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Federal and State Regulation of Activities Affecting Water Quality

Julia B. Epley

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FEDERAL AND STATE REGULATION OF
ACTIVITIES AFFECTING WATER QUALITY

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WESTERN WATER LAW IN TRANSITION

A short course sponsored by the
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I. Introduction.

Water quality is directly and indirectly protected under legal approaches that can be categorized in the following manner:

i) Statutory and regulatory management requirements which establish water quality standards and are designed to insure that those standards are achieved (Discussed in Part II of this paper);

ii) Statutory and regulatory cleanup and response requirements which apply in the event of a release, spill or other unauthorized discharge or disposal of substances detrimentally affecting water quality (Discussed in Part III); and

iii) Common law (and to a lesser extent, statutory) theories which create liability for injury and damage caused by releases of contaminants or substances into water bodies (Discussed in Part IV).

A. Statutory and Regulatory Management Requirements.

Statutory and regulatory management requirements to insure protection of water resources are issued under an array of Federal, state and local authorities.

At the Federal level, water quality standards and criteria are issued pursuant to the Clean Water Act ("CWA", 33 U.S.C. § 1251, et seq.), which regulates surface water quality primarily, and the Safe Drinking Water Act ("SDWA"; 42 U.S.C. § 300f, et seq.), which sets standards for surface and groundwaters used for drinking and delivered by public water systems.

Regulatory requirements governing management of activities affecting water quality are promulgated under those statutes and other Federal statutes, including the Resource Conservation and Recovery Act ("RCRA," 42 U.S.C. § 6901, et seq.) and the Federal Insecticide, Fungicide and Rodenticide Act ("FIFRA," 7 U.S.C. § 136, et seq.). These laws grant authority to the Environmental Protection Agency ("EPA") to control activities which may affect human health and the environment.

In addition, the EPA coordinates the various requirements applicable to groundwater quality under its Groundwater Protection Strategy.

Not discussed here, but also relevant to protection of water resources are other Federal laws, including the Marine Protection, Research and Sanctuaries Act (33 U.S.C. § 1401, et seq.).

State governments have enacted laws paralleling these Federal statutes and, in a few states, have enacted laws for protection of groundwater resources. In conjunction with Federal and state authorities, many local governments are also instituting new programs to regulate activities related to underground tanks which could affect groundwater quality.

B. Statutory and Regulatory Cleanup and Response.

Cleanup and response authority in the event of contamination of water supplies is granted at the Federal level under several laws, including the CWA, RCRA, and most importantly, the Comprehensive Environmental Response, Compensation and Liability Act ("CERCLA," 42 U.S.C. § 9601,

et seq.). Response authority at the state level is also granted by comparable state statutes.

C. Common Law Liability.

The common law--operable under different rules within each of the states--governs the rights of persons who suffer injuries or damages caused by environmental pollution to sue the responsible party. Suits may be brought for damages or, in some cases, injunctive relief. Federal common law actions involving contamination of water have recently been limited on theories of the preemption of Federal common law by Federal environmental statutes.

II. Statutory and Regulatory Management Requirements.

A. Standards and Criteria.

Water quality standards or criteria establish concentration levels or narrative statements for many contaminants when they are present in water which may not be exceeded or which may reflect the goals of water quality to be achieved through control measures. Management requirements imposed on activities which may affect water quality are often based on the standards and criteria developed under the environmental laws.

1. Clean Water Act.

a. Overview.

The CWA is one of two Federal statutes granting authority to establish water quality standards.

The basic scheme of the CWA, originally developed in 1972 and amended significantly in 1977 and later years, grants authority to the Federal and state governments to share responsibility for establishing water quality standards for all surface waters.

Prior to 1972, considerations of means to protect water quality were based solely on the quality of the receiving waters. After 1972, the CWA required the development of effluent limitation guidelines for point sources based on the use of specific control technology and consideration of water quality standards.

The statute imposes effluent limitations or standards on point sources, and it imposes other controls on the man-made or man-induced sources which contribute to alteration of water quality through pollution (see 33 U.S.C. § 1362(19); CWA § 502(19)).

Pollutants addressed by the CWA include materials from municipal and industrial point sources, pollutants from nonpoint sources, such as agricultural runoff, and material from dredge and fill activities.

The goals of the CWA are: i) the elimination of discharges of pollutants into navigable waters, and ii) the provision for the protection and propagation of fish, shellfish and wildlife and for recreation in and on the water, the so-called "fishable-swimmable" standard of water quality, as an interim measure whenever attainable (33 U.S.C. § 1251(a)(1) and (2); CWA § 101(a)(1) and (2)).

The CWA also declares that it is a national policy that the discharge of toxic pollutants in toxic amounts be prohibited (33 U.S.C. § 1251(a)(3); CWA § 101(a)(3)).

b. Federal Water Quality Criteria ("WQC").

The CWA requires the EPA to publish WQC reflecting the effects on health and welfare of all pollutants when they are present in water (33 U.S.C. § 1314(a)(1); CWA § 304(a)(1)). The WQC are not legally enforceable, but the information contained in the WQC is used by the states as guidance when setting their own specific water quality standards, discussed below.

The term "pollutant" is broadly defined to include "dredged spoil, solid waste, incinerator residue, sewage, garbage, sewage sludge, munitions, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt and industrial, municipal, and agricultural waste discharged into water. Excluded from the term "pollutant" are vessel sewage and specified materials injected and disposed of into oil, gas or water production wells (33 U.S.C. § 1362(6); CWA § 502(6)).

Although the EPA may set WQC for all pollutants under the CWA, the statute specifically requires the Agency to identify pollutants in two categories, which the EPA has done by listing these pollutants in its regulations: i) conventional pollutants, including biological oxygen demanding pollutants, suspended solids, pH, fecal coliform, and oil and grease (33 U.S.C. § 1314(a)(4); CWA § 304(a)(4); 40 C.F.R. § 401.16); and ii) toxic pollutants consisting, to date, of 65 chemicals and their compounds specifically referenced by the statute (33 U.S.C. § 1317(a)(1); CWA § 307(a)(1); 40 C.F.R. § 401.15). All other pollutants are pollutants which are neither conventional nor toxic, frequently called "nonconventional pollutants."

EPA has focused its criteria setting authority primarily on the development of criteria for conventional and toxic pollutants although WQC for some nonconventional pollutants have also been issued. The criteria development process has been difficult because of the complicated legal and scientific issues involved. Criteria for toxic pollutants, for example, were delayed pending adequate scientific review and were finally published in settlement of litigation brought to compel the issuance of the criteria (Natural Resources Defense Council v. Train 8 E.R.C. 2120 (D.D.C. 1976), modified, 12 E.R.C. 1833 (D.D.C. 1979)). The criteria are based on CWA goals and consist of narrative statements and specific numerical concentrations of pollutants in water that will, when not exceeded, reasonably protect human health and aquatic organisms.

The Agency last published the criteria in the EPA Quality Criteria For Water (1976), commonly referred to as the "Red Book," but many of the Red Book criteria have since been superseded, revised or added to by individual water quality criteria documents. Notice of availability of the documents incorporating revisions or additions to the WQC appears in the Federal Register (45 F.R. 79381, Nov. 28, 1980, and 49 F.R. 5831, Feb. 15, 1984).

c. Water Quality Standards ("WQS").

A WQS is developed by consideration of: i) a "designated use" for which the water body is to be protected (e.g., recreation, protection and propagation of fish and wildlife, agricultural and industrial uses, use as a public water supply or other purposes, including navigation), and ii) the numerical concentration or narrative statement applicable to a pollutant necessary to preserve or achieve

the designated use (33 U.S.C. § 1313(c)(2); CWA § 303(c)(2); 40 C.F.R. § 131.3(i)).

The CWA, in 1972, required states which did not have WQS applicable to intrastate waters to adopt such standards and provided that existing state WQS for all waters must be submitted to EPA for approval (33 U.S.C. § 1313(a); CWA § 303(a)). The statute also requires states to review standards and revise them as appropriate. When revising standards or adopting new ones, states must also gain EPA's approval (33 U.S.C. § 1313(c); CWA § 303(c)). EPA approval is contingent on the Agency's determination that state WQS are consistent with the requirements of the statute. If a state fails to gain EPA approval for its standards or does not submit them for approval, the EPA must promulgate WQS for the state (33 U.S.C. § 1313(b); CWA § 303(b)).

Since 1974, the EPA has taken action to promulgate WQS in seven states, but has withdrawn promulgation actions in five of those states (EPA Summary of Water Quality Standards Promulgation Actions, October 15, 1984). Federally promulgated WQS currently apply, for limited purposes, in Arizona and Mississippi (40 C.F.R. §§ 131.31 and 131.33).

WQS are promulgated so as to apply to individual water bodies and establish enforceable, maximum concentration levels of pollutants or narrative statements applicable to pollutants in a water body identified by the standard setting authority (40 C.F.R. § 131.3(b) and (i)).

States are required to designate uses consistent with the goals of the statute and which can be achieved by effective controls. The regulations allow for "downgrading"

of designated uses in limited circumstances if a state can show that attaining the use is not feasible (40 C.F.R. § 131.10).

The relationship between the enforceable state WQS and the nonenforceable Federal WQC which are provided to the states as guidance is illustrated by the review process WQS must undergo. State WQS must be scientifically defensible under the regulations. An adequate defense may consist of reliance on the Federal WQC (40 C.F.R. § 131.11).

WQS are enforceable in the sense that states or the EPA consider the WQS when issuing permits to discharge or when prescribing acceptable practices for sources of pollution, as discussed below.

2. Safe Drinking Water Act.

a. Overview.

The SDWA is designed to protect the quality of water delivered by public water systems for human consumption.

Public water systems include any system of piped water with at least 15 service connections or which regularly serves at least 25 individuals, regardless of whether the system is publicly or privately owned (42 U.S.C. § 300f(4); SDWA § 1401(4)). The EPA rules interpret the word "regularly" to mean that at least 25 individuals daily must use the system at least 60 days a year (40 C.F.R. § 141.2(e)). Thus, a seasonally used system at a beach resort or ski lodge, for example, or a system used just five times each month by groups, as at a Sierra Club trailside hostel, may be covered.

The SDWA also establishes a regulatory program to protect underground drinking water sources from either actual or potential contamination from the subsurface injection of fluids.

The SDWA requires the EPA to promulgate both primary and secondary drinking water regulations applicable to public water systems (42 U.S.C. § 300g-1; SDWA § 1412).

Primary drinking water regulations must specify contaminants which may have any adverse effect on the health of persons and maximum contaminant levels ("MCLs") or treatment techniques for those contaminants to prevent known or anticipated adverse effects on human health to the extent feasible (42 U.S.C. §§ 300f(1)(B) and 300g-1(b)(3); SDWA §§ 1401(1)(B) and 1412(b)(3)).

Secondary drinking water regulations must specify MCLs to protect the public welfare and apply to any contaminant in drinking water "which may adversely affect the odor or appearance of such water and consequently cause a substantial number of persons served * * *" to discontinue use of the system (42 U.S.C. § 300f(2); SDWA § 1401(2)). Development of both types of regulations is controlled by mechanisms and schedules specified in the statute.

b. Primary and Secondary Drinking Water Regulations.

To develop primary regulations, the EPA was required to promulgate interim primary regulations shortly after enactment of the SDWA (42 U.S.C. § 300g-1(a); SDWA § 1412(a)). These interim regulations cover specific inorganic and organic chemicals, turbidity, microbiological contaminants and radioactive elements (40 C.F.R.

§§ 141.11-141.16). The interim primary regulations were set at a level to protect health to the extent feasible, using technology, treatment techniques or other means generally available, taking costs into consideration (42 U.S.C. § 300g-1(a)(2); SDWA § 1412(a)(2)).

The statute further requires the EPA to revise the interim primary regulations and promulgate the revisions (42 U.S.C. § 300g-1(b)(2); SDWA § 1412(b)(2)). To aid the EPA in its revision process, the SDWA mandated a study by the National Academy of Sciences ("NAS") of the health effects of contaminants in drinking water (42 U.S.C. § 300g-1(e); SDWA § 1412(e)). Based on the NAS study, which was first published in 1977 (see 42 F.R. 35764, July 11, 1977), and other information available to the EPA, the Agency is developing the revised primary regulations, possibly to control a greater number of contaminants than is currently regulated.

In 1983, The EPA proposed to revise the interim primary regulations and sought guidance on four classes of contaminants which may be regulated: i) volatile synthetic organics; ii) synthetic organic, inorganic and microbiological contaminants; iii) radionuclides; and iv) disinfectant by-products (48 F.R. 45502, Oct. 5, 1983). On June 12, 1984, the EPA proposed to develop primary drinking water regulations for nine synthetic volatile organics: trichloroethylene, tetrachloroethylene, carbon tetrachloride, 1,2-dichloroethane, vinyl chloride, 1,1-dichloroethylene, benzene, 1,1,1-trichloroethane and p-dichlorobenzene (49 F.R. 24330).

To promulgate revised primary drinking water regulations the EPA is directed first to establish recommended maximum contaminant levels ("RMCLs") for each contaminant which may have any adverse effect on human

health. The RMCLs are to be set at a level at which no known or anticipated adverse human health effects will occur, allowing an adequate margin of safety. For some contaminants, the SDWA recognizes that it is difficult to ascertain their precise level in a public water system. The SDWA directs the EPA to publish a list of such contaminants (42 U.S.C. § 300g-1(b)(1)(B); SDWA § 1412(b)(1)(B)).

RMCLs are purely health-based standards and are not the legally enforceable standards used to regulate the affected public water systems. RMCLs may be quite stringent. Congressional guidance for establishing RMCLs notes that in cases where there is no safe threshold for a contaminant, such as carcinogens, the RMCL should be set at zero. (H.R.Rep. No. 93-1185, 92 Cong., 2d Sess., ("House Report"), reprinted in [1974] U.S.Code Cong.& Admin. News 6454, 6472-6473).

RMCLs are goals used by the Agency to develop MCLs which are enforceable standards. The MCLs are enforced in the sense that primary drinking water regulations also must contain procedures to insure that public water systems provide water to users which is in compliance with MCL concentrations (42 U.S.C. § 300f(1)(D); SDWA § 1401(1)(D)).

MCLs for revised primary drinking water regulations are required to be set as close to RMCLs as is feasible, with the use of the best technology, treatment techniques, and other means generally available (taking cost into consideration) (42 U.S.C. § 300g-1(b)(3); SDWA § 1412(b)(3)). MCLs are normally to be expressed as maximum permissible concentrations of contaminants in drinking water. For those contaminants for which precise concentrations in a public water system cannot be fairly ascertained, the revised primary regulations are to require

treatment techniques designed to reduce the level of the contaminant to prevent known or anticipated adverse health effects to the extent feasible (42 U.S.C. § 300g-1(b)(3); SDWA § 1412(b)(3)).

Secondary drinking water regulations or secondary maximum contaminant levels ("SMCLs") are nonenforceable by the EPA and are used only as guidance for states in setting up their drinking water programs under the Federal/state partnership which the Act establishes. However, the EPA encourages states to use the Federal SMCLs or an equivalent because the "aesthetic qualities are important factors in the public's acceptance and confidence in the public water system," and their use will prevent the public from obtaining drinking water "from potentially lower quality, higher risk sources" (44 F.R. 42195, July 19, 1979).

Secondary drinking water regulations to control the aesthetic qualities of water considered by the statute have been established for: i) color, ii) corrosivity, iii) odor, iv) pH, v) foaming agents, vi) total dissolved solids, and vii) six chemical substances (40 C.F.R. Part 143).

c. State Enforcement.

Enforcement of the primary drinking water regulations is shared between the Federal and state governments, with the states having the major role (42 U.S.C. § 300g-2; SDWA § 1413; see also "House Report," p. 6473.). Upon a demonstration that a state (including trust territories and the District of Columbia) satisfies certain criteria specified in the statute, including the adoption of primary drinking water regulations which are no less stringent than the Federal government's, enforcement

authority is turned over to the state (42 U.S.C. § 300g-2(a); SDWA § 1413(a)). Currently the only government authorities lacking primary enforcement authority are: Indiana, Wyoming, Oregon and the District of Columbia.

d. Suggested No Adverse Response Levels
("SNARLs") or Health Advisories.

In addition to the formal regulatory standards authorized by the SDWA, the EPA's Office of Drinking Water conducts an informal program to provide guidance and information concerning certain unregulated contaminants in drinking water. Formerly known as SNARLs and now titled "Health Advisories," the guidance provides toxicological analysis and estimates of acute and chronic risks due to exposure to these chemicals in drinking water.

Health advisories suggest conservative concentrations of a contaminant in drinking water at which adverse health effects would not be anticipated, with a margin of safety, for 1-day, 10-day and longer-term periods. The health advisory numbers especially for longer-term risks have been controversial because the process of setting SNARLs or health advisory levels has not been open to public comment. Furthermore, the advisories were originally developed to respond to local government needs for toxicological information when responding to transient exposure situations such as spills or accidents, and were not intended for use in situations where lifetime exposure to the chemical may be allowed to occur.

To date 64 SNARLs or advisories have been developed; 22 of them have been published. But the EPA has reportedly expressed its intention to expand the program, possibly to establish advisory levels for pesticide

contamination in groundwater (U.S. EPA, State-FIFRA Issues Research and Evaluation Group, "Minutes of Meeting on January 14-15, 1985 for Working Committee on Pesticide Disposal and Groundwater Protection," March 13, 1985).

3. Use of Federal Standards, Criteria and Advisories.

The standards, criteria, and advisories developed under the CWA and the SDWA are developed for unique purposes tied to the regulatory mechanisms of those statutes. However, in recent years these water quality standards, criteria and advisories have been used for other purposes than the ones for which they were originally developed, including use as standards for cleanup of environmental contamination. Their use in these contexts, as discussed below, can, on occasion, be questioned. For example, some reviewers of environmental contamination incidents have questioned whether it is appropriate to impose cleanup levels for groundwater based directly on SNARLs or RMCLs without consideration of the SDWA mechanism which accounts for intervening treatment of the water source before delivery to the user.

4. State Standards and Criteria.

Independent of the Federal/state standard setting programs of the CWA and the SDWA are the numerous individual state programs which may contain additional water quality standards or which work to apply those standards differently than their federal counterparts.

The CWA, for example, regulates the discharge of pollutants into surface waters primarily. But in many states establishing CWA water quality standards, the term

"water" is defined to include groundwater as well. In other states, e.g., Florida and New Mexico, separate authority is granted to set specific groundwater quality standards.

B. Management Requirements.

Several environmental statutes, in addition to the CWA and the SDWA, impose requirements on municipal, industrial, agricultural and construction activities designed to manage those activities to achieve or protect water quality. The management requirements contain extensive day-to-day oversight and control procedures mandating integrated compliance programs on the part of the regulated communities.

1. Clean Water Act.

a. Overview.

The CWA imposes a broad range of management requirements and controls on sources of pollution designed to achieve the water quality goals of the statute. These requirements may be broadly classified as applying to: i) point sources and ii) nonpoint sources of pollution.

Point sources are defined by the CWA to include "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." The term does not include return flows from irrigated agriculture (33 U.S.C. § 1362(14); CWA § 502(14)).

Point sources include industrial dischargers, publicly owned treatment works ("POTWs"), and sources discharging dredged or fill material. POTWs are defined in the regulations to mean "any device or system used in the treatment (including recycling and reclamation) of municipal sewage or industrial wastes of a liquid nature which is owned by a 'State' or 'municipality'" (40 C.F.R. § 122.2).

The CWA does not define the term "nonpoint source," but instead, requires the EPA to develop guidelines for identifying and evaluating the nature and extent of nonpoint sources of pollutants (33 U.S.C. § 1314(f); CWA § 304(f)). Nonpoint sources include: i) agriculturally and silviculturally related sources, ii) mine-related sources, iii) construction activity-related sources, iv) salt water intrusion, and v) plant site runoff, spillage, leaks, waste disposal or drainage of materials containing toxic or hazardous pollutants at facilities also regulated as point sources of these pollutants (33 U.S.C. §§ 1288(b)(2)(F)-(K) and 1314(e); CWA §§ 208(b)(2)(F)-(K) and 304(e)).

The methods used to reduce, control, or eliminate pollutants from point and nonpoint sources are numerous and complex. These methods include controls requiring: i) effluent limitations utilizing specified technology, ii) compliance with performance standards, iii) use of specified practices or facility design and operation requirements, iv) use of specified treatment or pretreatment methods, and v) detailed assessments and evaluations of the impacts of proposed discharges.

In addition the CWA requires certain facilities to institute measures to prevent spills or discharges of oil.

When considering the use of these measures, it is useful to remember that the primary directive of the statute, which insures that water quality is to be achieved or protected, declares that any discharge of any pollutant is unlawful unless the discharge is in compliance with the management requirements (33 U.S.C. § 1301(a); CWA § 301(a)). In many cases, compliance includes a requirement to obtain a permit for the controlled discharge.

b. Control of point sources other than POTWs.

The CWA requires the EPA to publish guidelines for effluent limitations of pollutants which reflect the degree of effluent reduction attainable through use of specified technology for classes and categories of point sources which discharge directly to navigable waters (33 U.S.C. § 1314(b); CWA § 304(b)). Effluent limitations are defined to include "any restriction * * * on quantities, rates, and concentrations of chemical, physical, biological, and other constituents which are discharged into navigable waters (33 U.S.C. § 1362(11); CWA § 502(11)). Effluent limitations issued for a point source class or category are normally expressed as the amount of a substance that may be discharged per day or month based on volume of production or in terms of maximum allowable concentrations of a pollutant in the effluent.

The statute requires that existing regulated classes and categories of point sources comply with the effluent limitations issued for them according to a specified schedule of compliance. The statute also requires that the schedule of compliance must require three levels of technology controls to be put into use over time: i) best practicable control technology currently available ("BPT"),

ii) best available technology economically achievable ("BAT"), and iii) best conventional pollutant control technology ("BCT"). Eventually all point sources, other than POTWs, discharging to navigable waters will be required to use BAT and/or BCT (33 U.S.C. § 1311(b)(1)(A)(i), (2)(A)(i), and (E); CWA § 301(b)(1)(A)(i), (2)(A)(i) and (E)).

In addition to compliance with the effluent limitations, all point sources which discharge to navigable waters may be required to comply with more stringent limitations issued by individual states if the state limitations are necessary to meet WQS (33 U.S.C. § 1311(b)(1)(C); CWA § 301(b)(1)(C)). Furthermore, the regulations allow the EPA to impose technology-based requirements on a case-by-case basis for any category of point source, other than POTWs, for which no effluent guidelines have been issued (49 F.R. 37998 at 38052, Sept. 26, 1984, amending 40 C.F.R. § 125.3(c)(2)).

Point sources, other than POTWs, which discharge to navigable waters may be required to comply with performance standards or effluent standards. New sources of pollution constructed after proposal of applicable regulations are required to meet the performance standards imposing a strict degree of effluent reduction which the EPA devises (33 U.S.C. § 1316; CWA § 306). Point sources discharging toxic pollutants may be required to comply with toxic effluent standards which are more stringent than effluent limitations for these pollutants and provide an ample margin of safety (33 U.S.C. § 1317(a)(2) and (4); CWA § 307(a)(2) and (4)). The EPA has developed performance standards and toxic effluent standards for several classes or categories of point sources (40 C.F.R. Part 405, et seq.; 40 C.F.R. Part 129).

Point sources which discharge pollutants to POTWs are regulated differently. The CWA requires the EPA to promulgate regulations requiring these sources to pretreat their discharges to prevent the discharge of any pollutant through a POTW which "interferes with, passes through, or otherwise is incompatible with" the POTW (33 U.S.C. § 1317(b)(1); CWA § 307(b)(1)).

The EPA's regulations specify general prohibitions in the pretreatment standards to insure that pollutants which could cause damage or inefficient operation of the POTW will not be introduced (40 C.F.R. § 403.5). In addition, categories or classes of point sources which discharge to POTWs are required to achieve numerical limitations on the quantities of particular pollutants (40 C.F.R. Part 405, et seq.). A permit is not required for point source discharge to a POTW (40 C.F.R. § 122.3(c)).

c. Control of POTWs.

The CWA requires POTWs to achieve effluent limitations attainable through application of secondary treatment methods (33 U.S.C. § 1311(b)(1)(B); CWA § 301(b)(1)(B)). Secondary treatment is designed by the EPA in its regulations to achieve specific effluent quantity levels for biochemical oxygen demand, carbonaceous biochemical oxygen demand, suspended solids and pH (49 F.R. 36986, Sept. 20, 1984, amending 40 C.F.R. § 133.102).

d. Other Point Source Controls.

The impacts of deposits of material from dredge and fill activities are governed by particular provisions of the CWA. The statute authorizes the EPA to develop guidelines for selection of disposal sites where such

materials may be discharged and to deny or restrict any area for such discharge if the materials will have "an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas * * *, wildlife, or recreational areas (33 U.S.C. § 1344(b) and (c); CWA § 404(b) and (c)).

The EPA guidelines specify that before allowing a discharge of dredged or fill material to occur extensive factual determinations must be made to evaluate the effects of the proposed discharge on the aquatic environment (40 C.F.R. § 230.11). The guidelines also contain measures to assure that practical alternatives to proposed discharges of dredged or fill material will be considered (40 C.F.R. § 230.10(a)).

Although the statute also establishes a comprehensive permitting system for such discharges, administered by the U.S. Army Corps of Engineers, several types of discharges of dredged and fill materials do not require a permit, including discharges of such material from common nonpoint sources or which are subject to review under the environmental impact process of the National Environmental Policy Act, 42 U.S.C. § 4321, et seq. (33 U.S.C. § 1344(f)(1) and (r); CWA § 404(f)(1) and (r); 33 C.F.R. § 230.25(a)(3)). The statute declares, however, that all discharges of dredged and fill material must comply with any applicable toxic effluent standards developed under the CWA (33 U.S.C. § 1344(f)(1); CWA § 404(f)(1)).

Finally, the CWA also requires the EPA to promulgate guidelines for allowable discharges from all point sources which discharge into the territorial seas, the contiguous zone or the ocean. The guidelines must determine the factors contributing to degradation of these waters

resulting from the disposal of pollutants (33 U.S.C. § 1343(c); CWA § 403(c)). Before allowing such discharges, the EPA may require information to be submitted sufficient to make the determination that the marine environment will not be harmed. Discharges in compliance with state WQS are presumed sufficiently protective of marine waters. (40 C.F.R. §§ 125.120-124).

The statute also requires the President to issue regulations establishing procedures to prevent unauthorized discharges of oil and hazardous substances from vessels and facilities (33 U.S.C. § 1321(j)(1)(C); CWA § 311(j)(1)(C)). The EPA's regulations implementing this provision require owners and operators of certain oil-related facilities to prepare Spill Prevention Control and Countermeasure Plans ("SPCC Plans"; 40 C.F.R. Part 112). The plans may include structural modifications for containment, provisions for personnel training, and spill prevention procedures. SPCC Plans for discharges of hazardous substances have not yet been required.

e. Permits for Point Sources.

The CWA requires that permits be obtained for all of the point sources described above which are not specifically excluded from the permitting requirement (33 U.S.C. §§ 1342(a) and 1344(a); CWA §§ 402(a) and 404(a); 40 C.F.R. § 122.1(b); 33 C.F.R. § 323.3(a)). Except for dredge and fill permits, the procedures for issuing the permits are developed under the National Pollution Discharge Elimination System ("NPDES") which vests the EPA with authority to administer and enforce the program unless a state seeks approval to administer its own permit program for discharges within its jurisdiction (33 U.S.C. § 1342(a)(1) and (b); CWA § 402(a)(1) and (b)).

f. Nonpoint Source Control.

The CWA does not impose clearly defined or specific requirements on nonpoint sources of pollution. The statute merely provides a process by which control of nonpoint sources will be carefully considered by state or local agencies. Under the law's requirements, state or local agencies are required to develop areawide plans which must include identification of nonpoint sources and the means to control them to the extent feasible (33 U.S.C. § 1288(2)(F)-(K); CWA § 208(b)(2)(F)-(K)). States are provided assistance in this effort by the CWA procedure which requires EPA to publish guidelines to assess the nature and extent of nonpoint source pollution and methods to control it (33 U.S.C. § 1314(f); CWA § 304(f)).

Under EPA's regulations, the state plans must describe the regulatory and nonregulatory programs, activities, and Best Management Practices ("BMPs") which the agencies may select as the means to control nonpoint sources (50 F.R. 1774, Jan. 11, 1985, adding 40 C.F.R. § 130.6(c)(4)).

BMPs are defined broadly as measures or practices "selected by an agency to meet its nonpoint source control needs. BMPs include * * * structural and nonstructural controls and operation and maintenance procedures" (50 F.R. 1774, Jan. 11, 1985, adding 40 C.F.R. § 130.3(1)).

In addition, certain point sources which involve potential "nonpoint" discharges of toxic or hazardous pollutants may be required to institute BMPs to control plant site runoff, spillage or leaks or other discharges containing toxic or hazardous materials, as a condition of

their NPDES permit (33 U.S.C. § 1314(e); CWA § 304(e); 40 C.F.R. §§ 122.44(k) and 125.103(2)-(c)).

2. Safe Drinking Water Act.

a. Management Requirements For Public Water Systems.

EPA regulations issued pursuant to the SDWA specify procedures which public water systems must follow in order to assure that water they deliver for consumption meets the water quality standards defined by the primary drinking water regulations. These requirements impose duties to: i) monitor, sample and analyze the water provided by the system and maintain records of such analysis, ii) report results of such analysis to proper authorities, and iii) notify the public in the event of failure to comply with an applicable MCL (40 C.F.R. §§ 141.21-141.42).

b. Underground Injection Control ("UIC").

The SDWA requires the EPA to promulgate regulations for state UIC programs. The regulations must contain minimum requirements "to prevent underground injection which endangers drinking water sources" and must require state programs to prohibit any underground injection except as authorized by permit or rule (42 U.S.C. §§ 300h(a) and (b)(1); SDWA §§ 1421(a) and (b)(1)).

The level of protection afforded by the "endangerment" standard is defined to include any subsurface emplacement of fluids by well injection which may result in the presence of any contaminant in underground water which supplies or can reasonably be expected to supply any public

water system if the presence of such contaminant may result in the system's not complying with any national primary drinking water regulation or may otherwise adversely affect the health of persons (42 U.S.C. § 300h(d); SDWA § 1421(d)). The UIC program, therefore, grants EPA authority to address contaminants in addition to those addressed by the drinking water regulations and to consider protection of underground water sources in addition to those actually or currently used to provide drinking water supplies.

The EPA's regulations define an underground source of drinking water ("USDW") to include an aquifer or its portion which: i) supplies any public water system, or ii) contains a sufficient quantity of groundwater to supply such a system and currently supplies drinking water for human consumption [by any means] or contains fewer than 10,000 mg/l total dissolved solids ("TDS") (40 C.F.R. § 144.3). However, the EPA may, in certain circumstances, exempt an aquifer from USDW coverage because the water may be too deep to recover economically or technologically, is so unfit as to be impractical to render fit for consumption, or because it contains TDS greater than 3,000 mg/l but less than 10,000 mg/l and is not reasonably expected to supply a public water system, or for other reasons specified in the regulations (40 C.F.R. § 146.4).

EPA regulations require underground injection to be authorized by a permit issued to the owner or operator of the well or by rule. The regulations also prohibit the construction of any well required to have a permit until the permit has been issued (40 C.F.R. § 144.11). Five classes of injection wells are subject to the permitting or rule requirements. The descriptions for these classes categorize wells used for injection of hazardous wastes, fluids used in oil and gas production wells or extraction of minerals or

for injection of other wastes or materials (40 C.F.R. § 144.6).

To obtain a permit for these activities or be authorized to conduct injection, well operators must generally: i) ensure proper operation and maintenance of the well, ii) demonstrate ability to close or plug wells and iii) report required monitoring information. Specified wells used for hazardous waste injection must also maintain evidence of financial responsibility to accomplish plugging or abandonment of wells (40 C.F.R. § 144.51-70). Class IV wells, used to dispose of hazardous or radioactive wastes into, above or near formations containing a covered aquifer, are completely prohibited, except in certain narrow circumstances (40 C.F.R. § 144.13). Hazardous waste injection beneath an aquifer is still permitted for the time being. However, this activity may be gradually phased out under new RCRA provisions discussed below.

The statute mandates that the EPA publish state UIC program requirements. The EPA is required to specifically list those states, including trust territories, where a UIC program may be necessary to protect drinking water (42 U.S.C. § 300h-1(a); SDWA § 1422(a)). The EPA has done so, and has determined that every state and trust territory must have such a program.

Although the Act contemplates administration of the program by the states, many states have found it difficult to assume full or partial control of the UIC program. In order to obtain approval, state programs must establish requirements at least as stringent as the Federal government's (40 C.F.R. § 145.11(b)(1)). In states which are unable to receive or which do not seek Federal approval, EPA is required to promulgate the Federal UIC program in those

states (42 U.S.C. § 300h-1(c); SDWA § 1422(c)). Thirty states and trust territories have received full "primacy" status to operate a UIC program, six states have partial approval and in twenty-one states, a Federally promulgated program is in effect.

c. Sole Source Aquifer Designation.

A final means by which the SDWA serves to protect groundwater quality is that under the statute EPA may designate certain aquifers as "sole or principal drinking water sources" which, if contaminated, would create a significant hazard to human health. Aquifers which are so designated are protected by special review of any Federally financed project which may contaminate the aquifer through a recharge zone (42 U.S.C. § 300h-3(e); SDWA § 1424(e)).

3. Resource Conservation And Recovery Act.

a. Overview.

RCRA encompasses a broad program to track the generation, storage, handling, treatment, transport and disposal of hazardous waste. The Act was significantly amended last year in ways which will result in more stringent requirements, including new regulatory authority for the management of solid wastes which are not hazardous.

The term solid waste is defined to include "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); RCRA § 1004(27)).

The regulatory definition of solid waste was significantly amended on January 4, 1985 to bring into the RCRA management system the use, reuse, or recycling of "secondary materials" (50 F.R. 614, amending 40 C.F.R. Parts 260, 261, 264, 265 and 266). Solid wastes do not include materials such as discharges from point sources regulated under the CWA.

Hazardous wastes are defined by statute as solid wastes which may cause or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible illness or pose a substantial present 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); RCRA § 1004(5)).

The regulations include as hazardous wastes numerous waste streams specifically listed as hazardous and any solid waste exhibiting characteristics of toxicity, corrosivity, reactivity or ignitability (40 C.F.R. Part 261). As a result of the recent amendments to the statute, the EPA will modify and expand its determination of hazardous characteristics.

Although the RCRA program also governs the generation and transport of hazardous wastes, it works to protect water quality specifically through a complex set of requirements imposed on all facilities which treat, store or dispose of hazardous wastes. These facilities include tanks and containers, surface impoundments, waste piles, land treatment units, landfills and incinerators.

The regulations govern every activity connected with these facilities including: i) location and siting, ii) design and iii) operation. Through these means the regulatory program serves to carry out the goal of protection of health and the environment and to require that "hazardous waste be properly managed in the first instance thereby reducing the need for corrective action at a future date" (42 U.S.C. § 6902(a)(4) and (5); RCRA § 1003(a)(4) and (5)).

At the heart of the RCRA program is a complex set of requirements designed to protect groundwater quality according to a strict standard. But the program also contains numerous requirements designed to protect the quality of surface waters as well. RCRA is, therefore, a preventative statute enacted to insure that overall environmental quality is maintained.

b. Location of facilities.

The siting of hazardous waste facilities is regulated to account for the potential effects of flooding. Facilities located in areas which may be inundated any time within a 100 year period must be designed, constructed and operated to prevent washouts of hazardous waste or to assure that no adverse effects on human health or the environment will occur in the event of a washout. When making a demonstration that washouts will not affect the environment, facility operators are directed to consider the impact of concentrations of hazardous constituents that would potentially affect use or potential use of surface waters and water quality standards established for them if a washout were to occur (40 C.F.R. § 264.18(b)).

c. Design and Operation.

Each of the facilities regulated under the program must be constructed according to specific design features to minimize any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents into environmental media, including soil or surface water (40 C.F.R. § 264.31). This general design criteria operates differently with regard to specific facilities.

Thus, containers and tanks must be of sufficient integrity to contain hazardous wastes properly, and in certain cases, containers must be separated or protected by dikes, berms or walls (40 C.F.R. § 264.170-220). Surface impoundments, waste piles and landfills must be equipped with liners to prevent any migration of hazardous wastes out of the impoundment, pile, or landfill to the adjacent subsurface soil, groundwater or surface water during the active life of any of these facilities unless an alternate design will protect surface and groundwater sufficiently. Surface impoundments, landfills and waste piles must also be constructed so as to prevent overtopping, runoff, runoff or breaks (40 C.F.R. §§ 264.221, 264.251 and 264.301). Land treatment units for the biological treatment of hazardous wastes must operate under a program to ensure that hazardous constituents are degraded, transformed, or immobilized within the treatment zone and do not reach the underlying water table (40 C.F.R. § 264.271).

In addition to these design requirements all facilities must maintain contingency plans and emergency procedures to respond to unplanned releases of hazardous wastes or hazardous waste constituents into the environment (40 C.F.R. § 264.50-56).

To insure the success of these design and operating requirements, RCRA regulations impose additional groundwater monitoring requirements on surface impoundments, waste piles, land treatment units or landfills used to treat, store or dispose of hazardous wastes. The regulations require all hazardous waste facilities to be permitted (40 C.F.R. §§ 270.1(b) and (c)). In the permits for facilities that must monitor the groundwater, the EPA specifies particular concentration limits in the groundwater underlying the facility which may not be exceeded. The concentration limit for each facility is the groundwater protection standard which that facility is required to meet. The concentration limits used under the RCRA program are generally background concentrations or MCLs developed under the SDWA of the hazardous constituents unless an alternate concentration limit ("ACL") is allowed by the EPA. A program to establish ACLs for hazardous waste facilities capable of demonstrating that use of the ACLs will sufficiently protect health and the environment is still in the formative stages of development at EPA. In the event compliance with a facility's standard is not achieved, the regulations require the facility to perform certain actions as a condition of its permit to operate in order to bring the facility into compliance (40 C.F.R. § 264.90-100).

Finally, the RCRA program also requires facilities intending to close or cease operations to meet closure standards which control, minimize or eliminate the escape of contaminants to the ground or to surface waters (40 C.F.R. § 264.111).

d. State Authorization.

Like the other environmental programs discussed responsibility for the RCRA program is shared between the

Federal government and the states. The statute provides for the EPA to grant states authorization to carry out their own program as long as they establish requirements which are equivalent to and consistent with the EPA's requirements and provide for adequate enforcement (42 U.S.C. § 6926; RCRA § 3006). Because of the complexity of RCRA rules, EPA has implemented the authorization process in phases allowing states to assume control for portions of the program as these were developed. According to the authorization scheme, any state which has partial or interim authorization must receive full approval of its entire program by January 1, 1986 or the entire program for that state will revert back to the EPA to enforce and administer (42 U.S.C. § 6926(c); RCRA § 3006(c); 40 C.F.R. § 271.137). As of May 6, 1985, twenty-six states have received full authorization to run their own hazardous waste programs.

e. RCRA Amendments of 1984.

Last year RCRA was amended extensively to:

- i) expand the scope of the program,
- ii) impose more stringent requirements for the management of hazardous wastes, and
- iii) provide powerful incentives for reducing the volumes of hazardous wastes which are generated or for treating them so as to render them nonhazardous (Hazardous and Solid Waste Amendments of 1984; P.L. 98-616, November 8, 1984). The regulations which the EPA is required to promulgate in order to carry out the new programs will take considerable effort to develop especially since the amendments specify rigid schedules for their development. In total, the new requirements will force strict adherence to the basic RCRA philosophy, which prohibits any degradation of the environment, including groundwater and surface water quality, resulting from the management of hazardous wastes.

The 1984 RCRA amendments will result in part in regulations to:

- i) Apply the RCRA program to management of hazardous wastes by small quantity generators formerly unregulated;
- ii) Expand the list and types of hazardous wastes which must be managed;
- iii) Ban the land disposal of hazardous wastes which cannot be demonstrated to remain within the disposal units or to sufficiently protect health and the environment for as long as the wastes remain hazardous;
- iv) Impose minimum technological requirements on the design and operation of treatment, storage and disposal facilities; and
- v) Establish new criteria and guidelines for the states to use in the regulation of municipal sanitary landfills receiving nonhazardous solid wastes and small quantities of hazardous wastes.

In addition, the 1984 RCRA Amendments establish a new regulatory program to be administered by the states and local authorities, with EPA approval, to control the operation of underground tanks which store petroleum or hazardous substances. Some states and localities have already instituted such programs.

4. Federal Insecticide, Fungicide and Rodenticide Act.

a. Overview.

FIFRA grants EPA authority to regulate the distribution, sale, handling and shipment of any pesticide. The statute prohibits these activities for any pesticide which is not registered properly (7 U.S.C. § 136a; FIFRA § 3(a)). In addition, the statute prohibits the use of any pesticide in a manner inconsistent with its labeling (7 U.S.C. § 136j(a)(2)(G); FIFRA § 12(a)(2)(G)). A pesticide product is registered under FIFRA only if the pesticide can be used without "unreasonable adverse effects on the environment" (7 U.S.C. § 136a(c)(5); FIFRA § 3(c)(5)), that is without causing any unreasonable risk to man or the environment, taking into account the economic, social, and environmental costs and benefits of the use of [the] pesticide (7 U.S.C. § 136(bb); FIFRA § 2(bb)). To support the registration of a pesticide, the statute authorizes the EPA to specify the kinds of information required to support the registration (7 U.S.C. § 136a(c)(2); FIFRA § 3(c)(2)). On the basis of the data, the EPA may classify the pesticide for either general or restricted use (7 U.S.C. § 136a(d); FIFRA § 3(d)). Through these activities and incentives the statute lays a foundation to consider issues regarding water quality, although protection of water quality is not explicitly mentioned.

b. Data Requirements.

Required data specified by EPA regulations to support a registration includes data to measure the potential environmental fate of the pesticide. Environmental fate data to evaluate potential for

groundwater contamination by pesticides includes hydrological analysis, photodegradation, soil metabolism, adsorption/desorption and dissipation studies (49 F.R. 42856, Oct. 24, 1984, amending 40 C.F.R. § 158.130).

c. Labeling Requirements.

Proposed labeling requirements for pesticide products would require the use of precautionary statements concerning potential environmental hazards, including effects on surface water quality, resulting from outdoor use of pesticides (49 F.R. 37960 at 37983, Sept. 26, 1984).

d. Risk and Use Criteria.

Current EPA regulations define criteria for determinations of unreasonable adverse effects. A rebuttable presumption arises to an EPA notice to deny or cancel the registration of a pesticide if the EPA determines that a pesticide's ingredients, metabolites or degradation products meet or exceed risk criteria, including the possibility of chronic toxicity effects due to exposure to these materials (40 C.F.R. § 162.11(a)(3)(ii)). Exposure situations may include exposure to these materials resulting from their presence in groundwater.

Classification use criteria adopted by the EPA set standards for outdoor uses of pesticides in new or prior registrations, including requirements that pesticides cause only minor or no adverse effects resulting from exposure to pesticide materials resulting from leaching or lateral movement in soil (40 C.F.R. §§ 162.11(c)(1)(iii)(D) and 162.11(c)(2)(iii)(D)).

5. State Management Requirements.

States may impose additional management requirements to protect water quality independent of Federal/state programs. Some states have imposed new requirements addressing groundwater quality specifically. For example, Arizona has recently promulgated regulations requiring facilities which may have any effect on groundwater to file a notice of disposal ("NOD") of wastes or materials to groundwater. On the basis of the NOD, facilities may be required to obtain a permit for the disposal or discharge of the materials to groundwater (ACRR Title 9, Ch. 20, Art. 2).

6. EPA Groundwater Protection Strategy ("GPS").

In response to a felt need that coordination was lacking among the numerous Federal, state and local programs designed to protect groundwater quality, the EPA began to study ways in which to manage the various programs more effectively. This effort resulted in the publication of the EPA's Groundwater Protection Strategy ("GPS") in August 1984. The goal of the GPS is to preserve "for current and future generations, clean groundwater for drinking and other uses, while protecting the public health of citizens who may be exposed to the effects of past contamination" (GPS, p. 1).

The GPS consists of a comprehensive scheme to:

- i) provide greater assistance and institutional support to state groundwater quality programs, which are viewed as having the primary responsibility for effective protection of this resource;
- ii) address potentially high risk sources of groundwater contamination, such as underground storage tanks and hazardous waste disposal facilities; and

iii) prepare guidelines for the implementation of EPA authority to protect groundwater based on the value and vulnerability of the resource.

The guidelines define protection policies for three classes of groundwater:

Class I -Special groundwaters which are highly vulnerable to contamination because of the hydrological characteristics of the areas in which they occur and which are irreplaceable as drinking water sources or ecologically vital;

Class II -Current and potential sources of drinking water and waters having other beneficial uses;

Class III-Groundwaters not considered suitable for drinking water and of limited beneficial use because of severe contamination such as high salinity or TDS levels in excess of 10,000 mg/l (GPS, pp. 6-7).

The classification scheme is intended to be applied in government programs requiring a permit to conduct activities affecting the groundwater or in government decisions concerning the need to conduct cleanup or restoration of the resource. But the precise methods that will be used to implement the GPS in these programs are still uncertain.

7. Reporting of Spills or Leaks.

In addition to the day-to-day management activities extensively regulated by the Federal and state

environmental laws, the statutes also require prompt notification to proper authorities if, despite efforts to comply with the regulations, an accidental spill, leak or discharge into the environment occurs.

a. CWA.

The CWA and regulations promulgated under the statute require any person in charge of a vessel or facility to report any unauthorized discharge of oil or hazardous substances into navigable waters in quantities that may be harmful to public health or welfare (33 U.S.C. § 1321(b) (4) and (5); CWA § 311(b) (4) and (5)). The Act also requires the EPA to designate substances which are hazardous (33 U.S.C. § 1321(b) (2); CWA § 311(b) (2)). The EPA's list of hazardous substances and the quantities determined by the Agency to be harmful when discharged are found in the regulations (40 C.F.R. Parts 116 and 117). The quantity of oil discharge which the EPA has determined to be harmful for purposes of CWA reporting is defined as any discharge which violates an applicable water quality standard or causes a film or sheen upon or discoloration of the surface of the water or which causes a sludge or emulsion to be deposited beneath the water's surface (40 C.F.R. § 110.3).

b. CERCLA.

CERCLA requires persons in charge of vessels or facilities to report releases of hazardous substances into the environment in excess of the reportable quantities ("RQ") for those substances established by the statute or by regulation (42 U.S.C. §§ 9603(a) and (b); CERCLA §§ 103(a) and (b)). Hazardous substances are defined to include any one of numerous chemicals or substances listed or identified pursuant to other environmental statutes specified by CERCLA

(42 U.S.C. § 9601(14); CERCLA § 101(14)). CERCLA also authorizes the EPA to designate additional hazardous substances by regulation (42 U.S.C. § 9602(a); CERCLA § 102(a)). EPA has recently designated additional substances as hazardous and reprinted the hazardous substances listed according to CERCLA in recent regulations. The new regulations also establish RQs for purposes of CERCLA for many of the substances listed (50 F.R. 13456, April 4, 1985, adding 40 C.F.R. Part 302). In the absence of a promulgated RQ, CERCLA specifies that the RQ for any hazardous substance is one pound or the RQ for the substance established under the CWA (42 U.S.C. § 9602(b); CERCLA § 102(b)).

c. Toxic Substances Control Act ("TSCA";
15 U.S.C. § 2601, et seq.).

TSCA is designed to control hazardous chemicals and mixtures primarily by giving the EPA the tools to identify such chemicals and to regulate them under conditions of manufacture, processing, import, distribution, use or disposal. As part of this program, the law requires manufacturers and processors to submit records or reports respecting health and environmental effects of commercially produced chemicals.

TSCA requires any person who manufactures, processes or distributes in commerce a chemical substance or mixture to notify the EPA of information which reasonably supports the conclusion that the substance or mixture presents a substantial risk of injury to health or the environment unless such person knows that the EPA has already been informed of the risk (15 U.S.C. § 2607(e); TSCA § 8(e)). EPA guidance implementing this provision explains that emergency incidents of environmental contamination,

including releases to groundwater, which pose serious threats to health or the environment must be reported (43 F.R. 11112, March 16, 1978).

d. RCRA.

Under the RCRA groundwater monitoring requirements for hazardous waste facilities, owners and operators of such facilities are required to report to the EPA statistically significant increases in the concentrations of parameters or constituents which they are required to monitor (40 C.F.R. § 264.98(h)).

III. Cleanup and Response Mechanisms.

A. Cleanup and Response Authority Under Federal Environmental Laws.

Several Federal environmental statutes grant authority for the government to conduct cleanup operations in the event that environmental contamination occurs and cleanup of the contaminants is necessary to protect health and the environment. These statutes also grant authority for the government to order responsible parties to conduct the cleanup or to bring a lawsuit against responsible parties for injunctive relief. In some cases, the government's costs of response may be recouped from the liable persons.

1. CWA.

The CWA authorizes the President to remove unauthorized discharges or threats of such discharges of oil or hazardous substances into or upon navigable waters unless the removal is done properly by responsible parties

(33 U.S.C. § 1321(c)(1); CWA § 311(c)(1)). The statute also authorizes the EPA to mitigate damages to health or welfare caused by such discharges (33 U.S.C. § 1321(b)(6)(C); CWA § 311(b)(6)(C)). If the discharge creates an imminent and substantial danger, the government may sue the responsible party to abate the danger or threat (33 U.S.C. § 1321(e); CWA § 311(e)). In addition, responsible parties may be held liable to the government for its costs of response, including costs to restore or replace natural resources (33 U.S.C. § 1321(f); CWA § 311(f)).

2. CERCLA.

CERCLA authorizes the President to remove or remedy any release or threat of release of a hazardous substance into the environment unless the response is performed properly by responsible parties (42 U.S.C. § 9604(a); CERCLA § 104(a)). If the release or threat of release creates an imminent and substantial danger, the government may order, or bring suit against, the responsible party to abate the danger or threat (42 U.S.C. § 9606(a); CERCLA § 106(a)). In addition responsible parties may be held liable to the government or other persons for costs of response actions which they perform or to the government for damages to natural resources (42 U.S.C. § 9607(a); CERCLA § 107(a)).

3. RCRA.

RCRA grants the EPA authority to sue for injunctive relief or issue administrative orders to abate an "imminent and substantial endangerment to health or the environment" caused by past or present handling, storage, treatment, transportation or disposal of any solid or hazardous waste (42 U.S.C. § 6973(a); RCRA § 7003(a)).

The EPA may also require corrective action to be taken at treatment storage and disposal ("TSD") facilities in the event a facility's concentration limits or alternate concentration limits are exceeded in the groundwater it is required to monitor (40 C.F.R. § 264.100). Such action is designed to bring the facility into compliance with its duty to manage its wastes properly so that they do not cause limits to be exceeded. The 1984 RCRA Amendments specify that corrective action is required for all releases of hazardous wastes or constituents from any solid waste management unit at a TSD facility seeking a permit to operate regardless of the time the waste was placed in the unit. The amendments also specify that corrective action under the groundwater monitoring requirements must be considered for areas beyond the boundaries of a facility if necessary (42 U.S.C. §§ 6924(u) and (v); RCRA §§ 3004(u) and (v)).

The 1984 RCRA Amendments also address corrective action for facilities at which corrective action was not required prior to 1984. For these "interim status" facilities, EPA may issue corrective action orders or file suit against the responsible party to perform cleanup in the event of past or present releases of hazardous waste into the environment (42 U.S.C. § 6928(h); RCRA § 3008(h)).

Under the new RCRA regulatory program to control the operation of underground storage tanks, EPA is required to issue regulations for proper corrective actions to be taken in response to releases of regulated substances from an underground tank (42 U.S.C. § 6991b(c)(4); RCRA § 9003(c)(4)).

4. SDWA.

The SDWA grants EPA authority to order, or bring suit against, any person responsible for creating an imminent and substantial danger caused by the presence of a contaminant in a public water system. This authority can be used to compel abatement of the danger or threat (42 U.S.C. § 300i; SDWA § 1431).

B. Extent of Response--"How Clean Is Clean."

The extent of response or the level of cleanup required by the environmental laws is not clearly defined. There is no clear law, for example, which establishes uniform specific numerical thresholds for various chemicals for the purpose of guiding cleanup of soil, surface water or groundwater in all cases. Instead, the environmental laws may provide statements directing cleanup or response actions to be conducted on a case-by-case basis according to the goals or principles enumerated in the statutes. The statutes may also mandate the development of regular procedures, evaluations or methods to be considered when response actions are performed by the government or by responsible parties. Most response or corrective actions are conducted pursuant to procedures or methods developed under the CWA, CERCLA or RCRA.

1. Response Actions Under the CWA and CERCLA.

The cleanup standards required by the CWA or CERCLA are only generally stated. Under the CWA, for example, removal of unauthorized discharges of oil or hazardous substances may be required any time such a discharge occurs or in order to mitigate any damages to public health or welfare caused by such discharges

(33 U.S.C. §§ 1321(b)(6)(C) and (c)(1); CWA §§ 311(b)(6)(C) and 311(c)(1)). Under CERCLA, the government can require cleanup to achieve whatever is "necessary to protect the public health or welfare or the environment" (42 U.S.C. §§ 9604(a) and 9606(a); CERCLA §§ 104(a) and 106(a)). These statutes are even less definite concerning the cleanup standards which apply to a voluntary cleanup action. Voluntary cleanups must be performed "properly" in order to avoid initiation of government response action (33 U.S.C. § 1321(c)(1); CWA § 311(c)(1); 42 U.S.C. § 9604(a)(1); CERCLA § 104(a)(1)).

However, the CWA and CERCLA mandate the development of a single plan to direct the government's response authority under both statutes. This plan, known as the National Oil and Hazardous Substances Pollution Contingency Plan ("National Contingency Plan" or "NCP") was originally mandated by § 311 of the CWA to respond only to discharges of oil and hazardous substances into navigable waters (33 U.S.C. § 1321(c)(2); CWA § 311(c)(2)). The NCP was revised extensively and republished in 1982 as required by CERCLA to reflect the additional responsibilities for cleanup that were created when CERCLA was enacted in 1980 (42 U.S.C. § 9605; CERCLA § 105; the EPA has promulgated and published the revised NCP at 40 C.F.R. Part 300).

The NCP establishes procedures to coordinate government responses to discharges of oil into navigable waters and to releases of hazardous substances into air, soil, surface waters and groundwaters. In addition to provisions regarding the organization and responsibilities of government agencies involved in response activities, the plan details procedures for: i) identification of hazardous substance releases, ii) assessment and evaluation of

response actions, and iii) selecting the methods and extent of appropriate short- and long-term cleanup operations.

Appendix A of the NCP sets out the Hazard Ranking System ("HRS") which is used to quantify the government's evaluation of actual or potential hazards to health or the environment posed by the release of a hazardous substance. Appendix B of the NCP establishes the National Priorities List ("NPL") which lists sites determined to pose the greatest hazards according to their ranking under the HRS.

The NCP currently in effect does not provide extensive guidance regarding the government's methods of investigation or selection of appropriate response. The NCP is also silent with regard to the conduct of voluntary response actions. It does, however, establish formal procedures for the government's phased approach to investigation and cleanup under CERCLA, and it enumerates those situations which may be addressed by various response actions and cleanup technologies.

The plan does not specify the standards to be used in achieving cleanup goals or mandate the use of any particular cleanup technology. Such standards are developed on a case-by-case basis by government agency decisions or, in some instances, by court-directed authority to settle or adjudicate litigation in CWA and CERCLA legal actions.

Proposed revisions to the NCP were published in reaction to the government's experience with the CERCLA program and in settlement of a lawsuit brought by the Environmental Defense Fund ("EDF") and the State of New Jersey (50 F.R. 5862, Feb. 12, 1985; EDF v. U.S. EPA No. 82-2234, D.C.Cir., Feb. 1, 1984; State of New Jersey v. U.S. EPA No. 82-2238, D.C.Cir., Feb. 1, 1984).

The proposed revisions: i) revise the criteria for undertaking short-term response actions and allow the government greater flexibility in determining actions which may be taken without the need for formal administrative determinations, ii) provide guidance on the use and application of environmental standards and criteria developed under other Federal laws in CERCLA cleanups, iii) modify the procedures for listing and deleting sites from the NPL, iv) clarify the roles and responsibilities of responsible parties involved in cleanups, and v) expand the provisions regarding community involvement and participation in the selection of appropriate responses.

The provisions regarding the use, at CERCLA cleanups, of environmental standards or criteria developed under other Federal laws, while not clearly defined, provide more extensive guidance than was previously available on the level of cleanup which may be required. The new guidance suggests that the government will often require strict cleanup levels to be used which will serve to completely restore affected resources to a pristine state or to a state reflecting the quality of the resource before it became contaminated by a release of a hazardous substance. These principles guiding the extent of response have already been reflected in recent government decisions selecting appropriate remedies for specific sites listed on the NPL (see, e.g., U.S. EPA "Record of Decision and Summary of Remedial Action Alternatives, Bridgeport Rental and Oil Services Inc., Logan Township, New Jersey," December 31, 1984).

2. Corrective Action Under RCRA.

The extent of response required when corrective action must be taken at a RCRA waste management facility is

also not clearly defined by the statute or the regulations. The statute requires that all RCRA regulations, including corrective action requirements, be designed as "may be necessary to protect human health and the environment" (42 U.S.C. § 6924(a); RCRA § 3004(a)). Under this general guidance EPA conservatively structured a regulatory system founded on the principle that hazardous waste management facilities should have no impact on the environment.

RCRA regulations requiring corrective action to be taken at a hazardous waste facility specify that the action will be performed in the context of complying with an individual facility's permit (40 C.F.R. § 264.100). Because of this situation very little public information has been made available detailing the precise level of corrective action which has been required at hazardous waste facilities.

The regulations specify that, in most circumstances, corrective action is required to insure that hazardous constituents entering the groundwater from a regulated unit do not exceed the groundwater protection standard established for a facility in its permit to operate (40 C.F.R. §§ 264.92, 264.94, and 264.100(a)).

3. Response Actions Under State Laws.

Many state governments are actively pursuing development of policies and principles directing the appropriate extent of response under state laws authorizing cleanup of the environment. These state policies appear to be in an earlier stage of development than the procedures developed by the Federal government under the NCP or RCRA. However, Federal cleanup policies are closely monitored by the states and used in the context of many state response

actions. Programs to develop state cleanup policies are currently underway in several states, including California and New Jersey.

IV. Common Law Liabilities.

A person who is injured by the environmental pollution of another has long had a right under common law to sue the wrongdoer for damages, and in some circumstances, for an injunction to halt or remedy the offensive conduct. There may be liability under common law even though a person complies fully with the statutes and regulations in existence at the time. In many instances, failure to comply with a statutory or regulatory requirement is itself grounds for common law liability.

There are four types of action which may be brought under common law to recover damages:

i) Trespass, the wrongful entry on another's land, including the throwing or placing of objects on or under the property of another;

ii) Nuisance, which may be private or public interference with a person's rights - pollution of privately owned wells, for example;

iii) Negligence, the breach of a recognized duty of care which causes damage to another; and

iv) Strict liability, or liability for harm caused without regard to fault because the activity causing the harm was ultrahazardous or because a product causing the harm was defective. In some states, New Jersey, for example, certain waste disposal

activities causing harm have been judged to be ultrahazardous (see State Dept. of Environ. Protect v. Ventron (N.J.S.Ct. 1983) 468 Atl.2d 150).

Although the common law does not address water quality directly, it serves indirectly as a powerful mechanism or incentive for persons to conduct their activities so as to protect water quality or prevent any deterioration of the quality of water. In addition to the potentially large awards of compensation for damages to plaintiffs in these cases, in some instances, plaintiffs may recover sums which are punitive if a defendant's conduct is malicious or manifests flagrant disregard for the harm caused.

Federal common law actions for damages, including economic losses or personal injuries, arising out of incidents involving pollution of water are preempted, according to the Supreme Court, by the provisions of the CWA. The CWA has been held to preempt a Federal common law action to abate a nuisance caused by interstate water pollution (City of Milwaukee v. Illinois (1981) 451 U.S. 304) and to deny a private right of action for damages caused by water pollution (Middlesex County Sewerage Authority v. National Sea Clammers Association (1981) 453 U.S. 1).