurring conditions and not human activity, the exceedance will not be considered a water quality standards violation. A.A.C. R18-11-119.

p. Compliance/enforcement

Pursuant to a 1990 decision of the EPA Administrator, schedules of compliance cannot be

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incorporated into NPDES permits unless underlying state law allows it. See In the Matter of Starkist Caribe, Inc., NPDES Appeal No. 88-5, 1990 NPDES LEXIS 4 (April 16, 1990). This decision was affirmed by the Environmental Appeals Board. See In the Matter of Star-Kist Caribe Inc., NPDES Appeal No. 88-5, 1992 WG 141237 (May 26, 1992). The new standards allow for the issuance of compliance schedules as a part of NPDES permits. A.A.C. R18-11-121. To be granted a schedule of compliance, the owner or operator of the point source must demonstrate that all applicable permit requirements of the Clean Water Act have been complied with and that the point source cannot comply with a discharge limitation based upon the water quality standard through the application of existing water pollution control technology, operational changes or source reduction. Id. § 121(A). Schedules of compliance for existing point sources must require compliance with discharge limitations based on water quality standards within three years after the effective date of the water quality standard (or ten years after that date, in the case of point source discharges of storm water). Schedules of compliance are not authorized for new point sources. Id. § 121(B).

The enforcement provisions of A.R.S. Title 49, Chapter 2, Article 4 apply to violations of surface water quality standards. See A.A.C. R18-11-120. Upon a violation of any provision of the water quality standards regulations, the Attorney General, upon request by ADEQ, is authorized to seek a civil penalty of up to $25,000 per day per violation, and/or injunctive relief. A.R.S. § 49-262. Violation of a water quality standard also may lead to criminal penalties, including felony penalties for acts performed knowingly or with criminal negligence. A.R.S. § 49-263. Citizen suits may be filed against a discharger and the state for violations of surface water quality standards. A.R.S. § 49-264.

D. Status of EPA Review of Arizona's New Standards

As noted above, the CWA requires EPA to review and approve each state's surface water quality standards, and to promulgate standards for the state if it does not correct deficiencies noted by EPA in its standards. EPA approved Arizona's numeric standards for toxic pollutants in March, 1992. EPA has not yet approved or disapproved any of the remainder of Arizona's new standards. EPA is currently conferring with the Fish and Wildlife Service to discuss whether Arizona's new standards will adequately protect threatened and endangered species. EPA does not plan to act upon the

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remainder of Arizona's standards until this consultation is complete.

EPA has provided ADEQ with a list of EPA's likely actions on the remainder of Arizona's standards. EPA has indicated that it will approve the majority of Arizona's standards, with the exceptions noted below.

EPA has indicated that it will disapprove: (1) the exclusion from water quality standards for mining impoundments (found at A.A.C. R18-11-103(2)); (2) the lack of fish consumption as a designated use in many waters (Arizona will be required to submit additional information demonstrating why it is appropriate not to assign this use to some waters); (3) the lack of implementation procedures for the narrative nutrient standard; (4) the lack of a biomonitoring implementation procedure to implement the narrative toxicity standard ("no toxics in toxic amounts"); and (5) the inclusion in the rules of practical quantitation limits ("PQLs"), found in Appendix C of the rules, which EPA believes should be included in guidance documents but not formal rules because of the frequency of change for PQLs. The PQL is the lowest level of quantitative measurement for various substances that can be reliably achieved during laboratory operations.

EPA also has indicated that it will conditionally approve other portions of Arizona's new standards, contingent upon ADEQ submitting additional information or providing certain assurances. Conditionally approved provisions are: (1) the nutrient waiver provision, found at A.A.C. R18-11-115, provided that ADEQ clarifies how this provision will be implemented; (2) the lack of the full body contact use designation for low flow waters (i.e., ephemeral waters), provided that ADEQ submits to EPA information demonstrating how it identified such waters; (3) the deletion from the water quality standards for limits on pathogens and viruses in effluent dominated waters, provided that ADEQ submits assurances that viral monitoring will be conducted as required in applicable NPDES permits; (4) the lack of comprehensive use designations for canals, provided that ADEQ assures EPA that it will revisit this issue (i.e., whether canals are navigable waters, and what use designations should be applied to them if they are) in the next triennial review; and (5) retention of the fecal coliform indicator to protect human health, provided that ADEQ assures EPA that it will adopt a different indicator in the next triennial review.

EPA already is gathering information and beginning to develop issue papers for the next triennial review. Some of the key issues likely to arise during that

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review are: (1) the proper methods to implement narrative standards; (2) appropriate criteria for turbidity and total suspended solids; (3) regulation of canals; (4) appropriate use designations for the state's waters; and (5) biological, physical and ecological integrity standards.

V. NONPOINT SOURCE POLLUTION CONTROL

A. Background

Nonpoint source pollution is that which is discharged by means other than a point source (i.e., "discernible, confined and discrete conveyance . . ."). The Clean Water Act does not define "nonpoint source." However, the term is defined by Arizona law as "any conveyance which is not a point source from which pollutants are or may be discharged to navigable waters." A.R.S. § 49-201(19).

Nonpoint source (NPS) pollution typically is defuse, unchannelled storm water runoff from fields, forest land and construction activity. The initial mechanism for regulating NPS runoff, enacted as part of the 1972 Federal Water Pollution Control Act, was the Section 208 area wide waste treatment planning and management program. See 33 U.S.C. § 1288. Through this program, regional, state and local agencies identified nonpoint sources of pollution and developed methods of control known as "best management practices" (BMPs). EPA provided financial and technical assistance. Although significant time and money was spend in developing these plans, they were relatively ineffective. After several years, Congress stopped funding the Section 208 planning process. See Arbuckle, J. Gordon, et al, Environmental Law Handbook 257 (9th Ed. 1987).

B. 1987 Clean Water Act Amendments

In 1987 Congress amended the Clean Water Act to foster increased control of NPS pollution. Section 101(a)(7) was added to the Act's declaration of goals and policies:

> "[I]t is the national policy that programs for the control of nonpoint sources of pollution be developed and implemented in an expeditious manner so as to enable the goals of this chapter to be met through the control of both point and nonpoint sources pollution."

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33 U.S.C. § 1251(a)(7). Also, Section 319 was enacted, which created a new program for controlling NPS pollution. 33 U.S.C. § 1329.

Section 319(a) required each state to prepare and submit to EPA for approval an assessment report that: (1) identifies those navigable waters within the state that cannot reasonably be expected to attain or maintain applicable water quality standards or the goals and requirements of the CWA without additional control of NPS pollution; (2) identifies categories and subcategories of nonpoint sources that contribute to the navigable waters not meeting surface water quality standards; (3) explains the state process for developing best management practices to control these nonpoint sources; and (4) describes state and local programs for controlling NPS pollution. 33 U.S.C. § 1329(a).

Section 319(b) required states to prepare and submit to EPA for approval a management program for controlling NPS pollution to navigable waters. The program must, among other things, identify BMPs to reduce pollutant loadings to navigable waters from the designated NPS categories. To the maximum extent practicable, the management program is to be developed and implemented on a watershed-by-watershed basis within the state. 33 U.S.C. § 1329(b)(4). This section also provides for the development of assessment reports and management plans by states that fail to do so, and authorizes EPA to provide financial assistance to states with approved management programs. See 33 U.S.C. § 1329(d),(e),(h),(i).

Section 319(m) requires EPA to submit a final report to Congress on its actions to implement this section of the Act. 33 U.S.C. § 1329(m). EPA complied with this provision by issuing its report to Congress, entitled "Managing Nonpoint Source Pollution," EPA-506/990 (January 1992). The report, among other things, indicates that as of September 13, 1990, Arizona had been awarded $555,000 in grants under Section 319 to assist in developing its nonpoint source control program. See id. at 11. The report also summarizes Arizona's nonpoint source management program. Id. at 116-117.

C. Arizona's Nonpoint Source Program

1. Implementation of Clean Water Act Requirements

In response to Section 319(a), ADEQ prepared and submitted to EPA the "Arizona Nonpoint Source Assessment Report" (1990). This assessment of navigable waters was

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based primarily on monitoring data from 1982 through 1987 and covered 5,921 miles of stream reaches spanning nine major surface water basins within the state. The report found that over 90% of the streams assessed were not fully supporting designated protected uses in the state surface water quality standards and that NPS pollution is the leading cause of water quality degradation in the state. Id. at 1. According to the report, the principal nonpoint sources, in descending order were unknown sources, rangeland (agricultural grazing), hydrologic/habitat modification, resource extraction, recreation, and a miscellaneous category. Id. at 1, 15-26. The first two categories were by far the most significant, affecting 3,674.7 and 3,539.6 miles of streams reach segments respectively. By comparison, the next highest category was hydrologic/habitat modification, which affected 859.7 stream miles. See "Arizona Nonpoint Source Water Quality Management Program," p. IV-1.

The principal water quality parameters showing elevated levels or exceeding water quality standards were, in decreasing order of magnitude, sediment/turbidity, metals, nutrients (nitrogen, potassium), salinity/total dissolved solids, and bacteria. See "Arizona Nonpoint Source Assessment Report," p. 1.

In response to Section 319(b), ADEQ submitted to EPA "Arizona Nonpoint Source Water Quality Management Program" (1989) (the "Management Plan"). EPA approved the program on January 3, 1990. The Management Plan indicates that the program in Arizona is being developed on a category by category basis, rather than a watershed by watershed basis. Id. at I-1. The principal categories of NPS pollution addressed by the management program are: agriculture, silviculture, construction, urban runoff, resource extraction, land disposal, hydrologic/habitat modification, other (a miscellaneous category), unknown sources and recreation. Id. at I-1 to I-8.

Having submitted both the NPS assessment report and the Management Plan, Arizona became eligible to receive funding for federal grants. See 33 U.S.C. § 1329(h). Arizona has used this funding to implement demonstration projects and currently has eleven field projects throughout the state.

2. The management program

Arizona's program for the control of nonpoint sources is not based on the authority in one discrete section of the state code. Rather the program draws on

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several different sections and regulatory programs. The Arizona Environmental Quality Act of 1986 (the "EQA") established the express authority for Arizona to develop a NPS pollution control program. The ADEQ, created by the Act, is designated as the lead agency in the state for all Clean Water Act purposes and thus coordinates with various other agencies to administer the NPS program. A.R.S. § 49-202(A).

The ADEQ director is required to "adopt, by rule, a program to control nonpoint source discharges of any pollutant or combination of pollutants into navigable waters." A.R.S. § 49-203(A)(3). While ADEQ is developing specific rules to implement this statutory mandate, the NPS program also relies on rules developed under other regulatory programs authorized by A.R.S. Title 49. The Arizona Attorney General has stated that Section 49-203(A)(3) may authorize ADEQ's use of approvals and certifications, but not permits. The permitting of nonpoint source discharges would have to occur through some other permitting authority, such as the aquifer protection permit program. See "Certification of Legal Authority for the Arizona Nonpoint Source Water Quality Management Program," (Dec. 29, 1989), at 5, referencing Ariz. Atty. Gen. Op. I83-110.

The EQA grants the agency broad authority to adopt rules, discharge limitations, best management practices and standards, as necessary to implement the NPS program. See A.R.S. § 49-203(A)(6). Other provisions of the Act give the director authority to inspect, sample, require the maintenance of records, integrate various water quality protection programs of the state, coordinate with other government agencies and delegate authority to county and local governments, all of which can be used for the control of nonpoint source pollution. See A.R.S. 49-203(B), (C); 49-104(A)(8); 49-107.

Arizona's NPS pollution program draws upon the authority of various regulatory programs administered by ADEQ, including the aquifer protection permit program, the pesticide contamination prevention program, the drywell program and the solid waste management program.

A principal program for NPS control is the aquifer protection permit program. Any person who discharges or who owns or operates a facility that discharges must obtain an aquifer protection permit. A.R.S. § 49-241(A). The term "discharge" is defined as "the addition of a pollutant from a facility either directly to an aquifer or to the land surface or the vadose zone in such a manner that there is a reasonable probability

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that the pollutant will reach an aquifer." A.R.S. § 49-201(10). In the Management Plan, ADEQ indicates that the permitting process for NPS discharges to surface waters will be integrated into the aquifer protection permit process. Management Plan at II-15. The aquifer protection program provides for the issuance of individual permits or general permits. Individual permits are subject to a "best available demonstrated control technology" (BADCT) standard and are administered by the aquifer protection permit section at ADEQ. See A.R.S. § 49-243(B)(1). General permits are subject to BMPs and are administered by the agency's nonpoint source pollution control section. See A.R.S. §§ 49-245--248.

"Best Management Practices" are defined as:

> those methods, measures or practices to prevent or reduce discharges and include structural and nonstructural controls and operation and maintenance procedures. Best management practices may be applied before, during and after discharges to reduce or eliminate the introduction of pollutants into receiving waters. Economic, institutional and technical factors shall be considered in developing best management practices.

A.R.S. § 49-201(3). Facilities that meet the general permit conditions set up by rule are not required to obtain an individual aquifer protection permit.

Section 49-246(A) provides the process for developing BMPs, which for NPS pollution would entail: (1) identifying the water quality problem for a certain category of NPS discharge; (2) assembling a specific advisory committee to develop and recommend BMPs to the ADEQ director; and (3) making a reasonable effort to notify persons conducting the targeted activity about the BMPs contained in the general permit. See "Arizona Nonpoint Source Water Quality Management program," at II-6.

A.R.S. § 49-246(B) and (C) authorizes ADEQ to establish BMPs for facilities and activities subject to general permits, including the following: on-site facilities for urban runoff, storm sewers, urban runoff, silvicultural activities, and septic tank systems with a capacity not greater than 2,000 gallons per day. The director is required to adopt BMPs for agricultural general permits. A.R.S. §§ 49-247 and 49-248. NPS pollution related to application of pesticides is regulated under A.R.S. § 49-305.

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At present, the ADEQ has adopted rules stating the best management practices for the application of nitrogen fertilizer and the operation of feedlots. A.A.C. R18-9-201--203. Rules for other NPSs are in the early development stage.

Authority to enforce the NPS program is derived from the general enforcement authority granted ADEQ under A.R.S. § 49-142. This section gives the director authority to issue administrative cease and desist orders for environmental nuisances or practices contrary to the environmental laws or rules of the state. Cease and desist orders are enforceable through injunctive relief in court. Separate enforcement authority exists for violations relating to surface water quality standards and aquifer protection permits. See A.R.S. Title 49, Chapter 2, Article 4. Likewise, separate enforcement authority exists for remedial actions (A.R.S. § 49-287), pesticide contamination (A.R.S. §§ 49-304, 309), drywells (A.R.S. § 49-334), solid, special and hazardous waste handling (A.R.S. § 49-764, 49-768, 49-866, 49-868, 49-923 through 49-926) and underground storage tanks (A.R.S. § 49-1013).

VI. SECTION 311 LIABILITY UNDER THE FEDERAL CLEAN WATER ACT

Section 311 (33 U.S.C. § 1321) of the CWA prohibits the unauthorized discharge of oil or hazardous substances into or upon the navigable waters of the United States. 33 U.S.C. § 1321(b)(3). Any owner, operator, or person in charge of any property from which oil or a hazardous substance is discharged may be liable for penalty of up to $25,000 for each offense and for all costs of cleanup and removal. Id. § 1321(b)(7); § 1321(c)(4), (5); § 1321(f). Courts have determined that liability under Section 311 is strict. See Steuart Transportation Co. v. Allied Towing Corp., 596 F.2d 609, 613 (4th Cir. 1979); Reliance Insurance Co. v. United States, 677 F.2d 844, 848 (Ct. Cl. 1982). Courts have imposed joint and several liability. See United States v. M/V Big Sam, 681 F.2d 432, 439 (5th Cir. 1982), cert. denied, 462 U.S. 1132 (1983); United States v. Hollywood Marine, Inc., 519 F. Supp. 688, 692 (S.D. Tex. 1981); In re Berkley Curtis Bay Co., 557 F. Supp. 335, 338 (S.D.N.Y. 1983).

There are defenses to Section 311 liability if the owner or operator can show that the discharge was "caused solely by (A) an act of God, (B) an act of war, (C) negligence on the part of the United States Government, or (D) an act or omission of a third party without regard to whether such act or omission was or

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was not negligent . . . ." 33 U.S.C. § 1321(f)(1), (2), (3).

Section 311 imposes a standard of reasonable care on the owners or operators of property to prevent a third party from causing a discharge. Landlords and subsequent purchasers may be held liable under the CWA for discharges caused by a tenant, prior owner or other third party where the landlord fails to exercise the requisite reasonable care. Knowledge of the presence of oil or hazardous substances on the property or even just of the presence of tanks that may contain such substances, without further action, may be sufficient to impose liability on the owner. Chicago, Milwaukee, St. Paul and Pacific Railroad Company v. United States, 575 F.2d 839 (Ct. Cl. 1978); The City of Pawtucket v. United States, 211 Ct. Cl. 324 (1976).

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CHAPTER 11

WETLANDS AND RIPARIAN REGULATIONS IN ARIZONA

Wetland and riparian habitat regulation is one of the most controversial areas of law today. Recent initiatives on both the federal and state level to substantially revise or to develop programs for protection of these areas has engendered significant public controversy. At the federal level, the primary vehicle for regulating wetlands and other aquatic habitats is Section 404 of the Clean Water Act, which generally addresses the discharge of "dredged or fill material" into "waters of the United States," including wetlands and other aquatic habitats. At the state level, there is comparatively little regulation of aquatic habitats, although state and local agencies take an active role in the Section 404 process. Recent legislation, however, may lead to a substantial expansion of Arizona regulation of aquatic habitats through the development of a regulatory program for "riparian" areas.

This chapter will discuss both the federal wetlands program as administered in Arizona and state riparian legislation. This chapter will first provide a brief overview of the 404 program and then discuss what is generally meant by the terms "waters of the United States" and "wetlands" in the context of federal regulation. Next, this chapter will provide a detailed discussion of the Section 404 permit process, with emphasis on aspects of the program unique to Arizona, including a discussion of the participation of Arizona agencies in the permit issuance process. Finally, state riparian legislation and potential future directions of riparian regulation in the state will be discussed.

I. Overview of Section 404 of the Clean Water Act

Section 404 was enacted in 1972 as part of comprehensive amendments to the Federal Water Pollution Control Act, now commonly referred to as the Clean Water Act. Pub. L. 92-500, § 2, 86 Stat. 884 (Oct. 18, 1972). Section 404 generally regulates the discharge of dredged or fill material into "navigable waters," which are in turn defined to include "waters of the United States." 33 U.S.C. § 1344(a) (establishing a permit program for discharges of dredge and fill material); Id., § 1362(7) (definition of navigable waters). The statute provides for a permit program to be administered by the Army Corps of Engineers, which, prior to 1972, administered similar permit programs under the Rivers and Harbors Act of 1899. 33 U.S.C. § 401 et seq. Congress required

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that permits issued by the Corps comply with guidelines prepared by the Environmental Protection Agency ("EPA"), for protection of the environmental values in regulated waters. Id., § 1344(b). EPA was also given the authority to veto any permit actually issued by the Corps if EPA determined that issuance of a permit would have an "unacceptable adverse effect" on municipal water supplies, fish and wildlife resources, or recreational areas. Id., § 1344(c).

To ensure that activities conducted under Section 404 permits complied with state surface water quality standards, Congress also required permittees to obtain "certification" (generally referred to as "401 certification" because it is authorized by Section 401 of the Clean Water Act) from the state environmental agency (in Arizona, the Department of Environmental Quality or "ADEQ"). Id., § 1341. Finally, through the Fish and Wildlife Coordination Act, 16 U.S.C. § 662, and the Clean Water Act itself, the federal and state wildlife agencies, the United States Fish and Wildlife Service ("FWS") and in Arizona, the state Game and Fish Department ("AGFD") were given authority to comment on permits issued under the 404 program.

This mandatory participation of five agencies leads to a cumbersome permitting process. However, it is important to keep in mind the actual authority of each agency with regard to the permit: The Corps has sole authority to issue or deny the permit. EPA has authority to "elevate" the Corps decision to a higher level with the Corps, and to veto the decision altogether. FWS also has elevation authority, but otherwise has authority only to comment on the permit. ADEQ has a form of veto authority (through 401 certification). AGFD has only commenting authority.

Exemptions from the 404 permit requirements are limited. The main exemptions apply to certain farming, forestry, and ranching activities, as well as construction or maintenance of farm or stock ponds or irrigation ditches. 33 U.S.C. § 1344(f)(1). There is an additional exemption for construction of temporary sedimentation basins on construction sites which does not include discharge of fill into regulated waters, and the construction or maintenance of farm roads or forest roads, or temporary roads for moving mining equipment. Id.

These exemptions were apparently intended by Congress to cover relatively minor activities with limited impact on aquatic resources. To this end, Congress included the "recapture" provision which provides that even if an activity meets the terms of the

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exemption, a permit is still necessary for the discharge of dredged or fill material which is "incidental to any activity having as its purpose bringing an area of the navigable waters into a use to which it was not previously subject, where the flow or circulation of navigable waters may be impaired or the reach of such waters . . . reduced . . . ." Id. § 1344(f)(2). See also Avoyelles Sportsmen's League Inc. v. Marsh, 715 F.2d 897, 926 (5th Cir. 1983).

Before discussing the intricacies of obtaining a permit, the scope of the program will be discussed through an analysis of the terms waters of the United States and wetlands.

II. Definition of Waters of the United States

The statute regulates the discharge to "waters of the United States." The statute does not define "waters of the United States" and a substantial debate arose in the early years of the Act over what precisely was covered by the program. The Corps originally adopted a definition which followed closely the definition of navigable waters under the Rivers and Harbors Act of 1899. See 38 Fed. Reg. 12217, 12218 (May 10, 1973) (proposed 404 permit rules); 37 Fed. Reg. 18289, 18290 (Sept. 9, 1972) (definition of navigable waters). The Rivers and Harbors program was limited to truly navigable waters, i.e., water which is either used for navigation purposes, was used for navigation in the past or is susceptible to use in navigation in the future. See 33 C.F.R. Part 329 (regulatory definition of navigable waters under the Rivers and Harbors Act).

Environmental organizations challenged the Corps' rules in federal district court, which overturned the Corps definition of waters of the United States. NRDC v. Calloway, 392 F.Supp. 685 (D.D.C. 1975). The court held:

> Congress by defining the term 'navigable waters' in [the 1972 amendments to the FWPCA] to mean 'the waters of the United States, including the territorial seas,' asserted federal jurisdiction over the nation's waters to the maximum extent permissible under the Commerce Clause of the Constitution. Accordingly, as used in the [Clean] Water Act, the term is not limited to the traditional tests of navigability.

392 F.Supp. at 686. The court directed the Corps to revise its regulatory definition accordingly.

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In response to Calloway, the Corps substantially modified its definition of waters of the United States and the Section 404 program in general. "Waters of the United States" is now defined to include essentially any surface water which could affect interstate commerce. 33 C.F.R. § 230.3(e). The regulations provide a nonexclusive list of such waters:

> (1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of tide; (2) All intrastate waters including interstate wetlands; (3) All other waters such as interstate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters: (i) which are or could be used by interstate or foreign travelers for recreational or other purposes; or (ii) from which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or (iii) which are used or could be used for industrial purposes by industries in interstate commerce; (4) All impoundments of waters otherwise defined as waters of the United States under the definition; (5) Tributaries of waters identified in paragraphs (a)(1) through (4) of this section; (6) The territorial seas; (7) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a)(1) through (6) of this section. Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA . . . are not waters of the United States.

33 C.F.R. § 230.3(s).

The regulations establish the landward limit of regulated waters. Generally, for non-tidal waters of the United States (except wetlands), jurisdiction extends to the "ordinary high water mark", defined as:

> [T]hat line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank,

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shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris or other appropriate means that consider the characteristics of the surrounding areas.

Id., § 328.3(e); § 328.4(c). For wetlands, including wetlands located adjacent to rivers and streams, jurisdiction extends to areas meeting jurisdictional criteria (such as the presence of aquatic vegetation) established by agency field manuals. Id. See also discussion of Corps and EPA wetland identification manuals below.

Four categories of regulated waters are of particular concern in Arizona: artificially-created waters, dry washes, isolated waters and wetlands.

A. Artificially-Created Waters

Litigation has established the breadth of the regulatory definition of waters of the United States to include artificially-created wetlands. Leslie Salt Co. v. United States, 896 F.2d 354 (9th Cir. 1990), cert. denied, 111 S. Ct. 1089 (1991), for instance, makes clear the "waters of the United States" includes artificially-created wetlands. Leslie Salt involved pits (used for depositing calcium chloride and for crystallizing salts) that were artificially-created on property adjacent to a tidal arm of the San Francisco Bay. Industrial operations utilizing these pits ceased in 1959. Since that time, the pits had regularly filled with water during the winter rainy season. Standing water formed on the property long enough for fish to live in the ponds. In addition, plant life began to form in the crystalizers. Furthermore, construction resulted in culverts that hydrologically connected the property to the tidal arm of the Bay, and the destruction of a levee and a tidegate allowed tidal backflow to reach the property. As a result, some wetland features developed on parts of the property, migratory birds used the pits as a habitat during the seasons when they were flooded, and an endangered species used the property as a habitat.

The court held that the jurisdiction over a particular water does not depend on how the property at issue became a water of the United States, concluding that Congress intended to regulate local aquatic ecosystems regardless of their origin (i.e., even those artificially-created). The court found that an artificially-created water could still be an "other water" under 33 C.F.R. § 328.3(a)(3) because at least one other water defined in that subsection ("lake")

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included artificially-created waters and because the Corps in comments to its final regulations reserved the right to regulate certain artificial water bodies (although admitting that it would not generally consider these bodies to be waters of the United States). The court also cited other cases where artificially-created waters were found to be within the Corps' jurisdiction under the Act. See also U.S. v. Akers, 651 F.Supp. 320 (E.D. Cal. 1987) (artificially-created wetlands dependent on man-made water supply were regulated waters).

The significance of Leslie Salt and related opinions is that artificially-created bodies of water may be considered to be waters of the United States. Thus, for instance, if a water treatment plant has been discharging effluent into a dry wash for several years, and such a discharge converts the dry wash into a wetland, that wetland may be subject to regulation under the Clean Water Act Section 404 program.

B. Dry Washes and Isolated Waters

Dry washes are generally considered to be waters of the United States. The regulatory definition of regulated waters includes "intermittent streams", and case law has confirmed that waters of the United States include "normally dry arroyos through which water may flow, where such water will ultimately end up in public waters such as a river or stream. . .. U.S. v. Phelps Dodge Corp., 391 F.Supp. 1181 (D. Ariz. 1975). While arguably a dry wash that is not hydrologically connected to other surface water is not a water of the United States, regulatory agencies apply a broad interstate commerce test to such "isolated" waters, and often find that water to be regulated. See Decision of EPA General Counsel No. 73, In re Kennecott Copper Corporation (December 15, 1978) (stream used for industrial purposes by one company, with no downstream industrial users, and no hydrological connection to other surface water bodies, is not a water of the United States); EPA General Counsel Memorandum Regarding Clean Water Act Jurisdiction Over Isolated Waters (September 12, 1985) (stating that "if the evidence reasonably shows that the waters 'are used or would be used' by migratory birds or endangered species," the water is a regulated water of the United State). (This migratory bird test could virtually guarantee a finding of jurisdiction.)

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C. Wetlands

Wetlands are a "subset" of waters of the United States and are probably the most controversial category of regulated waters. The current regulatory definition of wetlands is as follows:

> Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.

40 C.F.R. § 230.3; 33 C.F.R. § 328.3. While this definition suggests that wetlands are land areas that are flooded or saturated for substantial periods of time, the agency interpretation of this phrase has gradually expanded to include many normally dry areas that experience only minimal saturation or inundation. A brief review of the history of the development of the regulatory definition of wetlands is illustrative.

The term wetlands was not defined in the originally proposed 404 regulations published in 1973, although a consideration of effects on wetlands was part of the public interest review process. (See discussion of public interest review, below.) 38 Fed. Reg. at 12220. In 1975, the Corps proposed a definition of "fresh water wetlands" which consisted of areas "periodically inundated by fresh water and normally characterized by the prevalence of vegetation that requires saturated soil conditions for growth and reproduction." 40 Fed. Reg. 31320 (July 25, 1975) (emphasis added). Recognizing that many plants which survive in wetlands do not require saturated soil conditions to survive (and are, indeed, often found in upland areas) the Corps revised this definition to its current form:

> [W]e have changed our description of the vegetation involved by focusing on vegetation 'typically adapted for life in saturated soil conditions.' The old definition of 'fresh water wetlands' provided a technical 'loophole' by describing the vegetation as that which requires saturated soil conditions for growth and reproduction, thereby excluding the forms of truly aquatic vegetation that are prevalent in an inundated or saturated area, but that do not require saturated soil

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> from a biological standpoint for their growth and reproduction.

42 Fed. Reg. 37122, 37128 (July 19, 1977). The Corps made this additional comment:

> Finally, to respond to those who expressed concern that our definition of 'wetlands' may be interpreted as extending to abnormal situations including non-aquatic areas that have aquatic vegetation, we have listed swamps, bogs, and marshes at the end of this definition to further clarify our intent to include only truly aquatic areas.

42 Fed. Reg. at 37129. By adding these wetland types to the definition, the Corps appeared to be expressing an interest in regulating areas subject to substantial and extended inundation or flooding. However, as the regulation began to be implemented in practice, the length of time of inundation or flooding needed to create a wetland was gradually reduced.

Following the adoption of the regulatory definition of wetlands, the Corps began developing field manuals on a regional basis to assist Corps personnel in identifying wetlands. See, e.g., Environmental Laboratory, Preliminary Guide to Wetlands of the West Coast States, Technical Report Y-78-4 (April, 1978); Environmental Laboratory, Preliminary Guide to the Onsite Identification and Delineation of the Wetlands of the Interior United States, Technical Report Y-78-6 (May, 1982). This effort culminated in the publication of the Corps of Engineers Wetlands Delineation Manual in January of 1987. Similar efforts to develop a field manual for identifying wetlands were also undertaken by FWS and EPA. See Cowardin, Carter, Golet, and LaRoe, Classification of Wetlands and Deep Water Habitats of the United States (December 1979) (FWS wetland manual); Sipple, Wetland Identification and Delineation Manual (April 1988) (EPA wetland delineation manual). While the three manuals were similar in approach (they all strongly emphasize the importance of vegetation in identifying wetlands), the agencies saw the need for a more consistent approach to wetland identification and instituted a process for developing an interagency manual. The Soil Conservation Service, which had experience with identifying wetland soils (which was used as a criteria in the manuals for identifying wetlands), and which was given responsibility for administering the "Swamp Buster" provisions of the Food Security Act of 1985 (which provided for loss of agricultural benefits to farmers which converted wetland

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areas into cropland) was asked to join the interagency effort.

The result of this joint effort was the Federal Manual for Identifying and Delineating Jurisdictional Wetland (January 1989). The 1989 Manual was controversial from the start, largely due to rather broad criteria for identifying wetlands. The Manual relies on three basic criteria: hydrophytic vegetation (which is vegetation adapted for life in saturated soil conditions), hydric soils (i.e., soils that are saturated, flooded, or ponded long enough during the growing season to develop an aerobic conditions in the upper portion), and wetland hydrology (referring to permanent or periodic inundation or soil saturation to the surface). Manual at pp. 5-7.

Six general criticisms were regularly raised regarding the 1989 Manual. First, the 1989 Manual allowed evidence of one parameter (i.e., hydrology, soils or vegetation) to serve as evidence of the existence of another parameter, leading to identification of wetland areas which do not conclusively exhibit all three criteria. Second, in certain instances areas which were inundated for as little as seven days could be identified as wetlands. Third, areas which were dry at the surface all year round could potentially be identified as wetlands based on the presence of water 18 inches below the surface. Fourth, wetland hydrology could be established "even without strong evidence of the presence of water. Fifth, the method for calculation of the growing season (within which time of inundation or saturation was measured) did not appear to accurately reflect conditions in the field. Finally, because the Manual effectively defined wetlands for purposes of the 404 program, but was not developed through formal rulemaking procedures, there was wide criticism regarding the lack of public input. 56 Fed. Reg. 40446, 40446-47 (Aug. 14, 1991) (proposed revisions to 1989 Manual).

To remedy these problems, the agencies proposed sweeping changes to the 1989 Manual that would require far greater objective substantiation of the existence of all three wetland criteria. Id. In addition, the agencies proposed a modification to the regulatory definition of wetland that would incorporate many of the concepts developed in the Manual revision process. 56 Fed. Reg. 65964 (Dec. 19, 1991) (proposed wetland identification and delineation rule). The new proposals came under heavy attack by environmental organizations which challenged the "stricter criteria" approach of the proposals. See, e.g., "Environmental, Economic Harm Predicted If 1991 Revisions to Wetlands Manual Adopted",

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23 Environment Reporter 2176 (Jan. 24, 1992). In addition, field tests of the Manual conducted by regional offices of Corps Engineers were heavily critical of the proposed Manual revisions. See, e.g., "Memo Shows EPA Told Regional Offices to Withhold Manual Field Testing Results", 22 Environment Reporter 1823 (Nov. 29, 1991). The result was a stalemate between the regulated community and environmental organizations, with the administration in the middle, over the wetland identification and delineation process.

On January 19, 1993, the Manual controversy effectively came to an end when EPA issued a notice acknowledging that it will utilize the 1987 Corps Manual to identify wetlands. 58 Fed. Reg. 4995. Congress had earlier directed the Corps of Engineers to abandon the use of the 1989 Federal Manual and return to its 1987 Manual. Published reports indicate that EPA will continue to use the 1987 Corps Manual until the National Academy of Sciences completes its study on wetlands delineation. The Academy was granted $400,000 for 1993 to research methods to delineate wetlands and to identify wetland functions and values. 24 Environment Reporter 2485 (Jan. 22, 1993).

III. The Permit Requirement

A. General Applicability

As noted above, Section 404 requires a permit for the discharge of "dredged and fill material" to waters of the United States. It is important to distinguish between the discharge of dredged and fill material, which is considered a pollutant and is regulated under Section 404 and the discharge of other pollutants, which are regulated under Section 402 (33 U.S.C. § 1342) by National Pollutant Discharge Elimination System ("NPDES") permits. Virtually any material discharged to water is considered a pollutant. Id., § 1362(6).

"Dredged material" is material that is "excavated or dredged from waters of the United States." 33 C.F.R. § 323.2(d). The term also includes "runoff or overflow from a contained land or water disposal area." Id. The effect of this provision is to allow activities which involve the removal of dredged material from river beds (such as sand and gravel operations) to have the return flow permitted under the Section 404 program, rather than having that flow require a separate NPDES permit. "Fill material" means "any material used for the primary purpose of replacing an aquatic area with dry land or of changing the bottom elevation of a waterbody." Id., § 323.2(e). "Discharge of fill material" includes "[p]lacement of fill that is

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necessary for the construction of any structure in a water of the United States; building of any structure or impoundment requiring rock, sand, direct, other material for its construction; . . . dams and dikes; . . . ." Id., § 323.2(f). As a rule of thumb, any activity that alters the bottom elevation of waters of the United States will be covered under 404, while the discharge of waste material will be regulated under Section 402. See Memorandum of Agreement between EPA and the Corps on Solid Waste, 51 Fed. Reg. 8871 (March 14, 1986).

There has always been substantial controversy over the extent of Corps jurisdiction over activities, other than discharge of fill, which can have a substantial adverse affect on waters of the U.S. On June 16, 1992, the Corps and the EPA issued a proposed rule to affirm Section 404 jurisdiction over broad categories of activities which adversely impact wetlands and other aquatic resources. 57 Fed. Reg. 26894 (June 16, 1992). The proposal came in response to litigation brought by the National Wildlife Federation. North Carolina Wildlife Federation v. Tulloch, Civil No. C90-713-CIV-5-BO (E.D.N.C. 1992). In accordance with the Tulloch settlement, the Corps and EPA are proposing a rule which would "clarify" that:

> [M]echanized land clearing, ditching, channelization, and other excavation activities involve discharges of dredge material and when performed in waters of the United States will be regulated under Section 404 of the CWA when such activities have or would have the effect of destroying or degrading waters of the United States, including wetlands.

57 Fed. Reg. at 26894.

The Tulloch rulemaking attempts to resolve the troublesome issue of whether Section 404 regulates de minimis soil discharges associated with excavation and land clearing activities. On its face, Section 404 does not regulate excavation activities occurring within waters of the US; it only regulates the discharge of fill. However, it is almost inevitable with any excavation activities that some soil is redeposited into waters. Generally, the Corps has not regulated such de minimis discharges when the excavated material is entirely removed from waters. However, in instances where the discharges occur in connection with an activity, such as land clearing, in which there is an intent to eliminate waters of the United States or severely impact those waters, the Corps has often asserted jurisdiction. The Tulloch rulemaking is

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intended to clarify that if a project does not adversely impact waters of the United States, the fact that small amounts of soil may be discharged to waters will not be a basis for asserting jurisdiction. Conversely, land clearing activities and other mechanized soil movement activities which do adversely impact waters will be subject to regulation.

There are several significant exemptions from the 404 process provided by the statute and implementing regulations. A detailed description and interpretation of these exemptions is provided in both the Corps and EPA implementing regulations. Id., § 323.4; 40 C.F.R. Part 232.

B. Permit Procedures

The permit process is initiated by the filing of a permit application. The Corps recommends that persons contemplating major activities requiring a permit meet with Corps representatives for a preapplication consultation to give the Corps a feel for the activity to be conducted under the permit and to give the applicant an idea as to whether their permit requests are viable. 33 C.F.R. § 325.1(b).

Once the application is received, the Corps assigns it an identification number, advises the applicant of this number, and reviews the application for completeness. Id., § 325.2. If the application is incomplete, the Corps will request within 15 days any additional information necessary for further processing. The Corps then will prepare a public notice containing the information required by regulation. The public notice will be circulated to the EPA, ADEQ, FWS, the National Park Service, adjacent land owners the general public (through posted notices), and other persons to whom notice must be given under the statute. Id. § 325.3(d).

The Corps provides a comment period for interested persons of 15 to 30 days. If the comments relate to matters within the special expertise of another federal agency, the Corps may seek the advice of that agency. Similarly, the applicant may voluntarily elect to contact objectors in an attempt to resolve objections but will not be required to do so. Id. § 325.2. EPA, FWS and AGFD take a very active role in the commenting process.

The Corps must render a decision within 60 days after the application is complete, except in certain situations, including elevation (the permit decision is referred to higher authority), extension of the comment

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period, failure by the applicant to timely submit requested supplementary information, request from the applicant for suspension of the application processing or lack of information needed by the Corps for a decision on the application which cannot reasonably be obtained within the 60-day period. Id. § 325(d)(3). If for any reason, the 60-day period is extended, the 60-day clock will start running again as soon as the cause preventing the decision from being made within the normal 60-day period has been satisfied or eliminated. While the regulations establish these apparently "hard" deadlines, the time restrictions are easily circumvented. The Corps for instance can simply delay processing a permit application while the applicant resolves concerns of the other regulatory agencies (such as EPA or FWS). This can be justified either as a suspension pending submittal of additional information or as a request by the applicant to suspend processing.

If a permit is granted, the Corps will also determine whether to impose any special conditions to be included in the permit. (These conditions can include required mitigation of adverse environmental impacts, discussed below.) If the final decision is to deny the permit, the applicant will be advised in writing of the reasons for denial.

IV. Permit Issuance Criteria

The decision of whether to issue the permit is based on a variety of criteria, including the "public interest" review, the selection of the "least environmentally damaging practicable alternative" for the project, and the finding of no significant degradation of the aquatic ecosystem. In some instances, the Corps will require mitigation of adverse environmental impacts as a condition of the permit. Finally, there are certain statutory criteria, such as protection of endangered species and historic properties, which must be met prior to issuing a permit.

A. Public Interest Review

The Corps employs a generalized public interest standard in evaluating Section 404 permits. Id., § 320.4(a). The public interest review includes a consideration of economics, esthetics, general environmental concerns, wetlands, historic properties, fish and wildlife values, water quality, safety, food and fiber production, mineral needs and "the needs and welfare of the people." Id., § 320.4(a)(1). (This standard is frequently at odds with the EPA's analysis of alternatives to minimize adverse environmental impact on wetlands.) The Corps' regulations create a

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presumption that permits will be granted unless a variety of factors (including the practicable alternatives analysis) indicate that granting the permit would not be in the public interest. While the public interest review appears to stretch significantly the scope of the Corps' review over a permit application, the review does not often constitute an insurmountable obstacle to obtaining a permit.

B. Alternatives Analysis

The centerpiece of the EPA guidelines is the requirement that an applicant for a 404 permit select the least environmentally damaging option to fulfill the applicant's project purpose. This option is identified through an "alternatives analysis." The 404(b)(1) guidelines provide:

> No discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact upon the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences.

40 C.F.R. § 230.10(a). An alternative is "practicable" if it is:

> Available and capable of being done after taking into consideration cost, existing technology and logistics in light of overall project purposes. If it is otherwise a practicable alternative, an area not presently owned by the applicant which could reasonably be obtained, utilized expanded or managed in order to fulfill the basic purposes of the proposed activity may be considered.

Id. § 230.10(a)(2). Practicable alternatives include, but are not limited to (i) activities which do not involve a discharge of dredged or fill material into the waters of the United States or ocean waters and (ii) discharges of the dredged or fill material at other locations in waters of the United States or ocean waters. Id. at § 230.10(a)(1)(i)-(ii).

The aquatic ecosystem is defined to include waters of the U.S. and the various plant and animal species that utilize that area as habitat. In analyzing whether an alternative site will have less adverse impact on the aquatic ecosystem, various factors are assessed including physical and chemical impacts on the aquatic

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ecosystem, biological impacts, impacts on wetlands, and effects on "human use characteristics." Human use characteristics include impacts on municipal and private water supplies, recreational impacts (including hunting and fishing), "aesthetic" impacts, and cultural impacts. § 230.50, et seq. Finally, a determination must be made as to whether the alternative has "other significant adverse environmental consequences." § 230.10(a). These can include impacts on air quality and groundwater which might not involve the aquatic ecosystem. See 45 Fed. Reg. 85336, 85340 (Dec. 24, 1980) (EPA commentary on the Guidelines).

The EPA guidelines establish certain important assumptions. Under the guidelines, "water dependent" discharges are those associated with activities which require the use of special aquatic sites to fulfill their basic purpose. 40 C.F.R. 230.10(a)(3). "Special aquatic sites" are geographic areas possessing special ecological characteristics and include sanctuaries and refuges, wetlands, mud flats, vegetated shallows, coral reefs, and riffle and pool complexes. Id. § 230.3(q-1). Where an activity is not water dependent, the guidelines presume that practical alternatives that do not require special aquatic sites are available. The guidelines further presume that these alternatives have less adverse impact on the aquatic ecosystem, unless clearly demonstrated otherwise. Id., § 230.10(a)(3). 40 C.F.R. § 230.10(a)(3).

The alternatives analysis is a stumbling block to many permit applications. Often an applicant has purchased a piece of property which contains wetlands, waters of the United States or other aquatic habitats and then plans a development project on the site. Upon attempting to obtain a 404 permit, the applicant is surprised to find out that it must analyze the possibility of using other sites, including sites that the applicant does not own, in order to accomplish project objectives. The alternatives analysis requirement can be incomprehensible in certain contexts: the goal of the project is to develop a particular piece of property and therefore it makes no sense to analyze alternatives which do not include development of that property. Nevertheless, the regulatory agencies have become quite strict about applying the alternatives analysis test to 404 permit applications, particularly those which involve wetlands, and therefore careful attention must be given to analyzing project alternatives.

The key to a successful alternatives analysis is identifying the project's purpose. However, EPA and the Corps are cognizant of attempts to describe a project in

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terms of water dependency, when the project may not be truly dependent on water. An example is a "river front housing development" which would include various water amenities such as boat docking and maintenance facilities. According to principles espoused by EPA, project purposes do not include project amenities, a particular return on investment (unless the return is so low as to render the project impracticable), and certain desired size requirements. EPA would reduce the stated project purpose to EPA's view of the absolute minimum; the river front housing project would become simply "a housing project". See Yocom, Leidy, and Morris, Wetlands Protection Through Impact Avoidance, A Discussion of the 404(b)(1) Alternatives Analysis, Wetlands, Vol. 9, No. 2, at 283 (1989). When planning a project involving a 404 permit, careful thought must be given to an alternative analysis prior to initiating the project.

C. Significant Degradation

EPA guidelines provide that no discharge of dredged or fill material will be permitted which will "cause or contribute to significant degradation of the waters of the United States." Id. § 230.10(c). Effects contributing to significant degradation include: (1) effects of the discharge of pollutants on human health or welfare, including, effects on municipal water supplies, fish, wildlife and special aquatic sites; (2) effects of the discharge aquatic life and other wildlife dependent on aquatic ecosystems; (3) effects of the discharge of pollutants on aquatic ecosystem diversity, productivity, and stability; or (4) significantly adverse effects of discharge of pollutants on recreational, aesthetic, and economic values. Id. § 230.10(c)(1)-(4).

There is no objective standard for determining significant degradation. The only guidance that can be given with any certainty is that the higher the habitat value of a particular site, the greater the likelihood that destruction of that site will be considered significant.

D. Mitigation

"Mitigation" is the term used by the regulatory agencies to refer to efforts by the permit applicant to reduce or compensate for adverse environmental consequences of the proposed project. Mitigation has become the source of significant controversy in recent years for a variety of reasons, including President Bush's pledge that the 404 program would be administered so as to achieve "no net loss" of wetlands. Given that

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development within wetlands is inevitable, mitigation would become the prime tool for insuring that wetlands lost are replaced. Mitigation has now become a standard requirement for the 404 permit process and any applicant for a 404 permit will need to consider incorporating mitigation concepts into its project.

1. General Mitigation Authority

The Corps has authority to require mitigation for the adverse environmental impacts caused by a permitted activity. If necessary, the Corps can require mitigation to insure that the permitted activity will meet both the public interest test and the EPA guidelines. 33 C.F.R. § 320.4(r)(ii) and (iii).

The Corps also has the authority to require minor project modifications to "minimize adverse project impacts." Id. § 320.4(r)(1)(i). Modifications may be required even though the permitted activity would not be against the public interest. Minor project modifications include those that "are considered feasible (cost, constructability, etc.) to the applicant and that, if adopted, will result in a project that generally meets the applicant's purpose." Id. Examples of such modifications include "reductions in scope and size; changes in construction methods, materials or timing; and operation and maintenance practices or other similar modifications that reflect a sensitivity to environmental quality within the context of the work proposed." Id.

The EPA guidelines are the most important source of the Corps' authority to require mitigation. 40 C.F.R. Part 230. The Corps is required by the guidelines to impose mitigation to the extent "appropriate and practicable" to prevent significant degradation of the waters of the U.S. Id. at § 230.10(d). The regulations specifically prohibit a discharge unless "appropriate and practicable steps have been taken which will minimize potential adverse impacts of the discharge on the aquatic ecosystem." Id. Some of those steps are outlined in 40 C.F.R. Part 230, Subpart H, and generally consist of avoidance, minimization and compensation methods. The term "mitigation", therefore, refers to a range of activities besides the replacement of habitat. It is sometimes helpful to think of mitigation as involving this three step process: avoidance, minimization, and replacement of habitat.

Many of the actions suggested as methods to minimize and avoid adverse effects of the discharge relate to the site selection and project design. For

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instance, the guidelines recommend actions to control material after discharge, including selecting methods and sites that will limit "the potential for erosion, slumping or leaching of materials into the surrounding aquatic ecosystem . . . ." Id. at § 230.72(a). Specific methods suggested include containment levies, lined containment areas, capping of discharged material, and maintenance of the discharged material so as to prevent point and non-point sources of pollution. Id.

The guidelines also suggest compensation methods to limit the impact on the aquatic ecosystem. Id. at § 230.75. "Compensation" does not mean payment; it refers to replacement of habitat values. Compensation measures can be implemented by:

> Using planning and construction practices to institute habitat development and restoration to produce a new or modified environmental state of higher ecological value by displacement of some or all of the existing environmental characteristics. Habitat development and restoration techniques can be used to minimize adverse impacts and to compensate for destroyed habitat.

Id. at § 230.75(d). EPA clearly accepts mitigation plans which consist of development of off-site habitats to compensate for the loss of on-site habitats. See 45 Fed. Reg. 85336, 85344 (Dec. 24, 1980).

Mitigation may also be required if the project impacts endangered or threatened species protected under the Endangered Species Act ("ESA"). 16 U.S.C. § 1531 et seq. The ESA prohibits the "taking" of protected species, and this taking prohibition has generally been interpreted by FWS to apply to habitat modifications. See, e.g., Sierra Club v. Lyng, 694 F. Supp. 1260 (E.D. Tex. 1988). If any portion of the applicant's project area constitutes habitat for protected species, and the project will adversely modify that habitat, it may be necessary for the applicant to obtain an "incidental take permit" or "incidental take statement" from FWS authorizing the adverse impacts to the protected species. See 16 U.S.C. § 1536; § 1539. As part of the incidental take process, FWS will impose "reasonable and prudent measures" that are "necessary or appropriate" to minimize the adverse impact to the protected species, including mitigation. 50 C.F.R. § 402.14(i)(1); 16 U.S.C. § 1539(a)(2)(B). It is important to emphasize that ESA mitigation requirements apply regardless of whether waters of the United States are impacted.

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2. Scope of Required Mitigation

A major concern of any Section 404 permit applicant is whether all acreage impacted by the applicant's development will require mitigation. Developments on raw desert land can include land which qualifies as waters of the U.S. (including wetlands) as well as land outside of waters of the U.S. (referred to "upland" areas). While there is no question that mitigation can be required for wetland areas and other waters of the U.S., the question of whether damage to upland habitats will also have to be mitigated is more complex. While arguably, the Corps does not have authority to require mitigation for all upland habitats, such mitigation has been required in certain instances. Also, other considerations (such as mitigating environmental impacts so as to obviate the need for an environmental impact statement) may make much mitigation advisable.

The jurisdiction of the Corps under Section 404 generally is limited to waters of the U.S. See generally William Want, Law of Wetlands Regulation, Chapter 4 (1990). The EPA guidelines would extend the scope of the permitting inquiry beyond waters of the U.S. to include wildlife populations that utilize aquatic habitats. The EPA guidelines prohibit "significant degradation" of the waters of the U.S. and define effects contributing to significant degradation to include:

> Significantly adverse effects of a discharge of pollutants on life stages of aquatic life and other wildlife dependent on aquatic ecosystems, including the transfer, concentration, and spread of pollutants or their by-products outside of the disposal site through biological, physical, and chemical processes. . . .

Id. at § 230.10(c)(2). The "aquatic ecosystem" includes "waters of the United States, including wetlands, that serve as habitat for interrelated and interacting communities and populations of plants and animals." Id. at § 230.3(c). Therefore, by regulation, EPA has extended its review criteria beyond impacts on waters of the U.S. to include impacts on wildlife dependent on those waters but which may reside in adjacent habitat.

The guidelines provide that "appropriate and practicable steps" must be taken to "minimize potential adverse impacts of the discharge on the aquatic ecosystem." Id. at § 230.10(d). If impacts on the

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aquatic ecosystem are defined broadly to include wildlife that utilize offsite habitats, arguably mitigation can be required for areas adjacent to waters of the U.S. In practice this issue often appears to be resolved by requiring mitigation at an acreage ratio of greater than 1:1 for waters of the United States. The "extra" mitigation compensates for loss of value to adjacent habitats.

Considerations imposed by the National Environmental Policy Act ("NEPA") may affect the decision to mitigate for upland habitats. NEPA requires federal agencies to incorporate environmental values into their decision making process. The major requirement of NEPA is that federal agencies prepare an environmental impact statement ("EIS") on proposals for "major federal actions" which significantly effect quality of the human environment." 42 U.S.C. § 4332(2)(c); 40 C.F.R. § 1502.3. Because of the expense and delay associated with the EIS process, an important consideration for any project requiring federal approval is whether it is possible to structure the requirement to avoid an EIS. Typically, an EIS "must be prepared when substantial questions are raised on whether a project may significantly degrade the human environment." Friends of the Earth v. Hintz, 800 F.2d 822, 836 (9th Cir. 1986). However, an agency can consider efforts to mitigate environmental impacts in determining whether overall project impacts will be "significant." Id. at 837-38; Cabinet Mountains Wilderness v. Petersen, 685 F.2d 678, 684 (D.C. Cir. 1982).

The Corps also considers environmental impacts associated with a particular project that will extend to environmental impacts outside of waters of the United States. The Corps regulations state that environmental review must "address the impacts of the specific activity requiring a [department of the Army] permit and those portions of the entire project over which the [Corps] has sufficient control and responsibility to warrant Federal review." 33 C.F.R. Part 325, Appendix B, § 7(b)(1). The extension of review is not automatic. The regulations state:

> NEPA review would be extended to the entire project, including portions outside waters of the United States, only if sufficient federal control and responsibility over the entire project is determined to exist; that is, if the regulated activities, and those activities involving regulations . . . by other federal agencies, comprises a substantial portion of the overall project.

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Id. at § 7(b)(3). The regulations provide the following example of a facility that would require review of the entire project:

> For those activities that require a [Department of Army] permit for a major portion of a shore side facility, the scope of analysis should extend to uplands portions of the facility. For example, a shipping terminal normally requires dredging, wharves, bulkheads, berthing areas, and disposal of dredged material in order to function. Permits for such activities are normally considered sufficient federal control and responsibility to warrant extending the scope of analysis to include the upland portion of the facility.

Id. See also 53 Fed. Reg. 3120, 3121-22 (Feb. 3, 1988) (Preamble to Corps NEPA regulations).

3. Agency Policies Regarding Mitigation

The major policy statement on mitigation is the February, 1990 Memorandum of Agreement between EPA and the Corps (the "Mitigation MOA"). 55 Fed. Reg. 5510 (Feb. 15, 1990). In addition, there is a detailed policy statement by FWS regarding mitigation that governs FWS consultation procedures. 46 Fed. Reg. 7644 (January 23, 1981). AGFD also has a separate policy regarding mitigation. It is important to stress that while the Mitigation MOA is binding on the Section 404 permit process under the Clean Water Act, the FWS and AGFD policies are for the purpose of guiding those agencies in carrying out their commenting and consultation obligations.

All three policies focus on assessing the value of the habitat and compensating for that loss by creation or enhancement of habitats of equal or greater biological value. The policies also encourage, but do not mandate, compensation sites as close as possible to the impacted sits in both character and geography. Finally, the policies require that some sort of monitoring program be developed to ensure that the mitigation plan remains in place for as long as the impacts which require mitigation persist.

a. Mitigation MOA

The Mitigation MOA outlines the basic procedures followed by the Corps and EPA in determining the sufficiency of a mitigation plan under Section 404. The

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Mitigation MOA focuses on three general types of mitigation: avoidance, minimization and compensation. Mitigation MOA at 2. Significant disputes have arisen in the past between the Corps and EPA regarding the sequencing of mitigation strategies. The EPA has consistently taken the position that the mitigation alternatives should be addressed in sequence, i.e., it should first be determined that the negative impacts of the project cannot be avoided, then those impacts should be minimized to the greatest extent possible, and then only as a last resort should compensation be allowed. On the other hand, the Corps did not require such sequencing and would allow compensation in situations where environmental impacts had not been minimized or avoided.

The Mitigation MOA supposedly resolves this dispute. It specifically states that the Corps will first make a determination that potential environmental impacts "have been avoided to the maximum extent practicable . . . " Next, unavoidable impacts will be mitigated by requiring steps to minimize those impacts. Finally, compensation will be required for aquatic resource values impacted by the proposed project. Mitigation MOA at 3. Regarding sequencing, the Mitigation MOA states:

> It may be appropriate to deviate from the sequence when EPA and the Corps agree that the proposed discharge is necessary to avoid environmental harm (e.g. to protect a natural aquatic community from salt water intrusion, chemical contamination, or other deleterious physical or chemical impacts), or EPA and the Corps agree that the proposed discharge can reasonably be expected to result in environmental gain or insignificant environmental losses.

Id. Minimization and avoidance can be accomplished largely through site selection and project design. For instance, locating a site which impacts the least amount of waters of the United States and which avoids impacts to wetlands altogether goes toward meeting the avoidance requirement. Design of a project can minimize impacts to waters of the U.S. Also, control of offsite discharges and other impacts to adjacent habitats is an example of minimization.

The Mitigation MOA prefers that compensation be undertaken in areas adjacent or contiguous to the discharge site. (The Corps refers to this as "on-site" compensatory mitigation.) If on-site mitigation is not practicable, then the agencies would prefer that offsite

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mitigation be undertaken "in the same geographic area if practicable (i.e., in close physical proximity and, to the extent possible, the same watershed)." Mitigation MOA at 4.

An essential consideration in developing a mitigation plan is identifying the functional values of the impacted habitat. The Mitigation MOA provides that "[t]he determination of what level of mitigation constitutes 'appropriate' mitigation is based solely on the values and functions of the aquatic resource that will be impacted." Mitigation MOA at 2. Generally, the agencies prefer "in-kind" mitigation to "out-of-kind" mitigation, meaning that the agencies prefer that the type of habitat impacted be replaced with a similar habitat.

In terms of acreage, the agencies typically require "one for one functional replacement" for habitats lost. Mitigation MOA at 5. Again, this involves characterization of the impacted habitat and replacement of that habitat with a biological community of equal value. The agencies typically build into their ratio of replacement acreage a margin of safety "to reflect the expected degree of success associated with the mitigation plan. . . ." Id. The agencies require a higher ratio of replacement acreage to impacted acreage when the mitigation plan involves creation of artificial wetlands, rather than restoration of degraded wetlands. This is because restoration usually is more successful than creation of artificial wetlands.

Much has been made of the policy regarding "no net loss" of wetlands. The original draft of the Mitigation MOA supposedly implemented the no net loss policy. However, due to public pressure, the Corps and EPA backed off a blanket no net loss policy and provided:

> The level of mitigation determined to be appropriate and practicable under [the EPA Guidelines] may lead to individual permit decisions which do not fully meet [the no net loss] goal because the mitigation measures necessary to meet this goal are not feasible, not practicable, or would accomplish only inconsequential reductions and impacts. Consequently, it is recognized that no net loss of wetlands functions and values may not be achieved in each and every permit action.

Mitigation MOA at 2.

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Finally, the Mitigation MOA requires that monitoring be imposed as a permit condition in order to determine whether the permittee is in compliance with the mitigation requirements of the permit. Mitigation MOA at 6. Regarding projects involving "higher levels of scientific uncertainty," long-term monitoring, reporting and necessary remedial action will be required as a permit condition. Id.

b. FWS Mitigation Policy

The FWS mitigation policy, while more detailed, mirrors the Mitigation MOA. First, the policy recommends replacement of "habitat value" rather than mere replacement of acreage. 46 Fed. Reg. at 7645. Habitat value is measured by "carrying capacity," i.e., the capacity of the habitat to support animal and plant life. The valuation of the habitat is based largely on the capability of the habitat to support "evaluation species" which are selected by FWS on a case by case basis and are species which must be known to occur in the impacted area. 46 Fed. Reg. at 7662. They typically include species of high public interest or economic value. Evaluation species do not include endangered and threatened species, which are subject to separate protection under the Endangered Species Act.

FWS characterizes a particular habitat utilizing four "Resource Categories." Resource Category I includes habitat which has "high value for evaluation species" and which is "unique and irreplaceable." The planning goal for this category is "no loss of existing habitat value." Thus, if a project involves impacts to Resource Category I habitats, FWS will recommend that those impacts be eliminated. It is important to note that this is a FWS recommendation and does not have the force of law. In certain extreme cases, FWS will approve mitigation for these impacts.

Resource Category II habitat must have high value for evaluation species and must be "scarce or becoming scarce." The planning goal is "no net loss of in-kind habitat value." Impacts to Resource Category II habitats will likely involve some type of compensation. Habitats which include wetlands are assigned to either Resource Category I or II. Categories III and IV have correspondingly lower levels of value and protection.

The FWS policy follows five basic methods for achieving mitigation: avoidance, minimization, rectification, reduction or elimination over time, and compensation. 40 C.F.R. § 1508.20; 46 Fed. Reg. at 7660. Recommended avoidance and minimization techniques follow essentially the same process as in the Corps

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regulations (such as locating the project at the least environmentally damaging site and designing the project to control impact to offsite ecosystems). To "rectify" project impacts, the FWS policy suggests restoring the site to support fish and wildlife resources. This can include planting vegetation and restocking wildlife. 46 Fed. Reg. at 7660. To reduce or eliminate adverse impacts over time, the policy recommends monitoring to insure the integrity of the mitigation plan. Id. The FWS recommends that mitigation measures provide "for a duration of effectiveness for the life of the project plus such additional time required for the adverse effects of an abandoned project to cease to occur." Id. at 7659.

With regard to compensation, the policy provides for conducting "wildlife management activities to increase habitat values in existing areas," with emphasis on the areas impacted by the project and adjacent to public lands. Id. at 7660. The policy favors a mitigation site located "within the planning area" (i.e., the area impacted by the project). Id. In addition, mitigation activities can be conducted to "fully restore or rehabilitate previously altered habitat or modified existing habitat suited to evaluation species for the purpose of completely offsetting habitat value losses." Id. at 7660.

The Service will recommend support of a project if the project meets the following criteria:

(1) [It is] ecologically sound;

(2) The least environmentally damaging reasonable alternative is selected;

(3) Every reasonable effort is made to avoid or minimize damage or loss of fish and wildlife resources and uses;

(4) All important recommended means and measures have been adopted with guaranteed implementation to satisfactorily compensate for unavoidable damage or loss consistent with the appropriate mitigation goal; and

(5) For wetlands and shallow water habitats, the proposed activities are clearly water dependent and there is a demonstrated public need.

46 Fed. Reg. at 7659.

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Assuming an applicant follows a detailed alternatives analysis, and prepares a comprehensive mitigation plan, the first four factors should be met. The fifth factor will present a problem for activities which are not "water dependent," meaning that the project does not require location in a wetland in order to fulfill its basic purpose. 40 C.F.R. § 230.10(a)(3). Corps regulations allow siting of non-water dependent activities in wetlands if there is a clear demonstration that the site is the best alternative. The FWS policy appears to be to object to siting non-water dependant activities in wetlands all together. But, because the FWS does not "require absolute strict adherence to a required standard," 46 Fed. Reg. at 7647, the FWS and the Corps positions may be harmonized.

c. AGFD Mitigation Policy

The AGFD mitigation policy essentially follows FWS policy, but is less comprehensive. Like FWS, AGFD assigns a habitat to one of four Resource Categories. The highest category, Resource Category I, includes habitats "of the highest value to Arizona wildlife species, and [which) are unique and/or irreplaceable on a statewide or eco-region basis." The management goal is no loss of existing habitat. Again, this is a goal, not law, and in certain cases, AGFD may accept mitigation for impacts to these habitats. Habitat types associated with Resource Category I includes "key utilization areas" for species listed or proposed for listing by AGFD or pursuant to the Endangered Species Act. Resource Category II includes habitats "of high value for Arizona wildlife species and a relatively scarce or becoming scarce on a statewide or equal region basis." The compensation goal for this category is "no net loss of existing habitat value, while minimizing loss of in-kind value."

Resource Category III includes habitats "of high to medium value for Arizona wildlife species" and which are "relatively abundant on a statewide basis." The mitigation goal for these habitats are no net loss of habitat value. Habitat types included within this Resource Category are Sonoran desert, desert grasslands and chaparral zones. Resource Category IV includes areas of minimal habitat value and requires limited mitigation.

E. Other Statutory Criteria

Review and approval of a permit application may require the Corps to consider other federal statutes prior to issuing the permit. Primary statutes of concern include the National Environmental Policy Act

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("NEPA"), the National Historic Preservation Act ("NHPA") and the Endangered Species Act ("ESA"). Other laws of concern are listed in the Corps regulations at 33 C.F.R. § 320.3. It is important to note that the statutory requirements are prerequisites to obtaining a permit; but satisfying them does not mean that a permit will automatically be issued. If the statutory prerequisites are not met, the Corps is prevented from making a decision on a permit application. Thus, the necessity of preparing reports and conducting surveys required by the statutes can involve substantial expense and delay. Compliance with these statutes should be considered early in the permit process to avoid critical delays.

1. National Environmental Policy Act

Compliance with NEPA is required before issuance of a permit, and may delay issuance, particularly if it is determined that an EIS is required. As part of the permit review process, the Corps is directed to prepare an environmental assessment ("EA") "as soon as practicable after all relevant information is available (i.e., after the comment period for the public notice of the permit application has expired). . . ." 33 C.F.R. Part 325, Appendix B, 11 7. If the EA concludes that the issuance of the permit will significantly affect the environment, then an EIS must be prepared. 40 C.F.R. 1502.3. An EA is not required if an EIS is prepared. Id.

If the Corps determines that issuance of the permit will not have a significant environmental impact, it issues a Finding of No Significant Impact ("FONSI"). 33 C.F.R. § 230.11; 40 C.F.R. § 1508.13. Typically the EA and FONSI are combined into a single document. 33 C.F.R. Part 325, Appendix B, ¶ 7. According to Corps practice, this document also includes a statement of findings ("SOF") that addresses other required determinations (such as endangered species compliance). Completion of the EA and FONSI (assuming these documents meet statutory requirements) concludes the Corps' obligations under NEPA.

2. National Historic Preservation Act

The NHPA requires any federal agency "having authority to license any undertaking" to "take into account the effect of the undertaking on any district, site, building, structure or object that is included in or eligible for inclusion in the National Register" before approving the project. 16 U.S.C. § 470(f). Implementing regulations, developed by the National Advisory Council on Historic Preservation ("Council"),

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define undertaking to include "any project that can result in changes in the character of historic properties." 36 C.F.R. § 800.26. A Section 404 permit is generally considered to be an undertaking and must comply with NHPA requirements. 33 C.F.R. § 325.2(b).

Council and Corps regulations require a consultation process involving the State Historic Preservation Officer ("SHPO"), the federal agency involved (i.e., the Corps), and the Council. 36 C.F.R. § 800.3; 33 C.F.C. Part 325, Appendix C. The process essentially involves identifying historic properties (often through a survey by a competent archeologist) and analyzing the impact on those properties. 36 C.F.R. § 800.4; § 800.5. In order to avoid an "adverse effect" on historic properties, SHPO, the Corps, and the Council can suggest mitigation measures to reduce the impact of a particular project on historic properties. Id. § 800.5. The mitigation measures often include excavating and cataloging historic sites and preparing reports describing the value of those sites. If SHPO, the Corps and the Council all agree that the effect on historic properties of a proposed project is not adverse, the NHPA process is concluded. Id. § 800.5(d)(2). A finding of adverse impact triggers additional consultation requirements under the Act.

3. Endangered Species Act

The Corps also needs to comply with its obligations under the ESA prior to issuing a permit. The ESA requires federal agencies to consult with FWS to "insure that any action authorized. . .by such agency. . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in the adverse modification of [the species' critical] habitat . . . ." 16 U.S.C. § 1536(a)(2). Regulations adopted pursuant to the ESA list species that are endangered or threatened and habitats that are considered "critical." 50 C.F.R. Part 17. Determination of impact is accomplished through consultation with FWS pursuant to ESA regulations. Id. at Part 402. Assuming no protected species or habitat will be impacted by the federal agency action, the process is concluded when the particular federal agency involved (in our case, the Corps), makes a determination that its action will have "no adverse impact" on the species or habitat. Id. §§ 402.13(a); 402.14(b). As noted above, mitigation can be required to limit adverse impacts.

V. Permit Elevation

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A permit decision can be delayed if it is "elevated" to a higher authority within the Corps. 33 C.F.R. § 325.2(d)(3)(ii). Generally, the authority to issue or deny a permit has been delegated to the District Engineer (which in Arizona's case is the District Engineer for the Los Angeles District, Colonel Charles Thomas). In certain circumstances, the District Engineer is required to "refer" or "elevate" an application to the Division Engineer for resolution. Such circumstances include:

1. When a referral is required by a written agreement between the head of a federal agency and the Secretary of the Army;

2. When the recommended decision is contrary to the written position of the Governor of the state in which the work would be performed;

3. When there is substantial doubt as to the authority, law, regulations or policies applicable to the proposed activity;

4. When higher authority requests the application be forwarded for decision.

Id. § 325.9(b). Decision on the application can be further elevated from the Division Engineer to the Chief of Engineers if any of factors 1, 3, or 4 above apply. Id. § 325.9(c). After elevation, a decision on the permit is made by the Division Engineer or the Chief of Engineers, as applicable.

The Corps has executed memorandum of agreements ("MOAs") with EPA and the Department of Interior (on behalf of FWS) which govern the elevation process. Memorandum of Agreement between the Environmental Protection Agency and the Department of the Army (November 12, 1985) ("EPA MOA"); Memorandum of Agreement between the Department of the Interior and the Department of the Army (November 8, 1985) ("DOI MOA"). Under both MOAs, EPA or FWS can request permit elevation, but it is within the Corps' discretion to grant the request.

Under the EPA MOA, an EPA official (the Assistant Administrator, Office of External Affairs or "AAEA") has been designated as having authority to request permit elevation. EPA MOA at 1. EPA will request such elevation only if the AAEA finds:

1. That there has been insufficient interagency coordination at the district and division levels including a procedural failure to

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coordinate or a failure to resolve stated EPA concerns regarding compliance with the EPA guidelines;

2. That significant new information has been developed which was not previously available; or

3. That the project raises environmental issues of national importance requiring policy level review.

EPA MOA at 1.

The EPA MOA directs the Corps and EPA to utilize informal procedures to insure that these referral procedures are utilized "only when warranted." EPA MOA at 2. The District Engineer is required to notify EPA (through EPA's Regional Administrator or "RA") of an upcoming decision that is "contrary to a recommendation by EPA for permit denial or permit modification." Id. At this point, EPA is required to "insure that any additional views regarding the action are finalized and communicated to the [Division Engineer] as expeditiously as possible." EPA MOA at 3. This is one of the stages where the elevation process drags out. Although EPA is required to respond "as expeditiously as possible", what usually happens is that a meeting is requested, the meeting is delayed because of schedule conflicts, and sometimes further meetings are held. If the District Engineer subsequently decides to issue a permit over EPA objections (or absent conditions recommended by EPA), he will preliminarily notify EPA that the District Engineer intends to issue a letter formally stating the Corps' intention to issue a permit (referred to as a "Notice of Intent to Issue" or "Notice of Intent"). If the RA requests consultation within seven calendar days of the preliminary notice, the District Engineer will hold issuance of a Notice of Intent letter until 14 calendar days after the RA's request. During this period, the RA can consult with the Division Engineer to resolve EPA concerns. If no meeting is held between the Division Engineer and the RA within those 14 days, the District Engineer can proceed with issuing the Notice of Intent. Id. There is also potential for delay caused by the meetings initiated during those 14 days.

The procedures for referral of a permit decision above the District Engineer level "should be completed within 90 calendar days of the [District Engineer's] Notice of Intent. . .and in no event should the process exceed 120 calendar days." EPA MOA at 4. If the responsible EPA official (the AAEA) determines that referral is warranted, he must forward such request

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within 20 working days of the District Engineer's Notice of Intent to the Assistant Secretary of the Army (Civil Works). Within 15 working days, the Assistant Secretary will decide whether to refer the permit decision to a higher level. Id. If the Assistant Secretary decides not to elevate the permit decision, he must make such a finding in writing, setting forth responses to EPA comments. Id.

The DOI MOA parallels in all important respects the EPA MOA. The designated official with the authority to request permit elevation is the Assistant Secretary for Fish and Wildlife and Parks. Procedures are provided to insure that FWS is fully aware of any Corps decisions contrary to FWS recommendations. If referral is requested, the process should be limited to 90 calendar days, and in no case should exceed 120 calendar days. The Corps retains sole authority to decide whether to elevate the permit decision above the District Engineer level.

VI. EPA Veto

Section 404(c) of the Clean Water Act provides that EPA can prohibit the use of any defined area as a disposal site for Section 404 purposes if it determines, after notice and opportunity for a public hearing, "that the discharge of such materials into such area will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas (including spawning and breeding areas), wildlife, or recreational areas." 33 U.S.C. 1344(c). Before making this determination, EPA is required to consult with the Corps. Id. The authority to deny the use of a particular area for Section 404 permit purposes is generally referred to as EPA's "veto" authority.

EPA has adopted regulations governing the exercise of its veto, which are found at 40 C.F.R. Part 231. The procedures contain detailed notice and comment, hearing, and consultation provisions. EPA's authority to veto a Section 404 permit is based on a finding of "unacceptable adverse effect" which is defined as "impact on an aquatic or wetland ecosystem which is likely to result in significant degradation of municipal water supplies (including surface or groundwater) or significant loss of or damage to fisheries, shell fishing, or wildlife habitat or recreation areas." Id. § 231.2(e). In evaluating these impacts, EPA is to give "consideration" to its guidelines found at 40 C.F.R. Part 230. Id. Failure of the applicant to comply with the guidelines (particularly the alternatives analysis and mitigation requirements) is the primary basis for EPA vetoes.

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To date, few permits issued by the Corps have been vetoed, but the threat of veto can often compel permit applicants to accede to agency demands.

VII. Nationwide Permits

The Corps is authorized to issue certain general permits on a regional or nationwide basis to various classes of activities which are deemed to have minimal adverse environmental impacts. 33 U.S.C. § 1344(e). The Corps has done so through the issuance of nationwide permits ("NWPs"). (As yet, no regional permits have been issued within the district regulating Arizona.) The NWP procedures are in many ways just as complex as the individual permit procedures, but they do substantially reduce the costs and time delays associated with the 404 permit process. The Corps NWP procedures are published at 33 C.F.R. Part 330 and were recently revised, effective for five years. 56 Fed. Reg. 59110 (November 22, 1991).

Basically, NWPs allow particular activities to be conducted without the necessity of applying for individual permits if those activities conform to the requirements set forth in NWP. In some instances, predischarge notification (or "PDN") to the Corps must be provided, but in most instances, no notification is required. Permittees do have the option to request confirmation from the Corps that a proposed activity is authorized by an NWP. 33 C.F.R. § 330.6(a). The Corps generally retains the authority to revoke an NWP authorization for a particular activity and require that activity be individually permitted. Id., § 330.4(e) This typically is done only in unusual circumstances, where the adverse environmental effects of a project are particularly severe.

The current Corps regulations provide for 37 separate NWPs. Id., Appendix A. The NWPs apply to such activities as utility line and backfill bedding (NWP 12), bank stabilization activities necessary for erosion prevention (NWP 13), minor road crossings (NWP 14), return water from upland contained disposal areas (NWP 16), minor discharges (NWP 18), and headwaters and isolated waters discharges (NWP 26).

Perhaps the most significant NWP is NWP 26, which authorizes discharges into "headwaters and isolated water" provided that the discharge does not cause a loss of more than 10 acres of waters of the United States and that the permittee notifies the Corps if the discharge causes a loss of more than one acre. Id., Appendix C at Section B.26. The regulations define isolated waters as nontidal waters of the United States that are "not part

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of a surface tributary system to interstate or navigable waters of the United States; and not adjacent to such tributary water bodies." Id., § 330.2(e). Headwaters is defined as "nontidal rivers, streams, and/or lakes and impoundments, including adjacent wetlands, that are part of a surface tributary system to an interstate or navigable water of the United States upstream of the point on the river or stream at which the average annual flow is less than five cubic feet per second." Id. § 330.2(d). Much of Arizona is located above the headwaters. The Corps regularly publishes a headwaters determination for Arizona which can be obtained from the Corps in Phoenix. See Los Angeles District, U.S. Army Corps of Engineers Public Notice: Headwaters Determinations for Section 404 Permits in Arizona (July 15, 1991).

Qualifying for a nationwide permit does require compliance with certain special conditions under Part 330, Appendix A. For example, among other conditions, the discharge of dredged or fill material must not occur in the proximity of a public water supply intake; it must not jeopardize a threatened or endangered species; it may not occur in a component of the National Wildlife Scenic River System; it should not affect a site listed on the National Register of Historic Places; and it must not impair reserved tribal rights.

The status of NWPs in Arizona has been substantially complicated by the 401 certification requirement, and the reluctance of the state of Arizona to issue such certification. As discussed below, any permit issued under the 404 program must obtain certification (from the state in which the discharge is located) that such discharge will comply with state water quality standards. In Arizona, the agency responsible for administering 401 certification is ADEQ. Prior to reissuance of NWPs in November of 1991, ADEQ had waived certification for all NWPs. However, with the reissuance of NWPs last fall, ADEQ took a more active role in reviewing the NWPs under the 401 certification process. As a result of this review, ADEQ issued certification of certain NWPs, conditional certification of other NWPs, and outright denial of certification for a few NWPs. See Letter from Edward Z. Fox, Director, ADEQ to Colonel Thomas, Corps of Engineers (Jan. 17, 1992).

Certification for NWP 26 in particular was denied. While the terms of the NWP allow for the discharge of fill to less than one acre of waters of the U.S. without notice to the Corps, the denial of certification by ADEQ for this permit means that, in Arizona, a project seeking authorization under NWP 26, regardless of its size, must individually obtain pre-discharge

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certification from ADEQ. Denial of certification therefore significantly complicates utilization of this NWP.

VIII. 401 Certification

Section 401 of the Clean Water Act requires that an applicant for a federal discharge permit (including 404 permits) provide to the permitting agency (the Corps in this context) a certificate from the state that the discharge will comply with various requirements of the Clean Water Act, including state water quality standards. 33 U.S.C. § 1341(a)(1). On its face, this certification requirement is limited to an analysis of compliance with Clean Water Act §§ 301 (33 U.S.C. § 1312, dealing with water quality related effluent limitations), 303 (33 U.S.C. § 1313, requiring states to develop ambient water quality standards), 306 (33 U.S.C. § 1316, establishing performance standards for various categories of sources), and 307 (33 U.S.C. § 1317, requiring the development of standards for toxic pollutants and the establishment of a pretreatment program for publicly owned treatment works). The relevant state law implicated by this section would be limited to that established in response to one of the enumerated CWA provisions (e.g., surface water quality standards, pretreatment programs).

The issue is somewhat clouded, however, by the language of Section 401(d) which provides:

> Any certification provided under this section shall set forth any effluent limitations and other limitations, and monitoring requirements necessary to assure that any applicant for a Federal license or permit will comply with any applicable effluent limitations and other limitations, under section 1311 or 1312 of this title, standard of performance under section 1316 of this title, or prohibition, effluent standard, or pretreatment standard under section 1317 of this title, and with any other appropriate requirement of State law set forth in such certification, and shall become a condition on any Federal license or permit subject to the provisions of this section.

33 U.S.C. § 1311(d) (emphasis supplied.) The reference in the statute to the certification containing effluent limitations "and other limitations" sufficient to ensure compliance with "any other appropriate requirement of State law" is sometimes interpreted to give states wide

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latitude in setting conditions in Section 401 certifications.

The regulations governing state certification are found at 40 C.F.R. Part 121. In general, the regulations are not detailed, are generally out-of-date, and provide little guidance on administration of the certification process. 44 Fed. Reg. 32854, 32888, n.1 (June 7, 1979). Pursuant to the regulations, any certification must include a statement by the certifying agency that there is "a reasonable assurance that the activity will be conducted in a manner which will not violate applicable water quality standards," but must also contain a statement of "any conditions which the certifying agency deems necessary or desirable with respect to the discharge or the activity." See 40 C.F.R. § 121.2(a)(3) and (4).

The Corps' general Section 404 regulations mention 401 certification and suggest that the certification analysis should focus on water quality issues, but do not explicitly limit the scope of the state inquiry. See 33 C.F.R. § 320.3(a) (states must certify that discharges will comply with applicable effluent limitations and water quality standards); Id., § 325.2(b)(1)(i) (setting out procedures to be followed in cases where state refuses to certify a project, and indicating that the public hearing that follows such refusal "will be limited to water quality impacts"). Therefore, although existing federal regulations do not explicitly limit the factors a state may consider in determining what conditions to impose as part of its Section 401 certification, these sources make clear that the primary focus should be on water quality (particularly violations of water quality standards).

If the state fails to act within a reasonable time (not to exceed one year) on the request for certification, the certification requirement is waived. 33 U.S.C. § 1341(a)(1). Waiver is rare. The clock does not begin to run until a complete request is filed. More information is often requested during the course of the Department's review, and therefore, the request may not be deemed complete until just before the certification is issued.

Certification in Arizona is required for individual permits and for some nationwide permits. While there is limited federal regulatory guidance on how to obtain 401 certification, there is even less guidance at the state level. No state regulations have been promulgated for the certification process. Instead, the process is governed by ADEQ policy, particularly the Arizona Water Quality Control policies

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adopted April 13, 1977. The policies are provided to applicants in the form of a questionnaire, with the applicant expected to describe how it will comply with the policies. (See discussion above.) The certification process resembles a mini-permitting process in that it involves completion of a questionnaire provided by ADEQ, review by ADEQ of the responses, and final issuance of certification. ADEQ has authority to condition certification on project modifications and typically imposes such conditions.

IX. Enforcement

The Corps has broad enforcement powers. Included among these are cease and desist orders and civil penalties up to a maximum of $25,000 per day for each violation. 33 U.S.C. § 1344(s). Id., § 1319(c). In limited circumstances, the Corps may issue "after-the-fact" permits for unpermitted discharges with minimal environmental impact. After-the-fact permits are often accompanied by civil penalties. The Corps (upon finding a violation of the permitting requirements) can order removal of the structure for which a permit should have been obtained and require restoration of the area to its original condition. See generally 33 C.F.R. Part 326. The Corps also has criminal enforcement powers and persons who violate the terms of Section 404 permits can be imprisoned for up to one year for a first offense.

There have been notorious prosecutions of Clean Water Act violations. Two of the more famous recent examples include:

- A Pennsylvania developer sentenced to three years in jail, required to pay a $202,000 fine, and ordered to restore damaged wetlands, after being charged with a knowing failure to obtain a Section 404 permit. (The defendant ignored Corps cease and desist orders.) This was subsequently reduced on appeal because of the defendant's limited ability to pay. U.S. v. Pozgai, 22 Envtl. L. Rep. 20 (E.D.Pa. 1992).

- A Maryland developer who built a wildlife sanctuary and hunting preserve within a wetland area was given 18 months probation, a $1 million criminal fine and a $1 million "restoration" penalty. His consultant, who had accepted responsibility for obtaining all environmental permits and who ignored Corps cease and desist orders (issued after consultant had been told by the Corps that certain excavation and fill activities in endangered species habitats required

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a permit) was given six months in jail and an additional year of "supervised" probation. U.S. v. Ellen, 961 F.2d 462 (4th Cir. 1992).

The cases illustrate the willingness of the Corps to impose substantial and even criminal penalties against persons who ignore the law, particularly in situations where the Corps has advised the person of the need for a permit. Further, both cases highlight the danger of relying on common sense analysis of the need for a permit. Pozgai involved a developer filling in a small area on his own property. However, the fact that the project is minimal and located entirely on private land has little impact on the need for a permit. Ellen involved a project which was ostensibly for wildlife purposes, but that fact did not obviate the need for a permit.

Perhaps the most important lesson of the Ellen and Pozgai cases is that project proponents must carefully consider the need for a Section 404 permit well before starting construction. While the reports do not explicitly say so, the decision to ignore Corps demands to cease unauthorized activities must have been influenced by the fact that substantial investment in the project had already been made when the Corps intervened. In most instances, disruption of project construction can be more costly than delay in commencing construction caused by the need to obtain a permit.

X. Arizona Riparian Legislation

Arizona recently enacted legislation designed to phase in regulation of "riparian" areas of the state. The legislation adopts a definition of riparian area and directs various state agencies to conduct studies designed to lead to some form of riparian protection legislation in the 1995 legislative session. The legislation was the culmination of an initiative launched by ADEQ, AGFD and the Arizona Department of Water Resources ("ADWR") in the fall of 1991 to create a comprehensive regulatory scheme for riparian areas.

The definition of riparian area is possibly the most important accomplishment in the process. The legislation defines riparian area as follows:

> "Riparian area" means a geographically delineated area with distinct resource values, that is characterized by deep-rooted plant species that depend on having roots in the water table or its capillary zone and that occurs within or adjacent to a natural perennial or intermittent stream channel or

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within or adjacent to a lake, pond or marsh bed maintained primarily by natural water sources. Riparian area does not include areas in or adjacent to ephemeral stream channels, artificially-created stock ponds, man-made storage reservoirs constructed primarily for conservation or regulatory storage, municipal and industrial ponds or man-made water transportation, distribution, off-stream storage and collection systems.

Thus, in general, riparian areas are limited to areas supporting plants that must have their roots in the water table and do not include artificially-created wetlands.

In all, four studies will be done:

1. ADWR will study the effects of groundwater pumping and surface water appropriations on riparian areas and evaluate alternative regulatory programs "to balance the protection of riparian areas with existing and future groundwater pumping and new surface water appropriations." The report is to be completed by December 1, 1993.

2. AGFD is required to develop a system for classifying riparian areas according to their relative functions and values. The Department is then required to map riparian areas within the state. Its report is also due December 1, 1993.

3. ADEQ is required to identify activities that have adverse effects on riparian areas. At a minimum, it will investigate 12 specifically named activities which include virtually all commercial use of property. That report is likewise due December 1, 1993.

4. The Riparian Area Advisory Committee established by the bill is required to evaluate alternative programs for regulation of riparian areas, to prepare an interim report by July 1, 1994, and to propose statutory provisions to implement a regulatory program by December 1, 1994.

Throughout the studies, the agencies are required to take into account specifically enumerated non-environmental considerations such as economic impact and to provide opportunities for public notice and even to give notice to any person whose land is classified as riparian. However, that notice is informational only and does not require the landowner to dispute the designation at that time.

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CHAPTER 12

PESTICIDE REGULATION

Pesticides are chemicals used to kill or control pests, including insects, rodents, nematodes, fungi, weeds or bacteria. They are vital to the agricultural industry and essential for the protection of public health. In Arizona alone, approximately 40,000 applications of pesticides are made annually, amounting to more than 11 million pounds of pesticides. Phoenix Gazette (January 21, 1991). However, while pesticides have substantial beneficial uses, their improper use and disposal represents a significant threat to health and the environment. Given these dangers, pesticides are some of the most regulated substances produced by man.

Pesticide regulation consists of a complex web of federal, state and local laws. These laws fall into four broad categories:

- Registration requirements which generally must be followed by a manufacturer prior to offering the pesticide for sale.
- Use regulations applicable to the pesticide applicator.
- Disposal requirements applicable to unused pesticide, pesticide residues, and pesticide containers.
- Worker protection laws applicable to employees who handle or apply pesticides.

Agencies responsible for administering pesticide laws include the United States Environmental Protection Agency (EPA) which enforces registration, use and disposal regulations on the federal level, and the Chemicals Division of the Arizona Department of Agriculture (ADOA), which administers the state program for regulating pesticide use, registration and worker safety. Other agencies with authority over pesticides include the Arizona Department of Environmental Quality (ADEQ) which regulates the impact of pesticides on ground water and certain disposal regulations, the State Structural Pest Control Board, which regulates pesticides in buildings.

I. Registration

A. Federal Law

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The Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), 7 U.S.C. § 136 et seq., is the primary federal statute regulating pesticides. FIFRA establishes a detailed registration scheme for pesticides, which are defined as "(1) any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, and (2) any substance or mixture of substances intended for use as a plant regulator, defoliant, or desiccant." FIFRA, § 2(u). (There are a few limited exceptions to this definition). The term "pest" means (1) any insect, rodent, nematode, fungus, weed, or (2) any other form of terrestrial or aquatic plant or animal life or virus, bacteria, or other microorganism (except viruses, bacteria, or other microorganisms on or in living man or other living animals) which EPA declares to be a pest under other provisions of FIFRA. Id., § 2(t).

FIFRA generally prohibits the distribution or sale of any pesticide not registered with EPA. Id., § 3(a). Procedures for the registration of pesticides are contained at FIFRA § 3(c) and 40 C.F.R. Part 152. The registration process is initiated by filing an application with EPA. FIFRA § 3(c). A pesticide registration application must include a statement of all claims made for the pesticide, directions for use, a full description of tests made and results thereof relating to pesticide claims, and a request whether the pesticide is to be classified for general use or restricted use, or both. Id.

The applicant has a continuing obligation to submit information to EPA regarding any unreasonable adverse effects of a pesticide on the environment. Id. § 6(a)(2). Such informational requirements include the submission of toxicological studies, epidemiological studies, efficacy studies, studies of dietary or environmental pesticide residues, incident reports, toxic or adverse effect incident reports and dietary or environmental pesticide residue incident reports. 40 C.F.R. § 153 et seq.

EPA will approve a pesticide registration if it determines that: (a) the pesticide's composition warrants its proposed claims; (b) the pesticide's labeling and other material required to be submitted comply with FIFRA; (c) the pesticide will perform its intended function without unreasonable adverse effects on the environment; and (d) the pesticide will not generally cause unreasonable adverse effects on the environment when used in accordance with widespread and commonly recognized practice. FIFRA § 3(c)(5). If the applicant has not met the foregoing criteria, he is given an opportunity to correct deficiencies within thirty days. Id. § 3(c)(6).

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EPA is required to cancel the registration of a pesticide after five years unless the registrant or other interested persons with the concurrence of the registrant request that the registration be continued in effect. Id. § 6(a). In addition, EPA has authority to cancel a pesticide registration if labeling requirements do not comply with the Act or if the use of the pesticide causes unreasonable adverse effects on the environment. Id., § 6(b). Moreover, to prevent an imminent hazard during the time required to effectuate registration cancellation proceedings, EPA may order the suspension of a pesticide registration immediately. Id., § 6(c)(1).

FIFRA also requires establishments which produce pesticides to be registered with EPA. Id., § 7(a). Unlike pesticide registration, establishment registration is accomplished by submitting the name and address of the establishment to EPA. Upon receipt, EPA registers the establishment and assigns it an establishment number. Id., § 7(b). After registration, the establishment is required to provide EPA with information on the types and amounts of pesticides produced and sold or distributed by the establishment in the past year. Id., § 7(c).

B. Arizona Law

1. ADOA Registration

Arizona mandates registration of pesticides, but on a less comprehensive scale than FIFRA. Pesticides which are distributed, sold, transported or offered for sale within Arizona must be registered with the Chemicals Division of ADOA, and that registration must be renewed annually. A.R.S. § 3-351.A. The restriction on transportation applies only to pesticides delivered for transportation within Arizona or transported between points within the state. Id. Pesticides which are merely shipped through Arizona between points outside of the state are not covered by the registration requirement. Also, pesticides transported between two plants within the state owned by the same person are not covered by the registration requirement. Id., § 3-351.I.

To register a pesticide, the registrant must file a statement which includes the registrant's name and address, the name of the pesticide, a complete copy of the pesticide's label, including claims made for the pesticide and directions for use, and, if requested by the Division, a full description of the tests which provide a basis for the claims made for the pesticide. Id., § 3-351.B.; D. The Division has the authority to cancel the registration of a pesticide if necessary "in order to protect the public." Id., § 3-351.H.

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Arizona law prohibits the sale, distribution, offering for sale, or transportation within the state of pesticides that have not been registered in accordance with state law. Id., § 3-352.A.1. This prohibition also covers a pesticide if the claims made for the pesticide, directions for use, or composition of the pesticide differs from the representations made in connection with its registration. Id. This prohibition does not apply to (a) carriers lawfully engaged in transporting a pesticide within the state if the carrier allows ADOA, upon request, to inspect and copy the carrier's transportation records; (b) state and federal officials "engaged in the performance of their official duties"; or (c) the manufacturer or shipper of a pesticide intended for experimental use and supervised by state or federal officials. Id., § 3-353.A.

2. Groundwater Protection

Arizona also regulates, through the registration process, the impact of pesticides on groundwater quality. A.R.S. § 49-301 et seq. Any person who registers a pesticide in the state for agricultural use is required to submit to ADEQ specific information for each pesticide active ingredient that relates to the pesticide's impact on groundwater. Id., § 49-302.A. After December 1, 1987, no new pesticide may be registered unless the applicant has submitted requisite information to ADEQ. Id. § 49-302.F. The information must include data regarding water solubility, vapor pressure, octanol-water partition coefficient, soil adsorption coefficient, Henry's law constant, and dissipation studies, including hydrolysis, photolisis, aerobic and anaerobic soil metabolism and field dissipation, under conditions in Arizona or similar environmental use conditions. Id., § 49-302.A.

ADEQ is also required to establish numeric values for water solubility, soil absorption coefficient, hydrolysis, aerobic and an aerobic soil metabolism and field dissipation, and to establish by rule a groundwater protection list for pesticides with the potential to pollute groundwater. Id., § 49-303.A; § 49-305.

ADEQ is also required to notify ADOA not to register or to cancel registration of a pesticide intended to be applied by ground based application equipment or chemigation after December 1, 1989, if there is a "groundwater protection gap" for the pesticide. The "gap" means that insufficient data has been submitted to ADEQ pursuant to § 49-302.A. This penalty can be avoided by extension granted pursuant to § 49-306.A.1. Also, if ADEQ determines that a pesticide is carcinogenic, mutagenic, teratogenic or toxic to humans in concentrations at certain depths and the pesticide label cannot be changed

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to modify the approved use to insure that it does not pollute groundwaters of the state, it shall notify ADOA to cancel registration of pesticide. Id., § 49-309.A.

ADEQ is required to adopt rules to implement the groundwater protection program. Specifically, the rules include a requirement that a person who uses a pesticide that is on the groundwater protection list to report the use of that pesticide to ADEQ. The rules also require dealers of pesticides to make quarterly reports to ADEQ of all sales of those pesticides. A.R.S. § 49-305. These rules are published at A.A.C. R18-6-101 et seq.

II. Use

Use regulations include regulation of the pesticide applicator and limitations on methods of application (typically imposed through label requirements).

A. Federal Law

At the time of registration, a pesticide must be classified for general or restricted use although in some circumstances, it may be classified for both uses. FIFRA § 3(d). If the pesticide will not generally cause "an unreasonable adverse affect on the environment" when applied in accordance with label instructions or in accordance with "a widespread and commonly recognized practice," EPA will classify the pesticide for general use. Id., § 3(d)(1)(B). If such applications will cause unreasonable adverse affects on the environment, the pesticide will be classified for restricted use. Id.

Restricted use pesticides must be applied by certified applicators under federal or state control. In order for a state to regulate restricted use pesticides by certified applicators, the state must submit a plan to EPA for approval. Id. § 11(a)(2); 40 C.F.R. § 171.17. Arizona has received authority to regulate applicators of restricted use pesticides. See also 7C.F.R. Part 110 (recordkeeping requirements for certified applicators of federally restricted use pesticides).

A person may apply to EPA for an experimental use permit for a pesticide if the applicant can convince EPA that such a permit is needed to accumulate information necessary to register a pesticide. FIFRA § 5(a). EPA can, under certain circumstances, grant a state authority to issue an experimental use permit. Id., § 5(f). The Chemicals Division of the Arizona Department of Agriculture has authority under Arizona law to issue experimental use permits to any public or private research agency or educational institution for the purpose of experimentation. A.R.S. § 3-350.01. The Director of the

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Arizona Department of Agriculture has authority to submit to EPA "a state plan for issuing, monitoring, and controlling experimental use permits pursuant to [FIFRA § 5(f)]". Id., § 3-362.A.4.

Major use violations under FIFRA include detaching, altering, defacing or destroying the pesticide label and using a registered pesticide "in a manner inconsistent with its labeling." FIFRA § 12. The use of pesticide "in a manner inconsistent with its labeling" is perhaps the key prohibition. "Inconsistent use" is defined as the use of any registered pesticide in a manner not permitted by the labeling. Id. § 2(ee). This does not include (1) applying a pesticide at any dosage, concentration, or frequency less than that specified on the labeling unless specifically prohibited by the label, (2) applying a pesticide against any target pest not specified on the labeling if the application is to the crop, animal, or site specified on the labeling, unless the application is specifically prohibited by the label, (3) employing any method of application not prohibited by the labeling unless the labeling specifically states the product may be applied only by the methods specified on the labeling, and (4) mixing a pesticide or pesticides with a fertilizer when such mixture is not prohibited by the labeling. "Inconsistent use" also does not include any use of a pesticide in conformance with FIFRA sections 5 (providing for experimental use permits), 18 (providing exemptions for actions of state and federal agencies), or 24 (governing state regulation of pesticides). Also excluded from the definition of inconsistent use is any use of a pesticide in a manner that EPA determines to be consistent with the purposes of FIFRA.

B. Arizona Law

Rules governing the application and use of pesticides are found at A.A.C. R3-10-101 et seq. The rules provide for permits for regulated growers, sellers, and licenses for aircraft applicators, custom applicators, and agricultural pest control advisors. R3-10-201-206. There is also a process for certifying commercial and private applicators. R3-10-207, 208. The ADOA rules provide requirements for pesticide use, sales and equipment. R3-10-301 et seq. Those rules restrict pesticide use to a manner consistent with its labeling (similar to FIFRA) and provide specific application restrictions. R3-10-301. The rules also provide that "no person shall dump, negligently store or leave unattended any pesticide, or pesticide container or part thereof, at any place or under any condition where it presents a hazard to persons, animals or property." R3-10-305. Experimental use permits, pesticide sales, and equipment

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requirements are also covered by the regulations. R3-10-306-312.

ADOA also has the authority to designate "pesticide management areas" which are generally residential areas adjacent to agricultural land that have a "history of concerns" involving the aerial application of pesticides. A.R.S. § 3-366.A. In order to be designated as a pesticide management area, ADOA must find that the area is located less than a quarter mile from the property boundary of a residence, school, day care center or health care institution, the pesticide of concern is applied by air and is highly toxic or odoriferous, and at least 5 percent of the residences or any of the schools, day care centers or health care institutions located within a quarter mile of the area have filed a complaint with ADOA regarding pesticide use in the area. A.A.C. R3-10-308. Generally, aerial application of designated pesticides within pesticide management areas must be preceded by notice to ADOA "if possible". A.R.S. § 3-366.B.

The application and use of pesticides is also regulated by the Structural Pest Control Board. The Board's authority is limited to "structural pest control" which is defined as:

> [c]ontrolling household pests, wood-destroying pests or organisms or pests, including weeds, which are in the area near or around structures, in ornamental shrubs and trees, on golf courses, or in lawns or cemeteries and all pesticide application which could be harmful to public health, except pesticide applications governed by the [ADOA].

A.R.S. § 32-2301.20. A separate set of regulations governing structural pest control are provided which regulate use and storage of pesticides, licensing of fumigators, and certification of commercial applicators of pesticides. A.A.C. R4-29-01 et seq. Detailed revisions were made to these regulations effective December, 1992.

III. Disposal

A. Federal Law

1. EPA Voluntary Rules

Pursuant to the authority of FIFRA, EPA has promulgated rules governing disposal of pesticide waste and pesticide containers. 40 C.F.R. Part 165. These rules are mandatory only for EPA in carrying out its pesticide and container disposal operations. 40 C.F.R.

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§ 165.2(c). Broader disposal regulations have been issued under RCRA and are discussed below. Also, the FIFRA amendments of 1988 gave EPA broader authority to regulate storage and disposal of pesticides, and EPA is in the process of developing this program. See 56 Fed. Reg. 54025 (Oct. 21, 1991) (FIFRA regulatory agenda).

The EPA "voluntary" regulations contain a list of disposal procedures that are "not recommended". These provide that a person should not dispose of or store any pesticide, pesticide container or pesticide residue:

1. In a manner inconsistent with its labeling;

2. In a manner that would cause or allow open dumping (which is defined as placing pesticides or containers in a land site in a manner which does not protect the environment and is exposed to the elements, vectors, and scavengers);

3. In a manner that would cause or allow open burning (which is defined as the combustion of a pesticide or pesticide container in any fashion other than incineration);

4. In a manner that would cause or allow water dumping (i.e., into lakes, rivers, streams, etc.) or ocean dumping.

40 C.F.R. § 165.7.

EPA also has recommended procedures for the disposal of pesticides. Id., § 165.8. Organic pesticides, except those that contain mercury, lead, cadmium and arsenic compounds, may be:

1. Incinerated in a pesticide incinerator under prescribed conditions;

2. Buried in a specially designated landfill (if proper incineration is not available);

3. Injected into the soil (but only after seeking "guidance" or "advice" from EPA); or

4. Degradation by chemical methods or procedures (but again, only with EPA guidance).

Id. In addition, if approved procedures are not available, temporary storage of pesticides can be undertaken. Well injection is strongly discouraged.

Metallo-organic pesticides, except those which contain mercury, lead, cadmium or arsenic compounds,

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should be processed to recover their metal content prior to incineration. If this method is not available, the procedures prescribed above should be followed.

Disposal of organic mercury, lead, cadmium and arsenic pesticides and all inorganic pesticides should follow these recommended procedures:

1. Chemically deactivate the pesticide by conversion to nonhazardous compounds and recover the heavy metals, then dispose of as recommended above; or,

2. If (1) is not available, encapsulate the pesticide and dispose of in a specially designated landfill; or,

3. If (1) and (2) are not available, place in suitable containers and temporarily store until adequate disposal facilities or procedures are available.

Id., § 165.8(c).

Recommended procedures for pesticide container disposal are also provided. Id., § 165.9. Combustible containers (which contained organic or metallo-organic pesticides except organic mercury, lead, cadmium or arsenic) can be disposed of by incineration or burial in a specially designated landfill. Open burning of a small quantity of containers is allowed only when permitted by local authorities. Id., § 165.9(a).

Non-combustible containers that held organic or metallo-organic pesticides (except organic mercury, lead, cadmium or arsenic) should be triple rinsed. If the containers are in good condition they may be reused by refilling with a similar chemical. If not reusable, they should be punctured and recycled as scrap metal. As an alternative, the containers can be crushed and disposed of in a sanitary landfill. If the container was not triple-rinsed, it should be disposed of in a specially designated landfill. Id., § 165.9(b).

Containers that formerly held organic arsenic, cadmium, lead or mercury pesticides or inorganic pesticides should be triple rinsed, punctured and disposed of in a sanitary landfill. If the containers have not been triple rinsed, they should be encapsulated and placed in a specially designated landfill. Residues, if not utilized, should be disposed of in a manner prescribed for each pesticide as described above. The regulations also contain recommendations to homeowners regarding pesticide container disposal. Residential users should apply the pesticide according to label instructions and then wrap the container in several layers of paper and dispose of

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"singly" during routine municipal solid waste disposal. § 165.2(e).

The FIFRA amendments of 1988 significantly expanded EPA authority to regulate the storage and disposal of pesticides. FIFRA § 19; 54 Fed. Reg. 18076, 18083 (April 26, 1989). EPA was given authority to, among other things, require that the pesticide label contain requirements and procedures for the transportation, storage, and disposal of the pesticide, any container of the pesticide, any rinsate containing the pesticide, or any other material used to contain or collect excess or spilled quantities of the pesticide. FIFRA § 19(a)(1)(B). In addition, EPA was given the authority to regulate the storage, transport and disposal of pesticides (including containers, rinsates and other materials) whose registration had been cancelled. Id., § 19(a)(3). Furthermore, within 3 years of the effective date of the FIFRA amendments, EPA is required to promulgate regulations for the design of pesticide containers "that will promote the safe storage and disposal of pesticides." Id. § 19(e)(1)(A). EPA must also promulgate, within 3 years, regulations prescribing procedures and standards for the removal of pesticides from containers prior to disposal. Id. § 19(f)(1)(A).

EPA submitted a Report to Congress on these rules in June, 1992, and issued a proposed rule in May, 1993 as the first step in implementing FIFRA § 19. See 58 Fed. Reg. 26856 (May 5, 1993). The May 1993 proposal would (1) establish criteria for acceptable storage and disposal plans which registrants can submit to EPA to become eligible for reimbursement of storage costs under FIFRA § 19(c)(b); (2) establish indemnification procedures for certain suspended or cancelled pesticides; and (3) amend regulations regarding EPA's responsibility to accept for disposal certain suspended and cancelled pesticides. 58 Fed. Reg. at 26856. EPA intends to develop at a later date regulations regarding storage and disposal data requirements (for pesticide registration), container design and residue removal. Id. EPA is also considering possible rules under FIFRA § 19 authority on storage and transportation of pesticides and management of excess pesticides. Id.

4. Hazardous Waste Regulations

Disposal of pesticides may be governed by hazardous waste statutes. On the federal level, this is done through the Resource Conservation and Recovery Act (RCRA), 42 U.S.C § 6901 et seq. and accompanying regulations, 40 C.F.R. Parts 260 through 270. At the state level, this is done through the Hazardous Waste Management Act (HWMA) and rules (A.A.C. R18-9-201 et seq.) which are modeled on (and

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are nearly identical to) the federal hazardous waste rules. For convenience purposes, we will limit the citations in this section to the federal regulations, although in all instances the federal rule has been adopted by reference as state law.

Other course materials discuss in detail the scope of hazardous waste regulation under RCRA/HWMA and are useful in understanding regulation of pesticide wastes. The following is a brief overview of these regulations with emphasis on unique pesticide provisions.

If pesticides are "disposed of" as wastes rather than used as a product, they may be considered a hazardous waste and subject to stringent handling requirements. Pesticide wastes can consist of residues left at the bottom of containers or off-specification or unused product. The starting point for determining whether pesticides or pesticide containers are regulated under the hazardous waste laws is determining whether those materials constitute "solid" or "hazardous" wastes. Under the hazardous waste regulations, a solid waste is defined as any "discarded material" that is not otherwise excluded from regulation. 40 C.F.R. § 261.2(a)(1). A discarded material is in turn defined as any material which is abandoned, recycled or considered inherently waste-like. Id., § 261.2(a)(2). A material is considered abandoned if it is disposed of, burned or incinerated, or accumulated, stored or treated (but not recycled) before or in lieu of being abandoned by being disposed of, burned, or incinerated. Id., § 261.2(b). Therefore, pesticides or pesticide containers which are discarded or destined for discard can qualify as solid wastes under the hazardous waste laws.

A hazardous waste is in turn defined as a solid waste not otherwise excluded by the regulations, which exhibits a hazardous characteristic or which is listed as hazardous under the regulations. (Substantial changes to the hazardous characteristic rule are currently being considered by EPA and are discussed elsewhere in course materials.) Id., § 261.3. The characteristic of toxicity, for instance, can be met by a sufficient concentration of pesticides (such as chlordane and toxaphene) in a waste material. Id., § 261.24(b). Also, the listed wastes include a substantial number of pesticides. Id., § 261.33(e), (f). Therefore, discarded pesticide materials can be considered hazardous wastes.

EPA considers pesticide residue (which otherwise meets the hazardous waste criteria discussed above) that remains inside a container as hazardous waste, unless the container is rendered "empty." The regulations consider a container to be empty if:

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1. All wastes have been removed that can be removed using the practices commonly employed to remove materials from that type of container, e.g., pouring, pumping and aspirating, and

2. No more than 2.5 centimeters (1 inch) of residue remain on the bottom of the container or inner liner, or

3. (A) No more than 3% by weight of the total capacity of the container remains in the container or inner liner if the container is less than or equal to 110 gallons in size, or

(B) No more than .3% by weight of the total capacity of the container remains in the container or inner liner if the container is greater than 110 gallons in size.

Id., § 261.7(b)(1).

A container which held an "acute" hazardous waste (listed at §§ 261.31, 261.32 or 261.33(e)) is empty if the container or inner liner has been triple rinsed using a solvent capable of removing the commercial chemical product or manufacturing chemical intermediate, the container or inner liner has been cleaned by another method shown to be equally effective, or the inner liner (which prevented contact of the waste with the container) has been removed. Id., § 261.7(3). FIFRA prohibits the use of pesticide containers for any purpose except enclosing pesticides.

Under certain circumstances, pesticide wastes generated by a farmer can be exempt from hazardous waste regulation. Id., § 262.10(d), § 262.70. First, the farmer must follow a procedure that is identical for the emptying of a container of an acute hazardous waste, regardless of the type of hazardous waste in the container. Also, he must dispose of those pesticide wastes "on his own farm in a manner consistent with the disposal instruction on the pesticide label." Id. § 262.70. This exemption only applies to pesticide wastes, not other types of hazardous wastes which may be generated by the farmer.

Persons handling pesticide wastes (who are not farmers) must treat the rinsate from pesticide container as a hazardous waste, unless the rinsate can be used in the formulation or application process. This includes proper treatment, storage, disposal, and transport including the use of manifests. See generally 40 C.F.R. Part 262. The precise nature of the measures are determined by the amount of hazardous waste generated per month. Id. § 261.5.

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EPA recently proposed rules to "stream-line" regulation of cancelled or suspended and recalled pesticides that qualify as hazardous waste. Proposed 40 C.F.R. Part 273, 58 Fed. Reg. 8102 (Feb. 11, 1993). The proposal could reduce requirements applicable to certain generators, transporters, or collection points and ostensibly is designed to encourage recycling and proper management of these wastes. Id.

5. Solid Waste Regulations

Disposal of pesticide containers must be in accordance with state refuse regulations, including a pesticide disposal regulation adopted in 1979. A.A.C. R18-8-513. The refuse rules predate the hazardous waste regulations discussed above, and therefore in certain instances, disposal which meets refuse rule requirements may not comply with the hazardous waste rules.

The refuse rules prohibit the disposal of pesticide containers except to a sanitary landfill (after following the procedures outlined in the rule), or at a site or in a manner expressly approved by ADEQ, or by burning. R18-8-513.B. Burning is only allowed if it is done in accordance with all applicable state and local regulations, is conducted in an open area isolated and downwind from populated areas and does not involve more than 50 pounds of empty containers per day. R18-8-513.B.3.

Before disposing of a pesticide container such as a can, bottle, barrel, drum or tank, in a sanitary landfill, it must be triple-rinsed with a volume of water or other appropriate solvent equal to 10% of the container's capacity. Alternative methods are allowed if they achieve the same results. The rinsate from this process (which could be a hazardous waste) may not be "discharged to the environment" except in accordance with applicable laws. All rinsed containers must be punctured and crushed so they will not hold a liquid. R18-8-513.C.1. Finally, pesticide containers that are in the form of combustible bags or packages must be either folded or tied into bundles or put in a secondary container labeled as holding a pesticide residue. R18-8-513.C.2.

IV. Worker Safety

Since the mid-1970's, EPA has had standards designed to protect agricultural workers from harmful pesticide exposures. 40 C.F.R. Part 170. As recent as October, 1992, these rules only protected "farm workers performing hand labor operations in fields after ground (other than those incorporated into the soil), aerial or other type of application of pesticides." Former 40 C.F.R. § 170.1

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(1992). The rules were extremely limited and established requirements such as re-entry time for workers after pesticide application to a field. Former § 170.3(b).

Effective October 20, 1992, EPA significantly expanded these regulations to include employees in forests, nurseries, and greenhouses, and employees who handle (e.g., mix, load, apply) pesticides for use in these locations. 57 Fed. Reg. 38102 (Aug. 21, 1992) (final rule); See also 57 Fed. Reg. 42472 (Sept. 14, 1992) (USDA comments on final worker protection standard). The new regulations expand requirements for warnings about applications, use of personal protective equipment, and restrictions on entry to treated areas, and add new provisions for decontamination, emergency assistance, contact with handlers of highly toxic pesticides, and pesticide safety training. Pesticide registrants are required to add appropriate labeling statements referencing these regulations and specifying application restrictions restricted-entry intervals, personal protective equipment, and notification to workers of pesticide applications.

State law also protects employees who work with pesticides. Specifically, ADOA is required to adopt and enforce rules prescribing safe work practices for employees who "mix, load, apply, store or otherwise handle pesticides for agricultural uses and for employees who are exposed to residues of these pesticides after application or persons who are incidentally exposed to pesticides when or after they are applied." A.R.S. § 3-3106. The rules are to include provisions covering exposure of pilots, mixers, loaders, flaggers and ground and aerial applicators to pesticides; employee training and instruction; emergency medical care; the time and conditions under which employees may work alone with pesticides; adequate facilities, equipment and water for changing clothes and washing; necessary safety equipment and its cleaning; and provisions which limit field re-entry after pesticide application. Id. The regulations adopted under these provisions are found at A.A.C. R3-8-201 et seq.

V. Enforcement

Enforcement authority is administered by the agencies discussed above. The extent of that authority, and the severity of penalties vary widely, depending on the particular law implicated. For instance, EPA has authority to issue a "stop sale, use, or removal" order to any person who violates FIFRA and to seize pesticides for violations such as adulteration, misbranding and false labeling. FIFRA § 13. EPA also has authority to assess civil penalties up to $5000 a day against registrants,

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commercial applicators, wholesalers, dealers, retailers and distributors who violate the Act and to assess civil penalties up to $1000 a day against private applicators who violate the Act after receiving a warning from EPA or following a citation for any prior violation of the Act. Id., § 14. A knowing violation of the Act can subject a registrant or an applicant for registration to a fine up to $50,000, or one year of imprisonment, or both. Knowing violations by private applicators can subject such persons to fines up to $1000, or imprisonment up to thirty days, or both.

Congress has given the states primary enforcement responsibility over FIFRA use violations. Id., § 26. Although Congress has deferred pesticide use enforcement to the states, EPA retains authority to enforce FIFRA use violations where EPA finds that emergency conditions exist that require immediate action or where a state is unwilling or unable to respond adequately to the emergency. Id., § 27.

ADOA has enforcement authority over pesticide use under A.R.S. § 3-368. Any person who, after opportunity for hearing, is found to have caused a non-serious violation is subject to a $500 civil penalty. A serious violation carries a civil penalty of $10,000. Serious and non-serious violations can result in probation, suspension, revocation, non-renewal or denial of a permit, license or certification. § 3-370. Criminal penalties can be assessed in addition to civil penalties for knowing violations. § 3-370.C. ADOA and the Arizona Department of Health Services ("ADHS") are also authorized to issue a cease and desist order up to twenty-four hours in duration to halt the application of a pesticide upon a finding that the application presents an imminent and serious hazard to public health and safety. Id. § 3-371. ADOA can issue cease and desist orders for adulteration, misbranding, registration, labeling and other violations. Id. § 3-354. It can also issue a "stop sale, use or removal" order to the owner or custodian of any pesticide found to be in violation of the law and seek a temporary or permanent injunction to restrain persons from violating the pesticide laws. Id. § 3-356.C.; § 3-354.B.2. Unlike FIFRA, state law provides a private right of action (a citizen suit) against persons in violation of the pesticide laws and against ADOA itself for failure to perform non-discretionary duties under state law. Id. § 3-367.A.

Separate enforcement authority is exercised by ADEQ and the Structural Pest Control Board. Under the pesticide contamination prevention rules, ADEQ can impose a penalty of up to $10,000 per day against the registrant of a pesticide for which there is a "ground water

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protection data gap." Id. § 49-304.A. Additionally, ADEQ has very broad authority under the hazardous waste laws for imposing penalties for improper disposal of pesticide wastes. ADEQ has the authority, for instance, to issue a compliance order if it has reasonable cause to believe that a person is violating the hazardous waste law. If the violator fails to take corrective action, ADEQ has the authority to issue an order assessing a civil penalty of not more than $1,000 for each day of continued non-compliance. In addition, the Attorney General has authority to bring an action to recover penalties against a violator of up to $25,000 per day for each day of violation. See generally, Id. § 49-923 through 926. The Structural Pest Control Board has authority to take disciplinary action, as well as impose civil penalties for violation of the structural pest control regulations. Id. § 32-2321 et seq.

VI. Other Laws

Other federal and state laws impact, to some extent, the use and disposal of pesticides. Perhaps the most significant laws are those governing releases of hazardous substances to the environment, the so-called "Superfund" laws. Water pollution, air pollution, and wildlife protection laws can also regulate pesticides.

Other federal regulation impacting the use of pesticides includes the Toxic Substances Control Act (regulating manufacture and importation of toxic chemicals), the Occupational Safety and Health Act (regulating worker exposure to chemicals), the Hazardous Materials Transportation Act (regulating transport) and the Food, Drug and Cosmetic Act (regulating pesticide residue in food). A full discussion of these laws is beyond the scope of this article.

A. Superfund Laws

The federal Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and its state counterpart, the Water Quality Assurance Revolving Fund ("WQARF") statute, can apply to mishandled pesticide wastes. CERCLA provides for the notification and clean up of releases of hazardous substances to the environment. A release of a hazardous substance in a reportable quantity must be reported to the National Response Center. 42 U.S.C. § 9603. Several pesticides (e.g. methoxychlor, chlordane, toxaphene) are considered hazardous substances. However, application of a pesticide product registered under FIFRA is exempt from the notification requirement. § 9603(e). Disposal of such a product, however, would require notification. Also, CERCLA imposes liability as "responsible parties" for disposal of hazardous

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substances. § 9607(a). Again, application of a registered pesticide product is exempt from liability, but disposal of the same would not be. § 9607(i).

WQARF also regulates the release of hazardous substances to the environment. A.R.S. § 49-281 et seq. The term "hazardous substance" is similar in scope to the CERCLA definition and like CERCLA can include certain pesticides. Id., § 49-281.3; § 49-201.16. WQARF also establishes notice requirements for the release of reportable quantities of hazardous substances into the environment and establishes liability for responsible parties for remedial action costs. Id., §§ 49-284, 285. WQARF contains exemptions similar to CERCLA regarding application of a pesticide product registered under FIFRA and applied according to label requirements. Id., § 49-283.D.5.

CERCLA/WQARF concerns are particularly relevant to the purchase of former agricultural property. Generally, the owner of property contaminated by hazardous substances (including pesticides) can be liable for the cost of cleaning up the contamination. See, A.R.S. § 49-283.A.1; 42 U.S.C. § 9607. Both CERCLA and WQARF provide exemptions for the "innocent purchaser." 42 U.S.C. § 9601(35); Id., § 9607(b)(3); A.R.S. § 49-283.B.3. Innocent purchaser status is based in part on the investigations conducted by the buyer to ensure that a site is not contaminated. Former agricultural property presents a unique problem because its mere status as agricultural property raises the possibility that it has been contaminated by pesticides (including pesticides which have not been used in accordance with label instructions) and therefore particularly careful scrutiny of such property prior to purchase is usually warranted. High concentrations of pesticides on such property, beyond levels normally associated with normal pesticide application, is one indicator that improper disposal has occurred.

B. Water Pollution Laws

The Clean Water Act (CWA) regulates pesticide disposal in "waters of the United States" and to publicly owned treatment works (i.e., municipal sewer systems). This is accomplished primarily through National Pollutant Discharge Elimination System (NPDES) permits which regulate toxic substances in discharged wastewaters and impose industrial pretreatment requirements on businesses that discharge to municipal sewers.

Arizona has a broad program for protecting water quality, including the pesticide contamination prevention regulations discussed above, and the WQARF statutes also

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discussed above. These laws may be implicated by pesticide use or disposal.

C. Wildlife Laws

The use of pesticides can also affect wildlife, and thereby come under the regulation of various wildlife protection laws. Two statutes, The Endangered Species Act (ESA) and the Migratory Bird Treaty Act ("MBTA"), forbid the "taking" of species of wildlife (or in the case of the MBTA, migratory birds) listed as endangered or threatened under the ESA, or as protected under the MBTA. 16 U.S.C. § 1538(a); Id. § 703. A taking under the ESA is defined rather broadly to include killing, wounding, capturing, and harassment of protected species. § 1532(19). Under the MBTA, taking is defined more narrowly as killing. § 703.

In Defenders of Wildlife v. EPA, 882 F.2d 1294 (8th Cir. 1989), a federal appellate court found that the registration by EPA of strychnine constituted a taking of endangered species. The strychnine was used by farmers and ranchers to control rodents. Non-target species (including the black-footed ferret, a protected species) would ingest the bait and also be killed. Clearly, if the registration by EPA of a pesticide can constitute a "take", the direct use of a pesticide by an individual could likewise constitute a take, if an endangered or threatened species were impacted by the use.

There are two famous cases involving enforcement actions under the MBTA. In United States v. FMC Corp., 572 F2d. 902 (1978), a pesticide manufacturer was convicted for killing protected species of birds. The birds were killed by exposure to high levels of pesticides when they landed on wastewater treatment ponds maintained by the manufacturer. The Court held that the MBTA is a strict liability statute, meaning that, even though the corporation did not intentionally kill the birds, its act of maintaining the ponds resulted in the birds' death and therefore the corporation was liable. In another reported case under the MBTA, a pesticide dealer, applicator, and farmer were convicted of killing a protected species of bird when they applied pesticides to a field where migratory birds were known to repeatedly feed. The pesticide's label prohibited such application. United States v. Corbin Farm Service, 444 F. Supp. 510 (E.D. Cal. 1978).

D. Air Pollution Laws

Disposing of pesticide containers by incineration implicates air pollution laws. For example, 40 C.F.R. § 165.8 provides that incineration of containers must meet

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applicable Clean Air Act requirements. On the state level, open burning is prohibited, except in compliance with air pollution regulations. A.R.S. § 49-501, A.A.C. R18-2-402. The state allows pesticide container burning only when there is no safe alternative method of disposal and prohibits open burning of inorganic pesticides or pesticides that contain arsenic, cadmium, lead or mercury compounds. Id., R18-2-402.E.2.b. ADEQ can, and has, delegated the authority to issue open burning permits to responsible local officials. Id., R18-2-402.F. Permitted fires must be conducted in accordance with Open Burning Guidelines for Air Pollution Control. Id.

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CHAPTER 13

EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW REGULATION

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On October 17, 1986, the federal Emergency Planning and Community Right to Know Act of 1986 ("EPCRA"), 42 U.S.C. § 11001 et seq., was signed into law. EPCRA was only one part (Title III) of the much broader Superfund Amendments and Reauthorization Act of 1986 ("SARA"), which amended the federal Superfund law (CERCLA). EPCRA was in large part a response to the Bhopal industrial disaster in India and the fear that something similar could happen in the United States. As a result of the Act, certain businesses are required to provide information about a wide range of potentially hazardous chemicals used in their facilities to state and local authorities (including, in some cases, local fire departments). In most cases, this information also is available to the public on request. A similar state law closely parallelling federal requirements was enacted in Arizona in 1988. See Ariz. Rev. Stat. § 26-341 et seq. This chapter will focus on the more detailed EPCRA requirements and discuss any differences in Arizona law where appropriate.

The basic philosophy inherent in EPCRA is that the public and emergency response personnel have a right and a need to know about potential hazards to the public posed by a facility. Local emergency response authorities need this information to develop adequate emergency plans so that when an accident occurs, they will be able to assess the scope of any danger and be prepared to take appropriate steps to protect the public. Civil penalties of up to $25,000 per violation per day may be assessed for failure to comply with some of EPCRA's reporting requirements.

EPCRA is organized into three parts. Subchapter I establishes the framework for state and local emergency planning. Subchapter II sets forth reporting requirements for the submission of information concerning the type and quantity of hazardous chemicals maintained at certain facilities to federal, state, and

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local agencies. Subchapter III contains miscellaneous provisions concerning trade secret protection, enforcement, and public availability of information. This chapter discusses all three Subchapters of EPCRA (and all analogous Arizona requirements).

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I. SUBCHAPTER I: SECTIONS 301-305: EMERGENCY PLANNING AND NOTIFICATION

A. SECTION 301: ESTABLISHMENT OF STATE COMMISSIONS, PLANNING DISTRICTS, AND LOCAL COMMITTEES (42 U.S.C. § 11001)

1. STATE EMERGENCY RESPONSE COMMISSIONS

The governor of each state must appoint a state emergency response commission. If he or she fails to appoint one, the governor operates as the emergency response commission until one is appointed. The state commission appoints and supervises the local emergency planning committees (see below), and establishes procedures for handling public requests for information.

In Arizona, the governor has appointed the Arizona Emergency Response Commission. See Ariz. Rev. Stat. § 26-343. The Commission consists of the directors (or their designees) of the Division of Emergency Services, the Department of Environmental Quality, the Department of Health Services, the Department of Public Safety, and the Department of Transportation. See Ariz. Rev. Stat. § 26-343(A). An advisory committee that includes the state fire marshal has also been created to assist the Commission. See Ariz. Rev. Stat. § 26-343(B). The Commission is authorized to administer EPCRA in Arizona and also to administer all requirements of the state emergency planning and community right to know statute. See Ariz. Rev. Stat. § 26-343(F). The Commission also is empowered to adopt rules; these rules may not be more stringent than EPCRA and its implementing rules, unless a more stringent result is specifically required by the state statute. See Ariz. Rev. Stat. § 26-343(I). To date, the Commission has not adopted any rules.

2. LOCAL EMERGENCY PLANNING DISTRICTS

The state emergency response commission has the responsibility of designating emergency planning districts to facilitate the preparation and implementation of emergency plans. The emergency planning district may consist of existing political subdivisions or multi-jurisdictional planning commissions. This is the approach Arizona has followed - each county in the state is an emergency planning district.

3. LOCAL EMERGENCY PLANNING COMMITTEES

The state emergency response commission must appoint members of a local emergency planning committee for each emergency planning district. The emergency planning committee must include members from the

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following groups: elected, state and local officials; law enforcement, civil defense, firefighting, first aid, health, local environmental, hospital, and transportation personnel; broadcast and print media; community groups; and owners and operators of facilities subject to the requirements of Subchapter I. The emergency planning committee has the responsibility of coming up with the emergency plan (discussed below), and must allow public comment on the plan and provide public notification of committee activities. Like the state emergency response commission, the local emergency planning committee must establish procedures for handling public requests for information. The scope of the required emergency plan is outlined in Section 303, discussed below.

The Arizona provision authorizing the Commission to appoint local emergency planning committees tracks EPCRA very closely. See Ariz. Rev. Stat. § 26-344. One wrinkle added by the Arizona statute is to allow members of the public to petition the Commission to modify the membership of any local emergency planning committee. See Ariz. Rev. Stat. § 26-344(D).

B. SECTION 302: SUBSTANCES AND FACILITIES COVERED BY THE EMERGENCY PLANNING AND NOTIFICATION PROVISIONS OF SUBCHAPTER I (42 U.S.C. § 11002)

1. SUBSTANCES COVERED

The requirements of Subchapter I of EPCRA (i.e., the emergency planning and notification requirements of Sections 301-305) apply only to those substances designated as "extremely hazardous substances." (By contrast, reporting requirements under Sections 311-313 apply to a much broader range of substances). The list of extremely hazardous substances can be found in the Appendix to 40 C.F.R. Part 355. Currently, there are over 360 extremely hazardous substances.

2. THRESHOLD PLANNING QUANTITIES (TPQs)

A facility must engage in emergency planning based on the presence of an extremely hazardous substance only if that substance exists at the facility in an amount exceeding its threshold planning quantity ("TPQ"). Each extremely hazardous substance's TPQ is listed in the Appendix to 40 C.F.R. Part 355. In determining whether the TPQ of an extremely hazardous substance is present, it is necessary to determine whether, at any given instant, a facility has on-site, in all forms where the substance exists in concentrations greater than 1% by weight, an amount of an extremely hazardous substance

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exceeding its TPQ. If the extremely hazardous substance exists in forms where it is less than 1% by weight of a compound or mixture, it is regarded as de minimis and its volume is not considered in determining whether the TPQ level of the substance is present. See 40 C.F.R. § 355.30(e)(1). Solids on the extremely hazardous substance list have two alternative TPQ's separated by a slash (for example "500/10,000"). The lower TPQ is applicable only if the solid: (1) exists in powdered form and has a particle size less than 100 microns; or (2) is handled in solution or in molten form; or (3) meets the criteria for a National Fire Protection Association Rating of 2, 3, or 4 for reactivity. Unless one of these three situations exists, the higher amount is the applicable TPQ. See 40 C.F.R. § 355.30(e)(2)(i).

3. FACILITIES COVERED

Any facility at which an extremely hazardous substance is present in an amount exceeding its TPQ is subject to the requirements of Sections 301-305. Facility means all buildings, equipment, structures, and other stationary items located at a single site. The term also includes natural structures serving as containment structures for human use, including subsurface structures, if chemicals are purposefully placed in or removed from such structures by human means. See 40 C.F.R. § 355.20. One significant exception does exist: EPCRA generally does not apply to the transportation (including storage incident to transportation) of substances otherwise subject to EPCRA. See 42 U.S.C. § 11047. As discussed below, however, transportation facilities are subject to the emergency release notification requirements of Section 304.

Each covered facility must notify the state emergency response commission that it is subject to the emergency planning and notification requirements of Sections 301-305. See 40 C.F.R. § 355.30(b). Each such facility must also appoint a facility emergency response coordinator and notify the local emergency planning committee of that person's identity. See 40 C.F.R. § 355.30(c). Finally, the facility must notify the local emergency planning committee of any changes occurring at the facility that may affect community planning. See 40 C.F.R. § 355.30(d).

Arizona statutes on the required scope of emergency planning and notification (i.e., facilities and substances covered) track EPCRA almost identically. See Ariz. Rev. Stat. §§ 26-346 (substances covered) and 26-347 (facilities covered). The one significant difference in state law is that individual facilities

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are required to develop emergency response plans. Such plans are not required under federal law. This requirement is discussed below.

C. SECTION 303: COMPREHENSIVE EMERGENCY RESPONSE PLANS (42 U.S.C. § 11003)

1. REQUIRED EMERGENCY PLANS

Each local emergency planning committee is required to prepare (and annually update) an emergency plan. This plan must include (but is not limited to) the following information: (1) identification of facilities covered under Subchapter I, identification of routes likely to be used to transport extremely hazardous substances, and identification of facilities contributing to or subjected to additional risk because of their proximity to facilities covered under Subchapter I; (2) methods and procedures to be followed by facility owners and operators and medical personnel in responding to a release of extremely hazardous substances; (3) designation of a community emergency coordinator and facility emergency coordinators; (4) procedures providing for effective and timely notification by the facility emergency coordinator and the community emergency coordinator to persons specified in the emergency response plan and to the general public when a release has occurred; (5) methods for determining the occurrence of a release, and the likely affected area or population; (6) identification of emergency equipment and facilities available in the community and at each covered facility; (7) evacuation plans; (8) training programs, including schedules for training emergency response and medical personnel; and (9) methods and schedules for exercising the emergency plan. The local emergency planning committee may request from covered facilities whatever information is necessary to facilitate implementation of the emergency plan. The state emergency response commission then reviews the proposed plan to ensure that it is consistent with the plans adopted by other local emergency planning committees in the state. The EPA has published general guidance documents for preparing and implementing emergency plans. If desired by the local emergency planning committee, its plan will be reviewed by regional response teams established pursuant to CERCLA.

Arizona law tracks EPCRA very closely with respect to the preparation of comprehensive emergency response plans by local emergency planning committees. See Ariz. Rev. Stat. § 26-345. Arizona does require that each local emergency planning committee conduct at least a biennial exercise of its emergency response plan. See Ariz. Rev. Stat. § 26-345(C).

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One significant additional requirement is imposed by Arizona with respect to the preparation of emergency response plans. The state statute requires that facilities devise their own individual response plans, and set out what must be included in those plans. This required information includes: (1) the name, address, and telephone number of the facility emergency coordinator and an alternate; (2) a description of emergency warning systems and a list of emergency personnel and health professionals near the facility; (3) a description of employee emergency response training and emergency preparedness programs; (4) a description of appropriate emergency equipment necessary to respond to a release; (5) a description of emergency response procedures, including notification procedures and evacuation plans in the event of a release; (6) identification of routes and transportation methods used to carry extremely hazardous substances to and from the facility, if known; and (7) provision for at least an annual review of the plan and provisions to demonstrate the capability to execute the plan upon the request of the state emergency response commission. See Ariz. Rev. Stat. § 26-347(D). Under state law, the facility's response plan must be submitted to the local fire department, as well as to the local emergency planning committee and the state emergency response commission. Id.

D. SECTION 304: EMERGENCY NOTIFICATION IN THE EVENT OF A RELEASE (42 U.S.C. § 11004)

1. REPORTABLE RELEASES

The release of certain substances from a facility (which for purposes of release notification includes means of transportation, such as motor vehicles, rolling stock, and aircraft) at which hazardous chemicals are produced, used, or stored may require the facility owner or operator to notify federal, state, or local authorities. If the release is (1) of an extremely hazardous substance in excess of its EPCRA reportable quantity (RQ) (also given in the Appendix to 40 C.F.R. Part 355, and not the same as that substance's TPQ), or (2) is of a "hazardous substance" as defined by CERCLA whose release would have to be reported under Section 103(a) of CERCLA (i.e., where the release exceeds the substance's CERCLA reportable quantity, found at 40 C.F.R. Part 302, Table 302.4; where no CERCLA RQ has been established, EPCRA Section 304 reporting must be made for any release of a hazardous substance in excess of one pound), then the facility must meet the EPCRA reporting requirements set forth below. See 40 C.F.R. § 355.40(a)(1). Section 304 reporting requirements are in addition to any possible CERCLA reporting require-

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ments, and do not take the place of such requirements. In other words, release of a "hazardous substance" in an amount exceeding its CERCLA RQ could trigger reporting requirements under both CERCLA and EPCRA.

2. EXCEPTIONS

Section 304 reporting requirements do not apply to: (1) releases resulting in exposure solely to persons within the boundaries of the facility; (2) "continuous" releases under § 103(f) of CERCLA, for which similar notification has already been given to the EPA (except for "statistically significant increases" as defined in § 103(e) of CERCLA); (3) releases exempt from CERCLA reporting under § 101(22) of CERCLA (i.e., when the release is from certain engine exhaust, certain nuclear incidents, or the normal application of fertilizer); (4) "federally permitted releases" under § 101(10) of CERCLA (essentially, a release allowed, through permit or otherwise, by a federal or state statute more narrowly addressed to the type of release at issue; for example, releases permitted under the Clean Water Act or RCRA); (5) releases of pesticide products exempted from CERCLA reporting by § 103(e) of CERCLA; (6) releases not meeting the technical definition of "release" in § 101(22) of CERCLA; and (7) certain releases of radionuclides. See 40 C.F.R. § 355.40(a)(2).

3. NOTIFICATION REQUIREMENTS

a. Recipients: The owner or operator of a facility must immediately notify the community emergency coordinator of the local emergency planning committee and the state emergency planning commission of any reportable release. See 40 C.F.R. § 355.40(b)(1). (By contrast, notice of a release under CERCLA, which may be required in addition to Section 304 reporting for releases of certain substances, is made on the national level, to the National Response Center). Under Arizona law, notice also must be provided to the appropriate emergency response unit at ADEQ. See Ariz. Rev. Stat. § 26-348(A).

b. Contents: Notification must include, to the extent known at the time notice is given: (1) the chemical name or identity of any released substance; (2) whether the chemical is an extremely hazardous substance; (3) an estimate of the quantity released into the environment; (4) the time and duration of the release; (5) the medium into which the release occurred; (6) any known or anticipated acute or chronic health risks and, where appropriate, advice regarding necessary medical attention; (7) proper

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precautions to take as a result of the release; and (8) the names and telephone numbers of persons to be contacted for further information. See 40 C.F.R. § 355.40(b)(2). As soon as possible following a release, the owner or operator must provide written follow-up notice, updating the above information and including additional information on: (1) actions taken to respond to and contain the release; (2) any known or anticipated acute or chronic health risks associated with the release; and (3) where appropriate, advice regarding medical attention required for those exposed. See 40 C.F.R. § 355.40(b)(3).

Emergency notification provisions under state law are almost identical to EPCRA. One exception relates to the scope of the written follow-up notice required after a reportable release has occurred. This written follow-up notice must include, in addition to the information required under federal law, a summary of measures which have been or will be taken at the facility to avoid the recurrence of similar releases. See Ariz. Rev. Stat. § 26-348(B).

4. PENALTIES FOR FAILURE TO NOTIFY

The civil penalties for violating emergency release notification requirements can be up to $25,000 for each violation. For continuing violations, the civil penalties are up to $25,000 per day per violation for a first violation and $75,000 per day per violation for a second violation. Criminal penalties of up to $25,000 and/or two years in prison may be imposed for a knowing and willful failure to provide emergency notice of a release as required by Section 304. Those criminal penalties rise to $50,000 and/or five years in prison for a second knowing and willful failure to provide emergency notice of a release. See 40 C.F.R. § 355.50.

E. SECTION 305: EMERGENCY TRAINING AND REVIEW OF EMERGENCY SYSTEMS (42 U.S.C. § 11005)

1. EMERGENCY TRAINING

Federal officials involved in emergency training are authorized to provide training for federal, state, and local personnel in hazard mitigation, emergency preparedness, and other aspects of responding to hazardous chemicals. EPCRA also allocated $5,000,000 per year for four years (beginning in 1987) for funding state and local government programs designed to improve emergency training and preparedness.

2. REVIEW OF EMERGENCY SYSTEMS

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Section 305(b) of EPCRA requires EPA to initiate a study assessing the ability of current technology to: prevent release of extremely hazardous substances, measure the threat of any such releases, and identify specific substances, their chemical composition, and the relative concentration of the constituent substance. The EPA is also required to examine and suggest ways to improve public emergency alert devices in the event of a release of extremely hazardous substances.

II. SUBCHAPTER II: SECTIONS 311-313: REPORTING REQUIREMENTS

A. SECTION 311: MATERIAL SAFETY DATA SHEET REPORTING REQUIREMENTS (42 U.S.C. § 11021)

1. ACTIVITIES COVERED:

a. Generally: Owners and operators of facilities to which Section 311 applies are required to submit information to specified authorities regarding the presence of hazardous chemicals at their facilities. The required information was due on or before October 17, 1990 (or within three months after a facility first becomes subject to Section 311). This is a one-time only reporting requirement (unless supplemental reporting requirements are triggered, as discussed below). See 40 C.F.R. § 370.25(a).

b. Reporting requirements: Section 311 applies to the owner or operator of any facility (1) that is required under the Occupational Safety and Health Act of 1970 and that Act's regulations to prepare or have available a material safety data sheet (MSDS) for a hazardous chemical, and (2) that keeps such a chemical present at the facility in an amount greater than the minimum threshold levels established by Section 311's regulations (discussed below). See 40 C.F.R. § 370.20. If Section 311 requires an owner or operator to provide information on hazardous chemicals present at a facility, the owner or operator may submit the chemicals' MSDSs or a list of chemicals for which the facility is required to maintain a MSDS (grouped by hazard category). See 40 C.F.R. § 370.21(a) & (b). The information required under Section 311 must be submitted to the state emergency response commission, the local emergency planning commission and the local fire department with jurisdiction over the facility. See 40 C.F.R. § 370.21(a). These bodies prefer submission of a list rather than a series of MSDSs, but either will be accepted. An owner or operator violating Section 311's reporting requirements may be fined up to $10,000 for each violation. See 40 C.F.R. § 370.5(a). Each day a

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violation of Section 311 continues is considered a separate violation. See 40 C.F.R. § 370.5(c).

(1) Minimum threshold levels: Section 311 establishes certain threshold levels above which the presence of a hazardous chemical at a facility will trigger the reporting requirements. The applicable thresholds differ depending upon whether a chemical is considered a "hazardous chemical" or an "extremely hazardous substance." In calculating the amounts of individual hazardous chemicals present in mixtures, any quantities of the chemical where it constitutes less than 1% (or .1% if carcinogenic) by weight of the mixture need not be included. See 40 C.F.R. § 370.28(b)(1). If the mixture is reported as a whole (rather than by individual hazardous components), then the total quantity of the mixture should be reported (no analogous de minimis exception). See 40 C.F.R. § 370.28(b)(2).

(a) Hazardous chemicals: Generally, Section 311 adopts the Occupational Safety and Health Administration's (OSHA) definition of "hazardous chemicals," which is set forth in 29 C.F.R. § 1910.1200(c). See 40 C.F.R. § 370.2. Under OSHA's definition, a "hazardous chemical" is any element, chemical, or compound that is a physical or health hazard. Id. Although OSHA does not provide a specific list of chemicals it considers to be hazardous, it provides the criteria for determining whether a chemical constitutes a physical or health hazard. See 29 C.F.R. § 1910.1200(c) and Appendix A. However, EPA excludes some substances which would otherwise be included in OSHA's definition (for example, food or drugs regulated by the Food and Drug Administration). See 40 C.F.R. § 370.2.

If a hazardous chemical for which an owner or operator is required to prepare or have available a MSDS is present at a facility at any one time in an amount equal to or greater than 10,000 lbs. (or 4,540 kgs.), the owner or operator is required to submit a MSDS or list meeting Section 311's requirements on or before October 17, 1990, or within three months after a facility first becomes subject to Section 311. See 40 C.F.R. § 370.20(b)(1).

(b) Extremely hazardous substances: An "extremely hazardous substance" is any substance that is listed in the Appendices to 40 C.F.R. Part 355, as discussed above. See 40 C.F.R. § 370.2.

The owner or operator of a facility is required to submit a MSDS or other information concerning an

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"extremely hazardous substance" if such substance is present at the facility at any one time in an amount equal to or greater than 500 lbs. (or 227 kgs. - approximately 55 gallons) or the threshold planning quantity (TPQ) for that chemical, whichever is less. See 40 C.F.R. § 370.20(b)(1). (As noted above, the TPQ for a chemical may be ascertained by examining the table set forth in 40 C.F.R. Part 355.) If the amount of an extremely hazardous substance at a facility exceeds the lesser of 500 lbs. or its TPQ, the required documents must have been submitted on or before October 17, 1990, or within 3 months after the facility first becomes subject to Section 311. In determining whether the reporting threshold for an extremely hazardous substance has been exceeded, a facility should aggregate all quantities of the substance present in mixtures and all other quantities present elsewhere in the facility. See 40 C.F.R. § 370.28(c)(1).

(2) Supplemental reporting:

(a) Requests for MSDSs: The local emergency planning committee may require the owner or operator of a facility that has not previously submitted MSDSs to submit MSDSs for hazardous chemicals, even if the owner or operator prefers to submit (or already has submitted) a list of those chemicals. Once such a request is made, the owner or operator must submit the MSDS requested within 30 days. See 40 C.F.R. § 370.21(d). The minimum threshold for reporting in response to such a request is zero. See 40 C.F.R. § 370.20(b)(3). Members of the public can obtain the MSDSs filed with the designated authorities by submitting a written request to the local emergency planning committee. If someone requests a MSDS and the committee does not have the requested MSDS in its possession, the committee is required to request the MSDS from the facility. See 40 C.F.R. § 370.30(a)(1) & (2).

(b) New information: Once a MSDS is submitted, even as the result of a request made by an appropriate authority, a revised MSDS must be submitted within three months after the discovery of significant new information. See 40 C.F.R. § 370.21(c)(1).

(3) Alternate reporting by list: As noted above, an owner or operator subject to Section 311 may submit either an MSDS for each chemical required to be reported under Section 311, or a list of such chemicals. See 40 C.F.R. § 370.21(b). If an owner or operator chooses to submit a list, such list must contain the following information:

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(a) the names of the chemicals for which reporting is required, grouped by those chemicals' hazard categories. See 40 C.F.R. § 370.21(b)(1). A hazard category is a classification indicating what type of safety hazard a chemical may present by categorizing it as an immediate or delayed health hazard, a fire hazard, a sudden release of pressure hazard, or a reactivity hazard. See 40 C.F.R. § 370.2;

(b) the chemical or common name of each hazardous chemical. See 40 C.F.R. § 370.21(b)(2);

(c) the hazardous components of each hazardous chemical, except that the hazardous components of a mixture need not be reported if the mixture need reported. See 40 C.F.R. § 370.21(b)(3).

2. STATE LAW PROVISIONS

a. Generally: Arizona has adopted a counterpart to Section 311. See Ariz. Rev. Stat. § 26-349. The Arizona law generally mirrors the federal law, requiring filing of MSDSs or lists under the same conditions as Section 311. Id.

b. Additional requirements: Compliance with Section 311 generally means that an owner or operator has met the requirements of Ariz. Rev. Stat. § 26-349. However, Ariz. Rev. Stat. § 26-349 contains a few departures from its EPCRA counterpart.

(1) List information: If an owner or operator submits a list to meet the requirements of Section 311, Ariz. Rev. Stat. § 26-349(B)(2) requires that owner or operator to include the chemical abstract service registry number for that chemical, if such number is available. Ariz. Rev. Stat. § 26-349(B)(3) requires the list to include an indication of whether the owner or operator is withholding information on the chemical because the information is a trade secret.

(2) Requests for MSDSs: As noted above, EPCRA authorizes the local emergency planning committee to request the MSDS for any hazardous chemical at a facility (with a zero threshold). Arizona law allows such a request to be made by the state emergency response commission and the local fire department (in addition to the local emergency planning committee), but limits the scope of the request to chemicals on lists already submitted by a facility (i.e., these agencies have no explicit authority to go beyond the scope of a previously submitted list and seek a MSDS for a

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hazardous chemical present at a facility in an amount below an applicable threshold for reporting). See Ariz. Rev. Stat. § 26-349 (-C)

B. SECTION 312: HAZARDOUS CHEMICAL INVENTORY FORM REPORTING REQUIREMENTS (42 U.S.C. § 11022)

1. ACTIVITIES COVERED

a. Generally: Section 312 requires owners and operators of facilities that accumulate certain quantities of hazardous chemicals or extremely hazardous substances on site to submit hazardous chemical inventory forms to specified authorities (the state emergency response commission, the local emergency planning committees, and the fire department with jurisdiction over the facility). The initial report is due by March 1 of the year after the facility first becomes subject to Section 312, and annually thereafter. See 40 C.F.R. § 370.25(a). The report covers activities during the preceding calendar year.

b. Reporting requirements: Section 312 offers two forms on which reporting may occur (known as Tier I and Tier II forms). Submission of a Tier I inventory form (which EPA provides), a Tier II inventory form (also provided by EPA), or a state or local form containing identical information is mandatory if the owner or operator of a facility is required under OSHA and its regulations to prepare or have available a material safety data sheet (MSDS) for a hazardous chemical, and (2) if such a chemical is present in the facility in an amount greater than the minimum levels established by Section 312's regulations. See 40 C.F.R. § 370.20(a) & (b) (2).

Thresholds for determining whether Section 312 reporting is required are identical to thresholds under Section 311. For hazardous chemicals, the threshold is 10,000 lbs. (or 4,550 kgs.). See 40 C.F.R. § 370.20(b) (2). For extremely hazardous substances, the threshold is 500 lbs. (or 227 kgs. - approximately 55 gallons) or the threshold planning quantity (TPQ) for that substance, whichever quantity is less. See 40 C.F.R. § 370.20(b) (2).

In calculating amounts of individual hazardous chemicals present in mixtures, quantities of that chemical constituting less than 1% by weight (.1% if a carcinogen) of the mixture need not be included. See 40 C. F.R. § 370.28(b) (1). If the mixture is reported as a whole (rather than by individual hazardous components), then the total quantity of the mixture

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should be reported (no analogous de minimis exception). See 40 C.F.R. § 370.28(b) (2).

In determining whether the reporting threshold for an extremely hazardous substance has been exceeded, a facility should aggregate all quantities of the substance present in mixtures and all other quantities present elsewhere in the facility (no one percent de minimis exception). See 40 C.F.R. § 370.28(c)(1).

In calculating whether a threshold has been met, a facility should determine whether the threshold quantity was present at the facility at any given time during the preceding calendar year. If a threshold quantity is present, both Tier I and Tier II require estimates of average and maximum daily amounts present at the facility, but allow that estimate to be reported in ranges (e.g., 0-99 lbs., 100-999 lbs., 1000-9999 lbs., etc.).

(1) Tier I: Generally, a Tier I report sets forth information on the maximum and average daily amounts and general location of hazardous chemicals at a facility. Reporting is not required for individual chemicals; rather, a facility simply reports the amounts and general location of all chemicals posing a particular type of hazard (e.g., a fire hazard). The hazard categories on the Tier I form correspond to the physical and health hazards identified by OSHA in its regulations governing hazardous chemicals.

(2) Tier II: A Tier II report is chemical specific and more detailed with respect to location and manner of storage of the chemical than is a Tier I report. Submission of a Tier II report is no automatically required under Section 312, but a Tier II form must be submitted if requested by the state emergency response commission, the local emergency planning committee, or the local fire department. See 40 C.F.R. § 370.25(c). The report must be submitted within 30 days of receipt of the request. Id. The minimum threshold for reporting 'in response to such a request is zero. See 40 C. F.R. § 370.20(b) (3). In Arizona, submission of a Tier II report rather than a Tier I report was required beginning with the March 1, 1991 submission.

c. On-site inspections: Facilities submitting a Tier I or a Tier II report must allow on-site inspections by the local fire department upon that department's request. Such facilities must also provide the local fire department with specific location information on hazardous chemicals in the facility. See 40 C.F.R. § 370.25(d).

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d. Public requests for information: The regulations under Section 312 specify that any person may request Tier II information for a facility by writing to the state emergency response commission or the local emergency planning committee. See 40 C.F.R. § 370.30(b) (1). If the request for information is made by a state or local official acting in her official capacity, or the request (regardless of who makes it) concerns hazardous chemicals being kept at the facility in excess of 10,000 lbs., and the commission or committee does not already have the requested information, the commission or committee must ask the owner or operator of the facility to submit such information. See 40 C.F.R. § 370.30(b) (2). If the original request for information is not made by a public official acting in her official capacity and if the request concerns chemicals at the facility in amounts below the 10,000 lbs. threshold, the committee or commission may still request the information from the owner or operator of the facility, provided that the original request includes a statement of the requestor's general need. See 40 C.F.R. § 370.30(b) (3).

e. Alternative form: Tier I and Tier II forms are included in the federal regulations. See 40 C. F.R. §§ 370.40(b) & 370.41(b). Facilities may instead submit a state or local form containing information identical to that requested on the suggested federal forms. See 40 C.F.R. §§ 370.40(a) & 370.41(a).

f. Penalties: A violation of Section 312's reporting requirements may result in a fine of up to $25,000 per violation. See 40 C.F.R. § 370.5(b). Each day a violation of Section 312 continues is considered a separate violation. See 40 C.F.R. § 370.5(c).

2. STATE LAW PROVISIONS

Arizona has passed state counterparts to the federal inventory form reporting requirements. See Ariz. Rev. Stat. § 26-350. The requirements under the Arizona inventory form reporting statute are largely the same as the federal requirements, and owners or operators may use the federal reporting form to comply with the Arizona requirements. See Ariz. Rev. Stat. § 26-350(E). However, beginning with the March 1, 1991 report, Arizona requires submission of a Tier II form. See Ariz. Rev. Stat. § 26-350(A).

C. SECTION 313: TOXIC CHEMICAL RELEASE REPORTING REQUIREMENTS (42 U.S.C. § 11023)

1. ACTIVITIES COVERED

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a. Generally: Section 313 requires owners and operators of covered facilities to complete and submit EPA Form R summarizing their facilities' releases of certain chemicals ("toxic chemicals") into the environment. Release for purposes of Section 313 reporting is not limited to unpermitted or accidental spills into the environment; the term includes any method by which the facility allows a toxic chemical to enter an environmental medium (air, water, soil). Releases include, inter alia, transfers to off-site landfills or other treatment facilities and discharges to municipal sewer systems, as well as direct additions of a toxic chemical to the environment through air emissions (including fugitive emissions), direct discharges to surface water or underground injection wells, and on-site landfilling or placement in other forms of impoundments.

Reports must be submitted to both the EPA Administrator and the Director of the Arizona Department of Environmental Quality. This is an annual reporting requirement, with reports due by July 1 for releases occurring during the preceding calendar year. See 40 C.F.R. § 372.30(d). Form R is available directly from EPA; it is no longer published in the Code of Federal Regulations (although a broad list of required reporting elements is set forth at 40 C.F.R. § 372.85(b)).

b. Reporting requirements for the manufacturing, processing and use of toxic chemicals: The owner or operator of a plant, factory, or other facility is required to submit a report on all releases of a hazardous chemical during a calendar year if, during that calendar year, the facility (1) has ten or more full-time employees, and (2) its primary S.I.C. code is 20-39 (i.e., it is a manufacturing facility), and (3) the chemical is listed in 40 C.F.R. § 372.65 (a separate list of toxic chemicals), and (4) it manufactures, processes, or otherwise uses the chemical in excess of the threshold quantities established by Section 313. See 40 C. F.R. § 372.22. The Administrator has discretionary power to apply the requirements of Section 313 to facilities in addition to those specifically meeting the requirements of Section 313, if he or she determines that such application is warranted based on the toxicity of a toxic chemical handled by the facility, that facility's proximity to population centers or to other facilities releasing the chemical, the facility's chemical release history, or other factors.

EPA defines full-time employees based on an equivalence calculation. Total annual hours worked by all of the facility's employees should be divided by

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2,000 (a generally accepted estimate of the number of hours worked by a full-time employee in a year). The resulting number is the number of full-time employees for the purposes of Section 313. See 40 C.F.R. § 372.3.

(1) Requirements for the manufacture and processing of toxic chemicals: "Manufacture" means to produce, prepare, import or compound a chemical. See 40 C.F.R. § 372.3. The term also includes coincidental production of a listed toxic chemical as a by-product or purity in manufacturing, processing or using other chemical. Id. "Process" means the separation of a toxic chemical, after its manufacture, for distribution in commerce in any form as part of an article. Id. On its Form R instructions, EPA clarifies that "process" uses encompass "incorporative activities" such as use a reactant (feedstock, raw material, intermediate, or initiator) or a formulation component (e.g., additives, dyes, solvents, lubricants, flame retardants).

Beginning with the July 1, 1990 report covering calendar year 1989), Section 313 ports must be submitted annually where manufacturing and processing of listed chemicals exceeds 25,000 lbs. per year for the previous year. See 40 C. F.R. § 372.25. Thresholds for earlier reporting years were higher (75,000 lbs. for the report due in 1988 and 50,000 lbs. for the report due in 1989).

(2) Requirements for toxic chemicals "otherwise used": Section 313 also plies to any use of a listed toxic chemical not covered by the terms "manufacture" or "process." "Use" within the meaning of Section 313 includes e of a toxic chemical contained in a mixture or trade name product. See 40 C. F.R. § 372.3. On its Form R instructions, EPA interprets "otherwise used" as encompassing "nonincorporative activities" such as chemical processing aids (e.g., catalysts), manufacturing aids (e.g., coolants and lubricants), and other ancillary activities (e.g., cleaners and degreasers) where the toxic chemical does not come part of a finished product.

Any use of a toxic chemical, other than in manufacturing" or "processing," exceeding 10,000 lbs. per year requires submission of a toxic chemical release reporting form annually. See 40 F.R. § 372.25.

(3) Determining whether a reporting threshold has been exceeded:

(a) Generally: Owners 3 operators of facilities manufacturing, processing, or otherwise using chemicals listed in Section 313 must

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evaluate the amounts of such chemicals manufactured, processed, or otherwise used for the purpose of determining whether a threshold has been exceeded. Section 313 allows facilities to rely on readily available data and reasonable estimates in making that determination.

(b) Exemptions from threshold: Certain amounts of chemicals need not be factored into the threshold calculations. In calculating a facility's chemical consumption to determine whether a threshold has been exceeded, the following are not included:

(i) Amounts of toxic chemicals present in mixtures and trade name products in concentrations of less than 1% (or in concentrations of less than 0.1% if the chemical is defined by the Occupational Safety and Health Administration as a carcinogen). See 40 C.F.R. § 372.38(a).

(ii) Amounts of toxic chemicals used: (1) as a structural component of a facility; (2) in routine janitorial or facility grounds maintenance; (3) in foods, drugs, cosmetics or other items for personal use; (4) in motor vehicle maintenance; or (5) in process water or non-contact cooling water as drawn from the environment or from municipal sources, or in air used either as compressed air or as part of combustion. See 40 C.F.R. § 372.38(c).

(iii) Amounts of toxic chemicals that are manufactured, processed or used in a laboratory under the supervision of a technically qualified individual, except that this does not apply to specialty chemical production or to production processing or use of toxic chemicals in pilot plant scale operations. See 40 C.F.R. § 372.38(d).

(iv) Amounts of toxic chemicals present in "articles" at a facility. See 40 C.F.R. § 372.38(b). An article is a manufactured item that: (1) does not release a toxic chemical under normal processing and use conditions; (2) is shaped into a specific design during manufacture; and (3) has end use functions dependent on its shape or design See 40 C.F.R. § 372.3.

(c) Allocation of responsibility between owners and lessees: A person who owns the land on which a facility subject to Section 313 is located, but who has no other business interest in the operation of the regulated facility, is riot subject

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to Section 313 reporting requirements. See 40 C. F.R. § 372.38(e). If two or more persons that do not have any common corporate or business interests operate separate establishments within a single facility (e.g., multiple businesses operating in one industrial park), each person must treat their own establishment as a facility for purposes of Section 313 reporting. See 40 C. F.R. § 372.38(f).

(d) Mixtures and trade name products: If the owner or operator of a facility knows that a toxic chemical is present as a component of a mixture or trade name product, and knows the concentration of the chemical in the product, the owner or operator must determine the weight of the chemical imported, processed, or otherwise used as part of the mixture and combine that with other amounts of the same chemical manufactured, processed, or used at the facility to determine whether a threshold has been exceeded. See 40 C.F.R. § 372.30(b)(3)(i). If the owner or operator knows the identity of the chemical and the upper bound of its concentration in the mixture, but not its specific concentration, the owner or operator is required to presume that the chemical is present in the mixture at the upper bound concentration. See 40 C.F.R. § 372.30(b)(3)(ii). If the owner or operator knows the identity of the chemical, but no other information, that chemical need not be included in determining whether the threshold has been exceeded. See 40 C.F.R. § 372.30(b)(3)(iii). If the owner or operator knows the concentration or the upper bound concentration, but not the specific identity of a toxic chemical present in a mixture, the owner or operator must determine the mount of the chemical imported, processed, or otherwise used as a part of the mixture to determine whether a threshold has been exceeded using either the specific concentration or the upper limit. If a threshold has been exceeded, the owner or operator must report, identifying the chemical by its generic or trade name. See 40 C.F.R. § 372.30(b) (3) (iv) & (v).

(e) Range reporting for relatively small releases: For most toxic chemicals, EPA Form R requires facilities to submit total annual estimates of the amount of the chemical released to various environmental media. However, Form R allows facilities to report annual releases of less than 1000 pounds of a toxic chemical to an environmental medium in one of three reporting ranges: 1-10 lbs., 11-499 lbs., and 500-999 lbs.

(4) Recordkeeping: If the owner or operator of a facility is required to report under Section 313, the owner or operator must retain a copy of

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the report submitted under Section 313, all documents and materials used in determining that reporting was required, and all documents supporting the Section 313 report for three years from the date of submission of the report. See 40 C.F.R. § 372.10.

(5) Possible expansion of scope of Section 313 reporting: EPA currently is considering whether to expand the list of toxic chemicals under Section 313 and/or the types of facilities that must report under that section. See 57 Fed. Reg. 19126 (May 4, 1992). The list of toxic chemicals currently numbers over 300 individual chemicals and 20 chemical categories, but does not cover many other chemicals regulated under other federal environmental laws. In order to maximize public access to information regarding the use of these chemicals, EPA conducted preliminary screening on approximately 600 additional individual chemicals and 600 active ingredient pesticides, in order to determine if these chemicals should be added to the list of toxic chemicals required to be reported under Section 313. In addition, EPA is considering whether to expand required Section 313 reporting beyond facilities in S.I.C. codes 20-39 (manufacturing facilities). The Agency has indicated that it is attempting to balance the desire to maximize the information available to the public with the additional burdens on its resources that would result from greatly expanding the scope of Section 313 reporting.

On May 25, 1993, EPA Administrator Carol Browner announced that EPA intends to propose in the fall of 1993 approximately 200 additional chemicals to the list of toxic chemicals that must be reported under section 313. She also announced that EPA planned in 1994 to expand the scope of Section 313 reporting to encompass additional industries (beyond those in SIC Codes 20-39). See 24 Env't Rep. (BNA) 181 (May 28, 1993).

c. Supplier notification requirement: With certain exceptions discussed in the regulations, Section 313 requires owners toxic chemical, and (3) which sell or otherwise supply a mixture or trade name product containing the chemical to a facility covered by Section 313 or to someone who will ultimately supply such a facility with the chemical, to notify in writing each person to whom the mixture is supplied. See 40 C.F.R. § 372.45.

(1) Notification content: The notification must include the name of each toxic chemical in the mixture, the percent by weight of each toxic chemical in the product, and a statement that the mixture contains a chemical subject to Section 313

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reporting requirements. Id. If OSHA requires a supplier to provide a MSDS with the mixture, the notification must be attached or incorporated into the MSDS If the notification is attached, clear instructions must be provided to the effect that copying of the MSDS shall include copying of the notification. Id.

(2) Notification deadlines: If the mixture contains a toxic chemical listed in the regulations as having an effective date of January 1, 1987, notification must be supplied with the first shipment to each consumer beginning January 1, 1989. Id. If the mixture contains a toxic chemical listed in the regulations with an effective date of January 1, 1989 or later, each recipient must be notified with the first shipment of the mixture or trade name product in the first calendar year of the chemical's effective date.

d. Penalties: Violations of Section 313 reporting requirements may result in civil penalties of up to $25,000 per day per violation. See 40 C.F.R § 372.18.

e. Source reduction and recycling reporting requirement (beginning with reports covering calendar year 1991): A significant new component of Section 313 reporting resulted from passage of the Pollution Prevention Act of 1990 (the "PPA"). Section 6607 of the PPA requires (beginning with the report for the calendar year of 1991) each facility submitting a Section 313 report to file a toxic chemical source reduction and recycling report for the preceding calendar year. This report must include eight specific items: (1) the quantity of the toxic chemical entering any waste stream (or otherwise released into the environment) prior to recycling, treatment or disposal during the calendar year (except for "one time" generation resulting from such occurrences as accidents, remedial actions, etc.), as well as the percentage change in this quantity from the previous year; (2) the amount of each toxic chemical that is recycled; (3) source reduction practices used with respect to each toxic chemical; (4) the estimated amount of each toxic chemical expected to be reported under items 1 and 2 for the next two calendar years following the year covered in the report; (5) a ratio of production of each toxic chemical in the reporting year to production of that chemical in the previous year; (6) techniques used to identify source reduction opportunities (e. g., employee recommendations, external and internal audits, material balance audits); (7) amounts of toxic chemicals released into the environment from "one-time" events unrelated to production processes (e.g., accidents); and (8) the

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amount of each toxic chemical from the facility that is treated (at the facility or elsewhere) during the calendar year, and the percentage change from the previous year. See 42 U.S.C. § 13106(b). For the initial report required under the PPA (i. e., the report covering the calendar year of 1991), comparison to data from previous years is required only to the extent such information is available (i.e., facilities need not generate new information regarding past source reduction and recycling activities with respect to toxic chemicals). Id.

For purposes of these reporting requirements, the term "source reduction" means practices that reduce the amount of hazardous substances, pollutants, or contaminants entering any waste stream or otherwise released into the environment (including fugitive emissions) prior to recycling, treatment, or disposal, and reduce the hazards to public health and the environment associated with the release of such substances. Source reduction specifically includes equipment or technology modifications, process or procedure modifications, reformulation or redesign of products, substitution of raw materials, and improvements in housekeeping, maintenance, training or inventory control. See 42 U.S.C. § 13102(5) (A). Source reduction does not include practices that alter the physical, chemical, or biological characteristics or the volume of a hazardous substance, pollutant, or contaminant through a process or activity which itself is not integral to and necessary for the production of a product or the providing of a service. See 42 U.S.C. § 13102(5)(B).

In response to the requirements of the PPA, EPA promulgated regulations that would have required the reporting of what it considered to be the information required by the PPA on Form R (i.e., combining the PPA reporting with the existing Form R reporting). See 56 Fed. Reg. 48475 (Sept. 25, 1991). EPA was unable to finalize these regulations prior to the scheduled deadline for Form R reporting covering 1991 (that deadline being July 1, 1992). On May 27, 1992, the Office of Management and Budget ("OMB") printed a revised Form R for use only in satisfaction of Section 313 reporting due on July 1, 1992 (covering calendar year 1991). See 57 Fed. Reg. 22330 (May 27, 1992). Part II, Section 8 of the 1992 Form R mandates reporting of the information required by Section 6607 of the PPA. Because of the delay in issuing the 1992 Form R, EPA stated it will not initiate enforcement proceedings against facilities filing accurate Form R reports if those reports were filed by September 1, 1992. See 57 Fed. Reg. at 22330. A revised Form R for use in

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reporting 1992 data (due July 1, 1993) was made available by EPA in early 1993.

The Form R for 1991 reporting published by OMB on May 27 is to be utilized only for reporting covering the 1991 calendar year. EPA hopes to finalize its PPA regulations (and finalize Form R accordingly) prior to the time reporting is required for the 1992 calendar year i.e., prior to July 1, 1993).

Federal pollution prevention requirements are discussed in greater detail in another portion of these materials.

2. STATE LAW PROVISIONS

The state counterpart to Section 313, Ariz. Rev. Stat. § 26-351, requires reporting in all situations in which the federal requirements apply. The form required under Ariz. Rev. Stat. 26-351 must be submitted to EPA, the Arizona Emergency Response Commission, and ADEQ according to the deadlines established in Section 313. Reporting is required upon a uniform release form published by the Administrator or the Director of the Department of Environmental Quality. See Ariz. Rev. Stat. § 26-351(G). The Arizona statute authorizes the Director of ADEQ to apply toxic chemical reporting requirements to facilities not otherwise subject to those requirements (based on a consideration of the same factors that guide the EPA Administrator's discretionary decision to apply Section 313 requirements to a facility not otherwise subject to those requirements), and to petition EPA to add or delete chemicals from the list of toxic chemicals found at 40 C.F.R. § 372.65. See Ariz. Rev. Stat. § 26-351(C)-(D).

Arizona has adopted a separate state pollution prevention program. That statute requires any facility that must submit a Section 313 report, and any facility generating an average of one kilogram per month of acutely hazardous waste or 1,000 kilograms per month of hazardous waste, to submit by July 1 of each year a "toxic data report." See A.R.S. § 49-962. That report must include the pollution prevention report form required by EPA pursuant to the PPA and the annual progress report required under state law (discussed below). See Ariz. Rev. Stat. § 49-962.

Arizona requires certain facilities (those shipping off-site for purposes other than recycling certain minimum quantities of hazardous or acutely hazardous waste, or those using certain levels of toxic substances) to submit pollution prevention plans. These plans must include, inter alia, specific performance

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goals for pollution prevention, written policies indicating a commitment to implement the pollution prevention plan, and an analysis identifying pollution prevention opportunities. Facilities required to maintain a pollution prevention plan must in turn file an annual progress report with ADEQ analyzing the facility's success in achieving the goals set forth in the plan. Although the statute does not establish specific goals that must be met, it does require ADEQ to establish numeric goals for waste minimization (by January 1, 1994) and numeric goals for toxic use reduction (by January 1, 1999). See Ariz. Rev. Stat. § 49-963. Failure to implement a pollution prevention plan may lead to issuance of an administrative compliance order or a civil action to compel compliance with the terms of the plan. See Ariz. Rev. Stat. § 49-964(H). All information submitted pursuant to these requirements is presumptively available to the public, unless the person submitting the information can demonstrate that it would divulge a trade secret or other information likely to cause substantial harm to the person's competitive position, or unless the Attorney General demonstrates that disclosure of the information would be detrimental to an ongoing criminal investigation or to an ongoing or contemplated civil enforcement action. See Ariz. Rev. Stat. § 49-967.

State pollution prevention requirements are discussed in greater detail in another portion of these materials.

III. SUBCHAPTER III: SECTIONS 321-330: MISCELLANEOUS PROVISIONS

A. SECTION 321: RELATIONSHIP TO OTHER LAW (42 U.S.C. § 11041)

Section 321 provides that no EPCRA provision shall preempt or otherwise affect any state or local law. There is one exception: any state or local law requiring submission of a MSDS must require it to be in identical form to that specified in Section 311. The state or locality, however, may require submission of supplemental or additional information through the use of additional sheets attached to the MSDS or some other appropriate means.

B. SECTIONS 322-323: TRADE SECRETS (42 U.S.C. §§ 11042 & 11043)

Section 322 allows a person required to submit information under Sections 303, 311, 312, or 313 to withhold from any such submission a specific chemical's identity if he or she claims that the information

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constitutes a trade secret, and explains the basis for this belief. The person must include on a separate sheet submitted to the Administrator of the EPA the information he seeks to have withheld from the required submission, in order that the Administrator may make a determination as to whether the information truly constitutes a trade secret The person seeking trade secret protection must demonstrate the following: (1) that the person has not disclosed the information to anyone else, unless under a guarantee of confidentiality, and that he or she has taken reasonable measures to protect the confidentiality of the information; (2) that the information is not required to be disclosed under any federal or state law; (3) that disclosure of the information is likely to cause substantial harm to the competitive position of the disclosing party; and (4) that the chemical identity is not readily discoverable through reverse engineering. Both the party claiming trade secret protection and a member of the public seeking access to the withheld information may petition for judicial review of the Administrator's decision. Section 323 creates one exception to the confidentiality of trade secrets: a specific chemical identity must be disclosed where it is necessary for diagnosis or treatment of an individual by a health professional.

Arizona's emergency planning and community right to know statute does not contain a separate trade secret provision, but in several cases explicitly adopts the requirements found in EPCRA's trade secret provision. See, e.g., Ariz. Rev. Stat. §§ 26-349(C) (trade secret provisions apply to information submitted on MSDSs or lists) and 26-351(H) (trade secret provisions apply to information submitted on toxic chemical release reporting forms).

C. SECTION 324: PUBLIC ACCESS TO INFORMATION (42 U.S.C. § 11044)

Except for information protected as trade secrets, the public has access to every emergency response plan, MSDS, list, inventory form, toxic chemical release form, and follow-up emergency notice. Each emergency planning committee must designate a location at which such information may be reviewed during normal working hours. Likewise, under Arizona law, information submitted in a report of any kind generally is available to the public, unless a trade secret claim is established. See Ariz. Rev. Stat. §§ 26-349(C) and 26-351(H).

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D. SECTION 325: ENFORCEMENT (42 U.S.C. § 11045)

The Administrator of the EPA has the authority to seek the following penalties for violation of the various requirements of EPCRA:

1. Emergency Planning Violations (Section 302): If a facility fails to notify the state emergency response commission that it is subject to Subchapter A, or if it fails to notify the local emergency planning committee of its designated facility emergency coordinator (or fails to provide other relevant information), the Administrator may order the facility to comply with these requirements. Failure to comply with that order exposes the facility to a civil penalty of up to $25,000 per day for as long as the failure to comply continues.

2. Emergency Notification Violations (Section 304): For violations of Section 304 emergency notification requirements in the event of a release, the Administrator may assess a Class I administrative penalty of up to $25,000 per day per violation. The accused must be given notice and the opportunity for a hearing before such a penalty may be assessed. The Administrator may also assess a Class II administrative penalty of up to $25,000 per day for a first violation and up to $75,000 per day for a subsequent violation. The Administrator may also bring a civil action in United States District Court asking the court to assess a penalty of up to $25,000 per day per violation for a first violation and $75,000 per day for a subsequent violation. Criminal penalties may also be sought for a knowing and willful failure to provide notice under Section 304. For a first violation, the court may impose a fine of up to $25,000 and/or two years imprisonment; for a second violation, the penalties may range up to a $50,000 fine and/or five years imprisonment.

3. Section 311 Reporting Violations: Any person (other than a governmental entity) who violates the reporting requirements of Section 311 is liable for a civil penalty of $10,000 per day per violation. Each day a violation continues is considered a separate violation. These same penalty limits apply to someone claiming trade secret protection who fails to separately submit to the Administrator the information for which trade secret protection is claimed or who refuses to divulge trade secrets to a health professional where they are needed or diagnosis or treatment (pursuant to Section 23).

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4. Section 312 or 313 Reporting Violations: Any person (other that a governmental entity) who violates any requirement if Sections 312 or 313 is liable for a civil penalty up to $25,000 per day per violation. Each day a violation continues is considered a separate violation. In a consolidated action in 1993, EPA filed administrative complaints against 37 companies seeking civil penalties of almost $ 2.8 million for alleged failure to file Section 313 reports in a timely fashion (for 1991 and earlier years). See 24 Env't rep. (BNA) 263 (June 11, 1993).

5. Sections 322-323: Trade Secrets: A frivolous trade secret claim may be punished by in administrative penalty or court action seeking a fine of $25,000 for each such claim. Knowing and willful disclosure of information entitled to protection as a trade secret shall be subject to a criminal penalty of $20,000 and/or one year in prison. In addition to the monetary penalty mentioned above for failing to disclose information to a health professional needing it for diagnosis and treatment, the health professional may bring an action in United States District Court to compel the facility owner to disclose the necessary information.

6. Procedures for Appealing Administrative Penalties: Any administrative penalty levied by the Administrator may be appealed within thirty days to a United States District Court.

E. CIVIL ACTIONS (42 U.S.C. § 11046)

1. Citizen Suits: Any person may commence a civil action against a facility owner or operator for: (1) failure to submit a follow-up emergency notice under Section 304; (2) failure to submit a MSDS or list under Section 311; (3) failure to complete and submit an inventory form under Section 312; or (4) failure to complete and submit a toxic chemical release form under Section 313. Such a suit may not be commenced prior to 60 days after the plaintiff has given notice of the alleged violation to the Administrator, the state, and the alleged violator. No citizen suit may be maintained against a facility owner or operator if the Administrator has commenced and is diligently pursuing an administrative order or civil action to enforce the requirement concerned or to impose a civil penalty with respect to violation of the requirement.

Any person may bring a civil action against the Administrator of the E.P.A. for: (1) failure to publish inventory forms under Section 312; (2) failure to respond to a petition to add or delete chemical to the

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Section 313 list of toxic chemicals; (3) failure to publish a toxic chemical release form under Section 313; (4) failure to establish a computer database of toxic chemicals in accordance with Section 313; (5) failure to promulgate the trade secret regulations required by Section 322; or (6) failure to render a decision within nine months in response to a petition by a member of the public to review the classification of information as trade secrets.

A citizen may also sue the Administrator, a state governor, or a state emergency response commission for failure to provide a mechanism for public availability of information under Section 324.

Finally, a citizen may sue a state governor or state emergency response commission for failure to respond to a request for Tier II information within 120 days after the date of the request.

No citizen suit may be commenced against the Administrator on the six grounds listed above, or against the Administrator, state governor, or state emergency response commission for failure to provide public access to information, until 60 days after the plaintiff gives notice to the defendant that he intends to commence the action.

Unlike citizen suits brought under the Clean Water Act, EPCRA citizen suits may be brought for wholly past violations (i.e., violations that are not continuing and are not likely to recur. See Delaware Valley Toxics Coalition v. Kurz-Hastings Inc., 813 F. Supp. 1132 (E.D. Pa. 1993); Williams v. Leybold Technologies, Inc., 784 F. Supp. 765 (N.D. Cal. 1992); Atlantic States Legal Foundation Inc. v. Whiting Roll-Up Door Mfg. Corp., 772 F. Supp. 745 (W.D.N.Y. 1991).

2. State or Local Unit Suits: A state or local government may sue a facility owner or operator for failure to: (1) notify the emergency response commission of its being covered under Subchapter A of EPCRA; (2) submit a MSDS or list under Section 311; (3) make available information requested under Section 311; or (4) submit an inventory form under Section 312. A state emergency response commission or a local emergency planning committee may sue a facility owner or operator for failure to provide information requested under Sections 303 or 312. No such suit may be brought if the Administrator of the EPA is diligently pursuing an administrative order or civil action to remedy the alleged violation.

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3. Costs: In any litigation brought under Section 326, the court may award the prevailing or substantially prevailing party its costs of litigation, including reasonable attorneys' and expert witness fees. Such an award is totally at the court's discretion.

The only enforcement authority provided in Arizona's emergency planning and community right to know statute is the classification of any violation of that statute as a class 1 misdemeanor. See Ariz. Rev. Stat. § 26-317. No provision is made for civil penalties, injunctive relief, or citizen suits.

F. STATE LAW PROVISIONS

1. IMMUNITY OF OFFICIALS

Ariz. Rev. Stat. § 26-353 provides immunity to licensed, certified or authorized emergency responders and their employees at the scene of an emergency, and to governmental entities, multi-jurisdictional planning organizations, members of each local emergency planning committee, and their support personnel in carrying out the provisions of Ariz. Rev. Stat. §§ 26-341 to -353. Such immunity applies only when the emergency response is provided in good faith.

2. EMERGENCY RESPONSE FUND

Arizona has established an emergency response fund to be utilized by the state emergency response commission for the purpose of assisting it and local agencies in the performance of their duties under state law. See Ariz. Rev. Stat. § 26-352.

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CHAPTER 14

ENDANGERED SPECIES AND WILDLIFE PROTECTION

As natural habitats have come under greater pressure from urbanization and the utilization of natural resources, greater attention has been focused on wild life protection. The primary federal statute designed to protect wildlife is the Endangered Species Act, 16 U.S.C. § 1531, et seq., ("ESA"), which is familiar to most of the public because of high profile cases involving the snail darter or the spotted owl. See, e.g., Owl v. Man, Time, June 25, 1990, at 56. The other key federal wildlife statute is the Migratory Bird Treaty Act ("MBTA"), 16 U.S.C. § 703 et seq. Other federal statutes, such as the Clean Water Act, also provide significant protections for wildlife. While state law is not nearly as comprehensive, there are significant protections for wildlife provided under these laws also.

This chapter will focus on the ESA, MBTA and state wildlife protection laws, with brief mention of other federal laws significant to the protection of Arizona wildlife. This chapter places emphasis on provisions that apply to and affect private parties as opposed to government agencies. This chapter will also provide practical suggestions on how individuals, particularly developers, can manage wildlife issues. Given the expanding nature of wildlife protections, future development of undisturbed land will almost inevitably trigger wildlife protection laws.

I. Endangered Species Act

The key provisions of the ESA include Section 4, which sets forth the procedures for identifying or "listing" species needing protection, Section 7, which sets forth procedures for federal agencies to consult with the United States Fish and Wildlife Service ("FWS") to ensure that their actions do not adversely impact protected species, and Section 9, which generally prohibits causing harm to (or "taking") a protected species. Authority to administer the Act in Arizona (and with regard to terrestrial species generally) resides in the FWS. (Authority over marine species is held by The National Marine Fisheries Service and is beyond the scope of this paper.)

A. Listing Process

Pursuant to section 4 of the Act, the FWS is authorized to determine whether a species is

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"endangered" or "threatened." The FWS then places the endangered and threatened species on the official list, published at 40 C.F.R. Part 17. 16 U.S.C. § 1533. A useful compilation of species listed in Arizona is available from the Phoenix FWS office. Endangered and Threatened Species of Arizona, (Ecological Services Field Office of FWS, Phoenix, Ariz.), Summer 1991. The Act defines "endangered species" as "a species which is in danger of extinction throughout all or a significant portion of its range . . . ." 16 U.S.C. § 1532(6). Certain species of insects which constitute a pest and whose protection under the ESA would "present an overwhelming and overriding risk to man" are excluded from this definition. Id. A "threatened species" is "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range." 16 U.S.C. § 1532(20). As a practical matter, the distinction between endangered and threatened species is blurred by FWS's authority to extend by regulation the same level of protection to threatened species that is available to endangered species. 16 U.S.C. § 1533(d). This authority is regularly exercised. See, e.g., 50 C.F.R. § 17.31(a) (protections for threatened wildlife).

Species under consideration for ESA protection are considered "candidate species." 50 C.F.R. § 402.12. FWS maintains a compilation of candidate species which it regularly updates and publishes in the Federal Register. 56 Fed. Reg. 58804 (November 21, 1991)(list of candidate species); 58 Fed. Reg. 28034 (May 12, 1993)(FWS policy on assigning species to the various categories). A species on the candidate list does not receive substantive or procedural protection under the ESA as a result of candidate status. However, FWS and state wildlife agencies regularly use the list in determining the value of particular habitat when exercising current authority under the Clean Water Act Section 404 program. See 33 U.S.C. § 1344(m); 16 U.S.C. § 662(a). The list is also used in considering environmental impacts under the National Environmental Policy Act, 42 U.S.C. § 4321 et seq., 56 Fed. Reg. at 58805.

There are three categories of candidate species. Category 1 includes species for which FWS has substantial information sufficient to support the listing of the species but such listing has not yet occurred because it is "precluded" by other listing activity. This is the so-called "warranted but precluded" category and includes numerous species due to limitations on FWS resources. Species assigned to this category are assigned a priority number so that FWS addresses the species most in need of protection first.

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58 Fed. Reg. at 28035. Category 2 consists of species for which listing "is possibly appropriate" but for which conclusive data is not currently available to support a proposed listing. Id. The third category includes species for which sufficient information exists to conclude that the species does qualify for endangered species status. Id. This category can include species which are extinct or which are found in sufficient numbers.

1. Basis for Listing

The following factors are considered in determining whether a species is endangered or threatened: 1) the present or threatened destruction, modification or curtailment of the species' habitat or range; 2) overutilization of the species for commercial, recreational, scientific or educational purposes; 3) disease or predation; 4) the inadequacy of existing regulatory mechanisms; or 5) other natural or manmade factors affecting its continued existence. 16 U.S.C. § 1533(a)(1). Examples of application of these factors include: the listing of the northern spotted owl and proposed listing of the Mexican spotted owl, both of which were based in part on the threatened destruction of owl habitat through logging (factor 1); the listing of many international species, such as African elephants, due to hunting or trade in animal parts (factor 2); the listing of the Mohave population of the desert tortoise, which was afflicted with a respiratory disease and the listing of the northern spotted owl which suffered from predation by other owls (factor 3); and the listing of the owl due, in part, to the lack of protection of habitat through National Forest Service regulations (factor 4). See 55 Fed. Reg. 26114, 26175-94 (June 26, 1990) (listing of the northern spotted owl); 56 Fed. Reg. 56344, 56348-52 (November 4, 1991) (proposed listing of the Mexican spotted owl); 55 Fed. Reg. 12178 (April 2, 1990) (listing of Mohave population of desert tortoise as threatened); 43 Fed. Reg. 20504 (May 12, 1978) (listing of African elephant as threatened).

When listing a species as endangered or threatened, FWS is required to designate "to the maximum extent prudent and determinable" portions of the species' habitat as "critical." 16 U.S.C. § 1533(a)(3). Critical habitat is defined as the "specific areas within the geographical area occupied by the species . . . in which are found those physical or biological features essential to the conservation of the species and which may require special management considerations or protection . . ." 16 U.S.C. § 1532(5)(A)(i). Except under special circumstances,

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the entire geographical area occupied by a species should not be designated as critical habitat. 16 U.S.C. § 1532(5)(C). As a practical matter, FWS usually declines to designate critical habitat, either because such habitat cannot be determined or, ironically, because to do so would reveal the species' location to poachers or others who may harm the species. See, e.g., 57 Fed. Reg. 14374, 14376 (April 20, 1992) (declining to designate critical habitat for the Pima Pineapple Cactus due to the threat by plant collectors).

An example of the critical habitat designation process is the recent FWS proposal to designate critical habitat for four endangered species fish in the Colorado River system. 58 Fed. Reg. 6578 (Jan. 29, 1993). The four species are the Razorback Sucker, Colorado Squaw Fish, Humpback Chub, and Bonytail Chub. The Gila River above Coolidge dam, the Salt above Roosevelt Dam, the Verde above Horseshoe Dam, and most of the Colorado itself are being designated. The proposed critical habitat designations are being driven by a Sierra Club lawsuit, and are in fact a direct result of a recent settlement agreement between FWS and environmental groups. Id. at 6581.

The scope of the critical habitat designation should be of particular interest to entities such as agriculture, mining and forestry which may compete with wildlife for resources such as water or forage. The critical habitat designation includes "known constituent elements" which, for the four species under consideration, include "water, physical habitats, and biological environment as required for each particular life stage for each species." 58 Fed. Reg. at 6589. The "water" constituent "includes a quantity of water of sufficient quality (i.e., temperature dissolved oxygen, contaminants, nutrients, turbidity, etc.) that is delivered to a specific location in accordance with a hydrologic regime that is required for the particular life stage for each species." Id. at 6582. The "physical habitat" constituent "includes areas of the Colorado River system that are inhabited or potentially habitable for use in spawning, nursery, feeding, and rearing, or corridors between these areas." Id. These areas include the river channel itself, as well as "bottom lands, side channels, secondary channels, oxbows, back waters, and other areas in the 100-year flood plain, which when inundated provide spawning, nursery, feeding and rearing habitats or access to these habitats." Id.

2. Listing Procedures

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The ESA provides detailed procedures to be followed when designating a species as endangered. The determination is to be made "solely on the basis of the best scientific and commercial data available . . . after conducting a review of the status of the species and after taking into account those efforts [being made by government agencies] to protect such species. . . ." 16 U.S.C. § 1533(b)(1)(A). In making the determination of the species' critical habitat, FWS is required to utilize the best scientific data available and must also take into consideration "the economic impact, and any other relevant impact, of specifying any particular area as critical habitat." FWS is allowed to exclude an area from a critical habitat if it determines that the benefits of excluding the area from the critical habitat outweigh the benefits of including the area. FWS must, however, include an area within the critical habitat if it determines that the failure to include the area will result in the species' extinction. 16 U.S.C. § 1533(b)(2).

The ESA listing process can be initiated by FWS or by a petition from a private party. 16 U.S.C. § 1533(b)(3)(A); 50 C.F.R. § 424.14. FWS has ninety days to decide whether a petition presents enough data to support an investigation into the species status. 16 U.S.C. § 1533(b)(3)(A); 50 C.F.R. § 424.14(b). If FWS decides that the petition is "warranted," it commences a status review using the best available scientific and commercial data. 16 U.S.C. § 1533(b)(1); 50 C.F.R. § 424.14(b)(3). Using the status review, the agency then decides whether to propose a rule to list the species as threatened or endangered. 50 C.F.R. § 424.16.

After finding that listing a species may be warranted, the FWS has one year in which to complete the status review and make a decision. 16 U.S.C. § 1533(b)(3)(B). It may take one of three actions: propose a rule to list the species, extend consideration of the petition for another year, or reject the proposal or petition. Id. The proposed rule must be published in the Federal Register. 50 C.F.R. § 424.16. Publication is followed by a comment period and possibly a hearing. U.S.C. § 1533(b)(5)(E). After the close of the comment period, FWS may issue a final rule listing the species, extend the proposal if there is a substantial question as to the sufficiency and accuracy of the data, or withdraw the rule. 16 U.S.C. § 1533(b)(6). Any of these decisions may be challenged in federal court. 16 U.S.C. § 1533(b)(3)(c)(ii).

The proposed rule to list a species must be withdrawn if the listing does not occur within one year. FWS may issue a notice withdrawing the proposed rule

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"upon a finding that available evidence does not justify the action proposed by the rule . . . " 50 C.F.R. § 424.17. FWS has withdrawn proposed rules in the past based on findings that the species was not actually endangered or threatened, and on findings that the species was an "invalid taxon." See, e.g., 55 Fed. Reg. 47081 (Nov. 9, 1990); 56 Fed. Reg. 46400 (Sept. 12, 1991).

A species can be "delisted" under certain circumstances. 50 C.F.R. § 424.11. Each of the five factors for determining whether to list a species must be analyzed when considering delisting. 50 C.F.R. § 424.11(c). In addition, delisting must be supported by the best scientific evidence available after conducting a status review of the species. A species may be delisted only if the data substantiates that the species is neither endangered nor threatened for one of the following reasons: the species is extinct, the species has recovered, or the original data for classification is in error. 40 C.F.R. § 424.11(c).

In Arizona, a significant delisting recently occurred regarding the tumamoc globeberry. 58 Fed. Reg. 33562 (June 18, 1993). The species had been originally listed based on limited data indicating that the species was only found in limited areas in southern Arizona. Subsequent surveys conducted as part of the Central Arizona Project Canal indicated that the species was far more widespread than previously thought. As a result, the species was delisted.

It is important to note that the process leading up to issuance of a proposed rule is the critical stage in listing a species. A survey of Federal Register notices for the ten year period from January 1, 1982 to December 31, 1991 indicates that FWS completed 356 listing actions involving revisions to the lists of endangered and threatened wildlife and plants. "Completed listing actions" include final actions to either list a species as endangered or threatened, actions to downlist a species from endangered to threatened, actions to delist a species altogether, and withdrawals of proposals to list, downlist, or delist. (Many actions involve more than one species.) Of these completed actions, only twelve (or 3.4%) constituted withdrawals of proposals, and of these, only half (six) were based on the conclusion that the species was not threatened or endangered. See 55 Fed. Reg. 47081 (Nov. 9, 1990) (plant species); 54 Fed. Reg. 27413 (June 29, 1989) (plant); 52 Fed. Reg. 218026 (July 27, 1987) (plant); 51 Fed. Reg. 8215 (Mar. 10, 1986) (wildlife); 51 Fed. Reg. 230 (January 3, 1986) (wildlife); 50 Fed. Reg. 12348 (Mar. 28, 1985) (plant).

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The unmistakable conclusion to be drawn from these figures is that once a rule is proposed, it almost inevitably is finalized.

3. Recovery Plans

The ESA also requires FWS to develop "recovery plans" as part of the listing process to improve the chances for survival of the species and to lead, hopefully, to the delisting of the species. 16 U.S.C. § 1533(f). Plans have been developed in Arizona for several species of endangered fish.

B. Consultation

Under Section 7 of the ESA, every federal agency must "ensure that any action authorized, funded, or carried out by such agency . . . is not likely to jeopardize the continued existence of any endangered species or threatened species or result in a destruction or adverse modification of [critical] habitat . . . " 16 U.S.C. § 1536(a)(2). The phrase "agency action" includes a broad spectrum of activities, including projects funded by federal agencies and projects requiring federal permits (such as dredge and fill permits under Section 404 of the Clean Water Act). Therefore, Section 7 can directly impact private parties. The basic method for ensuring that protected species are not adversely impacted is the "consultation" process between the federal agency and FWS. Detailed procedures govern the consultation process. 16 U.S.C. § 1536(b), 50 C.F.R. Part 402. The threshold question is whether an endangered or threatened species is present within the area impacted by the federal action.

1. Informal Consultation

Generally, initial or "informal" consultation is conducted between FWS and the federal agency to identify whether any protected species (including endangered, threatened, proposed or candidate species) are present in the area of federal action. 50 C.F.R. § 402.13. The regulations define informal consultation as:

> [A]n optional process that includes all discussions, correspondence, etc., between [FWS], the Federal agency or the designated non-federal representative, designed to assist the Federal agency in determining whether formal consultation or a conference is required.

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Id., § 402.13(a). If FWS and the federal agency determine (during informal consultation) that the proposed action is not likely to adversely affect listed species or critical habitat, the consultation process is terminated, and no further action is necessary. Id. The regulations make it clear that an applicant can work with FWS to redesign the project so as to eliminate adverse impacts to a listed species:

> During informal consultation, [FWS] may suggest modifications to the action that the Federal agency and any applicant could implement to avoid the likelihood of adverse effects to listed species or critical habitat.

50 C.F.R. § 402.13(b). In some instances, it may be possible to "mitigate" impacts to the species, thereby eliminating any adverse impact.

If a proposed species is present, a procedure referred to as a "conference" is initiated to "identify and resolve potential conflicts at an early stage in the planning process." 50 C.F.R. § 402.10(a). The conference provides a method to quickly obtain FWS approval for the action without substantial project delays if a proposed species is subsequently listed or proposed habitat designated prior to the completion of the agency action. 50 C.F.R. § 402.10(c). While candidate species are not formally protected by the Act, they are included in this process to "alert" federal agencies to a potential listing. 50 C.F.R. § 402.12(d).

2. Formal Consultation

In order to trigger formal consultation, all that is necessary is that the proposed action "may affect" a listed species. Any impact at all, whether adverse or not, will trigger formal consultation unless the applicant (or federal agency) can eliminate, through informal consultation, all adverse impacts to the species. To initiate formal consultation, a written request must be submitted to FWS by the federal agency involved. The request must include:

1) A description of the action to be considered;

2) A description of the specific area that may be affected by the action;

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3) A description of any listed species or critical habitat that may be affected by the action;

4) A description of the manner in which the action may affect any listed species or critical habitat and an analysis of any cumulative effects;

5) Relevant reports, including any environmental impact statement, environmental assessment, or biological assessment prepared; and

6) Any other relevant available information on the action, the affected listed species, or critical habitat.

50 C.F.R. § 402.14(c).

The formal consultation period must conclude within ninety days after initiation unless it is extended by mutual agreement of the federal agency and FWS. If an applicant for a federal permit is involved, the agencies can extend the period for up to sixty days without the consent of the applicant. 50 C.F.R. § 402.14(e). In order to extend the consultation, the agencies must submit to the applicant a written statement setting forth the reasons why the longer period is required, the information that is required to complete the consultation, and the estimated date on which consultation will be completed. Id. (As a practical matter, the deadlines set forth in the consultation procedures have little substantive effect, because the possibility of an adverse decision by FWS encourages other parties involved to grant any extension FWS requests.)

FWS is required to deliver to the federal agency and the applicant its "biological opinion" within 45 days after the conclusion of formal consultation. Id. The 45-day period cannot be extended unless the applicant gives its written consent to a specific date. 50 C.F.R. § 402.14(g)(5). If, however, FWS sends a draft opinion to the federal agency, and the federal agency comments on the opinion within ten days of expiration of the 45-day deadline, then FWS gets an automatic 10-day extension. Id. (Again, extensions of these deadlines are common.)

The biological opinion serves the purpose of determining whether a federal agency action will "jeopardize the continued existence of listed species or result in the destruction or adverse modification of

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critical habitat." 50 C.F.R. § 402.14(g)(4). The FWS will also have to make a determination as to whether a "taking" will be occasioned by the federal action. If no taking will occur, FWS can provide "discretionary" conservation recommendations to the federal agency to "assist the federal agency in reducing or eliminating the impacts that its proposed action may have on listed species . . ." 50 C.F.R. § 402.14(g)(6). If the agency finds that a taking will occur, then it must impose "reasonable and prudent measures" that are "necessary or appropriate" to minimize the impact on the species. 50 C.F.R. § 402.14(i)(1). The only limitation on the reasonable and prudent measures are that they "cannot alter the basic design, location, scope, duration, or timing of the action and may involve only minor changes." 50 C.F.R. § 402.14(h)(2). These measures are referred to as the "incidental take statement" and function as a limited permit, allowing the applicant to legally undertake activities which may harm a protected species. It is important to emphasize that if a project adversely impacts a protected species, and the private party or government agency does not obtain an incidental take statement (or an incidental take permit, as described below), the action arguably violates the ESA.

Issuance of the biological opinion terminates the formal consultation process. 50 C.F.R. § 402.14(l)(1). Formal consultation can be reinitiated where federal involvement or control over the proposed action has been retained or authorized by law and one of the following requirements occur:

1) the amount or extent of taking specified in the incidental take statement is exceeded;

2) new information is discovered regarding the species;

3) the proposed action is subsequently modified in a manner not considered by the biological opinion and the modification results in impact to the species; or

4) a new species is listed or critical habitat designated that may be affected by the identified action.

50 C.F.R. § 402.16

Of particular importance to the consultation process is the fact that neither the agency nor the applicant can make an "irreversible or irretrievable commitment of resources" which would foreclose

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consideration or implementation of alternatives to the proposed action. 16 U.S.C. § 1536(d). It is the lack of reasonable alternatives which makes the agency eligible for the exemption discussed below.

3. Practical Considerations

A private party seeking a federal permit or approval for a contemplated project can be affected by the consultation process. Because the federal agency cannot issue a decision on the requested permit or other approval until it has resolved the question of whether the project will impact an endangered or threatened species, ESA issues have the potential to inject a significant amount of delay and expense into a project. In some instances, the time restraints and additional expenses of addressing ESA issues can actually render a project uneconomical. Therefore, it is important to identify ESA issues early in the planning process and factor time delay and expenses into project costs and completion schedules. An initial determination of whether ESA issues will come into play for a particular project should not be overly time consuming or expensive, given that much of the relevant information is readily available from FWS.

4. Exemption Process

As originally enacted, the ESA was absolute in its application. Therefore, a federal agency action which would jeopardize the continued existence of an endangered species or adversely modify critical habitat was prohibited by the Act. This prohibition was tested in Tennessee Valley Auth. v. Hill, 437 U.S. 153 (1978), when a federal agency proposed to construct a dam that would have inundated the only known habitat for the snail darter, effectively destroying the species. The court found no exemption for the ESA and forbade completion of the dam. Following this case, Congress enacted an exemption procedure, which is available if jeopardy or adverse modification cannot be avoided. 16 U.S.C. §§ 1536(g)-(h). The procedure utilizes the Endangered Species Committee, nicknamed the "God Squad" because it can authorize projects which have the potential to render a species extinct. The Committee includes the Secretaries of Agriculture, Army and Interior, the administrators of the Environmental Protection Agency and National Oceanic and Atmospheric Administration, and the Chairman of the Council of Economic Advisors. 16 U.S.C. § 1536(e). Regulations governing the exemption process are found at 50 C.F.R. Parts 450-53.

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To initiate the exemption process, the federal agency or private party submits an application to the Secretary of Interior describing the consultation process followed by the applicant and why the agency's proposed action cannot be altered or modified to meet the "jeopardy or adverse modification" test. 16 U.S.C. §§ 1536(f); (g)(2)(A). Within twenty days of receipt of the application (or other mutually agreed upon deadline), the Secretary must decide whether the consultation responsibilities set forth in Section 7 were carried out in good faith and whether the applicant made a reasonable and responsible effort to develop and consider modifications to the proposed action which would have been in conformity with the no jeopardy/adverse modification requirement. The agency must also have made the appropriate biological assessment, and must have "refrained from making any irreversible or irretrievable commitment of resources" as prohibited by the Act. 16 U.S.C. § 1636(g)(3)(A). After making this determination, the Secretary then submits a report to the Committee, discussing the following: 1) alternatives to agency action; 2) the evidence regarding whether that action is in the public interest or is of national or regional significance; 3) appropriate reasonable mitigation and enhancement measures which could be considered by the Committee; and 4) whether the agency involved had avoided making an irreversible and irretrievable commitment of resources as prohibited by the Act. 16 U.S.C. § 1536(g)(5).

The Committee then decides whether to grant an exemption. The Committee can grant an exemption only if it determines that: 1) there is no reasonable or prudent alternative to agency action; 2) the benefits of such action clearly outweigh the benefits of alternative courses of action consistent with conserving the species or its critical habitat and such action is in the public interest; 3) the action is of regional or national significance; and 4) neither the agency nor the applicant has made any irreversible or irretrievable commitment of resources prohibited by subsection (d) of the Act. 16 U.S.C. § 1536(h)(1)(A). In addition, the Committee must establish reasonable mitigation and enhancement measures which are necessary to minimize the adverse effects of the agency action upon the endangered species, threatened species, or critical habitat.

The Committee's most recent deliberations have involved an exemption from the ESA for logging within northern spotted owl habitat in Oregon and Washington. 57 Fed. Reg. 23405 (June 3, 1992). Aside from this case, our research has identified only one other situation in which the exemption procedure has been

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triggered. In that instance (involving construction in the Ohio River regulated under Section 10 of the Rivers and Harbors Act), the application was withdrawn. 50 Fed. Reg. 46157 (Nov. 6, 1987) (notice of receipt of exemption application for Consolidated Grain and Barge Co. of St. Louis); 51 Fed Reg. 2750 (Jan. 21, 1984) (notice of withdrawal of application). As is probably obvious from these examples, and from the high level make-up of the Committee, the exemption procedure is available, as a practical matter, only to major projects having significant, widespread impact.

C. Restrictions on "Takings"

1. Takings

Section 9 of the ESA provides that it is "unlawful for any person subject to the jurisdiction of the United States to take any [listed endangered species of fish or wildlife] within the United States . . .." 16 U.S.C. § 1538(a)(1)(B). The Act defines "take" as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to engage in any such conduct." 16 U.S.C.§ 1532(19). FWS implementing regulations define the term "harm" as "an act which actually kills or injures wildlife. Such act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering." 50 C.F.R § 17.3. Thus, in addition to covering harm to an individual species member, a taking can also include to harm the species as a whole by altering its habitat. See, e.g., Palila v. The Hawaii Dep't of Land and Natural Resources, 471 F. Supp. 985 (D. Haw. 1979), aff'd 639 F.2d 495 (9th Cir. 1981).

A separate prohibition applies to endangered plants. Section 9 makes it illegal to:

> Remove and reduce to possession any such species from areas under federal jurisdiction; maliciously damage or destroy any such species on any such area; or remove, cut, dig up, or damage or destroy any such species on any other area in knowing violation of any law or regulation of any state or in the course of any violation of a state criminal trespass law . . ..

16 U.S.C. § 1538. This provision has at least two important implications for projects within Arizona.

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First, given the large amount of federal land in the state (such as national forests, Indian reservations, National Parks and Bureau of Land Management-administered lands), many private projects may involve activities on these lands, and must therefore consider possible impacts to protected plant species. Second, Arizona has adopted the Native Plant Act, A.R.S. § 3-901 et seq., which regulates the removal, transportation and destruction of various species of native plants, whether found on state or private land. If a plant is found both on the native plant list and on the endangered species list, removal of that plant from private land could result in a violation of the ESA.

Section 9 applies to takings of endangered species. The Secretary does have the authority to similarly limit takings of threatened species. As noted above, whenever a species is listed as "threatened," FWS is required to issue regulations which it deems "necessary and advisable" to provide for the conservation of such species." 16 U.S.C. § 1533(d). FWS has the power to protect threatened species from any act that would be illegal under section 9 if committed against endangered species. FWS cannot allow takings of threatened species unless "population pressures within a given ecosystem cannot be otherwise relieved . . . " 16 U.S.C. § 1532(3); See also Sierra Club v. Clark, 755 F.2d 608 (8th Cir. 1985).

The relative scarcity of water in the Southwest may serve as the basis for the next battle over what constitutes a taking under the ESA. In a recent case, the Sierra Club filed suit in Texas to limit the withdrawal of ground water from an aquifer in the San Antonio area. Sierra Club v. Lujan, No. MO-91-CA-069 (W.D. Tex.). According to published reports of the lawsuit, the Sierra Club has alleged that the withdrawal of ground water from this aquifer for various municipal, industrial and agricultural uses, threatens to reduce surface water flow in streams containing critical habitat of several listed species. Given the reliance on ground water in the Phoenix and Tucson areas, and elsewhere in Arizona, it is possible that this type of lawsuit could be repeated in this state. See Ruhl, Phase Three of the ESA: Using Endangered Species Protection as a Natural Resource Management Tool, (Natural Resources and the Env't.), Winter 1992, at 38-39.

From the perspective of the private sector, the impact of the ESA's taking prohibition, particularly the FWS interpretation that takings include habitat modification, means that a developer of undisturbed land which serves as habitat for protected species must

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consider the possibility that such development could constitute a taking. Again, information regarding the location of endangered and threatened species within Arizona is readily available, and persons wishing to develop currently undisturbed land should consider this information when planning the development of their property. While the ground water litigation discussed above has yet to have a noticeable impact within the state, the private sector must also consider the possibility that projects which may result in the reduction of water flowing to wildlife habitats may also be subject to ESA regulation.

If a project will result in a taking, the project proponent should consider the possibility of obtaining an exemption through an incidental take permit, as discussed below.

2. Incidental Take Permits

The ESA as originally drafted contained no exemptions for private parties from the Section 9 taking prohibition. Section 9 did provide that exemptions given to federal agencies under Section 7(h) were excluded from the definition of taking. Thus, unless a private party could trigger federal agency action under Section 7, and thereby utilize its exemption procedure, a project which resulted in a significant habitat modification of an endangered species could be doomed. To mitigate this result, Congress provided a limited exception to the taking prohibition for "incidental" takings.

Section 10(a) provides that FWS may permit "any taking otherwise prohibited by [Section 9] if such taking is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity." 16 U.S.C. § 1539(a)(2)(B). In order to obtain the permit, the applicant must submit to FWS a habitat conservation plan that specifies the following:

1) The impact which will likely result from such taking;

2) What steps the applicant will take to minimize and mitigate such impacts, and the funding that will be available to implement such steps;

3) What alternative actions to such taking the applicant considered and the reasons why such alternatives are not being utilized; and

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4) Such other measures that FWS may require as being necessary or appropriate for the purposes of the plan.

16 U.S.C. § 1539(a)(2)(A). In order to issue the permit, FWS must find that the taking will be incidental, that the applicant will minimize and mitigate the impacts of the taking, that the applicant will insure that adequate funding for the plan and that the taking will not appreciably reduce the likelihood of the survival and recovery of the species in the wild. 16 U.S.C. § 1539(a)(2)(B).

To date, very few incidental taking permits have actually been issued by FWS. The cost of developing a conservation plan, coupled with the numerous procedural obstacles to obtaining such a permit, means that as a practical matter, an incidental taking permit will probably only be obtainable by large projects. Such projects will typically involve local government approval and participation, and thereby will draw those entities into the ESA process.

An example of the incidental taking permit process is the permit issued in 1986 to allow an incidental take of the Coachella Valley Fringe-Toed Lizard. 51 Fed Reg. 15,702 (Apr. 25, 1986). The lizard's habitat, which originally covered approximately 200 square miles in southern California, had been reduced by 1984 to only 70 square miles due to the conversion from its natural state to urban and agricultural uses. In order to avoid violations of the ESA and to allow further development within areas which included the lizard habitat, local governments petitioned the FWS for an incidental take permit. The FWS issued a permit only after approving a habitat conservation plan ("HCP") covering the lizard habitat.

The specifics of the Coachella Valley HCP give insight into what such a plan should include. The plan required setting aside three reserves consisting of a total of 12,382 acres of lizard habitat. In addition, "mitigation fees" covering the cost of administering the HCP were imposed on land which was to be developed. The fees consisted of an initial fee of $600 per acre, which would be assessed until a total of $7,000,000 had been collected, after which the fee would be decreased to $100 per acre for the remainder of the thirty year life of the permit. The FWS concluded that, based on the best evidence available, the proposed size and configuration of the reserves would promote the survival and recovery of the species in the wild.

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The experience in the Coachella Valley is being repeated elsewhere in California as more and more species in that state are being listed. Habitat conservation plans are being developed and approved to accommodate the kit fox, the desert tortoise and various species plants indigenous to areas now being subject to development. The California experience indicates that as urban populations expand, more listings of endangered species can be anticipated, and as more species are listed, more concerted efforts will have to be taken in order to develop remaining undisturbed areas.

D. Enforcement

Heavy penalties are provided for violations of the ESA. Any person who "knowingly" violates the Act or the regulations issued to implement Section 9 of the Act is subject to a civil penalty of not more than $25,000 for each violation. Other violations are punishable by a fine of not more than $500 per violation. 16 U.S.C. § 1540(a)(1). An exception to the penalty provision is that, no penalty should be imposed if "it can be shown by a preponderance of the evidence that the defendant committed an act based on good faith belief that he was acting to protect himself or herself, a member of his or her family, or any other individual from bodily harm, from any endangered or threatened species." 16 U.S.C. § 1540(a)(3). In addition, anyone who knowingly violates any provision of the Act, or any regulations issued under Section 9 of the Act, is subject to a criminal penalty of not more than $50,000 and/or imprisonment for not more than one year. 16 U.S.C. § 1540(b). Also, the U.S. Attorney General can seek to enjoin any person alleged to be in violation of the Act. 16 U.S.C. § 1540(e)(6).

One of the more powerful methods of enforcing the act is through private suits. The Act allows any person to commence a civil suit on his own behalf to enjoin any other person from violating the Act or any regulation issued under the Act. In certain circumstances, a private party can also file suit to compel FWS to perform its duties under the Act. The ESA provides that a litigant may be awarded the cost of litigation, including attorneys' fees, "whenever the Court determines such award is appropriate." 16 U.S.C. § 1540(g)(4). Nearly all of the federal court decisions interpreting the ESA have originated as citizen suits filed by environmental public interest groups such as the Sierra Club and the Defenders of Wildlife. See, e.g., Lane County Audubon Soc. v. Jamison, 958 F.2d 290 (9th Cir. 1992) (holding that individual timber sales by Bureau of Land Management could not proceed until

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consultation with FWS regarding conservation strategy was concluded).

A private developer must be especially wary of the citizen suit provision. The ESA is a valuable tool for groups (whether neighborhood alliances or national public interest organizations) to utilize to block development. If a group opposed to development can identify a species which is or should be listed as endangered or threatened, it can use the mechanisms of the ESA to delay and, in some cases, terminate development. The most famous example of this is the snail darter case where a $100 million dam project in Tennessee was halted on the brink of completion by the presence of a nearly extinct three-inch fish. A developer should, at the early stages of development, determine whether an endangered or threatened species will be impacted by the development. Otherwise, the developer may face a costly disruption that could be fatal to its plans.

E. ESA Reauthorization

In 1993, Congress will address reauthorization of the ESA. Reauthorization is expected to be controversial, with the business community pushing for greater flexibility in the Act, and environmental groups opposing any changes.

The business community's complaints with the Act are legion and are expected to be the focus of reauthorization in 1993. While environmentalists would like to "improve" the Act, primarily by speeding up the listing process and development of recovery plans for listed species, they will probably focus their efforts on preserving the Act in its current form and expanding FWS funding.

Key issues for reauthorization will likely include:

1. Economic Impacts of Listing. The failure of the Act to allow consideration of economic impacts on the listing process is one of the business community's biggest complaints. This is likely to be the most controversial issue of the reauthorization process. Environmentalists generally believe that the loss of any species should be prevented at all costs. This position ignores the fact that species extinction is part of the natural cycle, and many species designated for protection are likely to become extinct regardless of the protection of the ESA. The business community takes the position that while it is important to preserve species which can be preserved at a reasonable cost,

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there are situations in which the economic impacts of listing are so severe that such a listing would not be warranted. This is especially true if ESA protections are insufficient to prevent extinction. (The ability of the ESA to "rescue" a particular species is not considered in the listing process.) Several bills were introduced in the last session of Congress to amend the ESA in this manner, and similar legislation can be expected this year.

2. Lack of Practical Exemption Procedures. Neither the incidental take statement available under Section 7 consultation nor the incidental take permit available under Section 10 offer practical exemptions for projects which impact endangered species. These exemptions ostensibly are designed to permit projects that only incidentally impact endangered species. However, the cost and time delays associated with obtaining such exemptions effectively make them available to only the largest projects. A more streamlined permitting process (with mandatory deadlines) would help. Also, a proposal raised last year would transfer much of the exemption authority under Section 7 from the cabinet level Endangered Species Committee to the Secretary of Interior. This transfer should make the exemption easier to obtain.

3. Interference with Private Property Rights. The Act can effectively prohibit the use of private property, if that property serves as habitat for protected species. There are no provisions in the Act for assessing its potential to interfere with private property rights or to compensate landowners for having their property taken for the purposes of preserving species. Several bills introduced in the last session would have required a "constitutional takings" analysis by FWS in implementing the Act, along the lines of Executive Order 12630 (which requires federal agencies to consider impacts of their actions on private property rights).

4. FWS Funding. The Service simply does not have the funds necessary to carry out all of the duties Congress has delegated to it. As a result, environmentalists can be expected to push for greater funding to allow for more species listing and to speed development of species recovery plans.

5. Status of Reauthorization. The possibility of amending the ESA is currently being explored in Congress. H.R. 2043, sponsored by approximately fifty House members, "would increase emphasis on species recovery, while attempting to minimize economic and social impacts, facilitate protection of interrelated

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species and their habitats, improve consultation between government entities, and establish species conservation inducements for private land owners." Environment: Endangered Species Act-Reauthorization, Western States Water (Western States Water Council, Midvale, Utah), June 14, 1993, at 1. Other bills (H.R. 1490 and H.R. 1414) call for greater consideration to be given to the economic impact of conservation efforts. Id. Under other proposed legislation (H.R. 1414), species could not be listed unless there are actual threats to their existence. Id. Another proposal (H.R. 2207) would prohibit hunting and fishing in ESA enforcement. Id. In the Senate, legislation (S. 74) has been advanced to protect the standing of certain groups to sue the government to enforce the ESA. Id.

II. Migratory Bird Treaty Act

The MBTA provides significant, but far less comprehensive protection for wildlife than the ESA. In general, the Act protects migratory birds (which includes far more species of birds than protected under the ESA, but obviously does not include other species of wildlife or plants) by prohibiting takings of those species. However, the MBTA takings provision has not been interpreted as broadly as ESA and does not include habitat modifications.

The key provision of the Act provides: that "it shall be unlawful at any time, by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill" or otherwise sell or transport any migratory bird, or part of such bird, which is protected by treaties entered into between the United States and Great Britain (for Canada), Mexico, Japan and the former Soviet Union. 16 U.S.C. § 703. The Act is implemented through regulations adopted by FWS and published at 50 C.F.R. Part 10 et seq. The regulations include a list of migratory birds identified for protection under the Act. 50 C.F.R. § 10.13.

While the primary application of the MBTA is to regulate hunting activities, certain operations which may incidentally kill protected species of birds may trigger MBTA violations. Two well-known examples of this involved the use of pesticides on an agricultural field, which through faulty application killed several birds, and the operation of wastewater treatment ponds, which attracted and poisoned protected birds. In United States v. FMC Corp., 572 F.2d 902 (2d Cir. 1978), the defendant operated a pesticide manufacturing facility which discharged large amounts of wastewater into a 10-acre pond for treatment. The open water attracted

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water fowl during migration and in the spring of 1975, several dead birds were discovered at the pond. Analysis of the pond water indicated that the level of pesticides was "roughly 200 times greater than the level which could cause a significant probability of death to birds." 572 F.2d at 905. While the defendant made "ineffectual" attempts to keep birds away from the pond, the bird deaths continued. The defendant was convicted of criminal violations of the MBTA. The appellate court upheld the conviction, holding that criminal liability under the MBTA can be imposed regardless of whether the alleged violator intended to kill the bird in question.

In United States v. Corbin Farm Serv., 444 F. Supp. 510 (E.D. Cal. 1978), a pesticide dealer, his employee, the owner of an alfalfa field, and an aerial operator who sprayed the field with a registered pesticide, were charged with violating the Act, by virtue of the fact that the pesticide application caused the death of a number of protected water fowl. (The case also involved allegations of application of pesticide in a manner inconsistent with its labeling in violation of Federal pesticide laws.) Following the reasoning of FMC Corp., the court found that intent was not necessary in order to find a violation of the MBTA, and also that accidental poisoning of a protected bird constituted a violation of the Act. Id. at 531-34.

There have been recent attempts by environmental groups to expand the scope of the MBTA to apply to significant habitat modifications of protected species of birds. In the recent goshawk litigation, involving an administrative appeal and court challenge to National Forest Service guidelines for protection of the goshawk, the environmental organizations alleged that logging of goshawk habitat constituted a taking under the MBTA. See, e.g., Administrative Appeal of Northern Goshawk Interim Management Directive No. 2670-91-1, filed by the Wilderness Society, et al. (July 9, 1991). The case was resolved on other grounds, but the MBTA continues to be raised in timber sale appeals filed with the National Forest Service on a regular basis.

In the northern spotted owl litigation in the northwest U.S., the MBTA issue was directly raised and refuted by the Federal District Court. Again, the environmental organizations alleged that logging practices injured the northern spotted owl, a protected migratory bird, and therefore constituted a taking under the Act. The court found that the legislative history and court interpretations of the Act did not support such a broad reading of the statute. In short, MBTA taking prohibition does not apply to habitat modifications. Memorandum Opinion, Seattle Audobon

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Society v. Robertson No. C89-160WD slip opinion, at pp. 21-24 (March 7, 1991).

III. Other Federal Laws Affecting Wildlife

Numerous other federal statutes regulate or impact wildlife protection in Arizona. Unlike the ESA or the MBTA, these laws do not directly regulate the taking of protected species, but rather seek to protect wildlife values through management of other programs. The statutes fall into three broad categories: pollution control statutes, such as the Clean Water Act, or the Comprehensive Environmental Response Compensation and Liability Act ("CERCLA"), which regulate pollutants that may harm wildlife; federal land management statutes, such as the National Forest Management Act ("NFMA") and the Federal Land Management and Policy Act ("FLMPA"); and planning statutes such as the National Environmental Policy Act ("NEPA") or the Fish and Wildlife Coordination Act ("FWCA"). For an excellent discussion of these statutes, see Parenteau and Baur, An Overview of Federal Wildlife Law, Natural Resources and Env't, Spring 1990, at 3. Also, many of these statutes (primarily the Clean Water Act and CERCLA) are discussed more in depth in other course materials.

A. Clean Water Act Section 404

The Clean Water Act provides substantial protection for wildlife habitats both through regulatory efforts aimed at improving water quality, as well as direct protection for wildlife habitats provided under the Section 404 program. See generally 33 U.S.C. § 1251 et seq. Section 404 establishes a permitting program for the discharge of dredge fill material to "waters of the United States" which are defined broadly to include virtually any kind of surface water. 33 U.S.C. § 1344(a) (dredged and fill permit requirement); 13 U.S.C. § 1362(7) (statutory definition of navigable waters, which includes waters of the United States); 33 C.F.R. Part 323 (establishing the regulatory program for dredge and fill permits); 33 C.F.R. Part 328 (definition of waters of the United States). Court cases construing the term "waters of the United States" have made clear that normally dry washes or arroyos through which water occasionally may flow are regulated under the Clean Water Act. See United States v. Phelps Dodge Corp., 391 F.Supp. 1181 (D. Ariz. 1975); Quivira Mining Co. v. EPA, 765 F.2d 126 (10th Cir. 1985).

Any permit issued under the 404 program must comply with guidelines issued by the Environmental Protection Agency ("EPA") regarding protection of the "aquatic ecosystem." 33 U.S.C. § 1344(b); 40 C.F.R.

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Part 230. Under the guidelines (which have the force of regulation), aquatic ecosystem is defined as "waters of the United States, including wetlands, that serve as habitat for interrelated and interacting communities and populations of plants and animals." 40 C.F.R. § 230.3(c). The regulations generally provide that no 404 permit can be issued if "there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences." 40 C.F.R. § 230.10(a). Through the use of this "alternatives analysis," EPA and the Corps of Engineers (the agency responsible for issuing a 404 permit) force permit applicants to analyze project alternatives which would not involve a discharge into waters of the United States. The goal of the alternatives analysis is to ensure that the final permit issued is the "least damaging practicable alternative." In addition to EPA and the Corps, other resource agencies, such as the Arizona Game and Fish Department ("AGFD"), FWS and the Arizona Department of Environmental Quality ("ADEQ") have statutory authority to participate in the permit issuance process. See 33 U.S.C. § 1341 (providing for the 401 certification process administered by the state environmental quality agency); 33 U.S.C. § 1344(m) (providing for comment of FWS on Section 404 permit applications); 16 U.S.C. § 662(a) (providing for comment of FWS and AGFD on Section 404 permit applications). The practical effect of the guidelines is to severely restrict the issuance of 404 permits in the sensitive aquatic sites such as wetlands, and to greatly reduce the issuance of permits in other regulated waters.

B. Natural Resources Damages

Under another program of the Clean Water Act, which has been greatly expanded by CERCLA and the Oil Pollution Act of 1990, wildlife habitats are protected through the assessment of damages against persons responsible for discharging or releasing pollutants which adversely impact those habitats. With the passage of the 1977 amendments to the Clean Water Act, federal law established the right of government agencies to sue for damages to natural resources caused by certain discharges of oil or hazardous substances. Pub. L. 95-217, § 58(g), codified at 33 U.S.C. § 1321(f)(4), (5). The Act generally prohibited the discharge of oil or hazardous substances "into or upon the navigable waters of the United States . . . which may affect natural resources belonging to, and pertaining to, or under the exclusive management authority of the United States . . . ." Id. § 1321(b)(1). The owner or operator of the facility responsible for the discharge would be

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liable for the "costs of removal of oil or hazardous substance [including] any costs or expenses incurred by the Federal Government or any State government in the restoration or replacement of natural resources damaged or destroyed as a result of a discharge of oil or hazardous substance in violation of [the Act]." 33 U.S.C. § 1321(f)(4).

The natural resources provisions of the Clean Water Act were greatly expanded by the enactment of CERCLA in 1980. CERCLA generally establishes a liability scheme for the discharges of hazardous substances to the environment. 42 U.S.C. § 9601 et seq. Materials provided elsewhere in this course discuss the liability under CERCLA more extensively, including defining what entities are responsible parties under the statutes, and what materials constitute hazardous substances subject to regulation. For our purposes, it is important to note that CERCLA substantially expanded the natural resources provisions of the Clean Water Act by extending liability to "releases" of "hazardous substances" into the "environment" (which would include land surface and ground water not regulated by the Clean Water Act). The Clean Water Act provisions continue to play a role, however, because petroleum was excluded from CERCLA coverage.

In addition to imposing liability for costs of removal or remedial action and other necessary costs of response, CERCLA makes responsible parties liable for "damages for injury to, destruction of, or loss of natural resources, including the reasonable costs of assessing such injury, destruction, or loss resulting from such a release . . ." 42 U.S.C. § 9607(a)(4)(C). The statute defines "natural resources" as:

> [L]and, fish, wildlife, biota, air, water, ground water, drinking water supplies, and other such resources belonging to, managed by, held in trust, appertaining to, or otherwise controlled by the United States . . . any state or local government, any foreign government, any Indian tribe, or, if such resources are subject to a trust restriction on alienation, any member of an Indian tribe.

42 U.S.C. § 9601(16). All sums recovered as damages under these provisions must be used only to restore, replace, or acquire the equivalent of such natural resources. 42 U.S.C. § 9607(f)(1).

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The Oil Pollution Act of 1990, passed in response to the Exxon Valdez oil spill in Alaska, expanded liability for natural resources damages caused by the discharge of oil to navigable waters. 33 U.S.C. § 2701 et seq. The Act largely tracks CERCLA in establishing liability, establishing the measurement of damages, and requiring that damages be used to restore the natural resources adversely affected. 33 U.S.C. § 2706. The National Oceanic and Atmospheric Administration ("NOAA") is developing regulations to assess damages under this Act. 33 U.S.C. § 2706(e).

C. Federal Land Management Laws

Federal land management statutes are of particular importance in wildlife protection in Arizona, given the large amounts of land under federal control. The two main statutes of concern are NFMA and FLPMA. NFMA requires the National Forest Service ("NFS") to develop Resource Management Plans ("RMPs") which provide for the allocation of and development of resources within the forests. 16 U.S.C. § 1604. In addition to considering other uses of the national forest such as recreation and timber production, the RMPs are to:

> Provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives . . .

16 U.S.C. § 1604(g)(3)(B). In addition, NFS regulations regarding the planning process provide that "fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area." 36 C.F.R. § 219.19. The "viable population" requirement has been the source of substantial litigation in recent years regarding the planning process, primarily through attacks by environmental organizations against NFS for failing to manage National Forest lands in a manner adequate to protect wildlife resources. The goshawk and northern spotted owl litigation cited above both raised NFMA management concerns.

Similar to NFMA, FLPMA encourages "multiple use" of federal lands and protects wildlife resources through planning requirements. FLPMA defines "multiple uses to include the consideration of wildlife and fish . . . values." 43 U.S.C. § 1702(c). If federal approvals are needed to conduct operations of BLM lands, BLM will conduct an environmental analysis of the proposed project, taking impacts on wildlife resources

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into consideration, and may modify the proposed project to protect those values.

D. Federal Planning Laws

Certain federal planning statutes also can affect wildlife interests. For instance, NEPA generally requires federal agencies to consider the environmental impact of their actions prior to authorizing those actions. 42 U.S.C. § 4321 et seq. The primary methods for analyzing these impacts are the environmental impact statement ("EIS"), which analyzes environmental impact associated with major federal actions, and the environmental assessment ("EA"), which is a documentation of the decision of a federal agency not to do an EIS. Both EISs and EAs typically analyze the impact of a given action on wildlife resources.

Another federal act of concern in Arizona is the FWCA, which provides for commenting authority to FWS and AGFD for commenting on Corps of Engineer projects. The FWCA particularly comes into play under the § 404 current process, as described above. 16 U.S.C. § 662.

III. Arizona Wildlife Regulations

Arizona wildlife regulations are far less extensive and protective of wildlife that the ESA but do provide certain significant protections for Arizona wildlife. Like the ESA and MBTA, the Arizona Game and Fish laws restrict taking of wildlife:

> No person, except as provided by this title, or [Arizona Game and Fish] commission order shall take any wildlife in this state unless at the time of taking he has a valid license therefore on his person and exhibits it upon request for inspection to any game ranger, wildlife manager or peace officer.

A.R.S. § 17-331. "Take" is defined as:

> Pursuing, shooting, hunting, fishing, trapping, killing, capturing, snaring or netting wildlife or the placing or using of any net or other devise or trap any manner that may result in capturing or killing wildlife.

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A.R.S. § 17-101(17). Unlike the federal regulations, the state definition of take does not include habitat modifications.

Rules adopted by AGFD provide for identification of "restricted live wildlife" which are defined as "wildlife which has been determined by the commission to be an actual or potentially significant threat to indigenous wildlife by competition, disease or parasites, habitat degradation, predation, or impact on population management; or an actual or potentially significant threat to public safety by disease, physical threat, property damage or nuisance." A.A.C. R12-4-403.14. Restricted live wildlife are listed under R12-4-406 and a special license is required from the Department to capture restricted live wildlife. Id.

The Department rules also define "threatened native wildlife" as any species listed on the Threatened Native Wildlife ("TNW") List published by AGFD. R12-4-403.18. The TNW List is an informal compilation by AGFD of species native to Arizona whose existence in the state is threatened. The list has no substantive force (although AGFD asserts that the authority to develop the list is "implicit" in Arizona law), but it has significant ramifications for wildlife planning purposes and for future wildlife protection legislation in Arizona. The TNW List identifies four categories of species: extinct, endangered, threatened and candidate species. AGFD has described these categories as follows:

> Extinct forms are already gone forever. None exist anywhere; recovery is impossible. "Endangered" species may likely be gone from Arizona soon, if recovery efforts are not undertaken. The continued presence of "threatened" species in Arizona theoretically could also be in jeopardy in the future. Most are seriously threatened by habitat destruction or other factors. Their populations are known or suspected to have declined.
>
> Still others, the "candidate species" generally occupy habitats that are sufficiently limited and potentially threatened to make population declines seem likely. They are, to AGFD, "good"

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> candidates for threatened or endangered status.
>
> The TNW list includes both extinct and extirpated animals. Extirpated species, such as the black-footed ferret, are those known or suspected to have been eliminated from Arizona but which still exist elsewhere.

TNW List, preamble at 2.

The TNW List has substantial importance for AGFD planning activities, particularly its participation in the 404 permit issuance process and the national forest resource management plan commenting process. Recent efforts to develop an endangered species act for Arizona have also focused on the use of the TNW List. Legislation considered in recent years has included provisions that would incorporate the TNW List as a list of endangered species for the state and impose similar substantive protections as provided by the federal ESA for those species. Therefore, even though the list is currently compiled on an information basis, it is possible that, if adopted wholesale into a state ESA law, the list could have substantial impact on wildlife planning in the state.

VI. Conclusion

As natural areas are increasingly subject to urbanization and as the list of endangered species continues to expand, the ESA and related statutes will have more and more impact on private development. The broad reach of Section 9, which prohibits any person from "taking" an endangered species, as well Section 7, which prohibits any federal agency from jeopardizing a species' critical habitat, means that numerous projects will be required to follow the procedures in the ESA. The enforcement provisions, especially the citizen suit provisions, will only serve to increase the impact of the Act on private development. While the MBTA and state law do not currently protect wildlife habitats directly, future statutory changes, as well as changes in related state and federal programs could substantially increase protection of wildlife in the state.

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CHAPTER 15

BANKRUPTCY CONSIDERATIONS

The Bankruptcy Code is codified at 11 U.S.C. Sections 101 through 1330. Since the bankruptcy law is federal law, there is no state court law or state bankruptcy law to be addressed for purposes of this chapter. The United States Bankruptcy Court for the District of Arizona sits in Phoenix and Tucson, Arizona and administers the bankruptcy cases for Arizona corporations, partnerships and individuals who choose to file bankruptcy in Arizona. Accordingly, this chapter will attempt to address some of the bankruptcy issues which could occur and which could impact entities and governmental agencies in Arizona.

I. INTRODUCTION

The bankruptcy laws were enacted to provide a structure for the implementation of a debtor's "fresh start." The bankruptcy system enforces an equitable distribution of assets through a defined priority scheme to ensure fairness among creditors. The bankruptcy system also enables a Chapter 11 entity to continue in business for a reasonable time period to allow it to restructure its obligations.

The environmental laws were enacted to provide a structure for the cleanup of contamination -- a "fresh start" of a different nature. The system acts to stop activities that contaminate the environment, imposes liability and responsibility for past and current actions, shifts the cost from the victim to those who caused the problem, and creates a mechanism to clean up and to seek reimbursement for cleanup costs.

The two areas of law overlap and affect each other in multiple ways. Hopefully the two legal areas coexist in ways that enhance and implement the policies of both.

This chapter will briefly highlight four areas of interplay between the two areas of law: first, the priority of payment of cleanup costs and the dischargeability of such claims; second, the extent and effect of the automatic stay on the enforcement of environmental laws; third, the ability of the bankruptcy estate to abandon contaminated property;

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fourth, the potential liability of lenders who participate in management.[1]

II. THE PRIORITY OF PAYMENT OF CLEANUP COSTS AND THE DISCHARGEABILITY OF SUCH CLAIMS

Section 101(5) of the Bankruptcy Code defines a "claim" as the "(A) right to payment, whether or not such right is reduced to judgment, liquidated, unliquidated, fixed, contingent, matured, unmatured, disputed, undisputed, legal, equitable, secured, or unsecured; or (B) right to an equitable remedy for breach of performance if such breach gives rise to a right to payment, whether or not such right to an equitable remedy is reduced to judgment, fixed, contingent, matured, unmatured, disputed, undisputed, secured, or unsecured." Claims under the Bankruptcy Code are generally dischargeable under a debtor's Chapter 7 or 11 case.

Liabilities under the environmental laws have generally been found to constitute "claims." Ohio v. Kovacs, 469 U.S. 274 (1985). The Supreme Court held in Ohio v. Kovacs that a prepetition injunction requiring the Debtor to cleanup hazardous waste constituted a dischargeable debt, at least on the facts where the debtor could not physically perform the cleanup itself but merely pay the costs. Claims for cleanup are essentially a money judgment. The Ninth Circuit Bankruptcy Appellate Panel has held that liability incurred for postpetition environmental cleanup costs can be discharged in Chapter 7 if the debtor's release of hazardous waste occurred prepetition. In re Jensen, 127 B.R. 27 (Bankr. 9th Cir. 1991). Since Arizona is in the

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[1] Several excellent articles have been written on the interaction of environmental laws and bankruptcy law. See Cristina L. Diaz, Environmental Law: Bankrupt Polluters Cannot Avoid Environmental Responsibilities, 65 Temp. L. Rev. 1053 (1992); Kristy Kutz, Who is Going to Pay? CERCLA versus Bankruptcy, 31 Washburn L.J. 573 (1992); R. Todd Silliman, De Facto Lender Liability: Secured Creditors and Environmental Liabilities in Chapter 11, 12 Va. Envtl. L.J. 157 (1992); Epling, Impact of Environmental Law on Bankruptcy Cases, 26 Wake Forest L. Rev. 69 (1991); Mirsky, Conway and Humphrey, The Interface Between Bankruptcy and Environmental Laws, 46 The Business Lawyer 623 (Feb. 1991); Salerno, Ferland and Hansen, Environmental Law and its Impact on Bankruptcy Law -- The Saga of "Toxins-R-Us", 25 ABA Real Property, Probate and Trust Journal 261 (Summer 1990).

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Ninth Circuit, the Arizona Bankruptcy Courts will follow Jensen and the other Ninth Circuit precedent.

The Seventh Circuit, however, refined the analysis further to hold that when a potential CERCLA claimant can tie the debtor to a known release of a hazardous substance which the claimant knows will lead to response costs and when the claimant has conducted tests or taken some steps towards testing with regard to this contamination problem, then the contingent claim has arisen. If the claim arises prepetition, or even postconsummation, the debt is discharged. In re Chicago, M. St. P. & P.R.R., 974 F.2d 775, 786 (7th Cir. 1992).

Several courts have tried to limit the dischargeability of claims relating to prepetition conduct resulting in a release or threat of release of hazardous materials to cases in which the costs were "fairly contemplated" by the parties. In re Nat'l Gypsum Co., 139 B.R. 397 (N.D. Tex. 1992). In Nat'l Gypsum, the court stated that factors relevant to whether a fair contemplation of future costs based on prepetition conduct occurred include knowledge by the parties of a site in which a potentially responsible person may be liable, National Priorities List listing, notification by the EPA of potential liability, commencement of investigation and cleanup activities and incurrence of response costs. Id. at 408. See also Am Int'l, Inc. v. Datacard Corp., 146 B.R. 391 (N.D. Ill. 1992) (adopting "fair contemplation" standard for dischargeabilty); NCL Corp. v. Lone Star Bldg. Centers (Eastern), Inc., 144 B.R. 170 (S.D. Fla. 1992) (evaluating claims under more rigorous "fair contemplation" standard).

In certain circumstances, the right to an equitable remedy for breach of performance also is essentially capable of being reduced to a money judgment. Claims status could be denied, however, if the right to payment or an equitable remedy is too remote or speculative. For example, in In re Chateaugay Corp., 944 F.2d 997 (2d Cir. 1991), the court held that cleanup costs incurred or to be incurred are claims regardless of when incurred so long as such costs concerned the release or threatened release of hazardous substances that occurred prepetition. In regard to injunctive remedies as claims, the court ruled that injunctions sought as an option to EPA's right to incur and sue for response costs are claims. 944 F.2d at 1008.

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With respect to the priority of environmental claims, the courts have primarily focused on the time when the conduct giving rise to the claim occurred in order to determine when the claim arises. In re Johns-Manville Corp., 57 B.R. 680 (Bankr. S.D.N.Y. 1986). The general rule is that the claim arises under the state and federal environmental laws at the time the contamination or violation occurred, not at the time the cleanup occurred. In re Jensen, 127 B.R. 27 (Bankr. 9th Cir. 1991). See In re Dant & Russell, Inc., 853 F.2d 700 (9th Cir. 1988); In re Hudson Oil Co., 100 B.R. 72 (Bankr. D. Kan. 1989) (lessor's indemnification claim for cleanup of debtor-lessee's contamination arose at time of gas seepage); In re Cottonwood Canyon Land Co., 146 B.R. 992, 998 (Bankr. D. Colo. 1992) (holding that at time of disposal, debtor owed "debt" for cleanup).

Pursuant to CERCLA, the EPA is entitled to reimbursement for certain cleanup costs incurred by it in cleaning up contaminated sites. Other environmental laws provide similar entitlements to various governmental agencies and entities. The courts are not in agreement as to whether these costs are assessable against the estate as administrative claims or unsecured claims.[2]

Some courts have taken the position that environmental cleanup costs are administrative expenses entitled to administrative priority pursuant to Section 503(b)(1)(A) and Section 507(a)(1) of the Bankruptcy Code as actual and necessary costs and expenses of preserving the estate. In re Chateaugay Corp., 944 F.2d 997 (2d Cir. 1991). See In re Wall Tube & Metal Prods. Co., 831 F.2d 118 (6th Cir. 1987); In re Smith-Douglass, Inc., 856 F.2d 12, 17 (4th Cir. 1988) ("cleaning up

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[2] For further information on this topic, see John P. Berkery, The Dischargeability of CERCLA Cleanup Costs Incurred After Bankruptcy, 9 Bankr. Devs. J. 417 (1992); Michael J. Cadigan, Environmental Liability: Bankruptcy and Insurance Issues, 22 Envtl. L. 1279 (1992); Kathryn R. Heidt, Environmental Obligations in Bankruptcy: A Fundamental Framework, 44 Fla. L. Rev. 153 (1992); Nancy H. Kratzke, Dischargeability Issues and Superfund Claims: The Conflict Between Environmental and Bankruptcy Policies, 17 Colum. J. Envtl. L. 381 (1992); Michael I. Shaftel, CERCLA Injunctive Orders in Chapter 11 Bankruptcy: Fresh Start or Free Ride for the Reorganized Debtor, 17 Vt. L. Rev. 281 (1992).

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environmental violations is properly considered an administrative expense"); In re Virginia Builders, Inc., 153 B.R. 729 (Bankr. E.D. Va. 1993) (citing 28 U.S.C. § 959(b) as grounds for remediation costs being entitled to administrative priority); In re Conroy, 153 B.R. 686 (W.D. Pa. 1993) (because debtor obligated by law to clean up environmental violations, estate was benefitted by remediation by environmental authority, so expense is administrative); In re Nat'l Gypsum Co., 139 B.R. 397 (N.D. Tex. 1992); In re Stevens, 68 B.R. 774 (D. Me. 1987).

Other courts have taken the position that such cleanup costs, even if incurred postpetition for contamination which occurred prepetition, are not entitled to administrative priority and are merely general unsecured claims. In re Dant & Russell, Inc., 853 F.2d 700 (9th Cir. 1988); Southern Ry. v. Johnson Bronze Co., 758 F.2d 137 (3d Cir. 1985) (purchaser of contaminated property not entitled to administrative expense claim against debtor-vendor); In re Jensen, 127 B.R. 27 (Bankr. 9th Cir. 1991); In re Microfab, Inc., 105 B.R. 161, 168 (Bankr. D. Mass. 1989) ("I find that the Bankruptcy Code shows an intent to treat environmental cleanup obligations as . . . general unsecured claims . . ."). Since Arizona is in the Ninth Circuit, the Arizona Bankruptcy Courts will follow In re Dant & Russell and the other Ninth Circuit case law.

III. THE EXTENT AND EFFECT OF THE AUTOMATIC STAY ON GOVERNMENTAL AGENCIES AND ENFORCEMENT OF ENVIRONMENTAL LAWS

From a debtor's perspective, one of the principal benefits of a bankruptcy filing is the automatic stay under Section 362(a) of the Bankruptcy Code. The automatic stay basically stops the efforts by creditors to collect from the debtor or to interfere with the debtor's property. Section 362(a) stays all entities from "the commencement or continuation, . . . of a judicial, administrative or other action or proceeding against the debtor that was or could have been commenced before the commencement of the case under this title." Other subsections under this section also stop the enforcement against the debtor or its property of a judgment, the obtaining of possession of property, the creation, perfection or enforcement of a lien, or the collection, assessment or recovering of a claim against the debtor.

When environmental laws are involved, however,

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two exceptions to the automatic stay often apply. Section 362(b)(4) provides that the filing of a petition does not operate as a stay "of the commencement or continuation of an action or proceeding by a governmental unit to enforce such governmental unit's police or regulatory power." Section 362(b)(5) states that the petition does not operate as a stay "of the enforcement of a judgment, other than a money judgment, obtained in an action or proceeding by a governmental unit to enforce such governmental unit's police or regulatory power."

The filing of a bankruptcy petition does not exempt a debtor operating a business from compliance with the federal and/or state environmental laws. United States v. Wheeling-Pittsburgh Steel Corp., 818 F.2d 1077 (3d Cir. 1987). Pursuant to 28 U.S.C. Section 959(b), the trustee or debtor-in-possession must comply with all valid state laws and federal laws.

To the extent a governmental entity is seeking to enforce injunctive-type relief, for example, the abatement of environmental hazards, a majority of the courts have ruled that such action is not barred by the automatic stay. See United States v. Nicolet, Inc., 857 F.2d 202 (3d Cir. 1988) (government's action to recover CERCLA response costs falls within the 362(b)(4) exception); Penn Terra, Ltd. v. Penn. Dep't of Envtl. Resources, 733 F.2d 267 (3d Cir. 1984); In re Commonwealth Oil Refining Co., Inc., 805 F.2d 1175 (5th Cir. 1986), cert. denied, 483 U.S. 1005 (1987); United States v. F. E. Gregory & Sons, Inc., 58 B.R. 590 (Bankr. W.D. Pa. 1986), (complaint seeking injunction ordering debtor to reclaim abandoned mine not stayed).

The fact that injunctive relief may require an expenditure of funds by the debtor is not enough to stay the action. In the Penn Terra case, the Third Circuit found that unless the substance of the action is the enforcement of a money judgment, it will fall within the exceptions provided by Sections 362(b)(4) and (5). The court determined that an order will generally be found to be a money judgment if it identifies the parties for whom, and against whom, judgment is being entered, and contains a definite statement of the amount owed. 733 F.2d at 275. The court also considered whether the remedies sought by the government were compensation for past damages or prevention of future harm. The court implied that compensation for past damages would constitute a money judgment. Id. at 278.

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However, other courts have indicated that the automatic stay is applicable even when injunctive-type relief is sought. See United States v. Johns-Manville Sales Corp., 13 Envtl. L. Rep. 20,310, 20,311 (D.N.H. Nov. 15, 1982); In re Thomas Solvent Co., 44 B.R. 83 (Bankr. W.D. Mich. 1984) (chapter 7 debtor may enjoin the state from requiring debtor to purify pollution problem).

In City of New York v. Exxon Corp., 932 F.2d 1020 (2d Cir. 1991), the City was attempting in a district court suit to recover certain costs of removing from a number of landfills hazardous substances alleged to have been dumped by the waste hauling companies hired by the debtor. The debtor asserted that the automatic stay prevented the City from proceeding on its CERCLA claims since the City's actions were aimed at recovering costs related to the cleanup of City property. The City disagreed and also moved to withdraw the reference of all portions of the Chapter 11 case involving the CERCLA claims. The Second Circuit held that the CERCLA action in district court may continue, notwithstanding the automatic stay, and viewed the action by the governmental unit as an enforcement of its police and regulatory powers, and within the exception to the automatic stay. The court also upheld the action of the district court in enjoining any additional litigation relating to damages in the bankruptcy court. The Second Circuit noted that even though the damage claim may be a "core" proceeding, mandatory withdrawal of the reference was required on the CERCLA claim. As a result, the district court will litigate the amount of the CERCLA claim instead of the bankruptcy court.

The fixing of fines and penalties by an environmental agency may be allowed pursuant to the exception to the automatic stay under Section 362(b)(4), however, a judgment for money damages may not be enforced postpetition against property of the bankruptcy estate. See In re Commerce Oil Co., 847 F.2d 291, 296 (6th Cir. 1988) ("although the state contends that it may fix liability under § 362(b)(4), it concedes that it may not collect any penalties assessed . . ."); United States v. Nicolet, Inc., 857 F.2d 202 (3d Cir. 1988); In re New York Trap Rock Corp., 153 B.R. 642, 645 (Bankr. S.D.N.Y. 1993) (holding governmental actions under CERCLA to recover response costs are not stayed, but the enforcement of a money judgment is stayed); United States v. ACME Solvents Reclaiming, Inc., 154 B.R. 72, 74 (N.D. 111, 1993) (environmental enforcement actions fall within the 362(b)(4)

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exception).[3]

IV. THE ABILITY OF THE ESTATE TO ABANDON CONTAMINATED PROPERTY

Pursuant to Section 554 of the Bankruptcy Code, where estate property has an uncertain value due to its contaminated condition, or where insufficient funds are available from unencumbered assets for cleanup of contamination, a debtor-in-possession or trustee may consider abandonment of the property. Section 554 provides in part that the trustee or debtor-in-possession "may abandon any property of the estate that is burdensome to the estate or that is of inconsequential value and benefit to the estate."

The United States Supreme Court in Midlantic Nat'l Bank v. New Jersey Dep't of Envtl. Protection, 474 U.S. 494 (1986), ruled on the ability of a trustee to abandon contaminated property. The Chapter 7 trustee sought to abandon contaminated real and personal property. The two states in which the property was located objected on the basis that an abandonment would be a violation of their environmental laws. The Supreme Court held "that a trustee may not abandon property in contravention of a state statute or regulation that is reasonably designed to protect the public health or safety from identified hazards." 474 U.S. at 507. The restriction does not encompass situations dealing with speculative or indeterminate future violations of state law but the abandonment power was "not to be fettered by laws or regulations not reasonably calculated to protect the public health or safety from imminent and identifiable harm." Id. at 507.

Not all lower courts are in agreement in their interpretation of the Midlantic case. The majority view allows abandonment if there is no immediate danger to public health and safety, short of full compliance with the environmental laws. See In re Smith-Douglass, Inc., 856 F.2d 12 (4th Cir. 1988); In re Doyle Lumber, Inc., 137 B.R. 197, 207 (Bankr. W.D. Va. 1992) ("[T]he crucial determination in an abandonment controversy like the one before this court is whether there is an immediate danger to the public health and safety . . ."); In re MCI, Inc., 151 B.R. 103 (E.D. Mich. 1992); Leavell v. Karnes,

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[3] For further information on this topic, see Kathryn R. Heidt, The Automatic Stay in Environmental Bankruptcies, 67 Am. Bankr. L.J. 69 (1993).

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143 B.R. 212 (S.D. Ill. 1990); In re FCX, Inc., 96 B.R. 49, 54 (Bankr. E.D.N.C. 1989) ("Full compliance with all environmental laws is not required prior to abandonment . . .").

Other courts have allowed abandonment only if the trustee fully complies with the environmental laws. See In re Peerless Plating Co., 70 B.R. 943, 946-47 (Bankr. W.D. Mich. 1987) ("Although [Midlantic] has been interpreted as permitting abandonment of hazardous waste sites with less than full compliance with the applicable environmental law . . . this court must respectfully disagree."); In re Stevens, 68 B.R. 774 (D. Me. 1987).

A third variation recently adopted by the District Court of New Jersey allows abandonment if it "will not aggravate the threat of harm to the health and safety of the public." New Jersey Dep't of Envtl. Protection v. North Am. Prods. Acquisition Corp., 137 B.R. 8, 12 (D.N.J. 1992) (emphasis added).

Under the Midlantic analysis, the debtor's financial condition may be relevant. If the estate has unencumbered assets, the bankruptcy court may require stricter compliance with environmental laws before permitting abandonment. In re Doyle Lumber, Inc., 137 B.R. 197, 202 (Bankr. W.D. Va. 1992); In re MCI, Inc., 151 B.R. 103, 108 (E.D. Mich. 1992); In re Better-Brite Plating, Inc., 105 B.R. 912, 912 (Bankr. E.D. Wis. 1989).

V. THE POTENTIAL LIABILITY OF LENDERS FOR ENVIRONMENTAL CLEANUP COSTS

Two Circuit Court cases in 1990 created great concern among lenders and their bankruptcy counsel about potential liability in bankruptcy cases for environmental cleanup costs.

In May, 1990, the Eleventh Circuit in United States v. Fleet Factors Corp., 901 F.2d 1550 (11th Cir. 1990), cert. denied, 498 U.S. 1046 (1991), was the first Circuit Court to indicate that liability for environmental cleanup costs could be imposed on a postpetition lender as "an owner or operator" of a facility. Even though the lender did not actually involve itself in the day to day operation, liability could be imposed if its "involvement with the management of the facility [was] sufficiently broad to support the inference that it could affect hazardous waste disposal decisions if it so chose." 901 F.2d at 1558.

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In August, 1990, the Ninth Circuit in In re Bergsoe Metal Corp., 910 F.2d 668 (9th Cir. 1990), adopted what appears to be a less strict standard by requiring "some actual management of the facility" before a secured creditor could be liable. 910 F.2d at 672 (emphasis in original).

Other courts had found lenders liable for CERCLA and other environmental laws, either as an owner (because the lender took title of the contaminated property in foreclosure) or as an operator (because of the lender's participation in the management and operation of the contaminated property). See United States v. Maryland Bank and Trust, 632 F. Supp. 573 (D. Md. 1986) (lender could be liable under CERCLA as owner because it held title to contaminated property after foreclosure); United States v. Mirabile, 15 Envl. L. Rep. 20,994 (E.D. Pa. 1985) (lender could be liable under CERCLA as operator if it participated in day to day operational aspects of the site other than the purely financial aspects).

The Fleet Factors court indicated that without incurring liability a secured creditor could monitor any aspect of the debtor's business and become involved in occasionally discreet financial decisions relating to the protection of its security interest. However, activities which place a secured lender in risk of participation in management include financial decisions such as requiring the borrowers to seek the lender's approval before shipping goods to customer, dictating when and to whom goods were shipped, establishing prices, determining when employees should be laid off, supervising various activities of the office administrator, controlling access to the facility, influencing or making decisions regarding the borrower's treatment of hazardous waste and other activities indicating its involvement in the important financial affairs of the company. 901 F.2d at 1559-1560.

The theoretical discussion is however softened because, in Fleet Factors, the court focused on the secured creditor's capacity to influence hazardous waste decisions. The court noted in footnote 13 that the secured creditor had control over the hazardous waste barrels and prohibited the borrower from selling some of the barrels so that the barrels remained on the premises when the lender concluded its foreclosure. Id. at 1559. The lender did not foreclose upon the real property and left the barrels on the real property. The evidence also

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indicated that the auction company hired by the lender actually moved the barrels. In addition, the court noted evidence that, in the process of removing machinery and equipment after the auction, a party knocked asbestos loose from the pipes connected to the machinery and equipment during the time the lender had control of the facility. The court concluded that these facts would be sufficient to impose liability upon a secured creditor and demonstrated the nature and extent of the creditor's involvement with the facility. Id. at 1560.

The Bergsoe court adopted what appears to be a less strict standard by requiring "some actual management of the facility" before a secured creditor would be liable. 910 F.2d at 672. In determining the extent of permissible participation in management, the Ninth Circuit indicated that the fact that there are rights under the leases or documents to inspect or take possession upon foreclosure in itself is not sufficient to incur liability. The Bergsoe court in analyzing the secured creditor's rights under the leases involved noted that when a secured creditor has rights such as inspection and reentry upon foreclosure in order to protect its security interest, "what is critical is not what rights the [secured creditor] had, but what it did." Id. at 672. The court noted that the secured creditor had not enforced its rights and that there was no evidence of actual management of the facility. In agreeing with the Fleet Factors court, the Bergsoe court indicated that once a lender exercises actual management authority, it could be held responsible for the action or inaction which results in the hazardous waste threat. Id. at 673, fn. 3.

The difference between the Fleet Factors court's focus on the secured creditor's capacity to influence hazardous waste decisions and the Bergsoe court's focus on what the secured creditor actually did, as opposed to what rights or capacities a secured creditor possessed, may stem from the difference in the level of involvement by the secured creditors in the cases. In Fleet Factors, the secured creditor had involved itself deeply in the foreclosure and the liquidation of the assets, the court said the lender's involvement was "pervasive, if not complete." Whereas, in Bergsoe the lender had taken a more or less hands off stand and did not exercise its rights. The difference in focus is very subtle considering the widely different facts of the case, but should be noted.

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Following the decisions in both Fleet Factors and Bergsoe, the Environmental Protection Agency promulgated its Final Rule on Lender Liability under CERCLA on April 29, 1992. 40 C.F.R. § 300.1100 (1992). The Final Rule, issued as new Subpart L of the National Contingency Plan, interprets CERCLA Section 101(20)(A) and addresses the question regarding participation in the management.[4] The Final Rule lists actions which a lender may perform without losing the exemption. For example, foreclosure alone is acceptable provided the lender makes commercially reasonable efforts to divest itself of the property within twelve months. 40 C.F.R § 300.1100(d). See also Waterville Indus., Inc. v. Finance Auth., 984 F.2d 549 (1st Cir. 1993) (pre-Rule case citing Rule as further support for its decision not to hold lender liable after foreclosure where lender contracted with auctioneer to sell property within six months); Ashland Oil, Inc. v. Sanford Prods. Corp., 810 F. Supp. 1057 (D. Minn. 1993) (no liability where lender only held title to property for three to four weeks after foreclosure). The Final Rule should be reviewed in detail as a guide for lenders.[5]

The Final Rule also lists actions deemed to be "participation in management" which would expose the lender to liability. For example, exercising decision-making control over the hazardous substance management and assuming day-to-day environmental or operational management (as opposed to financial or administrative management) will expose a lender to liability. In this respect, the Final Rule expressly requires actual control, not the mere capacity to influence. 40 C.F.R. § 300.1100(c)(1). See also Kelley ex rel. Michigan Natural Resources Comm'n v. Tiscornia, 810 F. Supp. 901, 909 (W.D. Mich. 1993) (bank not liable where it never "crossed the murky line from the ability to influence operational decisions to actually making operational decisions.") This appears to accord more with the

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[4] The Final Rule is currently being challenged in two cases pending before the D.C. Circuit. Michigan v. EPA, C.A. No. 92-1312 (D.C. Cir. filed July 28, 1992); Chem Mfrs. Ass'n v. EPA, C.A. No. 92-1314 (D.C. Cir. filed July 28, 1992). The cases are scheduled for oral argument on October 28, 1993.

[5] For further information on this topic, see Ronald L. Weaver & Jo Claire Spear, Lender Environmental Liability: The EPA's Interpretation of CERCLA's Security Interest Exemption, 66 Fla. B.J. 24 (1992).

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holding of Bergsoe than Fleet Factors. On remand, however, the Fleet Factors court made clear that the Final Rule was not in conflict with its earlier decision, and any perception that the Fleet Factors standard imposes liability for the bare capacity to influence hazardous waste decisions is unwarranted. United States v. Fleet Factors Corp., 819 F. Supp. 1079, 1086 (S.D. Ga. 1993). The District Court, after all the appeals and remands, imposed liability for CERCLA response costs on the secured creditor Fleet Factors. United States v. Fleet Factors Corp., 821 F. Supp. 707 (S.D. Ga. 1993). The District Court held that the liability was imposed because the handling of hazardous waste materials by the secured creditor's agents constituted "impermissible post-foreclosure participation in management" and voided the secured creditor exemption. Id. at 719-20.

VI. CONCLUSION

The recent bankruptcy case law and environmental developments discussed above demonstrate that the two areas of law continue to overlap in a multiple of ways. The two policies conflict and each are weighed and scrutinized. However, the balancing of all policies and interests continues and the courts still struggle with each new set of facts and with each new "fresh start."

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CHAPTER 16

TOXIC TORT LITIGATION IN ARIZONA

The last year has witnessed an explosion of environmental toxic tort litigation in the State of Arizona. Following the settlement of several groundwater contamination suits in the Tucson area for cumulative sums in excess of $100,000,000.00, a number of plaintiffs commenced similar suits. This wave of toxic tort suits has focused primarily upon alleged groundwater contamination in the Phoenix metropolitan area.

The first of these suits, McIntire v. Motorola, Inc., No. CIV 91-2067 PHX WPC, was filed on December 20, 1991 in the United States District Court for the District of Arizona. The plaintiffs in McIntire allege that Motorola "has caused to be discharged into the groundwater, surface soil, subsurface soil, sewer and storm drain systems for the City of Phoenix, City of Scottsdale and Maricopa County, local water canals and through [Motorola's] smokestacks since the mid-1950's large toxic quantities of chemicals and pollutants/ contaminants including the volatile organic compound and solvent known as trichloroethylene (hereinafter TCE) which is . . . a proximate and producing cause of damage to Plaintiffs."[1] Complaint, ¶ 12. The Complaint seeks to have the litigation certified as a class action. Based upon Motorola's alleged conduct, the Complaint asserts claims sounding in negligence, gross negligence, nuisance, trespass, strict liability, intentional infliction of emotional distress, negligent infliction of emotional distress, assault and battery, fraudulent conceal-ment and medical surveillance.[2] As a result of Motorola's alleged conduct, plaintiffs seek to recover

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[1] The Complaint is not limited to TCE. Rather, plaintiffs allege that Motorola has improperly discharged the following chemicals and heavy metals: benzene, carbon tetrachloride (tetrachloromethane), chlorobenzene, 1,2,4-trichlorobenzene, 1,1,1-trichloroethane (TCA), 1,1-dichloroethane, chloroform (trichloromethane), 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, 2,4-dimethylphenol, ethylbenzene, napthalene, phenol, di-n-butyl phthalate, tetrachloroethene (PCE), toluene, alcohols, acetone, arsenic, beryllium, cadmium, chromium, copper, cyanide, lead, mercury, nickel, selenium, silver, gold, thallium and zinc.

[2] The Court dismissed the medical monitoring claim on April 24, 1992 on the grounds that it is not a separately cognizable claim, but rather an element of damages.

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damages for present and future personal injuries, the costs of a continuing medical surveillance program, damages for diminution in the value of real property and punitive damages.[3]

The second suit, Baker v. Motorola, Inc., No. CV92-02603, was filed in Maricopa County Superior Court on February 11, 1992. In addition to Motorola, the Complaint in Baker names two Motorola subsidiaries and eight other entities as defendants. The Complaint alleges that each of the named defendants "used, controlled, transported and/or disposed of one or more [volatile organic compounds] or other toxic chemicals causing contamination of groundwater and surface water, as well as air emissions. . ." Complaint, ¶ 69. The Complaint also names the Cities of Phoenix and Scottsdale and the Salt River Project as "probable" defendants. Their liability is predicated primarily upon the distribution of allegedly contaminated water. The Complaint, like its counterpart in McIntire seeks certification as a class action.

The Complaint in Baker proceeds upon theories of public and private nuisance, trespass, strict liability for ultrahazardous activities, strict products liability, negligence, breach of warranty, malicious conduct, fraud and misrepresentation.[4] Based upon these theories, the Complaint seeks to recover damages for diminution in the value and loss of use of property, damages for discomfort and annoyance, damages for reasonable and necessary lifetime medical surveillance and punitive damages.[5] Unlike their counterparts in

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[3] The Complaint also seeks to assert claims for the alleged commercial losses of certain plaintiffs engaged in the business of real estate brokerage.

[4] The claims for strict products liability and breach of warranty are asserted against only the Cities of Phoenix and Scottsdale and the Salt River Project.

[5] On July 28, 1992, the Court dismissed plaintiffs claims for medical surveillance damages on the grounds that

> Plaintiffs' claims for medical surveillance are tantamount to a challenge to programs which may be implemented by CERCLA. This Court lacks subject matter jurisdiction to entertain any such claim until such programs have actually been completed.

In reaching this result, the Court placed primary reliance upon In re Hanford Nuclear Reservation Litigation, 780 F.

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McIntire, the Baker plaintiffs specifically eschew any claim for presently manifest physical injuries.[6]

The most recent Phoenix area suit, Franklin v. Motorola, Inc., No. CIV 92-0421 PHX RCB, was filed in federal court on March 5, 1992.[7] The Complaint names as

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Supp. 1551 (E.D. Wash. 1991).

[6] More particularly, the Complaint alleges as follows:

> As a direct and proximate result of the Defendants' acts and omissions as set forth herein, many members of the Class have become sick, ill, disabled, and/or died, have suffered the death of family members, have experienced great anxiety and/or emotional distress, or have otherwise manifested disease or suffered personal injury. Such members of the Class have not discovered, and by the exercise of reasonable diligence could not have discovered, the causal nexus between their injuries and the Defendants' identities and acts and omissions, and any causes of action that they may have to recover for their individual personal injuries have not yet accrued. Therefore, this class action Complaint does not seek to adjudicate the claims of such individual members of the Class for damages for manifested or other disease or personal injury such as emotional distress.

Complaint, ¶ 35. Based primarily upon this allegation, the Complaint seeks affirmative declaratory relief that: (1) prior to the entry of judgment in this case, the statute of limitations for any present claim by any class member for manifested disease of personal injury has not yet accrued; and (2) any applicable statute of limitations is tolled for any claim by any class member for manifested disease or other personal injury until the lifetime medical surveillance and counseling program sought in the Complaint is in place and diagnoses are made pursuant to such program.

[7] The case of Acevedo v. Hughes Aircraft Company, No. CIV92-384 TUC JMR, was filed in federal court in Tucson on June 3, 1992. Acevedo is an action for "personal injury suffered by Plaintiffs as a result of consuming drinking water contaminated with hazardous wastes and substances, and as a result of otherwise being exposed to contaminated water." Complaint, ¶ 1. The Complaint asserts claims for cost recovery under the Comprehensive Environmental

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defendants Motorola, Smithkline Beecham Corporation and Beckman Instruments, all of whom did business in the East Valley, and seeks certification as a class action. The claims asserted in the Complaint all arise out of defendants' alleged "actions in causing pollution of groundwater, surface soil and subsurface soil beneath the Plaintiffs' real property by a variety of toxic and poisonous substances with resulting injury to Plaintiffs' real property." Complaint, ¶ 1. Plaintiffs advance claims of negligence, common law nuisance, gross negligence, strict liability, intentional tort and trespass. The Complaint makes no attempt to recover for personal injuries, either present or future, or medical surveillance, but instead limits the recovery sought to compensation for injury to plaintiffs' real property and punitive damages.

Despite the manifold differences among these cases, they all share a number of common elements. First, they all involve injuries allegedly attributable to exposure to one or more toxic substances. Second, in all instances, there is a significant lapse of time between the defendants' activities which allegedly give rise to liability and the onset and/or discovery of the perceived injuries. Third, at least with respect to the claims for personal injuries and medical surveillance, there is no precise, objectively verifiable, direct causal chain between defendants' conduct and the claimed injury. These common elements help to define the phrase "toxic tort" in the environmental context.[8]

A toxic tort can be defined as a personal injury and/or property damage, as well as related harm, that is allegedly attributable to a plaintiff's exposure to a toxic (in most instances, chemical) substance. In the usual case, the plaintiff's injury is neither traumatic nor acute, but rather consists of genetic or biochemical disruption. The plaintiff typically is exposed to the substance over a long period of time, and the injury manifests itself only after a long latency period. Gold, Causation in Toxic Torts: Burdens of Proof,

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Response, Compensation and Liability Act, 42 U.S.C. § 9601 et seq., and advances state law claims of negligence, nuisance, trespass and strict liability. Hughes is the sole defendant.

[8] Toxic torts, however, are not limited to the environmental context. Claims arising out of adverse, toxic reactions to vaccines or prescription drugs or consumer products may also be characterized as toxic torts.

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Standards of Persuasion, and Statistical Evidence, 96 Yale.L.J. 376 n.1 (1986).

Toxic tort suits differ significantly from the traditional tort suit. Traditional cases generally involve a specific single injury allegedly attributable to a single specific event. Toxic tort cases, on the other hand, are often more complex. They often involve many different types of injuries, for example chromosomal abnormalities and genetic mutations, immunotoxicity, central nervous system dysfunction and cancer. These injuries often manifest themselves only after a long latency period. During this latency period, plaintiffs are often exposed to myriad substances, some or all of which are capable of causing or contributing to the claimed injuries. The assessment of causation in this context often involves issues on the forefront of medical science.

This article encompasses several aspects of toxic tort litigation. First, it reviews the various theories of liability that are commonly asserted by plaintiffs in such actions. Second, it discusses the problems that may arise in identifying and establishing the liability of the particular defendant that is allegedly responsible for plaintiffs' exposure. Third, it analyzes some of the obstacles likely to confront plaintiffs in the toxic tort arena. Fourth, it considers some novel elements of damage for which recovery has been sought in toxic tort litigation. Finally, it examines the basis for property depreciation claims arising out of the alleged presence of contaminants in the soil and groundwater.

I. THEORIES OF LIABILITY

There are several theories of liability commonly asserted by plaintiffs in toxic tort litigation. These theories include negligence, strict liability, warranty, misrepresentation, trespass and nuisance. These theories, however, do not constitute separate and independent avenues of recovery, but rather overlap and tend to be asserted in conjunction with one another.

A. NEGLIGENCE

The Restatement (Second) of Torts defines negligence as "conduct which falls below the standard established by law for the protection of others against unreasonable risk of harm." Restatement (Second) of Torts § 282 (1965). The elements of a cause of action in negligence are:

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1. A duty or standard of conduct imposed by law for the protection of others against unreasonable risk of harm;

2. Defendant's failure to comply with the standard;

3. Sufficient causal connection between the defendant's conduct and the plaintiff's injury for the law to impose liability; and

4. Actual loss or damage to the plaintiff.

W. Prosser, Handbook on the Law of Torts § 30 at 143-144 (4th ed. 1971).

1. Duty and Breach

The threshold determination in a negligence action is whether the defendant has a duty to conform to a standard of conduct that protects others against unreasonable risks. There are two aspects to the duty inquiry. The first concerns the identity of the person or class of persons to whom the duty is owed. The second involves the nature and scope of the duty itself.

Most states, including Arizona, employ a very broad standard for defining the class of persons to whom the defendant owes a duty. Schnyder v. Empire Metals, Inc., 136 Ariz. 428, 431, 666 P.2d 528, 531 (Ct. App. 1983). In general terms, defendant owes a duty to all persons who are so situated that they would be exposed to an unreasonable risk of injury or loss if defendant fails to act with due care. Applying this standard in the toxic tort context, the manufacturer of hazardous substances, or those engaged in the transportation, storage and/or disposal of such substances can readily foresee that failure to exercise due care in formulation, production, packaging, transportation, labeling, storage or disposal activities will pose a risk of harm to workers, users and the general public.

Absent some special relationship, the standard of care owed another is only reasonable care to protect against a foreseeable and unreasonable risk of harm.[9]

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[9] If there is a "special" relationship between defendant and plaintiff, defendant will be required to comport with an elevated standard of care. According to section 314(A) of the Restatement (Second) of Torts,

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See Borel v. Fibreboard Paper Products Corp., 493 F.2d 1076, 1088 (5th Cir. 1973), cert. denied, 419 U.S. 869 (1974). Courts generally examine at least three considerations in determining what constitutes reasonable care:

1. The probability that an accident will occur;

2. The gravity of the injury which is likely if it does occur; and

3. The cost of precautions to prevent the accident.

United States v. Carroll Towing Co., 159 F.2d 169, 173 (2d Cir. 1947).

In a toxic tort case, like other tort litigation, the first variable, the probability of an accident is analyzed from the perspective of the reasonable person at the time of defendant's conduct under all the circumstances and not "with the wisdom born of the event." Greene v. Sibley, Lindsay & Curr Co., 257 N.Y. 190, 192, 177 N.E. 416, 417 (1931). This first factor imposes a significant burden upon the first victims of a particular toxic tort. As they are the first to suffer the adverse consequences of the particular toxic exposure, it may be difficult for them to establish that the defendant knew or should have known of the probability of injury attributable to the particular exposure. Once the defendant has been made aware, through litigation or otherwise, of the risk of illnesses or injuries attributable to exposure, it will be easier for plaintiffs to prevail with regard to this first variable.

The one saving grace for the earliest plaintiffs with regard to this first variable is that product manufacturers are held to the standard of experts in the field. For instance, in Borel, the Fifth Circuit Court stated that the manufacturer, at a minimum, "must keep abreast of scientific knowledge, discoveries, and advances and is presumed to know what is imparted thereby. But even more importantly, a manufacturer has a duty to test and inspect his product." Borel, 493 F.2d at 1089. Consequently, if the risks of injury or illness attendant to exposure were known in the

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common carriers, innkeepers, possessors of land and employers are just some of those under a heightened duty to provide protection and care. Restatement (Second) of Torts § 314A (1965).

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scientific or medical communities or if they would have been exposed through product testing and/or inspection, a particular defendant's ignorance of the probability of injury will likely not constitute a defense.

The second variable, the gravity of the injury, looks to the potential magnitude of the harm that is likely to result from exposure to the toxic substance in question and reflects the principle that the amount of care that the defendant must take is commensurate with the risk of harm. This variable is comprised of two factors. The first is the potential magnitude of the harm. The second is the probability that the harm will result from the exposure. Hence, where the risk of harm is great, or where the injury that may occur is serious, even if the risk of it occurring is relatively small, the care and vigilance required is raised accordingly.

The third factor looks to the ease with which the defendant could have acted to prevent the injury. On one level, this factor looks to the costs of developing, marketing and using a safer alternative product. In many cases, however, the cost of precautions to prevent the accident can be rendered minimal by giving adequate warning of the danger. Even if the technology does not exist or it is prohibitively expensive to eliminate the danger of a toxic agent and the toxic agent is too useful to society to prohibit its creation or use, it is neither impossible nor prohibitively expensive to provide a warning.[10]

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[10] According to the Restatement (Second) of Torts, liability for failure to warn arises if the manufacturer or supplier:

1. Knew or had reason to know that the product is or is likely to be dangerous for the use for which it was supplied;

2. Had no reason to believe that those who use the product would have realized its dangerous condition; and

3. Failed to exercise reasonable care to inform the user of its dangerous condition or of the facts which made it likely to be dangerous.

Restatement (Second) of Torts § 388 (1965).

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As previously indicated, the scope of the concept of reasonable care is affected by the character of the actor. Thus, in many toxic tort cases, because the defendants are manufacturers, professional entities, or others with special expertise in the activities they conduct, they are expected to exercise a higher degree of care than the ordinary, prudent person. According to Section 299(A) of the Restatement (Second) of Torts, "one who undertakes to render services in the practice of a profession or trade is required to exercise the skill and knowledge normally possessed by members of that profession or trade in good standing in similar communities." Restatement (Second) of Torts § 299(A) (1965). Professional practices and industry standards, however, set forth a minimum standard of conduct. Compliance with industry standards will not necessarily foreclose a court from imposing additional duties of care. See, e.g., The T.J. Hooper, 60 F.2d 737, 740 (2d Cir. 1932), cert. denied, 287 U.S. 662 (1932) (court found entire industry had failed to exercise reasonable care and defendant was negligent in following industry practice).

The duty to warn in negligence is not limited to manufacturers and suppliers of products. It arises whenever, under all the circumstances, an ordinary, prudent person would have given a warning to protect another person against a foreseeable and unreasonable risk of harm. See, e.g., Chrysler Corp. v. Dallas Power & Light Co., 522 S.W.2d 742, 744 (Tex. App. 1975). Because a manufacturer is expected to keep abreast of the current state of knowledge, its duty to warn may continue even after sale whenever it learns of a danger inherent in the product. See McKee v. Moore, 648 P.2d 21, 23-24 (Okla. 1982); Jones v. Bender Welding & Machine Works, Inc., 581 F.2d 1331, 1335 (9th Cir. 1978) (the duty to warn is continuous in negligence cases in which the probability that an accident will occur is present, the gravity of the injury is substantial, and the burden of warning users of the danger is not great).

The duty to warn is actually composed of two separate duties--a duty to give adequate and comprehensible instructions for safe use and a duty to warn of dangers inherent in improper use. See Restatement (Second) of Torts § 388 (1965). The recent trend of cases is to require that for a warning to be adequate, it must be calculated to reach and to be noticeable to and comprehensible by the user of the product and to any others within the foreseeable ambit of danger. Id.

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2. Causation

The third element of a negligence claim is the requirement of causation.[11] Like the majority of American jurisdictions, Arizona law recognizes that a defendant's act is a cause-in-fact of plaintiff's injuries if the act helped cause the final result and if that result would not have happened without the defendant's act. Ontiveros v. Borak, 136 Ariz. 500, 505, 667 P.2d 200, 205 (1983); McDowell v. Davis, 104 Ariz. 69, 72, 448 P.2d 869, 872 (1968). Liability attaches if the result would not have occurred but for defendant's conduct, even if that conduct contributed "only a little" to plaintiff's injuries. Ontiveros, 136 Ariz. at 505, 667 P.2d at 205; Markiewicz v. Salt River Valley Water Users' Association, 118 Ariz. 329, 338 n.6, 576 P.2d 517, 526 n.6 (Ct. App. 1978). Under the so-called "but for" rule of causation, if plaintiff would not have suffered damages but for defendant's act, such act is a cause-in-fact of the injury. Ontiveros, 136 Ariz. at 505, 667 P.2d at 205; Salt River Valley Water Users' Association v. Cornum, 49 Ariz. 1, 11, 63 P.2d 639, 644 (1937).

More recently, Arizona courts have begun to develop alternative theories of causation in response to certain factual situations. Where several factors combine to cause an accident and each factor alone would have caused the damage the "but for" test fails. In Herzberg v. White, 49 Ariz. 313, 66 P.2d 253 (1937), the court confronted a situation where a car travelling at excessive speed struck a woman, who had been a passenger in defendant's automobile, after defendant had stopped his car on the pavement at night and turned off his lights. The court recognized that defendant's negligence was a substantial factor in bringing about the accident "even though there were two other factors without which [the accident] would not have occurred . . . " Herzberg, 49 Ariz. at 319, 66 P.2d at 256. In response to this scenario, the court concluded that negligent conduct is a legal cause of harm so long as the conduct is a substantial factor in bringing about the injury and there is no special rule of law relieving the actor from liability. This is the so-called "substantial factor" test. It has been suggested that this test is more appropriate than the "but for" test in the context of toxic tort litigation. See Elam v.

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[11] The requirement of proving causation is not unique to negligence claims, but rather applies to all toxic tort claims. Regardless of the nature of the injury claimed by plaintiff, she must demonstrate that it is causally attributable to defendant's conduct.

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Alcolac, Inc., 765 S.W.2d 42, 174 (Mo. Ct. App. 1988); Gold, 96 Yale L.J. at 396.

Arizona courts, however, have not embraced the "substantial factor" test with open arms. In McDowell v. Davis, the court was asked to utilize the substantial factor test recognized in Herzberg as a substitute test for proximate causation. McDowell, 104 Ariz. at 70-71, 448 P.2d at 870-871. The court declined this invitation, noting that Herzberg had utilized the substantial factor test to determine causation-in-fact, not proximate cause. Id. at 71, 448 P.2d at 871. The court further expressed some reservations regarding the propriety of the "substantial factor" test even in the context of causation-in-fact. Specifically, the court noted that the word substantial "is palpably erroneous as inducing the concept of largeness as opposed to smallness. It is not how little or how large a cause is that makes it a legal cause . . . ." McDowell, 104 Ariz. at 71-72, 448 P.2d at 871-872; see also Markiewicz, 118 Ariz. at 338 n.6, 576 P.2d at 526 n.6.

Despite the stern criticism of the "substantial factor" test in McDowell, Arizona courts have not completely abandoned the substantial factor analysis as an alternative test of factual causation. Instead, they have continued to utilize this test, as modified in McDowell, in conjunction with the "but for" test. In Wisener v. State, 123 Ariz. 148, 150, 598 P.2d 511, 513 (1979), the court recognized that causation exists so long as "defendant's conduct was [more likely than not] a substantial factor in bringing about the result." In Papastathis v. Beall, 150 Ariz. 279, 280, 723 P.2d 97, 98 (Ct. App. 1986), the court recognized that "legal causation is established despite possible intervening causes if the conduct was a substantial factor in the eventual injury." "Arizona law holds that cause-in-fact exists if the defendant's act helped the final result and if that result would not have happened without defendant's act." Ontiveros, 136 Ariz. at 505, 667 P.2d at 205.

Once a court has concluded that defendant's conduct constitutes a cause-in-fact of plaintiff's injury, it must next determine whether defendant's conduct may properly be characterized as a proximate cause of such injuries. The concept of proximate cause evolved to deal with the great number of factors which contribute to the occurrence of an event as well as the contextual aspects of the event itself. The doctrine of proximate causation restricts liability for an event to those antecedent factors which proximately and directly resulted in its occurrence. Proximate cause has, therefore, been defined as any cause which, in a normal

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and continuous sequence, unbroken by any efficient, intervening cause, produces injury and without which injury would not have occurred. Shafer v. Mountain States Telephone & Telegraph Co., 335 F.2d 932, 935 (9th Cir. 1964); Pacht v. Morris, 107 Ariz. 392, 394, 489 P.2d 29, 31 (1971); Brand v. J. H. Rose Trucking Co., 102 Ariz. 201, 205, 427 P.2d 519, 523 (1967); Flowers v. K-Mart Corp., 126 Ariz. 495, 498, 616 P.2d 955, 958 (Ct. App. 1980); Lewis v. Wolf, 122 Ariz. 567, 568, 596 P.2d 705, 706 (Ct. App. 1979). "No principle of law has been so unvaryingly stated." McDowell, 104 Ariz. at 71, 448 P.2d at 871.

In general, plaintiff bears the burden of proof with regard to both causation-in-fact and proximate cause. Purcell v. Zimbelman, 18 Ariz. App. 75, 82, 500 P.2d 335, 342 (1972); see generally Arizona Public Service Co. v. Brittain, 107 Ariz. 278, 280, 486 P.2d 176, 178 (1971); Flowers, 126 Ariz. at 498, 616 P.2d at 958; Johnson v. Harris, 23 Ariz. App. 103, 105, 530 P.2d 1136, 1138 (1975). In order to sustain this burden, plaintiff must establish more than a possibility of causation. Purcell, 18 Ariz. App. at 82, 500 P.2d at 342; Kreisman v. Thomas, 12 Ariz. App. 215, 218, 469 P.2d 107, 110 (1970). Instead, plaintiff must present "probable facts from which . . . causal relations may be reasonably inferred." Purcell, 18 Ariz. App. at 82, 500 P.2d at 342; E. L. Jones Construction Co. v. Noland, 105 Ariz. 446, 453, 466 P.2d 740, 747 (1970). In short, plaintiff must demonstrate that a causal relationship more likely than not exists between defendant's conduct and his injuries. Kreisman, 12 Ariz. App. at 218, 469 P.2d at 110.

The causation requirement poses particular problems in the toxic tort context. Long latency periods, the unforeseen effect of conduct undertaken years ago by persons unknown, the exposure of the plaintiff to many harmful elements over the years, and loss or spoliation of evidence tend to obscure causation. The inexact fit between scientific and legal analysis is also part of the difficulty. These problems will be more fully discussed in section III.A, infra.

3. Damages

The fourth and last element of a negligence cause of actions is that the plaintiff must suffer actual loss or damage. Traditionally, this element has been prerequisite to any sort of tort recovery. The requirement of actual loss or damage serves the public policy of preventing fraudulent and vexatious lawsuits. In the toxic tort context, creative plaintiffs' attorneys have convinced certain courts to recognize

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novel theories of recovery that tend to dispense with this requirement of actual present loss or damage. These novel theories will be considered in section IV, infra.

Most toxic tort actions are not brought exclusively on a theory of negligence. The plaintiff bears a higher burden of proof in a negligence action than in a strict liability or breach of warranty action. Consequently, negligence claims are most often asserted in conjunction with these other theories.

B. EXPRESS AND IMPLIED WARRANTIES

The warranty theory of liability is usually available only when a product is the source of the injury. Strict liability tends to overshadow warranty as a theory of recovery because virtually every warranty case can also be brought in strict liability, and strict liability is not subject to such warranty defenses as lack of notice, lack of privity, and disclaimer.

Express warranty was an early detour around the negligence requirement that the plaintiff prove that the defendant was at fault. It is available if the defendant has made a positive assertion of fact to the plaintiff or the public concerning its product which is not true, the plaintiff learns of and relies upon the fact, and the plaintiff is injured as a result. Uniform Commercial Code § 2-213.

The implied warranties of merchantability and fitness for intended purpose are an amalgam of tort and contract law. A plaintiff can recover without proof of negligence on the defendant's part if a product has been marketed to the public, the product is defective or not fit for its intended purpose at the time of sale, and the user is injured as a consequence of the defect or unfitness. See Borel v. Fibreboard Paper Prods. Corp., 493 F.2d 1076, 1091 (5th Cir. 1973), cert. denied, 419 U.S. 869 (1974). Failure-to-warn cases are frequently premised upon implied warranty. The product is not deemed merchantable if "the directions and warnings as a whole do not adequately inform the user of the potential dangers." See Reid v. Eckerds Drugs, Inc., 40 N.C. App. 476, 480, 253 S.E.2d 344, 347 (1979).

C. STRICT LIABILITY

Strict liability is a recent common law development under which plaintiffs may recover damages against manufacturers without regard to fault. Traditionally, this theory has been limited to the products of industry and the abnormally dangerous

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commercial activities of industry. In recent years, plaintiffs have begun to argue that one of the aspects of industry that renders it abnormally dangerous is its generation and disposal of waste products.

Section 402A of the Restatement (Second) of Torts imposes liability, without regard to fault or privity, upon one who sells a "product in a defective condition unreasonably dangerous to the user or consumer . . . if (a) the seller is engaged in the business of selling such a product, and (b) it is expected to and does reach the user or consumer without substantial change in the condition in which it is sold." Restatement (Second) of Torts § 402A (1965). Raw materials such as asbestos have been held to be products for strict liability purposes even though they will undergo further processing before reaching the ultimate user. See Hammond v. North American Asbestos Corp., 105 Ill. App. 3d 1033, 1037, 435 N.E.2d 540, 544 (1982). Proximate cause and damage or loss from injury are elements of this action, but contributory negligence is not a defense, except in the narrow sense of assumption of the risk. Id.

Most toxic tort cases alleging strict products liability are failure-to-warn cases. The duty to warn in strict liability is similar to the duty in negligence except that it arises when an unreasonably dangerous product is sold in a defective condition--i.e., without warnings--regardless of whether the defendant knew or had reason to know that the agent was dangerous. In strict liability, the focus is on the condition of the product, and not on the conduct of the defendant. Jackson v. Coast Paint & Lacquer Co., 499 F.2d 809, 812 (9th Cir. 1974).

Failure-to-warn cases fall either into the "unavoidably unsafe products" category discussed in comment k to section 402A, Restatement (Second) of Torts § 402A comment k (1965), or the "unreasonably dangerous without adequate warnings" category discussed in comment j. Id. comment j. Unavoidably unsafe products are those which cannot be rendered safe for their intended and ordinary use in the present state of human knowledge, such as drugs with known serious side effects and which are sufficiently beneficial to justify their continued marketing and use. Other products, such as certain paints and glues, are safe for their intended and ordinary use, provided adequate directions or warnings are given.

As awareness of the potential dangers of environmental contamination has grown, American courts have become more receptive to the theory of strict

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liability adopted in England in Rylands v. Fletcher, LR 3 HL 338 (1868), which imposes liability for the harm caused by defendant's activities if he or she has undertaken a dangerous, nonnatural use of land. See, e.g., Fletcher v. Tenneco, Inc., 1993 WL 86561 (E.D. Ky. February 22, 1993) (court holds that hazardous waste disposal is an ultrahazardous activity in accordance with Kentucky common law). The Restatement (Second) of Torts has sought to broaden the nature of activities encompassed from the original Restatement of Torts' language of "ultrahazardous activity" to "abnormally dangerous activity." Restatement (Second) of Torts § 519 (1977). Liability is imposed if the harm that occurs is of the type that makes the activity abnormally dangerous, even though the defendant "has exercised utmost care to prevent the harm." Id. In determining whether an activity is abnormally dangerous, section 520 of the Restatement (Second) of Torts lists several factors to consider:

1. existence of a high degree of risk of some harm to the person, land or chattels of others;

2. likelihood that the harm that results from it will be great;

3. inability to eliminate the risk by the exercise of reasonable care;

4. extent to which the activity is not a matter of common usage;

5. inappropriateness of the activity to the place where it is carried on; and

6. extent to which its value to the community is outweighed by its dangerous attributes. Id.

The determination of whether an activity is abnormally dangerous involves a risk-utility balancing, as the sixth factor indicates, much like the balancing test used in nuisance cases. This risk-utility balancing lies within the province of the court, rather than the jury. Id. comment i.

D. **TRESPASS**

Trespass protects plaintiff's interest in a particular piece of land, as well as the earth beneath the land, and the air space above the land. Restatement (Second) of Torts § 158 comment i (1965). Trespass

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requires the direct physical invasion of another's right to the exclusive possession of his or her property and subjects the trespasser to strict liability if it is intentional or the result of an abnormally dangerous activity. Restatement (Second) of Torts § 158 (1965).

A few courts have abandoned the requirement of a physical invasion of visible proportions. In Martin v. Reynolds Metals Co., 221 Or. 86, 342 P.2d 790 (1959), cert. denied, 362 U.S. 918 (1960), invisible flouridic compounds emanated from defendant's plant and landed on plaintiffs' property, contaminating the water and forage and poisoning their livestock. The court held that the intrusion of particulates constituted a trespass, observing that in this atomic age, distinctions based upon physical size are meaningless. Martin, 221 Or. at 90, 342 P.2d at 794.

Plaintiff is not required to prove that defendant intended to trespass on the property. Rather, plaintiff need only show that defendant intended the act that resulted in the trespass, i.e., the act was volitional and was done with knowledge that it would to a substantial certainty result in the entry of a foreign matter. Restatement (Second) of Torts § 158 comment i (1965). Accordingly, defendant may not defend an action in trespass by proving that he acted with the mistaken belief that his actions, and the subsequent material invasion, were authorized by plaintiff. See, e.g., Serota v. M. & M. Utilities, Inc., 55 Misc. 2d 286, 285 N.Y.S.2d 121, 124 (1967) ("Obviously, the defendant intended to come upon plaintiff's land and make an oil delivery and did not intend to commit a trespass or intentionally to cast oil upon plaintiff's land. His innocence and his mistaken belief that his visit was authorized is of no moment since his intent is clearly shown to have been to deliver the oil. This unauthorized act, resulting in whatever damages which may have occurred, rendered him liable.").

Furthermore, the invasion of plaintiff's property need not be direct so long as plaintiff can show that an intentional act of defendant resulted in the harm. Thus, the causal intervention of natural conditions such as wind and rain, which may initiate or exacerbate the trespass, will not free defendant from liability. Restatement (Second) of Torts § 158 comment i (1977). See also Rushing v. Hooper-McDonald, Inc., 293 Ala. 56, 59, 300 So. 2d 94, 97 (1974) ("This court holds that it is not necessary that the asphalt or foreign matter be thrown or dumped directly and immediately upon the plaintiff's land but that it is sufficient if the act is done so that it will to a substantial certainty result

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in the entry of the asphalt or foreign matter onto the real property that the plaintiff possesses.").

E. **NUISANCE**

Private nuisance can be distinguished from trespass by the nature of the interest invaded--the private use and enjoyment of one's land, rather than the possession. W. Prosser & W. Keeton, Law of Torts, 622 (5th ed. 1984). It covers a broader range of activities than trespass, but the interference must be significant, unreasonable, and intentional or otherwise actionable--it is not actionable in and of itself. Restatement (Second) of Torts § 821F (1977). Nuisance cases have origins in equity and offer equitable remedies. In determining whether to characterize defendant's conduct as a nuisance, the court will weigh the value of the defendant's activities to the community against the private harm it causes. See generally Amory Park Neighborhood Association v. Episcopal Community Services, 148 Ariz. 1, 8, 712 P.2d 914, 921 (1985) ("The trial court should look at the utility and reasonableness of the conduct and balance these factors against the extent of harm inflicted and the nature of the affected neighborhood.").

One limitation of the nuisance theory for environmental litigation is that the present owner of the offending site will not be liable if he did not cause the nuisance but merely learned about it after acquiring the property and has done nothing to remedy it. On the other hand, a prior owner who has created a nuisance does not escape liability simply by selling the property. See State Department of Environmental Protection v. Exxon Corp., 151 N.J. Super. 464, 483-85, 376 A.2d 1339, 1349-50 (Ch. Div. 1977).

Another limitation, inherent in the balancing process, is that the defendant will not be held liable if the nature of his or her use is reasonable for that particular area. See Restatement (Second) of Torts § 821F comment e (1977). For example, a sulfurous smell emanating from a chemical factory would not constitute a nuisance where the odor affected only adjoining properties engaged in like operations. Id.

Public nuisance is "an unreasonable interference with a right common to the general public." Restatement (Second) of Torts § 821B (1977). As with a private nuisance, the interference is unreasonable if the utility and reasonableness of the conduct is outweighed by the extent and nature of the harm inflicted. Amory Park, 148 Ariz. at 8, 712 P.2d at 921.

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Although typically only the government has standing to enforce the rights of the public, a private right of action may be afforded if the plaintiff suffers harm of a different kind and degree than the general public. Restatement (Second) of Torts § 821C. See also Philadelphia Electric Co. v. Hercules, Inc., 762 F.2d 303, 315 (3d Cir. 1985), cert. denied, 474 U.S. 980 (1985). For example, a fisherman may sue for the contamination of public waters. The public has an interest in the overall cleanliness of public waters for purposes of swimming, boating, and the like. In contrast, the fisherman has an interest in clean water for purposes of maintaining his employment, which is dependent on the existence of healthy and productive fish.

An individual who has suffered a personal physical injury or illness as a result of a public nuisance may also bring a public nuisance claim on behalf of himself. In Anderson v. W.R. Grace & Co., 628 F. Supp. 1219 (D. Mass. 1986), residents brought a public nuisance action for the contamination of their groundwater by toxic chemicals. The residents had suffered an array of severe personal injuries, including childhood leukemia. The court, in allowing the residents to bring a public nuisance claim, stated: "[W]hen a plaintiff has sustained 'special or peculiar damage,' he or she may maintain an individual action . . . Injuries to a person's health are by their nature 'special and particular,' and cannot properly be said to be common or public . . . As plaintiffs allege that they have suffered a variety of illnesses as a result of exposure to the contaminated water, they have standing to maintain this nuisance action." Anderson, 628 F.Supp. at 1233.

In Bolin v. Cessna Aircraft Co., 759 F. Supp. 692 (D. Kan. 1991), however, the court rejected the reasoning advanced in Anderson:

> The nuisance in this case is not a nuisance that pervades the very atmosphere of plaintiffs' community, impairing health or inconveniencing persons who pass along the streets of the neighborhood. Rather, the presence of TCE in the groundwater underlying plaintiffs' property can be considered a nuisance only insofar as a person is exposed to this water. The facts submitted by the parties reveal that such exposure resulted only from the use of the wells on the plaintiffs' property. Thus the only harm or damage that results from the presence of TCE in the plaintiffs'

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groundwater is one shared by all persons exposed to this nuisance. Because no "special damage" can be shown, no plaintiff may maintain a private action under a public nuisance theory.

Id. at 721.

F. **FRAUDULENT MISREPRESENTATION AND CONCEALMENT**

The elements of fraudulent misrepresentation are:

1. A misrepresentation of fact;

2. Defendant's knowledge or belief that his or her representation is false or absence of belief that his or her representation is true--scienter;

3. Defendant's intention to induce the plaintiff to act or refrain from action in reliance upon the misrepresentation;

4. Plaintiff's justifiable reliance upon the misrepresentation; and

5. Damage or loss caused by such reliance.

Restatement (Second) of Torts § 526 (1939). Fraudulent concealment requires, instead of the first element in the list, that the defendant has prevented the plaintiff from acquiring material information. The defendant is regarded as having represented the nonexistence of the matter to plaintiff. Otherwise, the elements of the cause of action are the same. Id. § 550.

There are few reported cases in which plaintiffs have prevailed upon fraudulent misrepresentation or concealment theories in the toxic tort contexts. The elements of these claims impose a heavy burden upon plaintiffs. The enticements, however, are the possible recovery of punitive damages, the longer statutes of limitations, and the avoidance of the exclusivity of workers' compensation remedies. Most of the cases involve drugs and similar consumer products where the defendant has advertised the product as safe, despite knowledge that it was not, or has failed to report certain dangerous properties of the product which were known to him or her. See, e.g., Toole v. Richardson-Merrell, Inc., 251 Cal. App. 2d 689, 60 Cal. Rptr. 398 (1967). When the product's label contains warnings or

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disclaimers in conflict with defendant's representations, the plaintiff may have difficulty proving justifiable reliance. Defendant's intent to induce reliance on the part of the plaintiff may be inferred from the fact of advertising to the public or the medical profession.

II. ESTABLISHING THE LIABILITY OF THE RESPONSIBLE DEFENDANT

It is common in toxic tort litigation that plaintiff will be unable to ascertain the identity of the particular entity responsible for the toxic exposure to which plaintiff attributes his injuries. In the case of a long-latent injury allegedly attributable to a prescription drug, plaintiff may not have ever known or may be unable to recall the identity of the one company, out of the many companies that manufactured the drug in question, that manufactured the particular drug that plaintiff consumed. In the environmental context, a plaintiff alleging that she contracted cancer as a result of exposure to TCE, the presence of which in her drinking water was attributable to releases from a nearby disposal facility, has no way to identify the party and/or parties who disposed of the TCE to which she was exposed at the facility. As a general rule, this inability on the part of a plaintiff to identify the particular defendant responsible for the alleged injuries would preclude recovery.

The judicial system was first required to address the situation where plaintiff was injured by an unidentifiable member of a known and definable group of defendants in Summers v. Tice, 33 Cal.2d 80, 199 P.2d 1 (1948). In Summers, two hunters negligently shot in the direction of plaintiff, but it could not be ascertained which hunter's bullet actually struck plaintiff, causing injury. In permitting plaintiff to recover, the court adopted a rule of alternative liability which provides that, when all defendants, although acting independently, have breached a duty of care to the plaintiff but only one of them caused plaintiff 's injury, the burden of proof shifts to each defendant to prove that he or she did not cause the injury. If defendant fails to meet this burden, he will be held jointly and severally liable with all other defendants for plaintiff's injury. Summers, 33 Cal.2d at 84, 199 P.2d at 5. The rationale for the rule is that, "[a]s between an innocent plaintiff and negligent defendants, the latter should bear the cost of injury." Sindell v. Abbott Laboratories, 26 Cal. 3d 588, 163 Cal. Rptr. 132, 144, 607 P.2d 924, 936, cert. denied, 449 U.S. 912 (1980).

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In Sindell, the court adopted a theory of market share liability whereby, once plaintiff joined in the action the manufacturers of a substantial share of the entire market for the product which allegedly caused the injury, "each defendant [would be] held liable for the proportion of the judgment represented by its share of [the] market unless it demonstrates that it could not have made the product which caused plaintiff's injuries." Sindell, 607 P.2d at 937, 163 Cal. Rptr. at 145; accord Jolly v. Eli-Lilly & Co., 44 Cal. 3d 1103, 1114, 245 Cal. Rptr. 658, 664, 751 P.2d 923, 929 (1988); compare Payton v. Abbott Laboratories, 386 Mass. 540, 437 N.E.2d 171, 188-190 (Mass. 1982).

Several questions, however, remained open following Sindell. Specifically, the Sindell court did not determine the theories of recovery that could be asserted under a market share approach or the nature of defendants' liabilities under such an approach. The California Supreme Court partially resolved these questions in Brown v. Superior Court, 44 Cal. 3d 1049, 245 Cal. Rptr. 412, 751 P.2d 470 (1988). The court first held that a plaintiff who proceeds under a market share theory may not assert claims for either fraud or breach of warranty. Brown, 44 Cal.3d at 1072, 245 Cal. Rptr. at 426, 751 P.2d at 484. The court further held that defendants are not jointly liable, but rather are severally liable, each for that portion of plaintiff's damages equal to its proportional share of the market. Brown, 44 Cal.3d at 1074-75, 245 Cal. Rptr at 427-28, 751 P.2d at 485-86. The California Supreme Court, therefore, appears to have retreated somewhat from Sindell.

In Abel v. Eli-Lilly & Co., 418 Mich. 311, 320, 343 N.W.2d 164, 173, cert. denied, 469 U.S. 833 (1984), the court adopted the alternative liability theory in the DES context and applied the Summers requirement that all alleged tortfeasors be joined as defendants. The holding in Abel was restricted to DES cases. Abel, 343 N.W.2d at 173. In Martin v. Abbott Laboratories, 102 Wash. 2d 581, 689 P.2d 368 (1984), the court adopted a theory which it termed "market share alternative liability." Under this theory, all defendants unable to obtain exculpation are presumed to have equal market shares totalling one-hundred percent. Martin, 689 P.2d at 383. If a particular defendant succeeds in rebutting this presumption, the relative shares of the other defendants are adjusted accordingly. Id.; see also George v. Parke-Davis, 107 Wash. 2d 584, 733 P.2d 507 (1987). In Collins v. Eli Lilly & Co., 116 Wisc. 2d 166, 342 N.W.2d 37, cert. denied, 469 U.S. 826 (1984), the court imposed two important modifications to the Sindell rule. First, plaintiff need only sue one

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manufacturer of the product, not those representing a substantial market share. Collins, 342 N.W.2d at 49-51. Second, a defendant's percentage of liability is based on the principle of "risk contribution" with market share only one of the factors utilized in assessing an individual defendant's liability. Collins, 342 N.W.2d at 53. In Hymowitz v. Eli Lilly & Co., 73 N.Y.2d 487, 541 N.Y.S.2d 941, 539 N.E.2d 1069, 1078, cert. denied, 493 U.S. 944 (1989), the New York Court of Appeals adopted the Sindell theory of market share liability as modified in Brown, but precluded exculpation for any defendant who participated in the marketing of DES for pregnancy use. In Conley v. Boyle Drug Co., 570 So. 2d 275 (Fla. 1990), the Supreme Court of Florida adopted the Brown market share alternate theory of liability. The court, however, imposed two prerequisites to its use: 1) plaintiff must make a showing that she has made a genuine attempt to locate and to identify the manufacturer responsible for her injury; and 2) recovery is restricted to only those actions sounding in negligence, i.e., no recovery may be had where there are allegations of fraud, breach of warranty or strict liability. Conley, 570 So. 2d at 286.

In Wheeler v. Raybestos-Manhattan, 8 Cal. App. 4th 1152, 11 Cal. Rptr. 2d 109 (Cal. App. 1992), the California appellate court adopted the Sindell theory of liability in an asbestos case, despite the fact that the San Francisco Superior Court by general order 21 had rejected that same theory in asbestos cases. The Wheeler court concluded that generally Sindell should not apply to asbestos cases because asbestos, unlike DES, was not a single fungible product but merely a generic name for an ingredient in a variety of products each of which posed a different risk of harm. Id. at 1155. In Wheeler, however, plaintiffs alleged that they had been exposed to asbestos fibers in brake pad products. The court held that it would be impossible for plaintiffs to identify the makers of the brake pads, because the pads were all made from the same type of asbestos fiber. As such, the court held that the Sindell theory of market share liability was applicable to the specific facts of that case. Id. at 1158.

Other courts have declined to embrace the theories of alternative and market share liability enunciated in Summers and Sindell. See, e.g., Chapman v. American Cyanamid Co., 861 F.2d 1515, 1520 (11th Cir. 1988) (rejecting alternative liability under Georgia law); Senn v. Merrell-Dow Pharmaceuticals, Inc., 850 F.2d 611, 613 (9th Cir. 1988) (per curiam) (rejecting any shift in the burden of proof in a multiple defendant case under Oregon law); Lee v. Baxter Healthcare Corp., 721 F. Supp. 89, 95 (D. Md. 1989) (rejecting market share

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liability where the product was not considered dangerous by a regulatory agency and the plaintiff could not show that the named defendant provided a substantial share of the product to the market), aff'd, 898 F.2d 146 (4th Cir. 1990); Tidler v. Eli Lilly & Co., 95 F.R.D. 332, 334 & n.5 (D.D.C. 1982) ("radical departure" from traditional concepts of tort law; takes property without due process), aff'd, 851 F.2d 418 (D.C. Cir. 1988); Morton v. Abbott Laboratories, 538 F. Supp. 593, 599 (M.D. Fla. 1982) (market share theory "unquestionably" a "radical departure" from the traditional concept of causation); Griffin v. Tenneco Resins, Inc., 648 F. Supp. 964, 966 (W.D.N.C. 1986) (rejecting alternative, enterprise and market share liability under North Carolina law); Mizell v. Eli Lilly & Co., 526 F. Supp. 589, 596 (D.S.C. 1981) ("radical departure" that would "violate the public policy" of the state); Ryan v. Eli Lilly & Co., 514 F. Supp. 1004, 1018 (D.S.C. 1981) (Sindell is "unprecedented legislation" which amounts to a "remarkable" new burden-shifting theory); Gray v. United States, 445 F. Supp. 337, 338 (S.D. Tex. 1978) (plaintiff must identify defendant as manufacturer of product that caused injury); Shackil v. Lederle Laboratories, 116 N.J. 155, 173, 561 A.2d 511, 529 (1989) (rejecting market-share liability against vaccine manufacturers on public policy grounds, but specifically reserving judgment on whether market-share liability may be appropriate in another context that would be supported by public policy grounds); Mulcahy v. Eli Lilly & Co., 386 N.W.2d 67, 76 (Iowa 1986) (rejecting alternative, enterprise and market share liability); Zafft v. Eli Lilly & Co., 676 S.W.2d 241, 247 (Mo. 1984) (rejecting alternative, concerted action, industry-wide and market share liability); Namm v. Charles E. Frosst & Co., 178 N.J. Super. 19, 27, 427 A.2d 1121, 1128 (1981) (taking of defendant's property to compensate for harm that it did not cause). As one court has succinctly stated:

> We conclude that adoption of any theory of alternative liability requires a profound change in fundamental tort principles of causation, an adjustment rife with public policy ramifications. The legislature may study and adopt one or another such theory, but we cannot pretend that any such theory is consistent with common law principles of tort liability.

Senn v. Merrell-Dow Pharmaceuticals, Inc., 305 Or. 256, 264, 751 P.2d 215, 223 (1988).

Although Arizona appellate courts have not specifically addressed the Sindell theory of market

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share liability, they have considered and applied the Summers rationale. In Holtz v. Holder, 101 Ariz. 247, 251, 418 P.2d 584, 588 (1966), the court adopted the theory of alternative liability and applied it to a multiple collision automobile case where the acts of defendants occurred closely in time and place and the result was such that the injured party suffered damages which the trier of fact could not apportion between the two defendants. In adopting this rule, the court concluded that "it is more desirable, as a matter of policy, for an injured and innocent plaintiff to recover his entire damages jointly and severally from independent tortfeasors, one of whom may have to pay more than his just share, than it is to let two or more wrongdoers escape liability altogether, simply because the plaintiff cannot carry the impossible burden of proving the respective shares of causation or because the tortfeasors have not committed a joint tort." Holtz, 101 Ariz. at 251, 418 P.2d at 588.

Certain commentators have observed that mass exposure toxic tort cases present a uniquely appropriate context for the imposition of joint and several liability. In the mass tort cases, elimination of the need for plaintiff to identify a particular defendant as the cause of his injuries does not defeat the principle that a defendant should properly be held liable for only the damage that it caused. If plaintiff succeeds in proving that he was injured by the type of product or substance manufactured by the defendant class and there is some rational method by which a court can determine the percentage of total harm caused to all those damaged by each of the possible defendants, the principle that liability should be proportional to harm caused will not be abrogated. "Assuming every injured person will sue, looking at the total number of successful claims, each defendant will, at least theoretically, only be held responsible for that part of the damage that it caused to the community." In re "Agent Orange" Product Liability Litigation, 597 F. Supp. 740, 823 (E.D.N.Y. 1984), aff'd, 818 F.2d 145 (2d Cir. 1987) (hereinafter "Agent Orange"). Because of both the policy judgment that loss in the situation where a single culpable defendant cannot be identified should be borne by defendants and the exigencies of mass exposure toxic torts, it is possible that Arizona will adopt some form of alternative or market share liability in the toxic tort context.

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III. THE DIFFICULTY OF RECOVERING FOR MANIFEST INJURIES IN THE TOXIC TORT CONTEXT

A. THE CAUSATION INQUIRY

In the toxic tort context, there are really two aspects to the causation inquiry. The first aspect, the risk evaluation, examines whether the defendant's behavior put the plaintiff at risk of developing the injuries of which he complains. The second aspect, the occurrence analysis, addresses whether, assuming defendant's behavior has put the plaintiff at risk, the defendant's behavior actually caused the plaintiff's injury. See generally Dore, A Commentary on the Use of Epidemiological Evidence in Demonstrating Cause in Fact, 7 Harv. Envtl. L. Rev. 429, 435-36 (1983). This distinction has been recognized by the courts. See, e.g., "Agent Orange", 597 F. Supp. at 780.

Despite the necessity for this bifurcated analysis of the causation issue in the toxic tort context, courts generally have not held that a toxic tort plaintiff bears a lesser burden of proof on the issue of causation than does a traditional tort plaintiff. Toxic tort plaintiffs, like other plaintiffs, must establish causation by the preponderance of the evidence. Parker v. Employer's Mutual Liability Insurance Co., 440 S.W.2d 43, 47 (Tex. 1969) (cancer allegedly attributable to radiation exposure in the workplace); McEwen v. Ortho Pharmaceutical Corp., 270 Or. 375, 415 n.36, 528 P.2d 522, 541 n.36 (1974) (ocular injuries allegedly attributable to oral contraceptives). In the context of toxic substances regulation, however, one court has noted that it is not necessary to provide "rigorous step-by-step proof of cause and effect." Ethyl Corp. v. Environmental Protection Agency, 541 F.2d 1, 28 (D.C. Cir.), cert. denied, 426 U.S. 941 (1976). The court further suggested that facts which have been sufficiently established for regulatory purposes can also be accepted for purposes of civil litigation. Ethyl Corp., 541 F.2d at 28 n.58. There are, however, significant differences between the regulatory arena and a civil judicial forum.[12] These differences strongly

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[12] In the "Agent Orange" litigation, Judge Weinstein noted the difference between the two fora.

> The distinction between avoidance of risk through regulation and compensation for injuries after the fact is a fundamental one. In the former, risk assessments may lead to control of a toxic substance even though the probability of harm to any individual is

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suggest that the standard appropriate for the establishment of an adjudicative fact in litigation is more stringent than that required for the establishment of a regulatory fact. Compare Public Citizen Health Research Group v. Commissioner, Food & Drug Administration, 724 F. Supp. 1013, 1015 (D.D.C. 1989) (where the court held that because the FDA was aware of epidemiological studies regarding toxic shock syndrome and absorbency in tampons since 1981, an injunction was justified mandating that the FDA issue sufficient guidelines for labels on tampons); and Daubert v. Merrill Dow Pharmaceuticals, Inc., 727 F. Supp. 570, 575 (S.D. Cal. 1989) (where the court held that expert testimony that the drug Bendectin caused birth defects was inadmissible to the extent that it relied upon in vitro studies, chemical structure analysis, animal studies and unpublished epidemiological studies), aff'd, 951 F.2d 1128 (9th Cir. 1991).

In applying this preponderance standard in the toxic tort context, courts have noted that plaintiff's burden is to show "that there was a greater likelihood or probability that the harm complained of was due to causes for which the defendant was responsible than from any other cause." Lynch v. Merrell-National Laboratories, 830 F.2d 1190, 1197 (1st Cir. 1987) (quoting Corsetti v. Stone Co., 396 Mass. 1, 483 N.E.2d 793, 805 (1985)); accord Richardson v. Richardson-Merrell, Inc., 857 F.2d 823, 826 (D.C. Cir. 1988); Benedict v. United States, 822 F.2d 1426, 1429 (6th Cir. 1987); "Agent Orange", 597 F. Supp. at 785.

In assessing plaintiff's evidence on causation, courts have used varying standards. Certain courts have adhered to the "but for" test. See In re "Agent Orange" Product Liability Litigation, 611 F. Supp. 1223, 1261 (E.D.N.Y. 1985), aff'd, 818 F.2d 187 (2d Cir. 1987), cert. denied, 108 S.Ct. 2898 (1988) (hereinafter "Agent Orange"). Other courts have utilized the "substantial factor" test. Grinnell v. Charles Pfizer & Co., 274 Cal. App. 2d 424, 79 Cal. Rptr. 369, 374 (1969); Elam,

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> small and the studies necessary to assess the risk are incomplete; society as a whole is willing to pay the price as a matter of policy. In the latter, a far higher probability (greater than 50%) is required since the law believes it is unfair to require an individual to pay for another's tragedy unless it is shown that it is more likely than not that he caused it.

"Agent Orange", 597 F. Supp. at 781.

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765 S.W.2d at 174. Contra In re Bendectin Litigation, 857 F.2d 290, 311 (6th Cir. 1988) (restricting the substantial factor test to cases involving intervening or concurrent causes in which all alleged causes could have been "but for" causes of plaintiff's injuries), cert. denied, 488 U.S. 1006 (1989).

Regardless of the specific test employed, the ultimate effect of the rote application of the preponderance standard is to allow recovery if and only if plaintiff establishes a greater than fifty percent likelihood that his injuries were caused by defendant's conduct. Mauro v. Raymark Indus., Inc., 116 N.J. 126, 133, 561 A.2d 257, 264 (1989) (reviewing many recent cases that held that the plaintiff must prove that the prospective injury is probable). This result, although entirely appropriate in ordinary civil litigation, inherently entails great potential for inequity in the toxic tort context where much of the proof of causation is probabilistic in nature. In essence, the preponderance rule necessitates an "all or nothing approach, whereby the plaintiff becomes entitled to full compensation for those . . . damages that are proved to be 'probable' (a greater than 50 percent chance), but is not entitled to any compensation if the proof does not establish a greater than 50 percent chance. Jackson v. Johns Manville Sales Corp., 727 F.2d 506, 516 (5th Cir. 1984).

Despite the inherent inequities and ambiguities in the preponderance standard, courts have consistently applied it in the toxic tort context. Courts have, however, expressed different views regarding the quantum of proof which plaintiffs must adduce in order to satisfy the standard. Under the strong version of the preponderance rule, plaintiff cannot prevail without producing both statistical correlations indicating that the probability of causation exceeds fifty percent and some particularistic or anecdotal evidence providing direct and specific proof of the causal relationship between defendant's tortious conduct and the individual plaintiff's injuries. "Agent Orange", 611 F. Supp. at 1261.

Under the weak version of the preponderance rule, plaintiff may prevail merely by adducing statistical evidence regarding the correlation between the substance to which he was exposed and the type of condition from which he suffers. "Agent Orange", 597 F. Supp. at 835. There is much to recommend the weak version of the preponderance standard. As one commentator has noted:

> [T]he entire notion that "particularistic" evidence differs in some significant

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> qualitative way from statistical evidence must be questioned. The concept of "particularistic" evidence suggests that there exists a form of proof that can provide direct and actual knowledge of the causal relationship between the defendant's tortious conduct and the plaintiff's injury. "Particularistic" evidence, however, is in fact no less probabilistic than is the statistical evidence that courts purport to shun . . . . "Particularistic" evidence offers nothing more than a basis for conclusions about a perceived balance of probabilities.

Rosenberg, The Causal Connection in Mass Exposure Cases: A "Public Law" Vision of the Tort System, 97 Harv. L. Rev. 849, 870 (1984) (footnotes omitted). Because of this fact and the fact that particularistic evidence is unavailable in most cases, Judge Weinstein concluded in the "Agent Orange" litigation that "the weak" version of the preponderance rule appears to be the preferable standard to apply in mass exposure cases--particularly where, as here, all claimants and defendants are joined in one suit." "Agent Orange", 597 F. Supp. at 836.

In order to establish causation, a toxic tort plaintiff, like other plaintiffs, must establish, by the preponderance of the evidence, that defendant's conduct directly and proximately caused the condition from which plaintiff suffers.[13] See Mauro, 116 N.J. at 133, 561 A.2d at 264 (and cases cited therein). The unique aspect of toxic tort litigation lies not in any differential standard of proof applicable to the issue of causation but rather in the significant impediments

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[13] In some statutorily created causes of action, the plaintiff is relieved from its severe burden of proving causation by a preponderance of the evidence. For example, in a workers compensation claim under an occupational disease theory, the worker does not have to prove specific causation. The worker need only prove "a causal connection between the disease and the type of occupation in which the claimant was employed during the specific period of time he contracted the disease." Wuesthoff Memorial Hosp. v. Hurlbert, 548 So. 2d 771, 775 (Fla. App. 1989). In Hurlbert, the court held that the plaintiff does not need to prove specific exposure to the disease of which he complains, merely that he had contracted the disease and the occupation in which he works entails exposure to the disease. Id.

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encountered by plaintiffs in attempting to satisfy this burden.

In order to meet this burden, plaintiff must isolate the harmful substance, trace its pathway from defendant to plaintiff and establish the etiology of the harmful substance. See Note, A Suggested Remedy for Toxic Injury: Class Actions, Epidemiology and Economic Efficiency, 26 Wm. & Mary L. Rev. 497, 514 (1984-85). It is in this context that the legal preoccupation with deterministic causes is most pernicious. One commentator has specifically noted that, in the environment of toxic torts, this search for deterministic causes is "both artificial and misleading." See Robinson, Probabilistic Causation and Compensation for Tortious Risk, XIV J. of Legal Stud. 779, 781 (1985). As a general rule, there is no such evidence in the toxic tort context.[14]

There are several reasons for the absence of such evidence. First, there is often no traumatic event which permits the development of a simple causal chain from exposure to injury. Moreover, cancers and mutations do not necessarily leave any physical evidence of their causative agents. Hence, the direct observation of individual plaintiffs generally provides little or no evidence of causation. See Gold, 96 Yale L.J. at 379. Finally, the effects of the exposure frequently occur long after the exposure itself. This extended latency period is one of the primary reasons for the difficulties encountered by plaintiffs in proving toxic tort causation. See Ayers v. Township of Jackson, 106 N.J. 557, 585, 525 A.2d 287, 301 (1987).

Because there is little, if any, evidence of causation with regard to the individual plaintiff, courts must rely on probabilistic or statistical evidence of causation. The admission and utilization of such evidence is somewhat at odds with the traditional tort law emphasis on the individual and the elaboration of a specific causal chain from defendant to

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[14] Even if such proof did theoretically exist, it would be difficult for plaintiff to adduce at trial. Toxic exposure may begin, last for some years and then end without the victim ever knowing that exposure took place. Once the exposure has ended, the potential plaintiff will have difficulty showing the precise toxin to which he was exposed as well as the extent and duration of the exposure.

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plaintiff.[15] See Brennan, Causal Chains and Statistical Links: The Role of Scientific Uncertainty in Hazardous Substance Litigation, 73 Cornell L. Rev. 469, 532 (1988). Moreover, it is only within the last fifteen years that scientists have begun to discover the link between exposure to certain substances and the onset of cancer or other diseases or genetic mutations. Hence, probabilistic proof that a toxic substance is harmful often involves evidence "on the frontiers of science." Farber, Toxic Causation, 71 Minn. L. Rev. 1219, 1220 (1987).

Even if plaintiff has access to probabilistic studies which demonstrate the existence of a causal relationship and the court is willing to admit such studies into evidence, difficult hurdles still remain for plaintiff. First, the etiology of many diseases, such as cancer, and injuries, such as birth defects, involved in toxic tort litigation is poorly understood at present. Hence, even if plaintiffs are able to adduce probabilistic evidence which suggests a sufficiently strong correlation between exposure to the substances and the occurrence of injury to be characterized as causal, the trier of fact may be unwilling to accept such evidence absent a reasonable explanation of the manner in which the substance leads to the disease and/or injury.

Further, although a given chemical may increase the overall prevalence of a disease among the exposed population, certain members of the population may have contracted that same disease as a result of independent factors. In the "Agent Orange" litigation, the court recognized that the primary problem with plaintiffs' causation argument arose from the fact that the diseases for which plaintiffs sought recovery could result from many causes other than dioxin poisoning. "Agent Orange", 597 F. Supp. at 777.

These independent causative factors complicate the causation inquiry in two separate ways. First, it is well known that various chemicals often operate

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[15] Probabilistic evidence of one sort or another, however, has been accepted on a regular basis by the courts. Any time a court calculates future damages in a personal injury case, it must rely in part on mortality tables. These tables are merely one form of probabilistic evidence. It has, in fact, been suggested that "most knowledge, and almost all legal evidence, is probabilistic." DePass v. United States, 721 F.2d 203, 207 (7th Cir. 1983) (Posner, J., dissenting).

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synergistically with other chemicals in producing the ultimate result. Hence, it may be difficult to isolate the effects that are attributable to a single substance. Second, plaintiff must demonstrate that no intervening causes resulted in the development of the disease for which recovery is sought. Ayers, 106 N.J. at 585, 525 A.2d at 301. This intervening cause argument may pose particular difficulties for a plaintiff who smokes or lives in a particularly polluted area. See Dartez v. Fibreboard Corp., 765 F.2d 456, 466-67 (5th Cir. 1985); Gideon v. Johns-Manville Sales Corp., 761 F.2d 1129, 1139 (5th Cir. 1985). But see DeStories v. City of Phoenix, 154 Ariz. 604, 744 P.2d 705 (Ct. App. 1987).

The fundamental difficulty encountered by the toxic tort plaintiff in establishing causation, however, arises from the difference between scientific and legal methodologies. In the scientific community, the concept of causation implies nothing more than the fact that exposure to a given substance increases the overall risk of disease or injury among persons exposed to that substance. The scientific inquiry is not concerned with the existence of causation in an individual case. The legal inquiry, in contrast, involves precisely such an individualistic determination. The coalescence of scientific and legal methodologies is the key to the resolution of the causation problem in toxic tort litigation.

In order to assess the prospects for such a coalescence, it is essential to understand the various types of proof available to show causation in the typical toxic tort case. There are three primary types of evidence that can assist the trier of fact in resolving the causation issue in toxic tort litigation: (1) particularistic or anecdotal evidence from plaintiff's treating physician or other medical practitioner who has examined the plaintiff; (2) in vivo and in vitro animal studies; and (3) epidemiological studies.

1. Particularistic or Anecdotal Evidence

This type of evidence is one with which the judicial system has a long-standing familiarity. It consists of testimony from a qualified expert, see Fed. R. Evid. 702; Ariz. R. Evid. 702, usually a medical practitioner and often plaintiff's treating physician, that the disease, injury or condition for which plaintiff seeks redress was proximately caused by defendant's conduct. Such testimony must establish a causal relationship between defendant's conduct and plaintiff's injuries to "a reasonable degree of medical certainty or at least probability." City of Phoenix v.

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Industrial Commission, 120 Ariz. 237, 240, 585 P.2d 257, 260 (Ct. App. 1978); Barber v. Industrial Commission, 25 Ariz. App. 486, 488, 544 P.2d 703, 705 (1976); accord Bell Road Mini Storage v. Industrial Commission, 124 Ariz. 493, 495, 605 P.2d 895, 897 (1980); see generally DeStories v. City of Phoenix, 154 Ariz. 604, 607, 744 P.2d 705, 708 (Ct. App. 1987). Courts have noted that, in certain instances, particularistic evidence of causation may be sufficient to warrant a verdict in plaintiff's favor. See, e.g., Benedict, 822 F.2d at 1430; cf. Perry v. United States, 755 F.2d 888, 893 (11th Cir. 1985) (suggesting that the jury would have been entitled to credit testimony of plaintiff's treating physician despite testimony of countervailing experts). In fact, where the epidemiological evidence is conflicting and inconclusive, courts have deferred to the testimony offered by the treating and evaluating physicians. See, e.g., Sulesky v. United States, 545 F. Supp. 426, 430 (S.D.W. Va. 1982).

In considering the admissibility and sufficiency of expert opinions and evidence in toxic tort litigation, courts must require scientists to conform to the standards and criteria of science. If courts permit deviation from accepted scientific practices, toxic tort litigation becomes little more than a "crapshoot."[16] Black, Evolving Legal Standards for the Admissibility of Scientific Evidence, 239 Science 1508, 1511 (1988). There are a number of evidentiary rules which courts can utilize in exercising such control.

Before admitting expert testimony, the court is obligated, pursuant to Rule 104(a) of the Federal Rules of Evidence, to make a preliminary inquiry into its admissibility. "Agent Orange", 611 F. Supp. at 1239. Although expert testimony of one sort or another is required to establish causation in the toxic tort context,

> that is not to say that the court's hands are inexorably tied, or that it must accept uncritically any sort of opinion espoused by

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[16] In certain instances, courts have exercised active control over expert testimony in order to avoid the consequences of blind adherence to the experts' opinions. See, e.g., In re "Agent Orange" Product Liability Litigation 611 F. Supp. 1223, 1263 (E.D.N.Y. 1985), aff'd, 818 F.2d 187 (2d Cir. 1987), cert. denied, 108 S.Ct. 2898 (1988); Marder v. G.D. Searle & Co., 630 F. Supp. 1087, 1094-95 (D. Md. 1986), aff'd, 814 F.2d 655 (4th Cir. 1987); Johnston v. United States, 597 F. Supp. 374, 431 (D. Kan. 1984).

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> an expert merely because his credentials render him qualified to testify . . . . Whether an expert's opinion has an adequate basis, and whether without it an evidentiary burden has been met, are matters of law for the court to decide.

Richardson, 857 F.2d at 829. In conducting this preliminary inquiry, the court must determine whether the proffered testimony consists of both a reliable foundation and considered conclusions to avoid the hazards of prejudice and confusion. See McGlinchy v. Shell Chemical Co., 845 F.2d 802, 806 (9th Cir. 1988); Viterbo v. Dow Chemical Co., 826 F.2d 420, 422 (5th Cir. 1987); In re Air Crash Disaster at New Orleans, Louisiana, 795 F.2d 1230, 1233-34 (5th Cir. 1986); "Agent Orange", 611 F. Supp. at 1245.

This need for judicial scrutiny is greatest when the subject matter of the expert testimony involves new scientific frontiers.

> When either the expert's qualifications or his testimony lie at the periphery of what the scientific community considers acceptable, special care should be exercised in evaluating the reliability and probative worth of the proffered testimony under Rules 703 and 403.

"Agent Orange", 611 F. Supp. at 1242. Such heightened scrutiny is appropriate in the toxic tort context. "The uncertainty of the evidence in such cases, dependent as it is upon speculative scientific hypotheses and epidemiological studies, creates a special need for robust screening of experts . . . ." "Agent Orange", 611 F. Supp. at 1260. If the court fails to exercise the necessary vigilance with regard to the admission of expert testimony, it is difficult to remove purely conjectural and speculative questions from the jury. Marder, 630 F. Supp. at 1089.

The first mechanism which a court may use to preclude improper expert testimony is Rule 702 of the Federal Rules of Evidence. This rule provides as follows:

> If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may

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> testify thereto in the form of an opinion or otherwise.

Fed. R. Evid. 702. Under this rule, the testimony offered by an expert must fall within his area of expertise. Wells v. Ortho Pharmaceutical Corp., 788 F.2d 741, 744 (11th Cir.), cert. denied, 479 U.S. 950 (1986). Assuming that an expert possesses the necessary background qualifications to permit him to offer opinion testimony on a given subject, the next inquiry for the court is whether there is a sufficient foundation for his opinions.

A court's consideration of the foundation for expert testimony involves the provisions of Rules 703 and 403 of the Federal Rules of Evidence. Rule 703 provides as follows:

> The facts or data in the particular case upon which an expert bases an opinion or inference may be those perceived by or made known to the expert at or before the hearing. If of a type reasonably relied on by experts in the particular field in forming opinions or inferences upon the subject, the facts or data need not be admissible in evidence.

Fed. R. Evid. 703. The foundational test for the admission of expert testimony under Rule 703 has been succinctly stated as follows:

> If the underlying data are so lacking in probative force and reliability that no reasonable expert could base an opinion on them, an opinion which rests entirely on them must be excluded.

"Agent Orange", 611 F. Supp. at 1245. Rule 403 provides as follows:

> Although relevant, evidence may be excluded if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury, or by considerations of undue delay, waste of time, or needless presentation of cumulative evidence.

Fed. R. Evid. 403. In the "Agent Orange" litigation, Judge Weinstein cited Rule 403 as an alternative basis for the exclusion of plaintiffs' proffered expert testimony. "Agent Orange", 611 F. Supp. at 1255-56.

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NOTES

Under Rules 703 and 403, it is clear that proffered expert testimony must be based on more than unsupported inferences and unwarranted extrapolation. See Clinchfield Railroad Co. v. Lynch, 784 F.2d 545, 554 (4th Cir. 1986) ("the methodology in [expert's] report was basically sound"); Wells, 788 F.2d at 744 (experts were well qualified, testifying within their areas of expertise and based their conclusions on personal examination of the plaintiff and reliable epidemiological studies); Bulthuis v. Rexall Corp., 789 F.2d 1315, 1316-17 (9th Cir. 1985) (experts with extensive clinical expertise testified that the changes they personally observed in plaintiff's tissue were of a type commonly seen in DES exposed offspring and rarely seen in non-DES exposed individuals); Bieghler v. Kleppe, 633 F.2d 531, 532 (9th Cir. 1980) (expert based conclusions upon personal examination of accident site); Bandura v. Orkin Exterminating Co., 664 F. Supp. 1218, 1219 (N.D. Ill. 1987) (experts ruled out alternative explanations of plaintiff's malady and relied on a study that specifically examined the incidence of cancer among persons exposed to the particular chemical cause), aff'd, 865 F.2d 816 (7th Cir. 1988); Thompson v. Merrell Dow Pharmaceuticals, Inc., 229 N.J. Super. 230, 241, 551 A.2d 177, 183 (Ct. App. Div. 1988)(expert testimony could not consist of "a bare conclusion which lacks supporting data and rationale leading to the conclusion"); Boyles v. American Cyanamid Co., 796 F. Supp. 704, 706 (E.D.N.Y. 1992) (expert conclusions held inadmissible as nothing more than bare conclusory allegations).

One question that has repeatedly arisen regarding the foundational basis for expert testimony concerns the sufficiency of such testimony in the absence of supporting studies. In Sterling v. Velsicol Chemical Corp., 855 F.2d 1188, 1208-09 (6th Cir. 1988), the court held that plaintiff's experts' opinions, which lacked a widely accepted medical basis and the requisite clinical tests, were insufficient to sustain plaintiff's burden of proof on the issue of causation. Most courts, however, have accepted particularistic expert testimony regarding causation even though epidemiological studies supporting the experts' testimony were unavailable. See, e.g., Ferebee v. Chevron Chemical Co., 736 F.2d 1529, 1535-36 (D.C. Cir.), cert. denied, 469 U.S. 1062 (1984); Marder, 630 F. Supp. at 1094. Courts adopting the latter approach have supported their conclusion by noting that the novelty of the scientific issue involved should not compel the court to disregard available, credible testimony regarding causation. See Clinchfield Railroad Co., 784 F.2d at 554.

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Even though particularistic expert testimony regarding causation need not be based on epidemiological studies, it must be based upon a valid methodology. As the District of Columbia Circuit Court of Appeals noted in Ferebee:

> As long as the basic methodology employed to reach such a conclusion is sound, such as use of tissue samples, standard tests, and patient examination, products liability law does not preclude recovery until a "statistically significant" number of people have been injured or until science has had the time and resources to complete sophisticated laboratory studies of the chemical. In a courtroom, the test for allowing a plaintiff to recover in a tort suit of this type is not scientific certainty but legal sufficiency; if reasonable jurors could conclude from the expert testimony that paraquat more likely than not caused Ferebee's injury, the fact that another jury might reach the opposite conclusion or that science would require more evidence before conclusively considering the causation question resolved is irrelevant. That Ferebee's case may have been the first of its exact type or that his doctors may have been the first alert enough to recognize such a case does not mean that the testimony of those doctors, who are concededly qualified in their fields, should not have been admitted.

Ferebee, 736 F.2d at 1535-36. In light of this edict, it is interesting to note the various methodological bases which courts have found to constitute a sufficient foundation for expert causation testimony.

In Baroldy v. Ortho Pharmaceutical Corp., 157 Ariz. 574, 582, 760 P.2d 574, 582 (Ct. App. 1988), the court held that the treating physician's testimony, based on the absence of any reasonable explanation of causation other than exposure to defendant's product (a diaphragm), the time relationship between the use of defendant's product and the onset of disease and the presence of recorded cases in the literature supporting an association between defendant's product and disease, was sufficient to demonstrate causation. Another court found that experts, who had examined the patient and reviewed the available medical and scientific studies, had a sufficient foundation to testify regarding causation. Wells, 788 F.2d at 744. Still another court determined that a consideration of the temporal sequence

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of events coupled with a review of the relevant epidemiological literature constitutes a sufficient foundation for expert testimony regarding causation.[17] Benedict, 822 F.2d at 1430.

In Oxendine v. Merrell Dow Pharmaceuticals, Inc., 506 A.2d 1100 (D.C. App. 1986), plaintiff sought to recover damages for birth defects allegedly attributable to her mother's use of Bendectin during pregnancy. After a jury award in favor of plaintiff, the court granted judgment n.o.v. and, in the alternative, ordered a new trial on the basis of its conclusion that plaintiff had failed to establish causation. Oxendine, 506 A.2d at 1103. In order to sustain her burden on this issue, plaintiff presented expert testimony predicated upon the structural activity of Bendectin, in vivo animal studies, in vitro animal studies and human epidemiological data. Oxendine, 506 A.2d at 1104. Plaintiff's expert further testified that teratologists generally rely on these four categories of evidence in forming conclusions regarding the teratogenecity of a substance. Id. The court of appeals reversed the trial court's grant of judgment n.o.v. and ordered the verdict reinstated, concluding that there was an adequate foundational basis for the expert testimony adduced by plaintiff. Id. at 1110.[18]

Those cases in which courts have concluded that proffered expert testimony lacked a sufficient foundation are similarly illustrative. On numerous occasions, courts have concluded that expert testimony based upon chemical structure activity analysis and in vitro and in vivo animal studies is inadmissible. See, e.g., Lynch, 830 F.2d at 1194; Richardson, 857 F.2d at 830; cf. "Agent Orange", 611 F. Supp. at 1234. Courts have also questioned expert testimony predicated upon extrapolation from studies of the effects of industrial accidents. "Agent Orange", 611 F. Supp. at 1234. Another foundational flaw occasionally noted by the judiciary concerns the experts' failure to consider

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[17] The court did, however, note that mere observance of a temporal relationship is insufficient, by itself, to establish causation. Benedict, 822 F.2d at 1430.

[18] The court's conclusion in Oxendine is in direct conflict with decisions by the First Circuit and D.C. Circuit Courts of Appeals. In Lynch, 830 F.2d at 1194, and Richardson, 857 F.2d at 830, the courts rejected the testimony of the expert who testified in Oxendine, concluding that there was an insufficient foundation for his testimony.

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either epidemiological studies or alternative causes for plaintiff's injuries. "Agent Orange", 611 F. Supp. at 1250. Courts have also rejected and/or disregarded expert testimony when the expert failed to account for the individual idiosyncracies of the plaintiff. In re "Agent Orange" Product Liability Litigation, 611 F. Supp. 1267, 1272-73 (E.D.N.Y. 1985), aff'd, 818 F.2d 187 (2d Cir. 1987), cert. denied, 108 S.Ct. 2898 (1988) (hereinafter "Agent Orange"); O'Connor v. Industrial Commission, 19 Ariz. App. 43, 47-48, 504 P.2d 966, 970-71 (1972) (failure of expert opining as to causal relationship between petitioner's working conditions and his development of valley fever to account for prevalence of dust and the valley fever spore throughout the area in which petitioner lived and worked). Finally, even in those instances where there was a sufficient foundational basis for the expert's opinion, courts have rejected expert testimony which is flatly contradictory to the unanimous weight of epidemiological evidence. Richardson, 857 F.2d at 831; "Agent Orange", 611 F. Supp. at 1231.

One final issue has arisen concerning the foundational sufficiency of expert testimony regarding causation in toxic tort litigation. That issue is whether the theory of causation upon which the expert's opinion is based must be one that enjoys general acceptance in the scientific community. The argument in support of such a requirement derives from Frye v. United States, 293 F. 1013 (D.C. Cir. 1923). The issue in Frye concerned the admissibility of test results from a primitive lie detection system based upon deviations in the subject's systolic blood pressure. The district court rejected the proffered evidence. The court of appeals affirmed, noting that

> We think the systolic blood pressure deception test has not yet gained such standing and scientific recognition among physiological and psychological authorities as would justify the courts in admitting expert testimony deduced from the discovery, development and experiments thus far made.

Frye, 293 F. at 1014. The Frye test, which was originally designed to test the sufficiency of novel scientific methodologies as a basis for expert testimony, has been construed to require "general acceptance" of the methodologies in the relevant scientific community. See, e.g., Scales v. City Court of Mesa, 122 Ariz. 231, 234, 594 P.2d 97, 100 (1979) (breathalizer); State v. Valdez, 91 Ariz. 274, 280, 371 P.2d 894, 898 (1962) (polygraph). The Arizona Supreme Court has concluded that

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> [The] Frye test is satisfied when the court is able to conclude that disinterested and impartial experts, knowledgeable in the scientific specialty which deals with and uses such procedures or techniques, have come to recognize the methodology as having sufficient scientific basis to produce reasonably uniform and reliable results that will contribute materially to the ascertainment of the truth.

State ex. rel. Collins v. Superior Court, 132 Ariz. 180, 199, 644 P.2d 1266, 1285 (1982), overruled on other grounds, 135 Ariz. 257, 660 P.2d 858 (1983).

The Supreme Court of the United States, however, has recently held that the Frye "general acceptance" test has been superseded by the more liberal Federal Rules of Evidence as the standard for admitting expert scientific testimony in a federal court. Daubert v. Merrell Dow Pharmaceuticals, 1993 U.S. LEXIS 4408 (June 28, 1993). In Daubert, plaintiffs sued Merrell Dow Pharmaceuticals alleging that their birth defects had been caused by their mothers' ingestion of Bendectin, a prescription anti-nausea drug marketed by Merrell Dow. The Ninth Circuit Court of Appeals affirmed the lower court ruling that certain expert opinion evidence was not admissible as it was not "generally accepted" as reliable in the relevant scientific community.

In vacating the lower court holding, the Supreme Court of the United States held that Rule 702, Federal Rules of Evidence, not the Frye test, governs the admissibility of expert testimony. That rule provides that expert testimony must be based on scientific knowledge that will assist the trier of fact to understand or determine a fact in issue in order to be admissible. According to the Court, this entails a preliminary assessment of whether the reasoning or methodology underlying the testimony is scientifically valid and can be applied to the facts in issue. Although many factors will bear on this inquiry, the Court cautioned that the focus "must be solely on principles and methodology, not on the conclusions they generate." One key question is whether a scientific theory or principle can be and has been tested. Another consideration is whether the theory or technique has been subject to peer review and publication. Additionally, trial courts should consider the known or potential error rate. Finally, "general acceptance" can have a bearing on the inquiry.

Particularistic opinion evidence regarding causation is invaluable in toxic tort litigation because

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it generally constitutes the only evidence on the occurrence prong of the inquiry. Confronted with the complexities and uncertainties of probabilistic proof, jurors may latch onto such testimony as a compass in their sea of confusion. For this reason, it is imperative for the court to assure both that the expert is properly qualified and that there is a sufficient foundation for his testimony.

2. In Vitro and In Vivo Animal Studies

In order to establish the fact of causation, various toxic tort plaintiffs have sought to rely upon two types of animal studies. The first type of study, an in vivo study, involves the administration of the toxic substance under study to a population of animals, the observation of the animals' response to the given substance and a comparison of the animals exposed to the substance with a control group of animals that was not so exposed.[19] The second type of study, the in vitro study, examines the effect of the substance in question upon individual animal cells.[20]

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[19] An in vivo animal study involves the observation of test animals for a major portion of their life spans to assess the development of certain conditions or diseases during or after exposure to various doses of a test substance by an appropriate route. The animals that have been exposed to the test substance are then contrasted with a control group of animals that has not been so exposed. Taking cancer as an example, if the substance under study is found to be carcinogenic, researchers then estimate the dose of the alleged carcinogen required to provoke the cancer response in humans. First, the dosage is modified, using scaling factors to approximate human exposure. Then, because the short term of the study requires a relatively high dose of the test substance, the data is extrapolated to a lower dose on the assumption that the dose-response relationship varies in a consistent manner capable of description through a mathematical equation.

[20] In vitro studies are performed in a test tube and have the advantage of permitting scientists to focus on a specific effect. For example, to determine whether a drug can cause limb reduction defects, limb bud cells of animal embryos can be separated from the rest of the embryo, placed in a test tube where they are exposed to the substance under examination and then observed to determine if their development is thwarted by the drug. It is difficult, however, to construct a valid methodology for the performance of in vitro studies and the assessment of their results. In addition to these methodological

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The primary difficulty with animal studies generally involves the ability to extrapolate such studies to human populations and realistic levels of exposure. First, there are myriad differences between and among various animal species. See generally Lynch v. Merrell-National Laboratories, 646 F. Supp. 856, 865, (D. Mass. 1986), aff'd, 830 F.2d 1190 (1st Cir. 1987). Some or all of these distinctions may impact on the manner in which the substance under study affects the organism in question. For instance, the toxic effects of dioxin varied by a factor of five to ten thousand in comparisons between tests using guinea pigs and hamsters. See Rawls, Dioxin's Human Toxicity is Most Difficult Problem, Chem. and Eng. News, June 6, 1983, at 37.

Additionally, in order to obtain statistically significant results in a relatively small population of test animals, researchers must administer massive doses of the substance in question to the animals. These levels of exposure do not occur in the real world. Hence, certain assumptions regarding linearity and the dose-response relationship must be employed to predict the risk of exposure at lower doses. These assumptions may be faulty because they are predicated on the assumption that there is no threshold level below which exposure to a substance is harmless. See, e.g., Gulf South Insulation v. United States Consumer Products Safety Commission, 701 F.2d 1137, 1147 n.19 (5th Cir. 1983). Because of the difficulties in extrapolation from the high dosage levels required for testing, little is known about the true shape of the dose-response curve at environmental levels of exposure. At best, a linear extrapolation model provides a rough estimate of the upper limit of risk. See Public Citizen Health Research Group v. Tyson, 796 F.2d 1479, 1496-97 (D.C. Cir. 1986). Although it is unlikely that the real risk of exposure to a toxic substance will exceed the risk predicted in an animal study, the risk could in fact be significantly lower.

One commentator has summarized the difficulties inherent in animal studies in the following manner:

> It is important to recognize that the quantitative estimation of human cancer risk of necessity involves the extrapolation of results observed under one set of conditions

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difficulties, in vitro animal studies are subject to criticism because they involve a direct manner of exposure, not seen in the real world.

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> in the laboratory (rodents exposed for a lifetime to very high doses) to predict those likely to occur under another entirely different set of conditions in the real world (humans exposed intermittently to very low concentration). This extrapolation process is fraught with difficulty and uncertainty and involves a great many controversial assumptions of doubtful scientific validity.

See Wilkinson, Toxicology and the Law, at 10 (Comments Prepared for Presentation at the Annual Meeting of the American Bar Association, Toronto, Ontario, August 4-11, 1988). The assumptions used in making the necessary extrapolations from animal studies are trans-scientific in nature.

Because these assumptions are not capable of scientific verification or elucidation, animal studies have not been well received by the judiciary. Courts have uniformly concluded that such evidence is neither admissible nor a sufficient foundational basis, standing alone, for expert testimony. See, e.g., "Agent Orange", 611 F. Supp. at 1241; Lynch, 830 F.2d at 1194; Richardson, 857 F.2d at 830; Viterbo, 826 F.2d at 424; Gulf South Insulation, 701 F.2d at 1146 (considering small size of study and imprecision of data); Selwood v. Oxford Chemicals, Inc., No. 90-1048 (M.D. Pa. June 28, 1991) (animal studies are "grossly conjectural), aff'd, No. 91-5619 (3d Cir. February 21, 1992); In re Paoli Railroad Yard PCB Litigation, No. 86-2229, 1992 U.S. Dist. LEXIS 16287 (E.D. Pa. October 21, 1992) ("animal studies are of limited reliability when attempting to relate those studies to humans"). As Judge Weinstein concluded, "[t]he animal studies are not helpful . . . because they involve different biological species. They are of so little probative force and are so potentially misleading as to be inadmissible." "Agent Orange", 611 F. Supp. at 1241.

The district court in Lynch provided the most detailed analysis of the deficiencies of these types of studies. First, the court noted that the teratogenic qualities of a substance with regard to a species of animals cannot necessarily be extrapolated to humans. Lynch, 646 F. Supp. at 865. The court further noted that the large doses used in animal studies rendered the extrapolation process even more problematic. Id. Third, the court noted that in vitro studies were not "reasonably relied on by experts in the particular field." Lynch, 646 F. Supp. at 866.

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In conclusion, courts may elect to admit animal studies to corroborate the results of epidemiological studies. Courts have, however, universally concluded that animal studies, standing alone, are insufficient to prove causation.

3. Epidemiological Studies

Epidemiology is a branch of medical science that deals with the incidence, determinants, distribution and control of disease in a population. Epidemiological studies of particular interest with regard to toxic substances litigation are those that associate disease in human populations with measured exposure to toxic agents. Epidemiology involves an interdisciplinary methodology combining statistics, sociology and demography. Sources of data for epidemiological studies include surveys, death certificates and clinical and medical observations. Because researchers cannot control the factors which affect the quality of the data obtained, an epidemiological study is not an experiment.

The goal of any epidemiological inquiry is to establish an association between an alleged cause and effect by one of two methods. In a retrospective, or case control study, the epidemiologist starts by identifying the outcome in which he is interested. A population, consisting wholly of persons who have that particular outcome, is selected and matched with another population that is similar in material respects except that its members do not have the outcome in question. By comparing the two populations, the epidemiologist is able to determine whether the study population was exposed to anything different prior to the development of the outcome than was the control population. The prospective study, in contrast, begins with the identification of the substance that is the suspected causative agent. The epidemiologist will then identify a population that has been exposed to the substance and follow the health history of that population in order to verify the health outcomes of that group. These outcomes are then compared to a population that has not been exposed to the substance in question.

Once the data has been compiled, the epidemiologist applies statistical techniques and probabilistic reasoning to the observed incidence of disease. Based upon his review of the data, the epidemiologist then attempts to demonstrate the existence of statistically significant correlations or associations between certain clinical outcomes and

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population exposure to any number of variables.[21] Once the epidemiologist uncovers a statistical association between a risk factor and the incidence of disease,[22] he then proceeds to determine first whether the observed correlation is causal in nature and then whether the findings of the study can be extrapolated to the population at large.[23]

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[21] The identification of such statistical associations requires a sophisticated methodology. First, the study must encompass a sufficiently large population to reflect the characteristics of the total population of interest. Second, it must identify a control population as a clear norm from which deviations can be measured. Third, observed deviations must be sufficiently large that they can be characterized as more than random fluctuations. Finally, the study must account for a number of potentially pertinent factors such as gender, race, occupation, geographic location, lifestyle preferences and everyday exposure to hazardous materials. If a study fails to satisfy these criteria, its results will likely be invalid.

[22] The accepted means for measuring the magnitude of the observed association between a disease and a factor is through the relative risk coefficient (RR). This coefficient represents the ratio of the incidence rate of the disease in the exposed group (DE) divided by that rate in the non-exposed control group (DC).

$$RR = D_E/D_C$$

The relative risk coefficient can then be used to calculate the probability of causation (PC).

$$PC = 1 - 1/RR$$

The probability of causation is the percentage of risk of cancer in the exposed population that is attributable to the agent under analysis.

[23] The process of extrapolation in the context of an epidemiological study is not nearly as subjective as that same process in the context of animal studies. As previously discussed, the propriety of extrapolation in the latter context is dependent upon the validity of certain assumptions, none of which are susceptible to scientific proof. In the context of epidemiology, extrapolation requires a judgment whether the biases, by which is meant the differences between the study population and other populations, are sufficiently significant to preclude extrapolation. The effect of

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There are a number of factors which complicate the establishment of an association between an agent and an outcome in an epidemiological study. First, it must be determined whether the number of cases observed is statistically and significantly different than the number of cases expected. This problem is particularly great when the study attempts to detect the effect of a weak carcinogen or low dosages of any carcinogen without a large study population. See McElveen & Eddie, Cancer and Toxic Substances: The Problem of Causation and the Use of Epidemiology, 33 Clev. St. L. Rev. 29, 39 (1984-85). Additionally, in light of the current state of scientific knowledge regarding the etiology of carcinogenesis, mutagenesis and teratogenesis, it is difficult to know what potential factors could contribute to the outcome under study. Because of the limitations of present knowledge, it is difficult to account for all of the factors which may result in an increased incidence of disease. The failure to account for certain factors may skew the results of the study. Finally, as previously discussed, there may be a prolonged latency period between a person' s exposure to a carcinogen and the development of cancer. In order to avoid false negative results, it is imperative that any prospective study have a sufficient temporal duration.

Assuming that the study discloses a statistical association between the agent and the outcome, the next step of the inquiry is to determine whether the observed association is causal in nature. The prime difficulty in this regard is the practical inability completely to account for all variables that might affect the onset of disease. In assessing the causal nature of any observed relationship it is imperative to account for the possibility of confounding.[24] This potential for

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these biases can be addressed through consideration of the factors for which the epidemiologist accounted in his study and the use of statistical tests (i.e., confidence levels) to measure the strength of the statistical correlation observed.

[24] The relationships among coffee consumption, smoking and pancreatic cancer are illustrative. There has been an association of coffee consumption with pancreatic cancer. Coffee consumption, however, is also associated with smoking, a known cause of pancreatic cancer. Hence, in assessing the association between coffee consumption and pancreatic cancer, absent proper controls, it would be impossible to determine whether the increased incidence of disease was attributable to the fact that coffee drinkers also smoked cigarettes or rather whether the coffee

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confounding must be addressed during the initial phases of study design.

Epidemiologists have developed criteria for use in evaluating an association to make a determination of causality. In general terms, these criteria include consistency (experimental replication or the production of similar results through diverse investigative approaches), strength (the relative risk observed), temporal relationship (proof that the presumed cause always precedes the observed effect), coherence (biological plausibility of causation)[25] and specificity (the existence of a predictive pattern of effects likely to occur with a frequency greater than random chance if the antecedent event has causal significance). See generally McElveen & Eddie, 33 Clev. St. L. Rev. at 44; Ginsburg, Use and Misuse of Epidemiological Data in a Courtroom: Defining the Limits of Inferential and Particularistic Evidence in Mass Tort Litigation, XII Am. J. of L. and Med. 423, 425-26 (1986). These criteria have been embodied in the Henle-Koch-Evans postulates. These postulates are as follows:

1. The prevalence of the disease should be significantly higher in those exposed to the hypothesized cause than in controls not so exposed;

2. Exposure to the hypothesized cause should be more frequent among those with the disease than in controls without the disease when all other risk factors are held constant;

3. Incidence of the disease should be significantly higher in those exposed to the hypothesized cause than those not so exposed, as shown by prospective studies;

4. Temporally, onset of the disease should follow exposure to the hypothesized causative agent with

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consumption itself increased the risk of carcinogenesis.

[25] In assessing causality, the coherence criterion must be considered with caution because it is limited by the current state of scientific knowledge regarding disease etiology.

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the distribution of incubation periods on a log-normal shaped curve;

5. A spectrum of host responses should follow exposure to the hypothesized agent along the logical biologic gradient from mild to severe;

6. A measurable host response following the exposure to the hypothesized cause should have a high probability of appearing in those lacking this response before exposure or should increase in magnitude if present before exposure and such a response pattern should occur infrequently in persons not so exposed;

7. Experimental reproduction of the disease should occur more frequently in animals or man appropriately exposed to the hypothesized cause than in those not so exposed;

8. Elimination or modification of the hypothesized cause should decrease the incidence of disease;

9. Prevention or modification of the host response on exposure to the hypothesized cause should decrease or eliminate the disease; and

10. All of the relationships and findings should make biological and epidemiological sense.

See generally Black & Lilienfeld, Epidemiologic Proof and Toxic Tort Litigation, 52 Fordham L. Rev. 732, 763 (1984).

If a properly designed study discloses a statistical association between an agent and, an outcome and that association can be characterized as causal in nature, epidemiological evidence is germane to the toxic tort causation issue. It is important, however, to remember the limits of epidemiological proof.

First, and most importantly from a legal perspective, epidemiological evidence is incapable of

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proving individual causation.[26] By its nature, epidemiological studies focus on the prevalence of disease in a given population. See Gold, 96 Yale L.J. at 379-380. They cannot prove that a given individual exposed to the substance in question developed a disease solely and specifically as a result of such exposure. In a typical case, epidemiology can establish, at best, only a certain probability that a randomly selected case of disease is attributable to exposure to the substance in question. The problem of individual attribution on the basis of epidemiological studies was succinctly described by one commentator as follows:

> The limitations on epidemiology's ability to prove individual causation stem from its general and statistical nature. Epidemiological studies are general in that they deal with sources of disease in groups of people rather than particular individuals. Being statistical, they quantify the probabilities or risks, that members of a group will contract certain diseases under certain conditions. The only individual cause-and-effect relationship that epidemiological evidence can show is- that the defendants' conduct increased the plaintiff's risk of injury to some statistically measurable extent. It cannot answer the critical question whether the defendant's conduct actually injured the plaintiff.

Dore, 7 Harv. Envtl. L. Rev. at 436. Recalling the previously discussed division of the causation issue

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[26] One limited exception to this rule regarding individual causation applies to substances which produce a disease not otherwise seen in the general population. Certainly, the problem of establishing individual causation where the only proof of causation lies in epidemiological studies is less formidable where the damage in question is unique to the substance in question. As Judge Weinstein noted in the "Agent Orange" litigation, adenosis and clear cell adenocarcinoma of the vagina and uterus are almost unknown among women whose mothers had not taken DES. Similarly, asbestosis is uniquely associated with asbestos exposure. "Agent Orange", 597 F. Supp at 834. In most mass exposure cases, unfortunately, persons who have developed a disease as a result of exposure to a toxic substance cannot be distinguished from those persons in the general population who developed the disease wholly independent of any such exposure. "Agent Orange", 597 F. Supp. at 835.

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into the questions of risk and occurrence, epidemiological evidence is, strictly speaking, pertinent only to the risk prong of the causation inquiry.

There are other difficulties with epidemiological evidence aside from its inability to prove individual causation. For instance, the studies may often be inconclusive at the appropriate level of statistical significance. Additionally, "statistics can be manipulated, thereby undermining the probative value and reliability of the conclusions drawn." See McElveen & Eddie, 33 Clev. St. L. Rev. at 59.

The benefits and limitations of epidemiological evidence in legal proceedings have succinctly been summarized as follows:

> In summary, then, two points should be made about epidemiological studies. The first is that even if an association is found between a factor and a disease, it is still a matter of judgment whether that association is of causal significance. The second point is that epidemiology, by definition, is a study of populations, not individuals. Even if an association of causal significance is found, the question still remains: did the substance or agent in question cause the disease in a particular person in whom the legal system is interested? As noted, the answer to that question can only be a statistical one. Therefore, from a scientific point of view, the major problems of primary importance in any analysis of the validity of the epidemiological studies are the problems of determining whether an association is causal and the problems associated with statistical analysis. From a legal point of view, however, even if a causal association is established, can it ever be said with a reasonable medical certainty (i.e., more likely than not), that a particular person developed the disease from a factor in question?

McElveen & Eddie, 33 Clev. St. L. Rev. at 46-47.

In considering the benefits and disadvantages of epidemiological proof on the question of causation, courts have traditionally, exhibited reluctance to admit

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such proof into evidence.[27] See, e.g., Prudential Insurance Co. v. Gourley, 267 F.2d 156, 162-63 (5th Cir. 1959); Clark v. State Workmen's Compensation Commissioner, 155 W. Va. 726, 753, 187 S.E.2d 213, 217 (1972). The modern trend, however, is toward the admission of probabilistic evidence of causation. See, e.g., Kehm v. Proctor & Gamble Manufacturing Co., 724 F.2d 613, 617-20 (8th Cir. 1983); Punnet v. Carter, 621 F.2d 578, 586-87 (3d Cir. 1980); Wolf v. Proctor & Gamble Co., 555 F. Supp. 613, 624-26 (D.N.J. 1982); Oxendine, 506 A.2d at 1104-09; Sacred Heart Medical Center v. Department of Labor & Industries, 92 Wash. 2d 631, 637, 600 P.2d 1015, 1019 (1979).

This modern trend toward the acceptance of probabilistic evidence has carried over to the toxic tort context. See, e.g., Mertan v. E.R. Squibb & Sons, 141 Cal. App. 3d 511, 190 Cal. Rptr. 349, 352 (1983).[28] But see Szczepaniak v. United States, No. 80-990, slip op. at 6, (D. Mass. 1983) (rejecting epidemiological proof that plaintiff's transverse myelitis was causally related to the swine flu vaccine on the grounds that "bare statistics" do not have great probative value in establishing causation). For instance, in the context of workmen's compensation claims, Arizona courts have accepted epidemiological evidence that the deaths of uranium miners from lung cancer were directly and causally related to their exposure to radiation in uranium mines. State Compensation Fund v. Joe, 25 Ariz. App. 361, 543 P.2d 790 (1975); State Compensation Fund v. Yazzie, 25 Ariz. App. 89, 541 P.2d 415 (1975).

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[27] Certain commentators have noted that, despite these conceded limitations, courts should permit the use of epidemiological proof. They reason that the primary argument against the use of such evidence, the imprecision of probabilistic analysis, is unpersuasive considering that medical science is rarely precise and that courts have long accepted various forms of statistical evidence, such as mortality tables, to prove adjudicative facts. As Judge Weinstein noted in the "Agent Orange" litigation, epidemiological studies "constitute the best (if not the sole) available evidence in mass exposure cases . . . ." In re "Agent Orange" Product Liability Litigation, 597 F. Supp. at 834 (quoting Rosenberg, 97 Harv. L. Rev. at 856.).

[28] In denying hearing, the California Supreme Court ordered that the opinion of the Court of Appeals was not to be officially published.

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NOTES

In the context of toxic tort litigation, courts have recognized the potential advantages of epidemiological evidence. In Richardson, the District of Columbia Circuit Court of Appeals noted that "[w]hen [epidemiological] studies are available and relevant, and particularly when they are numerous and span a significant period of time, they assume a very important role in determinations of questions of causation." Richardson, 857 F.2d at 830. In the "Agent Orange" litigation, Judge Weinstein stated that such studies "assume a role of critical importance." "Agent Orange", 611 F. Supp. at 1239; accord Lynch, 646 F. Supp. at 863. In Allen v. United States, 588 F. Supp. 247, 416-19 (D. Utah 1984), rev'd on other grounds, 816 F.2d 1417 (10th Cir. 1987), cert. denied, 484 U.S. 1004 (1988), the court observed that mathematical or statistical evidence, when properly combined with other varieties of evidence, can supply a useful link in the process of proof.

Despite the increasing acceptance of epidemiological proof in certain contexts, Judge Weinstein has cautioned that epidemiological evidence is subject to abuse. Consequently, he noted that "particular care needs to be taken in examining the basis of the expert opinions proffered." In re "Agent Orange" Product Liability Litigation, 603 F. Supp. 239, 246 (E.D.N.Y. 1985), aff'd in part, dissm'd in part, 818 F.2d 194 (2d Cir. 1987) (hereinafter "Agent Orange").

In order to prevent such abuse, courts have engaged in detailed examinations of the foundational bases for the epidemiological studies offered as evidence of causation. In this regard, the court must determine not only whether the study at issue demonstrates a statistically significant relationship between the alleged causative agent and the outcome but also whether the study meets scientific criteria for reliability and validity. The threshold inquiry regarding reliability should limit judicial consideration to only those studies upon which reasonable experts in the field of epidemiology would rely. Cf. Robinson v. United States, 533 F. Supp. 320, 328 (E.D. Mich. 1982) (rejecting expert's theories derived from an epidemiological study because the scientific community did not accept them). In an administrative context, one court has accepted the findings of epidemiological studies that "were conducted using scientific methodologies, were performed by competent and highly regarded investigators, have been reported in recognized scientific journals after peer review, and have generally been accepted by experts in the field and the scientific community." National Commission on Egg Nutrition v. Federal Trade Commission,

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570 F.2d 157, 161 (7th Cir. 1977), cert. denied, 439 U.S. 821 (1978).

In toxic tort litigation, many epidemiological studies have been suppressed because of their potential prejudice and unreliability. In Emigh v. Consolidated Rail Corp., 710 F. Supp. 608 (W.D. Pa. 1989), the court held that epidemiological evidence was properly excluded from the trial because the studies in question were not conducted by the experts who testified. The court held that because these studies or their authors could not be cross-examined, it was not reliable evidence and prejudicial and therefore subject to exclusion under the Federal Rules of Evidence, Rules 403 and 703. Emigh, 710 F. Supp. at 612. Furthermore, several courts have excluded epidemiological evidence when it was not disclosed to the defendants during the discovery phase of the case. See Mauro, 116 N.J. at 126, 561 A.2d at 267; Emigh, 710 F. Supp. at 613. In Brock, the epidemiological study was also suppressed because the studies were not subjected to peer review. Brock, 874 F.2d at 313. The peer review requirement virtually mandates that epidemiological studies be published in scientific journals in order to be admissible.

Assuming that the epidemiological evidence satisfies the foundational prerequisites established by the court, there are many uses to which such evidence can be put. First, as previously discussed, an epidemiological study can be used as a foundational basis for particularistic expert opinion testimony regarding causation. It is not, however, a foundational prerequisite for such particularistic testimony. Ferebee, 736 F.2d at 1535. Second, it can be used to establish the risk aspect of the causation inquiry. Further, negative epidemiological studies have often been used to reject plaintiff's claim of causation. See, e.g., Gates v. United States, 707 F.2d 1141, 1146 (10th Cir. 1983) (per curiam) (swine flu); Cook v. United States, 545 F. Supp. 306, 315-16 (N.D. Cal. 1982) (swine flu); Migliorini v. United States, 521 F. Supp. 1210, 1218-19 (M.D. Fla. 1981) (swine flu); Johnston v. United States, 597 F. Supp. 374, 410 (D. Kan. 1984) (ionizing radiation); Lynch, 646 F. Supp. at 864 (Bendectin); "Agent Orange", 611 F. Supp. at 1231 (phenoxy herbicides). Still other courts have admitted epidemiological evidence "not as evidence of causation . . . but as an aid to understanding and evaluating the medical opinion of (the medical expert)." Lee v. A.C. & S. Co., 542 A.2d 352, 356 (Del. Sup. Ct. 1987). In Longoria v. McAllen Methodist Hospital, 771 S.W.2d 663, 665 (Tex. App. 1989), the court held that epidemiological probability of contracting AIDS from blood donated by high-risk donors was enough proof to

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avoid summary judgment on whether a hospital was negligent in not screening its blood supply prior to 1982.

In light of the potentially tremendous utility of epidemiological evidence, an issue has arisen regarding the need for plaintiff to present such evidence in order to establish causation. In choosing between the weak and strong versions of the preponderance standard, courts wrestled with the sufficiency of epidemiological studies in the absence of particularistic evidence regarding causation. This presents the opposite side of the coin the sufficiency of particularistic evidence in the absence of epidemiological studies.

Certain courts have concluded that epidemiological studies are required. See, e.g., Cook, 545 F. Supp. at 315-16; Heyman v. United States, 506 F. Supp. 1145, 1149 (S.D. Fla. 1981); see also Backes v. Valspar Corp., 783 F.2d 77, 80 (7th Cir. 1986).

The Fifth Circuit has recently held that epidemiological proof is a necessary, if not indispensable, element of a plaintiff's case in a toxic tort suit. Brock v. Merrill-Dow Pharmaceuticals, Inc., 874 F.2d 307, 313 (5th Cir. 1989), cert. denied, 494 U.S. 1046 (1990). The court stated that epidemiological proof is especially necessary "when the only other evidence is in the form of animal studies of questionable applicability to humans." In Brock, the jury found that Bendectin caused birth defects in a newborn infant. In presenting its case, the plaintiff presented testimony by "[s]ix highly qualified and experienced experts . . . that Bendectin is a human teratogen, i.e., capable of causing human birth defects. Three of them testified to the opinion that Bendectin was a cause of (the infant's) deformation." Brock v. Merrill-Dow Pharmaceuticals Inc., 884 F.2d 167, 168 (5th Cir. 1989) (Reavley, J. dissenting from denial of rehearing en banc). Despite plaintiff's expert testimony regarding causation, the majority of the Fifth Circuit held that the lack of conclusive epidemiological proof was fatal to plaintiff's case. Brock, 874 F.2d at 313. Furthermore, the majority held that the plaintiff's experts had not subjected their theories of causation to peer review and therefore their testimony was not sufficiently reliable to support a jury verdict. Id. A request for a rehearing en banc was made by plaintiff. This request was denied by a sharply divided panel. Six circuit judges dissented from the decision to deny the rehearing en banc and decried the requirement that only epidemiological studies can prove causal relation between Bendectin and birth defects.

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Brock, 884 F.2d at 168 (Reavley, J. dissenting from denial of rehearing en banc).

In the "Agent Orange" litigation, Judge Weinstein seems to suggest that both epidemiologic evidence that the probability of causation exceeds fifty percent in the exposed population and particularistic proof that the conduct complained of harmed plaintiff individually may be required for plaintiff to prevail. "Agent Orange", 611 F. Supp. at 1261-63. The court, however, noted that, in Ferebee, epidemiological studies were neither available nor required. In Ferebee, however, plaintiff presented technically competent and probative evidence by his treating physician regarding causation. "Agent Orange", 611 F. Supp. at 1262. Judge Weinstein's suggestion regarding the need for both probabilistic and particularistic proof must be confined to those cases in which epidemiological evidence is available. If such evidence is unavailable, courts do not have the luxury of waiting until the studies are completed. "Agent Orange", 597 F. Supp. at 782.

Most courts have concluded that epidemiological studies are not required. See, e.g., Wells, 788 F.2d at 745.

> It is proper to consider epidemiological studies in this kind of tort action, . . . but such evidence cannot be flatly required. It is appealing in an area overwhelmed by scientific uncertainty to latch onto a method which appears to dispel that uncertainty. If the use of epidemiological evidence does enhance the integrity of the fact-finding process, it will be helpful to all parties and if possible should be utilized. Like other forms of expert evidence, it is subject to abuse, however, and it should not be viewed as the magical cure for legal disputes.

Marder, 630 F. Supp. at 1094. The Marder court specifically noted two deficiencies in epidemiological studies: (1) a requirement for their presentation would handicap parties who lack the resources to sponsor studies; and (2) epidemiological data may simply be unavailable. Id. Toxic tort plaintiffs in Arizona, however, need not confront this issue because the Arizona Court of Appeals has held that "plaintiffs need not provide an existing scientific study showing a statistical correlation between the product and the injury to establish a causal relation in a products liability action." Baroldy, 157 Ariz. at 583, 760 P.2d at 583.

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The burden of establishing a causal link between the alleged toxic exposure and the manifestation of injury or illness is one of the most daunting obstacles facing the toxic tort plaintiff. The evidence that plaintiffs are likely to adduce on this issue are foreign to the judicial system and often involve issues on the edge of medical and scientific frontiers. Satisfaction of the causation burden of proof, however, is merely one of the obstacles with which toxic tort plaintiffs are confronted.

B. THE REQUIREMENT OF PRESENT PHYSICAL INJURY

Traditionally, the existence of a present physical injury allegedly attributable to defendant's conduct is prerequisite to any recovery in tort. Strict application of this requirement in the toxic tort context creates some difficulty because of the long latency period between exposure and manifestation. If a plaintiff is unable to sue until she has some demonstrable physical injury allegedly attributable to the claimed exposure, she may be unable to establish her claim on account of the inability to locate pertinent documents or witnesses. Even if able to marshall the necessary evidence, plaintiff will certainly encounter arguments that her disease is attributable to factors other than her temporally remote exposure.

The court applied the traditional requirement of physical harm in Payton v. Abbott Labs, 386 Mass. 540, 437 N.E.2d 171 (1982). There the Supreme Judicial Court of Massachusetts held that plaintiffs, whose mothers had taken the prescription drug diethylstilbestrol (DES) while pregnant, could not recover on a negligence theory in the absence of a physical harm. According to the court, the plaintiff's physical harm "must be manifested by objective symptomatology and substantiated by expert medical testimony." Payton, 437 N.E.2d at 181.

In Bradley v. American Smelting & Refining Co., 635 F. Supp. 1154 (W.D. Wash. 1986), plaintiff alleged emotional distress from the deposit of arsenic and cadmium particles on their land from the defendant's copper smelter. The court held that plaintiff's nuisance claim was compensable only if manifested by physical symptoms or if accompanied by an actual or threatened invasion of the plaintiff's person. Plaintiff, however, could not prove that the particles caused any injury or physical discomfort, or even any actual health risk, though the particles were present in the soil on his property in higher quantities than normal. The court granted defendant's motion for summary judgment, stating: "It is also clear that there has been no invasion or threatened invasion of

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plaintiff's security because, as the court has determined, the evidence indicates no health risk." Bradley, 635 F. Supp. at 1158.

Similarly, the physical harm requirement has led several courts to dismiss claims by wives of asbestos workers based on their alleged exposure to asbestos particles on their husbands' workclothes. See, e.g., Deleski v. Raymark Ind., Inc., 819 F.2d 377 (3d Cir. 1987); Wisnieski v. Johns-Manville Corp., 759 F.2d 271 (3d Cir. 1985); Cathcart v. Keene Industrial Insulation, 324 Pa. Super. 123, 471 A.2d 493 (1984).

In Cathcart, a Pennsylvania court affirmed a summary judgment order dismissing plaintiff's claim because she had demonstrated no physical manifestation of disease whatsoever. The court held that "until Thelma Cathcart is able to allege some physical injury or some medically-identifiable effect linked to her exposure to asbestos particles, her claim for negligent infliction of emotional distress is not legally cognizable." Cathcart, 471 A.2d at 508.

In Sypert v. United States, 559 F. Supp. 546 (D.D.C. 1983), a case involving a claim under the Federal Tort Claims Act by a prisoner who was exposed to the active tuberculosis virus of a fellow inmate, the court strictly applied the requirement of a present physical harm. Following exposure, plaintiff was given a tuberculosis skin test which confirmed the presence of tubercule bacilli in his body. He was not, however, suffering from any symptoms associated with tuberculosis. The court granted the defendant's motion for summary judgment on the grounds that plaintiff failed to demonstrate the requisite measurable physical injury. Sypert, 559 F. Supp. at 548.

In contrast, some courts have held that the existing physical injury requirement is met so long as there has been a demonstrable change in plaintiff's body. Like Sypert, supra, Plummer v. United States, 580 F.2d 72 (3d Cir. 1978), involved an action under the Federal Tort Claims Act by prisoners who had been exposed to the active tuberculosis of fellow inmates. The Court of Appeals for the Third Circuit, unlike the Sypert court, held that the infection of the plaintiffs' body with tubercule bacilli, corroborated by a skin test, constituted a "sufficient physical nexus to allow compensation for the mental affliction of the plaintiffs." Plummer, 580 F.2d at 76. The court noted:

> Here, the physical effects of the exposure of the plaintiffs to the tuberculosis infection were corroborated by the results

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> of a scientifically recognized skin test. And the effects of a concededly minute tubercule bacillus are potentially no less lethal than, for example, the impact of an automobile.

Id.

In McAdams v. Eli Lilly and Co., 638 F. Supp. 1173 (N.D. Ill. 1986), the court found medically demonstrable physical changes sufficient to support a cause of action. In that case, plaintiff sought damages for mental distress as a result of her in utero exposure to DES. A medical expert diagnosed a "premalignant disease," adenosis, based on anatomical deformities in the plaintiff's reproductive system caused by her exposure to DES. The court held that the expert's testimony was sufficient evidence of a physical injury. McAdams, 638 F. Supp. at 1178.

Some courts have gone so far as to hold damage to plaintiff's immune system is sufficient evidence of physical harm. In Anderson v. W. R. Grace & Co., 628 F. Supp. 1219 (D. Mass. 1986), plaintiff had consumed water allegedly contaminated by trichlorethylene (TCE) and tetrachlorethylene (TCA). The court, applying Massachusetts law, held that sufficient evidence of physical harm was established by expert testimony regarding damage to plaintiff's immune system. The plaintiffs, however, had also experienced other symptoms that were secondary to the alleged damage to the immune system, i.e., headaches, nosebleeds and respiratory infections. Anderson, 628 F. Supp. at 1226-27.

There is also authority for the proposition that the ingestion of a toxic substance is a sufficient physical harm for purposes of bringing a cause of action. Hagerty v. L & L Marine Services, Inc., 788 F.2d 315 (5th Cir. 1986). In Hagerty, a seaman who was drenched with dripolene, a chemical containing benzene, toluene and xyolene, brought a cause of action under the Jones Act to recover for his fear of developing cancer. The day after the incident, plaintiff suffered a brief period of dizziness and leg cramps, and felt a stinging sensation in his extremities. The Court of Appeals for the Fifth Circuit found these transitory symptoms sufficient to allow plaintiff to recover damages for his fear of developing cancer in the future.

> With or without physical injury or impact, a plaintiff is entitled to distress arising from fear of developing cancer where his fear is reasonable and causally related to the defendant's negligence. The

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> circumstances surrounding the fear-inducing occurrence may themselves supply sufficient indicia of genuineness. It is for the jury to decide questions such as the existence, severity and reasonableness of the fear.

Hagerty, 788 F.2d at 318.

In Stites v. Sundstrand Heat Transfer, Inc., 660 F. Supp. 1516 (W.D. Mich. 1987), the court, citing to Hagerty, refused to dismiss fear of cancer claims asserted by plaintiffs who had ingested TCE in their drinking water. Likewise, in Laxton v. Orkin Exterminating Co., 639 S.W.2d 431 (Tenn. 1982), the Tennessee Supreme Court ruled that the ingestion of water contaminated by chlordane, a possible carcinogen, was a sufficient injury to support a fear of cancer claim. Laxton, 639 S.W.2d at 434.

In response to the exigencies of toxic tort claims, certain courts have relaxed the traditional rule under which a presently manifest physical injury is prerequisite to tort recovery. While the relaxation of this rule resolves one problem confronting toxic tort plaintiffs, it raises other problems regarding the so-called "single cause of action" rule.

C. SINGLE CAUSE OF ACTION RULE

According to the Restatement (Second) of Torts, "one injured by the tort of another is entitled to recover damages from the other for all harm, past, present and prospective, legally caused by the tort." Restatement (Second) of Torts § 910 (1977). Comment d further provides:

> If an injured person fails to include in a suit all the elements of harm for which he could have obtained damages and obtains a judgment based only upon some of them, he is ordinarily not entitled to maintain a later action for the remaining elements of harm.

Id. at comment d. Most courts adhere to the Restatement rule, sometimes termed the single controversy rule, that a victim can bring only one cause of action for recovery of all damages resulting from a single wrongful act. This rule may force the toxic tort victim to wait until a disease manifests itself to sue for the harm of the

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disease if he has no present physical injury,[29] or if he has a present injury, to sue for all injuries within one cause of action.

The case of Gideon v. Johns-Manville Sales Corp., 761 F.2d 1129 (5th Cir. 1985), illustrates this point. The plaintiff in Gideon alleged that he was presently suffering from asbestosis and was likely to develop cancer in the future. The court, applying Texas law which required future damages to be proved beyond a preponderance of the evidence, permitted damages for future cancer because the plaintiff was able to establish that they were in fact reasonably certain to occur. Gideon, 761 F.2d at 1137-1138. In so holding, the court made the following comments regarding the single cause of action rule:

> [The plaintiff] has but one cause of action for all the damages caused by the defendant's legal wrong; the diseases that have developed and will in probability develop are included within this cause of action, for they are but part of the sequence of harms resulting from the alleged breach of legal duty. [The plaintiff] could not split his cause of action and recover damages for asbestosis, then later sue for damages caused by such other pulmonary disease as might develop, then still later sue for cancer should cancer appear.

Id. at 1137.

As the preceding passage illustrates, if plaintiff, for example, fails to prove beyond a mere probability the likelihood of developing cancer in the future, a future action is precluded even though the plaintiff actually develops cancer at some later date. In recognition of the harsh results that occur when the single controversy rule and the statute of limitations are applied to latent diseases in toxic tort cases, several courts have created exceptions to the single cause of action rule. See, e.g., Ayers v. Township of

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[29] There is an obvious tension between the single controversy rule and the statute of limitations. A person exposed to asbestos in year one, who is diagnosed as having scarring of the lungs in year five, who develops mesothelioma in year twenty-five and who delays bringing suit until the diagnosis of the mesothelioma will certainly confront the argument that his claims for personal injuries are barred by the statute of limitations.

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Jackson, 106 N.J. 557, 597, 525 A.2d 287, 307 (N.J. 1987); Eagle-Picher Indus. v. Cox, 481 So. 2d 517, 524-25 (Fla. Dist. Ct. App. 1985); Jackson v. Johns-Manville Sales Corp., 727 F.2d 506, 522 (5th Cir. 1984).

In Eagle-Picher, plaintiff sought to recover for asbestosis, fear of cancer, and negligent infliction of emotional distress all allegedly suffered as a result of exposure to asbestos products. The court held that plaintiff could recover for his emotional distress suffered as a result of his fear of developing cancer. The court further held, however, that plaintiff could not recover damages for the risk of cancer as a result of exposure to asbestos. Eagle-Picher, 481 So. 2d at 519.

In so holding, the court conducted a balancing test between the traditional justification relating to finality versus the equitable justification raised in toxic tort cases of compensating the injured plaintiff who actually develops a disease. The court held that "[t]he desirable goal of finality is not an absolute and . . . the procedural rule against splitting causes of action must be relaxed when equitable considerations demand it." Id. at 521. The court reasoned that equity dictated that plaintiff be able to redress the development of cancer in the future, and that the single cause of action rule should not bar such future action merely because plaintiff had already sought redress for the fear associated with developing cancer. Id. at 524-25.

In Ayers v. Township of Jackson, 106 N.J. 557, 525 A.2d 287 (N.J. 1987), toxic pollutants leached into the local aquifer from a city landfill and contaminated adjacent property owners' well water. The property owners brought a nuisance action, seeking damages for emotional distress, deterioration of their quality of life, medical surveillance and their increased risk of developing disease. In reviewing the appellate court's dismissal of the increased risk of disease claim, the New Jersey Supreme Court viewed its task as one of balancing the policy considerations of recognizing a cause of action for unquantified risk claims and recognizing a separate cause of action in the future, arising if and when the disease manifested itself. Ayers, 106 N.J. at 570, 525 A.2d at 300.

The court noted that if it recognized an action for an unquantified increased risk of disease it would expose the tort system to a flood of claims based on threats of injuries that might never occur. On the other hand, the court noted that dismissal of the increased risk claims would effectively preclude

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recovery for injuries caused by toxic exposure, in light of the traditional single cause of action rule. Id. at 597, 525 A.2d at 307.

The Ayers court, appreciating the problem associated with applying the single cause of action rule in delayed manifestation cases, held that "neither the statute of limitations nor the single controversy rule should bar timely causes of action in toxic-tort cases instituted after discovery of a disease or injury related to tortious conduct, although there has been prior litigation between the parties of different claims based on the same tortious conduct." Id.

Similarly in Arizona, the single controversy rule has been abandoned in the context of toxic torts, for the rule announced in Ayers. See Burns v. Jaquays Mining Corporation, 156 Ariz. 375, 378, 752 P.2d 28, 31 (Ct. App. 1987) ("We agree with the New Jersey Supreme Court in Ayers v. Township of Jackson [citation omitted] that neither the single controversy rule, nor the statute of limitations will preclude a timely filed cause of action for damages prompted by the future discovery of a disease or injury related to the exposure to a toxic substance, even though there has been prior litigation between the parties on different claims based on the same tortious conduct.").

D. STATUTES OF LIMITATIONS

A statute of limitations requires plaintiffs to commence suit within a certain period of time after their claims arise. If plaintiffs fail to bring suit within the allotted amount of time, their claims are barred. The creation of a statute of limitations reflects the legislative determination that a particular claim should be viable only for a limited time and stems from the idea of repose. After a certain time, a potential defendant should be free from the threat of suit being brought against him. See United States v. Kubrick, 444 U.S. 111, 117 (1979).

In Arizona, the periods within which plaintiffs must commence suit on various types of claims are set forth by statute. A claim based upon any form of statutory liability must be commenced within one year of the date that the claim accrued. Ariz. Rev. Stat. § 12-541.3. Actions for injuries done to the person of another must be commenced within two years after the claim arises. Ariz. Rev. Stat. § 12-542.1. The same period of limitations applies to claims for trespass for injury done to the estate or the property of another. Ariz. Rev. Stat. § 12-541.3. Claims for fraud must be

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brought within three years of their accrual.[30] Ariz. Rev. Stat. § 12-543.3. Unless based upon a claim of negligence or breach of an express warranty, no product liability action may be commenced and prosecuted if the claim accrues more than twelve years after the product was first sold for use or consumption.[31] Ariz. Rev. Stat. § 12-551. If the plaintiff is a minor or is "of unsound mind" when the claim accrues, the period of limitations will not commence until the plaintiff turns eighteen or regains his sanity. Ariz. Rev. Stat. § 12-502.A.

The critical question is when a particular claim will be deemed to have accrued. Traditionally, the statute of limitations began to run on a claim at the time of defendant's tortious act. Where the act and the injury coincide temporally, the legislative policy of repose could be carried out without nullifying valid claims.

In the toxic tort context, however, it is extremely unlikely that the injuries allegedly attributable to toxic exposure will occur within a statutory period that runs from the time that defendants engaged in the conduct giving rise to their liability. It often takes many years before the toxic substances migrate from their point of origin to a location where exposure can take place. Moreover, many of the injuries associated with exposure to toxic substances, most particularly cancer, have long latency periods, and the symptoms of the disease may not manifest themselves until years or even decades following the exposure. Additionally, even after developing a particular injury allegedly attributable to a toxic exposure, plaintiff

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[30] Although fraud claims are subject to a three-year period of limitations, claims for negligent misrepresentation must be commenced within two years of accrual. See Tucson Electric Power Co. v. Westinghouse Electric Corp., 597 F. Supp. 1102, 1106 (D. Ariz. 1984).

[31] A product liability action is statutorily defined as "any action brought against a manufacturer or seller of a product for damages for bodily injury, death or property damage caused by or resulting from the manufacture, construction, design, formula, installation, preparation, assembly, testing, packaging, labeling, sale, use or consumption of any product, the failure to warn or protect against a danger or hazard in the use or misuse of the product or the failure to provide proper instructions for the use or consumption of any product." Ariz. Rev. Stat. § 12-681.3.

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may, despite diligent efforts, remain ignorant of his toxic exposure or the relationship of his exposure to his injuries or both.

Because of the long latency period typical of illnesses caused by toxic substances, victims often discover their injury and the existence of a cause of action long after the expiration of the applicable statute of limitations, where the limitations period is calculated from the date of the exposure. Hence, statutes that are deemed to commence when the harmful event occurs are patently unfair to toxic claimants. Such statutes can bar an entire class of plaintiffs from relief. See Note, The Fairness and Constitutionality of Statutes of Limitations for Toxic Tort Suits, 96 Harv. L. Rev. 1683 (1984). The vast majority of jurisdictions have remedied this problem by adopting a version of the so-called "discovery rule," under which the limitations period begins to run when the plaintiff discovers, or should have discovered, the injury, as opposed to when the exposure actually took place. See, e.g., Ayers v. Township of Jackson, 106 N.J. 557, 569-70, 525 A.2d 287, 299-300 (N.J. 1987).

This discovery rule is designed to lessen the harsh results dictated by the statute of limitations bar. In Ayers, although the statute of limitations defense was not raised as an issue by defendants, the court nonetheless addressed the issue in dicta:

> [I]t is appropriate that all of the parties in interest understand that neither the single controversy doctrine nor the statute of limitations [citation omitted] will preclude a timely-filed cause of action for damages prompted by the future "discovery" of a disease or injury related to the tortious conduct at issue in this litigation. The bar of the statute of limitations is avoided because, under New Jersey's discovery rule, the cause of action does not accrue until the victim is aware of the injury or disease and of the facts indicating that a third party is or may be responsible.

Ayers, 106 N.J. at 570, 525 A.2d at 300.

Arizona courts have similarly adopted the discovery rule. The Arizona version of the discovery rule is identical to the New Jersey rule cited in Ayers: An action accrues when the plaintiff knew or by the exercise of reasonable diligence should have known that the injury existed and by whom the injury was caused.

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See, e.g., Anson v. American Motors Corp., 155 Ariz. 420, 422, 747 P.2d 581, 583 (Ct. App. 1987) (a cause of action does not accrue until plaintiff discovers or by the exercise of reasonable diligence should have discovered that he or she has been injured by the defendant's negligent conduct); Lawhon v. L.B.J. Institutional Supply, 159 Ariz. 179, 182, 765 P.2d 1003, 1006 (Ct. App. 1988)(the cause of action does not accrue until plaintiff knows or should have known of both the what and who elements of causation).

In Lawhon, plaintiffs brought a wrongful death action alleging that decedent had suffered a fatal reaction to a chemical agent used by a restaurant to keep food fresh. The trial court granted a motion for summary judgment in favor of defendants based upon the expiration of the applicable statute of limitations. Plaintiffs appealed, and the appellate court reversed, holding that there were sufficient questions of fact as to whether plaintiffs knew or, with the exercise of reasonable diligence, should have known the identity of the alleged distributor and manufacturer of the chemical agent in question.

The court began its analysis by examining the contours of the discovery rule in Arizona from its inception. According to the court, the rule was initially formulated in Mayer v. Good Samaritan Hospital, 14 Ariz. App. 248, 252, 482 P.2d 497, 501 (Ct. App. 1971), where the court held that "a cause of action . . . accrues when the plaintiff knew or by the exercise of reasonable diligence should have known of the defendant's conduct." Quoting from Anson v. American Motors Corp., 155 Ariz. 420, 423, 747 P.2d 581, 584 (Ct. App. 1987), the court then set forth the current interpretation of the rule: "[A] cause of action does not 'accrue' until a plaintiff discovers or by the exercise of reasonable diligence should have discovered that he or she has been injured by the defendant's negligent conduct." Lawhon, 159 Ariz. at 181, 765 P.2d at 1005.

The court reasoned that a fair interpretation of the rule as set forth in Anson was that an action would not accrue until the identity of the defendant was known. The court then noted, however, that there were no Arizona cases which directly considered the importance of a plaintiff's knowledge of the defendant's identity. Id. Accordingly, the court examined the discovery rule as applied in other jurisdictions. The court focused on several courts' analyses of United States v. Kubrick, 444 U.S. 111 (1979). Each of the cases analyzed reached the conclusion that ignorance of the who element of causation should, like ignorance of

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the what element of causation, postpone accrual of a cause of action. Lawhon, 159 Ariz. at 182, 765 P.2d at 1006 (citing Barrett v. United States, 689 F.2d 324, 330 (2d Cir. 1982) and Liuzzo v. United States, 485 F. Supp. 1274, 1281 (E.D. Mich. 1980)).

Based upon these interpretations of Kubrick, the court held that "a cause of action accrues when the plaintiff discovers or by the exercise of reasonable diligence should have discovered that he or she has been injured and by a particular defendant's negligent conduct. The cause of action does not accrue until the plaintiff knows or should have known of both the what and who elements of causation." Id. at 183, 765 P.2d at 1007. Although there are no cases subsequent to Lawhon discussing the discovery rule in a context where the identity of the defendant was an issue, the language of Lawhon is clear, and there is no reason to believe that an Arizona court would depart from this interpretation.

One of the more difficult questions presented in applying the discovery rule in a toxic tort context, and one that has yet to be addressed in an Arizona opinion, is the requisite state of knowledge that a plaintiff must possess in order to trigger the running of the applicable statute of limitations.

In Vispisiano v. Ashland Chemical Co., 107 N.J. 416, 527 A.2d 66 (1987), plaintiff brought a toxic tort action against suppliers, processors, manufacturers, and distributors of toxic waste materials seeking to recover damages for medical complications and bodily injuries resulting from his exposure to toxic chemical wastes during his employment at a toxic-waste disposal site. Plaintiff filed his complaint almost four years after the final date of his employment. Plaintiff's complaint against defendants was dismissed at the trial court level on the grounds that it had been filed beyond the time allowed by the applicable two year statute of limitations. The appellate court affirmed this decision, and the Supreme Court of New Jersey reversed.

Plaintiff's exposure to the offending chemical materials occurred during his employment with Chemical Control Corporation from October 1977 to April 1978. Prior to his employment, plaintiff suffered from and was treated for migraine headaches as a result of an automobile accident. During his employment, plaintiff began to experience swelling in various parts of his body, and to break out in rashes. Therefore, in March of 1978, he consulted an internist for treatment and diagnosis of his symptoms. The physician was unable to pinpoint the cause of plaintiff's symptoms, but she

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considered plaintiff's recent marriage and new occupational responsibilities as possible causative factors. Id. at 418, 527 A.2d at 68. In March 1978, plaintiff was rushed to a local emergency room, suffering from severe migraine headaches, where he underwent several tests and was eventually admitted. When plaintiff was discharged, his diagnosis was vascular headaches of "undetermined etiology." In June of 1978, after plaintiff had terminated his employment with Chemical Control Corporation, he received a follow-up examination in which the physician noted that the headaches had subsided, and concluded that "I do not believe this patient has any significant health problems." Id. at 419, 527 A.2d at 69.

Thereafter, sometime between February and March of 1980, plaintiff visited a former Chemical Control employee and friend, who was hospitalized for symptoms similar to those of plaintiff. During the visit, both raised the possibility that the symptoms might have been caused by the chemicals to which they were exposed at work. Plaintiff testified, however, that his doctors rejected this theory. As such, plaintiff concluded that the source of his symptoms was probably food, detergent, soap, or "men's problems." Id. Subsequently, plaintiff sought the treatment of an allergist in May of 1981. Working in conjunct with another physician, it was not until August 1982 that the allergist diagnosed the source of plaintiff's condition as toxic chemical exposure. Id. at 420, 527 A.2d at 70.

In analyzing when plaintiff's cause of action accrued, the Supreme Court of New Jersey emphasized the difficulty associated with discovering an injury and its causative agent in a toxic tort setting:

> '[M]any diseases which are induced by or aggravated by exposure to toxic substances are similar to diseases which are not related to that particular toxic exposure.' These diseases tend to express themselves in the same manner regardless of the precipitating agent, and it is rare that diagnosis of the disease in a particular individual will unequivocally indicate either the causative agent or the source of that agent. In a standard accident tort action, the injury, its cause, and its origin are easy to identify. In the toxic tort arena, the medically diagnosed injury is the first in a series of difficult facts to discover and allege. The latency period associated with many toxic substance

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> diseases is a major hurdle in the causation chain.

Id. at 423, 527 A.2d at 73. In determining when plaintiff knew or should have known of the causal relationship between his condition and his exposure to chemicals, the court examined discrete time frames. The court expressly disagreed with the standard applied by the trial court and adopted by the appellate court which tied accrual of a cause of action to the time a plaintiff's "suspicions" are "aroused." Id. at 425, 527 A.2d at 75.

In reaching the conclusion that the statute of limitations did not begin to run until August of 1982, the court stated that suspicion should not be taken as the touchstone for determining whether a plaintiff's cause of action accrues. Rather, the court held "that before a toxic-tort-case plaintiff may be deemed, in a 'discovery rule' context, to have the requisite state of knowledge that would trigger the running of the statute of limitations his impression of the nature of the injury and of its cause must have some reasonable medical support."[32] Id. at 427, 527 A.2d at 77 (emphasis added). In so holding, the court determined that it was not unreasonable for plaintiff to have relied upon the opinions of his doctors concerning the unlikely nexus between his symptoms and chemical exposure. Id.

Although the Vispisiano court required reasonable medical support, other courts have held that this does not entitle the plaintiff to merely sit on his rights until medical support comes to him. Rather, plaintiff will have an affirmative duty to inquire and investigate as to the cause and treatment of his symptom(s). Cornell v. E.I. Du Pont, 841 F.2d 23 (1st Cir. 1988).

In Cornell, plaintiff, a paint worker, brought a products liability action for damages allegedly associated with his exposure to polyurethane paint. The First Circuit affirmed the trial court's grant of summary judgment against plaintiff on the grounds that the applicable statute of limitations had run.

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[32] See also Graves v. Church & Dwight Co., Inc., 115 N.J. 256, 558 A.2d 463 (1989), where the Supreme Court of New Jersey affirmed the appellate court's extension of the Vispisiano holding to a case involving instantaneous traumatic injury. The case emphasizes the importance of medical corroboration in the process of accumulating sufficient information and facts to trigger the running of the statute of limitations.

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Plaintiff worked as a spray painter where from 1980 to 1982 he used polyurethane paint. In early 1980, within a few months after he began to use polyurethane, plaintiff began to experience flu-like symptoms. His symptoms included coughing up paint, difficulty breathing and chest pains. These symptoms persisted and in fact became more acute over the period plaintiff was exposed to the polyurethane. In June of 1981, plaintiff sought treatment for his condition. After a series of tests he was diagnosed as suffering from chronic obstructive lung disease which was exacerbated by exposure to polyurethane paints. Id. at 24.

Plaintiff commenced his personal injury action two and one half years after his condition was diagnosed by medical specialists in June of 1981. The First Circuit concluded that the level of notice required to start the statute of limitations running is "likely cause." Thus once on notice of facts sufficient that he reasonably should have known that his injuries were likely caused by the defendant's conduct, the statute of limitations began to run. The First Circuit affirmed the trial court's holding that plaintiff's claims were barred by the statute of limitations because plaintiff knew or reasonably should have known that his symptoms were likely caused by his use and exposure to polyurethane paint prior to June of 1981. In so holding, the court focused on the fact that plaintiff had a duty when he first began coughing up paint in early 1980 to investigate his condition by seeking advise from the medical field. Id. at 24. Because plaintiff neglected this duty for almost one and one half years, he would not be afforded the protection of the discovery rule.

Other courts have required the same or similar level of due inquiry and/or investigation. In Jolly v. Eli Lilly & Co., 245 Cal. Rptr. 658, 751 P.2d 923 (1988), a daughter of a user of diethylstilbestrol (DES) brought an action against the drug manufacturers seeking to recover for injuries allegedly sustained from her mother's ingestion of DES. In 1972 plaintiff learned that while in utero her mother had ingested the synthetic drug DES for the prevention of miscarriage. Plaintiff was told at that time that daughters could suffer injuries. Accordingly, she went to a DES clinic, where she was diagnosed as having adenosis, a precancerous condition that required careful monitoring. In 1978, plaintiff underwent a complete hysterectomy and a partial vaginectomy in order to remove a malignancy. Id. at 660, 751 P.2d at 925.

As of 1978, plaintiff was aware of the pendency of one or more DES suits alleging that DES manufacturers were liable to those injured due to their failure to

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test or failure to warn. Plaintiff, however, believed that she had no cause of action if she could not identify the particular manufacturer of the drug her mother took during pregnancy. Because her efforts to identify that manufacturer were unsuccessful, plaintiff did not file suit. It was not until one year after Sindell v. Abbott Laboratories, 163 Cal. Rptr. 132, 607 P.2d 924 (1980), was decided, which held that if a plaintiff could not identify the precise drug manufacturer of the ingested DES, she could state a cause of action against DES manufacturers of a substantial percentage of the market share of the drug, that plaintiff filed suit. Id.

The Supreme Court of California held that the limitations period begins to run once plaintiff has notice or information of circumstances to put a reasonable person on inquiry. The court stated:

> A plaintiff need not be aware of the specific "facts" necessary to establish the claim; that is a process contemplated by pretrial discovery. Once the plaintiff has a suspicion of wrongdoing, and therefore an incentive to sue, she must decide whether to file suit or sit on her rights. So long as a suspicion exists, it is clear that the plaintiff must go find the facts; she cannot wait for the facts to find her.

Id. at 662, 751 P.2d at 927-28 (emphasis added). Accordingly, the court concluded that plaintiff's cause of action began to run in 1978, and was therefore, time-barred in 1981. Id. at 664, 751 P.2d at 930.

In Grimm v. Ford Motor Co., 157 Mich. App. 633, 403 N.W.2d 482 (Mich. App. 1986), a wrongful death action was brought against manufacturers of polyvinyl chloride which allegedly caused breast cancer. The court held that once plaintiff has a suspicion that the injury is related to defendant's conduct, he has a duty to investigate the possible connection: "The discovery rule does not mean that a cause of action is held in abeyance indefinitely until plaintiff obtains professional assistance to determine the existence of a cause of action. [citation omitted] A plaintiff must act diligently in discovering his cause of action and cannot simply sit back and wait for others to inform him of his possible claim. Id. at 636, 403 N.W.2d at 485 (emphasis added).

Other courts have held, contrary to Vispisiano, supra, that despite plaintiff's due diligence to find authority to corroborate the suggested causation or to

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support legal liability, plaintiff may still be held to have sufficient knowledge for purposes of triggering the statute of limitations. In Kay v. Johnson & Johnson, 722 F. Supp. 874 (D. Mass. 1989), aff'd, 902 F.2d 1 (1st Cir. 1990), plaintiff brought a cause of action against the manufacturer and distributor of an oral contraceptive, claiming that the use of the contraceptive caused hyperpigmentation. In that case, plaintiff began experiencing a darkening of her skin within a few months after using the contraceptive. As such, plaintiff brought her condition to the attention of an internist who determined that the contraceptive was a likely possible cause of her problem. Plaintiff was thereafter instructed to not use the contraceptive. Id. at 875. Despite not using the contraceptive, however, plaintiff's condition did not recede. Plaintiff returned to the internist who then discarded the theory that the contraceptive was the cause of her progressive pigmentation. Id. at 876. During the years that followed, plaintiff was evaluated extensively by numerous physicians, all of whom were unable to diagnose her condition. It was not until some years thereafter that plaintiff's condition was again attributed to use of the contraceptive. Id. at 877.

In granting defendants' motion for summary judgment by holding that plaintiff's cause of action was time barred, the court acknowledged that a cause of action ordinarily accrues when plaintiff is on notice of a likely, rather than definite, cause of his injury. And a potential plaintiff with knowledge of the likely cause of his injury has a duty to seek legal as well as medical advice, within the period of limitations. Similarly, the mere fact that a potential plaintiff has not developed all of the evidence necessary to prove his or her case does not prevent the period of limitations from beginning or toll its expiration. Id. at 880.

Notwithstanding the fact that plaintiff's physicians retreated from their initial opinion that plaintiff's use of the contraceptive was the source of her malady, the court still held that plaintiff's cause of action accrued when she initially was told of the possible causal link. In so holding, the court reasoned that:

> Where a plaintiff . . . is unable despite due diligence to find authority to corroborate the suggested causation or to support legal liability, his claim may simply be inherently weak. In that case, there is no reason why the statute should not run. The plaintiff's failure to marshal support despite diligence may mean, however,

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> that he has received poor medical, scientific or legal advice. The result is unfortunate but is also not a reason why the statute should not run; the same pitfall faces all plaintiffs, not just those whose causes of action are inherently difficult to discover.

Id. at 881 (quoting Fidler v. Eastman Kodak Co., 714 F.2d 192, 200 (1st Cir. 1983)).

The court also addressed the argument raised by plaintiff that in certain cases in which the cause of a condition is unknowable until there is a scientific breakthrough, the action does not accrue until that breakthrough occurs. The court acknowledged the applicability of this theory in the limited circumstance where the cause of a condition is absolutely unknowable. The court held, however, that this theory was not applicable to plaintiff, as medical information existed to link plaintiff's condition to the contraceptive and that plaintiff's physicians merely did not rely on or did not locate such information. Id. at 883.

Although no Arizona case has addressed the requisite state of knowledge a plaintiff must possess to trigger the running of the applicable statute of limitations, an Arizona court would not likely depart from the reasoning advanced in the above case law. That case law dictates that once plaintiff has notice of facts that would put a reasonable person on notice that his injury was likely caused by the defendant's conduct, the applicable statute of limitations will begin to run. Once plaintiff suspects that his injury is related to defendant's conduct, plaintiff will have an affirmative duty to investigate his condition by, among other things, seeking advice from the medical and legal fields. Even if plaintiff's suspicions are not corroborated medically and/or legally, plaintiff may still have the requisite state of knowledge to trigger the running of the statute of limitations. Moreover, if plaintiff delays investigation and sits on his potential rights, he will be in breach of his affirmative duty and will therefore not be afforded the protection of the discovery rule.

IV. NOVEL DAMAGE THEORIES

Confronted with the foregoing obstacles, enterprising plaintiffs' counsel have developed new theories of damage. These theories include claims that: (1) exposure to the substance in question has caused plaintiffs reasonably to fear the future onset of disease and such fear is compensable; (2) exposure to

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the substance in question has increased the likelihood that plaintiffs will contract disease in the future and such increased risk is compensable; (3) exposure to the substance in question has necessitated lifetime medical surveillance for plaintiffs and defendants responsible for the exposure should bear this cost; (4) exposure to the substance in question has diminished the quality of plaintiffs' lives and such diminution is compensable; and (5) exposure to the substance in question has irreparably injured plaintiffs' immune systems, rendering them more susceptible to a wide panoply of maladies. Under these theories, proof of individual causation and manifest personal injuries are deemphasized, if not disregarded completely. These claims will be discussed seriatim.

A. INCREASED RISK OF FUTURE ILLNESS

The premise of an increased risk of future illness claim is that a plaintiff exposed to a toxic substance will be at an increased risk of succumbing to certain injuries in the future and should be compensated for that risk. Judicial recognition of this type of claim would greatly simplify the causation analysis. Specifically, it would relieve plaintiff of the burden to satisfy the occurrence prong of the inquiry. Plaintiff would be entitled to recover so long as he could establish, through epidemiological studies or otherwise, that defendant's conduct placed him at an increased risk of contracting disease. Recovery, however, is based on the likelihood of contracting disease, not the full panoply of damages that would be recoverable were the disease actually to manifest itself.

The key issue presented by such a claim is whether recovery is appropriate where an injury is not certain to materialize. Plaintiffs have argued that victims of toxic exposure should be compensated for any increased risk, and should not be precluded from recovery because science is unable to quantify the precise nature of the risk. Courts have, however, noted in criticism that increased risk claims provide a means by which damages may be awarded for a future disability that may never materialize. See Sterling v. Velsicol Chemical Corp., 855 F.2d 1188, 1204 (6th Cir. 1988). It has also been argued that by awarding damages prior to injury to those who may contract the illness, the courts will deplete resources that could be used to compensate those persons who actually contract the illness. See Eagle-Picher Indus. Inc. v. Cox, 481 So. 2d 517, 524-25 (Fla. App. 1985). This creates a significant potential for inequity.

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> To award damages based on a mere mathematical probability would significantly undercompensate those who actually do develop cancer and would be a windfall to those who do not.

Anderson v. W.R. Grace & Co., 628 F. Supp. 1219, 1232 (D. Mass. 1986); accord Note, 33 Vill. L. Rev. at 460-61. Courts have additionally focused on the fact that inequitable awards are likely to result, as the nature and the extent of any future injury cannot be accurately assessed. See Eagle-Picher Indus. Inc. v. Cox, 481 So.2d 517, 521 (Fla. App. 1985).

As a result of these concerns, many courts have placed onerous burdens on plaintiffs seeking damages for such claims. Courts generally require plaintiff to submit evidence demonstrating that the disease will be more likely than not to arise in the future. This requirement is derived from the standard applicable to claims for the future consequences of a presently manifest injury.[33] The traditional American Rule, adopted in the District of Columbia, is that recovery of damages based on future consequences may be had only if such consequences are "reasonably certain." Wilson v. Johns-Manville Sales Corp., 684 F.2d 111, 119 (D.C. Cir. 1982). Recovery of damages for speculative or conjectural future consequences is not permitted. To meet the "reasonably certain" standard, courts have generally required plaintiffs to prove that it is more likely than not (a greater than 50% chance) that the projected consequence will occur. If such proof is made, the alleged future effect may be treated as certain to happen and the injured party may be awarded full compensation for it; if the proof does not establish a greater than 50% chance, the injured party's award must be limited to damages for harm already manifested.

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[33] Recovery based upon the present risk of contracting a disease in the future is not qualitatively different from recovery for the future consequences of a presently manifest injury. The two recoveries are, however, quantitatively different. A plaintiff who prevails on an enhanced risk claim will recover only those damages necessary to compensate him for the increased risk of contracting disease. A plaintiff who seeks recovery for the future consequences of a present injury will recover the full amount of damages likely to result from the future consequences so long as the consequences themselves are more likely than not to occur.

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In Sterling, 855 F.2d at 1204, the court applied this test of reasonable medical certainty in the toxic tort context. Because plaintiff established "an increased risk for susceptibility to cancer and other diseases of only twenty-five to thirty percent," the Sterling court rejected plaintiff's claims for the risk of contracting disease in the future. Sterling, 855 F.2d at 1205. Most courts faced with a potential claim for damages for increased risk of developing a disease have disposed of the claims on the grounds that the plaintiffs were not able to show with reasonable certainty or reasonable probability that the disease or the condition will occur in the future. Id. at 1204 ("Where the basis for awarding damages is the potential risk of susceptibility to future disease, the predicted future disease must be medically reasonably certain [greater than 50%] to follow"); Hagerty v. L. & L. Marine Servs., Inc., 788 F.2d 315, 319 (5th Cir. 1986) ("We conclude that a plaintiff can recover only where he can show that the toxic exposure more probably than not will lead to cancer."); Herber v. Johns-Manville Corp., 785 F.2d 79, 82 (3d Cir. 1986) (Damages may not be awarded "for an injury that probably will not be suffered."); Ayers v. Township of Jackson, 106 N.J. 557, 567, 525 A.2d 287, 297 (N.J. 1987) (The "speculative nature of an unquantified risk claim" is one reason not to recognize such a claim.); Pierce v. Johns-Manville Sales Corp., 464 A.2d 1020, 1026 (Md. 1983) ("[R]ecovery of damages based on future consequences of an injury may be had only if such consequences are reasonably probable or certain.").

Wholly apart from the evidentiary standard that plaintiffs must satisfy, some courts have also imposed a requirement of present physical injury for increased risk recovery. In Werlein v. United States, 746 F. Supp. 887 (D. Minn. 1990), the Minnesota federal district court held that a plaintiff must suffer from a present physical injury that causes an increased risk of physical harm in the future before he may recover for damages for that increased risk of harm. But see Stites v. Sundstrand Heat Transfer Inc., 660 F. Supp. 1516, 1523 (W.D. Mich. 1987) (plaintiff need not demonstrate any present physical injury, but instead need only show, to a reasonable degree of medical certainty, that they will develop cancer in the future). The court, however, did not provide an answer at to whether subcellular injuries meet the test for a present injury and whether there is a sufficient scientific basis for concluding that such injury may increase the likelihood of future harm.

Other courts have employed even less demanding standards for allowing increased risk claims. These

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courts have utilized a "more likely than not" standard. Although it is unnecessary that medical evidence conclusively demonstrate that the future illness will develop, mere conjecture or even a possibility will not be sufficient for purposes of meeting this standard.

In Mauro v. Raymark Industries Inc., 116 N.J. 126, 561 A.2d 257 (1989), aff'g, 225 N.J. Super. 196, 542 A.2d (1988), the New Jersey Supreme Court delineated the more like than not standard:

> [A] Consequence of an injury which is possible, which may possibly ensue, is a risk which the injured person must bear because the law cannot be administered so as to do reasonably efficient justice if conjecture and speculation are to be used as the measure of damages. On the other hand, a consequence which stands on the plane of reasonable probability, although it is not certain to occur, may be considered in the evaluation of the damage claim against the defendant. In this way, to the extent that men can achieve justice through general rules, a just balance of the warring interests is accomplished.

Mauro, 116 N.J. at 144, 561 A.2d at 267 (quoting Budden v. Goldstein, 43 N.J. Super. 340, 347, 128 A.2d 730, 734 (1957)).

The Mauro court required neither a present injury nor proof to a reasonable degree of medical certainty. Instead, the court focused on the quantifiable probability of harm. According to the court, prospective damages are not recoverable unless they are reasonably probable to occur.

It is interesting to note that certain courts have refused to acknowledge the increased-risk damage theory regardless of the evidence proffered. In Askey v. Occidental Chemical Corp., 102 A.D.2d 130, 477 N.Y.S.2d 242 (4th Dept. 1984), the New York Appellate Division held that "damages resulting from the enhanced risk of cancer and the threat of future harm not yet realized are not compensable in a tort action." Askey, 102 A.D.2d at __, 477 N.Y.S.2d at __.

Relying upon the line of cases which addresses the ability to recover damages for the future consequences of a presently manifest injury, Arizona courts have refused to allow damages for the increased risk of contracting a future disease unless the plaintiff can prove that it is more probable than not that the feared

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disease will develop. Burns v. Jaquays Mining Corp., 156 Ariz. 375, 752 P.2d 28 (Ct. App. 1988); DeStories v. City of Phoenix, 154 Ariz. 604, 744 P.2d 705 (Ct. App. 1987).

In DeStories, a suit was filed by construction workers against the City of Phoenix and an Airport Construction Company to recover damages arising from exposure to asbestos dust during the interior remodeling at the Phoenix Sky Harbor International Airport. Plaintiffs alleged that their exposure to asbestos resulted in an increased risk of developing asbestos is and mesothelioma. The trial court granted defendants' motion for summary judgment on this claim, relying upon the legal proposition that an increased risk of future physical illness or harm cannot constitute a present injury compensable with damages. DeStories, 154 Ariz. at 606, 744 P.2d at 707.

The Court of Appeals affirmed, noting that "an increased risk of injury does not constitute a compensable harm absent some proof that actual injury is reasonably certain to occur in the future." Id. at 606, 744 P.2d at 707. To recover for increased risk of disease, the court stated that the plaintiffs must allege and prove, to a reasonable medical probability (i.e., a greater than fifty-percent chance), that the disease will occur.

> In the instant case, plaintiffs offered evidence establishing, at most, that they had been exposed to asbestos dust and therefore had an "increased probability" or "significantly increased risk" of developing a fatal lung disease. Plaintiffs offered no evidence that any one of them would contract such a disease to a reasonable medical probability. They accordingly failed to establish any compensable physical harm.[34]

Id. at 607, 744 P.2d at 708.

Burns also addressed the issue of recovery for increased risk of disease. In Burns, the residents of land adjacent to an asbestos-producing mill brought suit against the mill owner for, inter alia, damages for the increased risk of developing cancer and other asbestos-

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[34] This standard of proof, which appears more exacting than the "more likely than not" standard announced in Wilson and Sterling, creates a significant impediment for plaintiffs seeking to advance an enhanced risk claim in Arizona.

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related diseases. The trial court granted defendants summary judgment on this claim. Burns, 156 Ariz. at 377, 752 P.2d at 30.

The Court of Appeals held that plaintiffs could not recover for increased risk of developing a cancer-related disease. The court again relied upon the general rule that a plaintiff in Arizona cannot recover unless he or she can prove with reasonable probability that some physical injury has or will occur. Although the plaintiffs claim to have been suffering from mental anguish as a result of their exposure to asbestos, the court stated that there is no competent evidence of any physical impairment or harm caused by this exposure. "The threat of physical harm, not yet realized, is not enough." Id. at 377, 752 P.2d at 30.

B. MEDICAL SURVEILLANCE

Medical surveillance claims represent an attempt by plaintiffs to recover the costs associated with periodic medical examinations and tests which they claim are necessary to protect against exacerbation of disease brought about by exposure to toxic substances. The rationale behind medical surveillance claims is that periodic medical examinations will serve to mitigate future injury through early detection and treatment. Furthermore, it has been argued that medical surveillance serves as a deterrent to polluters who have exposed people to toxic substances.

Most courts which have dealt with medical surveillance claims have adhered to the tenets of traditional tort law in delineating the elements of such claims. They have required that plaintiffs prove the existence of a present physical injury that is directly attributable to the defendant's conduct. A growing number of courts, however, have relaxed the requirements in recognition of the emergence of toxic tort latent injuries.

The majority approach regarding medical surveillance recovery is set forth in the seminal New Jersey Supreme Court case, Ayers v. Township of Jackson, 106 N.J 557, 525 A.2d 287 (N.J. 1987). In that case, plaintiffs sought to recover the expense of annual medical testing to detect symptoms of exposure-related disease allegedly caused by toxic chemicals which had leached from the Township's landfill into an aquifer and, consequently, into their well water.

In attempting to fashion a standard for medical surveillance awards, the court recognized the difficulty of adequately compensating plaintiffs for post-exposure,

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pre-symptom injuries, while at the same time, ensuring a sufficient causal relationship exists between plaintiff's injuries and defendant's conduct. In light of these concerns, the court established the following standard:

> [M]edical surveillance is a compensable item of damages where the proofs demonstrate, through reliable expert testimony predicated upon the significance and extent of exposure to chemicals, the toxicity of the chemicals, the seriousness of the disease for which the individuals one at risk, the relative increase in the chance of onset of the disease in those exposed, and the value of early diagnosis, that such surveillance to monitor the effects of exposure to chemicals is reasonable and necessary.

Ayers, 106 N.J. at 606, 525 A.2d at 312.

The standard set forth in Ayers requires plaintiffs to establish, with a reasonable degree of medical certainty, that medical examinations and testing are necessary as a result of their exposure to a toxic substance. Although the court abandoned the traditional tort law requirement of a present physical injury, the court maintained that its standard was consistent with "well-established legal principles." In support of this proposition, the court analogized to the avoidable consequence rule, where a plaintiff is required to submit to treatment that is medically advisable. Where plaintiff fails to submit to such treatment, the court may bar recovery for a condition which he could have avoided or alleviated by such treatment. Id. at 581, 525 A.2d at 311.

The court also focused on important public health interests associated with medical surveillance. Recognition of medical surveillance claims would foster access to medical testing for individuals whose exposure to toxic substances created an actual enhanced risk of disease. Furthermore, the court noted that medical surveillance was "manifestly consistent" with the public policy interest in early detection and treatment of disease. Id.

In re Paoli Railroad Yard PCB Litigation, 916 F.2d 829 (3d Cir. 1990), cert. denied, 111 S.Ct. 1584 (1991), sets forth the most lenient standard for recovery of medical surveillance costs established thus far. In that case, residents living near a rail yard outside Philadelphia alleged that they were exposed to PCBs used in transformers at the yard. The residents, however,

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were unable to demonstrate that they had higher levels of PCBs in their blood than those found in the general population. Furthermore, plaintiffs' experts were unable to produce generally accepted epidemiological evidence that the plaintiffs' PCB levels subjected them to any increased risk of illness. In re Paoli, 916 F.2d at 860.

If traditional tort principles were applied, the defendants would have been entitled to judgment based on the lack of proximate causation between plaintiffs' exposure and their injuries. In fact, the trial court had granted defendants' motion for summary judgment on just that ground; it found that the mere presence of PCB levels in the plaintiffs' blood did not causally establish a compensable injury. In re Paoli Railroad Yard PCB Litigation, 706 F. Supp. 358 (E.D. Pa. 1988).

The Third Circuit, however, reversed on appeal, holding that the absence of proof of harm did not preclude plaintiffs from recovering medical surveillance damages. The court held that defendant would be required to provide medical surveillance to any individual who had an exposure to a toxic substance that might cause personal harm in the future. The court justified its standard on policy grounds stating that in the present toxic age, significant harm could be done to an individual notwithstanding the latent manifestation of that harm. Accordingly, traditional notions of proximate cause had to yield to a standard requiring only the probability that the far less costly remedy of medical supervision is appropriate. In re Paoli, 916 F.2d at 852.

Several courts have already adopted this liberal standard. See, e.g., Ambrogi v. Gould Inc., 750 F. Supp. 1233, 1248-49 (M.D. Pa 1990, amended 1991); Steed v. F.E. Meyers Co., No. 86-169, slip op. (D. Vt., Nov. 26, 1990); Miranda v. Shell Oil Company, 12 Cal. App. 4th 28, 33, 15 Cal. Rptr. 2d 569 (Cal. App. 1993); Bocook v. Ashland Oil Inc., 1993 WL 127775 (S.D.W.Va. January 11, 1993). According to Paoli and its progeny, plaintiffs may recover medical surveillance damages merely by proving exposure to a chemical and presenting an expert who will testify that there is a potential for latent manifestation of a disease.

Recently, however, several cases have, in apparent reaffirmation of traditional tort law, required a present physical injury or evidence that a resulting disease is reasonably certain to occur in order to recover medical surveillance costs. For example, in Potter v. Firestone Tire and Rubber Co., 274 Cal. Rptr.

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885 (Cal. App. 1990), review granted, 278 Cal. Rptr. 836, 806 P.2d 308 (Cal. 1991), the court stated:

> We simply conclude that where, as here, the evidence establishes that a plaintiff has an increased risk of cancer but does not establish that the cancer is reasonably certain to occur or that there is a reasonable medical probability of it occurring, then recovery for medical surveillance costs should not be permitted.

Id. at 897.

In rejecting the medical surveillance claims, the court acknowledged the public policy concerns advanced in both Paoli and Ayers. The court, however, cautioned that there are also significant public policy reasons against imposing liability where plaintiffs fail to prove a present, demonstrable injury and that costs are reasonably certain to be incurred.

Arizona courts have for the most part adopted the Ayers approach with regard to medical surveillance claims. In Burns v. Jaquays Mining Corp., 156 Ariz. 375, 380, 752 P.2d 28, 33 (Ct. App. 1988), the court held that when there is reliable expert testimony predicated upon the significance and extent of exposure, the toxicity of the contaminant, the seriousness of the diseases for which plaintiff is at risk, the relative increase in the chance of onset of the disease and the value of early diagnosis, medical surveillance costs are recoverable.

In DeStories, 154 Ariz. at 610, 744 P.2d at 711, plaintiffs sought to recover medical surveillance damages allegedly necessitated by their exposure to airborne asbestos. Defendants moved for summary judgment on the grounds that such damages were not recoverable. The trial court granted defendants' motion and the court of appeals affirmed. The appellate court observed that the threshold question was whether medical surveillance damages could be recovered without current physical harm and cited Schweitzer v. Consolidated Rail, 758 F.2d 936, 942 (3d Cir. 1985), for the proposition that current physical harm is prerequisite to recovery. The court, however, did not reach this question as it found that plaintiffs had not shown that:

> the asserted increased risk of lung disease entails any particular increase in the frequency, cost or intensity of plaintiffs' need for periodic medical examinations over what would normally have been prudent for

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them based on their individual circumstances.

DeStories, 154 Ariz. at 610, 744 P.2d at 711.

Although the courts in DeStories and Burns reached differing results with regard to plaintiffs' ability to recover for medical surveillance costs, the reasoning behind these decisions is consistent. As stated by the court in DeStories, "plaintiffs failed to adduce evidence that [medical surveillance] would be reasonably necessary." 154 Ariz. at 611, 744 P.2d at 711. In Burns, however, the plaintiffs did provide expert testimony describing in detail the reason why the plaintiffs required future medical surveillance as a result of exposure to hazardous substances. Moreover, the approval of medical surveillance damages in Burns is not inconsistent with the sub silentio endorsement of Schweitzer in DeStories because Burns involved exposure to asbestos, a substance which results in physical impact, namely scarring, upon ingestion.

Two Arizona courts have recently issued pronouncements on medical surveillance claims. First, in McIntire v. Mororola, No. CIV 91-2067 PHX WPC, Judge Copple issued an order dismissing plaintiffs' claim for medical surveillance on the grounds that it is not a separately cognizable claim, but rather an element of damages. Then, in Baker v. Motorola, No. CV 92-02063, Judge Cates ruled that the court lacked subject matter jurisdiction to consider plaintiffs' medical surveillance claims because such claims were tantamount to a challenge to programs which may be implemented under the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA"), 42 U.S.C. § 9601 et seq. In reaching this result, the court relied upon In re Hanford Nuclear Reservation Litigation, 780 F. Supp. 1551 (E.D. Wash. 1991).

C. FEAR OF FUTURE ILLNESS

The term "cancerphobia" has been used by courts to describe the emotional distress caused by the fear of developing cancer or similar diseases. Cancerphobia liability typically does not require the plaintiff to demonstrate an actual increased risk of developing a particular disease. Instead, the plaintiff must show that he or she reasonably is in fear of some day contracting a disease as a result of the toxic exposure. Cancerphobia claims have emerged in the toxic tort context as an outgrowth of the common law tort of negligent infliction of emotional distress.

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In recent years, courts have permitted plaintiffs to recover for this fear of future disease. See, e.g., Hagerty v. L & L Marine Services, Inc., 788 F.2d 315, 318 (5th Cir.), modified, 797 F.2d 256 (5th Cir. 1986) (in order to support recovery for cancerphobia, plaintiff must have suffered an "actionable injury");[35] Merry v. Westinghouse Electric Corp., 684 F. Supp. 847, 852 (M.D. Pa. 1988) (in order to recover for cancerphobia, plaintiffs must demonstrate "physical impact"); Valori v. Johns-Manville Sales Corn., No. 82-2686, 1985 W.L. 6074, slip op. at 4 (D.N.J. Dec. 11, 1985) (recovery for cancerphobia allowed in the absence of present physical injury). In support of such claims, courts have accepted both epidemiological studies, Wetherill v. University of Chicago, 565 F. Supp. 1553, 1559-61 (N.D. Ill. 1983), and testimony regarding medical advice from plaintiff's treating physician. Ferrara v. Galluchio, 5 N.Y.2d 16, 176 N.Y.S.2d 996, 152 N.E.2d 249, 251 (1958) (advice to have shoulder checked every six months because of possibility that cancer might develop).

In a majority of jurisdictions, fear of future illness must be accompanied by some form of physical harm in order to be compensable. Courts adopting this approach, contend that this requirement will limit frivolous suits and provide a reasonable safeguard against false claims. One such court, the Supreme Judicial Court of Massachusetts, articulated the justification for this requirement as follows:

> Although cases may arise in which the emotional distress absent physical harm may not be temporary or slight, nothing before us indicates that most such claims are not

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[35] The ruling in Hagerty is far from a paradigm of clarity. The original panel ruled that plaintiff could recover for cancerphobia "[w]ith or without physical injury or impact." Hagerty, 788 F.2d at 318. This holding was mere dicta, however, because the court noted that plaintiff "did suffer a 'physical injury' from the drenching which constitutes an 'impact.'" Hagerty, 788 F.2d at 318 n.1. In order to forestall en banc rehearing, Judge Reavley, the author of the original opinion, clarified this statement by noting the need for some sort of "actionable injury." Hagerty, 797 F.2d at 256. Judge Jolly, writing for seven judges who dissented from the denial of the petition for en banc rehearing, construed this to require "either a traumatic event giving rise to physical or mental injury, or physical injury resulting from the incremental effect of harmful substances." Id.

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> of that character. We are unwilling, therefore, to impose upon the judicial system and potential defendants the burden of dealing with claims of damages for emotional distress that are trivial, evanescent, temporary, feigned, or imagined, in order to ensure that occasional claims of a more serious nature receive judicial resolution.

Payton v. Abbot Labs, 386 Mass. 540, 549, 437 N.E.2d 171, 180 (1982).

In Ball v. Joy Manufacturing Co., 755 F. Supp. 1344 (S.D. Va. 1990), aff'd, 940 F.2d 651 (4th Cir. 1991), the West Virginia federal district court held that a plaintiff must suffer an actionable injury in order to recover for fear of future illness. In that case, employees and former employees of Joy alleged that they were exposed to polychlorinated biphenyls (PCBS) in their work place. As a result of this exposure, they claimed that they suffered emotional distress brought on by a fear of contracting cancer. At the time the action was brought, the plaintiffs suffered from no present physical injury.

The court held that the mere exposure to a toxic substance did not constitute the requisite physical injury to prevail on a claim for emotional distress. The court noted that if mere exposure were enough to give rise to a cause of action for emotional distress, individuals who might never manifest injury would have tort claims cognizable in federal court. In the course of its holding, the court relied on decisions from several jurisdictions that either specifically or implicitly held that the exposure to toxic substances is not a physical injury on which emotional distress damages may be recovered. Ball, 755 F. Supp. at 1368.

In Caputo v. Boston Edison Co., No. 88-2126-Z, slip op. (D. Mass. July 9, 1990), aff'd, 924 F.2d 11 (1991), the federal district court refused to consider chromosomal, cellular damage as adequate to demonstrate a physical injury from toxic exposure. Noting that the plaintiff had not suffered any illness as a result of the cellular changes and that expert testimony could not link these changes to a reasonable probability that the plaintiff would contract cancer, the court rejected the plaintiff's fear of future illness claim. The First Circuit affirmed.

Similarly, in Nesom v. Tri Hawk International, 985 F.2d 208 (5th Cir. 1993), the Fifth Circuit held that plaintiff, who alleged that he had been exposed to

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contaminated brain tissue during a craniotomy procedure during which human dura mater from a cadaver was grafted to torn tissue in his brain, had not sufficiently demonstrated a present physical injury to recover for his fear of developing a future illness. Plaintiff was unable to demonstrate that the grafted brain tissue was actually contaminated, and only that it was potentially contaminated. The court held that plaintiff could not recover for the "mere possibility" of developing a future illness. The court did, however, acknowledge that exceptions to this general rule exist where special circumstances guarantee that the claim is not spurious. Id. at .

Several courts, however, have softened the physical harm requirement. These cases have held that a physical manifestation of exposure, although not directly linked to an increased risk of cancer, in some instances will satisfy the physical harm requirement. See, e.g., Anderson v. W. R. Grace & Co., 628 F. Supp. 1219, 1222 (D. Mass. 1986); Brafford v. Susquehanna Corp., 586 F. Supp. 14, 17 (D. Colo. 1984).

In Barth v. Firestone Tire and Rubber Co., 661 F. Supp. 193 (N.D. Cal. 1987), Firestone employees alleged that as a result of their exposure to toxic substances in the tire manufacturing process, they had developed a fear of contracting cancer. Despite plaintiffs' failure to allege the existence of any present physical injury, the federal district court allowed recovery for emotional distress associated with the fear of contracting cancer. The court relied upon expert testimony indicating that exposure to the chemicals at issue may have caused damage to the immune system. According to the court, this potential effect on the immune system was sufficient to support the plaintiffs' fear of cancer claims. Even if scientific studies have not demonstrated a link between immune system damage and cancer, the court reasoned that this effect made reasonable the plaintiffs' fears. Barth, 661 F. Supp. at 197.

Similarly, in Mauro v. Raymark Industries, Inc., 116 N.J. 126, 561 A.2d 257 (1989), aff'g, 225 N.J Super. 196, 542 A.2d 16 (1988), the New Jersey Supreme Court upheld a damage award for fear of cancer to a plaintiff who was exposed to asbestos fibers. In that case, plaintiff had experienced a pleural thickening in his lungs as a result of his exposure to asbestos fibers. This condition, however, was not conclusively linked to the onset of a future cancer. Notwithstanding, the court affirmed the fear of cancer award, providing that any evidence of a physical injury, whether or not the injury directly related to the fear alleged, would be

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sufficient to support a fear of future illness claim. Mauro, 116 N.J. at 132-33, 561 A.2d at 263-64. In so holding, the court only required that the exposure proximately caused some physical manifestation, rather than the exact injury, for which the fear was alleged. Id. See also Herber v. Johns-Manville Corp., 785 F.2d 79, 85 (3d Cir. 1986).

There are other ways in which courts have liberalized the amount of injury that must be shown. Some courts have stated that damages to a plaintiff's immune system may satisfy the "injury" rule. See, e.g., Anderson v. W. R. Grace & Co., 628 F. Supp. 1219, 1228 (D. Mass. 1986). Other courts have concluded that the rule is satisfied by cellular or subcellular damage. Bradford v. Susquehanna Corp., 586 F. Supp. 14, 18 (D. Colo. 1984).

Ingestion of a harmful substance, or its presence in the body, also may constitute sufficient physical "impact" or "injury" to permit recovery. Gideon v. Johns-Manville Sales Corp., 761 F.2d 1129, 1137 (5th Cir. 1985) ("plaintiff sustained physical injury resulting from inhalation of fibers and the invasion of his body by those fibers" and could recover for the fear of medical conditions that would probably develop from those exposures); Wetherill v. University of Chicago, 565 F. Supp. 1553, 1561 (N.D. Ill. 1983) (exposure to DES constituted a sufficient physical injury to allow recovery); Eagle-Picher Indus., Inc. v. Cox, 481 So. 2d 517, 527 (Fla. Ct. App. 1985) (inhalation of asbestos fibers satisfies the "impact" rule). Marchira v. Long Island Rail Road, No. 91-2222 (E.D.N.Y. January 26, 1993) (exposure to AIDS-contaminated needle held to be sufficient physical injury to withstand motion for summary judgment despite negative AIDS test). Arizona courts have, however, rejected this approach. DeStories, 154 Ariz. at 610, 744 P.2d at 711.

Several courts have recently departed from the physical harm requirement altogether. In Potter v. Firestone Tire and Rubber Co., 274 Cal. Rptr. 885 (Cal. App. 1990), review granted, 278 Cal. Rptr. 836, 800 P.2d 308 (Cal. 1991), the California Court of Appeals for the Sixth District upheld a plaintiff's right to recover for fear of cancer without a demonstrable physical injury. In that case, plaintiffs alleged that as a result of their exposure to toxic chemicals that had been leached into their water wells from an adjacent landfill, they were experiencing fear of contracting cancer.

Although evidence at trial failed to demonstrate that plaintiffs had experienced any demonstrable injury as a result of their exposure, plaintiffs contended that

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the mere exposure to a known carcinogen was sufficient to support a viable fear of future illness claim. Defendant argued that in order to recover for fear of contracting cancer, plaintiffs would, at very least, need to demonstrate that there was a likelihood that they would develop cancer in the future. In rejecting the defendant's argument, and in affirming the trial court's substantial damage award, the court held that what is critical is not that the cancer is reasonably certain to develop, but rather, that the fear of developing that caner is reasonably certain to occur. Potter, 274 Cal. Rptr. at 891 (Cal. App. 1990).

The court in holding as it did, answered the defendant's argument that by not requiring a physical injury, the court was opening the floodgates of litigation, by stressing that plaintiff would still bear the difficult burden of convincing a jury that his fear is reasonable. Id.

Other cases have also recognized fear of future illness claims absent any present physical injury. See, e.g., Sterling v. Velsicol Chemical Corp., 855 F.2d 1188, 1206 (6th Cir. 1988); Herber v. Johns-Manville Corp., 785 F.2d 79, 84-85 (3d Cir. 1986); In re Moorenovich, 634 F. Supp. 634, 637 (D. Me. 1986); Valori v. Johns-Manville Sales Corp., No. 82-2686, slip op. (D.N.J. Dec. 11, 1985) (plaintiff allowed to recover for cancerphobia as long as (i) plaintiff is currently suffering from serious or emotional distress or a clinically diagnosed phobia of cancer, (ii) the fear was proximately caused by exposure to asbestos, (iii) plaintiff's fear is reasonable, and (iv) defendants are legally responsible for plaintiff's exposure); Wetherill v. University of Chicago, 565 F. Supp. 1553, 1560 (N.D. Ill. 1983); Wells v. Ortho Pharmaceutical, 615 F. Supp. 262, 297 (N.D. Ga. 1985); Bennett v. Mallinckrodt, Inc., 698 S.W.2d 854, 866-67 (Mo. Ct. App. 1985) (plaintiff need not allege contemporaneous physical injury to plead an action for emotional distress as long as distress is medically diagnosable), cert. denied, 476 U.S. 1176 (1986); Lavelle v. Owens-Corning Fiberglas Corp., 30 Ohio Misc.2d 11, 15, 507 N.E.2d 476, 480 (1987) ("modern tort law now recognizes a separate cause of action for serious emotional distress without a contemporaneous physical injury"); Laxton v. Orkin Exterminating Co., 639 S.W.2d 431, 434 (Tenn. 1982). These cases, however, represent the minority approach.

Arizona courts have adopted the majority approach, requiring a present physical injury. In DeStories v. City of Phoenix, 154 Ariz. 604, 744 P.2d 705 (Ct. App. 1987), the court held that plaintiffs could not recover for fear of developing cancer without identifying some

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present physical harm or medically identifiable effect resulting from their exposure. The court in denying plaintiffs' cancerphobia claims, relied on the language of section 436(A) of the Restatement (Second) of Torts:

> If the actor's conduct is negligent as creating an unreasonable risk of causing either bodily harm or emotional disturbance to another, and it results in such emotional disturbance alone, without bodily harm or compensable damages, the actor is not liable for such emotional disturbance.

Destories, 154, Ariz. at 609, 744 P.2d at 710.

Similarly, in Burns v. Jaquays Mining Corp., 156 Ariz. 375, 752 P.2d 28 (Ct. App. 1988), the court denied plaintiffs' fear of developing cancer claim, as they did not prove any manifestation of bodily injury. Although the plaintiffs claimed to be suffering from mental anguish as a result of their exposure to asbestos, the court stated that "[t]here is no competent evidence of any physical impairment or harm caused by this exposure. The threat of future harm, not yet realized, is not enough." Burns, 156 Ariz. at 377, 752 P.2d at 30.

Following DeStories and Burns, the Arizona Court of Appeals decided Weiner v. Ash, 162 Ariz. 214, 782 P.2d 332 (Ct. App. 1989). That decision contains language that can be interpreted as departing from the principles of DeStories and Burns. The plaintiffs in Weiner were awarded $250,000 in damages for future fear, anxiety, and emotional distress arising out of an incident in which the defendant shot at the plaintiffs. The plaintiffs suffered physical harm as a result of the incident, and thus, the court's holding is consistent with DeStories and Burns. To support its holding, however, the court cited Lavelle v. Owens-Corning Fiberglas Corp., 30 Ohio Misc.2d 11, 507 N.E.2d 476 (1987), in which the court recognized a cause of action for serious emotional distress, specifically cancerphobia, without a contemporaneous physical injury. Lavelle, 507 N.E. 2d at 480-81. The holding of Lavelle is inconsistent with DeStories and Burns, which required a showing of physical harm before allowing recovery for emotional distress.

D. DIMINUTION IN QUALITY OF LIFE

A number of courts have allowed recovery for diminution in the "quality of life," when a number of residents were significantly inconvenienced as a result of the contamination of their water supplies or property. Traditionally, under a nuisance cause of

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action, damages have been awarded for the discomfort and annoyance to the plaintiff as an occupant of property. See, e.g., Dixon v. New York Trap Rock Corporation, 293 N.Y. 509, 58 N.E.2d 517 (1944). Several cases have recognized discomfort and annoyance damages in a toxic tort context. See, e.g., Ayers v. Township of Jackson, 106 N.J. 557, 525 A.2d 287 (N.J. 1987); Sterling v. Velsicol Chem. Corp., 855 F.2d 1188 (6th Cir. 1988).

In Ayers, the New Jersey Supreme Court in recognizing plaintiffs' nuisance claims, awarded quality-of-life damages. According to the court, the damages were associated with the inconvenience, aggravation, and family disharmony suffered by residents who were forced to haul water for daily use. Ayers, 106 N.J. at 563-64, 525 A.2d at 293-94.

In non-toxic tort cases, several courts interpreting Arizona law have allowed recovery for interference with quality of life. See, e.g., Southern Pacific Co. v. Smith, 83 F.2d 451, 452 (9th Cir. 1936) (plaintiffs allowed to recover for noxious odor caused by stagnant pools of flood water); Martin v. United States, 471 F. Supp. 6, 11 (D. Ariz. 1979) (injured child was entitled to recover for interference with normal and usual activities as a result of her injuries). If the inconvenience is egregious, an Arizona court could allow diminution of quality of life damages to be recovered in a toxic tort action. See Burns v. Jaquays Mining Corp., 156 Ariz. 375, 379, 752 P.2d 28, 32 (Ct. App. 1988) (court stated that the trial court erred in dismissing plaintiffs' nuisance courts for damages for inconvenience, discomfort, and annoyance).

E. IMMUNOTOXICITY

The basic claim of immunotoxicity or "chemically-induced AIDS" is that exposure to a particular chemical of substance inhibits the body's normal mechanism for defending itself against disease, thereby rendering an individual more susceptible to everything from a common cold to cancer. In technical jargon, immunotoxicity is referred to as either chemically induced immune system disregulation or chemically induced immune system disfunction. Immune system disregulation involves a claim that the number (and/or ratio of different types) of human immune cells have been disrupted. On the other hand, immune disfunction involves a claim that while the number and ratio of immune cells is within normal range, the function of those cells in providing a key element of the body's immune system has been impaired.

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While this damage theory has been criticized by the mainstream medical and scientific communities, and actually rejected by several courts, the immunotoxicity claim in Arizona is uncertain because no reported Arizona case has addressed this damage theory.

In Sterling v. Velsicol Chem. Corp., 855 F.2d 1188 (6th Cir. 1988), several plaintiffs asserted a claim for damages attributable to immunotoxicity. Sterling involved a class action brought by property owners and inhabitants within a three-mile radius of a chemical waste burial site. In finding Velsicol liable for the plaintiffs' various injuries, the district court stated that "plaintiffs' normal immune-surveillance systems had been compromised or destroyed as a result of exposure to [the chemicals in Velsicol's dump site.]" Sterling v. Velsicol Chemical Corp., 647 F. Supp. 303, 442 (W.D. Tenn. 1986). The court based its conclusion on the testimony of two experts in the field of immunology and allergies. Id.

On appeal, the Sixth Circuit analyzed plaintiffs' immunotoxicity testimony from the standpoint of the Federal Rules of Evidence. Rule 702 allows the admission of expert testimony if, inter alia, the testimony "is in conformity to a generally accepted explanatory theory." Sterling, 855 F.2d at 1208. The court noted that, while some professional organizations and societies, such as AMA and the American Board of Allergy and Immunology "have not discredited completely the potential usefulness of clinical ecology, few have endorsed either its scientific methodology or the results of any experiments conducted under the guise of chemical ecology." Id. The court also noted that the two experts in the field of immunology that testified at trial "neither personally examined or interviewed the plaintiffs, nor performed the requisite medical tests," and "neither performed nor could identify any studies of the effects of [the chemicals at issue] on the immune system." Id. at 1209. Accordingly, the court reversed the district court's award of damages for "immune system impairment." Id.

The plaintiff in Barth v. Firestone Tire & Rubber Co., 673 F. Supp. 1466 (N.D. Cal. 1987), claimed that his exposure to hazardous substances while employed with defendant could lead to injury to his immune system. Ruling on defendant's motion to dismiss, the court acknowledged that direct injury to plaintiff's immune system is a "current physical injury" sufficient to withstand a motion to dismiss. Thus, despite the fact that the court expressed doubt as to the plaintiff's ability to prove that defendant caused injury to

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plaintiff's immune system, the court refused to dismiss the immunotoxicity claim. Barth, 673 F. Supp. at 1473.

There are several policy justifications for refusing to recognize immunotoxicity as a recoverable element of damages.

* Uncertainty of Damages: The link between environmental exposure and immune system dysfunction is conclusory and factually unsubstantiated. For example, the Executive Committee of the American Academy of Allergy and Immunology, in an article entitled "Position Statements: Clinical Ecology," 7 Jour. Allergy & Clinical Immunology, 269 (Aug. 1986), concluded that the suggestion that exposure to chemicals or pollutants in the environment adversely affects the function of immune system cells was unsupported by published data or reports.

* Proof Problems with Immunotoxicity Damages: There are several problems of proof in determining immunotoxicity damages. For example, how can a court or a jury determine whether an immune system is "abnormal?" Additionally, it may be difficult to determine and isolate the cause of the alleged "abnormal" immune system. Finally, the permanence of the "abnormal" condition is unpredictable.

* The Battle of Experts: A claim for immunotoxicity damages involves a battle of expert witnesses. Because the medical and scientific disciplines are uncertain as to the validity of this claim, parties in litigation could easily find experts to

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support either position. When the expert testimony involves matters on the frontier of science, it is difficult for the trier of fact to resolve such expert disputes and the court must exercise tremendous vigilance to prevent jury confusion.

There are also several policy reasons which would support judicial recognition of immunotoxicity damages:

* Jury Should Decide Genuineness of Claim: The trier of fact is well able to decide the fact or extent of physical suffering.

* Immunotoxicity Is a Compensable Injury: Unlike the claim for risk of future disease, the claim for immunotoxicity damages involves a present injury. The present injury is to the immune systems' subcellular structure. Consequently, under common law principles, the plaintiff should be compensated for such harm because physical impact has resulted. Barth v. Firestone Tire & Rubber Co., supra.

V. CLAIMS FOR DIMINUTION IN PROPERTY VALUE

Recently environmental litigation has begun to address and resolve claims that the value of properties in the vicinity of known chemical contamination has been reduced as a result of the proximity between the property and the contamination. These property devaluation claims present particular problems because, unlike most, if not all, toxic exposure personal injury claims, the typical plaintiff is usually a commercial enterprise or a large group of residential plaintiffs with litigation resources that approach, and in some instances, may exceed those of the defendant.

The amounts at stake in property devaluation toxic tort litigation are often substantial. On March 13, 1993, for example, a jury in Colorado awarded 567 residents of a Denver neighborhood alternate damages of $12 million or $28 million for market value loss or

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remediation costs. These amounts were awarded based only on property loss. Escamilla v. ASARCO, Inc., No. 91 CV 5716 (Colo. Dist. Ct., Denver County, 3/12/93).

Property devaluation claims arise in a variety of contexts. This article will discuss those claims as they arise in the following contexts: (1) Arizona case law; (2) subsequent landowner cases;[36] (3) landlord-tenant cases; (4) neighboring landowner cases;[37] (5) cases which seek to recover merely for the "stigma" of contamination; and (6) cases involving the effect of contamination on real estate taxes. Thereafter, issues posed in the valuation of contaminated real estate from an appraisal standpoint will be discussed.

A. **ARIZONA LAW.**

The Arizona toxic tort cases have yet to produce a body of law clearly establishing the specific rules of liability and damages for property devaluation claims. Because many of the claims asserted in toxic tort suits are based on common law theories such as nuisance, trespass, and strict liability, however, Arizona common law can be expected to play a major role in the development of this jurisprudence.

When a landowner in Arizona sues to recover for damage done to his or her land, the amount recovered depends on whether the damage is permanent or temporary. Permanent damage is that which cannot be repaired. If the damage is permanent, the landowner is entitled to recover the difference between the value of the property in its present state and the value the property would have been in had the damage not occurred. This is referred to as "diminution in value" and has been applied in the pollution context. Mohave County v. Chamberlin, 78 Ariz. 422, 428, 281 P.2d 128, 132 (1955) (landowner discharged sewage on neighbor's land). If the damage to the land is remediable, however, the damages frequently are based on the restoration cost, as long as it does not exceed the property's market value. There may be an issue as to lost use damages as well.

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[36] As referred to in this paper, subsequent landowner cases are those in which a current property owner sues a prior owner or operator located on the same property who is allegedly responsible for contaminating the land.

[37] Neighboring landowner cases are those in which one(landowner sues the owner or operator of nearby operations or activities who is alleged to have contaminated or at least lowered the value of the former's property.

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The diminution in value rule was applied by the Arizona courts in a series of cases arising out of asbestos contamination of property near Globe. There were numerous cases based on the contamination, at least four of which resulted in published opinions by the appellate courts. See Burrington v. Gila County, 159 Ariz. 320, 321 n.1, 767 P.2d 43, 44 (App. 1989). The court of appeals held in those cases that the owners of permanently damaged land could recover for their loss of use and enjoyment of the land in addition to damages for diminution in value. Id. at 324, 767 P.2d at 47. The legal concepts recognized in these cases are consistent with those applied by other jurisdictions in toxic tort litigation.

B. **SUBSEQUENT LANDOWNER CASES.**

As noted above, "subsequent landowner cases" are those dealing with a lawsuit by a current property owner against a prior owner, lessee, or occupant of the same property who is responsible for contaminating the land. As with toxic tort cases generally, the substantive claims are most often for negligence, nuisance, trespass, and strict liability.

Subsequent landowner cases often present the plaintiff(s) with potential bars to their causes of action which may be absent in the neighboring landowner cases discussed in Subsection I(C). The recent cases of Wilson Auto Enterprises, Inc. v. Mobil Oil Corp., 778 F. Supp. 101 (D.R.I. 1991), and Philadelphia Electric Co. v. Hercules, Inc., 762 F.2d 303 (3d Cir.) cert. denied, 474 U.S. 980 (1985), provide a good illustration. In Wilson, a property owner (Wilson) sued his vendor's lessee (Mobil) who was responsible for chemical contamination of the property. Wilson was unaware of the contamination when he bought the land. The claims against Mobil were based on negligence, trespass, nuisance, and strict liability. The court dismissed the negligence claim pursuant to the doctrine of "caveat emptor" (let the buyer beware). Under Rhode Island law, absent misrepresentation or a contract provision, the buyer of real estate bears the risk of defects in property and is required to inspect for possible problems. This was particularly true in the Wilson case where Wilson knew that the property had been used as a gas station, a fact that, according to the court, should have put him on notice of potential environmental problems. Wilson, 778 F. Supp. at 104-85.

Wilson's trespass claim met a similar fate. Trespass is commonly recognized as the physical invasion of one person's property by another person who has no right or privilege to enter. The court concluded that,

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because Mobil used the land under a valid lease from Wilson's predecessor, there could be no trespass. The court did not address whether Mobil was authorized under the lease to contaminate the soil. As to the nuisance claim, the court held that the doctrine applied only to interference with property rights by a neighboring, contemporaneous landowner. The contamination would have to come from outside Wilson's land for nuisance to be viable. The court dismissed the strict liability count on the ground that Rhode Island simply does not recognize the doctrine. Id. at 106-07.

The Hercules case involved a property owner (Gould) who sued a prior owner of the same land (PICCO) that was responsible for contaminating the soil and groundwater during its operation of a hydrocarbon resin manufacturing plant. The appellate court reversed a judgment in Gould's favor, again relying on caveat emptor. In response to Gould's argument that the case could proceed on the nuisance theory, the court held that a nuisance action could not circumvent the caveat emptor doctrine, and because Gould failed to test the property before he bought it, the judgment had to be reversed. The court also noted that its decision was consonant with the notion that nuisance traditionally has been a means of resolving disputes between neighboring land uses rather than owners of the same property. Hercules, 762 F.2d at 312-14.

Some courts from other jurisdictions, however, have rejected the strict common law notions espoused in Wilson and Hercules. For example, in Mangini v. Aerojet-General Corp, 281 Cal. Rptr. 827 (Cal. App. 1991), property owners (the Manginis) sued the lessee of a prior property owner (Aerojet) for contaminating the property while it was in Aerojet's possession. Aerojet had dumped and failed to remove millions of pounds of waste rocket fuel and other hazardous chemicals buried on the land. The Manginis' complaint included the usual negligence, nuisance, trespass, and strict liability claims.

Aerojet made the same nuisance argument the courts in Wilson and Hercules accepted; that is, that nuisance only applies to problems originating on neighboring property, not the same land. The court rejected that argument, however, holding that nuisance under California law was not so limited. Id. at 832-34. The court noted, however, that California nuisance law is different than most states. Nuisance claims in California are defined by specific statutes and thus are not based on common law. Id. at 834. The court in Mangini also determined that the Manginis stated a valid claim for trespass. In response to the argument that

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Aerojet was a lessee in lawful possession and that one "cannot trespass upon land in his own possession," the court noted that unless the lease gave Aerojet authority to dump the hazardous chemicals on the land, it had exceeded the limits of the landowner's consent to possession. Because no such lease provision could be found, the court held that the trespass claim was valid. Id. at 837. It is interesting that Mangini took a nearly opposite view of the nuisance and trespass claims as the Wilson and Hercules courts.

One final case meriting brief discussion is T & E Industries v. Safety Light Corp., 587 A.2d 1249 (N.J. 1991). A land buyer (T & E) sued a predecessor in title (Safety Light) who had contaminated the land with radium. Although the complaint contained the general claims, the court's opinion focused on the strict liability count. The legal basis for a toxic tort strict liability claim is the doctrine of the "abnormally dangerous" or "ultrahazardous" activity. The doctrine is based on the idea that a person or company that engages in certain kinds of dangerous activity should be responsible for losses caused by their actions, even if they acted with all possible care. Id. at 1257. In determining whether a particular activity is abnormally dangerous or ultrahazardous, several factors are weighed, including the magnitude of the potential harm, the inability to prevent harm through the exercise of reasonable care, the extent to which the activity is common or uncommon, and the benefit of the activity to society. If the activity qualifies as abnormally dangerous, the court must also determine if the harm suffered by the plaintiff is the type that makes the activity dangerous. Only if this additional requirement is met can the action proceed. Id. at 1259-60.

The T & E court determined that handling and disposing of radium is ultrahazardous, and the plaintiffs' harm was precisely the type that makes the activity dangerous. Id. at 1261. Safety Light argued that strict liability applies only to actions brought by neighboring property owners, not successors in title, and also that caveat emptor precluded the plaintiff's recovery. After noting the exceptions to caveat emptor, the court pointed out that the concept had been diluted in recent years. It held that the seller of the land is in a better position to know of the land's condition than the buyer, and is also better able to prevent the contamination in the first place. Moreover, allowing the buyer to recover would place the loss on the party who created the condition, which is consistent with the rationale underlying the ultrahazardous activity

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doctrine that certain enterprises should have to bear the consequences of their actions. Id. at 1257-58.

It will be interesting to see how the Arizona courts rule on the issues posed in the above cases. It is possible that they will follow the first line of cases and bar claims on the caveat emptor rationale. Arizona courts have already placed some restrictions on this doctrine. In Hill v. Jones, 151 Ariz. 81, 725 P.2d 1115 (Ct. App. 1986), the court recognized a duty to disclose latent material defects of which the seller has knowledge. In the Globe asbestos cases, the court of appeals applied caveat emptor to bar claims against the land sellers who had no knowledge of the contamination when they sold the property to the plaintiffs. Cothrun v. Schwartz, 156 Ariz. 459, 460-61, 752 P.2d 1045, 1046-47 (App. 1988). Arizona also follows traditional concepts regarding nuisance and trespass. These may prove to be further bars to plaintiffs' recoveries.

C. LANDLORD-TENANT CASES.

Issues similar to those discussed in the subsequent landowner cases also arise in the landlord/tenant context. The owner of land leased to a commercial tenant that discharges contaminants may sue to recover for damage to the land, or to obtain indemnity or contribution for cleanup costs. Arawana Mills Co. v. United Technologies Corp., 795 F. Supp. 1238 (D. Conn. 1992), is a recent landlord/tenant case that illustrates some of these issues. The property owner (Arawana) had leased the land at issue for several years to United Technologies Corporation (UTC). UTC overhauled and serviced jet engines on the property, an operation that involved the storage and handling of hazardous chemicals. During the years, UTC spilled some of the chemicals onto the ground, causing substantial contamination. Arawana sued UTC for CERCLA response costs, and alleged common law claims for breach of lease, waste,[38] nuisance, and strict liability based on abnormally dangerous activities. UTC moved to dismiss the claims in Arawana's complaint.

The court held that the breach of lease claim could be maintained even though UTC's lease had not expired and it was in lawful possession. The waste count, however, could not be pursued until after the lease terminated. The defendant argued that nuisance was not viable in a suit by a landlord against its

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[38] Waste is an action brought by the ultimate owner of land against one who has only a temporary right of occupancy for damage done during that occupancy.

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tenant, relying on the argument that nuisance applies only to adjoining landowners. The court, however, rejected that argument, holding that "[t]here is nothing in the relationship between a landlord and tenant that would appear to prevent a landlord from proving each one of these elements [of nuisance] in a claim against a tenant, and, certainly, tenants can be held liable for injuries to third-parties caused by nuisance on leased property." Id. at 1250. The court finally addressed and dismissed the strict liability count. After noting that Connecticut recognizes the traditional abnormally dangerous activities doctrine, the court held that it did not believe that the Connecticut Supreme Court would expand the doctrine to the handling and disposal of hazardous chemicals, especially in light of the extensive federal and state regulation of those activities. Id. at 1252.

The federal court in New Jersey took virtually the opposite view of nuisance in the context of a landlord/tenant case in Mayor & Council of Rockway v. Klockner & Klockner, 811 F. Supp. 1039 (D.N.J. 1993). The plaintiff city sued Klockner for allegedly contaminating the city's groundwater supply. In turn, Klockner sued the former lessee of the property, Thiokol, which allegedly contaminated the land during its tenancy. Klockner's claims against Thiokol were for public and private nuisance, negligence, fraudulent concealment, waste, trespass, and strict liability. The court refused to dismiss any of the claims except the private nuisance count. That cause of action was held invalid as in New Jersey, "a claim for private nuisance requires an interference with adjoining land," a rule that had previously been applied in the landowner/tenant situation by the New Jersey courts. Id. at 1058.

In some situations the roles are reversed, with the tenant suing the landlord. This was the case in Russell-Stanley v. Plant Industries, 595 A.2d 534 (N.J. Super. Ct. 1991). The current tenant, Russell-Stanley, sued the property owner, CPI, for cleanup costs arising out of contamination of the land caused by Russell-Stanley's predecessor in interest. Russell-Stanley's claims were based on traditional causes of action such as negligence and strict liability. The opinion in Plant was in the context of motions for summary judgment and the court only held that Russell-Stanley had viable claims that should not be dismissed; however, the court noted the significance of evidence presented that CPI may have actively participated in the management of the property during the period of contamination, and possibly knew that the tenant was polluting. Id. at 538-50. This case is also interesting in that Russell-Stanley actually purchased the prior tenant's assets and

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continued at least part of the business, yet sued CPI for the predecessor's actions.

As illustrated by these cases, the issues presented in the landlord/tenant context can be similar to those in subsequent or neighboring landowner cases. As also illustrated, the results can vary significantly depending on the court deciding the case.

D. NEIGHBORING LANDOWNER CASES.

Neighboring landowner cases generally involve the same common law claims as the subsequent landowner cases; however, some of the bars in the subsequent landowner cases do not apply. For example, the argument that nuisance applies only to contemporaneous, neighboring uses provides no help to the defendant in an indirect landowner case. The more difficult issues involve the "stigma" cases discussed in Subsection I(D).

In Akins v. Sacramento Municipal Utility District, 8 Cal. Rptr. 2d 785 (Cal. App.), review granted, 834 P.2d 1147 (Cal. 1992), a group of 200 plaintiffs sued the utility (SMUD) for claims arising out of alleged discharges of radioactive materials from the utility's nuclear power plant into nearby waterways. The plaintiffs' property damage claims were based on trespass, nuisance, and inverse condemnation. The trespass count was dismissed because the plaintiffs' evidence did not show that there had been any physical invasion of their property by the contaminants. The court then held that the plaintiffs' nuisance claims were based solely on the fear and anxiety caused by the releases of radioactive material in the vicinity of their land. Because the plaintiffs could not show any actual contamination of the their property, there was no interference with the comfort and enjoyment of the property sufficient to support a nuisance claim. Id. at 810-11.

The inverse condemnation count suffered the same fate as the other two claims. Inverse condemnation is a remedy available to a property owner when a governmental activity has taken or damaged his or her property (a public utility such as SMUD may be considered a governmental entity). In California, according to the court of appeals, this theory of recovery is limited to cases of actual physical invasion of property, a prerequisite that was lacking. Therefore, the plaintiffs were denied any recovery in the case. Id. at 811-13.

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Crawford v. National Lead Co., 784 F. Supp. 439 (S.D. Ohio 1989), is a recent case that applied the strict liability/ultrahazardous activity doctrine in the neighboring landowner situation. The neighbors of a uranium production plant sued to recover for diminished property values based on the plant's discharge of uranium and other hazardous materials into a nearby river. The court found liability based on strict liability and nuisance. The court applied the traditional ultrahazardous activity criteria discussed in Subsection I(B), and held that the handling and disposal of uranium is abnormally dangerous. It further held that the seepage of these materials into surrounding property was precisely the kind of harm that made the activity abnormally dangerous. The court also held that the defendants' release of inherently dangerous material constituted an unreasonable interference with the plaintiffs' land, giving rise to a claim for nuisance. Id. at 442-45.

The neighboring landowner cases provide the courts with some interesting damage calculation/quantification issues. Sterling v. Velsicol Chemical Co., 855 F.2d 1188 (6th Cir. 1988), provides a good example. The defendant (Velsicol) had used property as a landfill for wastes generated by its production of chlorinated hydrocarbon pesticides. The plaintiffs filed a class action lawsuit when they learned that the pesticides had leaked from the landfill and contaminated the water supply in the entire area. The court upheld Velsicol's liability under the typical common law claims.

The portion of the case relevant to this paper is the trial court's method of property damage calculation, which the appellate court upheld. The trial court first divided the plaintiffs' property into zones based on proximity to Velsicol's landfill. The first zone, denominated the "contaminated zone," was composed of property within one mile of the landfill. The next zone was called the "affected zone," which was the land outside the contaminated zone, but within two miles of the landfill. The final zone was called the "tertiary zone" and was composed of land outside the contaminated and affected zones, but within a three mile radius of the landfill. Id. at 1212.

The court applied the diminution in value calculation (which is accepted in Arizona) because the damage was permanent. The court determined that the property in the contaminated zone was worthless except for the value of the timber growing on the land. The court ascribed a somewhat greater value to property located within the affected zone and an even greater value to property in the tertiary zone. Based on these

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models and the market values prior to discovery of the contamination, damages were able to be calculated. Although the court of appeals noted that calculating damages in these situations is inherently imprecise, the trial court's conclusions were supported by the evidence and were therefore proper. Id. at 1212-13.

E. STIGMA CASES.

As referred to in this paper, "stigma" cases are those where the plaintiffs seek to recover damages for lost property value resulting not from actual contamination of their property, but from a decline in value due to the buying public's fear of purchasing property in the vicinity of contaminated land. In City of Santa Fe v. Komis, 845 P.2d 753, 756 (N.M. 1992), the court initially recognized three approaches to the availability of stigma damages: (1) loss in value caused by public fear is never an element of damages; (2) while purely conjectural damages are not recoverable, stigma damages may be recovered so long as the public fear is reasonable; and (3) loss in value due to the public perception of danger is compensable, even if the fear is unreasonable.

Many cases that have addressed pure stigma situations have held that the plaintiffs cannot recover even though market values may be affected. One such case is Adkins v. Thomas Solvent Co., 487 N.W.2d 715 (Mich. 1992). In Adkins, a group of landowners sued Thomas for injuries caused by Thomas's improper handling of toxic chemicals and industrial waste. Chemicals deposited on Thomas's property leached through the soil and ended up in the groundwater. The plaintiffs' claims were for negligence, nuisance, trespass, and strict liability based on ultrahazardous activity. The appeal in Adkins involved twenty-two plaintiffs who lived approximately 2000 feet away from the Thomas property. It was undisputed that due to a groundwater barrier, none of the toxic chemicals released by Thomas ever reached the groundwater under the plaintiffs' land. The trial court summarily dismissed the plaintiffs' claims for diminution in property value. Id. at 717-18.

The Michigan Court of Appeals reversed the dismissal. It held that nuisance does not require a physical invasion of the plaintiffs' property and, because at least some diminution had occurred, the plaintiffs should recover. Thus the Michigan Supreme Court in Adkins was faced with a difficult question. The plaintiffs had sustained no direct damage to their land, yet apparently had suffered property devaluation caused by the public's fear of purchasing land within one-half mile of a known contaminated site.

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The Michigan Supreme Court's opinion focused almost entirely on the nuisance claim and the requirement of a significant interference with the use and enjoyment of land. The court held that in Michigan, nuisance requires threatened or impending danger to property rights or the occupants' health. Because the plaintiffs could not trace any significant interference, real or threatened, to Thomas's conduct, the court determined that the devaluation was based on unfounded fears of danger and was "loss without an injury in the legal sense." Id. at 719-25.

The Adkins court justified its decision on policy grounds. If the plaintiffs were allowed to recover, a cause of action could be stated on behalf of anyone who could show any effect of contamination on property value even if the contamination never left the defendant's property. The court feared that defendants' resources might be diverted from plaintiffs whose land actually was polluted to plaintiffs who had suffered no real injury. The court stated in conclusion that if the law needed to be changed to compensate these losses, it was a job for the legislature, not the courts. Id. at 727.

A similar result was reached in a subsequent landowner case, Berry v. Armstrong Rubber Co., 780 F. Supp. 1097 (S.D. Miss. 1991). The plaintiffs lived on property previously occupied by Armstrong, and they sued to recover damages for diminution in value caused by Armstrong's alleged prior chemical dumping. The plaintiffs could not establish that any contamination of the land actually occurred. They asserted, however, that the stigma resulting from the alleged contamination caused a decline in market value. In granting summary judgment for Armstrong, the court held that "market stigma is not a compensable damage absent a confirmed physical property damage or a confirmed threat of physical property damage." Id. at 1104.

Commentators have generally urged two justifications for the decisions in Adkins and Berry. First, in reality, the effect of stigma on market values may be slight. Absent actual contamination, the decline in value may be negligible. This is illustrated by appraisal statistics from an EPA Superfund site covering several residential subdivisions located in Scottsdale, Arizona. The appraisers researched home sales within and without the area over a fifteen year period. Three subdivisions within the site and three subdivisions without it were analyzed. Based on the comparison of sales between the in-site and off-site property, the study concluded that "the Superfund designation has had no effect on the sales prices of property in Scottsdale." Interestingly, two of the three in-site

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subdivisions showed a larger increase in value than did the off-site locations. Of course, other studies can reflect different results. See, e.g., P. Patchin, "Contaminated Properties - Stigma Revisited," The Appraisal Journal 167 (April 1991).

Second, even where the defendant has contaminated some land, it is arguably unfair to hold it responsible for property devaluation that is not directly related to its actions. In this regard, the defendant may argue that, because it did not contaminate the plaintiff's land, its actions did not proximately result in any diminution in the value of the plaintiff's property. This argument, however, assumes that the stigma attributable to the contamination should be characterized as an unforeseeable, superseding cause of the property devaluation. The policy argument made in Adkins that the defendant's resources should be preserved for plaintiffs with actual property damage may also be accepted.

Although plaintiffs' claims for pure stigma type property damages have, on occasion, been rebuffed, similar damages have been awarded in the eminent domain context. Because the rationale for the award there may not be significantly different than in the toxic tort cases, the contamination cases are sometimes used to support the recovery of stigma damages. When a public entity takes property by eminent domain, the affected landowner is entitled to compensation for all losses caused by the taking. Diminution in the value of the landowner's remaining property is one such item. This often occurs when an easement is condemned and the landowner holds the remaining property.

A recent New Mexico Supreme Court case provides a good illustration. In City of Santa Fe v. Komis, 845 P.2d 753 (N.M. 1992), the City condemned an easement across property belonging to the Komises for a highway that would be used to transport nuclear waste to a disposal site. The Komises were awarded a total of $884,192 for the taking, of which $337,815 was for damages to the remaining property caused by the stigma of being located in the vicinity of the hazardous waste route. After noting the three approaches to the availability of stigma damages, the Komis court adopted the third, least restrictive approach, allowing recovery for loss in value due to the public perception of danger, even though that perception is unreasonable. It noted that the objective in a condemnation case is to compensate the landowner for all damages caused by the taking. In light of this objective, the court reasoned that, if a loss in value can be shown, even if based on an unreasonable public fear, the landowner must be

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compensated. The only prerequisites to recovery are that the landowner must show: (1) that a public fear of danger exists; and (2) that fear affects the remaining land's market value. The Komises demonstrated that a public fear existed that accidents along the route could result in significant harm, and as a result the value of their remaining land declined. As such, the court affirmed the award of stigma damages. Id. at 756.

The Arizona Court of Appeals addressed the condemnation stigma issue in Selective Resources v. Superior Court, 145 Ariz. 151, 700 P.2d 849 (App. 1984). The issue there was whether the trial court erred in excluding evidence of the adverse biological effects of exposure to electromagnetic fields in the condemnation of an easement for a high voltage power line. The court held that the evidence was highly relevant to the issue of devaluation of the landowner's remaining property. The court made it clear that property devaluation due to being in proximity to the power line was compensable; however, the court did not address whether or not the public fear of harm had to be reasonable. Id. at 753-54.

Although several courts have denied toxic tort plaintiffs damages for diminution in property value when no actual contamination of the plaintiffs' land can be shown, cases like Komis would support the argument that stigma damages are compensable in toxic tort cases. In any event, the ability to recover pure stigma damages in toxic tort cases can be expected to be a legal battleground in the foreseeable future.

F. **TAX CASES.**

Concurrent with the toxic tort suits for property damages, litigation between landowners and taxing authorities has also sprung forth over the assessed valuation of the contaminated land for taxation purposes. In virtually every jurisdiction, and certainly Arizona, landowners must pay taxes on land they own. These taxes are almost always based on the market value of the land, sometimes called "true value," or in Arizona, "full cash value." If a piece of land has a market value of $1 million, and taxes are, say, 1% of full cash value per year, it becomes readily apparent that contamination affecting the market value has immediate tax consequences for the owner. The courts have held that, because taxes are based on market value, they must be reduced even if the taxpayer was responsible for contaminating the land. See Reliable Electronic v. Board of Assessors, 573 N.E.2d 959, 960 (Mass. 1991). Although this paper does not attempt an

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exhaustive analysis and review of this area of the law, two recent cases illustrating the issues are discussed.

Frequently, when environmental contamination is discovered, the landowner may be subject to remediation costs imposed by the state or federal government. See, e.g., 42 U.S.C. § 9607; A.R.S. § 49-283. In these circumstances, the taxpayer frequently contends that for tax purposes, the full cash value should be correspondingly reduced for each dollar of cleanup liability. Although apparently popular, this argument generally has been rejected. In Vogelgesang v. Cecos International, Inc., 1993 Ohio App. Lexis 1478 (Ohio App. March 15, 1993), the owner of a former hazardous waste facility challenged the valuation placed on the property by the assessor. The court first noted that real estate must be appraised at its true value, which is the price at which the land would sell on an open market with no compulsion to buy or sell, and buyer and seller both knowing all relevant facts about the property. The landowner argued that the property was virtually worthless due to the contamination, and that in any event, the remediation costs should be deducted dollar for dollar from the true value. The court ultimately held that the taxpayer had not met its burden of proving that the assessor's valuation technique was improper; however, the court rejected any notion that the property was worthless, or that the cleanup costs should simply be deducted from market value. Id. at 12-18.

A major case in this area is the New Jersey case of Inmar Associates v. Borough of Carlstadt, 549 A.2d 38 (N.J. 1988). Inmar actually addressed two consolidated cases which involved land contaminated with tar and solvents. In both cases the landowners, who were potentially responsible for significant cleanup expenses, argued that these costs should be deducted from the property's market value. The taxing authorities in both cases argued that the effects on the land's value caused by the contamination and cleanup cost liability should simply be disregarded. They argued that environmental policy dictated a departure from the rule that taxes are based on the land's market value. Id. at 40-41.

The court rejected both the taxpayers' and taxing authorities' arguments. The court held that the property had to be taxed based on its actual value, even though calculating that value is often very difficult. The court noted that traditional valuation techniques do not work well with contaminated property and ultimately gave great weight to the assessors' valuation methods. The court, however, called on the assessor to use

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investigation and ingenuity, and pointed to the method (although rejected by the tax court) used by one of the taxpayer's experts as "containing the seeds of useful doctrine." Id. at 45. According to the expert, cleanup costs should be treated as a capital improvement which is depreciated over the beneficial life of the property. This approach does have some logic, as one could consider the remediation expenses to be, in a sense, maintenance or improvement costs which arguably should be amortized rather than simply deducted from the land's value for one or more tax years.

The issues addressed in Vogelgesang and Inmar have also moved to forefront in Arizona. For example, a class action was filed in Maricopa County Tax Court in late 1991 seeking the reduction of residential property values in an area of contamination. The class was allegedly composed of 30,000 members with property valued in excess of $5 million. The plaintiffs sought reduction of up to 80% in the taxable value of their land and, among other things, requested the court to order the direct reduction of remediation costs from full cash value. Wheeler v. Maricopa County, No. CV 91-01637 (Maricopa County Tax Court 1991). The case was voluntarily dismissed by the plaintiffs on February 8, 1993.

The driving force behind the tax cases may not be the actual tax dollars saved. In many of these cases, particularly when the property is residential, the actual tax savings can be fairly minor, perhaps $1,000 or less. The plaintiffs, however, may seek to use those suits to create persuasive evidence for use in a subsequent toxic tort suit against alleged contaminators where the claimed damages are far greater. For instance, a toxic tort suit has been filed on behalf of the plaintiffs in Wheeler. This synergy between the tax cases and toxic tort litigation can be expected to take on new dimensions in the foreseeable future.

Another interesting factor in the tax equation is whether cleanup costs are deductible from the remediating entity's taxes. See E. Fox & M. Solomon, "Who Incurs Environmental Clean-up Costs - And Why - May Determine Deductibility," The Journal of Taxation 12 (Jan. 1992). Under IRS regulations, deductions generally are not allowed for money spent on permanent improvements made to real property. Repairs, on the other hand, are deductible. Thus, the issue becomes whether cleanup costs are deductible repairs or nondeductible capital improvements. This issue can be of critical importance to corporations subject to substantial liability for cleanup costs. Environmental remediation has elements of a capital improvement and of

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a repair. The cleanup certainly increases the property's value, but what the remediator is really doing is returning the land to its former state - the essence of a repair. The deductibility issue has not been definitively resolved and it probably will ultimately be determined by amendments to the IRS code. One could speculate, however, that in light of government policy found in CERCLA and similar statutes, the ultimate deductibility of such expenses is rather unlikely.

Although the courts have struggled with proper valuation of contaminated land, two things are clear. Contamination can affect taxability, and creative valuation approaches may be necessary to ensure fairness to the public and taxpayers. As with property valuation in this context generally, frequent litigation can be expected in the future.

G. THE APPRAISAL OF CONTAMINATED LAND.

Whether the issue is property damage calculation in a toxic tort suit, or the correct value on which to base property taxes, some relatively accurate method of valuing contaminated land is crucial. Formulating this method, however, is proving to be rather difficult. It is well established that the best evidence of a piece of land's actual value is the price obtained in a recent arms-length sale of that land. Very often, however, there has been no such sale, so other valuation methods are employed. Traditionally, there are three such methods.

The first is based on recent sales of "comparable" property. Several sales of land with similar characteristics in the vicinity are viewed, and sometimes averaged, to arrive at what is seen as a relatively accurate prediction of value. Some variation of this is done by appraisers when preparing an appraisal accompanying an actual sale. The problem is determining which property is "comparable" as all land is unique to a certain extent. The second method can be used only for income producing property and deals with capitalizing the income produced. Although there are several methods of capitalizing income, a common method is to calculate the income stream over the past several years and apply a capitalization rate to the figures. By taking several factors into account, including the property value remaining after useful life, a prediction of value can be obtained. The third traditional way to value land is called the replacement cost approach. In simplified terms, the value of the bare land is viewed in conjunction with the depreciated cost of the improvements. This method does not use other sales,

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etc., and is often used when dealing with "special" properties that do not lend themselves well to either of the first two valuation techniques. See Allied Corp. v. Town of Camillus, 604 N.E.2d 1348 (N.Y. 1992).

It is not hard to see that when dealing with contaminated property these traditional valuation methods can be difficult to apply and may not be accurate in a particular context. It is often hard accurately to determine the extent of contamination or remediation costs. Anyone experienced in managing cleanups has seen wide variation in the efficiency and, therefore, the costs of similar remedial alternatives and similar contamination problems. Moreover, there is not a ready pool of comparable sales, as it is hard to sell contaminated land when the buyer may well become responsible for cleanup costs.

For these (and other) reasons, appraisers and the courts are being forced to invent creative valuation methods for contaminated property. One of the new methods that appears to be gaining popularity is referred to as "the statistical approach,"[39] sometimes called a "hedonic method." M. Elliot-Jones, "Real Estate Value & Toxic Sites," Spectrum Economics (San Francisco 1991). It is similar to the comparable sales technique, albeit on a larger scale. The sales price and characteristics of a large number of similar properties are analyzed and, at least in theory, the effect of contamination on value is determinable. Some consider this method to be superior to traditional valuation formulas on the grounds that it may reduce appraiser subjectivity, does not involve opinions or hypothetical sales, and is, once a database has been established, fairly cost effective. J. Arnold, at 28-29.

There are a number of other valuation techniques being used to value contaminated property, two of which merit mention here. One is called the "contingent valuation" method and has been used to determine natural resource damages under CERCLA. This method is explained in detail in K. Lynott & T. Higgins, "Cleanup Cases - Valuation Approaches May Differ," Nat'l Law Jour. 28 (May 4, 1992). This approach again uses large amounts of data and assesses several factors such as stigma and actual and potential cleanup costs. Experienced land buyers are then asked how these factors would affect the

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[39] This and other valuation methods are discussed in J. Arnold, "Appraising and Valuing Contaminated Properties," Vol. 16, No. 4 ALI/ABA Course Materials 23 (Feb. 1992).

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price they would pay for the land. The resulting value is based on an average of the survey.

The final method we address is called "the Oregon Rule." See B. Keen, "Tax Assessment of Contamination Property: Tax Breaks for Polluters?" 19 Boston Coll. Envir. Affs. Law Rev. 885, 912 (1992). The Oregon rule attempts to establish more of a bright line test to be followed by appraisers. The rule is part of the Oregon Department of Revenue's guidelines for assessing polluted land for tax purposes. It applies only to land on EPA's National Priority List or the Oregon environmental agency's equivalent list. The assessor is required to consider all three traditional valuation techniques, comparing contaminated with uncontaminated property and making adjustments for the estimated effects of contamination. One commentator has concluded that the Oregon Rule provides a fairly concrete valuation method. Id. at 813.

The purpose of this section is not to analyze all the various techniques being developed and employed to value contaminated real estate. Several scholars have done so exhaustively and there is no need to repeat those efforts here. See, e.g., B. Keen, supra note 66; R. Gladstone, "Contaminated Property: A Valuation Perspective," N.J. Law Jour. (Dec. 1991). The authors, however, wish to point out the difficulty of valuing these properties and that some creative solutions are being explored.

VI. CONCLUSION

As demonstrated by the recent spate of toxic tort suits filed in Arizona, toxic tort liability is, or should be, an area of tremendous concern for business in the coming years. As the volume of toxic tort litigation increases, courts will be compelled repeatedly to confront novel and difficult issues. In addressing these issues, courts will likely become more receptive not only to novel types of proof, such as epidemiological studies, but also to novel causes of action. The business

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CHAPTER 17

INSURANCE COVERAGE ISSUES FOR ENVIRONMENTAL CONTAMINATION

I. INTRODUCTION

The insurance industry estimates that there are between 600,000 and 700,000 abandoned toxic waste dumps in the United States that may need corrective action. Estimates to clean up and contain the resulting contamination run anywhere from $100 to $700 billion dollars and up to fifty years to complete. In addition, there are hundreds of thousands of underground storage tanks (UST's) in the United States containing everything from hazardous wastes to petroleum products. Some estimate that as many as 25% of those underground storage tanks have leaked or are currently leaking. Arizona has more than 22,000 registered UST's of which more than 2,000 have had reported discharges.

While the Congress and the Arizona Legislature have taken steps to correct the problem of environmental contamination through the Resource Conservation and Recovery Act ("RCRA") 42 U.S.C.A. § 6901 et seq., Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA") 42 U.S.C.A. § 4601 et seq., and the Arizona Environmental Quality Act ("EQA"), A.R.S. § 49-281, et seq. to name a few, the question remains: who will ultimately bear the cost of cleaning up this contamination, the entities that allegedly caused the contamination or their insurance carriers. Experience has shown that many times the cost of cleaning up the contamination exceeds the value of the property on which the contamination is located and in some cases the ability of the entity causing the contamination to fund the cleanup. These factors have resulted in inevitable conflicts between insurance carriers and their insureds. This is reflected in the proliferation of environmental claims during the 1980s and the corresponding proliferation of litigation between insurers and insureds. If history is any guide this proliferation will continue in the 1990's as toxic tort lawsuits become more prevalent.

Frequently, claims for indemnity under insurance policies occur when an insured is either ordered to clean up contamination allegedly caused at some prior time or enters into a Consent Decree with one of the federal or state regulatory agencies responsible for enforcing the environmental statutes. The following discussion initially addresses coverage issues that commonly arise under the Comprehensive General Liability

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Insurance policy, which has recently been renamed the Commercial General Liability Insurance Policy (CGLI policy), since this is the policy most frequently at issue. The following discussion will focus primarily on the question of environmental cleanup costs for hazardous wastes. Many of these same considerations, however, apply to coverage issues relative to toxic tort allegations by third parties as well as other types of insurance policies.

The issue of insurance coverage also impacts all areas of real estate and commercial/industrial transactions, including the liability of owners and operators of facilities on which hazardous wastes have been deposited and the need to submit evidence of financial responsibility for such things as UST's (A.A.C. R18-12-300 et. seq.)

II. SUBSTANTIVE ISSUES.

The typical CGL Policy states in part as follows:

> The company will pay on behalf of the insured all sums which the insured shall become legally obligated to pay as Damages because of (A) bodily injury or (B) Property Damage to which the insurance applies, caused by an Occurrence . . .

(Emphasis added.)

Litigation surrounding whether CGLI policies cover cleanup expenses has focused on several major issues. These issues include:

(1) Is the claim one for "equitable relief" or monetary "damages";

(2) Is the claim one for "property damage" or merely "economic loss";

(3) Was there an "occurrence" as that term is defined in the policy;

(4) What event triggers coverage under the policy; and

(5) Do any exclusions apply?

A. Choice of Law

The resolution of these issues depends to a large extent upon the particular state involved. Thus,

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determining which state's law will apply is critical. The choice of law rules of the state where an insurance coverage dispute is litigated governs the decision as to which state's law applies. See Lindsey v. Clossco, 642 F. Supp. 250 (D. Ariz. 1986); Klaxon Co. v. Stentor Elec. Mfg. Co., 313 U.S. 487, 61 S. Ct. 1020 (1941). Therefore, if Arizona were the forum state for a coverage dispute between an insured and its insurance carriers, Arizona's choice of law rules would dictate which state's law applies.

1. Applicable Law if the Insurance Policy Specifies the Choice of Law.

If the insurance policy states which particular state's law applies, this choice would probably be upheld. The Restatement of Contracts (2nd), as adopted in Arizona, generally supports the validity of the parties' choice of law. Restatement § 187(1) provides:

> The law of the state chosen by the parties to govern their contractual rights and duties will be applied if the particular issue is one which the parties could have resolved by an explicit provision in their agreement directed to that issue.

An insurance coverage dispute between Giant and its insurance carriers would likely turn on the construction of the various insurance policies. Explicit provisions of the policies probably could have resolved any disputes. Thus, any valid choice of law provision in the insurance policies should govern.

Even if the particular coverage dispute could not have been resolved by an explicit provision in the policy, the parties' choice of law should govern under § 187(2) unless:

> a. The chosen state has no substantial relationship to the parties or the transaction and there is no other reasonable basis for the parties choice, or
>
> b. The application of the law of the chosen state would be contrary to a fundamental policy of a state which has a materially greater interest in the chosen state in the determination of the particular issue . . .

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Therefore, if the disputed provision of the policy could not have been settled by an explicit provision in the policy, the parties choice of law would still govern the construction of the policy unless the state chosen had no substantial relationship to the parties or the transaction or was fundamentally contrary to the public policy of a state with a materially greater interest.

B. Choice Of Law If The Parties Did Not Specify Which State's Law Should Apply.

If the parties did not specify the choice of law, the "substantial relationship" test of Restatement § 188 should apply. Section 188 provides:

> 1. The rights and duties of the parties with respect to an issue in a contract are determined by the local law of the state, which, with respect to that issue, has the most significant relationship to the transaction and the parties under the principles stated in § 6.
>
> 2. In the absence of an effective choice of law by the parties, the contacts to be taken into account in applying the principles of § 6 to determine the law applicable to an issue include:
>
> a. The place of contracting,
>
> b. The place of negotiation of the contract,
>
> c. The place of performance,
>
> d. The location of the subject matter of the contract, and
>
> e. The domicile, residence, nationality, place of incorporation and place of business of the parties.

Therefore, if there is no choice of law provision in the policy, the general principles of § 188 must be analyzed to determine which state's law applies in the construction of the insurance policy. A contract of insurance is deemed to be executed at the place where the last act is done which is necessary to complete the transaction and bind all parties. Supreme Lodge, Knights of Pythias v. Meyer, 198 U.S. 508, 25 S. Ct. 754 (1905). Further, in the case of a master policy which may insure objects in several different states, in order to avoid having the same master policy interpreted

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according to different laws, courts have found the contacts of the state where the master policy was delivered to be controlling. See Erickson v. Sentry Life Ins. Co., 43 Wash. App. 651, 719 P.2d 160 (1986); Simms v. Metropolitan Life Ins. Co., 9 Kan. App. 2d 640, 685 P.2d 321 (1984).

C. Are Cleanup Costs "Equitable Relief" or Monetary "Damages"?

1. General Considerations:

Determining whether government cleanup actions seek "equitable relief" or "damages" is significant because of the well settled principle that claims for equitable relief are not claims for damages under liability insurance policies. Maryland Casualty Co. v. Armco, Inc., 822 F.2d 1348 (4th Cir. 1987) cert. denied 108 S. Ct. 703 (1988). Aetna Casualty & Surety Co. v. Hanna, 244 F.2d 499 (5th Cir. 1955).

Courts are split on the resolution of this issue. A number of decisions support the insurance industry argument that claims for cleanup costs are equitable in nature. These courts refuse to treat the claims as damages. Courts reach this result by concluding that CERCLA and other response cost actions assert claims for restitution, an equitable remedy. See e.g., Utica Mutual Ins. Co. v. Bausch & Lomb, Inc., 603 A. 2d 1241 (Md. App. 1992); Parker Solvents Co. v. Royal Ins. Co. of America, 950 F.2d 571 (8th Cir 1991) (applying Arkansas law); Aetna Casualty & Surety Co. v. Gulf Resources and Chemical Corp., 709 F. Supp. 958 (D. Idaho 1989); Cincinnati Ins. Co. v. Milliken and Co., 857 F.2d 979 (4th Cir. 1988); Maryland Casualty Co. v. Armco, Inc., 822 F.2d 1348 (4th Cir. 1987); Continental Ins. Co. v. Northeastern Pharmaceutical & Chemical Co. (NEPACCO), 842 F.2d 1977 (8th Cir. 1986) (applying Missouri law); Mraz v. Canadian Ins. Co., 804 F.2d 1325 (4th Cir. 1986); U.S. v. Mottolo, 605 F. Supp. 898 (D. New Hampshire 1985).

Other jurisdictions have rejected this distinction. These courts have adopted the insured's argument that the term "damages" includes all sums that the insured is obligated to pay by reason of liability imposed by law, including costs of complying with "equitable" orders or injunctions. See e.g., School District of Shorewood v. Wausau Ins. Companies, 488 N.W.2d 82 (Wis. 1922); Potomic Electric Power Co. v. Calif. Union Ins. Co., 777 F. Supp 989 (D.D.C. 1991); A.Y. McDonald Industries, Inc. v. Ins. Co. of N. America 475 N.W.2d 607 (Iowa 1991); Aetna Casualty and Surety Co. v. Pinther Corp., 948 F.2d 1507 (9th Cir. 1991)

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(Applying Idaho law); Aerojet General Corp. v. San Mateo County Superior Court, 211 Cal. App. 3d 684, 258 Cal. Rptr. 684 (1989); New Castle County v. Hartford Accident & Indemnity Company, 673 F. Supp. 1359 (D. Del. 1987); Township of Gloucester v. Maryland Casualty Company, 668 F. Supp. 394 (D.N.J. 1987); United States Aviex Company v. Traveller's Insurance Company, 125 Mich. App. 579, 336 N.W.2d 838 (1983). As stated by one such court,

> It is merely fortuitous from the standpoint of either plaintiff [the insured] or defendant [the insurer] that the State has chosen to have plaintiff remedy the contamination problem, rather than choosing to incur the costs of cleanup itself and then suing plaintiff to recover those costs. The damage to the natural resources is simply measured in the cost to restore the water to its original state.

Intel Corporation v. The Hartford Accident & Indemnity Company, 692 F. Supp. 1171 1188 (N.D. Cal. 1988) citing United States Aviex Co. v. Travelers Insurance Co., 125 Mich. App. 579, 330 N.W.2d 838 (1983).

2. Arizona Law.

No Arizona case has directly addressed this issue. But Arizona courts have adopted rules of insurance policy interpretation that could be applied to CGL policies.

a. Ambiguous Terms

The question whether a disputed policy term is ambiguous is a question of law to be determined by the Court. See e.g., Sparks v. Republic Mut. Life Ins. Co., 132 Ariz. 529, 647 P.2d 1127 (1982). Arizona courts find an ambiguity when various jurisdictions reach different conclusions as to the definition of a policy term in an insurance contract. Federal Ins. Co. v. P.A.T. Homes, Inc., 113 Ariz. 136, 547 P.2d 1050 (1976). Once the court finds an ambiguity, it will apply the words' ordinary meaning from the standpoint of one not versed in the law. Millar v. State Farm and Casualty Co., 167 Ariz. 93, 804 P.2d 822 (App. 1990).

Further, in interpreting an ambiguous term the Arizona courts normally examine the language of the clause, and consider public policy considerations and the purpose of the transaction as a whole. State Farm Mut. Auto Ins. Co. v. Carlson, 162 Ariz. 251, 782 P.2d 727 (1989). Only after these questions are resolved, are

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close questions regarding coverage or ambiguous policy language resolved against the entity drafting the policy. See e.g. Roberts v. State Farm Fire & Casualty Company, 146 Ariz. 284, 705 P.2d 1335 (1985); Tolano v. National Union Insurance Companies, 419 F.2d 377 (9th Cir. 1969) (applying Arizona law).

b. Unambiguous Terms.

In 1984, the Arizona Supreme Court stated that the terms of an unambiguous standardized insurance contract may be held to be unenforceable if the terms of the contract are beyond the reasonable expectations of the insured. When dealing with standardized boiler plate contracts, the Court will enforce the reasonable expectations of the insured and bind them only to those known terms. Darner Motor Sales, Inc. v. Universal Underwriters Insurance Company, 140 Ariz. 383, 393-94, 682 P.2d 388, 398-99 (1984). In so doing, the Court adopted the "Reasonable Expectation Doctrine." This Doctrine was first discussed by Professor Robert E. Keaton in 1970 as follows:

> The objectively reasonable expectations of applicants and intended beneficiaries regarding the terms of insurance contracts will be honored even though painstaking study of the policy provisions would have negated those expectations.

Keaton, Insurance Law Rights at Variance with Policy Provisions, 83 HARVARD LAW REVIEW 961, 967 (1970); see also 3 CORBIN ON CONTRACTS, Section 1, at 2 (1963).

Since Darner, the Arizona Court of Appeals has applied the Reasonable Expectation Doctrine in numerous situations. For example, in United States Fire Insurance v. Gentile, 147 Ariz. 589, 712 P.2d 436 (App. 1985), the Court found that an insured's continued renewal of an insurance policy despite a significant annual premium increase gave rise to a reasonable expectation of higher insurance coverage limits. The court applied the doctrine even though the insured made no specific inquiry about increasing the amount of coverage and the insurance agent made no specific recommendations. See also Heltzel v. Mecham Pontiac, 152 Ariz. 258, 730 P.2d 235 (1986) (where used car salesman "dickers a deal", a standardized boilerplate contract cannot undercut the dickered deal); State Farm Mutual Auto Insurance Company v. Bogart, 149 Ariz. 145, 153, 717 P.2d 449, 457 (1986) (automobile policy coverage with limits of $100,000.00/$300,000.00 could not be limited in boilerplate language to $15,000.00

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rental car coverage unless the insured was notified of such limitations); but see Mason v. State Farm Auto Insurance Company, 148 Ariz. 271, 273, 714 P.2d 441, 443 (App. 1985) (limitation of automobile insurance coverage to "owned but uninsured" vehicles upheld because the insured was not induced to believe that he had coverage for owned but not insured vehicles).

In an effort to clarify the scope of the Reasonable Expectation Doctrine, the Arizona Supreme Court has limited the Doctrine to four situations:

(1) Where the contract terms, although not ambiguous to the court, cannot be understood by the reasonably intelligent consumer who might check on his or her rights; or

(2) Where the insured did not receive full and adequate notice of the terms in question, and the provision is either unusual or unexpected, or one that emasculates apparent coverage; or

(3) When some activity which can be reasonably attributed to the insurer would create an objective impression of coverage in the mind of a reasonable insured; or

(4) Where some activity reasonably attributable to the insurer has induced a particular insured to reasonably believe that he has coverage, although such coverage is expressly or unambiguously denied in the policy.

Gordinier v. Aetna Casualty & Surety, 154 Ariz. 266, 273, 742 P.2d 277, 284 (1987). State Farm Mutual Auto Ins. Co. v. Dimmer, 160 Ariz. 453, 773 P.2d 1012 (App. 1989). Outside of these four situations, the Arizona courts are unlikely to apply the Reasonable Expectation Doctrine. See Green v. Mid-America Preferred Insurance Co., 156 Ariz. 265, 751 P.2d 581 (App. 1988) (explanation of terms contained in an endorsement held to be within the reasonable expectation of the issued and not contrary to declaration page but merely explanatory of declaration page provisions.)

D. Do Cleanup Costs Constitute "Property Damage"?

1. General Considerations.

CGLI policies provide coverage for all sums that the insured is legally obligated to pay "on account of property damage." "Property damage" is usually defined as "physical injury to or destruction of

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tangible property" or the "loss of the use of tangible property." A number of courts have interpreted this definition such that cleanup costs do not constitute property damage. This approach was demonstrated by the decision in Mraz v. Canadian Insurance Company, 804 F.2d 1325 (4th Cir. 1986) in which the Court held that the requirement under CERCLA to clean up contamination was not property damage but was rather merely an economic loss, similar to a normal business loss. The court relied upon the fact that under CERCLA, the government could take or require response actions in cases of a substantial threat of a release of a hazardous substance even before any damage actually occurred.

A number of jurisdictions have reached an opposite result and have rejected arguments that environmental contamination does not constitute "property damage." These courts reason that property is damaged to the extent that the environment has been adversely affected by the harmful substance and that the cost of eliminating the harmful substance from the environment is the measure of the damages. These courts include New York, New Jersey, California, Iowa, Oregon and the 9th Circuit Court of Appeals. See, e.g., Port of Portland v. Water Quality Ins. Syndicate, 796 F.2d 1188 (9th Cir. 1986); Lane Electric Co-Op Inc. v. Federated Rural Electric Ins. Corp., 114 Or. App. 156, 834 P.2d 502 (1992); A. Y. McDonald Industries, Inc. v. Insurance Co. of North America, 475 N.W.2d 607 (Iowa, 1991); Kutscher's Country Club Corp. v. Lincoln Ins. Co., 119 Misc. 2d 889, 465 N.Y. Supp. 2d 136 (Sup. Ct. 1983); Lansco, Inc. v. Dept. of Environmental Protection, 138 N.J. Super. 275, 350 A.2d 520, aff'd 145 N.J. Super. 433, 368 A.2d 363 (1976); cert. denied 73 N.J. 57, 368 A.2d 322 (1977).

2. Arizona Law.

Arizona courts have not yet addressed the issue whether cleanup costs constitute "property damage," but this issue also appears to be a close one under Arizona law. Hence, because Arizona courts have adopted the Reasonable Expectation Doctrine, Arizona courts might favor the insured on this issue. A look at what has occurred in other jurisdictions that have concluded cleanup costs are included within the phrase "property damage" illustrates this tendency.

The line of cases that support the view that environmental pollution is "property damage" originated in New York and New Jersey. In 1961, the New Jersey Courts adopted the Reasonable Expectation Doctrine when interpreting insurance contracts. See Kievet v. Loyal Protective Life Insurance Company, 34 N.J. 475, 170 A.2d

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22 (1961). Subsequently, in Lansco, Inc. v. Department of Environmental Protection, supra, a New Jersey court was faced with the issue whether a pollution cleanup claim constituted "property damage." The Court stated that cleanup claims constitute property damage under CGL policies. The Court added that "numerous decisions of our courts have held that an insured should receive what he generally may be understood to have contracted for." 138 N.J. Super. at 279, 350 A.2d at 524. In support of this statement, the New Jersey Court cited Kievet.

Those New York courts that have concluded that cleanup claims constitute property damage have relied on the New Jersey decision in Lansco. New York had previously adopted the Reasonable Expectation Doctrine in Licks v. Fidelity & Casualty Company, 306 N.Y. 357, 118 N.E.2d 355 (1954).

Thus although there is no Arizona precedent on this issue, several other jurisdictions that have concluded that pollution cleanup claims constitute "property damage" did so by relying on the Reasonable Expectation Doctrine, which is also judicially recognized in Arizona.

E. Was There An Occurrence?

1. Was It Accidental:

In determining whether a particular CGL policy applies, the insured must establish that a qualifying event has occurred. CGL policies have undergone a number of revisions over the last thirty years, many of which have had a significant impact on coverage for environmental pollution claims. Since many times the pollution prompting the cleanup order occurred many years before or occurred over many years, it is important to understand the progression of these changes and their impact.

Prior to 1966, the standard CGL policy insured against bodily injury or property damage caused by an "accident." These policies did not contain exclusions for injury or damages resulting from gradual contamination. Despite this fact, many courts limited their interpretation of "accident" to mean a sudden and identifiable event. Century Mutual Insurance Co. v. Southern Arizona Aviation, Inc., 8 Ariz. App. 384, 386, 446 P.2d 440, 492 (1968), ("Accident" as used in insurance policies was frequently defined as an undesigned, sudden and unexpected event, usually of an afflictive or unfortunate character, and often accompanied by a manifestation of force); American Home Products Corporation v. Liberty Mutual Insurance

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Company, 565 F. Supp. 1485 (S.D.N.Y. 1983) aff'd as modified 748 F.2d 760 (2nd Cir. 1984) ("accident" implies an event causing immediately injury or damage). Under this approach liability for losses extending over a period of time were not covered. Similarly, claims resulting from pollution caused by the natural result of the insured's business were also not covered. See generally, Goulka, The Pollution Exclusion, FOR THE DEFENSE, September, 1983 at 22.

In the first half of the 1960s, the requirement that the event be sudden became a minority view, and as a result much of the prior protection afforded insurers was lost. R. Tyler, Jr. and T. Wilcox, Pollution Exclusion Clauses: Problems in Interpretation and Application Under the Comprehensive General Liability Policy, 17 IDAHO LAW REVIEW 497, 499 (1981). This fact, plus the public's desire for coverage for multiple or episodic events, resulted in changes in the definition of a qualifying event.

2. Was It Intended or Expected?

In 1966, the standard CGLI policy language was modified to include the phrase "occurrence." The 1966 version defined "occurrence" as follows:

> An accident, including continuous or repeated exposure to conditions which results during the policy period in bodily injury or property damage neither expected nor intended from the standpoint of the insured.

In 1973, the definition of "occurrence" was modified slightly as follows:

> Occurrence means an accident including continuous or repeated exposure to conditions, which results in bodily injury or property damage neither expected nor intended from the standpoint of the insured; . . .

(emphasis added) Consequently, since 1966 the debate has focused on whether the resulting pollution was "intended" or "expected." While the "neither expected nor intended language" is found in the definition of "occurrence", most courts treat the provision as an exclusion which places the burden of proof on the insurance carrier to prove that the exclusion applies. Smith v. Hughes Aircraft Co. Corp., 783 F. Supp. 1222 (D. Az. 1991); Clemco Indus. v. Commercial Union IGS Co., 665 F. Supp. 816 (N.D. Calif, 1987), aff'd 848 F.2d

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1242 (9th Cir. 1988); Phoenix Pest Control Systems, Inc. v. Insurance Co. of North America, 165 Ariz. 31, 796 P.2d 463 (1990).

In resolving this issue in the environmental context, the relevant questions are whether the insured was (1) aware of the emission of the toxic substances into the environment, (2) aware of the toxicity of those substances, and (3) aware of the tendency of such substances to migrate into and through the soil and groundwater. In those cases where the insured has intentionally disposed of wastes on site, courts in other jurisdictions have concluded there was no "occurrence" because the pollution was intentional and not unexpected. Liberty Mutual Ins. Co. v. Triangle Industries Inc., 957 F.2d 1153 (4th Cir. 1992) (routine open dumping of sludge at landfill); American Motorists Ins,. Co. v. General Host Corp. 946 F.2d 1489 (10th Cir. 1991); Anaconda Minerals Co. v. Stoller Chemical Co., 773 F. Supp 1498 (D. Utah 1991); Great Lakes Container Corporation v. National Union Fire Insurance Company, 727 F.2d 30 (1st Cir. 1984) (no coverage for barrel reconditioning company that discharged pollutants onto the ground and into a nearby stream); American States Ins. Co. v. Md. Casualty Co., 587 F. Supp. 1549 (E.D. Md. 1984) (no coverage for dumping pollutants on site); Techalloy Co. v. Reliance Ins. Co., 338 Pa. Super. 1, 487 A.2d 870 (1984) (no coverage because insured had been previously put on notice that its ongoing actions resulted in contamination of nearby wells).

3. Arizona Law.

In determining whether a particular result was "unexpected or unintended," some courts have applied a "subjective standard" while other courts have used an "objective standard." Arizona courts have not specifically ruled whether a subjective or objective standard should be used in the pollution context, but Arizona courts have held that the subjective standard should be used in construing other insurance coverage disputes. In Farmers Ins. Co. v. Vagnozzi, 138 Ariz. 443, 449, 675 P.2d 703, 709 (1983), the Arizona Supreme Court held as follows:

> [T]he presumption that a person intends the ordinary consequences of his voluntary actions used in determining responsibility for the consequences of voluntary acts, has no application in the interpretation of terms used in insurance contracts. . . . Thus, the trier of fact must inquire into the actor's subjective intent.

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Arizona utilizes a two step process in determining subjective intent:

> First, intent is determined by looking at the insured's subjective desire to cause harm. *See Vagnozzi*, 138 Ariz. at 449, 675 P.2d at 709; *Meere*, 143 Ariz. at 359, 6794 P.2d at 189. An act, even though intentional, must be committed for the purpose of inflicting injury or harm:
>
> Second, if the nature and circumstances of the insured's intentional act were such that harm was substantially certain to result, intent may be inferred as a matter of law. Phoenix Control Systems v. Insurance Co. of North America, 165 Ariz. 31, 796 P.2d 463 (1990).

Arizona courts should, therefore, evaluate an insured's action based upon the subjective expectation and intention concerning the discharging of pollutants and the resulting contamination. If an insured can show that it did not specifically intend to discharge the alleged contaminants or that it did not intend or expect the resulting pollution to occur, then it should be able to show that the property damage was neither expected nor intended. But see Steinmetz v. National American Ins. Co., 121 Ariz. 268, 589 P.2d 911 (App. 1978) (where the court used an objective intent test to determine whether the consequences from an act were the natural and probable consequences rather than a subjective intent test). In view of the more recent nature of the Farmer decision, the fact that it has been cited by courts in other jurisdictions and that it was decided by the Arizona Supreme Court rather than an intermediate appellate court, it should have greater value as precedent.

Consequently, while it appears deliberate dumping would support an insurer's denial of coverage, this same reasoning should support a claim for coverage when the release or discharge is due to an unintentional or unexpected release from a container such as a retention pond, underground storage tank, pipeline, etc.

F. What Event Triggers Coverage?

1. General Considerations.

All CGL policies require that an occurrence happen "during the policy period." This raises an issue

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concerning what events within the policy period trigger coverage.

Courts in pollution insurance coverage litigation often analogize to asbestos case law to determine what factors trigger CGL insurance coverage. In the asbestos context, courts have relied primarily on three different theories to determine policy coverage. The "exposure theory" states that all insurers providing coverage at the time the injured party is exposed are jointly and severely bound to defend and indemnify the insured. Ducre v. Executive Officer of Halter Marine, Inc., 752 F.2d 976 (5th Cir. 1985); Owens-Illinois, Inc. v. Aetna Casualty & Surety Co., 668 F.2d 1034 (D.C.Cir. 1981). If applied to the pollution context, this theory results in coverage under any policy in effect when the release or discharge of pollution into the environment occurred. Armotek Industries, Inc. v. Employers Ins. of Wausau, 952 F.2d 756 (3rd Cir. 1992); Morrisville Water & Light Dept. v. U.S. Fidelity & Guaranty Co. 775 F. Supp 718 (D.Vt. 1991); Continental Ins. Co. v. NEPACCO, 842 F.2d 977 (8th Cir. 1988) (date of release triggers an occurrence).

The second theory used by courts in the asbestos context is called the "manifestation theory" and states that liability extends only to insurance companies providing coverage when the injuries either manifest themselves or become reasonably ascertainable by medical diagnosis. West American Ins. Co. v. Tufco Flooring East Inc., 104 N.C. App. 312, 409 S.E.2d 692 (1991); Appalachian Ins. Co. v. Liberty Mutual Ins. Co., 676 F.2d 56 (3rd Cir. 1982). Under this theory, coverage for environmental pollution claims would exist under those policies in effect when the pollution is discovered. Transamerica Ins. Co. of Michigan v. Ins. Co. of North America, 472 N.W.2d 5 (Mich. Ct. App. 1991); Mraz v. Canadian Ins. Co., 804 F.2d 1325 (4th Cir. 1986) (in a hazardous waste burial case, coverage was triggered when the leak and environmental damages was first discovered).

The last theory used by the courts in asbestos litigation cases is called the "triple trigger approach" and provides that coverage is triggered under all policies in effect from the date of first exposure through the date of manifestation. Keene Corp. v. Ins. Co. North America, 667 F.2d 1034 D.C. Cir. 1981), cert. denied, 455 U.S. 1007, 102 S.Ct. 1644 (1982). In the environmental pollution context, this theory would provide coverage under every insurance policy in effect from the date of the first release up through and including the date the pollution is discovered and harm diagnosed. Montrose Chemical Corp. v. Admiral Ins. Co.

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5 Cal. Rptr. 2d 358 (Ct. App. 1992); Ray Industries Inc. v. Liberty Mutual Ins. Co., 974 F.2d 754 (6th Cir. 1992) (applying Mich. law); Industrial Steel Container v. Firemen's Fund, 399 N.W.2d 156 (Minn. Ct. App. 1987) (coverage found under CGL policy issued after the leakage had occurred and after the pollution had been discovered because the court concluded that the leaking had continued up through the policy period in question); Centennial Ins. Co. v. Lumberman's Casualty Co., 677 F. Supp. 342, (E.D. Pa. 1987); Riehl v. Travelers Ins. Co., 772 F.2d 19 (3rd Cir. 1985).

2. Arizona Law:

Although they have not yet resolved the issue in an environmental contamination situation, Arizona courts have addressed the issue of what event triggers insurance coverage in the non-pollution context. The Arizona Court of Appeals in Century Mutual Ins. v. Southern Arizona Aviation, 8 Ariz. App. 384, 385, 466 P.2d 490, 491 (1968) adopted the rule that the time of an "occurrence" of an accident within the terms of a CGL policy is not the time the wrongful act was committed, but the time when the complaining party was actually damaged. In that case, the plaintiff sought recovery from Southern Arizona Aviation for damage to plaintiff's airplane. The plaintiff claimed that Southern Arizona Aviation negligently serviced and inspected his airplane which later caused an accident which damaged the aircraft. Century Mutual insured Southern Arizona Aviation at the time of the inspection, but not at the time of the accident. The court refused to find coverage because an insurer's liability should not "attach at the time of the negligent act, the proper rule seems to be that the liability accrues when the cause of action arises." Id. (quoting Toulane County Power Co. v. Pacific Surety Co., 43 Cal. App. 315, 185 P. 399 (1946)).

The Arizona Court of Appeals has applied the same rule in other cases. Outdoor World v. Continental Casualty Co., 122 Ariz. 292, 294, 594 P.2d 546, 548 (App. 1979) (coverage limited to bodily injury or property damage that occurs during the policy period); State v. Glenfalls Ins. Co., 125 Ariz. 328, 330, 609 P.2d 598, 600 (App. 1980) (coverage limited to loss sustained during policy period); Western Casualty & Surety Co. v. Hays, 162 Ariz. 61, 781 P.2d 38 (App. 1989) (no coverage for negligent act of seller of real property when negligence occurred prior to date of policy although buyer was not injured until act of government agency which occurred during coverage period.)

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The Arizona Supreme Court modified the foregoing rule in University Mechanical Contractors v. Puritan Ins., 150 Ariz. 299, 723 P.2d 648 (1986). The defendant in Puritan insured the plaintiff under a CGL policy that expired on October 13, 1979. During 1978, the plaintiff installed a solar heating and cooling facility in one of its buildings. Shortly after the system was installed, leaks developed due to problems with the O-rings in the pipes. Two months after the CGL policy issued to the plaintiff had expired, the pipes began to leak and the plaintiff was forced to repair the entire system. The trial court allowed coverage for the cost to replace the system. The court of appeals denied coverage on the grounds that the accident occurred two months after the policy had expired and thus there was no coverage. Puritan, 150 Ariz. 337, 339, 723 P.2d 686, 688. The Arizona Supreme Court vacated the judgment of the court of appeals and affirmed the trial court's judgment. The court based its decision on the grounds that coverage under the policy began when the O-rings were initially damaged (the O-rings were damaged while the policy was still in effect), although the accident leading up to the coverage dispute did not occur until after the policy had expired. See also, Arizona Property and Casualty Ins. Guaranty Fund v. Helme, 153 Ariz. 129, 134, 735 P.2d 451, 456 (1987) (coverage extends to all occurrences that proximately caused damages or injuries if the occurrences occurred during the policy period).

If an Arizona court chooses to apply the same analysis used by the Arizona Supreme Court in Puritan and Helme, it could find that coverage is triggered when the pollution contaminated the soil or aquifer as opposed to when the EPA or ADEQ assert cleanup liability or when the public is injured by the contamination. It should be noted, however, that in Puritan the Arizona Supreme Court stated that it strayed from the Century Mutual and Glenfalls rule only because the insurance policy in Puritan provided coverage for "physical injury to . . . tangible property which occurs during the policy period, including the loss of use at any time resulting therefrom." (Emphasis added.) 150 Ariz. at 302, 723 P.2d at 651. If, on the other hand, an Arizona court applies the Century Mutual and Glenfalls analysis, it could conclude that coverage for an EPA or ADEQ ordered cleanup is triggered only under those CGL policies in effect when the contamination is discovered in the environment.

Until the Arizona courts have designated which of the various "triggers" they will endorse in the environmental contamination context, an insured would be well advised to put on notice all carriers that issued policies providing coverage at the time the pollution

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was originally released (exposure theory) on the date of discovery (manifestation theory), and all times in between and up through any cleanup (triple trigger).

G. Do Any Exclusions Apply?

1. Owned Property Exclusion.

a. General Considerations:

The standard CGL policy usually excludes coverage for property damage to: (1) property owned, occupied by or rented to the insured, (2) property used by the insured, (3) property in the care, custody or control of the insured or (4) property over which the insured is for any purpose exercising physical control. According to the insurance industry this exclusion was intended to prevent the CGL policy from serving as first party insurance. This exclusion, however, has met with varying success. The courts have developed different theories to avoid this exclusion.

The first such theory employs a "horizontal analysis" and is demonstrated by the case of Broadwell Realty Services, Inc. v. The Fidelity & Casualty Company of New York, 218 N.J. Super. 516, 528 A.2d 76 (App. Div. 1987), wherein the Court held that the cost of measures taken by an insured on its own property in response to federal or state agency directives designed to abate continuing or threatened imminent third party property damage in the form of groundwater contamination was not within the terms of the exclusion. The court reasoned that to hold otherwise would require the insured to delay taking preventive measures thereby permitting the accumulation of property damage to third parties at the expense of the insurer. See also, Claussen v. Aetna Cas. & Surety Co., 754 F. Supp. 1576 (D. Ga. 1990); United States v. Conservation Chemical Company, 263 F. Supp. 152 (W.D. Mo. 1986); Bankers Trust Company v. Hartford Accident & Indemnity Company, 518 F. Supp. 371 (S.D.N.Y. 1981). Under this theory, the corrective action is not being taken to clean up "owned" property but is being taken to prevent migration off site and contamination of adjacent property.

Other states, however, have held that threatened migration off site is not sufficient to void the exclusion. New Jersey Dept. of Environmental Protection v. Signo Trading Int'l Inc., 130 N.J. 51, 612 A.2d 932 (1992).

Even this approach is not a blanket authorization for remedial action on an insured's premises. In Broadwell as well as those other jurisdictions endorsing

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this theory, the courts distinguish between onsite response costs to avoid continuing or threatened offsite migration of pollution and onsite response costs for pollution not subject to offsite migration. Only the first type of response costs are outside the owned property exclusion. Those courts also acknowledge, however, that determining the difference between the two types of response costs could be difficult.

In any event, it is clear that prophylactic capital improvements to avoid potential future contamination is not property damage, but rather a business expense. CPS Chemical Company v. Continental Insurance Company, 272 N.J. Super. 175, 536 A.2d 311 (1988) (no coverage for the costs of modifying manufacturing procedures or mechanisms designed to prevent future discharges or emissions of hazardous wastes).

The second theory adopted by some jurisdictions to avoid the "owned property" exclusion uses a "vertical analysis." This theory is demonstrated in Intel Corporation v. The Hartford Accident & Indemnity Company, 692 F. Supp. 1171 (N.D. Cal. 1988) where the court concluded that the "owned property" exclusion did not defeat coverage for response costs on the insured's premises. The court concluded that under California law, all groundwater within the state was the property of the people of the state of California and that therefore contamination of the groundwater, even under the insured's property, was itself injury to the property of third persons, thereby negating the owned property exclusion. A similar approach was used in U.S. Aviex Company v. Traveller's Insurance Company, 336 N.W.2d 838 (Mich. App. 1983) when the Court held that under Michigan law a landowner's use of groundwater beneath his property was limited to that reasonable use which did not cause interference with his neighbor's reasonable use of the same groundwater. See also MAPCO Alaska Petroleum, Inc. v. Central National Ins. Co. of Omaha 784 F. Supp. 1454 (D. Ala. 1991). See also Lane Electric Co-op Inc. v. Federated Rural Electric Ins. Corp., 116 Or. App. 156, 834 P.2d 502 (1992); Utica Mutual Insurance Co. v. Bausch & Lomb, 91 Mich. App. 1, 603 A. 2d 1241 91992).

b. Arizona Law:

It is well established in Arizona that a person has the duty to mitigate damages. This duty applies in actions involving personal injury and real property. Coury Brothers Ranches, Inc. v. Ellsworth, 103 Ariz. 515, 446 P.2d 458 (1968); Fulton v. Woodford, 17 Ariz. App. 490, 498 P.2d 564 (1972). This is significant because many of those courts which have held

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that the pollution exclusion clause was not applicable to onsite response costs incurred to prevent offsite migration have described that approach as the natural application of the obligation of an insured to mitigate damages. See Goodyear Rubber & Supply, Inc. v. Great American Ins. Co., 545 F.2d 95 (9th Cir. 1976) (cost of sewage operation, which prevented covered property damage, was covered); Globe Indemnity Company v. State of California, 43 Cal. App. 3d 745, 118 Cal. Rptr. 75 (1974). Thus, in view of the duty to mitigate, it is possible that Arizona courts may adopt the "horizontal analysis" and conclude that response costs incurred in connection with onsite activities in order to prevent actual or threatened offsite migration do not fall within the owned property exclusion.

Similarly, as discussed in greater detail in the chapters on groundwater quality, Arizona has a strong history of protecting the quantity and quality of groundwater.

Under Arizona law, there is no right to ownership in groundwater prior to its capture and withdrawal from a common supply. See Town of Chino Valley v. City of Prescott, 131 Ariz. 78, 638 P.2d 1324 (1981) appeal dismissed 457 U.S. 1101, 102 S. Ct. 297 (1982). But Arizona has a strong interest in protecting its groundwater. All aquifers in Arizona are classified for drinking water use unless the Department of Environmental Quality changes the classification. A.R.S. § 49-224. To date, no aquifer in Arizona has been reclassified. The strong public policy in favor of protecting groundwater would be a factor in favor of the Arizona courts adopting the "vertical analysis" in the event of groundwater contamination.

2. Pollution Exclusion Clause.

a. First Generation Clause:

As in the case of "accident" versus "occurrence," the CGL policy has undergone changes with respect to pollution exclusion clauses. Pollution exclusion clauses first began to appear in policies in 1973. Between 1973 and 1986, the typical CGL policy included a pollution exclusion clause which provided that coverage did not apply:

> . . . to bodily injury or property damage arising out of the discharge, disbursal, release or escape of smoke, vapors, soot, fumes, acids, alkalis, toxic chemicals, liquids or gases, waste materials or other irritants, contam-

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> inants or pollutants into or upon land, the atmosphere or any water course or body of water; but this exclusion does not apply if such discharge, disbursal, release or escape is sudden and accidental.

(Emphasis added). The pollution exclusion clause shifted the focus of inquiry from the result of the polluting event to the pollution itself.

As with most issues concerning insurance claims for environmental pollution, there is a split of authority on the interpretation and affect to be given pollution exclusion clauses. New Castle County v. Hartford Accident & Indemnity Company, 673 F. Supp. 1359 (D. Del. 1987) (listing cases and concluding that there is clearly a split of authority); Broadwell Realty Services, Inc. v. Fidelity & Casualty Company of New York, supra (listing cases and noting some degree of disarray).

The insureds' contention in favor of coverage is premised upon the argument that "sudden and accidental" is merely a reiteration of "unexpected and unintended" which is the terminology used to define "occurrence." Under this approach, if there is an "occurrence," by definition, the pollution exclusion clause cannot apply. Joy Technologies Inc. v. Liberty Mutual Ins. Co., 421 S.E.2d 493 (W. Va. Ct. App. 1992); Hela Mining Co. v. New Hampshire Ins. Co., 811 P.2d 1083 (Colo. 1991); Claussen v. Aetna Cas. & Surety Co., 754 F. Supp. 1576 (D. Ga. 1990); Grinnel Mutual Reinsurance Co. v. Wosmuth, 432 N.W.2d 495 (Minn. 1988); Broadwell Realty Services, Inc. v. Fidelity & Casualty Co. of N.Y., supra; Joansville Products, Inc. v. Transamerican Insurance Group, 156 Mich. App. 508, 402 N.W.2d 46 (1986); Illinois v. Martin, 126 Ill. App. 3d 94, 467 N.E.2d 287 (1983); New Castle County v. Hartford Accident & Indemnity Co., supra; Jackson Township Municipal Utilities Authority v. Hartford Accident & Indemnity Co., 186 N.J. Super 156, 451 A.2d 990 (1982); Pepper Steel Alloys, Inc. v. U.S. Fidelity & Casualty Co., 668 F. Supp. 154 (S.D. Fla. 1981); All State Insurance Company v. Klock Oil Company, 73 A.D.2d 486, 426 N.Y. Supp. 2d 603 (1980).

One court cited as further support for this conclusion a 1970 circular submitted by the Insurance Rating Board that explained that the pollution exclusion clause was intended by the insurance industry only to clarify that the definition of occurrence excluded coverage for expected or intended results. Kipin Industries, Inc. v. American Universal Insurance

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Company, 535 N.E.2d 334, 338 (Ohio Ct. App. 1987). In a very recent decision another court held that an insurer was estopped from arguing that a pollution exclusion clause bared coverage for the costs of cleaning up gradual pollution because the insurance industry "knowingly mistated [the exclusions] intended effect" in 1970 when it sought to have state insurance regulators approve the new policy language. Morton Int'l Inc. v. General Accident Ins. Co. of America, 1993 WL 273969 (N.J.).

The insurer's opposition on this issue is premised upon the argument that the pollution exclusion clause is not ambiguous and should be given its plain meaning. Under this argument, "sudden and accidental" is not synonymous with "unintended and unexpected" but has a very definite and time limiting meaning. Aetna Casualty & Surety Co. v. General Dynamics, 968 F.2d 7807 (8th Cir. 1992) (applying Mo. law); A. Johnson & Co. v. Aetna Casualty & Surety Co., 933 F.2d 66 (1st Cir. 1991); Northern Ins. Co. of N.Y. v. Aardvark Assoc. Inc., 942 F.2d 189 (3rd Cir. 1991) (applying Pa. law); Upjohn Co. v. New Hampshire Ins. Co., 438 Mich. 197, 476 N.W.2d 392 (1991); CPC v. Northbrook Express Surplus Ins. Co., 759 F. Supp 966 (D.R.I. 1991) (sudden means abruptly and precipitantly or over a short period of time); Olin Corp. v. Ins. Co. of North America, 762 F.Supp. 548 (S.D.N.Y. 1991); Clausen v. Aetna Casualty & Surety Company, 676 F. Supp. 1571 (S.D. Ga. 1987) (the exclusionary clause clearly indicates the carrier's intent to limit coverage for pollution related damages "to situations where such damages are caused by sudden pollution incidents involving equipment malfunctions, explosions and the like.") Anaconda Minerals Co. v. Stolher Chemical Co., 773 F. Supp. 1498 (D. Utah 1991); Bureau of Engraving v. Federal Ins. Co., 793 F. Supp. 209 (D. Minn. 1992). See also Lower Paxon Township v. United States Fidelity & Guaranty Co., 557 A.2d 393 (Pa. 1989) (gradual escape of methane gas over several months from a landfill not sudden); U.S. Fidelity & Guaranty Co. v. The Korman Group, 693 F. Supp. 253 (E.D. Pa. 1988); International Minerals v. Chemical Corporation v. Liberty Mutual Insurance Company, 168 Ill. App. 3rd 361, 522 N.E.2d 750 (1988) (pollution occurring over a three year period was not sudden even if it was accidental); Technicon Electronics Corp. v. American Home Assurance Co., 533 N.Y.S.2d 91 (App. 1988). Transamerica Ins. Co. v. Sunnes, 77 Or. App. 136, 711 P.2d 212 (1985) (intentional discharge over two year period neither sudden nor accidental); Techalloy Co. v. Reliance Ins. Co., 487 A.2d 820 (Sup. Ct. Pa. 1984) (sporadic contamination over 25 year period was not sudden); City of Milwaukee v. Allied Smelting Corporation, 117 Wis. 2d

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377, 344 N.W.2d 523 (App. 1983) (discharge of acid into City sewers during a 2 to 10 year period not sudden).

Still a different approach has been adopted by a few jurisdictions which have applied the so-called "active polluter" interpretation. Under this analysis, even if the insurers' argument concerning "sudden and accidental" is adopted, it is adopted only with respect to "active polluters." Thus, pollution exclusion clauses have been held not to bar coverage where the insured was not the actual polluter but was only statutorily responsible for the cleanup. Niagara County v. Utica Mutual Insurance Company, 80 A.D.2d 415, 439 N.Y.S.2d 538 (1981) (pollution exclusion clause did not apply to the County which had not participated in any dumping of contaminants in the "Love Canal"); cf. United Pacific Insurance Company v. Vans West Lake Union Inc., 34 Wash. App. 708, 664 P.2d 1262 (1983). But see Northern Ins. Co. v. Aardvark Associates, 942 F.2d 189 (3rd Cir. 1991).

A recent case further limited the impact of pollution exclusion clauses. In United States Fidelity & Guaranty Co. v. Wilkin Insulation Co., 578 N.E.2d 926 (Ill. 1991), the court held that the pollution exclusion clause was not intended to apply to the internal, asbestos contaminated atmosphere of a building. Finally, one recent case held that the resulting damages must be "unexpected and unintended," not necessarily the discharge. Fortieu v. Flambeau Plastics Co., 476 N.W.2d 593 (Wis. App. 1991).

b. Second Generation Clause:

In 1986, the pollution exclusion clause in the standard CGL policy was again changed. The 1986 version provides that coverage does not apply to:

> (1) Bodily injury or property damage arising out of the actual, alleged or threatened discharge, disbursal, release or escape of pollutants;
>
> (a) at or from premises you own, rent or occupy;
>
> (b) at or from any site or location used by or for you or others for the handling, storage, disposal, processing or treatment of waste;
>
> (c) at which you at any time transported, handled, stored, treated,

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disposed of, or processed as waste by or for you or any person or organization for whom you may be legally responsible; or

(d) at or from any site or location on which you or any contractors or subcontractors working directly or indirectly on your behalf or performing operations:

(i) if the pollutants are brought on or to the site or location in connection with such operations; or

(ii) if the operations are to test for, monitor, cleanup, remove, contain, treat, detoxify or neutralize the pollutants.

(2) Any loss, cost or expense arising out of any governmental direction or request that you test for, monitor, clean up, remove, contain, treat, detoxify or neutralize pollutants. Pollutants means any solid, liquid, gaseous or thermal irritant or contaminant, including smoke, vapor, soot, fumes, acids, alkalis, chemicals and waste. Waste includes materials to be recycled, reconditioned or reclaimed.

The 1986 pollution exclusion clause differs significantly from the earlier version and is often referred to as the "absolute pollution exclusion clause." For example, there is no longer an exception to the exclusion for "sudden and accidental" emissions of pollutants. The ambiguous nature of these terms relied upon by many courts in construing the prior pollution exclusion clause should therefore no longer pose interpretation problems.

Additionally, claims based on threatened and alleged emissions, as well as those based on actual emissions, are excluded. This change appears to exclude coverage for those governmental actions against the insured seeking injunctive relief to prevent imminent future pollution. This seems to be aimed at those jurisdictions which have held that despite the "owned property" exclusion response costs incurred for onsite activities to prevent threatened or actual offsite migration are covered costs.

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Subsection (1)(b) appears to be broader than subsection (1)(a) and coverage is excluded under subsection (1)(b) regardless of whether emissions are at or from the insured's premises. In order for offsite emissions to be excluded, however, the site must be used for handling "waste." Since "waste" refers to a particular class of pollutants as defined in the revised exclusion, an emission of pollutants other than "waste" offsite should not be excluded under this subsection.

Assuming that subsection (1)(b) applies, passive as well as "active" or "actual" polluters would arguably be affected. This is apparently intended to avoid the interpretation placed on some prior pollution exclusion clauses that they only apply to actual polluters.

Subsection (1)(c) appear to address an issue raised by the court in CPS Chemical Company, Inc. v. Continent Insurance Company, 49 A.2d 1265 (N.J. Super. 1984) reversed on other grounds, 495 A.2d 886 (N.J. Super. 1985). In that case, the court held that whether the insured may have been legally liable under principles of respondeat superior for the knowing illegal conduct for the company it had contracted with for the disposal of toxic waste was irrelevant in defining obligations between the insured and its carriers. The court went on to hold that from the insured's standpoint, the property damage was neither expected nor intended.

Finally, section (2) is apparently intended to exclude coverage for claims against the insured arising out of CERCLA, RCRA and other state and federal statutes which empower governmental bodies to force potentially responsible parties to clean up the contamination and to seek to recover response costs from the polluter.

The 1986 revisions to the pollution exclusion clause indicate that insurers are attempting to delineate in detail those risks they are not willing to assume and to specifically exclude those types of claims which have become most prevalent in the environmental pollution context. Consequently, the age old maxim of caveat emptor should become the byword of those insureds who may have environmental pollution problems and who purchase CGL policies after 1986.

A review of recent case law indicates that the majority of jurisdictions that have interpreted the 1973 pollution exclusion clause for the first time after 1985, have adopted the insurers' position that "sudden" requires a temporal relationship between the time of the release and subsequent contamination. Similarly, the few jurisdictions that have addressed the 1986 revision

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have upheld its applicability. U.S. Bronze Powders, Inc. v. Commerce & Industry Ins. Co., 259 N.J. Super. 109, 611 A.2d 667 (1992); Vantage Development Corp. v. American Environmental Technologies Corp., 251 N.J. Super. 516, 598 A.2d 948 (1991); Guilford Industries, Inc. v. Liberty Mutual Insurance Co., 688 F. Supp. 792 (D. Maine 1988); Township of Gloucester v. Maryland Casualty Co., 668 F. Supp. 394 (D.N.J. 1987); New Castle County v. Hartford Accident & Indemnity Co., 673 F. Supp. 1359 (D. Del. 1987); Healy Tibbits Construction Co. v. Foremost Insurance Co., 482 F. Supp. 830 (N.D. Cal. 1979) (similar language sustained in maritime insurance policy).

c. Arizona Law:

Only one Arizona case has yet to construe the first generation pollution exclusion clause. In Smith v. Hughes Aircraft Co. Corp., 783 F. Supp. 1222 (D. Ariz. 1991) the Court concluded that California law was controlling, but stated in dicta that under Arizona law "sudden and accidental" was ambiguous because other jurisdictions had interpreted it differently. The Court then concluded that "sudden" unmistakably connotes a temporal quality.

> Instead of being synonymous with unexpected and unintended, the pollution exclusion restricts coverage to accidents distinct in time.

783 F. Supp. at 1230 citing United States Fidelity & Guar. v. Morrison Grain Co., 734 F. Supp. 437 (D. Kan. 1990). The court further indicated that public policy considerations supported this conclusion. Limiting coverage to "sudden" pollution, increases the likelihood that such conduct was unintentional because it decreases the likelihood that an insured will turn a blind eye toward negligent waste practices that over time poison the environment. Finally, the court noted that Hughes was not an unsophisticated consumer, maintained its own insurance department and staffed it with professionals and had employed professional insurance brokers. Consequently, the court refused to interpret the ambiguity against the insurance company.

While no other Arizona court has interpreted "sudden and accidental" in the environmental context, Arizona courts have construed "injury by accident." In a worker's compensation case where compensation is only given if the case involves an industrial "injury by accident," the court concluded that exposure to deleterious conditions constitutes an injury by accident even though there is no suddenness in a temporal sense.

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See Montgomery Ward & Co. v. Industrial Comm'n, 27 Ariz. App. 765, 769, 558 P.2d 960, 964 (1976). The Arizona courts might therefore be amenable to an argument that "sudden and accidental" does not have a temporal limitation and does not require an immediate event. If so, Arizona would be one of several jurisdictions in which a federal court's interpretation of state law differs from the state court's interpretation of that same state law.

III. PROCEDURAL ISSUES

In addition to the substantive issues discussed previously, in any environmental pollution coverage dispute between an insured and an insurer, certain procedural issues arise. While these issues can arise whenever an insurer disputes coverage, they seem to be aggravated in the area of environmental pollution claims.

A. Notice Requirements:

1. General Considerations:

All policies, including CGL policies, include varying requirements that notice of occurrences, claims or suits be provided to the insurer. Many policies require an insured to give "immediate notice," to the insurer of a claim or suit while at the same time "reasonable notice" or "notice as soon as practicable" is required concerning an occurrence. Some policies even contain provisions requiring notice of an occurrence within a specified period of time.

In the environmental pollution context, courts have held that late notice is a defense to the insurers obligation to defend the suit or pay any judgment arising therefrom. Olin Corp. v. Ins. Co. of North America, 929 F.2d (2nd Cir. 1991) (delay of 1 year in providing notice voids coverage, no prejudice need be shown under New York law.) Wausau Insurance Company v. Valspar Corporation, 594 F. Supp. 269 (N.D. Ill. 1984) (notice ten years after the first suit concerning dumping of contaminants and 17 months after the filing of a related suit was untimely thereby relieving the insurer of its obligations). Furthermore, some jurisdictions have held that the requirement to show prejudice from late notice does not apply to claims made policies. Industrial Indemnity v. Superior Court, 224 Cal. App. 3d 828, 275 Cal. Rptr. 218 (1990).

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2. Arizona Law:

In Arizona, an insurance carrier is entitled to notice as set forth in the insurance policy. Arizona courts have softened this requirement, however, by holding that before an insurer can escape the obligation to defend a suit or pay a judgment arising therefrom, the insurer must establish prejudice as a result of the late notice. Arizona Title Insurance Trust Company v. Pace, 8 Ariz. App. 269, 445 P.2d 471 (1968). Further, the mere fact of delay in and of itself is not a sufficient showing of prejudice to satisfy this requirement. Globe Indemnity Company v. Bloomfield, 115 Ariz. 5, 562 P.2d 1372 (App. 1977).

a. Notice as Soon as Possible:

The requirements to provide "reasonable notice" or notice "as soon as possible" appears to be synonymous under Arizona law. As soon as practicable is generally construed to mean within a reasonable time period after the happening of an event taking into consideration all the facts and circumstances of the case. Lindus v. Northern Insurance Company of New York, 6 Ariz. App. 74, 429 P.2d 708 (1968) reh'g denied, opinion supplemented 6 Ariz. App. 298, 432 P.2d 157 (1968), vacated 103 Ariz. 160, 438 P.2d 311 (1968). Under this approach, courts have determined that a notice provided three months after the happening of event was in fact reasonable and was provided "as soon as practicable." American Home Assurance Company v. Sand, 253 F. Supp. 942 (D. Ariz. 1965). On the other hand, Arizona courts have also held that a delay of four and one-half years in providing notice after a traffic accident was unreasonable thereby excusing the insurer from its obligations. State Farm Mutual Auto Insurance Company v. Tarentino, 114 Ariz. 420, 561 P.2d 744 (1977). See also Aetna Casualty Insurance Company v. Martin Brothers Container and Timber Products Corporation, 256 F. Supp. 145 (D. Or. 1966) (notice provided 30 days after the insured first received the complaint concerning emissions of fly ash from its operations was held to be reasonable under the circumstances).

b. "Immediate" Notice:

Although there are no recent cases interpreting requirements of "immediate" notice, in at least one case, an Arizona court concluded that a policy requiring "immediate notice" was not complied with by notice given until 91 days after a loss occurred. Watson v. Ocean Acc. & Guarantee Corp., 28 Ariz. 573, 238 P.2d 338 (1925).

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3. Waiver of Policy Defenses:

a. General Considerations:

Just as an insured has the obligation to provide notice pursuant to the provisions of the policy, an insurer has the obligation to specify within a reasonable time after receiving notice whether it will honor the request for indemnification and defend the suit. As a part of this duty, the insurer also has the obligation to specify the bases for denying coverage. Failure to do so can result in the insurer being precluded from later arguing that the denial was based on additional grounds not included in the original denial. This result was demonstrated in the case of Intel Corporation v. The Hartford Accident Indemnity Company, 692 F. Supp. 1171 (N.D. Ca. 1988). In that case the court held that the insurance company had waived its right to rely on the pollution exclusion clause contained within the CGL policy because the letter denying coverage only cited the "owned property" exclusion. Based upon this fact, the court concluded that the "owned property" exclusion was the only basis for the denial despite the fact that the insurer had previously sent a letter to the insured indicating that additional exclusions, including the pollution exclusion clause, may apply; Thus an insurer can waive its right to rely on defenses not specified in its denial of coverage which a reasonable investigation would have uncovered. See also Dilingham Corporation v. Employer's Mutual Liability Insurance Company of Wisconsin, 503 F.2d 1181, 1185 (9th Cir. 1974) (applying Oregon law).

b. Arizona Law:

A review of Arizona case law indicates that Arizona courts may also take a hard line with respect to waiver of defenses to coverage when the insurer denies environmental pollution claims. For example, in U.S. Fidelity and Guaranty Co. v. Powercraft Homes, 141 Ariz. 71, 685 P.2d 136 (App. 1984), the court held that having once denied coverage on the basis that the claim was not covered by the policy, the insurer could not later raise the new defense of the insured's failure to comply subsequently with the policy's notice requirements. Conversely in the case of DMAFB Federal Credit Union v. Employers Mutual Liability Insurance Company of Wisconsin, 96 Ariz. 399, 396 P.2d 20 (1964), the court held that the insurer was not estopped to raise at trial a defense under the second provision of an exclusion clause because the insurer had quoted the full text of the clause in a reply to the notice of claim, although it was admitted that the insurer had emphasized the first provision of the exclusion clause in later

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correspondence. In a situation where an insurer denies coverage on only one or a specified number of bases, Arizona courts may therefore preclude it from raising additional grounds in any subsequent suit by the insured. While this issue is an interesting one, as a practical matter, an insurer will normally cite every possible defense in its letter denying coverage in order to avoid this outcome.

4. Duty to Defend.

a. What is the duty to Defend?

The duty of an insurer to defend against a claim is a significant right for the insured, especially in environmental pollution litigation. Often times a diligent and early defense and investigation will disclose evidence and facts that will shift the burden to pay for pollution clean up costs to other potentially responsible parties. In cases where the insured had very little or no involvement, a strong defense effort early in the case might qualify the insured for "de minimis" treatment. Further, small companies and individuals, often times are not able to afford counsel if it were not for the insurer's duty to defend.

It is generally recognized that an insurer's duty to defend an action brought against one of its insureds is separate and apart from the obligation to pay for any successful suit against that insured. Paulin v. Fireman's Fund Ins. Co., 1 Ariz. App. 408, 403 P.2d 555 (1965). This is premised upon the fact that in most policies, including CGL policies, the insurer assumes the responsibility to defend claims even in those cases where a subsequent trial indicates that the suit was without merit.

b. What determines the duty to Defend?

Earlier Arizona cases established that so long as some allegation in the complaint brought the claim within the coverage of the policy, a duty to defend arose. Paulin v. Fireman's Fund Ins. Co., 1 Ariz. App. 408, 403 P.2d 555 (1965). Subsequent Arizona cases, however, have modified this absolute requirement. The more recent cases provide that generally if the complaint in the action brought against the insured upon its face alleges facts which come within the coverage of the policy, the insurer is obligated to assume the defense of the action, but if the insurer is in possession of facts, not contained within the pleadings, upon which it can be established that no coverage applies, the insurer is free to deny defense of the case. Kepner v. Western Fire Ins. Co., 109 Ariz. 329,

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509 P.2d 222 (1973); Western Casualty & Surety Co. v. Hays, 162 Ariz. 61, 781 P.2d 38 (App. 1989). This modified duty to defend is based upon the belief that an insurer's duty to defend a policyholder is not absolute and should be determined by the actual facts rather than upon the mere allegations contained within the complaint filed by third parties against the policyholder. Granite State Insurance Corporation v. Mountain States Telephone & Telegraph Company, 117 Ariz. 432, 573 P.2d 506 (App. 1977). The justification for this relaxation of the duty to defend is several fold. First, under modern rules of practice, such as the Federal and Arizona Rules of Civil Procedure, the complaint serves only as a notice pleading and is framed before significant discovery crystallizes the facts of the case. Second, there are many cases where the allegations in the complaint, even if proved, would not be decisive as to the obligation of the insured to pay the resulting judgment. Lastly, if on the actual facts the insurer has reason to believe that the policy does not cover the insured, the interests of the insured and the insurer may in fact diverge. In such a situation, forcing the insurer to defend could be adverse to the interests of the insured.

c. Defense Costs:

An insurer's duty to defend can become more complicated in environmental and toxic tort claims in view of the fact that often times several insurers are involved because the triggering events have occurred over an extended period of time and involve several policies. The courts have resolved this added complexity in-various ways. In U.S. Fidelity & Guaranty Co. v. Thomas Solvent Co., 683 F. Supp. 1139 (W.D. Mich. 1988) the court held that each of the insured's primary automobile and CGL carriers owed an independent duty to defend and were jointly and severally liable for past and future defense costs without regard to the periods during which the insured was uninsured (e. g. insured had no obligation to share in the defense costs).

In National Standard Ins. Co. v. Continental Ins. Co., 1984 WL 23448 (N.D. Tex.), the court ruled that each insurer at risk must defend and that costs could be shared in accordance with the contribution and co-insurance clauses contained within the policies. In the asbestos case of Insurance Co. of North America v. Forty Eight Insulation, Inc., 633 F.2d 1212 (6th Cir. 1980) aff'd on rehearing 657 F.2d 814 (6th Cir. 1981) cert. denied, 455 U.S. 1009, 102 S. Ct. 1648 (1981) the court provided that liability should be pro rated among all insurers according to the period of time each was at risk. If this last approach were also applied to

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defense obligations, it could also require a self insured to pay for its pro-rata share.

d. When does the duty to defend arise?

A final issue sometimes arises concerning when an insurer's duty to defend is triggered. Here the courts are again "in disarray." Some courts have concluded that the mere receipt of a PRP letter from the EPA triggers the insurer's duty to defend. Colonial Tanning Corp. v. Home Indemnity Co., 780 F.Supp 906 (N.D.N.Y. 1992) (receipt of administrative complaint creates a duty to defend); A. Y. McDonald Indus. v. Insurance Co. of North America, 475 N.W.2d 607 (Iowa 1991) ("suit" includes any attempt to gain an end by legal process); Avondale Indus., Inc. v. Travelers Indemn. Co., 887 F.2d 1200, 1206 (2d Cir. 1989), reh'g denied, 894 F.2d 498 (1990) (a "PRP letter" which demanded information and the submission of a remedial action plan under threat of monetary penalties, waiver of defense and suit for non-compliance was "sufficiently adversarial to constitute a suit under New York law and within the meaning of the policy"; a letter merely inviting voluntary action might not have amounted to a "suit"); Hazen Paper Co. v. United States Fidelity and Guar. Co., 407 Mass. 689, 693-97, 555 N.E.2d 576, 579-82 (1990) (EPA letter demanding implementation of all necessary remedial measures and reimbursing EPA's costs on a "voluntary" basis and requesting information but with possible criminal penalties for non-compliance was substantially equivalent to a lawsuit); C. D. Spangler Const. Co. v. Indus. Crankshaft and Eng. Co., 326 N.C, 133, 388 S.E.2d 557, (1990), ("suit" has different meanings; state compliance orders qualify).

Other jurisdictions have held to the contrary. Ray Industries Inc. v. Liberty Mutual Ins. Co., 974 F.2d 754 (6th Cir. 1992) (Mich. law); Aetna Casualty & Surety Co. v. Gulf Resources & Chemical Corp., 709 F. Supp. 958 (C.D. Idaho 1989).

Still other jurisdictions have held that the mere existence of a statutory requirement to take corrective action created a duty to defend. Compass Ins. Co. v. Cravens, Dargen & Co., 748 P.2d 724, 728 (Wyo. 1988) (CGL policy covered the cost of cleaning up damage to an adjacent property caused by an oil spill on the insured's property even though it was cleaned up before any claim was asserted, because a Wyoming statute required the clean-up); Upjohn Co. v. New Hampshire Inc. Co., 178 Mich. Ct. App. 706, 444 N.W.2d 813, 819 (1989) ("[I]t makes no difference that Upjohn took the remedial action it did before being ordered to do so and, in

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fact, we believe that such swift remedial action should be encouraged rather than discouraged.")

Finally, the Arizona Court of Appeals has said that an insurer's obligation to defend does not arise until the insurer is presented with a complaint. Manny v. Anderson's Estate, 117 Ariz. 548, 574 P.2d 36 (App. 1977). Therefore, it is unclear whether an insurance company has a duty to defend under Arizona law in the absence of a specific action filed against the insured.

5. Reservation of Rights.

Often, in response to a notice of claim, an insured will be notified that the insurer will defend the lawsuit but only under a reservation of rights whereby the insurance company reserves the right to deny coverage and refuse payment of any resulting settlement or judgment. In the recent case of United Services Automobile Ass'n v. Morris, 154 Ariz. 113, 741 P.2d 246 (1987), the Arizona Supreme Court discussed the rights and obligations of an insured when the insurer defends a case under a reservation of rights. In most CGLI policies, the insured is under an affirmative obligation to cooperate with the insurance company and is prohibited from entering into a settlement without the consent of the insurer. In Morris, the Arizona Supreme Court held that where an insurer defends its insured under a reservation of rights and alleges a coverage defense, the insured does not violate the cooperation clause by entering into a settlement agreement with the opposing party. The court went on to explain, however, that in any subsequent suit attempting to collect on the policy, either by the insured or by the opposing party under an assignment of rights, the insurer would not be bound by any stipulations entered into by the insured with the opposing party. In the case in question, the insurer defended the suit while reserving the policy defense that the action resulting in injury to the third party was an intentional act and therefore excluded under the terms of the policy. The Court indicated that in any subsequent suit against the insurer, the insurer would not be bound by any stipulations between the insured and the opposing party that the actions in question were either negligent or intentional and could attempt to prove that the actions of the insured were intentional and therefore excluded under the terms of the policy.

The Court in Morris also indicated that the insured had the burden to establish that the settlement was fair and reasonable under the circumstances and was not fraudulent or collusive. Failure of the insured, or the assignee thereof, to carry that burden would allow

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the insurer to also challenge the amount of the settlement. If on the other hand, the insured satisfies this requirement, the amount of the settlement is not open to debate.

6. Denial of Coverage.

In addition to defending a law suit under a reservation of rights, an insurer may simply reject coverage in its entirety. In such a situation, the insured would be free to pursue whatever accommodation is possible with the opposing party. It has long been established in Arizona that where an indemnity insurer repudiates all liability under its policy, without reason, an insured is relieved from complying with any further conditions of the policy and is entitled to settle on whatever terms are possible and then seek recovery under the policy. Watson v. Ocean Accident and Guaranty Corporation, 28 Ariz. 573, 238 P. 338 (1925). Further, under Damron v. Sledge, 105 Ariz. 151, 460 P.2d 497 (1969), the court held that when an insurer denies coverage, an insured could enter into an agreement with the plaintiff without violating his duty to cooperate. Thus, in the situation where the insurer denies coverage the insurer should be kept advised concerning the intention to enter into settlement negotiations with the opposing party and the progress of those settlement negotiations, and be given a final opportunity to accept its duty to indemnify the insured prior to execution of any final settlement with the opposing party.

7. Limits/Deductible.

As discussed previously, each insurer may be required to provide coverage to the extent of its policy limits. Many CGLI policies issued prior to 1986 provided simply that coverage up to the policy limit applied "per occurrence." Further, even those policies which specified aggregate limits usually provided greater aggregate coverage than for each occurrence. Thus, a question often arises concerning whether the damage or injury is the result of a single or multiple occurrence. Depending on the size of the claim, resolution of that issue can impact dramatically on either an insured or its carrier. For example, as the number of occurrences increases, the total exposure of the insurer also rises. Similarly since many if not all such policies carry deductible clauses, an increase in the number of occurrences results in higher deductibles being paid by the insured before the insurer is required to indemnify. Consequently in a small pollution matter or in the case of a high deductible, it would be in the insured's best interest to have a "single occurrence,"

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while in larger cases or instances of small deductibles the opposite would be the case.

It should be noted that most courts hold that the determination of which "trigger" applies is not relevant to the separate issue concerning how many occurrences are included. Rather, some courts determine the number of occurrences by determining the cause or causes of a particular injury or damage. Under this approach, if there was only one proximate, uninterrupted and continuing cause which resulted in the claimed damage, then there is only one occurrence.

This approach is not unanimous, however. A small number of courts calculate the number of occurrences by focusing on the number of injuries (or distinct types of damages) rather than the number of causes for those injuries. Under this minority approach, there would be as many occurrences as there are injured or damaged victims.

8. Excess Coverage.

In many situations, the total insurance coverage is provided by a combination of primary insurers and excess insurers. This fact raises another issue in those cases where the "trigger" results in several primary policies being at risk. In such a case, must all primary policies be exhausted before any excess insurance coverage is triggered, or may the insured select the year for which it seeks coverage and then exhaust all primary and excess policies at risk that year before pursuing any other primary or excess policies for any prior or subsequent periods?

While Arizona courts have not yet addressed this issue, other jurisdictions have split. A California court has held that an excess carrier has no duty to indemnify until all primary policies are exhausted. A court in Texas on the other hand held that the insured was only required to exhaust its primary coverage once and could then seek indemnity from the corresponding excess carrier for the year the insured had unilaterally selected although the initial suit had named all carriers providing coverage for a six year period.

IV. OTHER INSURANCE.

The foregoing discussion focused primarily on the CGLI policy. In determining whether one is entitled to indemnity for defense and response costs, one should always be cognizant that other insurance policies may provide coverage even if the CGL policy does not because of any of the myriad of reasons discussed above.

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Consideration should be given to coverage provided by excess policies, automobile policies, homeowners policies, property policies and any other insurance policy that may have provided coverage to either the corporation or individual, the site or the activities thereon at any time.

A. Environmental Impairment Liability Insurance.

1. Coverage.

The coverage disputes arising between insureds and insurers as a result of environmental pollution situations and the need for insureds to be able to demonstrate financial capacity for USTs resulted in the development of Environmental Impairment Liability Insurance (EIL). EIL policies are specifically designed to cover certain environmental pollution claims, although a close reading of the policy is necessary in order to appreciate its full, or limited, coverage.

The typical EIL policy provides coverage for "environmental damages" and other costs, including clean-up costs associated with the insured's business, operations and/or locations. Environmental damage is typically defined as follows:

> the injurious presence in or upon land, the atmosphere, or any watercourse or body of water of solid, liquid gaseous, or thermal contaminants, irritants, or pollutants;

Similarly, pollution incident which can also be used in the coverage provision is defined as follows:

> The emission, discharge, release, or escape of:
>
> (1) any solid, liquid, gaseous, or thermal contaminants, irritants, or pollutants directly from the insured site,
>
> (2) or any waste materials from the operation of the insured site which are legally consigned for delivery or delivered to a waste facility for storage, disposal, processing, or treatment into or upon land, the atmosphere, or any watercourse or body of water, provided that such emission, discharge, release, or escape results in environmental damage. The entirety of

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any such emission, discharge, release, or escape, whether sudden or gradual, shall be deemed to be one "pollution incident."

2. Exceptions.

Although the EIL policy was intended to fill the environmental coverage gap, most such policies contain their own exclusions, many of which are unique to EIL policies while some are similar to those in the CGLI policy. The following are typical exclusions in an EIL policy.

1) The cost of cleaning up "pre-existing' conditions;

2) The cost of maintenance and routine cleanup;

3) Fines imposed by governmental action or punitive damages;

4) Oil and gas platforms;

5) Handling nuclear fuel or waste;

6) Disposing of toxic wastes in international water;

7) Previously closed facilities:

This insurance does not apply to bodily injury, property damage, or environmental damage arising out of a pollution incident emanating from an insured site or part thereof used by the named insured for the storage, disposal, processing, or treatment of waste materials, if such site or part thereof was:

(1) sealed off, closed, abandoned, or alienated prior to the retroactive date shown in the declarations of this policy, or

(2) sealed off or closed subject to statute, ordinance, or governmental regulation or directive requiring maintenance or monitoring

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durIng or after such sealing of for closure;

8) Pollution damage resulting from statutory violations:

This insurance does not apply to bodily injury, property damage, or environmental damage arising out of a pollution incident which results from or is directly or indirectly attributable to failure to comply with any applicable statute, regulation, ordinance, directive, or order relating to the protection of the environment and promulgated by any governmental body, provided that failure to comply is a willful or deliberate act or omission of

(1) the insured, or

(2) any named insured, or any member, partner, or executive officer thereof."

3. Automobile Liability Insurance.

Insureds most likely to seek indemnity under automobile liability policies are transporters who have hauled hazardous waste to a disposal facility. Coverage may depend on language which is contained in most auto insurance policies that requires the insured to indemnify against damages for bodily injury or property damage caused by an accident or occurrence and arising out of "the ownership, maintenance or use of a covered vehicle."

Courts in virtually every jurisdiction have addressed the issue whether bodily injury or property damage arises from the "ownership maintenance or use" of a covered vehicle. See 1 R. Long, The Law of Liability Insurance, Section 1.24 (1985); see also Annotation, Automobile Liability Insurance, 15 A.L.R. 4th 10 (1982). Courts generally interpret the phrase broadly and require automobile insurers to indemnify their insureds against liability for damages in a variety of circumstances. As in the case of CGL policies, there is a split of authority with respect to the applicability

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of automobile liability policies to environmental pollution claims.

At least one appellate court has ruled against coverage for the transport of waste under an automobile liability policy. In Waste Mgt. of Carolinas v. Peerless Ins., 323 S.E.2d 726 (N.C. App. 1984), reversed on other grounds, 340 S.E.2d 374 (N.C. 1986), the United States filed an action against owners and operators of a landfill seeking injunctive relief and reimbursement for costs incurred in attempting to remedy groundwater contamination allegedly caused by the defendants. The defendants in turn filed a third party action against Trash Removal service (TRS), which was the operator of a waste collection and transportation service for residential, commercial and industrial generators. The court of appeals held that the automobile policy issued to the TRS did not cover the loss reasoning as follows:

> [If] TRS is responsible for the discharge of hazardous waste materials at the . . . [landfill] this was due to TRS's policies and practices concerning materials handled, rather than any particular feature of, or malfunction of improper operation of (its vehicles). We do not find the requisite "causal connection" between the use of the [vehicles] and the injury. 323 S.E.2d at 735.

The federal court in United States Fidelity and Guaranty Company v. Thomas Solvent Company, 683 F. Supp. 1139 (W.D. MI 1988), applying Michigan law, concluded differently. In that case, the court determined that the issuer of an automobile policy was required to defend against a Michigan CERCLA claim alleging groundwater contamination caused in part by "improper handling" of solvents during the loading process and against private party claims alleging that spills resulted from seepage from transfer hoses connecting underground storage tanks to the insured's trucks. While this case only addressed the obligation of the insurer to defend the suit, it indicates a willingness of courts to extend an insurer's obligation under an auto liability policy to environmental pollution claims.

4. Property Insurance.

Property insurance policies can also provide potential coverage for environmental pollution claims. While a comprehensive analysis of such policies is beyond the scope of this paper, some examples of

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coverage for environmental claims may be helpful to demonstrate the possibility of such insurance.

a. Debris Removal.

In Lexington Ins. Co. v. Ryder System, Inc., 142 Ga. App. 36, 234 S.E.2d 839 (1977), the court held that there was coverage under a property insurance policy for the cost of cleaning up fuel that had leaked from an UST at the insured's place of business. The court did so by concluding that the fuel removal qualified under the debris removal clause of the policy in question. Similarly, in Insurance Co. of St. Louis v. McConnell Coast Co., 428 S.W.2d 659 (Tex. 1968) a leak from a tank was held to be covered because the loss was determined to have been caused by "corrosion" of the tank which was a covered peril under the property policy and not "contamination" which was listed as an excluded peril. The analogy to leaking UST is not difficult. Conversely, in Vantage Development Corp. v. American Environmental Technologies Corp., 251 N.J. Super. 516, 598 A.2d 948 (1991) the court held that soil was not included within the definition of "scheduled property" and that therefore there was no coverage under the applicable property insurance policy.

b. Scheduled Property.

In Vantage Development Corp. v. American Environmental Technologies Corp., supra, the court held that contaminated soil was not included within the definition of "scheduled property" and that therefore there was no coverage under the applicable property insurance policy.

c. Arizona Law.

Arizona courts agree that the general rule of insurance law is that only the proximate cause of a loss and not remote causes can be considered in determining whether recovery may be had under a policy of insurance. In J.R. Norton Co. v. Fireman's Fund Ins. Co., 116 Ariz. 427, 569 P.2d 857 (App. 1977), an employee at a cattle feedlot fraudulently concealed the fact that cattle were dying. When the owner eventually discovered the deaths he sought coverage under his fidelity insurance policy. The carrier denied coverage claiming that the deaths were due to mismanagement (non-covered event) rather than employee dishonesty (a covered event). The court rejected the insurer's argument reasoning that if the employee's concealment prevented the owner from becoming aware of the deaths and if the owner could prove he would have taken corrective action if he'd known, then

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the cause of the owner's damage was the dishonesty of the employee.

By analogy, if an insured's property policies cover employee negligence, and if that negligence either caused the pollution or prevented the insured from discovering the pollution in a timely fashion (i.e. failing to keep current inventories), and if the insured can establish that it would have taken corrective action to prevent further pollution if it had known, it may have a basis to argue that the removal costs were proximately caused by a covered peril (i.e. employee negligence) rather than pollution.

Even a homeowner's policy may provide coverage. For example, such policies normally cover "insured locations." Often times, insured locations include "vacate land, other than farmland, owned by or rented to an insured." Thus, situations may arise where an insured may be able to obtain coverage under this or other boilerplate provisions of a homeowner's policy, even if an applicable CGL policy did not provide coverage. A review of the case law fails to disclose any cases which have addressed the applicability of this or other typical provisions contained within a homeowner's policy to the environmental pollution context. However, in view of the ongoing nature of the environmental pollution problem, and the inability of many insureds to fund the required cleanup, it is not hard to imagine the day when homeowner's policies will be pursued by insureds in order to obtain coverage for environmental pollution response costs just as CGL policies have been pursued in the past. Whether such challenges are successful, only time will tell.

5. Title Insurance.

Finally, in one recent case an insured attempted unsuccessfully to obtain coverage for environmental contamination clean up costs under Title insurance issued on the property. Lickmill Creek Apts. v. Chicago Title Ins. Co., 6 TXLR 420 (Cal. Ct. App. 1991).

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CHAPTER 18

CRIMINAL ENVIRONMENTAL LIABILITY

I. INTRODUCTION.

In order to more effectively ensure compliance with environmental laws, Congress and the state legislatures have incorporated into these laws an array of criminal sanctions.[1] To enforce these sanctions, in 1981 the Environmental Protection Agency (the "EPA") established an Office of Criminal Enforcement, and the Department of Justice (the "DOJ") established an Environmental Crimes Unit of the Land's Division.

These measure have resulted in a seemingly exponential growth in criminal prosecutions under federal environmental laws. According to DOJ's Environmental Crimes Section statistics, between October 1, 1982 and March 26, 1992, a total of 675 defendants have been convicted federally of environmental crimes. This figure represents 225 corporations and 450 individuals. These convictions have resulted in the imposition of over $332,000,000 in fines and almost 190 years of jail time. Helen J. Brunner, Criminal Enforcement of Environmental Laws, 22 Envtl. Law 1315, 1327 (1992). In fiscal 1992 alone, DOJ set records for federal enforcement with 191 criminal indictments, $163 million in criminal penalties, $65.6 million recovered in civil penalties for environmental violations, and $923 million recovered for natural resources damages. Report Alleges Justice Department Failure to Prosecute, Environment Reporter, November 6, 1992, at 1710. In addition, the last three years have witnessed two of the largest criminal fines in the United States environmental history. On March 26, 1992, the DOJ announced that Rockwell International Corporation had agreed to plead guilty to five felonies and five misdemeanors in connection with hazardous waste violations at the Rocky Flats nuclear weapons plant near Denver, Colorado. Rockwell, which runs Rocky Flats for the United States Department of Energy, agreed to pay a fine of $18.5 million, representing the second largest

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[1] Despite the fact that most view it as a recent development, criminal sanctions were among the first tools used to combat environmental pollution. In 1899, Congress passed the Rivers and Harbors Act of 1899, 33 U.S.C.A. §§ 407, 411 (1988), more commonly known as the Refuse Act. That act provides criminal sanctions for the discharge of any refuse matter into a navigable water of the United States without a permit.

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fine ever assessed for environmental crimes. The largest fine came in 1991, when Exxon agreed to pay $125 million to settle the criminal charges that arose out of the Exxon Valdez oil spill. Larry Howell, Environmental Crimes: The Boom is "Busting" Corporations and Their Responsible Officers, Am. J. of Tr. Advcy 417, 420 (1992).

Past EPA enforcement actions targeted corporations. More recently, however, EPA and DOJ have also sought penalties against senior corporate officials. During fiscal 1988, for example, defendants, most of whom were corporate officers, were sentenced to a total of 39 years imprisonment and fined about $7,000,000. During the first half of fiscal 1989, individual defendants were sentenced to almost 31 years in prison and fined more than $9,000,000. This is in contrast to the figures for the fiscal year 1985 in which the defendants were sentenced to less than six years imprisonment and fined only $560,000.

Recent action by Congress also demonstrates that law makers are determined to punish environmental offenders more severely. In 1980, Congress amended the Resource Conservation and Recovery Act (RCRA), 42 U.S.C.A. § 6901 et seq., to establish the first felony sanctions for violations of a federal environmental protection statute. The 1986 amendments to the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), 42 U.S.C.A. § 9601 et seq., also include felony sanctions for certain violations of that statute. The 1987 reauthorization of the Clean Water Act, 33 U.S.C.A. § 1251 et seq. also includes substantially strengthened penalties and raised some violations of the Act to the levels of felonies as do the 1990 Clean Air Act Amendments, 42 U.S.C.A. § 7401 et seq.

In addition to the criminal sanctions available under the various environmental statutes, prosecutors may employ other federal and state statutes to punish environmental criminals. Federal and state statutes prohibit false reporting, mail fraud, racketeering and conspiracy. For these reasons, it is imperative that all individuals dealing with hazardous substances have a basic understanding of their rights under the criminal justice system.

This paper will address the following questions, the answers to which should provide a basic understanding of environmental crimes and equip the reader/listener with knowledge that is vital to avoiding criminal liability.

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1. What are the applicable federal and state environmental criminal statutes? What other criminal statutes can be charged? What effect, if any, do the federal sentencing guidelines have on criminal liability for environmental crimes?

2. What level of knowledge or intent is required pursuant to the criminal environmental statutes?

3. What are your rights when inspected by EPA or the Arizona Department of Environmental Quality ("ADEQ")? Under what circumstances are you entitled to split samples?

4. What is the relationship between administrative inspections and criminal investigations/searches? Does one preclude the other?

5. How can a company avoid criminal prosecution? What is the value of internal audits and how can the audit result be protected from forced disclosure to state and federal authorities?

II. FEDERAL AND STATE ENVIRONMENTAL AND CRIMINAL STATUTES.

A. Environmental Statutes.

Criminal enforcement agencies have numerous statutes under which individuals can be prosecuted for environmental crimes. Most of the federal and state environmental statutes include as penalties fines, imprisonment, probation or a combination thereof. The following are the federal environmental statutes which carry criminal penalties: 1) the Refuse Act, 33 U.S.C.A. § 407 et seq., 2) the Clean Air Act, 42 U.S.C.A. § 7401 et seq., 3) the Clean Water Act, 33 U.S.C.A. § 1251, 4) the Resource Conservation and Recovery Act (RCRA), 42 U.S.C.A. § 6901 et seq., 5) the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), 42 U.S.C.A. § 9601 et seq., 6) the Toxic Substances Control Act (TSCA), 15 U.S.C.A. § 2601 et seq., and 7) the Federal Insecticide, Fungicide and Rodenticide Act, 7 U.S.C.A. § 1361 et seq. Arizona has also enacted several environmental statutes with

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criminal penalty provisions: 1) The Air Quality Act, A.R.S. § 49-401 et seq., 2) the Water Quality Act, A.R.S. § 49-201 et seq., 3) the Solid Waste Act, A.R.S. § 49-701 et seq., 4) the Hazardous Waste Disposal Act, A.R.S. § 49-901 et seq., and 5) the Used Oil Management Act, A.R.S. § 49-801 et seq. A detailed discussion of each is contained in Appendix A.

B. Criminal Statutes.

In addition to the environmental statutes, prosecuting agencies may also charge individuals and corporations under applicable general criminal statutes. For example, on April 26, 1988, a Federal Grand Jury for the first time indicted the president of a company for violations of the Racketeer Influence and Corrupt Organization Act (RICO), 18 U.S.C.A. § 1961 et seq. He was also indicted for obstruction of justice and a series of mail fraud violations. The indictment also charged the company with transporting hazardous waste to an unpermitted facility and making false statements in a hazardous waste manifest. The following are the general federal criminal statutes that are readily applied to environmental crimes: 1) Conspiracy, 18 U.S.C.A. § 371, 2) False Statement, 18 U.S.C.A. § 1001, 3) RICO, 18 U.S.C.A. § 1961, 4) Mail Fraud, 18 U.S.C.A. § 1341, and 5) Obstruction of Justice, 18 U.S.C.A. § 1505. Arizona has similarly applied the following criminal statutes to environmental crimes: 1) Conspiracy, A.R.S. § 13-1003, 2) Fraud, A.R.S. § 13-2310, 3) False Statements, A.R.S. § 13-2407, and 4) Obstruction of Justice, A.R.S. § 13-2409. A more detailed description of each is also included in Appendix A.

C. Federal Sentencing Guidelines.

Each environmental or general criminal statute listed above contains its own specified range of punishments, either in the statute itself or by classifying the violation as to degree of felony or misdemeanor and relying on general sentencing provisions. The recent institution of federal sentencing guidelines, however, has already had and continues to have an impact on sentences imposed for environmental crimes under federal law.

In 1984, Congress enacted the Comprehensive Crime Control Act which established the U.S. Sentencing Commission. Following extensive public hearings and research the Commission issued sentencing guidelines in 1987. The guidelines are based upon a systematic approach to sentencing in an effort to avoid unrestrained judicial discretion. Perhaps in no area of criminal law will the increase in sentences under the

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guidelines be felt more strongly than in the environmental context. Prior to the sentencing guidelines, defendants routinely received suspended sentences. Post-guideline defendants, however, routinely go to prison. The guidelines establish three categories of environmental violations that cover most offenses within the major environmental statutes: 1) knowing endangerment; 2) mishandling hazardous or toxic substances or pesticides; and 3) mishandling other pollutants. For each category, a "base offense level" is assigned, followed by a list of "specific offense characteristics" that either add or subtract points from the base offense level to reach a defendant's point level. The sentence imposed is determined within a narrow range for that point level taking into account the defendant's criminal history.

The guidelines indicate that base offense levels for environmental crimes range from 6 to 24, with a range of 0-10 years imprisonment . These levels can be increased for such things as a history of prior offenses, willfully obstructing or impeding the investigation, whether the defendant was a manager or supervisor, whether the defendant was an organizer or leader of the criminal conduct or whether the defendant abused a position of public or private trust. Conversely, the base levels can be decreased if the defendant clearly demonstrates a recognition and acceptance of personal responsibility. Some of the factors taken into consideration in determining whether the defendant has demonstrated such acceptance is voluntary termination of the criminal conduct, voluntary restitution prior to a finding of guilt, voluntary and truthful admissions to the authorities, voluntary resignation from the office or position held during the commission of the offense and the timeliness of the defendant's conduct in manifesting the acceptance of responsibility.

Although a court has the discretion to go outside the guidelines, it must fully justify the basis for doing so. Consequently, courts are more likely to apply the guidelines. The effect of the sentencing guidelines is in many cases to provide a floor to the sentencing court's discretion and in some cases provides both a floor and a ceiling in those cases where the maximum sentence under the particular statute is less than the minimum sentence under the sentencing guideline. A simple example will demonstrate.

A negligent discharge of nonhazardous pollutants under the Clean Water Act in violation of an issued permit (which violates § 1319(c)(1)) can result in a statutory penalty of up to one year imprisonment. Under

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the sentencing guidelines, however, the same conduct would result in a total offense level of 14 (6 for the base offense of mishandling other environmental pollutants, 4 for the discharge of pollutants and 4 for discharging in violation of a permit). This would result in a sentence range of 15 to 21 months under the guidelines. The one year maximum under the Clean Water Act in essence becomes a minimum. Thus, while the penalties imposed under the federal environmental and general criminal statutes can be severe, the sentencing guidelines can further increase that severity by reducing the court's discretion, or as demonstrated above, by eliminating it completely.

The impact of the sentencing guidelines is best illustrated by comparing what a pre-guidelines defendant in an actual case received to what he would receive under the guidelines. In United States v. Hoflin, the former director of Public Works for the City of Ocean Shores, Washington, was convicted of directing an employee to illegally bury drums of paint waste, in violation of RCRA, and of illegally disposing of grease, in violation of the Clean Water Act. He was placed on probation for two years. 880 F.2d 1033 (9th Cir. 1989), cert. denied, 493 U.S. 1083 (1990). Had the offense occurred after November 1, 1987, the result would have been notably different. Because the RCRA violation involved the mishandling of a hazardous substance, Hoflin's base offense level would be eight. The violation would be increased by four levels because an actual release of the substance occurred. In addition, four more levels would be added because Hoflin disposed of the substance without a permit. As director of public works, Hoflin also would almost certainly face another increase of at least two levels for his position of authority. Therefore his offense level would have been at least 18, which requires 27 to 33 months in prison.

III. KNOWLEDGE OR INTENT.

The criminal law has long held that an individual must be shown to have exhibited criminal intent in order to be found guilty of a crime. This criminal intent is commonly referred to as mens rea. In Morrisette v. United States, the United States Supreme Court reversed the theft conviction of a man who had taken shell casings from a government target range. The defendant claimed that he believed the casings had been abandoned. The court refused to impose strict liability stating as follows:

> A relation between some mental element and punishment for a harmful act is almost as

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> instinctive as the child's familiar exculpatory "but I didn't mean to" and has afforded the rational basis for a tardy and unfinished substitution of deterrents and reformation in place of retaliation and vengeance as the motivation for public prosecution.

342 U.S. 246, 250-251, 72 S. Ct. 240 (1952).

This traditional concept of criminal intent has been diluted over the years as a result of "public welfare" legislation. For example, in United States v. Dotterwerch the president of a pharmaceutical company was convicted of violating the Food, Drug and Cosmetic Act by shipping misbranded and adulterated drugs. The court stated as follows with respect to intent:

> [The Act] dispenses with the conventional requirement of criminal conduct awareness of some wrongdoing. In the interest of the larger good, it puts the burden of acting at hazard upon a person otherwise innocent but standing in responsible relation to a public danger.

320 U.S. 277, 64 S. Ct. 134 (1943).

Similarly, in United States v. Park a chief executive officer of a corporation was convicted under the same statute. The defendant was held responsible, by virtue of his corporate position, for the rodent contamination of food stored in the corporation warehouse. The conviction was upheld by the United States Supreme Court which found the defendant was ultimately responsible for corporate policy and hence accountable for the charges alleged against him. 421 U.S. 658, 95 S. Ct. 1903 (1975).

The rationale behind these and other "public welfare" statutes appears to be that the public welfare demands accountability without proof of criminal intent. In view of the risk to society as a whole, an individual should be criminally accountable for the actual results of his actions rather than the intended results.

A majority of the environmental statutes require a defendant's actions to have been "knowing." However, the trend of eliminating criminal intent as a necessary element has continued in connection with environmental crimes. As such, the knowing requirement has been all but whittled away by most courts. Even those courts that have required a more rigorous amount of knowledge have virtually negated the requirement by allowing

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juries to infer the requisite knowledge from a defendant's position of responsibility (e.g., where defendant is a corporate officer).

In United States v. Johnson Towers, Inc. the government appealed the dismissal of a three-count indictment which charged a company and two individuals with the illegal disposal of hazardous wastes. The defendant company repaired large motor vehicles. In the process it used industrial chemicals containing hazardous wastes as defined in RCRA. The waste chemicals produced from operating the plant were placed in a trench which flowed into a creek. This was done without a permit from the EPA as required by RCRA.

The Third Circuit Court of Appeals reinstated the indictment. In doing so, the court discussed the meaning of the word "knowingly" as used in the statute. The court noted that it could, if it chose, read the statute without any mens rea requirement:

> Since we have already concluded that this is a regulatory statute which can be classified as a "public welfare statute," there would be a reasonable basis for reading the statute without any mens rea requirement.

The court went on to state, however, that such an interpretation would be arbitrary and nonsensical when applied to RCRA because it contained the word "knowingly." The court therefore held that the word "knowingly" should be read so that the government had to prove that the defendants knew they were acting without a permit when disposing of hazardous wastes. The court further held, however, as follows:

> Under certain regulatory statutes requiring "knowing" conduct, the government need prove only knowledge of the action taken and not of the statute forbidding them.

741 F.2d 662 (3rd Cir. 1984).

In another case, United States v. International Minerals and Chemicals Corporation, the defendant was charged with the shipment of dangerous materials in violation of ICC regulations. The Supreme Court held that proof of knowledge of the shipment alone was all the mens rea required. The government did not have to prove that the defendants knew of the existence or content of the prohibiting regulations. The court also noted that there was a presumption of awareness of regulations by those who deal with dangerous materials,

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despite the defendants' protestations to the contrary. 402 U.S. 558, 91 S. Ct. 1697 (1971).

Thus, the "knowing" standard requires knowledge only of the act of emitting a pollutant, not to the determination of whether the pollutant is regulated by a particular act or whether a permit was required. Thus, in order to establish a violation, the government must prove only knowledge that an action was taken and not knowledge of the statute forbidding the action.

Further, knowledge does not require certainty. As stated in United States v. United States Gypsum, "it is generally accepted that a person who acts [or omits to act] intends a result of his act [or omission] . . . when he knows that the result is practically certain to follow from his conduct, whatever his desire may be as to that result." 438 U.S. 422, 435, 98 S. Ct. 2864, 2877 (1978).

A jury may infer knowledge from an examination of circumstances surrounding the wrongful act, for instance, the existence of a regulatory scheme. Furthermore, a jury can determine that a defendant "knowingly" performed an act if the defendant willfully blinded himself to the conduct, circumstances or results specified in the statute. The knowledge requirement of the criminal penalty provisions of the environmental statutes may also be imputed to individuals in "responsible positions" within a defendant corporation. Some environmental statutes, however, prohibit imputing knowledge of a violation, e.g., the 1990 Clean Air Act Amendments and the Clean Water Act.

Recently, courts have demonstrated little reluctance in imposing criminal liability without specific criminal intent by the defendant. In United States v. Hoflin, the public works director for a Washington community was prosecuted for directing the disposal of drums of old paint on city property adjacent to a sewage treatment plant. For this action, defendant was convicted by the district court with the knowing disposal of a hazardous waste at an unpermitted facility in violation of RCRA. 880 F.2d 1033 (9th Cir. 1989), cert. denied, 439 U.S. 1083 (1990).

On appeal, defendant argued that the jury should have been instructed that he had to have known that the disposal took place at an unpermitted facility. The Ninth Circuit rejected this argument. The court held that knowledge of the absence of a RCRA permit was not necessary to prosecution under RCRA. The court further held that the jury instructions requiring proof that defendant was aware that the waste material in question

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was "not an innocuous substance such as water" was sufficient to demonstrate knowledge that the substance was hazardous.

Similarly, in United States v. Dee, the Fourth Circuit held that for a conviction under RCRA for the knowing storage and disposal of hazardous waste, "the government did not need to prove defendants knew violation of RCRA was a crime, nor that regulations existed listing and identifying the chemical wastes as RCRA hazardous wastes." 912 F.2d 741, 7455 (4th Cir. 1990). The court went on to note, however, that the knowledge element of the charge did require proof that the defendants had knowledge of the general hazardous character of the wastes at issue. Id.

In U.S. v. Sellers, the Fifth Circuit did not even require that much. In that case, defendant was convicted in the district court of knowingly and willfully disposing of a paint solvent (a hazardous waste) without obtaining a permit. On appeal, defendant challenged the jury instructions on the grounds that they did not require the government to prove that defendant knew that the paint solvent could be hazardous or harmful to persons or the environment. 926 F.2d 410 (5th Cir. 1991).

In affirming the lower court holding, the Fifth Circuit reasoned that the jury charge was not error in that the government need only prove that defendant knowingly disposed of wastes, and not that defendant knew the wastes were hazardous. The court reasoned that "where . . . dangerous or deleterious devices or products or obnoxious waste materials are involved, the probability of regulation is so great that anyone who is aware that he is in possession of them or dealing with them must be presumed to be aware of the regulation." Id. at 416. Thus, according to the court, it should have come as no surprise to defendant that the disposal of paint solvent, an extremely flammable substance, was hazardous and therefore regulated. Id. at 417.

Based on the foregoing, it is clear that a defense based upon lack of intent or ignorance of a particular statutory prohibition or requirement will not succeed if an individual is prosecuted under the environmental statutes. Vigilance and prevention are therefore even more important.

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IV. RIGHTS WHEN INSPECTED.

A. Split Samples.

RCRA provides that any person who generates, stores, treats, transports, disposes of or otherwise handles hazardous wastes must furnish hazardous waste information upon request to any representative of EPA or other designated officer and permits such representative to have reasonable access to all records relating to such waste. See 42 U.S.C.A. § 6901, et seq. A similar provision is included in the Administrative Regulations promulgated under the Arizona Hazardous Waste Disposal Act. The federal statute also provides as follows:

> If the officer, employee or representative obtains any samples prior to leaving the premises, he shall give to the owner, operator, or agent in charge, a receipt describing the sample obtained and if requested, a portion of such sample equal in volume or weight to the portion retained.

42 U.S.C.A. § 6927(a) (emphasis added).

The legislative history relating to the split sample requirement indicates that it was adopted in anticipation of litigation. As noted by one congressional committee "if an inspector removes a sample of such waste from the premises, then part of such sample, equal in weight and volume shall be left with the operator. The purpose of this requirement is so that in case of litigation, both parties have equal access to the evidence." 1976 U.S. Code Congressional Administration News, p. 6268. A similar split sample provision is included in CERCLA, 42 U.S.C.A. § 9604(e)(4)(B). Thus, under both RCRA and CERCLA an owner/operator is entitled to a split sample provided that a request for a split sample is made by the owner/operator's representative prior to the government inspector leaving the premises. The same provisions would also apply to any state inspector exercising authority under an EPA delegation. As a general rule, therefore, one should always request a split sample whenever any government agency inspects a facility and takes a sample.

The right to obtain split samples is important because samples of waste (1) may be subject to destruction by the inspecting agency while conducting the necessary analysis, (2) may consist of compounds which are subject to continuous chemical alteration between the time the sample is taken and the time it is tested by the government agency, (3) may require

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specific means of preservation such as refrigeration, etc. or (4) may not be subjected to the degree of analysis necessary to properly develop evidence for use by the defense. All these possibilities indicate that critical evidence helpful to the defense could be lost unless split samples are obtained at or near the time of the government sample.

B. Presence During Inspection.

Neither RCRA nor CERCLA specifically provide for the presence of an owner/operator during an inspection, however, such a right appears to be implicit in the requirements that the government inspector "enter at reasonable times," to "obtain samples from any person" and to "commence and complete [the inspection] with reasonable promptness."

The Arizona Solid Waste Act, provides that ADEQ must give a facility owner/operator the opportunity to have a representative accompany the inspector. A.R.S. § 49-763. Despite the foregoing provision, ADEQ has indicated that while it usually invites a facility's representative to accompany the inspector, it does not do so when ADEQ is conducting a "field" inspection.

The right to accompany an inspector should always be exercised. An owner/operator should never voluntarily allow any inspection of its premises without requesting that someone be allowed to accompany the inspector. This will often be the only way to insure a clear understanding concerning what areas or portions of the facility were actually inspected and from which areas the samples were taken. More often than not, the inspector will not be as familiar with the particular facility as the owner/operator. Thus, the only way to know the exact location of a particular sample is to have a representative of the facility present when the sample is taken.

C. Results of Laboratory Tests.

RCRA and CERCLA also provide as follows: "If any analysis is made of such samples, copies of the results of such analysis shall be furnished promptly to the owner, operator or agent in charge." 42 U.S.C.A. § 6927 and § 9604(e)(4)(B). Thus, even if one forgets to request a "split sample," the owner/operator is still entitled to a copy of the laboratory results. However, rather than rely on the initiative of the government agency it is strongly recommended that if the inspector takes samples, the owner/operator or his legal representative forward a written request to the inspector specifically asking for copies of any analysis

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performed. At best, this will alert the government inspector to the need to provide a copy of the analysis to you. At worst, if no laboratory results are sent, it will provide additional ammunition in any subsequent discussion with prosecuting agencies in an effort to convince them to exercise their prosecutorial discretion and not file charges.

V. RIGHTS WHEN SEARCHED.

A. Right to Disclosure.

In criminal prosecutions, unlike civil lawsuits, the government's discovery rights, limitations and obligations are governed by Federal or State Criminal Rules of Procedure, Statute (18 U.S.C. § 3500) and a series of United States Supreme Court cases starting with Brady v. Maryland. 373 U.S. 83, 83 S. Ct. 1194 (1963). See also Arizona v. Youngblood, 488 U.S. 51, 109 S. Ct. 333 (1988). Under the so-called Brady "fairness doctrine," the government is obligated to disclose all evidence in its possession favorable to a defendant, provided the defendant requests such disclosure. Brady material includes information that may be relevant to guilt or punishment as well as information that may be used to impeach prosecution witnesses. The duty to disclose extends from indictment through final judgment and must be timely. Id.

The failure to disclose Brady material mandates reversal of a conviction if the undisclosed evidence is such that its suppression undermines confidence in the result. United States v. Bagley, 473 U.S. 667, 105 S. Ct. 3375 (1985). Normally the good or bad faith exhibited by the prosecution is not relevant to the issue whether the undisclosed evidence was "material" but in close cases, where materiality is not conclusively shown, the prosecution's bad faith may be considered.

B. Duty to Preserve Evidence.

In criminal prosecutions, the government must also preserve evidence that "might be expected to play a significant role in the suspect's defense." In California v. Trombetta, the United States Supreme Court recognized the duty of the government to preserve evidence in a case where the police failed to preserve breath samples in a drunk driving prosecution. The Court established the following guidelines for determining the impact of failing to preserve evidence: (1) the destroyed evidence must be shown to have had an exculpatory value, (2) the exculpatory value of the evidence must have been apparent before the evidence was

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destroyed, (3) the destruction must have been in bad faith and (4) the evidence must be so unique that the defendant is effectively prevented from establishing his innocence. 467 U.S. 479, 104 S. Ct. 2528 (1984).

The requirements to produce and preserve evidence raise the question whether an individual is entitled to a split sample in a search situation. The EPA has stated that the split sample requirement of RCRA (and by analogy CERCLA) is not applicable when a search is conducted pursuant to a criminal search warrant. The EPA has stated, however, that its "policy" is to provide split samples at the time a sample is taken. The policy further provides that EPA's investigation should take large enough samples so that a portion can be provided to the defendant, if requested, and to retain an extra portion of the sample if a split sample has been refused or no one is available to accept it. EPA interoffice memorandum, "Guidelines on Samples, Preservation and Disposal of Technical Evidence in Criminal Enforcement Matters," April 18, 1984. ADEQ is in the process of drafting a similar policy that provides that the facility representative will be provided with split samples upon request. Despite these policies, the fact remains that they are just that, policies which are arguably not legally enforceable. Consequently, the entitlement to a split sample must be based on a legally enforceable right in order to provide any recourse in the event an EPA or ADEQ investigator fails to or refuses to provide a split sample.

As previously discussed, both RCRA and CERCLA provide a legal basis for a split sample, provided one has requested the split sample at the time it was originally taken. When attempting to enforce the RCRA/CERCLA "inspection" rights in the face of a search warrant, a defendant can rely on several arguments. First, while the environmental statutes address inspections, they are silent concerning any legislative intent to limit the right to a split sample to only inspection situations. When legislative intent is ambiguous, traditional concepts of criminal law indicate that the statute should be read in a manner that is least onerous to the defendant. United States v. Callahan, 173 F. Sup. 98 (D. Mo. 1959). Second, as discussed previously in the context of general criminal law, the government may be obligated to provide a split sample when one is requested and the sample is subject to destruction or alteration as a result of the testing such as where any attempt to retest the same sample would be invalid due to excessive "holding time." Arguably, the factors set forth in the Trombetta decision could be satisfied by showing that the split sample was requested pursuant to the statute, that the

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request was denied and that the sample seized was unique and effectively deprived the defendant of the ability to prove a defense. Such a showing should allow a defendant the presumption that the evidence destroyed through testing or natural alteration was in fact exculpatory, thereby entitling the defendant to dismissal of the charges. Finally, as discussed previously, the legislative history of the RCRA provision states that the purpose of a split sample was so that both parties would have equal access to evidence in the event of litigation.

An analogous situation was addressed by the Ninth Circuit Court of Appeals in Triangle Candy Company v. United States in a case involving the prosecution for selling adulterated candy in violation of the Federal Food, Drug and Cosmetic Act. The court held as follows:

> If those accused under the act are not given a portion of the sample, the power to make a complete defense is substantially curtailed. Intent is no part of the crime with which they are charged. If they have introduced the food in interstate commerce, and if it is adulterated, they are guilty, regardless of their intent or lack of knowledge as to alteration. It may frequently happen that the single factual issue is that of adulteration. Without access to a portion of the sample, they are confronted by government analysis of that sample which they cannot refute but at best and with difficulty, impeach by challenging the government's method of sampling and testing.

144 F. 2d 195, 199 (9th Cir. 1944). The court went on to hold that provision of a split-sample, except in certain specified cases, is a condition precedent to prosecution. Id.

Thus while the government may claim that there is no legally enforceable right to a split sample in the criminal search warrant situation, there are strong arguments to the contrary provided a split sample was requested in a timely manner.

C. Right to Remain Silent.

Under the Fifth Amendment to the United States Constitution and similar provisions in the Arizona Constitution, a person has a right to remain silent so as not to incriminate oneself in connection with a criminal violation. Except in a few limited situations, however, there is no requirement that a

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government representative advise someone to remain silent. Many people have a misunderstanding concerning the so-called Miranda rights (i.e. the right to remain silent, anything you say can and will be used against you, right to a lawyer and if one cannot afford an attorney, provision for a lawyer free of charge). Many believe that these rights must be explained whenever a suspect in a criminal case is questioned by a law enforcement officer or other government representative. The Miranda rule only applies, however, in those situations where the suspect is "in custody" and is being interrogated, which are not likely to occur in a typical environmental inspection/search situation.

The knowledge of one's right to remain silent is especially important in the inspection situation because oftentimes an inspector will not specify in great detail the purpose of the visit. Further, the governmental inspector may honestly represent that the thrust of the inspection is one thing only to have the thrust change once incriminating evidence is uncovered. This is due to the fact that another well-established rule of law called the "clear view" doctrine provides that if a government agent is lawfully in a situation and observes evidence of illegal activity, the government can use that evidence in any subsequent trial. Thus, anything observed by or told to a government agent during an inspection or search can be used in a subsequent prosecution even if no Miranda warning was given.

Whenever dealing with federal or state agencies in the environmental area, you should always ask yourself the following questions and unless you have satisfactory answers to each, you should refrain from making any statements and consult legal counsel:

(1) What agency does the agent work for?

(2) What is the purpose of the agent's questions?

(3) What must you tell the investigator? (i.e., location of various documents versus past conduct) and

(4) Should I talk to a lawyer before answering any questions?

This is especially advisable if you know of environmental violations which are unrelated to the announced focus of the inspection.

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If there is the slightest chance that your statements or the statements of your employees may be used against you in later criminal proceedings, you should simply tell the government agent that you need to consult with your attorney before answering any questions. And once you so state, don't let yourself be talked into answering "just a few questions."

VI. RELATIONSHIP BETWEEN ADMINISTRATIVE INSPECTION AND CRIMINAL INVESTIGATION.

Generally, the government may conduct simultaneous civil, administrative and criminal investigations. An individual should be aware of the possibility of parallel proceedings whenever dealing with government representatives in any particular matter. Simultaneous criminal and administrative investigations may be conducted by federal or state agencies or different agencies at either level. Despite the possibility of such parallel investigations, a government agent is not obligated to say more than is absolutely necessary to accomplish the inspection. Since they are not obligated to tell you more than the basics (time, date, identification of inspector, general purpose of the inspection), don't hesitate to ask direct questions such as, "Is this a criminal investigation?" or "Am I the target of a criminal investigation?" If the response is yes, you know to immediately contact an attorney. If the response is no or noncommittal, that is not a reason to let your guard down. On the contrary, it may be an indication to be especially careful in your contact with the agent.

A. Record Conversations.

In view of the potential for simultaneous investigations, several defensive measures are recommended. First, if you choose to talk to the investigator, you should record the conversation. 18 U.S.C.A. § 2511(e) provides as follows:

> It shall not be unlawful under this chapter for a person not acting under color of law to intercept a wire, oral, or electronic communication where such person is a party to the communication or where one of the parties to the communication is given prior consent to such interception unless such communications intercepted for the purpose of committing any criminal or tortious act in violation to the constitution or the laws of the United States or of any state.

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Similarly, Arizona statutes provide that it is legal to intercept (or record) any "wire, electronic or oral communication by any person, if the interception is effected with the consent of a party to the communication or a person present during the communication." A.R.S. § 13-3012.

Recording a conversation can be especially important because government agents, like most people, have selective memories when it comes to recalling specifics about prior conversations. The only sure way to establish that an agent tricked or otherwise coerced you into providing incriminating information is to insure that the agent's statements are recorded. This will help avoid the inevitable "swearing match" when your attorney argues in any future criminal proceeding that the statement should be suppressed.

B. Limits on Administrative Investigations.

So long as the government has a legitimate purpose for pursuing a civil or administrative investigation, the information obtained therefrom can be used in that proceeding as well as any criminal investigation. On the other hand, if the government has no valid reason for pursuing the administrative action, and if it can be shown that the government is using discovery in a civil or administrative action for the purpose of bringing a criminal case, you should ask the court to either stay the civil or administrative proceeding or prohibit any information discovered as a result of the administrative action from being used in the criminal proceeding.

In United States v. Kordel the Food and Drug Administration served interrogatories on the defendant company. A simultaneous criminal investigation was being conducted by the DOJ. Company officials answered the interrogatories and later were criminally charged and convicted. On appeal, the defendants argued that the civil discovery process was used to circumvent their privilege against self-incrimination. The Supreme Court found that the defendants had waived their Fifth Amendment right against self-incrimination by not asserting the privilege as an objection to the interrogatories. The court also emphasized that the company should have requested a protective order under the federal rules of civil procedure in order to postpone the civil discovery until resolution of the criminal action. 397 U.S. 1, 90 S. Ct. 763 (1970).

Similarly, in United States v. LaSalle National Bank the issue was whether the district court correctly refused to enforce several IRS civil summons when it found that the special agent who issued them was

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conducting his investigation solely for the purpose of unearthing evidence of criminal conduct. The Supreme Court held that an administrative summons issued after an agency has abandoned a civil or administrative determination in favor of a criminal prosecution necessarily was issued in bad faith and therefore could not be enforced. The Supreme Court therefore remanded the case to the District Court to determine whether the IRS had abandoned the civil proceedings before issuing the civil subpoena. 437 U.S. 298, 98 S. Ct. 2357 (1978).

In some cases, civil discovery can be used to gain valuable information when a simultaneous criminal investigation is ongoing. It may be possible to learn the names of potential witnesses, obtain copies of evidentiary documents and even take the depositions of government witnesses as part of the civil proceeding. It may also be possible to simultaneously minimize any attempt by the government to pursue discovery in the civil case by invoking the Fifth Amendment right against self-incrimination. Obviously, the effective use of such civil discovery while denying any benefit to the government should only be made after consultation with an attorney.

In dealing with government agencies, never assume that you will only be dealing with attorneys in one agency or one section of an agency. There is no prohibition against ADEQ exchanging information with the environmental crimes unit of the Attorney General's office. Similarly, the EPA may exchange information with the DOJ. In fact, some statutes specifically provide that the environmental agency may provide the environmental crimes enforcement agency with information obtained from the administration process. 42 U.S.C.A. § 6927 (RCRA) ("such record, report, document or information may be disclosed to other officers, employees or authorized representatives of the United States concerned with carrying out this chapter or one relevant in a proceeding under this chapter."); see also 42 U.S.C.A. § 9604(e)(4)(B) (CERCLA). This authority to share information applies even if an individual is able to convince the respective environmental agency that the information is "confidential" and therefore not subject to public disclosure. Thus, one should assume that any information given to EPA or ADEQ will at some point also be reviewed by the Department of Justice or the Arizona Attorney General's office.

VII. HOW TO AVOID CRIMINAL PROSECUTION.

The potential for criminal prosecution for environmental crimes is increasing and the penalties

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that can be imposed are significant. Consequently, it is better to formulate strategies to avoid prosecution rather than rely upon the expertise of qualified counsel to avoid a conviction. Towards this end, the following recommended strategies are submitted for consideration.

A. Conduct An Internal Review or Audit of Compliance.

The government will never know your facility or industry as well as you do. An internal environmental audit of your facility by qualified personnel should be able to identify those environmental problems which any government agency would uncover. The purpose of the audit would be to identify those areas in which violations are occurring and to identify areas in which violations may occur unless corrective action is taken.

Any such audit should be done in such a way as to protect to the maximum extent possible the audit results. In the recent case of State of Arizona v. Excel Industries, Inc., 161 Ariz. 188, 777 P.2d 686 (1989), the Arizona Supreme Court discussed the confidentiality and privileged nature of a consultant's report. The issue was the extent of the so-called "work product" privilege. The Arizona Criminal Rules of Procedure provide limited protection for the "opinions, theories or conclusions of defense counsel or his legal or investigative staff" prepared in anticipation of litigation. This protection can only be pierced if the state establishes that it has a "substantial need" of the material and cannot obtain the material or equivalent material without "undue hardship." Arizona Rule of Criminal Procedure 15.4.

Excel manufactured cultured marble in facilities in Phoenix and Tucson. In March 1986, the Department of Health Services (which then had authority to administer the Hazardous Waste Disposal Act), conducted an inspection of the Phoenix facility and sent a copy of the inspection report to the company. In May, 1986, Excel learned that a criminal investigator had taken soil samples from adjacent property. Excel then retained criminal defense counsel. At counsel's request, Excel retained Western Technologies, Inc. (WTI) to conduct "confidential" tests of the Phoenix facility. WTI did so, submitted its report to Excel and was paid by Excel. Later, WTI received a grand jury subpoena requesting a copy of the most recent WTI report. Excel was not advised of the subpoena because of admonitions of nondisclosure in the subpoena. WTI provided a copy of the report which also contained some notes by WTI's personnel based on subsequent discussions with Excel's counsel. Exel, 161 Ariz. at 190, 777 P.2d at 688.

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The Arizona Supreme Court held that the report was protected as part of the attorney "work product" in anticipation of litigation and should not have been provided to the government. In doing so the court stated that WTI was a part of the defense counsel's staff because the request for an internal audit was initiated by the attorney despite the fact that Excel contracted directly with and paid the consultant. The court also concluded that the protocol which resulted in the report including the type of investigation, the type and location of samples and the method of analysis all involved "opinions" by WTI and therefore fell within the work product exception. Finally, the court concluded that since the government had the authority to inspect and test the facility at any time, the same evidence was equally available to both sides. The court therefore reinstated the trial court's order that the matter be returned to the grand jury for a new determination of probable cause without the use of the subject report. Id. at 194, 777 P.2d at 692.

In order to maximize the protection afforded an internal audit, especially one which is anticipated to confirm violations, a company should first consult with appropriately qualified counsel and authorize the audit pursuant to counsel's guidance. A company should also consider having the attorney retain and pay the consultant (with the costs being billed by the attorney as a disbursement). The attorney could then communicate the final report to the client. Although this procedure does not guarantee protection in all cases, it should give a company the strongest argument.

B. Institute Corrective Action Wherever Required.

Once the internal audit results are completed, it is imperative that the company follow through and take corrective action in those areas where violations or threatened violations may occur. It is in this area that the adage "an ounce of prevention is worth a pound of cure" is most appropriate. Further, by taking proactive corrective action, a company will be in a better position to demonstrate to any prosecuting agencies the "good faith" nature of its efforts to correct the problem. While good faith efforts by a defendant are not defenses to the environmental criminal statutes, they are very relevant to convincing a prosecutor to exercise his prosecutorial discretion and not file charges against a particular defendant. Thus, even if the good faith nature of your corrective action is not a defense to an environmental crime, it could result in no charges being filed if you are able to convince the prosecuting agency that you are making good

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faith and serious efforts to comply. Of course, in order to be persuasive, the good faith efforts must predate the notice of a criminal investigation.

C. Require and Monitor Mandatory Training.

It is not sufficient to simply identify and correct the problem. One should also take the necessary steps to ensure that all employees and supervisors receive adequate and proper training so as to avoid future problems. Such training should be mandatory and included as part of the job description or promotion criteria within the company. The need to have an understanding of and abide by often very complex technical environmental requirements is no less important than other technical requirements of a particular job function. The significance of environmental compliance should therefore be reflected in formalized training within the company.

D. Institute and Require Compliance With Proper Procedures and Policies.

In addition to correcting past violations, a company should institute appropriate policies to prevent recurrences of problems. A company should also insure that all of its employees have a clear understanding that the company will not tolerate variations from the policies or violations of environmental laws. The existence of policies designed to avoid environmental pollution or violation of the environmental laws could also be very strong evidence in any attempt to convince a prosecuting agency not to file charges in the first place. It is axiomatic, however, that if a company has a particular policy, it must insure the policy is followed. It could be very damaging if the government can show that a company had a policy that was intended to avoid a violation of an environmental statute but failed to follow its own policy.

E. Adopt an Incentive Program and/or an Employee Reporting System.

Oftentimes, the most fertile sources of information which result in criminal prosecutions are disgruntled employees or former employees. By adopting an incentive program and/or an employee reporting system, a company may be able to avoid the situation where the first time the company's officers find out about a particular problem from a lower echelon employee is when the DOJ or Attorney General serves a search warrant based upon that employee's confidential communication to the agency.

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It should be kept in mind that the goal of instituting any or all of the foregoing recommendations are twofold. First, it is to avoid a violation of the environmental laws. Second, it may also provide additional ammunition in order to convince a prosecuting agency to exercise its prosecutorial discretion and not file criminal charges.

VIII. CONCLUSION.

Recent actions by both federal and state prosecuting agencies indicate that criminal prosecutions for violations of environmental statutes will continue to increase. Further, the penalties imposed, in the form of both imprisonment and fines, will also undoubtedly continue to increase in their severity and frequency of being imposed. The watch word for at least the next decade should therefore be one of prevention, rather than risk the possibility of criminal conviction.

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APPENDIX A

I. FEDERAL ENVIRONMENTAL PROTECTION STATUTES.

A. The Refuse Act.

The Refuse Act, 33 U.S.C.A. § 407 (West 1986) (codified as part of the Rivers and Harbors Act of 1899, 33 U.S.C.A. §§ 401 et seq. (West 1986)), makes it a crime to discharge "any refuse matter of any kind or description whatsoever" into the navigable waters of the United States without the permission of the Army Corps of Engineers. The Refuse Act has consistently been construed as a "strict liability" statute, imposing liability without any showing of intent, knowledge or negligence.

The criminal proscriptions of the Refuse Act were not applied to industrial water polluters until the late 1960's because prior to that time it was thought that the Act applied only to deposits of refuse that impeded navigation. Industrial discharges were thought to fall under an exemption for refuse matter flowing from streets and sewers. In 1966, the Supreme Court held that the Refuse Act covered all pollutants.

The Act remained largely unused, however, until the 1970s when the Water and Wet Lands Report called for a vigorous prosecution of violators. After this report, prosecutors across the country began to use the Refuse Act in the battle against water pollution. Commentators at the time hailed the Refuse Act as a promising weapon in the fight for clean water. See, e.g., Comment, The Refuse Act of 1899: Its Scope and Role in the Control of Water Pollution, 58 Calif. L. Rev. 14 44 (1970); Rogers, Industrial Water Pollution and the Refuse Act: A Second Chance for Water Quality, 119 U. Pa. L. Rev. 761 (1971).

B. The Clean Air Act.

The Clean Air Amendments of 1990 (The Clean Air Act), 42 U.S.C.A. § 7401 et seq. regulate the emission of certain pollutants into the air. The regulated gases include carbon monoxide (produced by the in complete burning of carbon and fuels); particulates (solid or liquid substances produced primarily by stationary fuel combustion and industrial processes); sulfur oxides (poisonous gases produced when fuel containing sulfur is burned); nitrogen oxides (produced when fuel is burned at very high temperatures, resulting primarily from industrial combustion operations and motor vehicles); and hydrocarbons (unburned and wasted fuel found in concentrations commonly known as "smog").

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1. Knowingly violates implementation plan.

The Act employs several enforcement mechanisms, including criminal sanctions. Any person who knowingly violates a requirement of an implementation plan prepared in accordance with the Act, knowingly violates or fails or refuses to comply with any order commanding emission reductions or termination, or exceeds the maximum allowable pollutant levels provided for new facilities, can be punished by a fine of not more than $25,000 per day of violation, or by imprisonment for not more than five years, or both. 42 U.S.C.A. § 7413(c)(1). The punishment is doubled for a repeat violation. Id. A defendant charged with criminal violations of the Clean Air Act cannot advance technological or economic infeasibility as a defense to the enforcement action.

2. Knowingly makes false statement.

The Clean Air Act prohibits a person from knowingly disseminating false statements, representations, or certifications in any application, record, report or plan filed or required to be maintained under the Act. 42 U.S.C.A. § 7413(c)(2). It further proscribes falsifying or tampering with any monitoring device or method required to be maintained under the Act. Id. The penalty for violating these provisions is a fine of not more $10,000, or imprisonment for not more than two years, or both. Id.

3. Knowingly fails to pay required fee.

The criminal provisions of the Clean Air Act require a "knowing" mental state, or a "knowing" mens rea. An act is done "knowingly" if it is done voluntarily and intentionally, and not because of a mistake or accident. The "knowing" standard applies only to the act of emitting the pollutant, not to the determination of whether the pollutant is one regulated by the Act or whether the emittance of the pollutant requires a permit. That is, in order to establish a violation, the government must prove only knowledge that the actions were taken and not knowledge of the statute forbidding them. Knowledge does not require certainty: "It is generally accepted that a person who acts (or omits to act) intends a result of his act (or omission). . . when he knows that the result is practically certain to follow from his conduct, whatever his desire may be as to that result." United States v. United States Gypsum Co., 438 U.S. 422, 435, 98 S. Ct. 2864, 2877 (1978).

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A jury may infer "knowledge" from an examination of the circumstances surrounding the wrongful act, for instance, the existence of a regulatory scheme. Furthermore, the jury can determine that a defendant "knowingly" performed an act if the defendant willfully blinded himself to the conduct, circumstances, or result specified in a statute. The knowledge requirement of the criminal penalty provisions of environmental statutes may be imputed by the jury to individuals who hold "responsible positions" within a defendant corporation.

4. Corporate liability.

Corporations can be guilty of knowing or willful violations of regulatory statutes such as the Clean Air Act through the doctrine of respondeat superior. This doctrine can be applied when an employee acting within the scope of his duties knowingly violates the provisions of the Act.

C. The Clean Water Act.

The objectives of the Federal Water Pollution Control Act of 1972 (Clean Water Act), 33 U.S.C.A. § 1251 et seq. (West 1986 & Supp. 1990), were to maintain the chemical, physical, and biological integrity of the nation's waters and to eliminate the discharge of pollutants into the navigable waters of the United States. 33 U.S.C.A. § 1251. The Act prohibits the discharge of toxic pollutants into navigable waters of the United States without a permit and the violation of permit conditions or limitations.

Criminal penalties are mandated for persons who negligently or knowingly violate the statute or any lawful order, permit, standard or regulation issued pursuant to it. 33 U.S.C.A. § 1319. The Act defines "person" to include a "responsible corporate officer". 33 U.S.C.A. § 1319(c)(6).

1. Knowing violation of discharge limit.

A defendant who knowingly violates the discharge provisions of the statute, or knowingly fails to comply with an order, permit, standard or regulation issued by EPA in accordance with the statute, or who knowingly violates the pretreatment standards specified in the Act, can be punished with a fine of not less than $5,000.00 nor more than $50,000 per day of violation, or imprisonment for not more than three years, or both. 33 U.S.C.A. § 1319(c)(2). The penalty is doubled for a repeat offense. 33 U.S.C.A. § 1319(c)(2).

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2. Knowingly false statement or inaccurate monitoring device.

The Act prohibits making false material statements or representations in any application, record, report, or plan filed or required to be maintained under the Act. 33 U.S.C.A. § 1319(c)(4). It is also illegal for a person to knowingly falsify, tamper with, or render inaccurate any monitoring device or method required to be maintained under the Act.

Violation of either of these provisions requires a "knowing" state of mind and can be punished by a fine of up to $10,000, imprisonment for up to two years, or both. Id. A repeat offense, is punishable by a maximum fine of $20,000 per day of violation, or four years of imprisonment, or both. Id.

3. Exposes others to "imminent danger" of serious bodily harm.

Any person who knowingly violates the terms of the statute or of any permit condition or limitation imposed by the EPA, and who knows at the time that he thereby places another person in "imminent danger of death or serious bodily injury", is subject to a fine of up to $250,000, or imprisonment for up to 15 years, or both. 33 U.S.C.A. § 1319(c)(3)(A). If the "person" is an organization, conviction results in a maximum fine of $1,000,000. Id. The maximum punishment is doubled with respect to both fine and imprisonment for a repeat violation. Id.

For purposes of determining whether an individual knew that his conduct placed another person in imminent danger of death or serious bodily injury, the person is responsible only for his actual awareness or actual belief. 33 U.S.C.A. § 1319(c)(3)(B)(i) (II). Knowledge possessed by another person may not be attributed to the defendant. 33 U.S.C.A. § 1319(c)(3)(B)(i)(II). However, circumstantial evidence, including evidence that the defendant took affirmative steps to shield himself from relevant information, can be used to prove actual knowledge. Id.

A defendant charged with violating the "knowing endangerment" provision may defend on the grounds that the person endangered consented to the conduct or that the danger was a reasonably foreseeable hazard of an occupation, business, or profession. Reasonably foreseeable hazards of medical treatment or medical or scientific experimentation are also defensible under the "knowing endangerment" provision of the Act. 33 U.S.C.A. § 1319(c) (3) (B) (ii).

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4. Knowingly polluting a sewer system.

A person who knowingly introduces into a sewer system or publicly owned treatment works any pollutant or hazardous substance, which the person knew or reasonably should have known could cause personal injury or property damage, or causes a treatment facility to violate any effluent limitation or condition of any permit issued under the provisions of the Act, is subject to a fine of $5,000 to $50,000 per day of violation, or imprisonment for not more than three years, or both. 3 U.S.C.A. § 1319(c)(2)(B). Punishment for a repeated violation of this provision can be a fine of $100,000 per day of violation, or imprisonment or up to six years, or both. Id.

5. Negligent violations.

Negligent violations of the Act's discharge provisions are punishable by a fine of 2,500 to $25,000 per day of violation, or imprisonment for a maximum of one year, or both. 33 J.S.C.A. § 1319(c)(1). A person convicted of a repeated negligent violation is subject to a fine of up to $50,000 per day of violation, or two years of imprisonment, or both. 33 U.S.C.A. § 1319(c)(1)(B).

D. The Resource Conservation and Recovery Act.

Congress enacted the Resource Conservation and Recovery Act (RCRA), 42 U.C.A. § 6901 et seq. (West 1983 & Supp. 1990), in response to growing public concern over the generation, transportation, and disposal of hazardous and potentially hazardous waste products. The Act establishes a comprehensive system for managing the generation, transportation, treatment, storage, and disposal of the hazardous waste.

RCRA imposes duties upon waste generators to report quantities of waste produced and account for the disposition of these wastes. It holds generators responsible for labeling and safe containment, mandating environmentally sound disposal practices for solid wastes. Criminal sanctions are authorized for violation of RCRA's provisions.

1. Knowing transportation, etc. of hazardous waste in violation of Act.

Any person who knowingly transports, or causes to be transported, any hazardous waste identified in the statute to a facility that does not have a permit, or who knowingly treats, stores or disposes of any hazardous waste without an appropriate permit or in

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violation of permit limitations is subject to a maximum fine of $50,000 for each day of violation, or imprisonment for up to five years, or both. 42 U.S.C.A. § 6928(d). A subsequent conviction results in double the prison term and/or double the fine.

2. Knowing failure to maintain or file necessary documents.

RCRA imposes criminal liability upon a person who knowingly destroys, alters, conceals, or fails to file any record, manifest, report, or other document required to be maintained or filed. 42 U.S.C.A. § 6928(d)(4). It is also a violation of RCRA to knowingly transport without a manifest, or to cause to be transported without a manifest, any hazardous waste or used oil that is required, by regulation, to be accompanied by a manifest. 42 U.S.C.A. § 6928(d)(5). This includes even those hazardous wastes not identified or listed in RCRA. 42 U.S.C.A. § 6928(d)(5).

The knowing violation of these provisions can result in imprisonment for up to two years and/or a fine of up to $50,000 for each day of violation. A subsequent conviction for these violations results in double punishment.

3. Knowing export of hazardous waste.

It is a violation of RCRA to export knowingly those hazardous wastes identified by the statute without the consent of the receiving country or in a manner inconsistent with any international agreement between the United States and the receiving country. 42 U.S.C.A. § 6928(d)(6). Violations of this provision carry a fine of up to $50,000, or a maximum of two years imprisonment, or both. 42 U.S.C.A. § 6928(d). Repeat violations carry double penalties.

4. Knowing endangerment.

A person who knowingly transports, treats, stores, disposes of, or exports any hazardous waste identified in RCRA, or used oil not identified as a hazardous waste by RCRA, who knows at the time that he thereby places another person in imminent danger of death or serious bodily injury, will be fined a maximum of $250,000 and/or be imprisoned for a maximum of 15 years. 42 U.S.C.A. § 6928(e). An organization convicted of this offense faces a maximum fine of $1,000,000. Id.

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E. Comprehensive Environmental Response, Compensation and Liability Act.

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C.A. § 9601 et seq. (West 1982 & Supp. 1990), mandates the clean-up of past pollution, as opposed to the abatement of current or future pollution.

1. Failure to notify agency of release or location of unregistered site.

CERCLA provides misdemeanor penalties of up to one year imprisonment and/or a $10,000 fine for failure to notify the appropriate federal agency of a release of a hazardous substance or of the existence of an unregistered hazardous waste site. 42 U.S.C.A. § 9603(b).

2. Knowing destruction/falsification of records.

Knowing destruction, mutilation, erasure, disposal, concealment, or falsification off certain records carries a fine and/or imprisonment of 3 years (or five years for a repeat conviction). 42 U.S.C.A. § 9603(d)(2).

3. Willful violation of agency orders.

CERCLA allows fines of up to $25,000 per day for willful violation of, or refusal to comply with, orders issued under the provisions of the statute. 42 U.S.C.A. § 9606(b).

F. Toxic Substances Control Act.

Congress enacted the Toxic Substances Control Act (TSCA), 15 U.S.C.A. § 2601 et seq. (West 1982 & Supp. 1990), in response to concern over chemical substances and mixtures that present an unreasonable, risk of injury to human health or the environment. TSCA regulates "chemical substances," which are defined as any organic or inorganic substance with a particular molecular identity, including any combination of substances occurring in whole or in part as a result of chemical reactions occurring in nature. 15 U.S.C.A. § 2602(2)(A). It does not cover any pesticide or tobacco product, any source material or special nuclear material or by-product thereof, or any article of sale that is subject to particular federal taxes. The Act also does not cover foods, food additives, drugs, or cosmetics. 15 U.S.C.A. § 2602(2)(B).

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1. Knowing violation.

The Act makes it unlawful to knowingly or willfully violate any provision of section 2614, which:

a. mandates compliance with the provisions of the Act and any rule promulgated under the Act;

b. prohibits the use for commercial purposes of a chemical substance or mixture that a person knows or has reason to know has been manufactured, processed, or distributed in violation of the Act;

c. prohibits failure or refusal to establish and maintain records or submit reports as required by the Act; and

d. requires compliance with the entry and inspection requirements of the Act.

The criminal penalty for violating § 2614 is imprisonment for not more than one year and/or a fine of up to $25,000 for each day of violation. 15 U.S.C.A. § 2615.

2. Improper disclosure of information.

The Toxic Substances Control Act provides that any information obtained by the government in order to enforce the Act, such as test data, cannot be disclosed by the government, except that the Administrator of the EPA may authorize the disclosure of information:

a. To an officer or employee of the federal government for law enforcement purposes or other health or environmental protection purposes;

b. to contractors with the federal government if disclosure is necessary to performance of the contract;

c. to protect against unreasonable risk of injury to health or the environment; or

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d. when relevant to a proceeding under the Act.

15 U.S.C.A. § 2613(a).

A federal government employee who wrongfully and knowingly discloses such information to a person not entitled to receive it may be convicted of a misdemeanor that carries a fine of not more than $5,000 and/or imprisonment of not more than one year. Any contractor or employee of a contractor who is provided confidential information, as authorized above, is considered to be a government employee for the purposes of this section. 15 U.S.C.A. § 2613(d)(2). Thus, unauthorized disclosure of information can result in criminal penalties for the private sector.

G. Underground Storage Tank Act.

Congress passed the Underground Storage Tank Act (UST), 42 U.S.C.A. § 6991 (West Supp. 1990), in 1984 as a means of regulating the leakage of potentially harmful substances from underground storage facilities. The Act includes no criminal penalties.

II. FEDERAL GENERAL CRIMINAL STATUTES.

The government's enforcement power is not limited to the criminal provisions of the various environmental statutes. More generalized penal provisions are available to prosecutors in prosecuting environmentally harmful behavior. Offenses listed in the United States Code which may be employed include, but are not necessarily limited to: (1) conspiracy, (2) false statements, (3) racketeering, (4) mail fraud and (5) obstruction of justice.

A. Conspiracy.

Individuals or organizations who conspire to violate an environmental protection law can be prosecuted under 18 U.S.C.A. § 371 (West 1966), which states:

> If two or more persons conspire either to commit any offense against the United States, or to defraud the United States, or any agency thereof in any manner or for any purpose, and one or more of such persons do any act to effect the object of the conspiracy, each shall be fined not more than $10,000 or imprisoned not more than five years, or both.

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If the offense that is the object of the conspiracy is a misdemeanor, punishment for the conspiracy cannot exceed the maximum punishment provided for such a misdemeanor. Id.

While courts have specified the necessary elements of conspiracy in several different ways, the elements may be generally listed as follows:

1. an unlawful object to be accomplished;

2. a plan or scheme embodying the means to accomplish that object;

3. an agreement or understanding between two or more people whereby they become definitely committed to cooperate for the accomplishment of the object by the means embodied in the agreement or by any effective means; and

4. an overt act in furtherance of the conspiracy.

It is not necessary that all parties expect to derive the same benefits from the act or that each party join with the hope of receiving a pecuniary benefit. While mere knowledge or approval, without participation, does not make one a party to a conspiracy, a meeting of the minds or a tacit agreement is enough. No formal or express agreement between the parties is needed to prove conspiracy.

B. False Statements.

Criminal liability may be imposed for the making of materially false statements to the government. The statute provides:

> Whoever, in any matter within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals or covers up by any trick, scheme, or device a material fact, or makes any false, fictitious or fraudulent statements or representations, or makes or uses any false writing or document knowing the same to contain any false, fictitious or fraudulent statement or entry, shall be fined not more than $10,000 or-imprisoned not more than five years, or both.

18 U.S.C.A. § 1001 (West 1982).

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This statutory provision, unlike similar sections of the Clean Water Act, is not limited to statements required by law or regulation. That is, a person may be punished for making any false statement to the government for any reason and in any manner. Violation of § 1001 is a felony and can be punished by imprisonment for up to five years.

C. Racketeering (RICO).

The Racketeer Influenced and Corrupt Organizations Act (RICO), 18 U.S.C.A. § 1961 et seq. (West 1984 & Supp. 1990), sets forth both civil and criminal penalties for engaging in racketeering activity. RICO prohibits:

1. the use or investment of money received through a pattern of racketeering activity to acquire, establish, or operate an enterprise engaged in or affecting interstate commerce;

2. the acquisition or maintenance of an enterprise engaged in or affecting interstate commerce, or the collection of an unlawful debt, through a pattern of racketeering activity;

3. the conducting of or participation in an enterprise engaged in or affecting interstate commerce through a pattern of racketeering activity or collection of unlawful debt; and

4. conspiracy to violate the above.

18 U.S.C.A. § 1962.

Included in the definition of "racketeering activity" are such crimes a bribery, mail fraud, and obstruction of justice, which may be applicable to an environmental polluter, regardless of whether or not he has violated the letter of the environmental statutes. See 18 U.S.C.A. § 1961(1). Any person or entity who engages in two or more acts of racketeering activity has demonstrated a "pattern" of racketeering activity. 18 U.S.C.A. § 1961(S). Thus, an environmental polluter may become liable under RICO.

A person who violates RICO is subject to fines and/or imprisonment of up to 20 years. Furthermore, a person convicted of a RICO violation must forfeit: (1) any interest he acquired or maintained in violation of RICO; (2) any interest in, security of, claim against, and property or contractual right of any kind in any enterprise that the person established, operated, controlled or participated in violation of RICO; and

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(3) any property derived from any direct or indirect proceeds of racketeering activity. 18 U.S.C.A. § 1963(a). Property subject to criminal forfeiture includes real property, including things growing on, affixed to, or found in land; and tangible and intangible personal property. 18 U.S.C.A. § 1963(b).

D. Mail Fraud.

The Mail Fraud statute, 18 U.S.C.A. § 1341 (West Supp. 1990), is a broad statute that makes it a crime to carry out any fraudulent scheme through use of the U.S. mail. The statute provides:

> Whoever, having devised or intending to devise any scheme or artifice to defraud for the purpose of executing such scheme or artifice or attempting so to do, places in any post office or authorized depository any matter or thing whatever . . . , or takes or receives therefrom, any such matter or thing, or knowingly causes to be delivered by mail according to the direction thereon shall be fined not more than $1,000,000 or imprisoned not more than 20 years, or both.

Thus, prosecutors may use the mail fraud statute against an environmental polluter who utilizes the U.S. postal service to further a scheme to violate the environmental statutes.

E. Obstruction of Justice.

It is a crime for any person to obstruct in any manner the administration of governmental entities. The Obstruction of Justice statute provides:

> Whoever corruptly, or by threats of force, or by any threatening letter or communication influences, obstructs, or impedes or endeavors to influence, obstruct, or impede the due and proper administration of the law under which any pending proceeding is being had before any department or agency of the United States, or the due and proper exercise of the power of inquiry under which any inquiry or investigation is being had by either house, or any committee of either House or any joint committee of the Congress shall be fined not more than $5,000 or imprisoned not more than five years, or both.

18 U.S.C.A. § 1505.

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This statute has been successfully applied to the submission of a false document in response to an IRS subpoena as well as the falsification of records in anticipation of a federal agency subpoena. Investigations by the EPA would qualify as "proceedings" under the statute.

III. ARIZONA ENVIRONMENTAL PROTECTION STATUTES.

A. Environmental Quality Act.

The Environmental Quality Act, A.R.S. §§ 49-101 et seq. (West 1988), establishes a Department of Environmental Quality (DEQ), which is to formulate policies and programs to protect the environment of the state and work for the prevention and abatement of all water and air pollution within the state. The director of DEQ is authorized to issue cease and desist orders and to seek injunctions to prevent the continued existence of certain conditions specified in the statute as environmental nuisances. A.R.S. §§ 49-141, 49-142. The Act does not provide criminal penalties.

B. The Air Quality Act.

The Air Quality Act, A.R.S. §§ 49-401 et seq. (West 1988), authorizes the Director of Environmental Quality to establish and maintain standards for airborne pollutants. DEQ is authorized to issue installation and operating permits and to prevent violations by major sources of air pollution in the state, including motor vehicles and industrial machinery and equipment. A.R.S. § 49-426. Any person who is installing or operating any equipment or device that will contribute to or reduce air pollution must obtain a permit from DEQ. A.R.S. § 47-426. The permit requirement does not apply to motor vehicles or agricultural equipment. Id. In issuing permits, the Director may impose any terms or conditions that he deems necessary that are consistent with the Clean Air Act. A.R.S. § 49-426(H).

The Director may require reports explaining physical outlets, processes and fuels used, and the nature and duration of harmful emissions. A.R.S. § 49-432(A). Owners or operators of air contaminant sources must provide, maintain and operate air contaminant monitoring devices. A.R.S. § 49-432(C).

1. Violation of Act.

A.R.S. § 49-451 specifies that any person who violates any provision of the Air Quality Act is guilty of a misdemeanor. The punishment for violating the Act is a fine of between $50 and $1,000 per day for each day

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the violation continues, and each day of violation is considered a separate offense. A.R.S. § 49-451. Violations of Arizona's Air Quality Act are strict liability offenses; therefore, lack of criminal intent is not considered a valid defense. A.R.S. § 49-452.

Recently Senate Bill 1430 was enacted. The Bill provides several changes to the Air Quality Act, including the penalties provisions. According to the Bill, after October 31, 1994, any person who knowingly releases an extremely hazardous substance into the ambient air, and who knows at the time that he thereby places another person in imminent danger of death or serious bodily injury, will be guilty of a class 2 felony, punishable by a prison sentence of up to seven years and/or a fine of up to $150,000 for a person or $1 million for a corporation. A.R.S. §§ 13-701(B)(1), 13-803(A)(1). Furthermore, after October 31, 1994, a person who operates a source of air pollution that is required to have a permit, and who knowingly operates such source without a permit is guilty of a class 5 felony, punishable by a prison sentence of up to two years and/or a fine of up to $150,000 for a person or $1 million for a corporation.

2. Violation of county air pollution provisions.

Any person who violates the county air pollution control provisions of the statute is guilty of a class 1 misdemeanor for each day the violation continues. A.R.S. § 49-502. This is also a strict liability statute, and lack of criminal intent is not a defense. A.R.S. § 49-503.

C. Water Quality Control Act.

The Water Quality Control Act, A.R.S. § 49-201 et seq. (West 1988), gives DEQ the power to act for the State for purposes of the Clean Water Act, the Resource Conservation and Recovery Act, and the Safe Drinking Water Act, (42 U.S.C.A. §§ 201, 300(f)-300(j)(9) (West 1982 & Supp. 1990)). A.R.S. § 49-202(A). DEQ is also the designated state water pollution control agency for purposes of CERCLA. A.R.S. § 49-202(B).

The Water Quality Act requires any person who discharges pollutants, or who owns or operates a facility that discharges pollutants, into any aquifer or navigable waters within the state to obtain an aquifer protection permit from the Director. A.R.S. § 49-241(A). The Act specifies certain discharging facilities that can be operated only after securing a permit. These include:

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a. surface impoundments, including holding or storage pits, ponds and lagoons;

b. solid waste disposal facilities;

c. injection wells; land treatment facilities;

d. mine tailings piles and ponds;

e. mine leaching operations;

f. some septic tank systems;

g. groundwater recharge projects and underground storage and recovery projects;

h. point source discharges to navigable waters; and

i. sewage or sludge ponds and wastewater treatment facilities.

A.R.S. § 49-241(B).

The Water Quality Act makes it unlawful to:

a. discharge without a permit;

b. fail to monitor, sample or report discharges as required by the statute;

c. violate discharge limitations specified in a permit issued by DEQ;

d. violate a water quality standard.

A.R.S. § 49-263(A).

1. Negligent violation.

The Act establishes different penalties for different mens rea. A person who performs an act prohibited under § 49-263(A) with criminal negligence is guilty of a class 6 felony and can be sentenced to one and one-half years in prison. A.R.S. §§ 49-263(B), 13-701(B)(5).

2. Knowing violation.

A person who knowingly performs an act prohibited under A.R.S. § 49-263(A) is guilty of a class

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5 felony, punishable by a prison sentence of two years. A.R.S. §§ 49-263(C), 13-701(B)(4).

3. Knowing or reckless endangerment.

The statute also contains a "knowing or reckless endangerment" provision. Any person who knowingly or recklessly "manifests an extreme indifference for human life" in performing an act prohibited under A.R.S. § 49-263(A) is guilty of a class 2 felony, which carries a punishment of up to seven years of imprisonment. A.R.S. §§ 49-263(D), 13-701(B)(1). A felony conviction under this provision can also result in a maximum $150,000 fine for a person, or a maximum $1 million fine for a corporation. A.R.S. §§ 13-801, 13-803(A)(1).

D. Solid Waste Management Act.

The Solid Waste Management Act, A.R.S. § 49-701 et seq. (West 1988), establishes a system for solid waste management that requires the collection, storage, transportation, transfer, processing, treatment or disposal of solid waste to be done in a manner that protects public health and the environment.

Any person who practices open burning at a public solid waste disposal facility without a permit, scavenges at a public facility, damages or destroys signs posted at a public facility, or dumps solid waste on public or private land violates the Solid Waste Management Act and is guilty of a class 2 misdemeanor. A.R.S. §§ 49-791, 13-802(B), 13-804(3). A defendant convicted of a class 2 misdemeanor may be subject to a maximum fine of $750 for a person or $10,000 for a corporation and may also be imprisoned for up to four months. A.R.S. § 13-707(2), § 13-802(B), 13-803(A)(3).

E. The Hazardous Waste Disposal Act.

The Hazardous Waste Disposal Act, A.R.S. § 49-901 et seq. (West 1988), gives the Director the authority to establish and maintain a hazardous waste disposal facility. A.R.S. § 49-902(A). It also gives the Director the power to promulgate rules and regulations governing the management, construction and operation of any hazardous waste disposal facilities established under the terms of the statute. A.R.S. § 49-905. The rules and regulations issued under this section govern travel routes for the transportation of hazardous wastes within the state and the types and amounts of hazardous wastes that can be accepted for disposal by hazardous waste disposal facilities. A.R.S. § 49-905.

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1. Intentional violations.

Felony punishment is mandated for certain intentional or reckless violations of the Act. A.R.S. § 49-925(A). The following acts, if done knowingly, constitute a class 5 felony, which carries a sentence of up to two years in prison and/or a fine of up to $150,000 per individual or $1 million per corporation for each day of violation: (1) transporting any hazardous waste to a facility not authorized to receive the hazardous waste under the Act; (2) generating hazardous waste and causing or allowing it to be transported to a facility not authorized to receive it; and (3) treating, storing, transporting or disposing of hazardous waste without the appropriate authority under the statute or under the federal act.

2. Reckless violation.

A person who recklessly commits any of the above specified acts is guilty of a class 6 felony and can be sentenced up to 1 1/2 years in prison and/or fined up to $150,000 per person or $1 million per corporation. Each day of violation is considered a separate offense. A.R.S. § 49-925(B).

3. Extreme indifference for human life.

A person who knowingly or recklessly "manifests an extreme indifference for human life" in doing any of the above specified acts is guilty of a class 3 felony. A.R.S. § 49-925(A). A class 3 felony is punishable by five years in prison and a $150,000 fine, if an individual, or $1 million fine, if an organization or corporation. A.R.S. §§ 701(B)(2), 13-801(A), 13-803(A)(1).

F. The Underground Storage Tank Act.

The Underground Storage Tank Act, A.R.S. §§ 49-1001 et seq. (West 1988 & Supp. 1990), requires that owners of underground storage tanks notify DEQ of the tank's age, size, type, location and use. A.R.S. § 49-1002(A). Owners or operators of underground storage tanks must maintain a leak detection system, an inventory control system, and a system of tank testing, and keep systematic and complete records of the information obtained from the detection, inventory control and leak testing system. A.R.S. § 49-1003.

Underground storage tank operators must notify DEQ of any releases of CERCLA-listed wastes "as soon as practicable but no later than 24 hours after a release is detected." A.R.S. § 49-1004. The owner or operator

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of an underground storage tank is obligated to take immediate action to stop any release of tank contents and mitigate any fire, explosion, or vapor hazard. A.R.S. § 49-1005(A). Owners or operators of underground storage tanks must also file with DEQ a statement of financial responsibility, if required to do so by CERCLA. A.R.S. § 49-1006.

Owners or operators of underground storage tanks must, upon request, provide DEQ with any information relating to the tank and its associated equipment and contents. A.R.S. § 49-1011. The owner or operator must also permit the Director to conduct monitoring and testing of the tanks or of surrounding soil, air, surface water or groundwater. Id. The director also has the right to inspect and copy all records relating to the tanks and to inspect and obtain samples of regulated substances contained in the tanks. Id. While civil penalties are prescribed for anybody who violates the provisions of the Act, no criminal penalties are specified. A.R.S. § 49-1013.

IV. ARIZONA GENERAL CRIMINAL LAWS.

As with the federal system, an environmental polluter can be prosecuted under Arizona general state criminal statutes. Although this has not yet frequently been done, in view of the increasing use of general criminal statutes in the federal courts, it is highly likely that the Arizona Attorney General and DEQ will begin to use these statutes to protect the environment.

A. Conspiracy.

A.R.S. § 13-1003. The same punishment as provided for the unlawful goal of the conspiracy.

B. Fraud.

A.R.S. § 13-2310. Class 2 Felony. Imprisonment up to 7 years and/or a fine up to $150,000 for a person or $1 million for a corporation.

C. False Statement.

A.R.S. § 13-2407. Class 6 Felony. Imprisonment up to 1 1/2 years and/or a fine up to $150,000 for a person or $1 million for a corporation.

D. Obstruction of Justice.

A.R.S. § 13-2409. Class 5 felony. Imprisonment up to 2 years and/or fine up to $150,000 for a Person and $1 million for a corporation.

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E G F P _____

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