Environmental Laws: Summaries of Major Statutes Administered by the Environmental Protection Agency

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Summary

With congressional approval, the Nixon Administration established the Environmental Protection Agency (EPA) in 1970 under an executive branch reorganization plan, which consolidated numerous federal pollution control responsibilities that had been divided among several federal agencies. EPA's responsibilities grew over time as Congress enacted an increasing number of environmental statutes and major amendments to these statutes. EPA's primary responsibilities have evolved to include the regulation of air quality, water quality, and chemicals in commerce; the development of regulatory criteria for the management and disposal of solid and hazardous wastes; and the cleanup of environmental contamination. The implementation and enforcement of many of these federal authorities is delegated to the states. EPA also provides financial assistance to states and local governments to aid them in administering pollution control programs and in complying with certain federal environmental requirements. Several federal statutes provide the legal authority for EPA's programs and activities. The major provisions of each of the following statutes are summarized in this report, as laid out in existing law as of this writing.

The **Clean Air Act (CAA)** authorizes EPA to set mobile source limits, ambient air quality standards, hazardous air pollutant emission standards, standards for new pollution sources, and significant deterioration requirements; to identify areas that do not attain federal ambient air quality standards set under the act; to administer a cap-and-trade program to reduce acid rain; and to phase out substances that deplete the Earth's stratospheric ozone layer.

The **Clean Water Act (CWA)** authorizes the regulation and enforcement of requirements that govern waste discharges into U.S. waters, and financial assistance for wastewater treatment plant construction and improvements. The **Ocean Dumping Act** focuses on the regulation of the intentional disposal of materials into ocean waters and authorizes related research. The **Safe Drinking Water Act (SDWA)** authorizes EPA to establish primary drinking water standards, regulate underground injection disposal practices, and administer a groundwater control program.

The **Solid Waste Disposal Act** and **Resource Conservation and Recovery Act (RCRA)** govern the regulation of solid and hazardous wastes, and corrective actions to address improper waste management practices. The **Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)** focuses on the cleanup of contamination resulting from the past release of hazardous substances, but excludes petroleum which primarily is covered under the **Oil Pollution Act**. Amendments to the **Solid Waste Disposal Act** specifically address the cleanup of petroleum leaked from underground storage tanks that are not covered under CERCLA.

The **Toxic Substances Control Act (TSCA)** and the **Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)** require regulation of commercial chemicals to reduce risks to human health and the environment. The **Pollution Prevention Act (PPA)** authorizes various mechanisms intended to prevent pollution by reducing the generation of pollutants at the point of origin. The **Emergency Planning and Community Right-to-Know Act (EPCRA)** requires industrial reporting of toxic releases and encourages chemical emergency response planning.

Under these and other statutes, Congress has assigned EPA the administration of a considerable body of law and associated programs and activities. This report is not comprehensive in terms of summarizing all laws administered by EPA, but covers the major, basic statutory authorities underlying the agency's programs and activities, and those which EPA has delegated to the states.

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Introduction

The origin of the Environmental Protection Agency (EPA) is rooted in a reorganization of the executive branch under the Nixon Administration. Reorganization Plan No. 3 of 1970 proposed the establishment of EPA to integrate the administration of numerous federal pollution control laws that had been carried out by several federal agencies.[1] This plan was part of a broader effort to reorganize an array of environmental responsibilities of many federal agencies, which also resulted in the creation of the National Oceanic and Atmospheric Administration (NOAA).[2] The Nixon Administration created EPA and NOAA through this reorganization with congressional approval under procedures established in the Reorganization Act of 1949, as amended.[3]

The Reorganization Act authorizes the President to propose reorganizations to Congress that would promote the "better execution" of federal laws, the "more effective" management of individual agencies and their functions, and the "efficiency of the operations of Government to the fullest extent practicable."[4] President Nixon determined that the consolidation of federal pollution control responsibilities under one agency was necessary to meet these statutory objectives, and proposed a reorganization of the executive branch to establish EPA under Reorganization Plan No. 3. The plan was based largely on recommendations of the "Ash Council," which President Nixon had formed to examine the organization of environmental responsibilities among federal agencies.[5] The 91st Congress approved this plan, leading to the creation of EPA on December 2, 1970.[6]

Over time, EPA's authorities have grown as Congress has enacted an increasing number of environmental statutes and major amendments to these statutes. EPA's primary responsibilities have evolved to include the regulation of air quality, water quality, and chemicals in commerce; the development of regulatory criteria for the management and disposal of solid and hazardous wastes; and the cleanup of environmental contamination. Although EPA sets uniform pollution control standards and regulations on a national level, the implementation and enforcement of many of these federal standards and regulations are delegated to the states. EPA also provides financial assistance in the form of grants to states and local governments to aid them in administering pollution control programs and in complying with certain federal environmental requirements. The states also have enacted their own pollution control authorities and programs, which complement the federal role of EPA in protecting human health and the environment.

This report presents a summary of the body of federal environmental statutes that together constitute the main authorities of EPA, but this report is not comprehensive in terms of discussing

[1] Reorganization Plan No. 3 of 1970, and President Nixon's accompanying message submitting the plan to Congress, are available on EPA's web site: http://www.epa.gov/history/org/origins/reorg.html. Section 2 of the plan identified the individual programs and activities of federal agencies transferred to EPA.

[2] Reorganization Plan No. 4 addressed the establishment of NOAA.

[3] 5 U.S.C. §901 et seq.

[4] 5 U.S.C. §901(a).

[5] As submitted to President Nixon on April 29, 1970, the recommendations of the President's Advisory Council on Executive Organization, commonly referred to as the "Ash Council," are available on EPA's web site: http://www.epa.gov/history/org/origins/ash.html.

[6] Approval of executive branch reorganization plans under the Reorganization Act of 1949, as amended, is subject to congressional approval through a resolution process outlined at 5 U.S.C. §906.

all federal statutes that may authorize certain activities of the agency.[7] This report highlights prominent provisions of the selected statutes discussed herein, characterizes the purpose and scope of major programs and activities authorized in each statute, and explains the definitions of key statutory terms that establish the parameters of the agency's authorities in these instances.

Although Congress somewhat recently has renewed the authorization of appropriations for certain EPA programs and activities through targeted amendments to various statutes, a more comprehensive reauthorization of many of the statutes that EPA administers has not been enacted for a number of years. Even though the authorization of appropriations may expire, program authority (often referred to as an agency's "enabling" authority) generally does not expire unless repealed, or unless there is a "sunset" date for the program authority itself. If the authorization of appropriations for a specific program or activity has expired, Congress still may provide funding through the annual appropriations process to continue that program or activity, if certain rules for floor consideration are not enforced or are waived.

House and Senate rules generally do not allow the appropriation of funding for a program or activity that Congress has not authorized in law, but these rules are subject to points of order and are not self-enforcing. Congress therefore may appropriate funding for a specific program or activity for which the authorization of appropriations has expired, if no Member raises a point of order, or the rules are waived for consideration of a particular bill. Congress typically has done so to continue the appropriation of funding for EPA programs and activities for which the authorization of appropriations has expired. Once enacted, appropriations provide the legal authority for an agency to obligate federal funds in that particular fiscal year.[8] Congress appropriates funding for EPA within the Interior, Environment, and Related Agencies annual appropriations bill.[9] (For a discussion of funding for FY2012, see the "Environmental Protection Agency" section in CRS Report R41896, *Interior, Environment, and Related Agencies: FY2012 Appropriations*, coordinated by Carol Hardy Vincent.)

This report focuses primarily on EPA's program authorities under the statutes discussed herein. A list of major amendments to the parent statute is provided at the beginning of each summary. The final table at the end of each summary lists the individual provisions of the statute, cross-referencing the sections of the public laws to the sections of the United States Code where each provision is codified. The summaries in this report outline the major provisions of each statute, but are not comprehensive in terms of discussing every provision of these statutes in their entirety. For the purpose of brevity, the summaries omit certain details and secondary provisions that would necessitate a lengthier examination. Furthermore, some prominent provisions are only briefly mentioned, which are beyond the scope of the summaries provided herein.

[7] For example, the National Environmental Education Act of 1990 (P.L. 101-619) authorized EPA to award grants to elementary and secondary schools to support environmental education.

[8] For a discussion of these and other budgetary procedures, see CRS Report 98-721, *Introduction to the Federal Budget Process*, coordinated by Bill Heniff Jr.

[9] During the 109th Congress, EPA's funding was moved from the jurisdiction of the House and Senate Appropriations Subcommittees on Veterans Affairs, Housing and Urban Development, and Independent Agencies to the Interior, Environment, and Related Agencies Appropriations Subcommittees, beginning with the FY2006 appropriations. This change resulted from the abolition of the House and Senate Appropriations Subcommittees on Veterans Affairs, Housing and Urban Development, and Independent Agencies. This subcommittee jurisdiction was transferred among the remaining subcommittees of the House and Senate Committees on Appropriations.

Moreover, this report provides an analytical summary of the major provisions of the statutes as laid out in existing law as of this writing. This report does not examine issues associated with their implementation or with regulations that EPA may have proposed or promulgated to carry out these statutes. Other CRS reports offer information on current developments and issues associated with the implementation of various statutory authorities of EPA and the agency's regulatory role under these statutes. (For a discussion of certain regulatory actions that have received recent attention, see CRS Report R41561, *EPA Regulations: Too Much, Too Little, or On Track?*, by James E. McCarthy and Claudia Copeland.)

Clean Air Act[10]

The Clean Air Act, codified as 42 U.S.C. 7401 *et seq*., seeks to protect human health and the environment from emissions that pollute ambient, or outdoor, air. It requires the Environmental Protection Agency to establish minimum national standards for air quality, and assigns primary responsibility to the states to assure compliance with the standards. Areas not meeting the standards, referred to as "nonattainment areas," are required to implement specified air pollution control measures. The act establishes federal standards for mobile sources of air pollution and their fuels and for sources of 187 hazardous air pollutants, and it establishes a cap-and-trade program for the emissions that cause acid rain. It establishes a comprehensive permit system for all major sources of air pollution. It also addresses the prevention of pollution in areas with clean air and protection of the stratospheric ozone layer.

Background

Like many other programs administered by the Environmental Protection Agency, federal efforts to control air pollution have gone through several phases, beginning with information collection, research, and technical assistance, before being strengthened to establish federal standards and enforcement. Federal legislation addressing air pollution was first passed in 1955, prior to which air pollution was the exclusive responsibility of state and local levels of government.

The federal role was strengthened in subsequent amendments, notably the Clean Air Act Amendments of 1970, 1977, and 1990. The 1970 amendments established the procedures under which EPA sets national standards for air quality, required a 90% reduction in emissions from new automobiles by 1975, established a program to require the best available control technology at major new sources of air pollution, established a program to regulate air toxics, and greatly strengthened federal enforcement authority. The 1977 amendments adjusted the auto emission standards, extended deadlines for the attainment of air quality standards, and added the Prevention of Significant Deterioration program to protect air cleaner than national standards.

Changes to the act in 1990 included provisions to (1) classify most nonattainment areas according to the extent to which they exceed the standard, tailoring deadlines, planning, and controls to each area's status; (2) tighten auto and other mobile source emission standards; (3) require reformulated and alternative fuels in the most polluted areas; (4) revise the air toxics section, establishing a new program of technology-based standards and addressing the problem of sudden,

[10] Prepared by James E. McCarthy, Larry B. Parker, Linda-Jo Schierow, and Claudia Copeland, Specialists in the Resources, Science, and Industry Division.

catastrophic releases of air toxics; (5) establish an acid rain control program, with a marketable allowance scheme to provide flexibility in implementation; (6) require a state-run permit program for the operation of major sources of air pollutants; (7) implement the Montreal Protocol to phase out most ozone-depleting chemicals; and (8) update the enforcement provisions so that they parallel those in other pollution control acts, including authority for EPA to assess administrative penalties.

Table 1. Clean Air Act and Amendments

(codified generally as 42 U.S.C. 7401-7671)

Year	Act	Public Law Number
1955	Air Pollution Control Act	P.L. 84-159
1959	Reauthorization	P.L. 86-353
1960	Motor vehicle exhaust study	P.L. 86-493
1963	Clean Air Act Amendments	P.L. 88-206
1965	Motor Vehicle Air Pollution Control Act	P.L. 89-272, Title I
1966	Clean Air Act Amendments of 1966	P.L. 89-675
1967	Air Quality Act of 1967 National Air Emission Standards Act	P.L. 90-148
1970	Clean Air Act Amendments of 1970	P.L. 91-604
1973	Reauthorization	P.L. 93-15
1974	Energy Supply and Environmental Coordination Act of 1974	P.L. 93-319
1977	Clean Air Act Amendments of 1977	P.L. 95-95
1980	Acid Precipitation Act of 1980	P.L. 96-294, Title VII
1981	Steel Industry Compliance Extension Act of 1981	P.L. 97-23
1987	Clean Air Act 8-month Extension	P.L. 100-202
1990	Clean Air Act Amendments of 1990	P.L. 101-549
1991	Technical correction to list of hazardous air pollutants	P.L. 102-187
1995-96	Relatively minor laws amending the Act	P.L. 104-6, P.L. 104-59, P.L. 104-70, P.L. 104-260
1998	Amended Section 604 re methyl bromide	P.L. 105-277, Section 764
1998	Border Smog Reduction Act of 1998	P.L. 105-286
1999	Chemical Safety Information, Site Security and Fuels Regulatory Relief Act	P.L. 106-40
2004	Amendments to §209 re small engines	P.L. 108-199, Division G, Title IV, Section 428
2005	Energy Policy Act of 2005 (amended §211 re fuels)	P.L. 109-58
2007	Energy Independence and Security Act of 2007 (amended §211 re fuels)	P.L. 110-140

The 1990 amendments also authorized appropriations for clean air programs through FY1998. The act has not been reauthorized since then. House rules require enactment of an authorization

before an appropriation bill can be considered; but this requirement can be waived and frequently has been. Thus, while authorization of appropriations in the Clean Air Act (and most other environmental statutes) has expired, programs have continued and have been funded. The act's other legal authorities, to issue and enforce regulations, are, for the most part, permanent and are not affected by the lack of authorization.

The remainder of this report describes major programs required by the act, with an emphasis on the changes established by the 1990 amendments.

National Ambient Air Quality Standards

In Section 109, the act requires EPA to establish National Ambient Air Quality Standards (NAAQS) for air pollutants that endanger public health or welfare, in the Administrator's judgment, and whose presence in ambient air results from numerous or diverse sources. The NAAQS must be designed to protect public health and welfare with an adequate margin of safety. Using this authority, EPA has promulgated NAAQS for six air pollutants: sulfur dioxide (SO_2), particulate matter ($PM_{2.5}$ and PM_{10}), nitrogen dioxide (NO_2), carbon monoxide (CO), ozone,[11] and lead. The act requires EPA to review the scientific data upon which the standards are based, and revise the standards, if necessary, every five years. More often than not, however, EPA has taken more than five years in reviewing and revising the standards.

Originally, the act required that the NAAQS be attained by 1977 at the latest, but the states experienced widespread difficulty in complying with this deadline. As a result, the deadlines for achieving NAAQS have been extended several times. Under the 1990 amendments, most areas not in attainment with NAAQS must meet special compliance schedules, staggered according to the severity of an area's air pollution problem. The amendments also established specific requirements for each nonattainment category, as described below.

State Implementation Plans

While the act authorizes the EPA to set NAAQS, the states are responsible for establishing procedures to attain and maintain the standards. Under Section 110 of the act, the states adopt plans, known as State Implementation Plans (SIPs), and submit them to EPA to ensure that they are adequate to meet statutory requirements.

SIPs are based on emission inventories and computer models to determine whether air quality violations will occur. If these data show that standards would be exceeded, the state must impose additional controls on existing sources to ensure that emissions do not cause "exceedances" of the standards. Proposed new and modified sources must obtain state construction permits in which the applicant shows how the anticipated emissions will not exceed allowable limits. In nonattainment areas, emissions from new or modified sources must also be offset by reductions in emissions from existing sources.

[11] Unlike the other NAAQS pollutants, ozone is not directly emitted, but rather is formed in the atmosphere by the interaction of volatile organic compounds (VOCs) and nitrogen oxides (NOx) in the presence of sunlight. The control of ozone is, thus, based on regulating emissions of VOCs and NOx.

The 1990 amendments require EPA to impose sanctions in areas which fail to submit a SIP, fail to submit an adequate SIP, or fail to implement a SIP: unless the state corrects such failures, a 2-to-1 emissions offset for the construction of new polluting sources is imposed 18 months after notification to the state, and a ban on most new federal highway grants is imposed six months later. An additional ban on air quality grants is discretionary. Ultimately, a Federal Implementation Plan may be imposed if the state fails to submit or implement an adequate SIP.

The amendments also require that, in nonattainment areas, no federal permits or financial assistance may be granted for activities that do not "conform" to a State Implementation Plan. This requirement can cause a temporary suspension in funding for most new highway and transit projects if an area fails to demonstrate that the emissions caused by such projects are consistent with attainment and maintenance of ambient air quality standards. Demonstrating conformity of transportation plans and SIPs is required in nonattainment areas whenever new plans are submitted.

Nonattainment Requirements

In a major departure from the prior law, the 1990 Clean Air Act Amendments grouped most nonattainment areas into classifications based on the extent to which the NAAQS was exceeded, and established specific pollution controls and attainment dates for each classification. These requirements are described here as spelled out in Sections 181-193 of the act.[12]

Nonattainment areas are classified on the basis of a "design value," which is derived from the pollutant concentration (in parts per million or micrograms per cubic meter) recorded by air quality monitoring devices. The design value for the 1-hour ozone standard was the fourth highest hourly reading measured during the most recent three-year period. Using these design values, the act created five classes of ozone nonattainment, as shown in **Table 2**. Only Los Angeles fell into the "extreme" class, but 97 other areas were classified in one of the other four ozone categories. A simpler classification system established moderate and serious nonattainment areas for carbon monoxide and particulate matter with correspondingly more stringent control requirements for the more polluted class.

Table 2. Ozone Nonattainment Classifications

Class	Marginal	Moderate	Serious	Severe	Extreme
Deadline	1993	1996	1999	2005-2007[a]	2010
Areas[b]	42 areas	32 areas	14 areas	9 areas	1 area

[12] EPA modified the ozone standard, specified in the statute as 0.12 parts per million (ppm) averaged over a 1-hour period, to 0.08 ppm averaged over an 8-hour period, through regulations promulgated in July 1997. In April 2004, the agency promulgated an implementation rule for the new 8-hour standard. Under this rule, the 1-hour standard was revoked as of June 15, 2005, and areas that had not yet attained it were converted to new classifications depending on their 8-hour concentration of ozone. As a result of court challenges, the ramifications of this conversion to the 8-hour standard are still unfolding, but in general the former 1-hour nonattainment areas remain subject to the controls specified for their 1-hour category. New nonattainment areas that did not exceed the 1-hour standard, but do violate the 8-hour standard, in general are subject to more flexible controls under Subpart 1 (Sections 171-179B) of the act. The standard was revised again in March 2008, to 0.075 ppm averaged over 8 hours, but EPA subsequently agreed to reconsider the 2008 standard, a task it expects to complete in 2011. Nonattainment areas for the new standard would be designated following its promulgation.

Class	Marginal	Moderate	Serious	Severe	Extreme
Design Value	0.121 ppm-0.138 ppm	0.138 ppm-0.160 ppm	0.160 ppm-0.180 ppm	0.180 ppm-0.280 ppm	>0.280 ppm

a. Areas with a 1988 design value between 0.190 and 0.280 ppm were given 17 years to attain; others had 15 years.

b. Number of areas in each category as of the date of enactment.

As shown in the table, the deadlines for attainment for ozone nonattainment areas stretched from 1993 to 2010, depending on the severity of the problem. (Under the 8-hour ozone standard, which replaced the 1-hour standard in 2004, these deadlines are changed to 2007 to 2021.) For carbon monoxide, the attainment date for moderate areas was December 31, 1995, and for serious areas, December 31, 2000. For particulate matter, the deadline for areas designated moderate nonattainment as of 1990 was December 31, 1994; for those areas subsequently designated as moderate, the deadline is six years after designation. For serious areas, the respective deadlines are December 31, 2001, or 10 years after designation.

Requirements for Ozone Nonattainment Areas

Although areas with more severe air pollution problems have a longer time to meet the standards, more stringent control requirements are imposed in areas with worse pollution. A summary of the primary ozone control requirements for each nonattainment category follows.

Marginal Areas

- Inventory emissions sources (to be updated every three years).
- Require 1.1 to 1 offsets (i.e., new major emission sources of volatile organic compounds [VOCs] must reduce VOC emissions from existing facilities in the area by 10% more than the emissions of the new facility).
- Impose reasonably available control technology (RACT) on all major sources emitting more than 100 tons per year for the nine industrial categories where EPA had already issued control technique guidelines describing RACT prior to 1990.

Moderate Areas

- Meet all requirements for marginal areas.
- Impose a 15% reduction in VOC emissions in six years.
- Adopt a basic vehicle inspection and maintenance program.
- Impose RACT on all major sources emitting more than 100 tons per year for all additional industrial categories where EPA will issue control technique guidelines describing RACT.
- Require vapor recovery at gas stations selling more than 10,000 gallons per month.
- Require 1.15 to 1 offsets.

Serious Areas

- Meet all requirements for moderate areas.

- Reduce definition of a major source of VOCs from emissions of 100 tons per year to 50 tons per year for the purpose of imposing RACT.
- Reduce VOCs 3% annually for years 7 to 9 after the 15% reduction already required by year 6.
- Improve monitoring.
- Adopt an enhanced vehicle inspection and maintenance program.
- Require fleet vehicles to use clean alternative fuels.
- Adopt transportation control measures if the number of vehicle miles traveled in the area is greater than expected.
- Require 1.2 to 1 offsets.
- Adopt contingency measures if the area does not meet required VOC reductions.

Severe Areas

- Meet all requirements for serious areas.
- Reduce definition of a major source of VOCs from emissions of 50 tons per year to 25 tons per year for the purpose of imposing RACT.
- Adopt specified transportation control measures.
- Implement a reformulated gasoline program.
- Require 1.3 to 1 offsets.
- Impose $5,000 per ton penalties on major sources if the area does not meet required reductions.

Extreme Areas

- Meet all requirements for severe areas.
- Reduce definition of a major source of VOCs from emissions of 25 tons per year to 10 tons per year for the purpose of imposing RACT.
- Require clean fuels or advanced control technology for boilers emitting more than 25 tons per year of NO_x.
- Require 1.5 to 1 offsets.

As noted, EPA promulgated a new, 8-hour ozone standard in July 1997. Following extensive court challenges, the agency designated nonattainment areas for the new standard on April 30, 2004. State Implementation Plans were required to be submitted in 2007.

Requirements for Carbon Monoxide Nonattainment Areas

As with ozone nonattainment areas, carbon monoxide (CO) nonattainment areas are subjected to specified control requirements, with more stringent requirements in Serious nonattainment areas. A summary of the primary CO control requirements for each nonattainment category follows.

Moderate Areas

- Conduct an inventory of emissions sources.
- Forecast total vehicle miles traveled in the area.
- Adopt an enhanced vehicle inspection and maintenance program.
- Demonstrate annual improvements sufficient to attain the standard.

Serious Areas

- Adopt specified transportation control measures.
- Implement an oxygenated fuels program for all vehicles in the area.
- Reduce definition of a major source of CO from emissions of 100 tons per year to 50 tons per year if stationary sources contribute significantly to the CO problem.

Serious areas failing to attain the standard by the deadline have to revise their SIP and demonstrate reductions of 5% per year until the standard is attained.

Requirements for Particulate Nonattainment Areas

Particulate (PM_{10}) nonattainment areas are also subject to specified control requirements. These are:

Moderate Areas

- Require permits for new and modified major stationary sources of PM_{10}.
- Impose reasonably available control measures (RACM).

Serious Areas

- Impose best available control measures (BACM).
- Reduce definition of a major source of PM_{10} from 100 tons per year to 70 tons per year.

In July 1997, EPA promulgated new standards for fine particulates ($PM_{2.5}$). The $PM_{2.5}$ standards were also subject to court challenges. The absence of a monitoring network capable of measuring the pollutant delayed implementation as well. Nonattainment areas for $PM_{2.5}$ were designated on April 14, 2005. States had three years subsequent to designation to submit State Implementation Plans. Revisions to the NAAQS promulgated in October 2006 strengthened the $PM_{2.5}$ standard.

Transported Air Pollution

Meeting the nation's clean air standards can be complicated as air pollution is no respecter of political boundaries or subdivisions. This problem of transported air pollutants has come into particular focus as states and EPA attempt to develop effective compliance strategies to achieve both the ozone and the PM2.5 NAAQS. Under Section 110(a)(2)(D), SIPs must include adequate provisions to prevent sources within that state from contributing significantly to nonattainment in one or more downwind states.

If EPA finds a SIP inadequate to achieve a NAAQS, it must require the affected state to submit a revised SIP that includes sufficient measures to bring that state into compliance. This is known as a "SIP Call." The 1990 Clean Air Act amendments provided EPA and the states with new tools to address the transport problem through this provision. One of those tools is Section 176A, a provision that permits the EPA, either on its own or by petition from any state, to establish a transport region to address regional pollution problems contributing to violations of a primary NAAQS. A commission of EPA and state officials is constituted to make recommendations to EPA on appropriate mitigation strategies. Based on the commission's findings and recommendations, EPA is then required under Section 110(k)(5) to notify affected states of inadequacies in their current state implementation plans and to establish deadlines (not to exceed 18 months) for submitting necessary revisions (i.e., a SIP call). Besides authorizing administratively created transport regions, the 1990 amendments statutorily created an Ozone Transport Region (OTR) in the Northeast. This provision (Section 184 of the act) required specific additional controls for all areas (not only nonattainment areas) in that region, and established the Ozone Transport Commission for the purpose of recommending to EPA regionwide controls affecting all areas in the region.

The transport issue may also be addressed by affected downwind states through a Section 126 petition. As amended by the 1990 Clean Air Act amendments, under Section 126(b) any state or political subdivision may petition EPA for a finding that a major source or group of stationary sources located in another state is emitting pollutants that "significantly contribute" to the nonattainment of a NAAQS by their state. EPA is to respond to the petition within 60 days. If the petition is granted, the offending sources must cease operations within three months unless the sources comply with emission controls and the compliance schedules as determined by EPA to bring them into compliance with the section. Section 126 has rarely been used, although it has proven useful to EPA in some cases as backup authority where there might be challenges to a SIP call.

Emission Standards for Mobile Sources

Title II of the Clean Air Act has required emission standards for automobiles since 1968. The 1990 amendments significantly tightened these standards: for cars, the hydrocarbon standard was reduced by 40% and the nitrogen oxides (NO_x) standard by 50%. These standards—referred to as "Tier 1" standards—were phased in over the 1994-1996 model years.

The amendments envisioned a further set of reductions ("Tier 2" standards), but not before model year 2004. For Tier 2 standards to be promulgated, the agency was first required to report to Congress concerning the need for further emission reductions, the availability of technology to achieve such reductions, and the cost-effectiveness of such controls compared to other means of attaining air quality standards. EPA submitted this report to Congress in August 1998, concluding that further emission reductions were needed and that technology to achieve such reductions was available and cost-effective. Tier 2 standards, requiring emission reductions of 77% to 95% from cars and light trucks were promulgated in February 2000, and were phased in over the 2004-2009 model years. To facilitate the use of more effective emission controls, the standards also require a more than 90% reduction in the sulfur content of gasoline, beginning in 2004.

The 1990 amendments also required that oxygenated gasoline, designed to reduce emissions of carbon monoxide, be sold in the worst CO nonattainment areas and that "reformulated" gasoline (RFG), designed to reduce emissions of volatile organic compounds and toxic air pollutants, be sold in the nine worst ozone nonattainment areas (Los Angeles, San Diego, Houston, Baltimore,

Philadelphia, New York, Hartford, Chicago, and Milwaukee); metropolitan Washington, DC, and four areas in California were added to the mandatory list later. Other ozone nonattainment areas can opt in to the RFG program; as of 2006, additional areas in 11 states had done so.

The fuels provisions were modified by the Energy Policy Act of 2005 (EPACT), removing the requirement that RFG contain oxygenates. Instead, EPACT required the use of increasing amounts of renewable fuel, most likely to be ethanol, in motor fuels, beginning in 2006. The Energy Independence and Security Act of 2007 further strengthened the renewable fuel requirements.

Use of alternative fuels and development of cleaner engines was also to be stimulated by the Clean-Fuel Fleet Program. In all of the most seriously polluted ozone and CO nonattainment areas, centrally fueled fleets of 10 or more passenger cars and light-duty trucks must purchase at least 30% clean-fuel vehicles when they add new vehicles to existing fleets, starting in 1999. (The act originally required the program to begin in 1998, but the start was delayed by a year.) The percentage rose to 50% in 2000 and 70% in 2001. Heavy-duty fleets are required to purchase at least 50% clean-fuel vehicles annually. A clean fuel vehicle is one which meets Low Emission Vehicle (LEV) standards and operates on reformulated gasoline, reformulated diesel, methanol, ethanol, natural gas, liquefied petroleum gas, hydrogen, or electricity.

In addition to the above program, California's Zero Emission Vehicle (ZEV) program also is intended to promote the development of alternative fuels and vehicles. Section 209(b) of the Clean Air Act allows the EPA Administrator to grant California the authority to develop its own vehicle emissions standards if those standards are at least as stringent as the federal standards and if the state demonstrates that it needs the standards to meet compelling and extraordinary conditions. In addition to setting more stringent standards for all vehicles, California used this authority to establish a program requiring auto manufacturers to sell ZEVs (electric or hydrogen fuel cell vehicles) in the state beginning in 2003. This program has been substantially modified since it was enacted, and now allows credit for hybrid and partial ZEV vehicles in addition to true ZEVs, but it has served as an incubator for lower emission technologies since its adoption. Section 177 of the act allows other states to adopt California's stricter standards: at least 10 states (Connecticut, Maine, Massachusetts, New Jersey, New York, Oregon, Pennsylvania, Rhode Island, Vermont, and Washington) have already adopted them or are in the process of doing so.

The 1990 amendments also imposed tighter requirements on certification (an auto's useful life is defined as 100,000 miles instead of the earlier 50,000 miles), on emissions allowed during refueling, on low temperature CO emissions, on in-use performance over time, and on warranties for the most expensive emission control components (8 years/80,000 miles for the catalytic converter, electronic emissions control unit, and onboard emissions diagnostic unit). Regulations were also extended to include nonroad fuels and engines.

Standards for trucks and buses using diesel engines were also strengthened. The 1990 amendments required new urban buses to reduce emissions of diesel particulates 92% by 1996, and all other heavy-duty diesel engines to achieve an 83% reduction by the same year. NO_x emissions must also be reduced, 33% by 1998. Authority to further strengthen these standards led to promulgation in January 2001 of new emission standards requiring a further 90%-95% reduction in emissions phased in over the 2007-2010 model years, and a reduction of 97% in the allowable amount of sulfur in highway diesel fuel. These regulations were followed in May 2004 by similar requirements for nonroad diesel equipment, which will be phased in between 2007 and 2015.

Hazardous Air Pollutants

Completely rewritten by the Clean Air Act Amendments of 1990, Section 112 of the act establishes programs for protecting public health and the environment from exposure to toxic air pollutants. As revised by the 1990 amendments, the section contains four major provisions: Maximum Achievable Control Technology (MACT) requirements; health-based standards; standards for stationary "area sources" (small, but numerous sources, such as gas stations or dry cleaners, that collectively emit significant quantities of hazardous pollutants); and requirements for the prevention of catastrophic releases.

First, EPA is to establish technology-based emission standards, called MACT standards, for sources of 187 pollutants listed in the legislation, and to specify categories of sources subject to the emission standards.[13] EPA is to revise the standards periodically (at least every eight years). EPA can, on its own initiative or in response to a petition, add or delete substances or source categories from the lists.

Section 112 establishes a presumption in favor of regulation for the designated chemicals; it requires regulation of a designated pollutant unless EPA or a petitioner is able to show "that there is adequate data on the health and environmental effects of the substance to determine that emissions, ambient concentrations, bioaccumulation or deposition of the substance may not reasonably be anticipated to cause any adverse effects to human health or adverse environmental effects."

EPA is required to set standards for sources of the listed pollutants that achieve "the maximum degree of reduction in emissions" taking into account cost and other non-air-quality factors. These MACT standards for new sources "shall not be less stringent than the most stringent emissions level that is achieved in practice by the best controlled similar source." The standards for existing sources may be less stringent than those for new sources, but must be no less stringent than the emission limitations achieved by either the best performing 12% of existing sources (if there are more than 30 such sources in the category or subcategory) or the best performing 5 similar sources (if there are fewer than 30). Existing sources are given three years following promulgation of standards to achieve compliance, with a possible one-year extension; additional extensions may be available for special circumstances or for certain categories of sources. Existing sources that achieve voluntary early emissions reductions will receive a six-year extension for compliance with MACT.

The second major provision of Section 112 directs EPA to set health-based standards to address situations in which a significant residual risk of adverse health effects or a threat of adverse environmental effects remains after installation of MACT. This provision requires that EPA, after consultation with the Surgeon General of the United States, submit a report to Congress on the public health significance of residual risks, and recommend legislation regarding such risks. If Congress does not legislate in response to EPA's recommendations, then EPA is required to issue standards for categories of sources of hazardous air pollutants as necessary to protect the public health with an ample margin of safety or to prevent an adverse environmental effect. A residual risk standard is required for any source emitting a cancer-causing pollutant that poses an added

[13] The 1990 amendments specified 189 pollutants, but P.L. 102-187, enacted on December 4, 1991, deleted hydrogen sulfide from the list of toxic pollutants, leaving only 188. On December 19, 2005, EPA removed methyl ethyl ketone (MEK) from the list of toxic air pollutants. The total number of listed air toxics is now 187.

risk to the most exposed person of more than one-in-a-million. Residual risk standards are due eight years after promulgation of MACT for the affected source category. Existing sources have 90 days to comply with a residual risk standard, with a possible two-year extension. In general, residual risk standards do not apply to area sources.

The law directed EPA to contract with the National Academy of Sciences (NAS) for a study of risk assessment methodology, and created a Risk Assessment and Management Commission to investigate and report on policy implications and appropriate uses of risk assessment and risk management. In 1994 NAS published its report, *Science and Judgment in Risk Assessment*. The Commission study, *Framework for Environmental Health Risk Management*, was released in 1997.

Third, in addition to the technology-based and health-based programs for major sources of hazardous air pollution, EPA is to establish standards for stationary "area sources" determined to present a threat of adverse effects to human health or the environment. The provision requires EPA to regulate the stationary area sources responsible for 90% of the emissions of the 30 hazardous air pollutants that present the greatest risk to public health in the largest number of urban areas. In setting the standard, EPA can impose less stringent "generally available" control technologies, rather than MACT.

Finally, Section 112 addresses prevention of sudden, catastrophic releases of air toxics by establishing an independent Chemical Safety and Hazard Investigation Board. The Board is responsible for investigating accidents involving releases of hazardous substances, conducting studies, and preparing reports on the handling of toxic materials and measures to reduce the risk of accidents.

EPA is also directed to issue prevention, detection, and correction requirements for catastrophic releases of air toxics by major sources. Section 112(r) requires owners and operators to prepare risk management plans including hazard assessments, measures to prevent releases, and a response program.

New Source Performance Standards

Section 111 of the act requires EPA to establish nationally uniform, technology-based standards (called New Source Performance Standards, or NSPS) for categories of new industrial facilities. These standards accomplish two goals: first, they establish a consistent baseline for pollution control that competing firms must meet, and thereby remove any incentive for states or communities to weaken air pollution standards in order to attract polluting industry; and second, they preserve clean air to accommodate future growth, as well as for its own benefits.

NSPS establish maximum emission levels for new major stationary sources—powerplants, steel mills, and smelters, for example—with the emission levels determined by the best "adequately demonstrated" continuous control technology available, taking costs into account. EPA must regularly revise and update NSPS applicable to designated sources as new technology becomes available, since the goal is to prevent new pollution problems from developing and to force the installation of new control technology.

The standards also apply to modifications of existing facilities, through a process called New Source Review (NSR). The law's ambiguity regarding what constitutes a modification (subject to

NSR) as opposed to routine maintenance of a facility has led to litigation, with EPA proposing in recent years to modify its interpretation of the requirements of this section.

Solid Waste Incinerators

Prior to 1990, solid waste incinerators, which emit a wide range of pollutants, were subject to varying degrees of state and federal regulation depending on their size, age, and the type of waste burned. In a new Section 129, the 1990 amendments established more consistent federal requirements specifying that emissions of 10 categories of pollutants be regulated at new and existing incinerators burning municipal solid waste, medical waste, and commercial and industrial waste. The amendments also established emissions monitoring and operator training requirements.

Prevention of Significant Deterioration / Regional Haze

Sections 160-169 of the act establish requirements for the prevention of significant deterioration of air quality (PSD). The PSD program reflects the principle that areas where air quality is better than that required by NAAQS should be protected from significant new air pollution even if NAAQS would not be violated.

The act divides clean air areas into three classes, and specifies the increments of SO_2 and particulate pollution allowed in each. Class I areas include international and national parks, wilderness and other pristine areas; allowable increments of new pollution are very small. Class II areas include all attainment and not classifiable areas, not designated as Class I; allowable increments of new pollution are modest. Class III represents selected areas that states may designate for development; allowable increments of new pollution are large (but not exceeding NAAQS). Through an elaborate hearing and review process, a state can have regions redesignated from Class II to Class III (although none have yet been so redesignated).

While the 1977 amendments only stipulated PSD standards for two pollutants, SO_2 and particulates, EPA is supposed to establish standards for other criteria pollutants. Thus far, only one of the other four (NO_2) has been addressed: the agency promulgated standards for NO_2 in 1988.

Newly constructed polluting sources in PSD areas must install best available control technology (BACT) that may be more strict than that required by NSPS. The justifications of the policy are that it protects air quality, provides an added margin of health protection, preserves clean air for future development, and prevents firms from gaining a competitive edge by "shopping" for clean air to pollute.

In Sections 169A and B, the act also sets a national goal of preventing and remedying impairment of visibility in national parks and wilderness areas, and requires EPA to promulgate regulations to assure reasonable progress toward that goal. In the 1990 Amendments, Congress strengthened these provisions, which had not been implemented.

The amendments required EPA to establish a Grand Canyon Visibility Transport Commission, composed of governors from each state in the affected region, an EPA designee, and a representative of each of the national parks or wilderness areas in the region. Other visibility transport commissions can be established upon EPA's discretion or upon petition from at least two

states. Within 18 months of receiving a report from one of these commissions, EPA is required to promulgate regulations to assure reasonable progress toward the visibility goal, including requirements that states update their State Implementation Plans to contain emission limits, schedules of compliance, and other measures necessary to make reasonable progress. Specifically mentioned is a requirement that states impose Best Available Retrofit Technology on existing sources of emissions impairing visibility.

The Grand Canyon Commission delivered a set of recommendations to EPA in June 1996, and the agency subsequently promulgated a "regional haze" program applicable to all 50 states under this authority.

Acid Deposition Control

The Clean Air Act Amendments of 1990 added an acid deposition control program (Title IV) to the act. It set goals for the year 2000 of reducing annual SO_2 emissions by 10 million tons from 1980 levels and reducing annual NO_x emissions by 2 million tons, also from 1980 levels.

The SO_2 reductions were imposed in two steps. Under Phase 1, owners/operators of 111 electric generating facilities listed in the law that are larger than 100 megawatts had to meet tonnage emission limitations by January 1, 1995. This would reduce SO_2 emission by about 3.5 million tons. Phase 2 included facilities larger than 75 megawatts, with a deadline of January 1, 2000. Compliance has been 100%.

To introduce some flexibility in the distribution and timing of reductions, the act creates a comprehensive permit and emissions allowance system. An allowance is a limited authorization to emit a ton of SO_2. Issued by EPA, the allowances would be allocated to Phase 1 and Phase 2 units in accordance with baseline emissions estimates. Powerplants which commence operation after November 15, 1990, would not receive any allowances. These new units would have to obtain allowances (offsets) from holders of existing allowances. Allowances may be traded nationally during either phase. The law also permitted industrial sources and powerplants to sell allowances to utility systems under regulations developed by EPA. Allowances may be banked by a utility for future use or sale.

The act provided for two types of sales to improve the liquidity of the allowance system and to ensure the availability of allowances for utilities and independent power producers who need them. First, a special reserve fund consisting of 2.8% of Phase 1 and Phase 2 allowance allocations has been set aside for sale. Allowances from this fund (25,000 annually from 1993-1999 and 50,000 thereafter) are sold at a fixed price of $1,500 an allowance. Independent power producers have guaranteed rights to these allowances under certain conditions. Second, an annual, open auction sold allowances (150,000 from 1993-1995, and 250,000 from 1996-1999) with no minimum price. Utilities with excess allowances may have them auctioned off at this auction, and any person may buy allowances.

The act essentially caps SO_2 emissions at individual existing sources through a tonnage limitation, and at future plants through the allowance system. First, emissions from most existing sources are capped at a specified emission rate times an historic baseline level. Second, for plants commencing operation after November 15, 1990, emissions must be completely offset with additional reductions at existing facilities beginning after Phase 2 compliance. However, as noted above, the law provides some allowances to future powerplants which meet certain criteria. The utility SO_2 emission cap was set at 8.9 million tons, with some exceptions.

The act provides that if an affected unit does not have sufficient allowances to cover its emissions, it is subject to an excess emission penalty of $2,000 per ton of SO_2 and required to reduce an additional ton of SO_2 the next year for each ton of excess pollutant emitted.

The act also requires EPA to inventory industrial emissions of SO_2 and to report every five years, beginning in 1995. If the inventory shows that industrial emissions may reach levels above 5.60 million tons per year, then EPA is to take action under the act to ensure that the 5.60 million ton cap is not exceeded.

The act requires EPA to set specific NO_x emission rate limitations—0.45 lb. per million Btu for tangentially-fired boilers and 0.50 lb. per million Btu for wall-fired boilers—unless those rates can not be achieved by low-NO_x burner technology. Tangentially and wall-fired boilers affected by Phase 1 SO_2 controls must also meet NO_x requirements. EPA was to set emission limitations for other types of boilers by 1997 based on low-NO_x burner costs, which EPA did. In addition, EPA was to propose and promulgate a revised new source performance standard for NO_x from fossil fuel steam generating units, which EPA also did, in 1998.

Permits

The Clean Air Act Amendments of 1990 added a Title V to the act which requires states to administer a comprehensive permit program for the operation of sources emitting air pollutants. These requirements are modeled after similar provisions in the Clean Water Act. Previously, the Clean Air Act contained limited provision for permits, requiring only new or modified major stationary sources to obtain construction permits (under Section 165 of the act).

Sources subject to the permit requirements generally include major sources that emit or have the potential to emit 100 tons per year of any regulated pollutant, plus stationary and area sources that emit or have potential to emit lesser specified amounts of hazardous air pollutants. However, in nonattainment areas, the permit requirements also include sources which emit as little as 50, 25, or 10 tons per year of VOCs, depending on the severity of the region's nonattainment status (serious, severe, or extreme).

States were required to develop permit programs and to submit those programs for EPA approval by November 15, 1993. EPA had one year to approve or disapprove a state's submission in whole or in part. After the effective date of a state plan, sources had 12 months to submit an actual permit application.

States are to collect annual fees from sources sufficient to cover the "reasonable costs" of administering the permit program, with revenues to be used to support the agency's air pollution control program. The fee must be at least $25 per ton of regulated pollutants (excluding carbon monoxide). Permitting authorities have discretion not to collect fees on emissions in excess of 4,000 tons per year and may collect other fee amounts, if appropriate.

The permit states how much of which air pollutants a source is allowed to emit. As a part of the permit process, a source must prepare a compliance plan and certify compliance. The term of permits is limited to no more than five years; sources are required to renew permits at that time. State permit authorities must notify contiguous states of permit applications that may affect them; the application and any comments of contiguous states must be forwarded to EPA for review. EPA can veto a permit; however, this authority is essentially limited to major permit changes. EPA review need not include permits which simply codify elements of a state's overall clean air plan,

and EPA has discretion to not review permits for small sources. Holding a permit to some extent shields a source from enforcement actions: the act provides that a source cannot be held in violation if it is complying with explicit requirements addressed in a permit, or if the state finds that certain provisions do not apply to that source.

Enforcement

Section 113 of the act, which was also strengthened by the 1990 amendments, covers enforcement. The section establishes federal authority to issue agency and court orders requiring compliance and to impose penalties for violations of act requirements. Section 114 authorizes EPA to require sources to submit reports, monitor emissions, and certify compliance with the act's requirements, and authorizes EPA personnel to conduct inspections.

Like most federal environmental statutes, the Clean Air Act is enforced primarily by states or local governments; they issue most permits, monitor compliance, and conduct the majority of inspections. The federal government functions as a backstop, with authority to review state actions. The agency may act independently or may file its own enforcement action in cases where it concludes that a state's response was inadequate.

The act also provides for citizen suits both against persons (including corporations or government agencies) alleged to have violated emissions standards or permit requirements, and against EPA in cases where the Administrator has failed to perform an action that is not discretionary under the act. Citizen groups have often used the latter provision to compel the Administrator to promulgate regulations required by the statute.

The 1990 Amendments elevated penalties for some knowing violations from misdemeanors to felonies; removed the ability of a source to avoid an enforcement order or civil penalty by ceasing a violation within 60 days of notice; gave authority to EPA to assess administrative penalties; and authorized $10,000 awards to persons supplying information leading to convictions under the act.

Stratospheric Ozone Protection

Title VI of the 1990 Clean Air Act Amendments represents the United States' primary response on the domestic front to the ozone depletion issue. It also implements the U.S. international responsibilities under the Montreal Protocol on Substances that Deplete the Ozone Layer (and its amendments). Indeed, Section 606(a)(3) provides that the Environmental Protection Agency shall adjust phase-out schedules for ozone-depleting substances in accordance with any future changes in Montreal Protocol schedules. As a result, the phase-out schedules contained in Title VI for various ozone-depleting compounds have now been superseded by subsequent amendments to the Montreal Protocol.

Since passage of Title VI, depleting substances such as CFCs, methyl chloroform, carbon tetrachloride, and halons (referred to as Class 1 substances) have been phased out by industrial countries, including the United States. New uses of hydrochlorofluorocarbons (HCFCs) (called Class 2 substances under Title VI) are banned beginning January 1, 2015, unless the HCFCs are recycled, used as a feedstock, or used as a refrigerant for appliances manufactured prior to January 1, 2020. Production of HCFCs is to be frozen January 1, 2015, and phased out by January 1, 2030. Exemptions consistent with the Montreal Protocol are allowed.

The EPA is required to add any substance with an ozone depletion potential (ODP) of 0.2 or greater to the list of Class 1 substances and set a phase-out schedule of no more than seven years. For example, methyl bromide (ODP estimated by EPA at 0.7) was added to the list in December 1993, requiring its phaseout by January 1, 2001; this decision was altered by Congress in 1998 to harmonize the U.S. methyl bromide phase-out schedule with the 2005 deadline set by the parties to the Montreal Protocol in 1997. Also, EPA is required to add any substance that is known or may be reasonably anticipated to harm the stratosphere to the list of Class 2 substances and set a phase-out schedule of no more than 10 years.

Title VI contains several implementing strategies to avoid releases of ozone-depleting chemicals to the atmosphere, including (1) for Class 1 substances used as refrigerant—lowest achievable level of use and emissions, maximum recycling, and safe disposal required by July 1, 1992; (2) for servicing or disposing refrigeration equipment containing Class 1 and 2 substances—venting banned as of July 1, 1992; (3) for motor vehicle air conditioners containing Class 1 or 2 substances—recycling required by January 1, 1992 (smaller shops by January 1, 1993); (4) sale of small containers of class 1 and 2 substances—banned within two years of enactment; and (5) nonessential products—banned within two years of enactment.

Table 3. Major U.S. Code Sections of the Clean Air Act, as Amended

(codified generally at 42 U.S.C. 7401-7671q)

42 U.S.C.	Section Title	Clean Air Act, as Amended
Chapter 85—Air Pollution Prevention And Control		
Subchapter I—Programs and Activities		
Part A—Air Quality and Emission Limitations		
7401	Congressional findings and declaration of purpose	Sec. 101
7402	Cooperative activities	Sec. 102
7403	Research, investigation, training, and other activities	Sec. 103
7404	Research relating to fuels and vehicles	Sec. 104
7405	Grants for support of air pollution planning and control programs	Sec. 105
7406	Interstate air quality agencies; program cost limitations	Sec. 106
7407	Air quality control regions	Sec. 107
7408	Air quality criteria and control techniques	Sec. 108
7409	National primary and secondary ambient air quality standards	Sec. 109
7410	State implementation plans for national primary and secondary ambient air quality standards	Sec. 110
7411	Standards of performance for new stationary sources	Sec. 111
7412	Hazardous air pollutants	Sec. 112
7413	Federal enforcement	Sec. 113
7414	Recordkeeping, inspections, monitoring, and entry	Sec. 114
7415	International air pollution	Sec. 115
7416	Retention of state authority	Sec. 116
7417	Advisory committees	Sec. 117
7418	Control of pollution from federal facilities	Sec. 118
7419	Primary nonferrous smelter orders	Sec. 119
7420	Noncompliance penalty	Sec. 120
7421	Consultation	Sec. 121
7422	Listing of certain unregulated pollutants	Sec. 122
7423	Stack heights	Sec. 123
7424	Assurance of adequacy of state plans	Sec. 124
7425	Measures to prevent economic disruption or unemployment	Sec. 125
7426	Interstate pollution abatement	Sec. 126
7427	Public notification	Sec. 127
7428	State boards	Sec. 128
7429	Solid waste combustion	Sec. 129
7430	Emission factors	Sec. 130

42 U.S.C.	Section Title	Clean Air Act, as Amended
7431	Land use authority	Sec. 131
Part B—Ozone Protection (Section 7450 to 7459 repealed—new provisions related to stratospheric ozone protection are found at 42 U.S.C. 7671 et seq., under Subchapter VI below)		
Part C—Prevention of Significant Deterioration of Air Quality		
Subpart I—Clean Air		
7470	Congressional declaration of purpose	Sec. 160
7471	Plan requirements	Sec. 161
7472	Initial classifications	Sec. 162
7473	Increments and ceilings	Sec. 163
7474	Area redesignation	Sec. 164
7475	Preconstruction requirements	Sec. 165
7476	Other pollutants	Sec. 166
7477	Enforcement	Sec. 167
7478	Period before plan approval	Sec. 168
7479	Definitions	Sec. 169
Subpart II—Visibility Protection		
7491	Visibility protection for federal class I areas	Sec. 169A
7492	Visibility	Sec. 169B
Part D—Plan Requirements for Nonattainment Areas		
Subpart I—Nonattainment Areas in General		
7501	Definitions	Sec. 171
7502	Nonattainment plan provisions in general	Sec. 172
7503	Permit requirements	Sec. 173
7504	Planning procedures	Sec. 174
7505	Environmental Protection Agency grants	Sec. 175
7505a	Maintenance plans	Sec. 175A
7506	Limitations on certain federal assistance	Sec. 176
7506a	Interstate transport commissions	Sec. 176A
7507	New motor vehicle emission standards in nonattainment areas	Sec. 177
7508	Guidance documents	Sec. 178
7509	Sanctions and consequences of failure to attain	Sec. 179
7509a	International border areas	Sec. 179B
Subpart II—Additional Provisions for Ozone Nonattainment Areas		
7511	Classifications and attainment dates	Sec. 181
7511a	Plan submissions and requirements	Sec. 182
7511b	Federal ozone measures	Sec. 183
7511c	Control of interstate ozone air pollution	Sec. 184

42 U.S.C.	Section Title	Clean Air Act, as Amended
7511d	Enforcement for Severe and Extreme ozone nonattainment areas for failure to attain	Sec. 185
7511e	Transitional areas	Sec. 185A
7511f	NO_x and VOC study	Sec. 185B
Subpart III—Additional Provisions for Carbon Monoxide Nonattainment Areas		
7512	Classification and attainment dates	Sec. 186
7512a	Plan submissions and requirements	Sec. 187
Subpart IV—Additional Provisions for Particulate Matter Nonattainment Areas		
7513	Classifications and attainment dates	Sec. 188
7513a	Plan provisions and schedules for plan submissions	Sec. 189
7513b	Issuance of RACM and BACM guidance	Sec. 190
Subpart V—Additional Provisions for Areas Designated Nonattainment for Sulfur Oxides, Nitrogen Dioxide, or Lead		
7514	Plan submission deadlines	Sec. 191
7514a	Attainment dates	Sec. 192
Subpart VI—Savings Provisions		
7515	General savings clause	Sec. 193
Subchapter II—Emission Standards for Moving Sources		
Part A—Motor Vehicle Emission and Fuel Standards		
7521	Emission standards for new motor vehicles or new motor vehicle engines	Sec. 202
7522	Prohibited acts	Sec. 203
7523	Actions to restrain violations	Sec. 204
7524	Civil penalties	Sec. 205
7525	Motor vehicle and motor vehicle engine compliance testing and certification	Sec. 206
7541	Compliance by vehicles and engines in actual use	Sec. 207
7542	Information collection	Sec. 208
7543	State standards	Sec. 209
7544	State grants	Sec. 210
7545	Regulation of fuels	Sec. 211
7546	Renewable Fuel	Sec. 212
7547	Nonroad engines and vehicles	Sec. 213
7548	Study of particulate emissions from motor vehicles	Sec. 214
7549	High altitude performance adjustments	Sec. 215
7550	Definitions	Sec. 216
7552	Motor vehicle compliance program fees	Sec. 217
7553	Prohibition on production of engines requiring leaded gasoline	Sec. 218
7554	Urban bus standards	Sec. 219

42 U.S.C.	Section Title	Clean Air Act, as Amended
Part B—Aircraft Emissions Standards		
7571	Establishment of standards	Sec. 231
7572	Enforcement of standards	Sec. 232
7573	State standards and controls	Sec. 233
7574	Definitions	Sec. 234
Part C—Clean Fuel Vehicles		
7581	Definitions	Sec. 241
7582	Requirements applicable to clean-fuel vehicles	Sec. 242
7583	Standards for light-duty clean-fuel vehicles	Sec. 243
7584	Administration and enforcement as per California standards	Sec. 244
7585	Standards for heavy-duty clean-fuel vehicles (GVWR above 8,500 lbs. up to 26,000 lbs.)	Sec. 245
7586	Centrally fueled fleets	Sec. 246
7587	Vehicle conversions	Sec. 247
7588	Federal agency fleets	Sec. 248
7589	California pilot test program	Sec. 249
7590	General provisions	Sec. 250
Subchapter III—General Provisions		
7601	Administration	Sec. 301
7602	Definitions	Sec. 302
7603	Emergency powers	Sec. 303
7604	Citizen suits	Sec. 304
7605	Representation in litigation	Sec. 305
7606	Federal procurement	Sec. 306
7607	Administrative proceedings and judicial review	Sec. 307
7608	Mandatory licensing	Sec. 308
7609	Policy review	Sec. 309
7610	Other authority	Sec. 310
7611	Records and audits	Sec. 311
7612	Economic impact analyses	Sec. 312
7614	Labor standards	Sec. 314
7615	Separability	Sec. 315
7616	Sewage treatment grants	Sec. 316
7617	Economic impact assessment	Sec. 317
7619	Air quality monitoring	Sec. 319
7620	Standardized air quality modeling	Sec. 320
7621	Employment effects	Sec. 321

42 U.S.C.	Section Title	Clean Air Act, as Amended
7622	Employee protection	Sec. 322
7624	Cost of vapor recovery equipment	Sec. 323
7625	Vapor recovery for small business marketers of petroleum products	Sec. 324
7625-1	Exemptions for certain territories	Sec. 325
7625a	Statutory construction	Sec. 326
7626	Authorization of appropriations	Sec. 327
7627	Air pollution from Outer Continental Shelf activities	Sec. 328
Subchapter IV-A—Acid Deposition Control		
7651	Findings and purposes	Sec. 401
7651a	Definitions	Sec. 402
7651b	Sulfur dioxide allowance program for existing and new units	Sec. 403
7651c	Phase I sulfur dioxide requirements	Sec. 404
7651d	Phase II sulfur dioxide requirements	Sec. 405
7651e	Allowances for states with emissions rates at or below 0.80 lbs/mmBtu	Sec. 406
7651f	Nitrogen oxides emission reduction program	Sec. 407
7651g	Permits and compliance plans	Sec. 408
7651h	Repowered sources	Sec. 409
7651i	Election for additional sources	Sec. 410
7651j	Excess emissions penalty	Sec. 411
7651k	Monitoring, reporting, and recordkeeping requirements	Sec. 412
7651l	General compliance with other provisions	Sec. 413
7651m	Enforcement	Sec. 414
7651n	Clean coal technology regulatory incentives	Sec. 415
7651o	Contingency guarantee, auctions, reserve	Sec. 416
Subchapter V—Permits		
7661	Definitions	Sec. 501
7661a	Permit programs	Sec. 502
7661b	Permit applications	Sec. 503
7661c	Permit requirements and conditions	Sec. 504
7661d	Notification to Administrator and contiguous states	Sec. 505
7661e	Other authorities	Sec. 506
7661f	Small business stationary source technical and environmental compliance assistance program	Sec. 507
Subchapter VI—Stratospheric Ozone Protection		
7671	Definitions	Sec. 601
7671a	Listing of class I and class II substances	Sec. 602

42 U.S.C.	Section Title	Clean Air Act, as Amended
7671b	Monitoring and reporting requirements	Sec. 603
7671c	Phase-out of production and consumption of class I substances	Sec. 604
7671d	Phase-out of production and consumption of class II substances	Sec. 605
7671e	Accelerated schedule	Sec. 606
7671f	Exchange authority	Sec. 607
7671g	National recycling and emission reduction program	Sec. 608
7671h	Servicing of motor vehicle air conditioners	Sec. 609
7671i	Nonessential products containing chlorofluorocarbons	Sec. 610
7671j	Labeling	Sec. 611
7671k	Safe alternatives policy	Sec. 612
7671l	Federal procurement	Sec. 613
7671m	Relationship to other laws	Sec. 614
7671n	Authority of Administrator	Sec. 615
7671o	Transfers among parties to Montreal Protocol	Sec. 616
7671p	International cooperation	Sec. 617
7671q	Miscellaneous provisions	Sec. 618
[29 U.S.C. 655]	Chemical Process Safety Management	Sec. 304 of CAA of 1990
[29 U.S.C. 1662e]	Clean Air Employment Transition Assistance	Sec. 1101 of CAA of 1990

Note: This table shows only the major U.S. Code sections. For more detail and to determine when a section was added, consult the official version of the U.S. Code.

Clean Water Act[14]

The principal law governing pollution of the nation's surface waters is the Federal Water Pollution Control Act, or Clean Water Act. Originally enacted in 1948, it was totally revised by amendments in 1972 that gave the act its current shape. The 1972 legislation spelled out ambitious programs for water quality improvement that have since been expanded and are still being implemented by industries and municipalities. Congress made certain fine-tuning amendments in 1977, revised portions of the law in 1981, and enacted further amendments in 1987. **Table 4** lists the original law and major amendments to it.

Table 4. Clean Water Act and Major Amendments

(codified generally at 33 U.S.C. §§1251-1387)

Year	Act	Public Law Number
1948	Federal Water Pollution Control Act	P.L. 80-845 (Act of June 30, 1948)
1956	Water Pollution Control Act of 1956	P.L. 84-660 (Act of July 9, 1956)
1961	Federal Water Pollution Control Act Amendments	P.L. 87-88
1965	Water Quality Act of 1965	P.L. 89-234
1966	Clean Water Restoration Act	P.L. 89-753
1970	Water Quality Improvement Act of 1970	P.L. 91-224, Part I
1972	Federal Water Pollution Control Act Amendments	P.L. 92-500
1977	Clean Water Act of 1977	P.L. 95-217
1981	Municipal Wastewater Treatment Construction Grants Amendments	P.L. 97-117
1987	Water Quality Act of 1987	P.L. 100-4

For a review of ongoing implementation of the act, see CRS Report R40098, *Water Quality Issues in the 111th Congress: Oversight and Implementation*, by Claudia Copeland.

Background

The Federal Water Pollution Control Act of 1948 was the first comprehensive statement of federal interest in clean water programs, and it specifically provided state and local governments with technical assistance funds to address water pollution problems, including research. Water pollution was viewed as primarily a state and local problem, hence, there were no federally required goals, objectives, limits, or even guidelines. When it came to enforcement, federal involvement was strictly limited to matters involving interstate waters and only with the consent of the state in which the pollution originated.

During the latter half of the 1950s and well into the 1960s, water pollution control programs were shaped by four laws which amended the 1948 statute. They dealt largely with federal assistance to

[14] Prepared by Claudia Copeland, Specialist in Resources and Environmental Policy, Environmental Policy Section, Resources, Science, and Industry Division.

municipal dischargers and with federal enforcement programs for all dischargers. During this period, the federal role and federal jurisdiction were gradually extended to include navigable intrastate, as well as interstate, waters. Water quality standards became a feature of the law in 1965, requiring states to set standards for interstate waters that would be used to determine actual pollution levels.

By the late 1960s, there was a widespread perception that existing enforcement procedures were too time-consuming and that the water quality standards approach was flawed because of difficulties in linking a particular discharger to violations of stream quality standards. Additionally, there was mounting frustration over the slow pace of pollution cleanup efforts and a suspicion that control technologies were being developed but not applied to the problems. These perceptions and frustrations, along with increased public interest in environmental protection, set the stage for the 1972 amendments.

The 1972 statute did not continue the basic components of previous laws as much as it set up new ones. It set optimistic and ambitious goals, required all municipal and industrial wastewater to be treated before being discharged into waterways, increased federal assistance for municipal treatment plant construction, strengthened and streamlined enforcement, and expanded the federal role while retaining the responsibility of states for day-to-day implementation of the law.

The 1972 legislation declared as its objective the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters. Two goals also were established: zero discharge of pollutants by 1985 and, as an interim goal and where possible, water quality that is both "fishable" and "swimmable" by mid-1983. While those dates have passed, the goals remain, and efforts to attain the goals continue.

The Clean Water Act (CWA) today consists of two major parts, one being the Title II and Title VI provisions which authorize federal financial assistance for municipal sewage treatment plant construction. The other is regulatory requirements, found throughout the act, that apply to industrial and municipal dischargers.

The act has been termed a technology-forcing statute because of the rigorous demands placed on those who are regulated by it to achieve higher and higher levels of pollution abatement. Industries were given until July 1, 1977, to install "best practicable control technology" (BPT) to clean up waste discharges. Municipal wastewater treatment plants were required to meet an equivalent goal, termed "secondary treatment," by that date. (Municipalities unable to achieve secondary treatment by that date were allowed to apply for case-by-case extensions up to July 1, 1988. According to EPA, 86% of all cities met the 1988 deadline; the remainder were put under judicial or administrative schedules requiring compliance as soon as possible. However, many cities, especially smaller ones, continue to make investments in building or upgrading facilities needed to achieve secondary treatment.) Cities that discharge wastes into marine waters were eligible for case-by-case waivers of the secondary treatment requirement, where sufficient showing could be made that natural factors provide significant elimination of traditional forms of pollution and that both balanced populations of fish, shellfish, and wildlife and water quality standards would be protected.

The primary focus of BPT was on controlling discharges of conventional pollutants, such as suspended solids, biochemical oxygen demanding material, fecal coliform and bacteria, and pH. These pollutants are substances that are biodegradable (i.e., bacteria can break them down), occur

naturally in the aquatic environment, and deplete the dissolved oxygen concentration in water, which is necessary for fish and other aquatic life.

The act required greater pollutant cleanup than BPT by no later than March 31, 1989, generally demanding that industry use the "best available technology" (BAT) that is economically achievable. Compliance extensions of as long as two years are available for industrial sources utilizing innovative or alternative technology. Failure to meet statutory deadlines could lead to enforcement action.

The act utilizes both water quality standards and technology-based effluent limitations to protect water quality. Technology-based effluent limitations are specific numerical limitations established by EPA and placed on certain pollutants from certain sources. They are applied to industrial and municipal sources through numerical effluent limitations in discharge permits. Water quality standards are standards for the overall quality of water. They consist of the designated beneficial use or uses of a waterbody (recreation, water supply, industrial, or other), plus a numerical or narrative statement identifying maximum concentrations of various pollutants which would not interfere with the designated use. The act requires each state to establish water quality standards for all bodies of water in the state. These standards serve as the backup to federally set technology-based requirements by indicating where additional pollutant controls are needed to achieve the overall goals of the act. In waters where industrial and municipal sources have achieved technology-based effluent limitations, yet water quality standards have not been met, dischargers may be required to meet additional pollution control requirements. For each of these waters, the act requires states to set a total maximum daily load (TMDL) of pollutants at a level that ensures that applicable water quality standards can be attained and maintained. A TMDL is both a planning process for attaining water quality standards and a quantitative assessment of pollution problems, sources, and pollutant reductions needed to restore and protect a river, stream, or lake. Based on state reports, EPA estimates that more than 40,000 U.S. waters are impaired and require preparation of TMDLs.

Control of toxic pollutant discharges has been a key focus of water quality programs. In addition to the BPT and BAT national standards, states are required to implement control strategies for waters expected to remain polluted by toxic chemicals even after industrial dischargers have installed the best available cleanup technologies required under the law. Development of management programs for these post-BAT pollutant problems was a prominent element in the 1987 amendments and is a key continuing aspect of CWA implementation.

Prior to the 1987 amendments, programs in the Clean Water Act were primarily directed at point-source pollution—wastes discharged from discrete and identifiable sources, such as pipes and other outfalls. In contrast, except for general planning activities, little attention had been given to nonpoint-source pollution (stormwater runoff from agricultural lands, forests, construction sites, and urban areas), despite estimates that it represents more than 50% of the nation's remaining water pollution problems. As it travels across land surface towards rivers and streams, rainfall and snowmelt runoff picks up pollutants, including sediments, toxic materials, and conventional wastes (e.g., nutrients) that can degrade water quality.

The 1987 amendments authorized measures to address such pollution by directing states to develop and implement nonpoint pollution management programs (Section 319 of the act). States were encouraged to pursue groundwater protection activities as part of their overall nonpoint pollution control efforts. Federal financial assistance was authorized to support demonstration

projects and actual control activities. These grants may cover up to 60% of program implementation costs.

While the act imposes great technological demands, it also recognizes the need for comprehensive research on water quality problems. This is provided throughout the statute, on topics including pollution in the Great Lakes and Chesapeake Bay, in-place toxic pollutants in harbors and navigable waterways, and water pollution resulting from mine drainage. The act also authorizes support to train personnel who operate and maintain wastewater treatment facilities.

Federal and State Responsibilities

Under this act, federal jurisdiction is broad, particularly regarding establishment of national standards or effluent limitations. The Environmental Protection Agency (EPA) issues regulations containing the BPT and BAT effluent standards applicable to categories of industrial sources (such as iron and steel manufacturing, organic chemical manufacturing, petroleum refining, and others). Certain responsibilities are delegated to the states, and this act, like other environmental laws, embodies a philosophy of federal-state partnership in which the federal government sets the agenda and standards for pollution abatement, while states carry out day-to-day activities of implementation and enforcement. Delegated responsibilities under the act include authority for qualified states to issue discharge permits to industries and municipalities and to enforce permits (46 states have been delegated the permit program; EPA issues discharge permits in the remaining states—Idaho, Massachusetts, New Hampshire, New Mexico—and the District of Columbia.). In addition, as noted above, states are responsible for establishing water quality standards.

Titles II and VI—Municipal Wastewater Treatment Construction

Federal law has authorized grants for planning, design, and construction of municipal sewage treatment facilities since 1956 (Act of July 9, 1956, or P.L. 84-660). Congress greatly expanded this grant is program in 1972. Since that time Congress has authorized $65 billion and appropriated more than $85 billion in Clean Water Act funds to aid wastewater infrastructure plant construction (not including congressionally earmarked appropriations for specific projects). Grants are allocated among the states according to a complex statutory formula that combines two factors: state population and an estimate of municipal sewage treatment funding needs derived from a biennial survey conducted by EPA and the states.

The most recent EPA-state estimate, completed in 2008, indicated that nearly $203 billion is needed to build and upgrade needed municipal wastewater treatment plants in the United States and for other types of water quality improvement projects that are eligible for funding under the act. In 2002, EPA released a new report called the Gap Analysis which estimated that, over the next two decades, the United States needs to spend nearly $390 billion to replace existing wastewater infrastructure systems and to build new ones. Estimates of future funding needs and questions about federal support continue to be prominent.

Under the Title II construction grants program established in 1972, federal grants were made for several types of projects (such as secondary or more stringent treatment and associated sewers) based on a priority list established by the states. Grants were generally available for as much as 55% of total project costs. For projects using innovative or alternative technology (such as reuse or recycling of water), as much as 75% federal funding was allowed. Recipients were responsible for non-federal costs but were not required to repay federal grants.

Policymakers have debated the tension between assisting municipal funding needs, which remain large, and the impact of grant programs such as the Clean Water Act's on federal spending and budget deficits. In the 1987 amendments to the act, Congress attempted to deal with that apparent conflict by extending federal aid for wastewater treatment construction through FY1994, yet providing a transition towards full state and local government responsibility for financing after that date. Grants under the traditional Title II program were authorized through FY1990. Under Title VI of the act, grants to capitalize State Water Pollution Control Revolving Funds, or loan programs, were authorized beginning in FY1989 to replace the Title II grants. States contribute matching funds, and under the revolving loan fund concept, monies used for wastewater treatment construction will be repaid to a state, to be available for future construction in other communities. All states now have functioning loan programs, but the shift from federal grants to loans, since FY1991, has been easier for some than others. The new financing requirements have been a problem for cities (especially small towns) that have difficulty repaying project loans. Statutory authorization for grants to capitalize state loan programs expired in 1994; however, Congress has continued to provide annual appropriations. An issue affecting some cities is overflow discharges of inadequately treated wastes from municipal sewers and how cities will pay for costly remediation projects. In 2000, Congress amended the act to authorize a two-year $1.5 billion grant program to help cities reduce these wet weather flows. Authorization for that wet weather grant program expired at the end of FY2003 and has not been renewed.

Permits, Regulations, and Enforcement

To achieve its objectives, the act embodies the concept that all discharges into the nation's waters are unlawful, unless specifically authorized by a permit. Thus, more than 65,000 industrial and municipal dischargers must obtain permits from EPA (or qualified states) under the act's National Pollutant Discharge Elimination System (NPDES) program (authorized in Section 402 of the act). NPDES permits also are required for more than 150,000 industrial and municipal sources of stormwater discharges. An NPDES permit requires the discharger (source) to attain technology-based effluent limits (BPT or BAT for industry, secondary treatment for municipalities, or more stringent for water quality protection). Permits specify the control technology applicable to each pollutant, the effluent limitations a discharger must meet, and the deadline for compliance. Sources are required to maintain records and to carry out effluent monitoring activities. Permits are issued for five-year periods and must be renewed thereafter to allow continued discharge.

The NPDES permit incorporates numerical effluent limitations issued by EPA. The initial BPT limitations focused on regulating discharges of conventional pollutants, such as bacteria and oxygen-consuming materials. The more stringent BAT limitations emphasize controlling toxic pollutants—heavy metals, pesticides, and other organic chemicals. In addition to these limitations applicable to categories of industry, EPA has issued water quality criteria for more than 115 pollutants, including 65 named classes or categories of toxic chemicals, or "priority pollutants." These criteria recommend ambient, or overall, concentration levels for the pollutants and provide guidance to states for establishing water quality standards that will achieve the goals of the act.

A separate type of permit is required to dispose of dredge or fill material in the nation's waters, including wetlands. Authorized by Section 404 of the act, this permit program is administered by the U.S. Army Corps of Engineers, subject to and using EPA's environmental guidance. Some types of activities are exempt from these permit requirements, including certain farming, ranching, and forestry practices which do not alter the use or character of the land; some construction and maintenance; and activities already regulated by states under other provisions of

the act. EPA may delegate certain Section 404 permitting responsibility to qualified states and has done so twice (Michigan and New Jersey). For some time, the act's wetlands permit program has been one of the most controversial parts of the law. Some who wish to develop wetlands maintain that federal regulation intrudes on and impedes private land-use decisions, while environmentalists seek more protection for remaining wetlands and limits on activities that take place in wetlands.

Nonpoint sources of pollution, which EPA and states believe are responsible for the majority of water quality impairments in the nation, are not subject to CWA permits or other regulatory requirements under federal law. They are covered by state programs for the management of runoff, under Section 319 of the act.

Other EPA regulations under the CWA include guidelines on using and disposing of sewage sludge and guidelines for discharging pollutants from land-based sources into the ocean. (A related statute, the Ocean Dumping Act, regulates the intentional disposal of wastes into ocean waters.) EPA also provides guidance on technologies that will achieve BPT, BAT, and other effluent limitations.

The NPDES permit, containing effluent limitations on what may be discharged by a source, is the act's principal enforcement tool. EPA may issue a compliance order or bring a civil suit in U.S. district court against persons who violate the terms of a permit. The penalty for such a violation can be as much as $25,000 per day. Stiffer penalties are authorized for criminal violations of the act—for negligent or knowing violations—of as much as $50,000 per day, three years' imprisonment, or both. A fine of as much as $250,000, 15 years in prison, or both, is authorized for "knowing endangerment"—violations that knowingly place another person in imminent danger of death or serious bodily injury. Finally, EPA is authorized to assess civil penalties administratively for certain well-documented violations of the law. These civil and criminal enforcement provisions are contained in Section 309 of the act. EPA, working with the Army Corps of Engineers, also has responsibility for enforcing against entities who engage in activities that destroy or alter wetlands.

While the CWA addresses federal enforcement, the majority of actions taken to enforce the law are undertaken by states, both because states issue the majority of permits to dischargers and because the federal government lacks the resources for day-to-day monitoring and enforcement. Like most other federal environmental laws, CWA enforcement is shared by EPA and states, with states having primary responsibility. However, EPA has oversight of state enforcement and retains the right to bring a direct action where it believes that a state has failed to take timely and appropriate action or where a state or local agency requests EPA involvement. Finally, the federal government acts to enforce against criminal violations of the federal law.

In addition, individuals may bring a citizen suit in U.S. district court against persons who violate a prescribed effluent standard or limitation. Individuals also may bring citizen suits against the Administrator of EPA or equivalent state official (where program responsibility has been delegated to the state) for failure to carry out a nondiscretionary duty under the act.

Table 5. Major U.S. Code Sections of the Clean Water Act, as Amended

(codified generally at 33 U.S.C. §§1251-1387)

33 U.S.C.	Section Title	Clean Water Act, as Amended
Chapter 26—Water Pollution Prevention and Control		
Subchapter I—Research and Related Programs		
1251	Congressional declaration of goals and policy	Sec. 101
1252	Comprehensive programs for water pollution control	Sec. 102
1253	Interstate cooperation and uniform laws	Sec. 103
1254	Research, investigations, training and information	Sec. 104
1255	Grants for research and development	Sec. 105
1256	Grants for pollution control programs	Sec. 106
1257	Mine water pollution control demonstrations	Sec. 107
1258	Pollution control in the Great Lakes	Sec. 108
1259	Training grants and contracts	Sec. 109
1260	Applications for training grants and contracts; allocations	Sec. 110
1261	Scholarships	Sec. 111
1262	Definitions and authorizations	Sec. 112
1263	Alaska village demonstration projects	Sec. 113
1264	Omitted (ecological study of Lake Tahoe)	Sec. 114
1265	In-place toxic pollutants	Sec. 115
1266	Hudson River reclamation demonstration project	Sec. 116
1267	Chesapeake Bay	Sec. 117
1268	Great Lakes	Sec. 118
1269	Long Island Sound	Sec. 119
1270	Lake Champlain Basin program	Sec. 120
1273	Lake Pontchartrain Basin	Sec. 121
1274	Wet weather watershed pilot projects	Sec. 122
Subchapter II—Grants for Construction of Treatment Works		
1281	Congressional declaration of purpose	Sec. 201
1282	Federal share	Sec. 202
1283	Plans, specifications, estimates, and payments	Sec. 203
1284	Limitations and conditions	Sec. 204
1285	Allotment of grant funds	Sec. 205
1286	Reimbursement and advanced construction	Sec. 206
1287	Authorization of appropriations	Sec. 207
1288	Areawide waste treatment management	Sec. 208
1289	Basin planning	Sec. 209

33 U.S.C.	Section Title	Clean Water Act, as Amended
1290	Annual survey	Sec. 210
1291	Sewage collection systems	Sec. 211
1292	Definitions	Sec. 212
1293	Loan guarantees	Sec. 213
1294	Public information and education on recycling and reuse of wastewater, use of land treatment, and reduction of wastewater volume	Sec. 214
1295	Requirements for American materials	Sec. 215
1296	Determination of priority of projects	Sec. 216
1297	Guidelines for cost-effective analysis	Sec. 217
1298	Cost effectiveness	Sec. 218
1299	State certification of projects	Sec. 219
1300	Pilot program for alternative water source projects	Sec. 220
1301	Sewer overflow control grants	Sec. 221
Subchapter III—Standards and Enforcement		
1311	Effluent limitations	Sec. 301
1312	Water quality-related effluent limitations	Sec. 302
1313	Water quality standards and implementation plans	Sec. 303
1314	Information and guidelines	Sec. 304
1315	State reports on water quality	Sec. 305
1316	National standards of performance	Sec. 306
1317	Toxic and pretreatment effluent standards	Sec. 307
1318	Records and reports, inspections	Sec. 308
1319	Enforcement	Sec. 309
1320	International pollution abatement	Sec. 310
1321	Oil and hazardous substance liability	Sec. 311
1322	Marine sanitation devices	Sec. 312
1323	Federal facilities pollution control	Sec. 313
1324	Clean lakes	Sec. 314
1325	National Study Commission	Sec. 315
1326	Thermal discharges	Sec. 316
1327	Omitted (alternative financing)	Sec. 317
1328	Aquaculture	Sec. 318
1329	Nonpoint source management programs	Sec. 319
1330	National estuary program	Sec. 320
Subchapter IV—Permits and Licenses		
1341	Certification	Sec. 401
1342	National pollutant discharge elimination system	Sec. 402

33 U.S.C.	Section Title	Clean Water Act, as Amended
1343	Ocean discharge criteria	Sec. 403
1344	Permits for dredged or fill materials	Sec. 404
1345	Disposal or use of sewage sludge	Sec. 405
1346	Coastal recreation water quality monitoring and notification	Sec. 406
Subchapter V—General Provisions		
1361	Administration	Sec. 501
1362	Definitions	Sec. 502
1363	Water Pollution Control Advisory Board	Sec. 503
1364	Emergency powers	Sec. 504
1365	Citizen suits	Sec. 505
1366	Appearance	Sec. 506
1367	Employee protection	Sec. 507
1368	Federal procurement	Sec. 508
1369	Administrative procedure and judicial review	Sec. 509
1370	State authority	Sec. 510
1371	Authority under other laws and regulations	Sec. 511
1372	Labor standards	Sec. 513
1373	Public health agency coordination	Sec. 514
1374	Effluent Standards And Water Quality Information Advisory Committee	Sec. 515
1375	Reports to Congress; detailed estimates and comprehensive study on costs; state estimates	Sec. 516
1376	Authorization of appropriations	Sec. 517
1377	Indian tribes	Sec. 518
Subchapter VI—State Water Pollution Control Revolving Funds		
1381	Grants to states for establishment of revolving funds	Sec. 601
1382	Capitalization grant agreements	Sec. 602
1383	Water pollution control revolving loan funds	Sec. 603
1384	Allotment of funds	Sec. 604
1385	Corrective action	Sec. 605
1386	Audits, reports, and fiscal controls, intended use plan	Sec. 606
1387	Authorization of appropriations	Sec. 607

Note: This table shows only the major code sections. For more detail and to determine when a section was added, consult the official version of the U.S. Code.

Ocean Dumping Act[15]

The Ocean Dumping Act has two basic aims: to regulate intentional ocean disposal of materials, and to authorize related research. Title I of the Marine Protection, Research, and Sanctuaries Act of 1972 (MPRSA, P.L. 92-532), which is often referred to just as the Ocean Dumping Act, contains permit and enforcement provisions for ocean dumping. Research provisions are contained in Title II, concerning general and ocean disposal research. Title IV established a regional marine research program, and Title V addresses coastal water quality monitoring. Title III of the MPRSA, not addressed here, authorizes the establishment of marine sanctuaries. **Table 6** shows the original enactment and subsequent amendments.

Table 6. Ocean Dumping Act and Amendments

(codified generally at 33 U.S.C. §§1401-1445, 16 U.S.C. §§447-1447f, 33 U.S.C. §§2801-2805)

Year	Act	Public Law Number
1972	Marine Protection, Research, and Sanctuaries Act	P.L. 92-532
1974	London Dumping Convention Implementation	P.L. 93-254
1977	Authorization of Appropriations	P.L. 95-153
1980	Authorization of Appropriations	P.L. 96-381
1980	Authorization of Appropriations	P.L. 96-572
1982	Surface Transportation Assistance Act	P.L. 97-424
1986	Budget Reconciliation	P.L. 99-272, §§6061-6065
1986	Water Resources Development Act	P.L. 99-662, §§211, 728, 1172
1987	Water Quality Act of 1987	P.L. 100-4, §508
1988	Ocean dumping research amendments	P.L. 100-627, Title I
1988	Ocean Dumping Ban Act	P.L. 100-688, Title I
1988	U.S. Public Vessel Medical Waste Anti-Dumping Act of 1988	P.L. 100-688, Title III
1990	Regional marine research centers	P.L. 101-593, Title III
1992	National Coastal Monitoring Act	P.L. 102-567, Title V
1992	Water Resources Development Act	P.L. 102-580, §§504-510

Background

The nature of marine pollution requires that it be regulated internationally, since once a pollutant enters marine waters, it knows no boundary. Thus, a series of regional treaties and conventions pertaining to local marine pollution problems and more comprehensive international conventions providing uniform standards to control worldwide marine pollution has evolved over the last 35 years.

[15] Prepared by Claudia Copeland, Specialist in Resources and Environmental Policy, Environmental Policy Section, Resources, Science and Industry Division.

At the same time that key international protocols were being adopted and ratified by large number of countries worldwide (early 1970s), the United States enacted the MPRSA to regulate disposal of wastes in marine waters that are within U.S. jurisdiction. It utilizes a comprehensive and uniform waste management system to regulate disposal or dumping of all materials into ocean waters. Prior to 1972, U.S. marine waters had been used extensively as a convenient alternative to land-based sites for the disposal of various wastes such as sewage sludge, industrial wastes, and pipeline discharges and runoff.

The basic provisions of the act have remained virtually unchanged since 1972, but many new authorities have been added. These newer parts include (1) research responsibilities for EPA; (2) specific direction that EPA phase out the disposal of "harmful" sewage sludges and industrial wastes; (3) a ban on the ocean disposal of sewage sludge and industrial wastes by December 31, 1991; (4) inclusion of Long Island Sound within the purview of the act; and (5) inclusion of medical waste provisions. Authorizations for appropriations to support provisions of the law expired at the end of FY1997 (September 30, 1997). Authorities did not lapse, however, and Congress has continued to appropriate funds to carry out the act.

Four federal agencies have responsibilities under the Ocean Dumping Act: EPA, the U.S. Army Corps of Engineers, the National Oceanic and Atmospheric Administration (NOAA), and the Coast Guard. EPA has primary authority for regulating ocean disposal of all substances except dredged spoils, which are under the authority of the Corps of Engineers. NOAA is responsible for long-range research on the effects of human-induced changes to the marine environment, while EPA is authorized to carry out research and demonstration activities related to phasing out sewage sludge and industrial waste dumping. The Coast Guard is charged with maintaining surveillance of ocean dumping.

Regulating Ocean Dumping

Title I of the MPRSA prohibits all ocean dumping, except that allowed by permits, in any ocean waters under U.S. jurisdiction, by any U.S. vessel, or by any vessel sailing from a U.S. port. The act bans any dumping of radiological, chemical, and biological warfare agents and any high-level radioactive waste, and medical wastes. Permits for dumping of other materials, except dredge spoils, can be issued by the EPA after notice and opportunity for public hearings where the Administrator determines that such dumping will not unreasonably degrade or endanger human health, welfare, the marine environment, ecological systems, or economic potentialities. The law regulates ocean dumping within the area extending 12 nautical miles seaward from the U.S. baseline and regulates transport of material by U.S.-flagged vessels for dumping into ocean waters. EPA designates sites for ocean dumping and specifies in each permit where the material is to be disposed. EPA prepares an annual report on ocean dumping permits for material other than dredged material (although the most recent report was issued in 2006).[16]

In 1977, Congress amended the act to require that dumping of municipal sewage sludge or industrial wastes which unreasonably degrade the environment cease by December 1981. In 1986 amendments, Congress directed that ocean disposal of all wastes cease at the traditional 12-mile site off the New York/New Jersey coast (that is, barred issuance of permits at the 12-mile site) and be moved to a new site 106 miles offshore. In 1988, Congress enacted several laws amending

[16] See http://www.epa.gov/owow/oceans/regulatory/dumpdredged/documents/2006oceandumpingreport.pdf.

the Ocean Dumping Act, with particular emphasis on phasing out sewage sludge and industrial waste disposal in the ocean, which continued despite earlier legislative efforts.

In 1992, Congress amended the act to permit states to adopt ocean dumping standards more stringent than federal standards and to require that permits conform with long-term management plans for designated marine dumpsites, to ensure that permitted activities are consistent with expected uses of the site.

Virtually all ocean dumping that occurs today is dredged material—sediments removed from the bottom of water bodies in order to maintain navigation channels and berthing areas. The Corps of Engineers issues permits for ocean dumping of dredged material, the bulk of which results from maintenance dredging by the Corps itself or its contractors. According to data compiled by the Corps, each year an average of 70 million cubic yards of dredged sediment material is disposed of in the ocean at designated sites. Before sediments can be permitted to be dumped in the ocean, they are evaluated to ensure that the dumping will not cause significant harmful effects to human health or the marine environment. EPA is responsible for developing criteria to ensure that the ocean disposal of dredge spoils does not cause environmental harm. Permits for ocean disposal of dredged material are to be based on the same criteria utilized by EPA under other provisions of the act, and to the extent possible, EPA-recommended dumping sites are used. Where the only feasible disposition of dredged material would violate the dumping criteria, the Corps can request an EPA waiver. Amendments enacted in 1992 expanded EPA's role in permitting of dredged material by authorizing EPA to impose permit conditions or even deny a permit, if necessary to prevent environmental problems.

Permits issued under the Ocean Dumping Act specify the type of material to be disposed, the amount to be transported for dumping, the location of the dumpsite, the length of time the permit is valid, and special provisions for surveillance. The EPA Administrator can require a permit applicant to provide information necessary for the review and evaluation of the application.

Enforcement

The act authorizes EPA to assess civil penalties of not more than $50,000 for each violation of a permit or permit requirement, taking into account such factors as gravity of the violation, prior violations, and demonstrations of good faith; however, no penalty can be assessed until after notice and opportunity for a hearing. Criminal penalties (including seizure and forfeiture of vessels) for knowing violations of the act also are authorized. In addition, the act authorizes penalties for ocean dumping of medical wastes (civil penalties up to $125,000 for each violation and criminal penalties up to $250,000, five years in prison, or both). The Coast Guard is directed to conduct surveillance and other appropriate enforcement activities to prevent unlawful transportation of material for dumping, or unlawful dumping. Like many other federal environmental laws, the Ocean Dumping Act allows individuals to bring a citizen suit in U.S. district court against any person, including the United States, for violation of a permit or other prohibition, limitation, or criterion issued under Title I of the act.

In conjunction with the Ocean Dumping Act, the Clean Water Act (CWA) regulates all discharges into navigable waters including the territorial seas. Although these two laws overlap in their coverage of dumping from vessels within the territorial seas, any question of conflict is essentially moot because EPA has promulgated a uniform set of standards (40 C.F.R. Parts 220-229). The Ocean Dumping Act preempts the CWA in coastal waters or open oceans, and the CWA

controls in estuaries. States are permitted to regulate ocean dumping in waters within their jurisdiction under certain circumstances.

The act also requires the EPA Administrator, to the extent possible, to apply the standards and criteria binding upon the United States that are stated in the 1972 Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matters (known as the London Dumping Convention). This Convention, signed by more than 85 countries, includes Annexes that prohibit the dumping of mercury, cadmium and other substances such as DDT and PCBs, solid wastes and persistent plastics, oil, high-level radioactive wastes, and chemical and biological warfare agents; and requires special permits for other heavy metals, cyanides and fluorides, and medium- and low-level radioactive wastes.

Research and Coastal Water Quality Monitoring

Title II of the MPRSA authorizes two types of research: general research on ocean resources, under the jurisdiction of the National Oceanic and Atmospheric Administration (NOAA); and EPA research related to phasing out ocean disposal activities.

NOAA is directed to carry out a comprehensive, long-term research program on the effects not only of ocean dumping, but also of pollution, overfishing, and other human-induced changes on the marine ecosystem. Additionally, NOAA assesses damages from spills of petroleum and petroleum products.

EPA's research role includes "research, investigations, experiments, training, demonstrations, surveys, and studies" to minimize or end the dumping of sewage sludge and industrial wastes, along with research on alternatives to ocean disposal. Amendments in 1980 required EPA to study technological options for removing heavy metals and certain organic materials from New York City's sewage sludge.

Title IV of the MPRSA established nine regional marine research boards for the purpose of developing comprehensive marine research plans, considering water quality and ecosystem conditions and research and monitoring priorities and objectives in each region. The plans, after approval by NOAA and EPA, are to guide NOAA in awarding research grant funds under this title of the act.

Title V of the MPRSA established a national coastal water quality monitoring program. It directs EPA and NOAA jointly to implement a long-term program to collect and analyze scientific data on the environmental quality of coastal ecosystems, including ambient water quality, health and quality of living resources, sources of environmental degradation, and data on trends. Results of these activities (including intensive monitoring of key coastal waters) are intended to provide information necessary to design and implement effective programs under the Clean Water Act and Coastal Zone Management Act.

Table 7. Major U.S. Code Sections of the Ocean Dumping Act, as Amended

(codified at 33 U.S.C. §§1401-1445, 16 U.S.C. §§1447-1447f, 33 U.S.C. §§2801-2805)

U.S.C.	Section Title	Ocean Dumping Act, as Amended
33 U.S.C.		
Chapter 27—Ocean Dumping		
1401	Congressional finding,, policy, declaration of purpose	Sec. 2
1401	Definitions	Sec. 3
Subchapter I—Regulation		
1411	Prohibited acts	Sec. 101
1412	Dumping permit program	Sec. 102
1412a	Emergency dumping of industrial waste	Sec. 102A
1413	Dumping permit program for dredged material	Sec. 103
1414	Permit conditions	Sec. 104
1414a	Special provisions regarding certain dumping sites	Sec. 104A
1414b	Ocean dumping of sewage sludge and industrial waste	Sec. 104B
1414c	Prohibition on disposal of sewage sludge at landfills on Staten Island	Sec. 104C
1415	Penalties	Sec. 105
1416	Relationship to other laws	Sec. 106
1417	Enforcement	Sec. 107
1418	Regulations	Sec. 108
1419	International cooperation	Sec. 109
1420	Authorization of appropriations	Sec. 111
1421	Omitted (annual report to Congress)	Sec. 112
Subchapter II—Research		
1441	Monitoring and research program	Sec. 201
1442	Research program respecting possible long-range effects of pollution, overfishing, and man-induced changes of ocean ecosystems	Sec. 202
1443	Research program respecting ocean dumping and other methods of waste disposal	Sec. 203
1444	Annual reports	Sec. 204
1445	Authorization of appropriations	Sec. 205
16 U.S.C.		
Chapter 32A—Regional Marine Research Program		
1447	Purposes	Sec. 401
1447a	Definitions	Sec. 402
1447b	Regional Marine Research Boards	Sec. 403
1447c	Regional research plans	Sec. 404
1447d	Research grant program	Sec. 405

U.S.C.	Section Title	Ocean Dumping Act, as Amended
1447e	Report on research program	Sec. 406
1447f	Authorization of appropriations	Sec. 407
33 U.S.C.		
Chapter 41—National Coastal Monitoring		
2801	Purposes	Sec. 501
2802	Definitions	Sec. 502
2803	Comprehensive Coastal Water Quality Monitoring Program	Sec. 503
2804	Report to Congress	Sec. 504
2805	Authorization of appropriations	Sec. 505

Note: This table shows only the major U.S. Code sections. For more detail and to determine when a section was added, consult the official version of the U.S. Code.

Safe Drinking Water Act[17]

The Safe Drinking Water Act (SDWA), Title XIV of the Public Health Service Act, is the key federal law for protecting public water supplies from harmful contaminants. First enacted in 1974 and substantively amended in 1986 and 1996, the act is administered through programs that establish standards and treatment requirements for public water supplies, control underground injection of wastes, finance infrastructure projects, and protect sources of drinking water. The 1974 law established the current federal-state arrangement in which states may be delegated primary implementation and enforcement authority for the drinking water program. The state-administered Public Water Supply Supervision (PWSS) Program remains the basic program for regulating the nation's public water systems, and 49 states have assumed this authority. SDWA appropriations were authorized through FY2003.

Background

As indicated in **Table 8**, the Safe Drinking Water Act has been amended several times since enactment of the Safe Drinking Water Act of 1974 (P.L. 93-523). Congress enacted P.L. 93-523 after nationwide studies of community water systems revealed widespread water quality problems and health risks resulting from poor operating procedures, inadequate facilities, and poor management of public water supplies in communities of all sizes. The 1974 law gave EPA substantial discretionary authority to regulate drinking water contaminants and gave states the lead role in implementation and enforcement.

[17] Prepared by Mary Tiemann, Specialist in Environmental Policy, Environmental Policy Section, Resources, Science, and Industry Division.

Table 8. Safe Drinking Water Act and Amendments

(codified generally at 42 U.S.C. 300f-300j-25)

Year	Act	Public Law Number
1974	Safe Drinking Water Act of 1974	P.L. 93-523
1977	Safe Drinking Water Act Amendments of 1977	P.L. 95-190
1979	Safe Drinking Water Act Amendments	P.L. 96-63
1980	Safe Drinking Water Act Amendments	P.L. 96-502
1986	Safe Drinking Water Act Amendments of 1986	P.L. 99-339
1988	Lead Contamination Control Act of 1988	P.L. 100-572
1996	Safe Drinking Water Act Amendments of 1996	P.L. 104-182
2002	Public Health Security and Bioterrorism Preparedness and Response Act of 2002	P.L. 107-188

The first major amendments (P.L. 99-339), enacted in 1986, were largely intended to increase the pace at which EPA regulated contaminants. From 1974 until 1986, EPA had regulated just one additional contaminant beyond the 22 standards previously developed by the Public Health Service. The 1986 amendments required EPA to (1) issue regulations for 83 specified contaminants by June 1989 and for 25 more contaminants every three years thereafter, (2) promulgate requirements for disinfection and filtration of public water supplies, (3) ban the use of lead pipes and lead solder in new drinking water systems, (4) establish an elective wellhead protection program around public wells, (5) establish a demonstration grant program for state and local authorities having designated sole-source aquifers to develop groundwater protection programs, and (6) issue rules for monitoring injection wells that inject wastes below a drinking water source. The amendments also increased EPA's enforcement authority.

The Lead Contamination Control Act of 1988 (P.L. 100-572) added a new Part F to the SDWA. These provisions were intended to reduce exposure to lead in drinking water by requiring the recall of lead-lined water coolers, and requiring EPA to issue a guidance document and testing protocol for states to help schools and day care centers identify and correct lead contamination in school drinking water.

After the regulatory schedule mandated in the 1986 amendments proved to be unworkable for EPA, states and public water systems, the 104th Congress made sweeping changes to the act with the SDWA Amendments of 1996 (P.L. 104-182). As over-arching themes, these amendments aimed to target resources to address the greatest health risks, add some regulatory flexibility, provide funding for federal drinking water mandates, and improve water systems' compliance capacity. The amendments revoked the requirement that EPA regulate 25 new contaminants every three years, and provided a risk-based approach for selecting contaminants for regulation. Among other changes, Congress added some flexibility to the standard-setting process, required EPA to conduct health risk reduction and cost analyses for most new standards, authorized a state revolving loan fund (SRF) program to help public water systems finance projects needed to meet SDWA requirements, added programs to improve small system compliance, expanded consumer information requirements, increased the act's focus on pollution prevention through a voluntary source water protection program, and streamlined the act's enforcement provisions. P.L. 104-182 extended authorizations for appropriations under the act through FY2003.

In June 2002, drinking water security provisions were added to the SDWA through the Public Heath Security and Bioterrorism Preparedness and Response Act of 2002 (P.L. 107-188). Key provisions of the act include requirements for community water systems serving more than 3,300 individuals to conduct vulnerability assessments and prepare emergency preparedness and response plans and requirements for EPA to conduct research on preventing and responding to terrorist or other attacks.

National Drinking Water Regulations

A key component of the SDWA is the requirement that EPA promulgate national primary drinking water regulations for contaminants that may pose health risks and that are likely to be present in public water supplies. Section 1412 instructs EPA on how to select contaminants for regulation and specifies how EPA must establish regulations once a contaminant has been selected. The regulations apply to the roughly 168,000 privately and publicly owned water systems that provide piped water for human consumption to at least 15 service connections or that regularly serve at least 25 people. EPA has issued regulations for roughly 90 contaminants.

Contaminant Selection and Regulatory Schedules

Section 1412, as amended in 1996, directs EPA to select contaminants for regulatory consideration based on occurrence, health effects, and meaningful opportunity for health risk reduction. Starting in 1998, and every five years thereafter, EPA must publish a list of contaminants that may warrant regulation. Starting in 2001, and every five years thereafter, EPA must determine whether or not to regulate at least five of the listed contaminants. The act requires EPA to evaluate contaminants that present the greatest health concern and to regulate contaminants that occur at concentration levels and frequencies of public health concern. The amendments also included schedules for EPA to complete regulations for specific contaminants (i.e., radon, arsenic, disinfectants and disinfection byproducts, and *Cryptosproridium*).

Standard Setting

For each contaminant that EPA determines requires regulation, EPA must set a non-enforceable maximum contaminant level goal (MCLG) at a level at which no known or anticipated adverse health effects occur and which allows an adequate margin of safety. EPA must then set an enforceable standard, a maximum contaminant level (MCL), as close to the MCLG as is "feasible" using best technology, treatment techniques, or other means available (taking costs into consideration). EPA generally sets standards based on technologies that are affordable for large communities; however, under P.L. 104-182, EPA is now required, when issuing a regulation for a contaminant, to list any technologies or other means that comply with the MCL and that are affordable for three categories of small public water systems (serving populations of 10,000 or fewer). If EPA does not identify technologies that are affordable for small systems, then EPA must identify small system "variance" technologies or other means that may not achieve the MCL but are protective of public health.

Another provision added in 1996 requires EPA, when proposing a regulation, to publish a determination as to whether or not the benefits of the standard justify the costs. If EPA determines that the benefits do not justify the costs, EPA may, with certain exceptions, promulgate a standard that maximizes health risk reduction benefits at a cost that is justified by the benefits.

New SDWA regulations generally become effective three years after promulgation. Up to two additional years may be allowed if EPA (or a state in the case of an individual system) determines the time is needed for capital improvements. Section 1448 outlines procedures for judicial review of EPA actions involving the establishment of SDWA regulations and other final EPA actions.

Risk Assessment

The 1996 amendments also added risk assessment and risk communication provisions to SDWA. When developing regulations, EPA is required to (1) use the best available, peer-reviewed science and supporting studies and data; and (2) make publicly available a risk assessment document that discusses estimated risks, uncertainties, and studies used in the assessment. When proposing drinking water regulations, EPA must publish a health risk reduction and cost analysis (HRRCA). EPA may promulgate an interim standard without first preparing this benefit-cost analysis or making a determination as to whether the benefits of a regulation would justify the costs if EPA determines that a contaminant presents an urgent threat to public health.

Variances and Exemptions

In anticipation that some systems, particularly smaller ones, could have difficulty complying with every regulation, Congress included in the SDWA provisions for variances and exemptions. Section 1415 authorizes a state to grant a public water system a *variance* from a standard if raw water quality prevents the standard from being met despite application of best technology, and the variance does not result in an unreasonable risk to health. A 1996 provision (Subsection 1415(e)) authorizes variances specifically for small systems based on application of best affordable technology.

When developing a regulation, if EPA cannot identify a technology that meets the standard and is affordable for small systems, EPA must identify variance technologies that are affordable but do not necessarily meet the standard. In cases where EPA has identified variance technologies, states may grant small system variances to systems serving 3,300 or fewer persons if the system cannot afford to comply with a standard (through treatment, an alternative water source, or restructuring) and the variance ensures adequate protection of public health. States also may grant these variances to systems serving between 3,301 and 10,000 persons with EPA approval. To receive a small system variance, the system must install a variance technology.

Section 1416 authorizes states to grant public water systems temporary *exemption*s from standards or treatment techniques if a system cannot comply for other compelling reasons (including costs). An exemption is intended to give a water system more time to comply with a regulation and can be issued only if it will not result in an unreasonable health risk. A qualified system may receive an exemption for up to three years beyond the compliance deadline. Systems serving 3,300 or fewer persons may receive a maximum of three additional two-year extensions, for a total exemption duration of nine years.

State Primacy

Section 1413 authorizes states to assume primary oversight and enforcement responsibility (primacy) for public water systems. To assume primacy, states must adopt regulations at least as stringent as national requirements, develop adequate procedures for enforcement, adopt authority for administrative penalties, maintain records, and develop a plan for providing emergency water

supplies. Currently, 55 of 57 states and territories have primacy authority. The act authorizes $100 million annually for EPA to make grants to states to administer the Public Water System Supervision Program. States may also use part of their SRF grant for this purpose.

Enforcement, Consumer Information, and Citizen Suits

The Safe Drinking Water Act requires public water systems to monitor their water supplies to ensure compliance with drinking water standards and to report monitoring results to the states. States review monitoring data submitted by public water systems, or conduct their own monitoring, to determine system compliance with drinking water regulations. EPA monitors public water system compliance primarily by reviewing the violation data submitted by the states.

Section 1414 requires that, whenever EPA finds that a public water system in a state with primary enforcement authority does not comply with regulations, the agency must notify the state and the system and provide assistance to bring the system into compliance. If the state fails to commence enforcement action within 30 days after the notification, EPA is authorized to issue an administrative order or commence a civil action. In a non-primacy state, EPA must notify an elected local official (if any has jurisdiction over the water system) before commencing an enforcement action against the system.

The 1996 amendments strengthened enforcement authorities, streamlined the process for issuing federal administrative orders, increased administrative penalty amounts, made more sections of the act clearly subject to EPA enforcement, and required states (as a condition of primacy) to have administrative penalty authority. The amendments also provided that no enforcement action may be taken against a public water system that has a plan to consolidate with another system.

Consumer Information and Reports

Enforcement provisions also require public water systems to notify customers of violations of drinking water standards or other requirements, such as monitoring and reporting. Systems must notify customers within 24 hours of any violations that have the potential to cause serious health effects as a result of short-term exposure (e.g., violations of microbial standards). The amendments also require community water systems to mail to all customers an annual " consumer confidence report" on contaminants detected in their drinking water. States must prepare annual reports on the compliance of public water systems and make summaries available to EPA and the public, and EPA must prepare annual national compliance reports.

Citizen Suits

Section 1449 provides for citizens' civil actions. Citizen suits may be brought against any person or agency allegedly in violation of provisions of the act, or against the Administrator for alleged failure to perform any action or duty that is not discretionary.

Compliance Improvement Programs

The 1996 amendments added two state-administered programs aimed at improving public water system compliance with drinking water regulations: the operator certification program and the capacity development program. Section 1419 required states to adopt programs for training and

certifying operators of community and non-transient non-community systems (e.g., schools and workplaces that have their own wells). In 1999, EPA issued guidelines specifying minimum certification standards. EPA is required to withhold 20% of a state's revolving fund (SRF) annual grant unless the state has adopted and is implementing an operator certification program. Section 1420 required states to establish capacity development programs, also based on EPA guidance. These programs must include (1) legal authority to ensure that new systems have the technical, financial, and managerial capacity to meet SDWA requirements; and (2) a strategy to assist existing systems that are experiencing difficulties to come into compliance. EPA is required to withhold a portion of SRF grants from states that do not have capacity development strategies.

Ground Water Protection Programs

Most small water systems rely on ground water as a source of drinking water, and Part C of the act focuses on ground water protection. Section 1421 authorized the establishment of state underground injection control (UIC) programs to protect underground sources of drinking water. In 1977, EPA issued mandated regulations containing minimum requirements for the underground injection of wastes into five classes of disposal wells and requiring states to prohibit any underground injection not authorized by state permit. The law specified that the regulations could not interfere with the underground injection of brine from oil and gas production or recovery of oil unless underground sources of drinking water would be affected. Section 1422 authorized affected states to submit plans to EPA for implementing UIC programs and, if approved, to assume primary enforcement responsibility. EPA is required to implement the program if a state's plan has not been approved or the state has chosen not to assume program responsibility (Section 1423). For oil and gas injection operations only, states with UIC programs are delegated primary enforcement authority without meeting EPA regulations (Section 1425).

Section 1424(e) authorizes EPA to make determinations, on EPA's initiative or upon petition, that an aquifer is the sole or principal drinking water source for an area. In areas that overlie a designated sole-source aquifer, no federal funding may be committed for projects that EPA determines may contaminate such an aquifer. Any person may petition for sole source aquifer designation.

The act contains three additional state programs aimed specifically at protecting ground water. Added in 1986, Section 1427 established procedures for demonstration programs to develop, implement, and assess critical aquifer protection areas already designated by the Administrator as sole source aquifers. Section 1428, also added in 1986, established an elective state program for protecting wellhead areas around public water system wells. If a state established a wellhead protection program by 1989, and EPA approved the state's program, then EPA may award grants covering between 50% and 90% of the costs of implementing the program. Section 1429, added in 1996, authorizes EPA to make 50% grants to states to develop programs to ensure coordinated and comprehensive protection of ground water within the states. Appropriations for these three programs and for UIC state program grants were authorized through FY2003.

Source Water Assessment and Protection Programs

In 1996, Congress broadened the act's pollution prevention focus to embrace surface water, in addition to ground water, protection. Section 1453 required EPA to publish guidance for states to implement source water assessment programs that delineate boundaries of areas from which systems receive their water, and identify the origins of contaminants in delineated areas to

determine systems' susceptibility to contamination. States with approved assessment programs may adopt alternative monitoring requirements to provide systems with monitoring relief provided under Section 1418.

Section 1454 authorized a source water petition program based on voluntary partnerships between state and local governments. States may establish a program under which a community water system or local government may submit a petition to the state requesting assistance in developing a voluntary source water quality protection partnership to (1) reduce the presence of contaminants in drinking water; (2) receive financial or technical assistance; and (3) develop a long-term source water protection strategy. This section authorized, through FY2003, $5 million each year for grants to states to support petition programs. States also may use 10% of their annual SRF grant to support various source water protection activities including the petition program.

State Revolving Funds

In 1996, Congress authorized a drinking water state revolving loan fund (DWSRF) program to help systems finance improvements needed to comply with SDWA regulations (Section 1452). EPA is authorized to make grants to states to capitalize DWSRFs, which states then may use to make loans to public water systems. States must match 20% of the federal grant, and grants are allotted among the states based on the results of the latest quadrennial needs survey. Each state and the District of Columbia must receive at least 1% of the appropriated funds. A state may transfer up to 33% of the grant to the Clean Water Act (CWA) SRF, or an equivalent amount from the CWA SRF to the DWSRF through FY2002. This authority has been extended in subsequent appropriations acts.

DWSRFs may be used to provide loans for expenditures EPA has determined will facilitate compliance or significantly further the act's health protection objectives. States must make available 15% of their annual allotment for loan assistance to systems that serve 10,000 or fewer persons, to the extent that funds can be obligated for eligible projects. States may use up to 30% of their DWSRF grant to provide loan subsidies (including forgiveness of principal) to help economically disadvantaged communities. Also, states may use a portion of funds for technical assistance, source water protection and capacity development programs, and for operator certification. The law authorized appropriations of $599 million for FY1994 and $1 billion per year for FY1995 through FY2003 for the DWSRF program.

Drinking Water Security

The 107th Congress passed the Public Health Security and Bioterrorism Preparedness and Response Act of 2002 (P.L. 107-188). Title IV of the Bioterrorism Act amended the SDWA to address threats to drinking water security. Key provisions are summarized below.

Vulnerability Assessments

Section 1433 was added to SDWA, requiring each community water system serving more than 3,300 individuals to conduct an assessment of the system's vulnerability to terrorist attacks or other intentional acts to disrupt the provision of a safe and reliable drinking water supply. This provision established deadlines, based on system size, for community water systems to certify to EPA that they had conducted a vulnerability assessment and to submit to EPA a copy of the

assessment. The law required all these systems to complete vulnerability assessments by June 30, 2004, or earlier. Section 1433 exempts the contents of the vulnerability assessments from disclosure under the Freedom of Information Act (except for information contained in the certification identifying the system and the date of the certification), and provides for civil and criminal penalties for inappropriate disclosure of information by government officials.

In addition, Section 1433 required each community water system serving more than 3,300 individuals to prepare or revise an emergency response plan incorporating the results of the vulnerability assessment. EPA was required to provide guidance to smaller systems on how to conduct vulnerability assessments, prepare emergency response plans, and address threats.

The act authorized $160 million for FY2002, and such sums as may be necessary for FY2003 through FY2005, to provide financial assistance to community water systems to conduct vulnerability assessments, to prepare response plans, and to address basic security enhancements and significant threats.

The Bioterrorism Act also added new SDWA Sections 1434 and 1435 directing the EPA Administrator to review methods by which terrorists or others could disrupt the provision of safe water supplies. EPA was required to review methods for preventing, detecting, and responding to such disruptions, and methods for providing alternative drinking water supplies if a water system was destroyed or impaired. The act authorized $15 million for FY2002, and such sums as may be necessary for FY2003 through FY2005 to carry out these sections.

Emergency Powers

Under Section 1431, the Administrator has emergency powers to issue orders and commence civil action if (1) a contaminant likely to enter a public water supply system poses a substantial threat to public health, and (2) state or local officials have not taken adequate action. The Bioterrorism Act amended this section to specify that EPA's emergency powers include the authority to act when there is a threatened or potential terrorist attack or other intentional act to disrupt the provision of safe drinking water or to impact the safety of a community's water supply.

Tampering with Public Water Systems

Section 1432 provides for civil and criminal penalties against any person who tampers, attempts to tamper, or makes a threat to tamper with a public water system. Amendments made by the Bioterrorism Act increased criminal and civil penalties for tampering, attempting to tamper, or making threats to tamper with public water supplies. The maximum prison sentence for tampering was increased from 5 to 20 years. The maximum prison sentence for attempting to tamper, or making threats to tamper, was increased from 3 to 10 years. The maximum fine that may be imposed for tampering was increased from $50,000 to $1 million. The maximum fine for attempting to tamper, or threatening to tamper, was increased from $20,000 to $100,000.

Emergency Assistance

SDWA Subsection 1442(b) authorizes EPA to provide technical assistance and to make grants to states and public water systems to assist in responding to and alleviating emergency situations. The Bioterrorism Act amended Subsection 1442(d) to authorize appropriations for such

emergency assistance of not more than $35 million for FY2002, and such sums as may be necessary for each fiscal year thereafter.

Other Selected Provisions

Section 1417 prohibits the use of pipe, solder, or flux that is not "lead free" (as defined by the SDWA) in the installation or repair of public water systems or plumbing in residential or other facilities providing drinking water. It prohibits the sale of potable water pipes, pipe fittings, plumbing fittings and fixtures that are not lead free, and the sale of solder or flux that is not lead free (unless it is properly labeled). This section's prohibitions do not apply to pipes, fittings or fixtures used exclusively for nonpotable services, such as manufacturing, industrial processing, outdoor watering, and irrigation.[18]

Section 1442 authorizes EPA to conduct research on the causes, treatment, control, and prevention of diseases resulting from contaminants in water. Section 1442(b) authorizes EPA to make grants and provide technical assistance to states or public water systems to assist them in responding to emergency situations; $35 million are authorized to be appropriated each year for this purpose. Section 1442(e) authorized $15 million for each year, through FY2003, for EPA to provide technical assistance to small public water systems and Indian Tribes to help them comply with SDWA regulations. Section 1458 directed EPA to conduct studies regarding subpopulations at greater risk, biological mechanisms, and waterborne disease occurrences.

Section 1447 provides that any federal agency having jurisdiction over federally owned and maintained public water systems must comply with all federal, state and local drinking water requirements as well as any underground injection control programs. The President may exempt a facility from compliance with a requirement if he determines it to be in the paramount interest of the country to do so. Exemptions last one year, but additional exemptions may be granted.

Under Section 1457, EPA may use the estrogenic substances screening program created in the Food Quality Protection Act of 1996 (P.L. 104-170) to provide for testing of substances that may be found in drinking water, if the Administrator determines that a substantial population may be exposed to such substances.

[18] For purposes of Section 1417, as amended by the Reduction of Lead in Drinking Water Act, P.L. 111-380, the term "lead free" means solders and flux containing not more than 0.2% lead; and water pipes, pipe fittings, plumbing fittings and fixtures containing not more than 0.25% lead.

Table 9. Major U.S. Code Sections of the Safe Drinking Water Act, as Amended (Title XIV of the Public Health Service Act)

(codified generally at 42 U.S.C. 300f-300j-25)

42 U.S.C.	Section Title	Safe Drinking Water Act, as Amended
Chapter 6A—Public Health Service		
Subchapter XII—Safety of Public Drinking Water Systems		
Part A—Definitions		
300f	Definitions	Sec. 1401
Part B—Public Water Systems		
300g	Coverage	Sec. 1411
300g-1	National drinking water regulations	Sec. 1412
300g-2	State primary enforcement responsibility	Sec. 1413
300g-3	Enforcement of drinking water regulations	Sec. 1414
300g-4	Variances	Sec. 1415
300g-5	Exemptions	Sec. 1416
300g-6	Prohibitions on the use of lead pipes, solder, and flux	Sec. 1417
300g-7	Monitoring of contaminants	Sec. 1418
300g-8	Operator certification	Sec. 1419
300g-9	Capacity development	Sec. 1420
Part C—Protection of Underground Sources of Drinking Water		
300h	Regulations for state programs	Sec. 1421
300h-1	State primary enforcement responsibility	Sec. 1422
300h-2	Enforcement of program	Sec. 1423
300h-3	Interim regulation of underground injections	Sec. 1424
300h-4	Optional demonstration by states relating to oil and natural gas	Sec. 1425
300h-5	Regulation of state programs	Sec. 1426
300h-6	Sole source aquifer demonstration program	Sec. 1427
300h-7	State programs to establish wellhead protection areas	Sec. 1428
300h-8	State ground water protection grants	Sec. 1429
Part D—Emergency Powers		
300i	Emergency powers	Sec. 1431
300i-1	Tampering with public water systems	Sec. 1432
300i-2	Terrorist and other intentional acts	Sec. 1433
300i-3	Contaminant prevention, detection, and response	Sec. 1434
300i-4	Supply disruption prevention, detection and response	Sec. 1435

42 U.S.C.	Section Title	Safe Drinking Water Act, as Amended
Part E—General Provisions		
300j	Assurance of availability of adequate supplies of chemicals necessary for treatment of water	Sec. 1441
300j-1	Research, technical assistance, information, training of personnel	Sec. 1442
300j-2	Grants for state programs	Sec. 1443
300j-3	Special project grants and guaranteed loans	Sec. 1444
300j-4	Records and inspections	Sec. 1445
300j-5	National Drinking Water Advisory Council	Sec. 1446
300j-6	Federal agencies	Sec. 1447
300j-7	Judicial review	Sec. 1448
300j-8	Citizen's civil action	Sec. 1449
300j-9	General provisions	Sec. 1450
300j-11	Indian Tribes	Sec. 1451
300j-12	State revolving loan funds	Sec. 1452
300j-13	Source water quality assessment	Sec. 1453
300j-14	Source water petition program	Sec. 1454
300j-15	Water conservation plan	Sec. 1455
300j-16	Assistance to colonias	Sec. 1456
300j-17	Estrogenic substances screening program	Sec. 1457
300j-18	Drinking water studies	Sec. 1458
Part F—Additional Requirements to Regulate Safety of Drinking Water		
300j-21	Definitions	Sec. 1461
300j-22	Recall of drinking water coolers with lead-lined tanks	Sec. 1462
300j-23	Drinking water coolers containing lead	Sec. 1463
300j-24	Lead contamination in school drinking water	Sec. 1464
300j-25	Federal assistance for state programs regarding lead contamination in school drinking water	Sec. 1465

Note: This table shows only the major code sections. For more detail and to determine when a section was added, consult the official version of the U.S. Code.

Solid Waste Disposal Act/Resource Conservation and Recovery Act[19]

The Resource Conservation and Recovery Act of 1976 (RCRA) established the federal program regulating solid and hazardous waste management. RCRA actually amends earlier legislation (the Solid Waste Disposal Act of 1965), but the amendments were so comprehensive that the act is commonly called RCRA rather than its official title.

The act defines solid and hazardous waste, authorizes EPA to set standards for facilities that generate or manage hazardous waste, establishes a permit program for hazardous waste treatment, storage, and disposal facilities, and authorizes EPA to set criteria for disposal facilities that accept municipal solid waste. RCRA was last reauthorized by the Hazardous and Solid Waste Amendments of 1984. The amendments set deadlines for permit issuance, prohibited the land disposal of many types of hazardous waste without prior treatment, established criteria applicable to municipal solid waste landfills, and established a new program regulating underground storage tanks. The authorization for appropriations under this act expired September 30, 1988, but funding for the EPA's programs in this area has continued; the act's other authorities do not expire.

Table 10. Solid Waste Disposal Act/Resource Conservation and Recovery Act and Major Amendments

(codified generally at 42 U.S.C. 6901-6992k)

Year	Act	Public Law Number
1965	Solid Waste Disposal Act	P.L. 89-272, Title II
1970	Resource Recovery Act of 1970	P.L. 91-512
1976	Resource Conservation and Recovery Act of 1976	P.L. 94-580
1980	Used Oil Recycling Act of 1980	P.L. 96-463
1980	Solid Waste Disposal Act Amendments of 1980	P.L. 96-482
1984	Hazardous and Solid Waste Amendments of 1984	P.L. 98-616
1986	Superfund Amendments and Reauthorization Act of 1986	P.L. 99-499, Sec. 205
1988	Medical Waste Tracking Act of 1988	P.L. 100-582
1992	Federal Facility Compliance Act of 1992	P.L. 102-386
1996	Land Disposal Program Flexibility Act of 1996	P.L. 104-119

Background

Enacted in 1965 under Title II of the Clean Air Act of 1965, the Solid Waste Disposal Act focused on research, demonstrations, and training. It provided for sharing with the states the costs of making surveys of waste disposal practices and problems, and of developing waste management plans. The Resource Recovery Act of 1970 changed the whole tone of the legislation from

[19] Prepared by Linda Luther, Analyst in Environmental Policy, and Mary Tiemann, Specialist in Environmental Policy, Environmental Policy Section, Resources, Science, and Industry Division.

efficiency of disposal to concern with the reclamation of energy and materials from solid waste. It authorized grants for demonstrating new resource recovery technology, and required annual reports from EPA on means of promoting recycling and reducing the generation of waste.

The federal government embarked on a more active, regulatory role, embodied in the Resource Conservation and Recovery Act of 1976. RCRA instituted the first federal permit program for hazardous waste management programs and prohibited open dumps. Under the Hazardous and Solid Waste Amendments of 1984 (HSWA), the federal government attempted to prevent *future* cleanup problems by prohibiting land disposal of untreated hazardous wastes; setting liner and leachate collection requirements for land disposal facilities; setting deadlines for closure of facilities not meeting standards; and establishing a corrective action program to investigate and clean up releases of hazardous wastes.

Waste Management Requirements

How a waste must be managed depends on whether it is a "solid waste" or a "hazardous waste." Hazardous wastes are regulated in accordance with federal standards. The management of non-hazardous solid waste is left primarily to individual states. RCRA defines solid waste broadly as

> …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, but does not include solid or dissolved material in domestic sewage, or solid or dissolved materials in irrigation return flows or industrial discharges which are point sources [regulated under the Clean Water Act]…or special nuclear, or byproduct material as defined by the Atomic Energy Act.[20]

As ultimately determined by EPA, a *solid waste* becomes a *hazardous waste*[21] in one of two ways—it may be deemed hazardous because it exhibits certain hazardous characteristics (ignitability, corrosivity, reactivity, or toxicity), or it may be deemed hazardous if EPA specifically lists the waste as such.[22] Hence, hazardous wastes are referred to as "characteristic" or "listed" wastes.[23]

Hazardous Waste Management Requirements

If a waste is ultimately determined to be hazardous, then it may be subject to the requirements of RCRA Subtitle C and the implementing regulations.[24] Under Subtitle C, EPA has broad authority to regulate hazardous waste from its generation to its ultimate disposal (and beyond, if disposal leads to contamination of air, soil, or water). The rules governing every phase of the waste's

[20] See 42 U.S.C. §6903(27).

[21] Hazardous waste is a subset of solid waste. A waste must first be determined to be a solid waste before it can meet the definition of hazardous waste. Solid waste is further defined in the RCRA regulations at 40 C.F.R. Part 261.2. Hazardous waste is defined at 40 C.F.R. Part 261.3.

[22] See 42 U.S.C. 6921(a), and implementing regulations at 40 C.F.R Part 261, "Subpart B—Criteria for Identifying the Characteristics of Hazardous Waste and for Listing Hazardous Waste."

[23] Criteria for listing hazardous waste are found at 40 C.F.R. Part 261.11; those identified waste are listed under 40 C.F.R. Part 261.31-261.33.

[24] 40 CFR Parts 260 through 268, Parts 270 to 279, and Part 124.

management is often referred to as "cradle to grave." Under Subtitle C's requirements, EPA was directed to

- establish standards applicable to hazardous waste generators and transporters;
- establish minimum national standards applicable to owners and operators of hazardous waste treatment, storage, and disposal facilities (TSDFs);
- establish a permit program applicable to TSDFs; and
- establish criteria for states to administer and enforce their own hazardous waste program.

With regard to hazardous waste generators, EPA established standards that include regulations concerning record keeping and reporting, waste accumulation time limits, and storage requirements, among other requirements.[25] With regard to hazardous waste transporters, EPA established standards that were coordinated by EPA with existing regulations of the Department of Transportation.[26]

EPA was directed to establish design and operating standards for hazardous waste treatment, storage, and disposal facilities (TSDFs), including standards for waste piles, landfills, and surface impoundments.[27] Under Subtitle C, land disposal of hazardous waste is prohibited unless the waste is first treated to meet certain treatment standards or unless the waste is disposed in a unit from which there will be no migration of hazardous constituents for as long as the waste remains hazardous. Further, TSDFs regulated under Subtitle C are required to clean up any releases of hazardous waste or constituents from solid waste management units at the facility, as well as beyond the facility boundary, as necessary to protect human health and the environment. RCRA Subtitle C also requires TSDFs to demonstrate that they have adequate financial resources (i.e., financial assurance) for obligations, such as closure, post-closure care, necessary cleanup, and any liability from facility operations. TSDFs are required to operate in accordance with a permit that incorporates all of the design and operating standards established by EPA rules.

EPA has primary responsibility for implementing the hazardous waste program. However, states may seek to implement their own hazardous waste management programs (including the TSDF permitting program).[28] EPA will authorize states to implement a hazardous waste management program that is at least *as stringent* as the federal program. Currently, EPA implements the hazardous waste management program in Iowa, Alaska, Indian Country, and the territories, except Guam. All other states implement their own programs, while EPA maintains oversight of them.

As EPA develops new regulations, a state-implemented program must be reviewed to determine whether the state has authority to enforce comparable requirements.[29] As a result, many states are also authorized to implement individual RCRA program elements that EPA promulgated after

[25] Regulations applicable to hazardous waste generators are listed under 40 C.F.R. Part 262. For more information, see EPA's "Hazardous Waste Generators" webpage at Http://www.epa.gov/epawaste/hazard/generation/index.htm.

[26] Regulations applicable to hazardous waste generators are listed under 40 C.F.R. Part 263.

[27] 42 U.S.C. §§6924-6925; the regulations implementing RCRA's requirement to develop a hazardous waste permit program and standards for owners and operators of hazardous waste treatment, storage, and disposal facilities are found under 40 C.F.R. Parts 264 and 265.

[28] 42 U.S.C. §6926.

[29] If the new EPA standard is *less* stringent than a state's existing standard, the state may choose not to adopt it.

1984 (e.g., Corrective Action, Landfill Disposal Restrictions, and Recycled Used Oil Management Standards).[30]

Criminal violations of Subtitle C requirements are punishable by fines of as much as $50,000 for each day of violation and/or imprisonment for as long as five years; knowingly endangering human life brings fines of as much as $250,000 ($1 million for a company or organization) and as long as 15 years imprisonment.

In cases not involving criminal conduct, the act authorizes civil and administrative penalties of as much as $25,000 per day of violation. EPA is authorized both to issue administrative compliance orders and to seek injunctive relief through the courts. Similar civil and administrative penalties (but not criminal penalties) apply to violations of the underground storage tank requirements in Subtitle I (discussed below).

As discussed above, RCRA in practice is largely enforced by state agencies exercising state authority equivalent to the federal. EPA retains the power to undertake enforcement in such authorized states, however: the act requires only that the Administrator give notice to the state in which a violation has occurred prior to issuing an order or commencing a civil action.

RCRA also provides for citizen suits (discussed below, under "Solid Waste Management Requirements") both against persons and entities alleged to have violated standards or permit requirements and against EPA in cases where the Administrator has failed to perform an action that is nondiscretionary under the act.

Solid Waste Management Requirements

Solid wastes that are neither a listed nor a characteristic hazardous waste, or wastes that are not specifically exempted from regulation as a hazardous waste, are regulated under Subtitle D of RCRA. In contrast to its authority under Subtitle C, EPA's authority to regulate solid waste disposal under Subtitle D is limited. Instead, Subtitle D establishes state and local governments as the primary planning, regulating, and implementing entities for the management of non-hazardous solid waste, such as household garbage and non-hazardous industrial solid waste.[31]

Under the authority of Sections 1008(a)(3) and 4004 of RCRA, EPA first promulgated "Criteria for Classification of Solid Waste Disposal Facilities and Practices" (40 C.F.R. 257).[32] These regulations established minimum national performance standards necessary to ensure that "no reasonable probability of adverse effects on health or the environment" will result from solid waste disposal facilities or practices. Practices not complying with regulations specified under 40 C.F.R. 257 constitute "open dumping" and are prohibited under RCRA. EPA does not have the authority to enforce that prohibition directly. Instead, states and citizens may enforce the prohibition on open dumping using the citizen suit authority under RCRA (discussed below under "Citizen Suits and Imminent Hazard Provisions"). EPA also may intervene if it is determined that waste disposal practices pose an imminent endangerment to human health or the environment (also discussed below).

[30]For information on the status of individual state programs and authorities, see EPA's "RCRA State Authorization" page, available online at http://www.epa.gov/epawaste/laws-regs/state/index.htm.

[31]See EPA's "Hazardous Waste: RCRA Subtitle D" website at http://www.epa.gov/region02/waste/dsummary.htm.

[32] 44 *Federal Register* 53438, September 13, 1979.

Under HSWA, EPA was required to revise its existing criteria for evaluating whether solid waste management practices and facilities were conducting open dumping.[33] Under HSWA, EPA was directed to establish criteria applicable to solid waste management facilities that may receive hazardous household waste and hazardous wastes from small quantity generators.[34] Subsequently, EPA promulgated "Criteria for Municipal Solid Waste Landfills" (at 40 C.F.R. 258). Those regulations apply to landfills that receives household waste, that are not a "land application unit, surface impoundment, injection well, or waste pile."[35] The requirements include location restrictions, operation and design criteria (e.g., liner, leachate collection, run-off controls), groundwater monitoring and corrective action requirements, closure and post-closure care, and financial assurance criteria. EPA's standards applicable to landfill operations (i.e., dry disposal systems) specifically exclude requirements applicable to surface impoundments (i.e., liquid waste ponds).

Also required under HSWA, states were directed to implement a permit program to assure that solid waste management facilities that may receive municipal solid waste (MSW)[36] complied with the revised landfill criteria. EPA was authorized to determine the adequacy of the state permit programs. Further, for states it determined did not have an adequate permit program, EPA was provided with inspection and enforcement authority under of Subtitle C to enforce the prohibition on open dumping.[37]

Requirements applicable to MSW landfills do not apply to non-hazardous commercial or industrial waste landfills or construction and demolition waste landfills. Those disposal units are subject to requirements applicable to open dumping that are regulated at the state level.

Under Subtitle D, solid waste provisions authorized under RCRA include financial and technical assistance for states and local governments. However, most such assistance ended in FY1981 due to overall budget cutbacks.

Citizen Suits and Imminent Hazard Provisions

As mentioned above, open dumping prohibitions, specified under the sanitary landfill regulations (40 C.F.R. 257), are enforced by states or through citizen suits. Citizen suit provisions specified under Section 7002 of RCRA allow for civil action against any entity that is alleged to be in violation of any "permit, standard, regulation, condition, requirement, prohibition, or order."[38] Further, citizen suits are allowed where the disposal of any *solid* or *hazardous* waste may present "an imminent and substantial endangerment to health or the environment."[39]

[33] Previously established under Sections 1008 and 4004 of RCRA.

[34] "Small quantity generators" (SQGs) are a category of hazardous waste generators. As specified under Section 3001(d) of RCRA Subtitle C, SQGs are those that generate between 100 and 1,000 kilograms of hazardous waste during a calendar month.

[35] 40 C.F.R. Part 258.2.

[36] The term "municipal solid waste" is referred to in the regulations, but not RCRA itself. In the law, it is referred to as "solid waste management facilities that may receive hazardous household waste or hazardous waste due to the provision of section 3001(d) for small quantity generators."

[37] 4542 U.S.C. §6972(c)(2).

[38] 42 U.S.C. §6972.

[39] 42 U.S.C. §6972(a)(1)(B).

In addition to citizen suit provisions, EPA is authorized to take action if past or present handling, storage, treatment transportation, or disposal of any solid or hazardous wastes may present an imminent and substantial endangerment to health or the environment.[40] Under Section 7003 of RCRA, EPA can initiate judicial action or issue an administrative order to any past or present waste generator or owner of a disposal facility who has contributed or is contributing to the disposal. Section 7003 is available for use in several situations where other enforcement tools may not be available. For example, it can be used at sites and facilities that are not subject to Subtitle C of RCRA or any other environmental regulation. Specifically, action may be initiated if *each* of the following conditions is met:

- Conditions may present an imminent and substantial endangerment to health or the environment—such conditions generally require careful documentation and scientific evidence. However, the endangerment standard under RCRA has generally been broadly interpreted.
- The potential endangerment stems from the past or present handling, storage, treatment, transportation, or disposal of any solid or hazardous waste.
- The person has contributed or is contributing to such handling, storage, treatment, transportation, or disposal.[41]

Under Section 7003, EPA may take action as deemed necessary, determined on a case-by-case basis. Further, it gives EPA authority to obtain relevant information regarding potential endangerments.

Underground Storage Tanks

To address a nationwide problem of leaking underground storage tanks (USTs), Congress established a leak prevention, detection, and cleanup program through the 1984 RCRA amendments and the 1986 Superfund Amendments and Reauthorization Act (SARA).

The 1984 RCRA amendments created a federal program to regulate USTs containing petroleum and hazardous chemicals to limit corrosion and structural defects, and thus minimize future tank leaks. The law directed EPA to set operating requirements and technical standards for tank design and installation, leak detection, spill and overfill control, corrective action, and tank closure. The UST program (RCRA Subtitle I) is administered primarily by states. It requires registration of most underground tanks, bans the installation of unprotected tanks, sets federal technical standards for all tanks, coordinates federal and state regulatory efforts, and provides for federal inspection and enforcement.

In 1986, Congress created a petroleum UST response program by amending Subtitle I of RCRA through SARA (P.L. 99-499). Prior to SARA, EPA lacked explicit authority to clean up contamination from leaking underground petroleum tanks as Congress had specifically excluded petroleum products (although not petrochemicals) from the Superfund law. The 1986 provisions authorized the federal government to respond to petroleum spills and leaks, and created a Leaking

[40] 42 U.S.C. §6973.

[41] For details on EPA's Office of Enforcement and Compliance Assurance, see "Guidance on the Use of Section 7003 of RCRA," October 1997, available at http://www.p2pays.org/ref/03/02645.pdf. For information on legal requirements for initiating action under Section 7003, in particular, see pp. 9-19.

Underground Storage Tank (LUST) Trust Fund to fund cleanup of leaks from petroleum USTs in cases where the UST owner or operator does not clean up a site. The LUST Trust Fund provides money for EPA to administer the program and for states to oversee cleanups, take enforcement actions, and undertake cleanups themselves when necessary. The money in the fund is derived primarily from a 0.1 cent-per-gallon federal tax on motor fuels and several other petroleum products.

The 1986 amendments also directed EPA to establish financial responsibility requirements for UST owners and operators to cover costs of taking corrective action and to compensate third parties for injury and property damage caused by leaking tanks. The law required EPA to issue regulations requiring tank owners and operators selling petroleum products to demonstrate minimum financial responsibility. The regulations require insurance coverage of $1 million, or alternatively, owners and operators may rely on state assurance funds to demonstrate financial responsibility.

The Energy Policy Act of 2005 (P.L. 109-58) included in Title XV, Subtitle B, The Underground Storage Tank Compliance Act (USTCA). This act amended Subtitle I of the Solid Waste Disposal Act to add new leak prevention and enforcement provisions to the UST regulatory program and impose new requirements on states, EPA, and tank owners. The USTCA requires EPA, and states that receive funding under Subtitle I, to conduct compliance inspections of all USTs at least once every three years. It also requires states to comply with EPA guidance prohibiting fuel delivery to ineligible tanks; develop training requirements for UST operators and individuals responsible for tank maintenance and spill response; prepare compliance reports on government-owned tanks in the state; and implement groundwater protection measures for UST manufacturers and installers. The act also directed EPA to develop and implement a strategy to address UST releases on tribal lands.

The USTCA authorized the appropriation of $155 million annually for FY2006 through FY2011 from the LUST Trust Fund for states to use to implement the new UST leak prevention requirements and to administer state programs. Congress also authorized trust fund appropriations of $200 million annually for FY2006 through FY2011, for EPA and states to administer the LUST corrective action program, and another $200 million annually for FY2006 through FY2011, specifically for addressing releases involving methyl tertiary butyl ether (MTBE) and other oxygenated fuels (e.g., ethanol).

Promoting Recycling

Considering the prominence of the terms “Resource Conservation” and “Recovery” in the title of the law itself, it would appear that requirements regarding waste recycling or reuse would be significant elements of RCRA. In fact, requirements to recycle are largely absent from the law. As a component in non-hazardous solid waste, decisions regarding recycling are left to states and local governments.

The role RCRA has played in promoting recycling has been through funding research, development, and demonstration projects associated with solid waste management.[42] However, authority for most research projects fell victim to budget cutbacks. Currently, a limited number of

[42] Under RCRA Subtitle H—Research, Development, and Demonstration Information.

solid waste grants are available for development or pilot projects that promote waste reduction, recycled-content products, markets for recycled materials, or assist in the development of solid waste management plans.

RCRA also promotes "closing the loop" on recycling by establishing a federal procurement program.[43] The goal of the program is to stimulate markets for recycled products by requiring federal departments and agencies to "buy recycled." EPA is required to designate products that are or can be made with recovered materials, and to recommend practices for buying these products. Once a product is designated, procuring agencies are required to purchase it with the highest recovered material content level practicable. EPA subsequently published "Comprehensive Procurement Guidelines" to assist federal agencies in meeting their procurement requirements.[44]

Amendments to RCRA

RCRA has been amended several times. Some of those amendments were noncontroversial additions clarifying portions of the law, correcting clerical errors in the text, or encouraging the recycling of certain solid wastes. The most significant sets of amendments occurred in 1980, 1984, and 1992.

Solid Waste Disposal Act Amendments of 1980

The Solid Waste Disposal Act Amendments of 1980 amended RCRA in several ways. It was intended, in part, to provide EPA with stronger enforcement authority to address illegal dumping of hazardous waste. It also authorized funds to conduct an inventory of hazardous waste sites and extended RCRA authorizations for appropriations through FY1982. Amending language contained in Superfund, P.L. 96-510, established an Assistant Administrator for Solid Waste and Emergency Response at EPA.

The 1980 amendments also included provisions that excluded the following large-volume astes from the definition of hazardous waste under Subtitle C of RCRA:

- waste generated primarily from the combustion of coal or other fossil fuels;
- solid waste from the extraction, beneficiation, and processing of ores and minerals, including phosphate rock and overburden from the mining of uranium ore;
- cement kiln dust; and
- wastes generated during the exploration, development, and production of crude oil, natural gas, and geothermal energy.

At the time of the exclusion, these "special wastes" (as they were referred to by EPA) were believed to pose less risk to human health and the environment than the wastes being identified for regulation as hazardous waste. The amendments specified that the hazardous waste exclusion

[43] 42 U.S.C. §6962.

[44] For more information, see EPA's Comprehensive Procurement Guidelines web page at http://www.epa.gov/epawaste/conserve/tools/cpg/index.htm.

would be held pending completion of a study and report to Congress by EPA for each waste category. The subsequent regulatory timeline and the determination of the appropriate waste management method for each category of special waste has been a complex and varied process.[45] To date, special wastes largely have been regulated at the state level. However, a large spill of coal combustion waste in December 2008 from a Tennessee Valley Authority facility in Kingston, TN, heightened interest in the extent to this waste should be regulated under RCRA.[46]

To establish national standards intended to address risks associated with potential coal combustion waste (CCW) mismanagement, on June 21, 2010, EPA proposed two regulatory options to manage the waste. The first would draw on EPA's existing authority to identify a waste as hazardous and regulate it under the waste management standards established under Subtitle C of the RCRA. The second option would establish regulations applicable to CCW disposal units under RCRA's Subtitle D solid waste management requirements. Under Subtitle D, EPA does not have the authority to implement or enforce its proposed requirements. Instead, EPA would rely on states or citizen suits to enforce the new standards.[47] The public comment period on this regulatory proposal closed on November 19, 2010. It received over 11,000 comments. EPA has not indicated when a final rule may be issued.

The Used Oil Recycling Act of 1989

In an effort to encourage used oil recycling, and in recognition of its potential threat to public health and the environment when reused or disposed of improperly, Congress enacted the Used Oil Recycling Act in 1980 (P.L. 96-463). The act amended RCRA by requiring EPA to study the hazards posed by used oil and to develop used oil management standards to protect human health and the environment. Subsequently, EPA established recycling regulations for used oil that are completely separate from the hazardous waste recycling standards (provisions under which used oil may otherwise be regulated).

Since EPA's used oil program is designed to encourage used oil recycling, the regulations include a "recycling presumption."[48] This is an assumption that all used oil that is generated will be recycled. The recycling presumption simplifies the used oil management system by enabling handlers to only comply with the used oil regulations, instead of the hazardous waste regulations. Only when the used oil is actually disposed of or sent for disposal must handlers determine whether or not the used oil exhibits a characteristic of hazardous waste and manage it in accordance with hazardous waste regulations.

Hazardous and Solid Waste Amendments of 1984

The most significant set of amendments to RCRA was the Hazardous and Solid Waste Amendments of 1984 (HSWA), a complex law with many detailed technical requirements. In addition to restrictions on land disposal, and the inclusion of small quantity generators (SQGs) in

[45] For information on the regulatory status of each category of waste, see EPA's Special Wastes website at http://www.epa.gov/osw/nonhaz/industrial/special/index.htm.

[46] For information on the status of regulatory proposals and related developments, see EPA's Coal Combustion Residuals website at http://www.epa.gov/osw/nonhaz/industrial/special/fossil/ccr-rule/index.htm

[47] For a discussion of these and other related issues, see CRS Report R41341, *EPA's Proposal to Regulate Coal Combustion Waste Disposal: Issues for Congress*, by Linda Luther

[48] Regulations that specify used oil management standards are found at 40 C.F.R. Part 279.

the hazardous waste regulatory scheme that was summarized above, HSWA created the new regulatory program for underground storage tanks (see the above "Underground Storage Tanks" section of this report.) The amendments directed EPA to issue regulations governing those who produce, distribute, and use fuels produced from hazardous waste, including used oil. Under HSWA, hazardous waste facilities owned or operated by federal, state, or local government agencies must be inspected annually, and privately owned facilities must be inspected at least every two years. Each federal agency was required to submit to EPA an inventory of hazardous waste facilities it ever owned.

The 1984 law also imposed on EPA a timetable for issuing or denying permits for TSDFs; required permits to be for fixed terms not exceeding 10 years; terminated in 1985 the "interim status" of land disposal facilities that existed prior to RCRA's enactment, unless they met certain requirements; required permit applications to be accompanied by information regarding the potential for public exposure to hazardous substances in connection with the facility; and authorized EPA to issue experimental permits for facilities demonstrating new technologies. EPA's enforcement powers were increased, the list of prohibited actions constituting crimes was expanded, penalties were increased, and the citizen suit provisions were expanded. Other provisions prohibited the export of hazardous waste unless the government of the receiving country formally consented to accept it; created an ombudsman's office in EPA to deal with RCRA-associated complaints, grievances, and requests for information; and reauthorized RCRA through FY1988 at a level of about $250 million per year.

HSWA also specified that owners or operators of TSDFs are responsible for investigating and, as necessary, cleaning up releases at or from their facilities, regardless of when the releases occurred. EPA refers to this cleanup of TSDFs under these statutory authorities as RCRA Corrective Action.

Finally, HSWA called for a National Ground Water Commission to assess and report to Congress in two years on groundwater issues and contamination from hazardous wastes. The commission was never funded and never established, however.

Federal Facility Compliance Act

The third major set of amendments was the Federal Facility Compliance Act of 1992. This act specified in greater detail the extent to which federal facilities are subject to enforcement actions under RCRA, and waived the federal government's sovereign immunity from prosecution under the statute. As a result, federal departments and agencies can be subject to enforcement through injunctions, administrative orders, and/or penalties for noncompliance. However, the limited ability of one federal agency to sue another can, in practice, affect the extent to which EPA itself may enforce the requirements of the statute against another federal agency. Furthermore, federal employees may be subject to criminal sanctions, including both fines and imprisonment under any federal or state solid or hazardous waste law. The act also contains special provisions applicable to mixtures of radioactive and hazardous waste at Department of Energy facilities and to munitions, military ships, and military sewage treatment facilities handling hazardous wastes.

1996 Amendments

The 104th Congress passed an additional set of amendments to RCRA, the Land Disposal Program Flexibility Act (P.L. 104-119). This act exempts hazardous waste from RCRA regulation

if it is treated to a point where it no longer exhibits the characteristic that made it hazardous, and is subsequently disposed in a facility regulated under the Clean Water Act or in a Class I deep injection well regulated under the Safe Drinking Water Act. A second provision of the bill exempted small landfills located in arid or remote areas from groundwater monitoring requirements, provided there is no evidence of groundwater contamination.

Additional Selected Laws Affecting Solid Waste Management

Although not technically amending RCRA, Congress has enacted various solid/hazardous waste-related measures, which are briefly summarized below.

Sanitary Food Transportation Act

The Sanitary Food Transportation Act of 1990 (P.L. 101-500) required the regulation of trucks and rail cars that haul both food and solid waste (a problem commonly referred to as "backhauling of garbage"). The act directed the Departments of Agriculture, Health and Human Services, and Transportation to promulgate regulations specifying (1) record keeping and identification requirements; (2) decontamination procedures for refrigerated trucks and rail cars; and (3) materials for construction of tank trucks, cargo tanks, and ancillary equipment.

Clean Air Act

The Clean Air Act Amendments of 1990 (P.L. 101-549) contained a provision mandating stronger federal standards for solid waste incinerators. The law requires EPA to issue new source performance standards to control air emissions from municipal, hospital, and other commercial and industrial incinerators. New facilities must comply with the EPA rules within six months of the time they are issued, and existing units must comply within five years of issuance.

Pollution Prevention Act

The Pollution Prevention Act of 1990 (Sections 6601-6610 of P.L. 101-508) was passed as part of the Omnibus Budget Reconciliation Act of 1990. The measure declared pollution prevention to be the national policy, and directed EPA to undertake a series of activities aimed at preventing the generation of pollutants, rather than controlling pollutants after they are created. Matching grants were authorized for states to establish technical assistance programs for businesses, and EPA was directed to establish a Source Reduction Clearinghouse to disseminate information. The act also imposed new reporting requirements on industry. Firms that were required to file an annual toxic chemical release form under the Emergency Planning and Community Right-to-Know Act of 1986 must also file a report detailing their source reduction and recycling efforts over the previous year. A more complete description of the act, which addresses air and water pollution as well as waste, is provided in the first section of this report.

Indian Lands Open Dump Cleanup Act

The Indian Lands Open Dump Cleanup Act of 1994 (P.L. 103-399) required the Indian Health Service (IHS) to provide technical and financial support to inventory and close open dumps on Indian lands, and to maintain the sites after closure. According to IHS, only two of more than 600 waste dumps on Indian lands met current EPA regulations prior to the law's enactment.

Mercury-Containing and Rechargeable Battery Management Act

The 104th Congress passed legislation (P.L. 104-142) exempting battery collection and recycling programs from certain hazardous waste management requirements, prohibiting the use of mercury in batteries, and requiring labels on batteries to encourage proper disposal and recycling. By exempting battery collection and management programs from some parts of RCRA, the law was expected to stimulate new recycling programs.

Table 11. Major U.S. Code Sections of the Solid Waste Disposal Act/ Resource Conservation and Recovery Act (RCRA)

(codified generally at 42 U.S.C. 6901-6992k)

42 U.S.C.	Section Title	Solid Waste Disposal Act/RCRA, as Amended
Chapter 82—Solid Waste Disposal		
Subchapter I—General Provisions		
6901	Congressional findings	Sec. 1002
6902	Objectives and national policy	Sec. 1003
6903	Definitions	Sec. 1004
6904	Governmental cooperation	Sec. 1005
6905	Application of chapter and integration with other Acts	Sec. 1006
6906	Financial disclosure	Sec. 1007
6907	Solid waste management information and guidelines	Sec. 1008
Subchapter II—Office of Solid Waste; Authorities of the Administrator		
6911	Office of Solid Waste and Interagency Coordinating Committee	Sec. 2001
6912	Authorities of Administrator	Sec. 2002
6913	Resource Recovery and Conservation Panels	Sec. 2003
6914	Grants for discarded tire disposal	Sec. 2004
6914a	Labeling of lubricating oil	Sec. 2005
6915	Annual report	Sec. 2006
6916	General authorization	Sec. 2007
6917	Office of Ombudsman	Sec. 2008
Subchapter III—Hazardous Waste Management		
6921	Identification and listing of hazardous waste	Sec. 3001
6922	Standards applicable to generators of hazardous waste	Sec. 3002
6923	Standards applicable to transporters of hazardous waste	Sec. 3003
6924	Standards applicable to owners and operators of hazardous waste treatment, storage, and disposal facilities	Sec. 3004
6925	Permits for treatment, storage, or disposal of hazardous waste	Sec. 3005
6926	Authorized State hazardous waste programs	Sec. 3006
6927	Inspections	Sec. 3007
6928	Federal enforcement	Sec. 3008

42 U.S.C.	Section Title	Solid Waste Disposal Act/RCRA, as Amended
6929	Retention of State authority	Sec. 3009
6930	Effective date	Sec. 3010
6931	Authorization of assistance to States	Sec. 3011
6932	Transferred to §6935	
6933	Hazardous waste site inventory	Sec. 3012
6934	Monitoring, analysis, and testing	Sec. 3013
6935	Restrictions on recycled oil	Sec. 3014
6936	Expansion during interim status	Sec. 3015
6937	Inventory of Federal agency hazardous waste facilities	Sec. 3016
6938	Export of hazardous wastes	Sec. 3017
6939	Domestic sewage	Sec. 3018
6939a	Exposure information and health assessments	Sec. 3019
6939b	Interim control of hazardous waste injection	Sec. 3020
6939c	Mixed waste inventory reports and plan	Sec. 3021
6939d	Public vessels	Sec. 3022
6939e	Federally owned treatment works	Sec. 3023
Subchapter IV—State or Regional Solid Waste Plans		
6941	Objectives of subchapter	Sec. 4001
6942	Federal guidelines for plans	Sec. 4002
6943	Requirements for approval of plans	Sec. 4003
6944	Criteria for sanitary landfills	Sec. 4004
6945	Upgrading of open dumps	Sec. 4005
6946	Procedure for development and implementation of State plan	Sec. 4006
6947	Approval of State plan; Federal assistance	Sec. 4007
6948	Federal assistance	Sec. 4008
6949	Rural communities assistance	Sec. 4009
6949a	Adequacy of certain guidelines and criteria	Sec. 4010
Subchapter V—Duties of Secretary of Commerce in Resource and Recovery		
6951	Functions	Sec. 5001
6952	Development of specifications for secondary materials	Sec. 5002
6953	Development of markets for recovered materials	Sec. 5003
6954	Technology promotion	Sec. 5004
6955	Marketing policies, establishment; nondiscrimination requirement	Sec. 5005
6956	Authorization of appropriations	Sec. 5006
Subchapter VI—Federal Responsibilities		
6961	Application of federal, state, and local law to federal facilities	Sec. 6001

42 U.S.C.	Section Title	Solid Waste Disposal Act/RCRA, as Amended
6962	Federal procurement	Sec. 6002
6963	Cooperation with Environmental Protection Agency	Sec. 6003
6964	Applicability of solid waste disposal guidelines to Executive agencies	Sec. 6004
6966	Increased use of recovered mineral component in federally funded projects involving procurement of cement or concrete	Sec. 6005
6966a		
6966b	Use of granular mine tailings	Sec. 6006
Subchapter VII—Miscellaneous Provisions		
6971	Employee protection	Sec. 7001
6972	Citizen suits	Sec. 7002
6973	Imminent hazard	Sec. 7003
6974	Petition for regulations; public participation	Sec. 7004
6975	Separability	Sec. 7005
6976	Judicial review	Sec. 7006
6977	Grants or contracts for training projects	Sec. 7007
6978	Payments	Sec. 7008
6979	Labor standards	Sec. 7009
6979a	Transferred to §6939b	
6979b	Law enforcement authority	Sec. 7010
Subchapter VIII—Research, Development, Demonstration, and Information		
6981	Research, demonstration, training, and other activities	Sec. 8001
6982	Special studies; plans for research, development, and demonstrations	Sec. 8002
6983	Coordination, collection, and dissemination of information	Sec. 8003
6984	Full-scale demonstration facilities	Sec. 8004
6985	Special study and demonstration projects on recovery of useful energy and materials	Sec. 8005
6986	Grants for resource recovery systems and improved solid waste disposal facilities	Sec. 8006
6987	Authorization of appropriations	Sec. 8007
Subchapter IX—Regulation of Underground Storage Tanks		
6991	Definitions and exemptions	Sec. 9001
6991a	Notification	Sec. 9002
6991b	Release detection, prevention, and correction regulations	Sec. 9003
6991c	Approval of state programs	Sec. 9004
6991d	Inspections, monitoring, testing, and corrective action	Sec. 9005
6991e	Federal enforcement	Sec. 9006
6991f	Federal facilities	Sec. 9007
6991g	State authority	Sec. 9008

42 U.S.C.	Section Title	Solid Waste Disposal Act/RCRA, as Amended
6991h	Study of underground storage tanks	Sec. 9009
6991i	Operator training	Sec. 9010
6991j	Use of funds for release prevention and compliance	Sec. 9011
6991k	Delivery prohibition	Sec. 9012
6991l	Tanks on tribal lands	Sec. 9013
6991m	Authorization of appropriations	Sec. 9014
Subchapter X—Demonstration Medical Waste Tracking Program		
6992	Scope of demonstration program for medical waste	Sec. 11001
6992a	Listing of medical wastes	Sec. 11002
6992b	Tracking of medical waste	Sec. 11003
6992c	Inspections	Sec. 11004
6992d	Enforcement	Sec. 11005
6992e	Federal facilities	Sec. 11006
6992f	Relationship to state law	Sec. 11007
6992g	Repealed (Report to Congress)	Sec. 11008
6992h	Health impacts report	Sec. 11009
6992i	General provisions	Sec. 11010
6992j	Effective date	Sec. 11011
6992k	Authorization of appropriations	Sec. 11012

Note: This table shows only the major code sections. For more detail and to determine when a section was added, consult the official version of the U.S. Code.

Comprehensive Environmental Response, Compensation, and Liability Act[49]

By the end of the 1970s, Congress had enacted several environmental laws to regulate sources of pollution in the United States, but had not yet addressed responsibility for contamination resulting from releases of pollutants into the environment. In the late 1970s, the discovery of severely contaminated sites, such as "Love Canal" in New York and Times Beach in Missouri, raised questions as to whether there should be a federal role in cleaning up environmental contamination to protect the public from potential harm. Congress enacted the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA, P.L. 96-510) to authorize the federal government to clean up contaminated sites in the United States and to make the "potentially responsible parties" connected to those sites financially liable for the cleanup costs. CERCLA created the Superfund program to carry out these authorities. The Environmental Protection Agency (EPA) administers the program. Subsequent amendments to CERCLA also authorized EPA to administer a separate grant program to support the cleanup of abandoned or idled "brownfields" properties to encourage their redevelopment.

CERCLA established a broad liability scheme that holds both past and current owners and operators of contaminated facilities financially responsible for the costs of cleanup. At waste disposal sites, generators of the waste sent to the site for disposal, and transporters of the waste who selected the site for disposal, also are responsible for the cleanup costs. If these potentially responsible parties cannot be found or cannot pay for the cleanup, CERCLA authorizes the federal government to finance the cleanup to ensure the protection of human health and the environment. These costs borne by the federal government are referred to as "orphan shares." The broad liability scheme of CERCLA is intended to capture all parties that may have had some involvement in the actions that resulted in contamination of the environment, in order to minimize the burden of the costs of cleanup on the general taxpayer who had no involvement. This approach to liability is based on the principle that polluters should be required to pay for the environmental damage that they cause, often referred to as the "polluter pays principle."

CERCLA established the Hazardous Substance Superfund Trust Fund to finance cleanup actions taken by the federal government at contaminated sites where the potentially responsible parties cannot pay or cannot be found. A combination of special taxes on industry and revenues from the General Fund of the U.S. Treasury initially financed the Superfund Trust Fund, but the authority to collect the industry taxes expired at the end of 1995. As the remaining revenues were expended over time, Congress increased the contribution of general Treasury revenues in an effort to make up for the shortfall from the expired industry taxes. The availability of Superfund Trust Fund monies to finance the cleanup of contaminated sites is subject to appropriations by Congress.

Considering the liability of the federal government as a potentially responsible party at its own facilities, the cleanup of federal facilities is not funded with Superfund Trust Fund monies under the Superfund program, but with other federal monies appropriated for other programs administered by the agencies responsible for these facilities. The Department of Defense (DOD)

[49] Prepared by David M. Bearden, Specialist in Environmental Policy, Environmental Policy Section, Resources, Science, and Industry Division.

and the Department of Energy (DOE) administer the cleanup of most contaminated federal facilities. EPA and the states are responsible for overseeing and enforcing the implementation of CERCLA at federal facilities to ensure that applicable requirements are met.

To prioritize cleanup actions, CERCLA directed EPA to establish and maintain a National Priorities List (NPL) of the most contaminated sites in the United States which present the greatest risks to human health and the environment. The NPL includes both non-federal sites and federal facilities that are deemed to present a sufficient level of risk to warrant listing. EPA may require the potentially responsible parties to directly perform or pay for cleanup actions themselves. Alternatively, EPA may clean up a contaminated site up-front with appropriated Superfund monies and later recover those funds from the potentially responsible parties (with the exception of the cleanup of federal facilities which must be funded up-front by the administering agencies). In the event that the potentially responsible parties cannot pay or cannot be found, appropriated Superfund monies may be used to pay the orphan shares of cleanup costs at a site, under a cost-sharing agreement with the state in which the site is located.

The following sections summarize the major cleanup authorities of CERCLA and other relevant provisions of the act. The topics discussed herein include the overall scope and reach of cleanup actions authorized under the statute, the process under which cleanup actions are selected and carried out at individual sites, the financial liability of potentially responsible parties for the costs of cleanup actions, the Superfund Trust Fund that may pay for cleanup actions when the potentially responsible parties cannot pay or cannot be found, enforcement of cleanup liability against the potentially responsible parties to minimize the need for federal tax revenues to finance the cleanup of contaminated sites, the applicability of CERCLA to federal facilities, and federal assistance for the cleanup of brownfields properties. A more in-depth examination of these statutory authorities is presented in CRS Report R41039, *Comprehensive Environmental Response, Compensation, and Liability Act: A Summary of Superfund Cleanup Authorities and Related Provisions of the Act*, by David M. Bearden.

It should be emphasized that how and to what degree a specific contaminant at an individual site must be cleaned up under CERCLA are not specified in the law itself. The specific actions that are required to clean up contaminants at individual sites are determined on a site-by-site basis. Although CERCLA established a general process for making cleanup decisions, more specific direction is provided in EPA regulation and agency guidance. Other federal agencies that administer the cleanup of federal facilities under CERCLA have developed additional guidance documents that apply to their own respective facilities. Although the statutory authorities upon which federal agencies have based their cleanup regulations and guidance are discussed in this report, the content of these regulations and guidance is not examined here.

Major Amendments

Congress has amended CERCLA on numerous occasions to clarify the applicability of the cleanup authorities of the statute, and to provide relief from liability for certain categories of parties who may not have been involved in actions that led to contamination, or who may have contributed only certain quantities or types of waste to a site. Congress also has amended the statute to authorize federal assistance for the cleanup of abandoned or idled "brownfields" properties to encourage their redevelopment. Further, certain amendments have addressed unique cleanup challenges at federal facilities, such as the cleanup of unexploded ordnance on decommissioned military training ranges in the United States, and responsibility for the cleanup of contaminated federal property when it is transferred out of federal ownership.

The Superfund Amendments and Reauthorization Act of 1986 (SARA, P.L. 99-499) clarified that federal facilities are subject to the cleanup requirements of CERCLA to the same extent as non-federal entities, and amended various response, liability, and enforcement provisions of the law. The 1986 amendments also renewed the authorization of appropriations for EPA's Superfund program through FY1991, and established a separate Defense Environmental Restoration Program within DOD to address contamination at active and decommissioned military facilities in the United States. Sections 311 and 312 of the National Defense Authorization Act for FY2002 (P.L. 107-107) expanded the cleanup authorities of this program explicitly to include military munitions and related contamination on decommissioned military training ranges and munitions disposal sites in the United States.

Title VI of the Omnibus Budget Reconciliation Act of 1990 (P.L. 101-508) extended the authorization of appropriations for EPA's Superfund program through FY1994, and Title XI of that statute extended the authority to collect the special Superfund taxes on industry through December 31, 1995. Although reauthorizing legislation has been introduced in various Congresses, the taxing authority for the Superfund Trust Fund has not been renewed to date, nor has the authorization of appropriations for EPA's Superfund program been extended. Instead, Congress has continued to fund the Superfund program primarily with general Treasury revenues through the annual appropriations process. Congress has annually authorized and appropriated funding for the Defense Environmental Restoration Program each year since its establishment. Most of this funding is supported with general Treasury revenues, with the exception of some revenues generated from the sale or lease of closed military bases which help fund their cleanup.

In 1992, the Community Environmental Response Facilitation Act (P.L. 102-426) amended the federal facility provisions of CERCLA to facilitate the transfer of uncontaminated parcels of surplus federal property on which hazardous substances or petroleum products were not released. Section 334 of the National Defense Authorization Act for FY1997 (P.L. 104-201) further amended CERCLA to allow the transfer of contaminated surplus federal property before cleanup is complete, if certain assurances are provided to guarantee that the property will be cleaned up to a level that would be suitable for its intended use after transfer.

Other amendments have attempted to address the fairness of the liability scheme of CERCLA, either by limiting or eliminating the liability of certain categories of parties. In 1996, the Asset Conservation, Lender Liability, and Deposit Insurance Protection Act (Subtitle E, Title II, Division A of P.L. 104-208) amended CERCLA to protect certain fiduciaries and financial lenders from liability. In 1999, the Superfund Recycling Equity Act (Title VI, Appendix I of P.L. 106-113) exempted generators and transporters of recyclable scrap materials from cleanup liability under CERCLA, if the person who received the materials disposed of them instead and the disposal resulted in contamination. There had been some concern that the potential liability of generators and transporters under CERCLA could be a deterrent to recycling.

In 2002, the Small Business Liability Relief and Brownfields Revitalization Act (P.L. 107-118) provided relief from cleanup liability for: (1) persons who contributed very small quantities of waste or only municipal solid (i.e. non-hazardous) waste to a site, (2) owners of property that became contaminated merely as a result of migration from a contiguous property owned by another person, and (3) "bona fide" prospective purchasers who otherwise may be hesitant to acquire a contaminated property because of potential cleanup liability once acquiring ownership. The 2002 act also established more specific criteria for exempting "innocent" owners of contaminated property from cleanup liability, if they purchased the property without knowledge of the existing contamination and they had no involvement in actions that led to contamination.

Persons seeking an exemption from liability as a "bona fide" prospective purchaser, contiguous property owner, or "innocent" landowner must have performed "all appropriate inquiry" into the prior uses of the property *before* acquiring ownership, and must take "reasonable steps" *after* acquiring ownership to prevent potentially harmful exposure to environmental contamination on their properties. Consequently, such persons still may bear some responsibility, even though they may be exempt from the more extensive liability scheme of CERCLA.

In addition to providing relief from liability for certain categories of parties, P.L. 107-118 authorized federal grants to assist in the cleanup of "brownfields" properties. Brownfields properties typically are abandoned, underutilized, or idled sites where the known or suspected presence of contamination, and the potential for cleanup liability, could be viewed as a deterrent to purchase the property for redevelopment. Brownfields properties tend to be less contaminated than sites listed on the NPL, but may need some cleanup to make them suitable for reuse. EPA originally had established a program in 1993 to provide federal assistance for the cleanup of brownfields properties using the general cleanup authorities of CERCLA as the legal basis for this assistance. P.L. 107-118 provided explicit statutory authority for this purpose, and established a separate Brownfields grant program within EPA, apart from the Superfund program.

Table 12 lists CERCLA as enacted in 1980 and the major amendments to the law noted above. After a summary of the cleanup authorities of the statute presented in the following sections of this report, **Table 13** lists each section of CERCLA and other related laws, and the codification of these provisions in the United States Code.

Table 12. Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and Major Amendments

(codified generally at 42 U.S.C. 9601-9675)

Year	Act	Public Law Number
1980	Comprehensive Environmental Response, Compensation, and Liability Act of 1980	P.L. 96-510
1986	Superfund Amendments and Reauthorization Act of 1986	P.L. 99-499
1990	Omnibus Budget Reconciliation Act of 1990	P.L. 101-508, Title VI, §6301, Title XI, Subtitle B, Part IV, §11231
1992	Community Environmental Response Facilitation Act	P.L. 102-426
1996	Asset Conservation, Lender Liability, and Deposit Insurance Protection Act	P.L. 104-208, Division A, Title II, Subtitle E
1996	National Defense Authorization Act for Fiscal Year 1997	P.L. 104-201, §334
1999	Superfund Recycling Equity Act	P.L. 106-113, Appendix I, Title VI
2002	Small Business Liability Relief and Brownfields Revitalization Act	P.L. 107-118

Federal Response Authorities

Section 104(a) of CERCLA specifically authorizes the President to respond to a release (or substantial threat of a release) of a hazardous substance into the environment, or of a pollutant or contaminant which may present an "imminent and substantial danger to the public health or welfare."[50] As authorized by Section 115 of CERCLA,[51] the President delegated the response authorities of CERCLA to EPA and other federal agencies by executive order.[52] EPA may respond to releases within the inland zone, and the U.S. Coast Guard may respond to releases within the coastal zone, which includes inland river ports and harbors, the Great Lakes, and U.S. coastal waters. If a release were to occur at a federal facility, the agency that administers the facility is authorized to take response actions, subject to oversight and enforcement by EPA and the state in which the facility is located. Federal funding to carry out response actions under CERCLA is subject to appropriations by Congress.

Notification of a release of a hazardous substance is the action that may trigger a federal response under CERCLA. Section 103(a) requires the party responsible for a release to notify the National Response Center if the quantity of the release exceeds the regulatory limit established for that particular substance.[53] These limits are referred to as "reportable quantities," which are specified in federal regulation.[54] State or local officials, or members of the public, who observe or suspect a release of a hazardous substance also may report the incident. Once a release is reported, the National Response Center is to notify the appropriate federal agency that would be responsible for carrying out the President's response authorities under Section 104(a), and for taking any federal enforcement actions that may be necessary against the parties responsible for the release.

Response actions taken under CERCLA most often entail cleanup activities involving the containment, removal, or treatment of environmental contamination to prevent potentially harmful exposure, but may include the temporary or permanent relocation of potentially exposed individuals if warranted. Congress has excluded certain types of environmental contamination from the response authorities of CERCLA, which may be addressed under other federal environmental laws. These exclusions are provided within the statutory definitions of key terms upon which the response authorities of CERCLA hinge, including the terms "hazardous substance," "pollutant or contaminant," and "release." In addition to these exclusions, Congress has placed general limitations on the extent to which response actions may be taken under CERCLA to address releases of hazardous substances, pollutants, or contaminants in certain situations. In effect, these exclusions and limitations may restrict the applicability or scope of the response authorities of CERCLA at a particular contaminated site.

[50] 42 U.S.C. §9604(a).

[51] 42 U.S.C. §9615.

[52] Executive Order 12580, Superfund Implementation, January 23, 1987, 52 *Federal Register* 2923. Hereinafter, references to Presidential authorities under CERCLA refer to those that have been delegated to EPA and other federal agencies, unless noted otherwise.

[53] 42 U.S.C. §9603(a).

[54] 40 C.F.R. §302.4.

Petroleum Exclusion and Related Oil Pollution Act Authorities

The response authorities of CERCLA do not extend to releases of petroleum. Section 101(14) of CERCLA generally excludes releases of petroleum, including crude oil and any fraction thereof, from the definition of a "hazardous substance" for the purposes of the statute. Section 101(33) does the same for the definition of "pollutant or contaminant." Petroleum releases are covered instead by other statutes, which in effect serve as a complement or companion to the response authorities of CERCLA. The Oil Pollution Act of 1990 (P.L. 101-380) is the primary federal law that addresses releases of petroleum. The response authorities of the Oil Pollution Act are rooted in Section 311(c) of the Clean Water Act, which authorizes federal actions to respond to releases of petroleum into or on the navigable waters of the United States and adjoining shorelines. Similar to the response authorities of CERCLA, EPA is the delegated lead for the cleanup of oil spills that occur within the inland zone, and the U.S. Coast Guard leads the cleanup of oil spills that occur within the coastal zone. Section 9003(h) of the Solid Waste Disposal Act provides additional federal response authorities for petroleum leaked from underground tanks. In practice, CERCLA has been applied to the cleanup of some wastes containing petroleum only if the wastes also contained hazardous substances that were not part of the petroleum product itself.

Other Exclusions

Section 101(22) of CERCLA also excludes certain types of releases from the definition of the term "release," thereby removing such releases from the statute's reach. A specific category of nuclear materials is excluded from the definition of release, including "source, byproduct, or special nuclear material" released from a nuclear incident or at certain uranium processing sites. The disposal and cleanup of these materials are subject to the Atomic Energy Act and the Uranium Mill Tailings Radiation Control Act. With the exception of these specific nuclear materials, CERCLA generally applies to the release of radionuclides. In federal regulation, EPA has designated several hundred radionuclides as hazardous substances that are subject to the authorities of CERCLA. Section 101(22) also excludes three other types of releases from the response authorities of CERCLA: (1) a release that would result in exposure solely within the workplace; (2) emissions from engine exhaust of a motor vehicle, train, aircraft, vessel, or power pumping station; and (3) the "normal" application of fertilizer.

Limitations on Response Actions

Section 104(a)(3) limits the extent to which actions may be taken under CERCLA to respond to releases of hazardous substances, pollutants, or contaminants in certain situations. Response actions generally may not be taken in situations involving: (1) releases of naturally occurring substances in their unaltered form; (2) releases from products (such as asbestos) that are part of a residential, business, or community structure or building; or (3) releases into public or private drinking water supplies due to deterioration of supply systems through ordinary use. However, in the event of a public health or environmental emergency declared by the President, CERCLA authorizes response actions to be taken under the statute in any of these three situations, if no other person has the authority and capability to respond in a timely manner.

Prioritization of Response Actions

Section 105(a) of CERCLA requires the President to develop a National Priorities List (NPL) of the most hazardous sites in the United States to prioritize response actions. The President has

delegated this task to EPA. The NPL must be updated at least annually. Section 105(c) requires the use of a Hazard Ranking System (HRS) to determine which sites warrant placement on the NPL. The system scores each site based on certain factors, such as the quantity and nature of hazardous substances; the likelihood of the migration of contamination in groundwater, surface water, and air; and the proximity to human populations and sensitive environments. Because of this range of factors, the severity of contamination alone may not necessarily be sufficient cause to list a site on the NPL. For example, a geographically isolated site with substantial contamination still may not score highly enough on the HRS to warrant placement on the NPL, if the distance from human populations prevents the likelihood of exposure.

Section 105(a) of CERCLA also required the President to develop a National Hazardous Substance Response Plan to establish procedures and standards for responding to releases of hazardous substances, pollutants, and contaminants into the environment. The law directed the President to incorporate these procedures and standards into the National Oil and Hazardous Substances Pollution Contingency Plan (referred to as the National Contingency Plan for short, or NCP). As delegated by the President, EPA promulgated the National Hazardous Substance Response Plan in federal regulation as part of the NCP. These regulations govern any response actions taken under CERCLA.

Scope of Response Actions

CERCLA authorizes two types of response actions: "removal" and "remedial" actions. These terms are defined in Sections 101(23) and 101(24) of CERCLA respectively. Removal does not necessarily mean the physical removal of contamination from the soil, surface water, or groundwater, and remedial actions do not necessarily involve treatment of contamination. Rather, both actions may involve various methods to prevent exposure to contamination, including the relocation of potentially exposed individuals if warranted. It should be noted that the NCP allows remedial actions to be financed with Superfund monies only at sites listed on the NPL, whereas removal actions may be financed with Superfund monies at non-NPL sites to address emergency situations. This restriction is intended to reserve Superfund monies for costlier remedial actions at NPL sites that are thought to present the greatest risks. This funding restriction in the regulations is based on the statutory requirement of Section 105(a) of CERCLA for EPA to prioritize contaminated sites for the purpose of taking remedial actions.

Removal actions tend to be shorter term actions that address more immediate risks, whereas remedial actions tend to be longer term actions that offer a more permanent solution. As such, remedial actions often entail more extensive and costly measures. Because of the typically greater extent and cost of remedial actions, they are subject to more in-depth review in the form of a Remedial Investigation and Feasibility Study (RI/FS). An RI/FS involves an investigation of the contamination to assess potential risks of exposure and a study of the feasibility of remedial alternatives to address those risks. Remedial actions also are subject to public participation requirements under Section 117 of CERCLA. (See the "Public Participation" section of this report.) Removal actions are not subject to a similar degree of review or public comment because of the perceived need for swifter response to address more immediate risks.

Section 104(c)(1) generally restricts the timing of removal actions funded with Superfund monies to one year and the cost to $2 million, with exceptions provided in certain situations. For example, a remedial action may exceed these limitations if the continuance of the removal action would contribute to the remedial action planned at the site. These general timing and cost

limitations on removal actions are intended to ensure that removal actions are not pursued on a broader scale as a way to avoid the more in-depth review required of remedial actions.

However, CERCLA does not impose these limitations on a removal action funded by a responsible party with its own funds, nor by a federal agency at a federal facility with dedicated monies appropriated to that agency for that purpose apart from Superfund. From a practical standpoint, imposing the above timing and cost limitations on removal actions at many federal facilities administered by the Department of Defense and Department of Energy could constrain the needed scope of removal actions, as cleanup challenges are often greater at these federal facilities in comparison to non-federal sites.

Federal-State Cost Sharing

Section 104(c)(3) of CERCLA requires the state in which a non-federal NPL site is located to agree to share the costs of remedial actions at that site, as a condition of obligating federal Superfund monies to finance those actions. States are not responsible for sharing the costs of cleanup at sites where the potentially responsible parties pay for the cleanup, including federal facilities that are funded by the federal agencies that administer them. Rather, the federal government and the states are to share the costs of assuming the responsibility for the orphan shares of the cleanup costs, for which there are no viable parties to pursue.

This cost-sharing requirement in Section 104(c)(3) is intended to reduce the financial burden on the federal taxpayer presented by the often long-term financial commitment involved in carrying out a remedial action. Notably, CERCLA does not require states to agree to share the costs of removal actions, which typically are less costly as a result of their smaller scope. Consequently, federal Superfund monies may be used to finance the entire costs of removal actions.

At a site where the state must agree to share the costs of remedial actions as a condition of the obligation of federal Superfund monies, the state first must provide certain assurances of its financial commitments, specified in a binding contract or cooperative agreement with the federal government. Absent such contract or agreement, federal Superfund monies are not available to finance remedial actions at that site. To allow the obligation of federal Superfund monies to commence the remedial actions, the state must agree to pay 10% of the costs of those actions. If the site was owned or operated by the state, or a political subdivision of the state, at the time of disposal, the state must agree to pay at least 50% of the costs of the remedial actions.

In addition to the above conditions, the state must agree to perform future maintenance of the remedial actions for their expected operational life. The point of maintenance usually occurs after any necessary construction is complete and the remedial action is operating as intended. CERCLA authorizes a delay in the state's responsibility for the maintenance of groundwater or surface water remedies. Section 104(c)(6) allows a state to delay its maintenance responsibilities for the first 10 years of the operation of such remedial actions. The statute allows a delay in the state's maintenance responsibility specifically for these types of actions to reduce the burden of those costs on the state, as the cleanup of groundwater or surface water tends to be more costly than other types of remediation. During the initial 10-year period, federal Superfund monies instead can be used to pay the maintenance costs of groundwater or surface water remedies.

Selection of Response Actions

Section 121(a) of CERCLA generally requires response actions at contaminated sites to achieve acceptable levels of exposure that would be protective of human health and the environment. Response actions also are to be cost-effective over both the short term and long term, including the operation and maintenance of the action. Section 121(b) states a preference for the selection of remedial actions that involve treatment to "permanently and significantly" reduce the "volume, toxicity or mobility" of contamination, as opposed to actions that do not involve such treatment.

Actions not involving treatment often entail the containment of wastes on-site, or the removal and disposal of wastes off-site. The containment of wastes on-site could present lingering health and environmental risks if the containment method were to fail over time. If the remedial action would result in wastes being left on-site, Section 121(c) requires the President to review the performance of the remedial action every five years to determine whether that action continues to be protective of human health and the environment. If the action is not functioning as intended, the President may take additional remedial actions at the site to achieve the cleanup goal.

Although Section 121 includes certain requirements to govern the selection of remedial actions, it does not specify how clean an individual site must be to protect human health and the environment. Section 121 also does not identify the specific nature of the remedial actions that would be required to attain a cleanup goal at an individual site. Instead, these cleanup decisions are made on a site-by-site basis taking many factors into consideration, including the potential for human exposure based on the anticipated land use, and the technical and economic feasibility of cleanup alternatives to prevent exposure.

Cleanup Standards

The level of cleanup that is required can vary widely from site to site depending on the contaminants present, the cleanup standards or criteria that apply to those contaminants, and the response actions selected to attain those standards or criteria. Rather than specify standards or criteria for individual hazardous substances, Section 121(d) of CERCLA broadly requires that cleanup comply with applicable, relevant, and appropriate requirements (ARARs) to protect human health and the environment. ARARs can include a host of federal or state standards, requirements, or other criteria. In this sense, CERCLA functions as an "umbrella" statute under which other statutes or regulations also may be applied to the cleanup of a contaminated site.

Section 121(d)(4) authorizes the waiver of a particular standard, if:

- the contemplated response action would be part of a larger remedial action that would meet the standard once the larger action is completed;
- compliance with the standard would result in a greater risk than the alternatives;
- compliance with the standard would be technically impracticable from an engineering perspective;
- an equivalent standard of performance would be attained;
- in the case of a state standard, the state has not consistently applied that standard elsewhere within its jurisdiction; or

- meeting the standard would not provide a balance between the need for protection of public health and welfare and the environment at the site under consideration, and the availability of monies in the Superfund Trust Fund to respond to more immediate risks at other sites.

Although CERCLA generally does not list specific standards that may apply to the cleanup of an individual site, there are two sets of standards cited in Section 121(d) that broadly apply to the selection of remedial actions at any site. First, the law requires remedial actions to achieve a level of cleanup that would attain Maximum Contaminant Levels (MCLs) established for current or potential sources of drinking water under the Safe Drinking Water Act. Second, remedial actions must be consistent with other water quality criteria established under Sections 303 or 304 of the Clean Water Act. However, the applicability of these sets of standards to an individual site remains limited to circumstances in which the standards still are deemed "relevant and appropriate," consistent with the underlying premise of an ARAR.

State Participation

CERCLA authorizes a broad role for states to participate in the cleanup process. States must agree to share in the costs of remedial actions at non-federal NPL sites as a condition of the obligation of federal Superfund monies. In acknowledgment of their sharing of the costs of cleanup, Section 121(f) of CERCLA requires that states be afforded opportunities for "substantial and meaningful involvement" in initiating, developing, and selecting remedial actions. However, there are certain limitations on the involvement of states in cleanup decisions at federal facilities, as states do not share in the costs of cleanup at these facilities. If a state wishes to challenge a remedial decision of a federal agency at a facility which that agency administers, Section 121(f)(3) requires that the state show that the decision of the agency is not supported by "substantial evidence."

Public Participation

CERCLA also provides a role for the general public in commenting on the selection of remedial actions at individual sites. This role is similar to that under many other federal laws that require the opportunity for the public to comment on certain types of federal decisions. Section 117 of CERCLA requires EPA, or other federal agency responsible for administering and funding the cleanup of a contaminated site, to provide the public an opportunity to comment on proposals for the selection of remedial actions. Once a final decision is made, public notice of the decision must be provided, with an explanation of any "significant" differences from the proposed action and a response to each "significant" public comment on the proposed action.

The opportunity for public comment required by Section 117 of CERCLA applies only to decisions on remedial actions. Decisions on removal actions are not subject to these requirements because of the presumed need for expedited action to address more immediate risks. In practice, EPA and other federal agencies typically notify the public of the selection of removal actions to inform communities of the nature and timing of such actions. To assist the public in understanding technical information presented in cleanup decision documents, Section 117(e) of CERCLA authorizes technical assistance grants of up to $50,000 for community groups. These grants are available only to affected communities at sites listed on the NPL.

Agency for Toxic Substances and Disease Registry

Section 104(i) of CERCLA established the Agency for Toxic Substances and Disease Registry (ATSDR) primarily to assess potential health risks at NPL sites. The ATSDR assesses individual sites based on the likelihood of human exposure to contamination through the air, soil, surface water, groundwater, and other pathways such as consumption of contaminated food sources. The purpose of these assessments is two-fold: to inform the public of potential health hazards at a contaminated site, and to aid decision-makers in evaluating what cleanup actions may be warranted to prevent potentially harmful exposure. Although the findings of the ATSDR may be used to inform the selection of cleanup actions, the agency does not have any authority to dictate cleanup decisions. In addition to site-specific assessments, Section 104(i) directs the ATSDR to prepare toxicological profiles of hazardous substances commonly found at NPL sites to identify potential health effects that can result from exposure.

Section 104(i) of CERCLA also authorizes the ATSDR to carry out several other functions intended to protect public health. For example, the agency is authorized to provide medical care and testing to individuals in the event of a public health emergency caused by, or believed to be caused by, exposure to toxic substances. CERCLA does not provide any criteria as to what constitutes a public health emergency for this purpose, presumably leaving the declaration of such an emergency to the discretion of the ATSDR. As with other roles, the resources of the agency to fulfill this role are subject to appropriations by Congress. To date, the ATSDR has not used its authority under CERCLA to declare a public health emergency. In practice, the agency's role has focused on educating the public about known health risks from exposure to hazardous substances, and assessing potential risks at individual sites to aid in informing cleanup decisions.

Financial Liability

Section 107 of CERCLA identifies the categories of potentially responsible parties connected with a contaminated site who are liable for the costs of response actions that EPA deems necessary to protect human health and the environment. Such parties also are liable for damages for injury to, destruction of, or loss of natural resources resulting from a release of a hazardous substance, including the costs of assessing such injury, destruction, or loss; and the costs of public health assessments carried out by the ATSDR under Section 104(i) of CERCLA. The following sections discuss the categories of parties who are liable under Section 107 of CERCLA, the reach of liability, defenses to liability, and limitations on the liability of certain categories of parties.

Categories of Potentially Responsible Parties

Section 107(a) identifies four categories of potentially responsible parties who are liable for the costs of response actions, natural resource damages, and public health assessments associated with the release or threatened release of a hazardous substance:

- any person who currently owns or operates a facility or vessel from which a hazardous substance was released;
- any person who at the time of disposal of a hazardous substance owned or operated the facility at which such disposal occurred;

- any person who arranged for the disposal or treatment of a hazardous substance (often referred to as a generator of waste), and any person who arranged for the transport of a hazardous substance for disposal or treatment; and
- any person who accepts or accepted a hazardous substance for transport to a disposal or treatment facility, incineration vessel, or site selected by such person.

With respect to liability, financial responsibility for cleanup costs may extend to actions beyond a facility boundary, if a hazardous substance were to migrate (i.e., move or spread) through the environment. Section 101(8) of CERCLA defines the term "environment" to include not only the land, but also surface water, groundwater, or ambient air. Consequently, cleanup actions may be necessary not only on the facility where the initial release occurred, but anywhere the hazardous substance may migrate through the environment. For example, hazardous substances that migrate into groundwater or surface water can travel some distance, even miles, and can necessitate cleanup actions across a larger area than where the release first occurred.

Reach of Liability

Over time, the courts have interpreted liability under Section 107 of CERCLA to be strict, joint and several, and retroactive. This judicial interpretation is rooted in case law, legislative history, and the definition of liability in Section 101(32) of CERCLA that applies the same standards of liability as in Section 311 of the Clean Water Act.

- Strict liability means that a party can be held liable regardless of whether the conduct of that party was negligent.
- Joint and several liability means that one or more of the liable parties can be held responsible for the full cost of the cleanup at a site, regardless of the degree of involvement in the contamination. However, Section 113(f)(1) of CERCLA allows a party to seek recovery of some of its cleanup costs from other parties at a site through contribution claims in court. In deciding such claims, a court is to base the allocation of cleanup costs on "equitable factors." In the event that a party can show that the waste it sent to the site could not have contributed to the contamination, joint and several liability is not to apply to that party.
- Retroactive liability means that parties are liable for the cleanup of hazardous substances released prior to the enactment of CERCLA on December 11, 1980. However, Section 107(f)(1) extends liability for natural resource damages only to releases that occurred on or after the enactment of CERCLA, which resulted in injury to, destruction of, or loss of the natural resources.

It should be emphasized that the above description of the basic liability standards of CERCLA merely offers a brief summary of the broad reach of the statute, as generally interpreted by the courts over time. As such, this description does not examine the complexities of individual court decisions on these matters. Since the enactment of CERCLA in 1980, well over one thousand court decisions have interpreted these basic liability standards under the statute to determine the financial responsibility of potentially responsible parties for the costs of cleanup. How a court may view the cleanup liability of an individual party at any one site would depend on numerous legal issues that are beyond the scope of the summary of CERCLA offered in this report.

Defenses to Liability

Section 107(b) of CERCLA provides defenses to liability under certain circumstances. A party cannot be held liable for the release or threatened release of a hazardous substance, and resulting injury to, destruction of, or loss of natural resources, if that party can provide evidence that the release or threatened release was caused solely by:

- an act of God;
- an act of war;
- an act or omission of a third party with whom the defendant has no contractual relationship, if the defendant exercised due care with respect to the hazardous substance and took precautions against foreseeable acts or omissions of that third party and against the foreseeable consequences of such acts or omissions; or
- any combination of these three circumstances.

The third party defense sometimes is characterized as the "innocent" landowner defense, in the sense that it typically pertains to property owners who had no involvement in the actions that led to the contamination. Section 101(35) of CERCLA defines the term contractual relationship for the purpose of the third party defense, and specifies the conditions that a landowner must satisfy to claim the lack of a contractual relationship connecting the owner to the contamination.

Limitations on Liability

To address the fairness of the liability scheme of CERCLA, Congress has amended Section 107 and other related provisions of the statute to limit, or in some cases eliminate, the liability of certain categories of parties who may not have been involved in actions that resulted in contamination, who may have contributed only very small quantities or less toxic wastes to a contaminated site, or whose conduct Congress did not wish to discourage. These categories of parties include:

- response action contractors who merely perform the work to clean up a contaminated site, but who did not cause or otherwise contribute to the contamination;
- state and local governments that acquired contaminated property involuntarily through bankruptcy, tax delinquency, abandonment, or other circumstances, and did not cause or otherwise contribute to the contamination;
- persons who only hold a contaminated property in a fiduciary capacity;
- financial lenders who acquire financial interests or ownership of a contaminated property through foreclosure;
- generators and transporters of scrap materials intended for recycling, but instead may have been disposed of by other persons;
- persons who contributed only very small quantities of waste or only municipal solid (i.e. non-hazardous) waste to a site;
- service station dealers who only disposed of recycled oil that was not contaminated with hazardous substances, and who fully complied with federal regulations for managing the recycled oil;

- "innocent" landowners who purchased a property without knowledge of existing contamination, with respect to the third party defense;
- other "innocent" owners of property that became contaminated merely through migration from a contiguous property where the initial release occurred; and
- "bona fide" prospective purchasers who otherwise may be hesitant to acquire a property on which contamination is known or suspected to be present, because of the potential liability for cleanup upon acquiring ownership.

Hazardous Substance Superfund Trust Fund

CERCLA established the Hazardous Substance Superfund Trust Fund to provide a source of funds for the federal government to finance the cleanup of contaminated sites where the potentially responsible parties cannot pay or cannot be identified. This assumption of financial responsibility for these "orphan shares" of cleanup costs is intended to ensure that the actions necessary to protect human health and the environment are carried out. The availability of Superfund Trust Fund monies to pay for the cleanup of orphaned sites is subject to appropriations by Congress. Once appropriated, the availability of Superfund monies under EPA's Superfund program to pay for remedial actions is further subject to cost-sharing agreements with the states in which the sites are located, as discussed in the "State Participation" section of this report.

Original Taxing Authority

The special taxing authority to finance the Superfund Trust Fund expired at the end of 1995. Before this authority lapsed, three dedicated taxes on petroleum, chemical feedstocks (and imported chemical derivatives), and corporate income provided most of the revenues for the Superfund Trust Fund. Revenues from the General Fund of the U.S. Treasury also contributed to the trust fund to augment the dedicated taxes, but these general tax revenues were a relatively small portion of the total revenues to the trust fund during the time that the dedicated taxes were collected through the end of 1995.

As originally enacted in 1980, Section 211(a) of CERCLA authorized the Superfund excise taxes on petroleum and chemical feedstocks. Section 515(a) of the Superfund Amendments and Reauthorization Act of 1986 expanded the reach of the chemical feedstocks tax to include imported chemical derivatives. Prior to expiration at the end of 1995, the Superfund excise tax on petroleum was 9.7 cents per barrel. The Superfund excise tax on chemical feedstocks and imported chemical derivatives varied from $0.22 per ton to $4.87 per ton, depending on the substance (with the exception of xylene which was taxed at a higher rate of $10.13 per ton in the initial years of the tax until 1992.) Section 516(a) of the Superfund Amendments and Reauthorization Act of 1986 established the special tax on corporate income to provide an additional revenue stream for the Superfund Trust Fund. Prior to expiration in 1995, the Superfund tax on corporate income (formally referred to as the Corporate Environmental Income Tax) was 0.12% of corporate alternative minimum taxable income in excess of $2 million.

Congress created the Superfund taxes on petroleum and chemical feedstocks, based on the broadly held assumption that much of the environmental contamination in the United States had been caused as a result of industrial activities that involved these substances. The Superfund tax on corporate income was intended to raise additional revenues from a wide range of businesses that may have used or disposed of hazardous substances. However, some questioned the fairness

of these taxes. Opponents highlighted that the income tax captured all businesses that met the income threshold, regardless of whether a business used or disposed of hazardous substances. Opponents also noted that not all petroleum and chemical companies were necessarily involved in actions that led to contamination.

The appropriateness of the Superfund tax on petroleum was especially controversial in light of the exclusion of petroleum from the cleanup authorities of CERCLA. Because of this exclusion, monies from the Superfund Trust Fund have paid for the cleanup of petroleum contamination only if the contamination includes hazardous substances that are not part of the petroleum product itself. Congress has established other trust funds to address releases of petroleum. Title V of the Superfund Amendments and Reauthorization of 1986 created the Leaking Underground Storage Tank Trust Fund to pay for actions to respond to petroleum released from underground tanks. Title VIII of the Omnibus Budget Reconciliation Act of 1986 (P.L. 99-509) created the Oil Spill Liability Trust Fund to pay for actions to respond to surface releases of petroleum.

Current Source of Revenues

After the authority to collect the Superfund taxes expired, the remaining revenues from these taxes were expended by the end of FY2003, leaving revenues from the General Fund of the U.S. Treasury as the main source of monies for the Superfund Trust Fund. Although the Superfund taxes have expired, industry has continued to provide some of the funding for the trust fund via corporate income taxes that contribute to the General Fund. (Revenues to the General Fund consist of corporate income taxes, individual income taxes, and miscellaneous federal receipts and collections that are not dedicated to specific federal trust funds.)

In addition to general Treasury revenues, others sources of monies have continued to contribute some revenues to the Superfund Trust Fund. Cleanup costs borne by the federal government that are later recouped from the potentially responsible parties are deposited into the trust fund (referred to as cost recoveries). These recouped funds can be made available for the cleanup of other sites where the potentially responsible parties cannot pay or cannot be found. Fines and penalties assessed against potentially responsible parties for violations of CERCLA are deposited into the trust fund as well. Interest also accrues on the trust fund balance. Collectively, these monies have been relatively small compared to the amount of general Treasury revenues that now support most of the trust fund. However, these other sources of monies do continue to help finance the trust fund, and to some extent reduce the need for general Treasury revenues at sites where the potentially responsible parties cannot be found or cannot pay.

Enforcement Mechanisms

There are three mechanisms through which the federal government can take actions to enforce cleanup liability under CERCLA, if the potentially responsible parties can be identified and have the financial capability to pay. These mechanisms include judicial or administrative orders under Section 106 of the statute requiring potentially responsible parties to perform cleanup actions, cost-recovery actions under Section 107 to recoup expenditures of Superfund monies from the potentially responsible parties for cleanup actions performed by the federal government, and voluntary settlement agreements with the potentially responsible parties under Section 122 to perform or pay for cleanup actions. Like the response authorities of CERCLA, these enforcement authorities are presidential authorities. As discussed earlier in this report, a 1987 executive order delegated the President's response authorities under CERCLA to EPA and other federal agencies.

This order also delegated the enforcement of the statute to EPA at sites on the land, and to the U.S. Coast Guard within inland river ports and harbors, the Great Lakes, and U.S. coastal waters.

These agencies have the discretion to use any of the above mechanisms available under the law to enforce the cleanup liability of potentially responsible parties. In practice, the agencies typically attempt to negotiate voluntary settlement agreements with the potentially responsible parties first, and usually turn to the use of Section 106 orders or Section 107 cost-recovery actions when a negotiated settlement appears unlikely. Under a negotiated settlement, the agencies may take a party's ability to pay into consideration when determining that party's share of the cleanup costs. In the negotiation process, the party seeking the reduction must submit financial information to document whether its ability to pay may in fact be limited. The decision of the enforcing agency as to whether a reduced settlement is warranted is not subject to judicial review. However, a party only can pay for the cleanup to the extent it is indeed capable, to the point of bankruptcy. Reducing a party's share of the cleanup costs based on its ability to pay is intended to avoid such financial outcomes as a consequence of cleanup liability.

Although EPA and the U.S. Coast Guard are responsible for enforcing cleanup liability, Section 310 of CERCLA authorizes citizens to challenge the adequacy of a cleanup action in court. The timing of a citizen suit for these purposes is limited under other provisions of the statute. Section 113(h)(4) of CERCLA does not permit a citizen suit to be brought for violation of a cleanup requirement until the selected cleanup action at a site is completed. Further, a citizen suit may not be brought with regard to a removal action at a site where a remedial action is planned. These limitations on the timing of citizen suits are intended to allow the complete implementation of cleanup actions planned at a site, prior to subjecting the adequacy of those actions to judicial review to assess their compliance with CERCLA.

Federal Facilities

After CERCLA was enacted in 1980, questions arose as to whether Congress intended federal facilities owned and operated by the United States government to be subject to the cleanup requirements and liability provisions of the statute. As originally enacted, CERCLA was silent on this matter. Section 120 of the Superfund Amendments and Reauthorization Act of 1986 added Section 120 to CERCLA to clarify that federal facilities are subject to the cleanup requirements of the statute to the same extent as other entities, including the liability and enforcement provisions of the law. To comply with CERCLA, the federal agency with administrative jurisdiction over a facility is responsible for administering and paying for the cleanup of contamination out of its own budget, subject to appropriations by Congress.

Section 111(e) of CERCLA explicitly prohibits the use of Superfund Trust Fund monies to clean up federal facilities, as these monies are dedicated to paying for the cleanup of sites where the potentially responsible parties cannot be identified or cannot pay. However, Section 111(e)(3) does allow the use of Superfund Trust Fund monies at an individual federal facility to provide alternative water supplies, if groundwater contamination has migrated beyond the boundary of that facility, and there are other potentially responsible parties connected to that facility in addition to the United States. In all other instances, Superfund Trust Fund monies are not available for the cleanup of federal facilities.

As noted earlier in this report, the vast majority of contaminated federal facilities are administered by DOD and DOE. Congress has established dedicated appropriations accounts for each of these departments that are intended to fulfill the financial liability of the United States for

the cleanup of the facilities that they administer. Section 211 of the Superfund Amendments and Reauthorization Act of 1986 specifically authorized a Defense Environmental Restoration Program within DOD to administer the cleanup of active and decommissioned military installations in the United States. Sections 311 and 312 of the National Defense Authorization Act for FY2002 (P.L. 107-107) expanded DOD's cleanup authorities to include unexploded ordnance, discarded munitions, and munitions constituents (i.e., hazardous substances leached from munitions into the environment) on decommissioned training ranges and munitions disposal sites in the United States. Although Congress has not enacted similarly explicit cleanup program authorities for DOE, the department administratively established an Office of Environmental Management in 1989 to consolidate its cleanup efforts under CERCLA and other related statutory authorities, such as the Atomic Energy Act which governs the disposal of radioactive wastes.

EPA and the states play a role in overseeing and enforcing the implementation of CERCLA at federal facilities administered by DOD and DOE under the above programs, as well as other contaminated federal facilities administered by other agencies. Section 120(e) of CERCLA explicitly requires EPA to take the lead in overseeing the cleanup of federal facilities listed on the NPL, but Section 120(f) of the statute allows states and local governments to participate in cleanup decisions. The states play a more prominent role in overseeing the cleanup of federal facilities not listed on the NPL. While CERCLA authorizes EPA and the states to oversee the cleanup of federal facilities, certain provisions of the law can limit their ability to direct or dictate how the cleanup process may be carried out at a federal facility.

For example, Section 120(e)(4)(A) of CERCLA gives EPA final decision-making authority to select remedial actions at federal facilities listed on the NPL, but does not explicitly authorize EPA to direct the schedule of performing those actions, nor how those actions are to be operated and maintained over the long term to ensure their performance. These latter elements of the cleanup process at federal facilities would appear to be subject to negotiation among the agencies. Further, EPA's enforcement of cleanup requirements at federal facilities through court actions is complicated by the limited ability of one federal agency to sue another. With respect to the participation of states and local governments, Section 120(f) of CERCLA requires the opportunity to be involved in cleanup decisions, but does not give states and local governments decision-making authority similar to EPA's authority at federal facilities on the NPL. In practice, these limitations may restrict the extent to which EPA, the states, and local governments may oversee the cleanup of federal facilities, even though Section 120 of CERCLA does require federal facilities to comply with cleanup requirements to the same extent as other entities.

National Security Exemption

Although Section 120 of CERCLA clarified the applicability of the statute to federal facilities, Section 120(j) authorized the President to exempt an individual federal facility from a requirement of CERCLA on a case-by-case basis if the exemption would be necessary to protect national security. This exemption is intended to prevent situations in which a federal facility may become unavailable for purposes essential to protecting national security, if carrying out a specific cleanup action somehow may interfere with those purposes. Section 120(j) specifically authorizes the President to exempt a federal facility administered by DOD or DOE from compliance with an individual requirement of CERCLA, if the President deems such an exemption necessary to protect national security.

The President must notify Congress within 30 days of the issuance of an exemption and explain the reason for it. The time period of an exemption initially is limited to one year, but the President

may renew it annually with notification to Congress. Historically, a national security exemption under Section 120(j) of CERCLA has not been invoked at any facility that DOD or DOE administers. Instead, contaminated facilities of both departments generally have been subject to the cleanup requirements of CERCLA. DOD and DOE have been responsible for carrying out these requirements at their respective facilities under the programs discussed above, with appropriations by Congress. However, there have been disagreements at some facilities as to what requirements may be applicable to their cleanup, and how certain requirements that are deemed applicable are to be satisfied to ensure the protection of human health and the environment.

Brownfields Properties

In 1993, EPA established an element within the Superfund program to assist communities with the cleanup of certain lower risk sites that did not warrant placement on the NPL, but at which cleanup was desired to encourage economic redevelopment. The purpose of the program was to provide federal financial assistance for the cleanup of properties referred to as "brownfields." These properties typically are abandoned, idled, or underutilized, and on which known or suspected contamination is perceived as a deterrent to redevelopment by prospective purchasers who may be hesitant about becoming liable for cleanup once acquiring ownership.

EPA initially used Superfund appropriations to provide "seed monies" to communities in the form of grants and loans to aid them in financing certain types of cleanup actions. Although there was broad support for this effort, some questioned EPA's authority under CERCLA to use Superfund monies for the cleanup of these lower risk sites that were not listed on the NPL and that did not appear to warrant emergency removal actions under the Superfund program. Still, in the annual appropriations process, Congress set aside funding for brownfields cleanup assistance within the Superfund account for several years without specifically amending CERCLA for this purpose.

In the 107th Congress, Subtitle A and Subtitle C of Title II of the Small Business Liability Relief and Brownfields Revitalization Act of 2002 (P.L. 107-118, hereinafter referred to as the "Brownfields Act") amended CERCLA to provide explicit statutory authority for EPA to administer a Brownfields program separately from the Superfund program. The Brownfields Act authorized appropriations for this new program apart from appropriations for the Superfund account. There had been some concern about the diversion of Superfund appropriations away from addressing the greater human health and environmental risks at NPL sites. Still, the portion of Superfund appropriations that had been spent on the cleanup of brownfields properties was relatively small compared to the total appropriation.

The program explicitly authorized in the Brownfields Act is similar in scope to the program that EPA had established in 1993, with the exception that the Brownfields Act allowed federal financial assistance for the cleanup of contamination resulting from releases of petroleum. As discussed earlier in the "Federal Response Authorities" section of this report, CERCLA otherwise does not apply to the cleanup of petroleum. The Brownfields Act also created two separate types of grants within the Brownfields program. One provides more direct financial assistance for the assessment and cleanup of individual properties. The other provides financial assistance to states and Indian tribes to aid them in carrying out their own cleanup programs, which in turn may assist in the cleanup of individual properties. In addition to these grant programs, Congress has enacted certain federal tax incentives through the Internal Revenue Code, which are intended to encourage the cleanup of brownfields properties.

Table 13 lists each section of CERCLA, as codified primarily in Title 42 of the United States Code. The table also includes sections codified in Title 26 of the United States Code—Internal Revenue Code—pertaining to Superfund taxes and the Superfund Trust Fund. Relevant sections of Title 10 of the United States Code—Armed Forces—also are identified in the table with respect to the specific cleanup authorities of the Defense Environmental Restoration Program, which is to be implemented consistent with the requirements of CERCLA.

Table 13. Major U.S. Code Sections of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as Amended, and Related Acts

(codified at 42 U.S.C. 9601-9675; 26 U.S.C. 4611,4661, 4671, 59A, 9507; 10 U.S.C. 2700-2710)

U.S.C.	Section Title	CERCLA, as Amended, and Related Acts
42 U.S.C.		
Chapter 103—Comprehensive Environmental Response, Compensation, and Liability		
Subchapter I—Hazardous Substances Releases, Liability, Compensation		
9601	Definitions	Sec. 101
9602	Designation of additional hazardous substances and establishment of reportable released quantities; regulations	Sec. 102
9603	Notification requirements respecting released substances	Sec. 103
9604	Response authorities	Sec. 104
9605	National Contingency Plan	Sec. 105
9606	Abatement actions	Sec. 106
9607	Liability	Sec. 107
9608	Financial responsibility	Sec. 108
9609	Civil penalties and awards	Sec. 109
9610	Employee protection	Sec. 110
9611	Uses of fund	Sec. 111
9612	Claims procedure	Sec. 112
9613	Civil proceedings	Sec. 113
9614	Relationship to other law	Sec. 114
9615	Presidential delegation and assignment of duties or powers and promulgation of regulations	Sec. 115
9616	Schedules	Sec. 116
9617	Public participation	Sec. 117
9618	High priority for drinking water supplies	Sec. 118
9619	Response action contractors	Sec. 119
9620	Federal facilities	Sec. 120
9621	Cleanup standards	Sec. 121
9622	Settlements	Sec. 122
9623	Reimbursement to local governments	Sec. 123

U.S.C.	Section Title	CERCLA, as Amended, and Related Acts
9624	Methane recovery	Sec. 124
9625	Section 6921(b)(3)(A)(i) Waste	Sec. 125
9626	Indian tribes	Sec. 126
9627	Recycling transactions	Sec. 127
9628	State response programs	Sec. 128
Subchapter II—Hazardous Substance Response Revenue		
Part A—Hazardous Substance Response Trust Fund		
9631	Repealed (Establishment of Hazardous Substance Response Trust Fund)	Sec. 221
9632	Repealed (Liability of United States limited to the amount in trust fund)	Sec. 222
9633	Repealed (Administrative procedures)	Sec. 223
Part B—Post-Closure Liability Trust Fund		
9641	Repealed (Post Closure Liability Trust Fund)	Sec. 232
Subchapter III—Miscellaneous Provisions		
9651	Reports and studies	Sec. 301
9652	Effective dates; savings provision	Sec. 302
9653	Repealed (Termination of authority to collect taxes)	Sec. 303
9654	Applicability of federal water pollution control funding, etc., provisions	Sec. 304
9655	Legislative veto of rule or regulation	Sec. 305
9656	Transportation of hazardous substances; listing as hazardous material; liability for release	Sec. 306
9657	Separability; contribution	Sec. 308
9658	Actions under state law for damages from exposure to hazardous substances	Sec. 309
9659	Citizen suits	Sec. 310
9660	Research, development, and demonstration	Sec. 311
9660a	Grant program	P.L. 99-499, Sec. 126(g)
9661	Love canal property acquisition	Sec. 312
9662	Limitation on contract and borrowing authority	P.L. 99-499, Sec. 3
Subchapter IV—Pollution Insurance		
9671	Definitions	Sec. 401
9672	State laws; scope of chapter	Sec. 402
9673	Risk retention groups	Sec. 403
9674	Purchasing groups	Sec. 404
9675	Applicability of securities laws	Sec. 405

U.S.C.	Section Title	CERCLA, as Amended, and Related Acts
26 U.S.C.		
Subtitle A—Income Taxes		
Chapter 1—Normal Taxes and Surtaxes		
Subchapter A—Determination of Tax Liability		
59A	Environmental tax	P.L. 99-499, Sec. 516(a)
Subtitle D—Miscellaneous Excise Taxes		
Chapter 38——Environmental Taxes		
Subchapter A—Tax on Petroleum		
4611	Imposition of tax	Sec. 211(a)
Subchapter B—Tax on Certain Chemicals		
4661	Imposition of tax	Sec. 211(a)
Subchapter C—Tax on Certain Imported Substances		
4671	Imposition of tax	P.L. 99-499, Sec. 515(a)
Subtitle I—Trust Fund Code		
Chapter 98—Trust Fund Code		
Subchapter A—Establishment of Trust Funds		
9507	Hazardous Substance Superfund	P.L. 99-499, Sec. 517(a)
10 U.S.C.		
Subtitle A—General Military Law		
Part IV—Service, Supply, and Procurement		
Chapter 160—Environmental Restoration		
2700	Definitions	P.L. 99-499, Sec. 211(a)
2701	Environmental restoration program	P.L. 99-499, Sec. 211(a)
2702	Research, development, and demonstration program	P.L. 99-499, Sec. 211(a)
2703	Environmental restoration accounts	P.L. 99-499, Sec. 211(a)
2704	Commonly found unregulated hazardous substances	P.L. 99-499, Sec. 211(a)
2705	Notice of environmental restoration activities	P.L. 99-499, Sec. 211(a)
2706	Annual reports to Congress	P.L. 99-499, Sec. 211(a)
2707	Environmental restoration projects	P.L. 107-314, Sec. 313
2708	Contracts for handling hazardous waste from defense facilities	P.L. 102-190, Sec. 331
2709	Investment control process for environmental technologies	P.L. 106-65, Sec. 323
2710	Inventory of unexploded ordnance, discarded military munitions, and munitions constituents at defense sites (other than operational ranges)	P.L. 107-107, Sec. 311

Note: This table shows only the major U.S. Code sections. For more detail and to determine when a section was added, consult the official version of the U.S. Code.

Emergency Planning and Community Right-to-Know Act[55]

The Emergency Planning and Community Right-to-Know Act (EPCRA, codified at 42 U.S.C. 11001-11050) was enacted in 1986 as Title III of the Superfund Amendments and Reauthorization Act (P.L. 99-499). EPCRA established state commissions and local committees to develop and implement procedures for coping with releases of hazardous chemicals, and mandated annual reporting to government officials on environmental releases of such chemicals by the facilities that manufacture or use them in significant amounts. EPA facilitates planning, enforces compliance when necessary, and provides public access to information about environmental releases of toxic chemicals.

Subtitle A—Emergency Planning and Notification

EPCRA established a national framework for EPA to mobilize local government officials, businesses, and other citizens to plan ahead for possible chemical accidents in their communities. Subtitle A requires local planning to respond to sudden releases of chemicals that might occur in the event of a spill, explosion, or fire. It is intended to ensure that responsible officials will know what hazardous chemicals are used or stored by local businesses and will be notified quickly in the event of an accident.

Under Section 301, each state is required to create a State Emergency Response Commission (SERC), to designate emergency planning districts, and to establish local emergency planning committees (LEPCs) for each district. Section 302 requires EPA to list extremely hazardous substances and to establish threshold planning quantities for each substance. Originally, Congress defined chemicals as "extremely hazardous substances" if they appeared on a list EPA published in November 1985 as Appendix A in "Chemical Emergency Preparedness Program Interim Guidance." However, EPA has authority to revise the list, and the threshold quantities of chemicals. Based on listing criteria, the intent appears to be to include only chemicals in quantities that could harm people exposed to them for only a short period of time. The law directs each facility to notify the LEPC for its district if it stores or uses any "extremely hazardous substance" in excess of its threshold planning quantity.

Section 303 directs LEPCs to work with facilities handling specified "extremely hazardous substances" to develop response procedures, evacuation plans, and training programs for people who will be the first to respond in the event of an accident. Upon request, facility owners and operators are required to provide an LEPC with any additional information that it finds necessary to develop or implement an emergency plan.

Section 304 requires that facilities immediately report a sudden release of any "extremely hazardous substance" or any "hazardous substance" (a much broader category of chemicals defined under CERCLA Section 102(a)) that exceeds the reportable quantity to appropriate state,

[55] Prepared by Linda-Jo Schierow, Specialist in Environmental Policy, Environmental Policy Section, Resources, Science, and Industry Division.

local, and federal officials.[56] Releases of a reportable quantity of a "hazardous substance" also must be reported to the National Response Center under CERCLA Section 103(a). (See the section above on "Hazardous Substance Superfund Trust Fund.")

Subtitle B—Reporting Requirements

Subtitle B establishes various reporting requirements for facilities. The information collected may be used to develop and implement emergency plans, as well as to provide the public with general information about chemicals to which they may be exposed.

The Occupational Health and Safety Act of 1970 (OSHAct) requires most employers to provide employees with access to a material safety data sheet (MSDS) for any "hazardous chemical." This "right-to-know" law for workers aims to ensure that people potentially exposed to such chemicals have access to information about the potential health effects of exposure and how to avoid them. EPCRA, Section 311 requires facilities covered by OSHAct to submit an MSDS for each "hazardous chemical" or a list of such chemicals to the LEPC, the SERC, and the local fire department. EPA has authority to establish categories of health and physical hazards and to require facilities to list hazardous chemicals grouped by such categories in their reports. An MSDS need only be submitted once, unless there is a significant change in the information it contains. An MSDS must be provided in response to a request by an LEPC or a member of the public. "Hazardous chemicals" are defined by the Code of Federal Regulations, Title 29, at Section 1910.1200(c).[57]

EPCRA, Section 312 requires the same employers to submit annually an emergency and hazardous chemical inventory form to the LEPC, SERC, and local fire department. These forms must provide estimates of the maximum amount of the chemicals present at the facility at any time during the preceding year; estimates of the average daily amount of chemicals present; and the general location of the chemicals in the facility.[58] Information must be provided to the public in response to a written request. EPA is authorized to establish threshold quantities for chemicals below which facilities are not required to report.

Section 313 mandates development of the Toxic Release Inventory (TRI), a computerized EPA database of "toxic chemical" releases to the environment by manufacturing facilities.[59] It requires manufacturing facilities that manufacture, use, or process "toxic chemicals" to report annually to EPA on the amounts of each chemical released to each environmental medium (air, land, or water) or transferred off-site. EPA makes TRI data available in "raw" and summarized form to the

[56] Under CERCLA Section 102(a) a "hazardous substance" includes any "elements, compounds, mixtures, solutions, and substances which, when released into the environment may present a substantial danger to the public health or welfare or the environment." Included in this definition are substances listed under the authority of any of the major environmental statutes (see CERCLA Section 101(14)).

[57] EPCRA excepts foods, food additives, and other substances regulated by the Food and Drug Administration; solids in a manufactured item to the extent exposure does not occur; substances used for personal or household purposes; substances used in research or hospitals; and substances used in routine agricultural operations.

[58] EPCRA allows facilities to report aggregate amounts of chemicals with similar health and environmental effects. This is called "Tier I" information. However, chemical specific information ("Tier II") must be provided on request (under certain conditions) to a SERC, LEPC, fire department, or the public.

[59] "Toxic chemicals" are substances that may sicken people who are exposed to them in relatively small amounts by eating, drinking, breathing, or through skin absorption. The term "hazardous substance" is broader, including toxic chemicals, but also substances that are explosive, flammable, corrosive, or otherwise harmful.

general public. The public may obtain specific information (e.g., about a particular manufacturing facility) by submitting a request in writing to EPA. EPA distributes written and electronic, nationwide and state-by-state summaries of annual data. Raw data and summaries also are available over the Internet.[60]

EPCRA Section 313 generally requires a report to EPA and the state from each manufacturer with 10 or more employees and who either uses 10,000 pounds or manufactures or processes 25,000 pounds of any "toxic chemical" during the reporting year. However, EPA may adjust (and has adjusted in the past) these thresholds for classes of chemicals or categories of facilities.

EPCRA enumerates the following data reporting requirements for each covered chemical present at each covered facility:[61]

- whether it is manufactured, processed, or otherwise used, and the general category of use;
- the maximum amount present at each location during the previous year;
- treatment or disposal methods used; and
- amount released to the environment or transferred off-site for treatment or disposal.

EPCRA requires reporting by manufacturers, which the law defines as facilities in Standard Industrial Classification codes 20 through 39.[62] The law authorized EPA to expand reporting requirements to additional industries. EPA promulgated a rule May 1, 1997, requiring reports on toxic releases from seven additional industrial categories, including some metal mining, coal mining, commercial electric utilities, petroleum bulk terminals, chemical wholesalers, and solvent recovery facilities (62 *Federal Register* 23834).[63]

The original statute specified 313 "toxic chemicals" or categories of chemicals for which reporting was required, but EPCRA gave EPA authority to add or delete chemicals from the list either on its own initiative or in response to citizen petitions. EPA has removed more than 15 and added roughly 350 chemicals (or categories) to the original list. The listing criteria specified in Section 313(d)(2) authorize EPA to add a chemical when it is "known to cause or can reasonably be anticipated to cause" the following:

- "significant adverse acute human health effects at concentration levels that are reasonably likely to exist beyond facility site boundaries as a result of continuous, or frequently recurring, releases,"

[60] See, for example, EPA's Envirofacts, at http://www.epa.gov/enviro/html/toxic_releases.html; TOXNET, operated by the National Library of Medicine, at http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?TRI; or Right-to-Know Net, provided by OMB Watch at http://www.rtknet.org/.

[61] Congress added data submission requirements for manufacturers and processors of toxic substances when it enacted the Pollution Prevention Act of 1990 (see above).

[62] Standard Industrial Classification Codes were changed to North American Industry Classification System codes on March 21, 2003 (66 FR 13872-13887).

[63] Current regulations promulgated under EPCRA may be found at Title 40 in the Code of Federal Regulations, Part 372.

- in humans cancer, birth defects, or serious or irreversible chronic health effects, or
- "because of—(i) its toxicity, (ii) its toxicity and persistence in the environment, or (iii) its toxicity and tendency to bioaccumulate in the environment, a significant adverse effect on the environment of sufficient seriousness, in the judgment of the Administrator, to warrant reporting under this Section."

Subtitle C—General Provisions

Subtitle C contains various general provisions, definitions, and authorizations.

Trade Secrets

Section 322 authorizes reporting facilities to withhold the identity of a chemical if it is a trade secret and they follow procedures established by EPA.

Information for Health Professionals

Special provisions are made in Section 323 for informing health professionals of a chemical identity that has been withheld to protect confidential business information, if the information is needed to diagnose or treat a person exposed to the chemical.

Right to Know

Section 324 directs EPA, governors, SERCS, and LEPCs to make emergency response plans, MSDSs, lists of chemicals, inventory forms, toxic chemical release forms, and follow up emergency notices available to the general public.

Enforcement

Section 325 establishes civil, administrative, and criminal penalties for non-compliance with mandatory provisions of the act. Citizens are given the authority to bring civil action against a facility, EPA, a governor, or an SERC by Section 326.

Chemical Transport

Chemicals being transported or stored incident to transport are not subject to EPCRA requirements, according to Section 327.

Other Provisions

Section 328 authorizes EPA to issue regulations. Definitions are provided in Section 329. Section 330 authorizes to be appropriated "such sums as may be necessary" to carry out this title.

Table 14. Major U.S. Code Sections of the Emergency Planning and Community Right-to-Know Act (EPCRA)

(codified generally at 42 U.S.C. 11001-11050)

42 U.S.C.	Section Title	EPCRA
Chapter 116—Emergency Planning And Community Right-To-Know		
Subchapter I—Emergency Planning and Notification		
11001	Establishment of state commissions, planning districts, and local committees	Sec. 301
11002	Substances and facilities covered and notification	Sec. 302
11003	Comprehensive emergency response plans	Sec. 303
11004	Emergency notification	Sec. 304
11005	Emergency training and review of emergency systems	Sec. 305
Subchapter II—Reporting Requirements		
11021	Material safety data sheets	Sec. 311
11022	Emergency and hazardous chemical inventory forms	Sec. 312
11023	Toxic chemical release forms	Sec. 313
Subchapter III—General Provisions		
11041	Relationship to other law	Sec. 321
11042	Trade secrets	Sec. 322
11043	Provision of information to health professions, doctors and nurses	Sec. 323
11044	Public availability of plans, data sheets, forms and followup notices	Sec. 324
11045	Enforcement	Sec. 325
11046	Civil actions	Sec. 326
11047	Exemption	Sec. 327
11048	Regulations	Sec. 328
11049	Definitions	Sec. 329
11050	Authorization of appropriations	Sec. 330

Note: This table shows only the major U.S. Code sections. For more detail and to determine when a section was added, consult the official version of the U.S. Code.

Pollution Prevention Act of 1990[64]

The Pollution Prevention Act of 1990 requires the Environmental Protection Agency to establish an Office of Pollution Prevention, develop and coordinate a pollution prevention strategy, and develop source reduction models. The act requires owners and operators of manufacturing facilities to report annually on source reduction and recycling activities, and authorizes EPA to collect data collection on pollution prevention.

Background

Enactment of the Pollution Prevention Act of 1990 marked a turning point in the direction of U.S. environmental protection policy. From an earlier focus on the need to reduce or repair environmental damage by controlling pollutants at the point where they are released to the environment, Congress enacted this law with the goal of achieving pollution prevention through reduced generation of pollutants at their point of origin. Broad support for this policy change was based on the notion that traditional approaches to pollution control had achieved progress, but may in the future be supplemented with new approaches that might better address cross-media pollution transfers, the need for cost-effective alternatives, and methods of controlling pollution from dispersed or nonpoint sources of pollution.

Pollution prevention, also referred to as "source reduction," is viewed by its advocates as the first in a hierarchy of options to reduce risks to human health and the environment. Where prevention is not possible or may not be cost-effective, other options would include recycling, followed next by waste treatment according to environmental standards, and as a last resort, safe disposal of waste residues. Source reduction is the preferred strategy for environmental protection because it often is cost-effective; offers industry substantial savings in reduced consumption of raw materials, pollution control costs, and liability costs; reduces risks to workers; and reduces risk to the environment and public health.

In 1990, opportunities for source reduction appeared to be plentiful, but often were unrealized or rejected by industries without adequate consideration. The act was meant to increase interest in source reduction and encourage adoption of cost-effective source reduction practices. The law was enacted as Title VI of the Omnibus Budget Reconciliation Act of 1990, P.L. 101-508, and is codified as 42 U.S.C. 13101-13109.

Provisions

Section 6602(b) of the Pollution Prevention Act states that it is the policy of the United States that "pollution should be prevented or reduced at the source whenever feasible; pollution that cannot be prevented should be recycled in an environmentally safe manner, whenever feasible; pollution that cannot be prevented or recycled should be treated in an environmentally safe manner whenever feasible; and disposal or other release into the environment should be employed only as a last resort and should be conducted in an environmentally safe manner."

[64] Prepared by Linda-Jo Schierow, Specialist in Environmental Policy, Environmental Policy Section, Resources, Science, and Industry Division.

Section 6603(5) defines source reduction as:

> any practice which—
>
> (i) reduces the amount of any hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released into the environment (including fugitive emissions) prior to recycling, treatment, or disposal; and
>
> (ii) reduces the hazards to public health and the environment associated with the release of such substances, pollutants, or contaminants.

Section 6604 of the act required EPA to establish an Office of Pollution Prevention. The office must be independent of the "single-medium program offices," but was given authority to review and advise those offices to promote an integrated, multi-media (i.e., air, land, and water) approach to source reduction. EPA was directed to develop and implement a detailed and coordinated strategy to promote source reduction, to consider the effect on source reduction of all EPA programs and regulations, and to identify and make recommendations to Congress to eliminate barriers to source reduction. EPA also must conduct workshops and produce and disseminate guidance documents as part of a training program on source reduction opportunities for state and federal enforcement officers of environmental regulations. EPA's strategy, issued in 1991, identifies goals, tasks, target dates, resources required, organizational responsibilities, and criteria to evaluate program progress. In addition, the act requires EPA to promote source reduction practices in other federal agencies and to identify opportunities to use federal procurement to encourage source reduction.

To facilitate source reduction by industry, EPA is required under Section 6604 to develop, test, and disseminate model source reduction auditing procedures to highlight opportunities; promote research and development of source reduction techniques and processes with broad applicability; establish an annual award program to recognize innovative programs; establish a program under Section 6605 of state matching grants for programs to provide technical assistance to business; and disseminate information about source reduction techniques through a clearinghouse established in Section 6606.

The act also includes provisions to improve data collection and public access to environmental data. Section 6604(b) directs EPA to develop improved methods of coordinating, streamlining and assuring access to data collected under all federal environmental statutes. An advisory panel of technical experts is established to advise the Administrator on ways to improve collection and dissemination of data. With respect to data collected under federal environmental statutes, Section 6608 directs EPA to evaluate data gaps and data duplication as well as methods of coordinating, streamlining, and improving public access.

Section 6607 requires owners and operators of many industrial facilities to report annually on their releases of toxic chemicals to the environment (under the Emergency Planning and Community Right-to-Know Act of 1986, Section 313). The Pollution Prevention Act requires these reports to include information about the facility's efforts in source reduction and recycling. Specifically, reports must include

- the quantity of the toxic chemical entering any waste stream (or released to the environment) prior to recycling, treatment, or disposal;
- the quantity of toxic substance recycled (on- or off-site);

- the source reduction practices used;
- quantities of toxic chemical expected to enter waste streams and to be recycled in the two years following the year for which the report is prepared;
- ratio of production in the reporting year to production in the previous year;
- techniques used to identify opportunities for source reduction;
- amount of toxic chemical released in a catastrophic event, remedial action, or other one-time event; and
- amount of toxic chemical treated on- or off-site.

All collected information is to be made available to the general public.

Section 6607(c) of the Pollution Prevention Act provides enforcement authority under Title III of the Superfund Amendments and Reauthorization Act (also known as the Emergency Planning and Community Right-to-Know Act). Civil, administrative, and criminal penalties are authorized for non-compliance with mandatory provisions. Citizens are given the authority to bring civil action for non-compliance against a facility, EPA, a governor, or a State Emergency Response Commission.

Section 6608(a) requires EPA to file a report on implementation of its Pollution Prevention Strategy biennially. The required contents of the reports are specified in the statute.

Authorization for appropriations under the Pollution Prevention Act expired September 30, 1993, but appropriations have continued.

Table 15. Major U.S. Code Sections of the Pollution Prevention Act

(codified generally at 42 U.S.C. 13101-13109)

42 U.S.C.	Section Title	Pollution Prevention Act
Chapter 133—Pollution Prevention		
13101	Findings and policy	Sec. 6602
13102	Definitions	Sec. 6603
13103	EPA activities	Sec. 6604
13104	Grants to states for technical assistance programs	Sec. 6605
13105	Source reduction clearinghouse	Sec. 6606
13106	Source reduction and recycling data collection	Sec. 6607
13107	EPA report	Sec. 6608
13108	Savings provision	Sec. 6609
13109	Authorization of appropriations	Sec. 6610

Note: This table shows only the major U.S. Code sections. For more detail and to determine when a section was added, consult the official version of the U.S. Code.

Toxic Substances Control Act[65]

The Toxic Substances Control Act (TSCA, 15 U.S.C. 2601 et seq.) authorizes the EPA to screen existing and new chemicals used in U.S. manufacturing and commerce to identify potentially dangerous products or uses that should be subject to federal control. Both naturally occurring and synthetic chemicals are subject to TSCA, with the exception of chemicals regulated under other federal laws concerning food, drugs, cosmetics, firearms, ammunition, pesticides, tobacco, or mixtures. EPA may require manufacturers and processors of chemicals to conduct and report the results of tests to determine the effects of potentially dangerous chemicals on living things. Based on test results and other information, EPA must regulate the manufacture, importation, processing, distribution, use, and/or disposal of any chemical that presents an unreasonable risk of injury to human health or the environment. A variety of regulatory tools is available to EPA under TSCA ranging in severity from a total ban on production, import, and use to a requirement that a product bears a warning label at the point of sale. TSCA directs EPA to use the least burdensome option that can reduce risk to a level that is reasonable given the benefits provided by the chemical product or process.

The original legislation included a single title, which has since been designated Title I. As enacted, TSCA included a provision requiring EPA to take specific measures to control the risks from polychlorinated biphenyls (PCBs) (Section 6(e)). Title I was amended in 2008 to restrict sales of elemental mercury (P.L. 110-414). In addition, five titles have been added to address specific concerns—asbestos in 1986 (Title II, P.L. 99-519), radon in 1988 (Title III, P.L. 100-551), lead in 1992 (Title IV, P.L. 102-550), schools in 2007 (Title V, P.L. 110-140), and formaldehyde in 2010 (Title VI, P.L. 111-199). Title II directs EPA to set standards for asbestos mitigation in schools and requires asbestos contractors to be trained and certified. Title III directs EPA to provide technical assistance to states that choose to support radon monitoring and control. Title IV provides similar assistance with respect to abatement of lead-based paint hazards. Title V

Table 16. Toxic Substances Control Act and Major Amendments

(codified generally at 15 U.S.C. 2601-2697)

Year	Act	Public Law Number
1976	Toxic Substances Control Act	P.L. 94-469
1986	Asbestos Hazard Emergency Response Act	P.L. 99-519
1988	Radon Program Development Act	P.L. 100-551
1990	Radon Measurement	P.L. 101-508, §10202
1990	Asbestos School Hazard Abatement Reauthorization Act	P.L. 101-637
1992	Residential Lead-Based Paint Hazard Reduction Act of 1992	P.L. 102-550
2007	Energy Independence and Security Act of 2007, Subtitle E - Healthy High-Performance Schools	P.L. 110-140
2008	Mercury Export Ban Act of 2008	P.L. 110-414
2010	Formaldehyde Standards for Composite Wood Products Act	P.L. 111-199

[65]Prepared by Linda-Jo Schierow, Specialist in Environmental Policy, Environmental Policy Section, Resources, Science, and Industry Division.

addresses environmental issues at schools, including energy efficiency. Finally, Title VI establishes limits on emissions of formaldehyde from composite wood products.

Background

Federal legislation to control toxic substances was originally proposed in 1971 by the President's Council on Environmental Quality. Its report, "Toxic Substances," defined a need for comprehensive legislation to identify and control chemicals whose manufacture, processing, distribution, use, and/or disposal was potentially dangerous and not adequately regulated under other environmental statutes. The House and Senate each passed bills in both the 92nd and 93rd Congresses (in 1972 and 1973, respectively), but controversies over the scope of chemical screening prior to commercial production and distribution, level of costs, and the relationship to other regulatory laws stalled final action. Episodes of environmental contamination—including the Hudson River and other waterways by PCBs, the threat of stratospheric ozone depletion from chlorofluorocarbon (CFC) emissions, and contamination of agricultural produce by polybrominated biphenyls (PBBs) in the state of Michigan—together with more exact estimates of the costs of imposing toxic substances controls, opened the way for final passage of the legislation. President Ford signed the TSCA into law on October 11, 1976.

Title I

TSCA (Title I) directs EPA to

- require manufacturers and processors to conduct tests for existing chemicals if (1) their manufacture, distribution, processing, use, or disposal may present an unreasonable risk of injury to health or the environment; or they are to be produced in substantial quantities and the potential for environmental release or human exposure is substantial or significant; (2) existing data are insufficient to predict the effects of human exposure and environmental releases; and (3) testing is necessary to develop such data (Section 4);
- prevent future risks through pre-manufacture screening and regulatory tracking of new chemical products (Section 5);
- control unreasonable risks already known, or as they are discovered for existing chemicals (Section 6); and
- gather and disseminate information about chemical production, use, and possible adverse effects to human health and the environment (Section 8).

Authorization for appropriations for these activities and a state grant program for control of toxic substances in the environment expired on September 30, 1983, although appropriations for these programs have continued.

Testing of Chemicals

Many chemicals, even some in widespread use, are not well characterized in terms of their potential health and environmental effects. One of the major goals of TSCA was to induce the development of test data by producers (i.e., manufacturers, importers, and processors) of chemicals in commerce. Section 4 of TSCA directs EPA to require the development of test data

on existing chemicals when certain conditions prevail: (1) the manufacture, processing, distribution, use, or disposal of the chemical "may present an unreasonable risk," or (2) the chemical is produced in very large volume and there is a potential for a substantial quantity to be released into the environment or for substantial or significant human exposure. Under either condition, EPA must issue a rule requiring tests if (a) existing data are insufficient to resolve the question of safety, and (b) testing is necessary to develop the data.

Because there were more than 55,000 chemicals in U.S. commerce at the time EPA was to begin developing test rules, Congress established a special interagency committee to help EPA determine which chemicals should be considered first, and to coordinate testing needs and efforts among government agencies. At least every six months the Interagency Testing Committee (ITC) must consider candidate chemicals for inclusion on a list of substances that the ITC recommends to EPA for development and promulgation of test rules. TSCA directs the ITC to "designate" a subset of chemicals on the list for EPA action within 12 months. The list can contain no more than 50 "designated" chemicals at any time. When a chemical is designated, EPA has one year to respond by issuing a proposed test rule or a notice explaining why no testing is needed.

TSCA requires the ITC to consider the following factors when it makes listing decisions: (1) quantity of the substance to be manufactured, (2) quantity of the chemical in environmental releases, (3) number of people who will be exposed occupationally and the duration of exposure, (4) extent of non-occupational human exposure, (5) similarity of the chemical to any other chemical known to present an unreasonable risk, (6) existence of data concerning environmental or health effects of the chemical, (7) the quantity of information to be gained by testing, and (8) the availability of facilities and personnel for performing testing. Chemicals known or suspected to cause or contribute to cancer, gene mutations, or birth defects are to be assigned a higher priority. In response to information that indicates "there may be a reasonable basis to conclude that a chemical ... presents or will present a significant risk of serious or widespread harm to human beings from cancer, gene mutations, or birth defects," TSCA requires EPA action to prevent or reduce that risk or publication of a finding that the risk is not unreasonable.

Pre-manufacture Notification for New Chemicals or Uses

TSCA (Section 5) requires manufacturers, importers, and processors to notify EPA at least 90 days prior to producing or otherwise introducing a new chemical product into the United States. Any information or test data that is known to, reasonably ascertainable by, or in possession of the notifier, and that might be useful to EPA in evaluating the chemical's potential adverse effects on human health or the environment, must be submitted to EPA at the same time. TSCA also requires EPA to be notified when there are plans to produce, process, or use an existing chemical in a way that differs from previously permitted uses, if the Administrator has determined by rule that new uses of the chemical may produce significant changes in human and environmental exposures and therefore require notification. The 90-day notice provides EPA with the opportunity to evaluate the chemical use and, if necessary, to prohibit or limit such activity before it occurs to prevent unreasonable risk of injury to human health or the environment.

EPA has 45 days after notification (or up to 90 days if it extends the period for good cause) to evaluate the potential risk posed by the chemical. If EPA determines that there is a reasonable basis to conclude that the substance presents or will present an unreasonable risk, the Administrator must promulgate requirements to protect adequately against such risk. Alternatively, EPA may determine that the proposed activity related to a chemical does not present an unreasonable risk; this decision may be based on the available data, or, when no data

exist to document the effects of exposure, on what is known about the effects of chemicals in commerce with similar chemical structures and used in similar ways.

The purpose of EPA's screening procedure is to identify potential hazards, and control them before use of a chemical becomes widespread. If data are inadequate to make an informed judgment and (1) manufacture, processing, distribution in commerce, use, or disposal may present an unreasonable risk, or (2) a chemical is to be produced in substantial quantities, and the potential for environmental release or human exposure is substantial or significant, EPA may issue a proposed order to prohibit or limit such activities until sufficient data are submitted.

Although the legislative history of TSCA includes a presumption that testing of new products would take place before they were widely used, either as the chemical was developed, or as its markets grew, TSCA also forbids promulgation of blanket testing requirements for all new chemicals. This reflects concern that uniform testing requirements might stifle innovation in the chemical industry. Thus, EPA must decide which chemicals, or which categories of chemicals, warrant the costs of premarket testing. EPA reviews more than 1,000 new chemical manufacturing notices annually.

Regulatory Controls for Hazardous Chemicals

TSCA requires EPA to regulate manufacturing, processing, distribution in commerce, use, or disposal of a chemical if it will present an unreasonable risk of injury to health or the environment, and the risk cannot be reduced to a sufficient degree under another federal law administered by EPA. The alternative means available to EPA for controlling chemical hazards that present unreasonable risks are specified in Section 6 of TSCA. EPA has the authority to:

- prohibit or limit the amount of production or distribution of a substance in commerce;
- prohibit or limit the production or distribution of a substance for a particular use;
- limit the volume or concentration of the chemical produced;
- prohibit or regulate the manner or method of commercial use;
- require warning labels and/or instructions on containers or products;
- require notification of the risk of injury to distributors and, to the extent possible, consumers;
- require record-keeping by producers;
- specify disposal methods; and
- require replacement or repurchase of products already distributed.

EPA also may impose any of these requirements in combination, or for a specific geographical region. However, EPA is required by TSCA to regulate only "to the extent necessary to protect adequately" against a risk, and to use the "least burdensome" regulatory approach, even in controlling unreasonable risks.

Information Gathering

Section 8 of TSCA requires EPA to develop and maintain an inventory of all chemicals, or categories of chemicals, manufactured or processed in the United States. The first version of this inventory identified approximately 55,000 chemicals in commerce in 1979. All chemicals not on the inventory are, by definition, "new" and subject to the notification provisions of Section 5. These chemicals must be added to the inventory if they enter U.S. commerce. Chemicals need not be listed if they are only produced in very small quantities for purposes of experimentation or research.

Two chemical substances are directly addressed in Title I: PCBs and elemental mercury. TSCA directs EPA to regulate PCBs and to ban most uses. In addition, TSCA prohibits the sale, distribution, or transfer of elemental mercury by federal agencies.

To aid EPA in its duties under TSCA, the agency was granted considerable authority to collect information from industries. EPA may require maintenance of records and reporting of: chemical identities, names, and molecular structures; categories of use; amounts manufactured and processed for each category of use; descriptions of byproducts resulting from manufacture, processing, use, and disposal; environmental and health effects; number of individuals exposed; number of employees exposed and the duration of exposure; and manner or method of chemical disposal.

Manufacturers, processors, and distributors of chemicals are required to maintain records of significant adverse reactions to health or the environment alleged to have been caused by a substance or mixture. Records of adverse effects on the health of employees must be retained for 30 years from the date of reporting. Industry also must submit lists and copies of health and safety studies. Studies showing adverse effects previously unknown must be submitted to EPA as soon as they are completed or discovered.

Imminent Hazards

Section 7 provides EPA authority to take emergency action through the district courts to control a chemical substance or mixture which presents an imminent and unreasonable risk of serious widespread injury to health or the environment.

Relation to Other Laws

Section 9 allows EPA to refer cases of chemical risk to other federal agencies with the authority to prevent or reduce the risk. For statutes under EPA's jurisdiction, TSCA gives the Administrator discretion to decide if a risk can best be handled under the authority of TSCA.

Enforcement and Judicial Review

Section 11 authorizes EPA to inspect any facilities subject to TSCA requirements and to issue subpoenas requiring attendance and testimony of witnesses, production of reports and documents, answers to questions and other necessary information. Section 13 mandates TSCA enforcement at the national borders by the Treasury Department.

Section 15 identifies acts prohibited under TSCA, while Section 16 describes penalties for acts violating these prohibitions, as well as recourse available to anyone accused of such violations. Section 16 authorizes civil penalties, not to exceed $25,000 per violation per day, and affords the defendant an opportunity to request a hearing before an order is issued and to petition for judicial review of an order after it is issued. Criminal penalties also are authorized for willful violations. Section 17 provides jurisdiction to U.S. district courts in civil actions to enforce TSCA Section 15 by restraining or compelling actions that violate or comply with it, respectively. Chemicals may be seized and condemned if their manufacture, processing, or distribution violated the act.

Section 19 authorizes any person to file a petition for judicial review of specified rules within 60 days of issuance under TSCA. The court is directed to set aside specified rules if they are not supported by substantial evidence in the rulemaking record taken as a whole.

Section 20 authorizes civil suits by any person against any person in violation of the act. It also authorizes suits against EPA to compel performance of nondiscretionary actions under TSCA. Section 21 provides the public with the right to petition for the issuance, amendment, or repeal of a rule requiring toxicity testing of a chemical, regulation of the chemical, or reporting.

Confidential Business Information

Section 14 provides broad protection of proprietary confidential information about chemicals in commerce. Disclosure by EPA employees of such information generally is not permitted, except to other federal employees, or when necessary to protect health or the environment. Data from health and safety studies of chemicals is not protected unless its disclosure would reveal a chemical process or chemical proportion in a mixture. Wrongful disclosure of confidential data by federal employees is prohibited, and may result in criminal penalties.

Chemical Categories

Section 26 allows EPA to impose regulatory controls on categories of chemicals, rather than on a case-by-case basis. However, EPA cannot regulate a group merely because it is composed of new chemical substances.

State Preemption

TSCA Section 18 preempts state actions that establish or continue in effect requirements applicable to a chemical substance or mixture that is federally regulated under TSCA Sections 5 or 6, unless the state requirement is identical to the federal requirement, implements another federal law, or prohibits use of the substance or mixture within the state. However, a state may ask EPA to allow a state requirement that provides a significantly higher degree of protection from risk than does the federal requirement.

Other Provisions

TSCA Section 10 directs EPA to conduct and coordinate among federal agencies research, development, and monitoring that is necessary to the purposes of the act.

Section 12 excludes chemical products manufactured for export from TSCA requirements except for reporting and record keeping requirements in Section 8. In 2008, Congress excluded

elemental mercury from this exemption, banning its export beginning in 2013, with the exception of mercury contained in coal. Other exceptions from essential uses may be granted by rule.

Section 22 waives compliance when in the interest of national defense.

Section 23 provides protection of employees who assist in carrying out the provisions of the act (i.e., "whistle-blowers").

The potential effects of TSCA rules on employment must be monitored by EPA, according to Section 24.

Section 25 mandates study of the need for indemnification of people affected by federal laws administered by EPA and of the feasibility of establishing a standard classification system for chemical substances and of storing and retrieving information about them.

Section 26 authorizes data sharing and cooperative action to facilitate TSCA implementation between EPA and other federal agencies. It also authorizes collection of fees for EPA processing of data submitted in response to an order under Section 4 or 5. EPA is directed to establish an office to assist the regulated community. The agency also must establish a procedure to ensure disclosure of financial interests in the regulated community by EPA employees. Final orders issued under TSCA must contain a statement of basis and purpose. Finally, Section 26 established within EPA a new Assistant Administrator for Toxic Substances.

TSCA Section 27 authorizes research and development of test methods for chemicals by the Public Health Service in cooperation with EPA.

Grants to states are authorized by Section 28 to establish and operate programs to prevent or eliminate unreasonable risks to health or the environment.

Section 29 authorized appropriations through 1983.

An annual report is mandated by Section 30.

Title II (Asbestos in Buildings)

Growing public concern about the presence of potentially hazardous asbestos in buildings, especially in schools, led to congressional efforts to address this problem. Title II of TSCA, the Asbestos Hazard Emergency Response Act (AHERA), was enacted in 1986 (P.L. 99-519) and amended in July 1988 (P.L. 100-368). It required EPA to set standards by October 1987, for responding to the presence of asbestos in schools. The standards, set at levels adequate to protect public health and the environment, identify appropriate response actions that depend on the physical condition of asbestos. Schools, in turn, were required to inspect for asbestos-containing material, and to develop and implement a plan for managing any such material. Plans for managing asbestos were to be submitted by schools before May 1989, and implementation was to begin by July 1989. The law contains no deadlines for schools to complete implementation.

Title II requires asbestos contractors and analytical laboratories to be certified, and schools to use certified persons for abatement work. Training and accreditation requirements also apply to inspectors, contractors, and workers performing asbestos abatement work in all public and commercial buildings. EPA may award training grants to nonprofit organizations for asbestos

health and safety programs. However, authorization of appropriations for this grant program expired September 30, 1995. Other Title II requirements (such as mandates that buildings be inspected for asbestos) have not been extended to non-school buildings.

To enforce requirements, TSCA authorizes EPA to take emergency action with respect to schools if school officials do not act to protect children. The act also authorizes citizen action with respect to asbestos-containing material in a school and to compel action by EPA, either through administrative petition or judicial action. Civil penalties not to exceed $5,000 are authorized for violations such as failing to conduct an inspection or to develop a school management plan.

Concern about how schools would pay for required actions was addressed in separate legislation (the Asbestos School Hazard Abatement Act of 1984, or ASHAA, P.L. 98-377). It established a program offering grants and interest-free loans to schools with serious asbestos problems and demonstrated financial need. Although EPA for several years did not request funding for this program, Congress appropriated funds. Authorization of appropriations for this program expired September 30, 1995, and Congress has not appropriated funds since FY1993; a total of $382 million in grant and loan funds were appropriated from FY1984 through FY1993. Repaid ASHAA loans are returned to an Asbestos Trust Fund, established in TSCA Title II, to become a dedicated source of revenues for future asbestos control projects.

Title III (Radon Programs)

In October 1988 Congress amended TSCA by adding Title III—Indoor Radon Abatement (15 U.S.C. 2661 et seq., P.L. 100-551). The basic purpose of Title III is to provide financial and technical assistance to the states that choose to support radon monitoring and control; neither monitoring nor abatement of radon is required by the act.

Title III required EPA to update its pamphlet "A Citizen's Guide to Radon," to develop model construction standards and techniques for controlling radon levels within new buildings, and to provide technical assistance to states. EPA is to provide technical assistance by: establishing an information clearinghouse; publishing public information materials; establishing a national database of radon levels detected, organized by state; providing information to professional organizations representing private firms involved in building design and construction; submitting to Congress a plan for providing financial and technical assistance to states; operating cooperative projects with states; conducting research to develop, test, and evaluate radon measurement methods and protocols; developing and demonstrating new methods of radon measurement and mitigation, including methods that are suitable for use in nonresidential child care facilities; operating a voluntary program to rate radon measurement and mitigation devices and methods and the effectiveness of private firms and individuals offering radon-related services; and designing and implementing training seminars. The proficiency rating program and certification for training programs collect fees for service, and therefore, are meant to be self-supporting, but Congress authorized $1,500,000 to be appropriated to establish these programs. Congress authorized $3,000,000 to be appropriated for each of three years beginning in 1989 for the other provisions of Sections 303, 304, and 305.

A matching grant program was established for the purpose of assisting states in developing and implementing programs for radon assessment and mitigation. For this program, $30 million was authorized to be appropriated over three years, with funds targeted to states or projects that made efforts to ensure adoption of EPA's model construction standards and techniques for new buildings; gave preference to low-income persons; or addressed serious and extensive radon

contamination problems or had the potential to reduce risk or to develop innovative assessment techniques, mitigation measures, or management approaches.

Other sections of Title III require EPA to: conduct a study to determine the extent of radon contamination in schools; identify and list areas of the U.S. with a high probability of having high levels of indoor radon; make grants or cooperative agreements to establish and operate at least three regional radon training centers; and provide guidance to federal agencies on radon measurement, risk assessment, and remedial measures.

All authorizations for appropriations specific to this title expired September 30, 1991, although appropriations have continued.

Title IV (Lead Exposure Reduction)

The 102nd Congress added Title IV to TSCA when it enacted the Residential Lead-Based Paint Hazard Reduction Act of 1992 as Title X in the Housing and Community Development Act of 1992 (P.L. 102-550). Title IV aims to accelerate federal efforts to reduce risks to young children who daily are exposed to lead-based paint in their homes. In addition, it is expected to stimulate development of lead inspection and hazard abatement services in the private sector, while ensuring that the services provided and any products employed are reliable and effective in reducing risk. To these ends, Title IV directs EPA:

- to promulgate definitions of lead-contaminated dust, lead-contaminated soil, and lead-based paint hazards;
- to ensure that people engaged in detection and control of lead hazards are properly trained and that contractors are certified;
- to publish requirements for the accreditation of training programs for workers;
- to develop criteria to evaluate the effectiveness of commercial products used to detect or reduce risks associated with lead-based paint;
- to establish protocols, criteria, and minimum performance standards for laboratory analysis of lead in paint films, soil, and dust;
- to establish a program to certify laboratories as qualified to test substances for lead content; and
- to publish and distribute to the public a list of certified or accredited environmental sampling laboratories.

Title IV explicitly applies these requirements to federal facilities and activities that may create a lead hazard.

In addition, Congress directed EPA to conduct a study of lead hazards due to renovation and remodeling activities that may incidentally disturb lead-based paint. EPA is required to promulgate guidelines for the renovation and remodeling of buildings or other structures when these activities might create a hazard.

Title IV directs EPA to establish a clearinghouse and hotline to distribute information about the hazards of lead-based paint, how to avoid exposure and reduce risk, and new technologies for removing or immobilizing lead-based paint. In addition, Congress mandated development of: a

lead hazard information pamphlet; public education and outreach activities for health professionals, the general public, homeowners, landlords, tenants, consumers of home improvement products, the residential real estate industry, and the home renovation industry; and information to be distributed by retailers of home improvement products to provide consumers with practical information related to the hazards of renovation where lead-based paint may be present.

Title IV authorizes states to propose programs to train and certify inspectors and contractors engaged in the detection or control of lead-based paint hazards. States also may develop the required informational pamphlets. TSCA requires EPA to promulgate a model state program that may be adopted by any state. Congress gave EPA the authority to approve or disapprove authorization for state proposals and to provide grants for states to develop and implement authorized programs. A federal program must be established, administered, and enforced by EPA in each state without an authorized program.

The Department of Health and Human Services also has responsibilities under Title IV of TSCA. It mandates a study by the Centers for Disease Prevention and Control (CDC) and the National Institute for Environmental Health Sciences to determine the sources of lead exposure to children who have elevated lead levels in their bodies. The National Institute for Occupational Safety and Health is directed to study ways of reducing occupational exposure to lead during abatement activities.

The act established a rule-making docket to ensure the availability to the general public of all documents submitted to agencies that are relevant to regulatory decisions pursuant to this legislation. The docket is required to include the drafts of all proposed rules submitted by EPA to the President's Office of Management and Budget (OMB), written comments on the drafts, and written responses to comments. In addition, the agency must provide an explanation for any major change to a proposed rule that appears in the final rule, and such changes may not be made based on information not filed in the docket. Dockets are required to be established in each EPA regional office.

Congress authorized to be appropriated "such sums as may be necessary" for TSCA Title IV.

In addition to amending TSCA, Title X of the Housing and Community Development Act of 1992 authorized grants to states for risk assessments and lead-based paint removal and immobilization in private housing for low-income residents; establishing state training, certification, or accreditation programs for inspectors and abatement contractors; and research at the Department of Housing and Urban Development (HUD). Authorization for appropriations for these grants expired September 30, 1994, but appropriations have continued. Title X directed HUD to establish guidelines for federally supported work involving risk assessments, inspections, interim controls, and abatement of lead-based paint hazards. In addition, the National Institute for Occupational Safety and Health (NIOSH) was provided $10 million for training people who remove or immobilize paint.

Title V (Reducing Risks in Schools)

At the end of 2007, the 110th Congress added a fifth title to TSCA, subtitled Healthy High-Performance Schools. Enacted as Title IV, Subtitle E (Section 461) of P.L. 110-140, the Energy Independence and Security Act of 2007, TSCA Title V authorizes EPA to establish a state grant program to provide technical assistance for EPA programs to schools and develop and implement

state school environmental health programs. State programs must include standards for school building design, construction, and renovation, and identify ongoing school building environmental problems and recommended solutions. Environmental problems specifically mentioned in the law include "contaminants, hazardous substances, and pollutant emissions." EPA's authority to provide grants expires five years after the date of enactment.

Title V requires the EPA Administrator, in consultation with the Secretary of Education and the Secretary of Health and Human Services, to issue voluntary guidelines within 18 months of Title V enactment for selecting sites for schools (presumably new schools). The guidelines are to account for the "special vulnerability of children to hazardous substances or pollution exposures in any case in which the potential for contamination at a potential school site exists," modes of transportation available to students and staff, efficient use of energy, and potential use of a school at the site as an emergency shelter.

Title V also requires the EPA Administrator, in consultation with the Secretary of Education and the Secretary of Health and Human Services, to issue voluntary guidelines within two years of enactment for developing and implementing state environmental health programs for schools. These guidelines must take into account the findings of federal initiatives established under "relevant federal law with respect to school facilities," including initiatives related to water and energy conservation authorized by Sections 431 through 441, and work related to high-performance green buildings authorized by Section 492 of P.L. 110-140. In particular, the guidelines must take into account "environmental problems, contaminants, hazardous substances, and pollutant emissions"; natural day lighting; ventilation; heating and cooling; moisture control and mold; maintenance, cleaning, and pest control; acoustics; and "other issues relating to the health, comfort, productivity, and performance of occupants of the school facilities." In addition, Title V requires that the guidelines provide "technical assistance on siting, design, management, and operation of school facilities"; collaborate with children's environmental health centers in school environmental investigations"; assist states and the public to better understand and improve the environmental health of children; and take into account "the special vulnerability of children in low-income and minority communities to exposures from contaminants, hazardous substances, and pollutant emissions."

Several provisions in Title V refer to entities established under other sections of the Energy Independence and Security Act of 2007 (P.L. 110-140). For example, Title V contains directives for the Federal Director of the Office of Federal High-Performance Green Buildings in the General Services Administration, which was created by Section 436(a). In addition, there is reference to the national high-performance green building clearinghouse established in Section 423(1) "to carry out public outreach to inform individuals and entities of the information and services [related to high-performance green buildings] available governmentwide." Title V requires the Federal Director to ensure, "to the maximum extent practicable," that the public clearinghouse "receives and makes available information on the exposure of children to environmental hazards in school facilities." The EPA Administrator is directed to prepare an annual report to Congress on activities carried out under Title V authority, and this report also must be made available to the public through the clearinghouse.

For the purposes of carrying out the provisions of Title V, Congress authorized appropriations of $7 million through FY2013.

Title VI (Limiting Formaldehyde Emissions)

In July 2010, Congress enacted the Formaldehyde Standards for Composite Wood Products Act (P.L. 111-199), adding a new Title VI to TSCA. The new title mandates specific formaldehyde emission standards for hardwood plywood, medium-density fiberboard, and particleboard that is sold, supplied, offered for sale, or manufactured in the United States. The standards are phased in over 2 years from enactment and are based on the voluntary national formaldehyde emissions standards established by ASTM International (formerly known as the American Society for Testing and Materials), method ASTM E-1333-96 (2002).

The standards apply to plywood, particleboard, and medium-density fiberboard in the form of an unfinished panel or incorporated into a finished good. Certain products are excluded, including many forms of lumber and panels used for outdoor applications, such as structural plywood, prefabricated wood I-joists, most windows, antiques or other previously owned goods, and composite wood products used inside automobiles, trucks, rail cars, boats, and aircraft.

EPA is required to promulgate regulations ensuring compliance with the emission standards and must include provisions relating to labeling, chain of custody requirements, sell-through provisions; ultra low-emitting formaldehyde resins, finished goods, third-party testing and certification; auditing and reporting of third-party certifiers; recordkeeping; enforcement, laminated products; and exceptions for products and components containing "de minimis amounts" of composite wood products. The new law prohibits stockpiling of products manufactured before the effective date of the act for sale after that date. Also prohibited is any requirement for labeling products manufactured prior to the "designated date of manufacture."

P.L. 111-199 requires an annual report to Congress on the status of implementation and the extent to which relevant industries have achieved compliance. Finally, the act directs the Secretary of Housing and Urban Development to update regulations concerning formaldehyde emissions from composite wood in manufactured homes (24 Code of Federal Regulations 3280.308) to ensure that the standards established by TSCA Title VI are implemented.

Table 17. Major U.S. Code Sections of the Toxic Substances Control Act, as Amended

(codified generally at 15 U.S.C. 2601-2695d)

15 U.S.C.	Section Title	Toxic Substances Control Act, as Amended
Chapter 53—Toxic Substances Control		
Subchapter I—Control of Toxic Substances		
2601	Findings, policy, and intent	Sec. 2
2602	Definitions	Sec. 3
2603	Testing of chemical substances and mixtures	Sec. 4
2604	Manufacturing and processing notices	Sec. 5
2605	Regulation of hazardous chemical substances and mixtures	Sec. 6
2606	Imminent hazards	Sec. 7

15 U.S.C.	Section Title	Toxic Substances Control Act, as Amended
2607	Reporting and retention of information	Sec. 8
2608	Relationship to other federal laws	Sec. 9
2609	Research, development, collection, dissemination, and utilization of data	Sec. 10
2610	Inspections and subpoenas	Sec. 11
2611	Exports	Sec. 12
2612	Entry into customs territory of the United States	Sec. 13
2613	Disclosure of data	Sec. 14
2614	Prohibited acts	Sec. 15
2615	Penalties	Sec. 16
2616	Specific enforcement and seizure	Sec. 17
2617	Preemption	Sec. 18
2618	Judicial review	Sec. 19
2619	Citizens' civil actions	Sec. 20
2620	Citizens' petitions	Sec. 21
2621	National defense waiver	Sec. 22
2622	Employee protection	Sec. 23
2623	Employment effects	Sec. 24
2624	Studies	Sec. 25
2625	Administration	Sec. 26
2626	Development and evaluation of test methods	Sec. 27
2627	State programs	Sec. 28
2628	Authorization of appropriations	Sec. 29
2629	Annual report	Sec. 30
Subchapter II—Asbestos Hazard Emergency Response		
2641	Congressional findings and purpose	Sec. 201
2642	Definitions	Sec. 202
2643	EPA regulations	Sec. 203
2644	Requirements if EPA fails to promulgate regulations	Sec. 204
2645	Submission to state governor	Sec. 205
2646	Contractor and laboratory accreditation	Sec. 206
2647	Enforcement	Sec. 207
2648	Emergency authority	Sec. 208
2649	State and federal law	Sec. 209
2650	Asbestos contractors and local educational agencies	Sec. 210
2651	Public protection	Sec. 211
2652	Asbestos Ombudsman	Sec. 212

15 U.S.C.	Section Title	Toxic Substances Control Act, as Amended
2653	EPA study of asbestos-containing material in public buildings	Sec. 213
2654	Transition rules	Sec. 214
2655	Worker protection	Sec. 215
2656	Training Grants	Sec. 216
Subchapter III—Indoor Radon Abatement		
2661	National goal	Sec. 301
2662	Definitions	Sec. 302
2663	EPA's citizen's guide	Sec. 303
2664	Model construction standards and techniques	Sec. 304
2665	Technical assistance to states for radon programs	Sec. 305
2666	Grant assistance to states for radon programs	Sec. 306
2667	Radon in schools	Sec. 307
2668	Regional radon training centers	Sec. 308
2669	Study of radon in federal buildings	Sec. 309
2670	Regulations	Sec. 310
2671	Additional authorizations	Sec. 311
Subchapter IV—Lead Exposure Reduction		
2681	Definitions	Sec. 401
2682	Lead-based paint activities training and certification	Sec. 402
2683	Identification of dangerous levels of lead	Sec. 403
2684	Authorized state programs	Sec. 404
2685	Lead abatement and measurement	Sec. 405
2686	Lead hazard information pamphlet	Sec. 406
2687	Regulations	Sec. 407
2688	Control of lead-based paint at federal facilities	Sec. 408
2689	Prohibited acts	Sec. 409
2690	Relationship to other federal law	Sec. 410
2691	General provisions relating to administrative proceedings	Sec. 411
2692	Authorization of appropriations	Sec. 412
Subchapter V—Healthy High-Performance Schools		
2695	Grants for healthy school environments	Sec. 501
2695a	Model guidelines for siting of school facilities	Sec. 502
2695b	Public outreach	Sec. 503
2695c	Environmental health program	Sec. 504
2695d	Authorization of appropriations	Sec. 505

15 U.S.C.	Section Title	Toxic Substances Control Act, as Amended
Subchapter VI—Formaldehyde Standards for Composite Wood Products		
2697	Formaldehyde Standards	Sec. 601

Note: This table shows only the major U.S. Code sections. For more detail and to determine when a section was added, consult the official version of the U.S. Code.

Pesticide Laws[66]

The Environmental Protection Agency (EPA) is responsible for implementing federal pesticide policies under two statutes: the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA),[67] governing the sale and use of pesticide products within the United States; and the Federal Food, Drug, and Cosmetic Act (FFDCA), which limits pesticide residues on food in interstate commerce (including imports). Pesticides are broadly defined in FIFRA Section 2(u) as chemicals and other products used to kill, repel, or control pests. Familiar examples include pesticides used to kill insects and weeds that can reduce the yield, and sometimes harm the quality, of agricultural crops, ornamental plants, forests, wooden structures, and also pastures. But the broad definition of "pesticide" in FIFRA also applies to products with less familiar "pesticidal uses." For example, substances used to control mold, mildew, algae, and other nuisance growths on equipment, in surface water, or on stored grains are pesticides. The term also applies to disinfectants and sterilizing agents, animal repellents, rat poison, and many other substances. EPA estimates that there are about 18,000 pesticide products currently in use.[68] These all are regulated under FIFRA, but approximately 5,800 pesticide products used in food production also are regulated under the FFDCA, as discussed below.

FIFRA directs EPA to restrict the use of pesticides as necessary to prevent unreasonable adverse effects on people and the environment, taking into account the costs and benefits of various pesticide uses. FIFRA requires EPA to regulate the sale and use of pesticides in the United States through registration and labeling.[69] The act prohibits sale of any pesticide in the United States unless it is registered and labeled to indicate approved uses and restrictions. It is a violation of the law to use a pesticide in a manner that is inconsistent with the label instructions. EPA registers each pesticide product for each approved use. For example, a product may be registered for use on green beans to control mites, as a seed treatment for cotton, and as a treatment for structural cracks. In addition, FIFRA requires EPA to reregister older pesticides based on new data that meet current regulatory and scientific standards. Establishments that manufacture or sell pesticide products must register with EPA. Facility managers are required to keep certain records and to allow inspections by federal or state regulatory officials.

For the approximately 600 or more pesticides (i.e., active ingredients) registered for use in food production, the FFDCA Section 408 authorizes EPA to establish maximum allowable residue

[66] Prepared by Linda-Jo Schierow, Specialist in Environmental Policy, Environmental Policy Section, Resources, Science, and Industry Division.

[67] FIFRA also is known as the Act of June 25, 1947.

[68] Beech, James L. U.S. EPA, Office of Pesticide Programs. Personal communication, November 20, 2006.

[69] Exceptions are noted in 40 CFR 152.20, 152.25, and 152.30.

levels (called tolerances) that ensure that human exposure to the pesticide ingredients in food and animal feed will be "safe".[70] A "safe" tolerance is defined as a level at which there is "a reasonable certainty of no harm" from the exposure. Under FFDCA, foods with a residue of a pesticide ingredient for which there is no tolerance established, or with a residue level exceeding an established tolerance limit, are declared "unsafe" and "adulterated"; such foods cannot be sold in interstate commerce or imported to the United States. Pesticides may not be registered under FIFRA for use on food unless tolerances (or exemptions) have been established under the FFDCA.

History of Federal Pesticide Law

Table 18 and **Table 19** list the original enactment of FIFRA and FFDCA and major amendments to these statutes, respectively.

FIFRA

Federal pesticide legislation was first enacted in 1910. It aimed to reduce economic exploitation of farmers by manufacturers and distributors of adulterated or ineffective pesticides. Congress did not address the potential risks to human health posed by pesticide products until it enacted FIFRA in 1947. The U.S. Department of Agriculture (USDA) was responsible for administering the pesticide statutes during this period. However, responsibility was shifted to the EPA when that agency was created in 1970. Broader congressional concerns about long- and short-term toxic effects of pesticide exposure on people who applied pesticides (applicators), wildlife, nontarget insects and birds, and on consumers, subsequently led to a complete revision of FIFRA in 1972. The 1972 law completely replaced the original 1947 law, and is the basis of current federal policy. Substantial changes were made in 1988 (P.L. 100-532), 1996 (P.L. 104-170), and 2004 (P.L. 108-199). The 1988 amendments focused on accelerating the reregistration process. The 1996 amendments facilitated registration of pesticides for special (so-called "minor") uses, reauthorized collection of fees to support reregistration, and required coordination of regulations implementing FIFRA and the FFDCA. The 2004 amendments, known as the Pesticide Registration Improvement Act (PRIA), modified the types and amounts of fees that EPA could collect to support its activities. The Pesticide Registration Improvement Renewal Act, or PRIA2 (P.L. 110-94), enacted October 9, 2007, reauthorized and revised these fee provisions, which would have expired at the end of FY2008.

Authorization for appropriations for FIFRA expired on September 31, 1991, although appropriations bills have continued to provide funding to implement the law. Authority provided by FIFRA to EPA to issue and enforce regulations, is, for the most part, permanent, and is not affected by the expiration of the authorization of appropriations.

[70] Ingredients in pesticide products are categorized as active or inert. Active ingredients are those that are intended to control the pest, while inert ingredients are used to deliver the active ingredients effectively to the pest. Inert ingredients often are solvents or surfactants and often comprise the bulk of the pesticide product. Some inerts are known to be toxic, and some are known to be harmless, but EPA lists most in the category "inerts of unknown toxicity."

Table 18. Federal Insecticide, Fungicide, and Rodenticide Act and Amendments

(codified generally at 7 U.S.C. 136-136y)

Year	Act	Public Law Number
1947	Federal Insecticide, Fungicide, and Rodenticide Act	P.L. 80-104
1964	Federal Insecticide, Fungicide, and Rodenticide Act Amendments	P.L. 88-305
1972	Federal Environmental Pesticide Control Act	P.L. 92-516
1975	Federal Insecticide, Fungicide, and Rodenticide Act Extension	P.L. 94-140
1978	Federal Pesticide Act of 1978	P.L. 95-396
1980	Federal Insecticide, Fungicide and Rodenticide Act Amendments	P.L. 96-539
1988	Federal Insecticide, Fungicide, and Rodenticide Amendments of 1988	P.L. 100-532
1990	Food, Agriculture, Conservation, and Trade Act of 1990	P.L. 101-624
1991	Food, Agriculture, Conservation and Trade Amendments of 1991	P.L. 102-237
1996	Food Quality Protection Act (FQPA) of 1996	P.L. 104-170
2004	Pesticide Registration Improvement Act of 2003	P.L. 108-199, Division G, Title V
2007	Pesticide Registration Improvement Renewal Act	P.L. 110-94

Note: The current FIFRA statute was established by P.L. 92-516, which completely replaced (by amendment) the original 1947 legislation.

FFDCA

The original Federal Food, Drug, and Cosmetic Act of 1938 (FFDCA) established the structure of the current law. With respect to food safety, it required the Food and Drug Administration (then a part of the U.S. Department of Agriculture) to set maximum residue levels (tolerances) for unavoidable poisonous substances in food. Congress acted to protect consumers from pesticide residues on food in 1954 by adding a new Section 408 to the FFDCA. It directed FDA to set residue tolerances for all pesticides in *raw* agricultural commodities. Congress expanded the requirement for tolerances in the Food Additives Amendment of 1958, which added Section 409, directing FDA to set tolerances for food additives, including pesticide residues in *processed* foods. Section 409 also forbade the addition to food of any additive (including pesticide residue), if it was found to be a potential cancer-causing agent. This provision is referred to as the Delaney Clause.

Table 19. Federal Food, Drug, and Cosmetic Act, Section 408, and Amendments

(codified generally at 21 U.S.C. 321-346a)

Year	Act	Public Law Number
1938	Federal Food, Drug, and Cosmetic Act	Act of June 25, 1938
1954	Federal Food, Drug, and Cosmetic Act Amendments	Act of July 22, 1954
1958	Food Additive Amendments of 1958 (including the Delaney Clause)	P.L. 85-929
1996	Food Quality Protection Act of 1996	P.L. 104-170

In 1970, authority to establish tolerances for pesticide residues was transferred to the newly formed EPA. FDA (now in the Department of Health and Human Services) retained responsibility for enforcement of tolerances in food that is imported or sold across state boundaries.

In 1996, Congress substantially revised requirements for pesticide residue tolerance setting in the Food Quality Protection Act (FQPA). The FQPA redefined terms so that pesticide residues in processed foods were no longer regulated as food additives, and therefore no longer were subject to the Delaney Clause. The FQPA also established a new safety standard of a "reasonable certainty of no harm" from exposure to pesticides. See **Table 21** for a listing of current pesticides-related provisions in the FFDCA.

The Act of July 22, 1954, authorized such sums as may be necessary to carry out this FFDCA section (21 U.S.C. 346b).

Registration of Pesticide Products

When pesticide manufacturers apply to register a pesticide active ingredient, pesticide product, or a new use of a registered pesticide under FIFRA Section 3, EPA requires them to submit scientific data on toxicity and behavior in the environment. EPA may require data from any combination of more than 100 different tests, depending on the potential toxicity of active and inert ingredients and degree of exposure. To register a pesticide use on food, EPA also requires applicants to identify analytical methods that can be used to test food for residues of active ingredients, certain inert ingredients, and their breakdown products and to determine the amount of residue that could remain on crops, as well as on (or in) food products, assuming that the pesticide product is applied according to the manufacturers' recommended rates and methods.

Based on the data submitted, EPA determines whether and under what conditions the proposed pesticide use would present an unreasonable risk to human health or the environment. If the pesticide is proposed for use on a food crop, EPA also determines whether a "safe" level of pesticide residue, called a "tolerance," can be established under the Federal Food, Drug, and Cosmetic Act. A tolerance must be established before a pesticide registration may be granted for use on food crops. If registration is granted, the agency specifies the approved uses and conditions of use, including safe methods of pesticide storage and disposal, which the registrant must explain on the product label. FIFRA requires that federal regulations for pesticide labels pre-empt state, local, and tribal regulations. Use of a pesticide product in a manner inconsistent with its label is prohibited.

EPA may classify and register a pesticide product for general or for restricted use. Products known as "restricted-use pesticides" are those judged to be more dangerous to the applicator or to the environment. Such pesticides can be applied only by people who have been trained and certified. Individual states and Indian tribes generally are responsible for training and certifying pesticide applicators.

FIFRA Section 3 also allows "conditional," temporary registrations if (1) the proposed pesticide ingredients and uses are substantially similar to currently registered products and will not create additional significant environmental risks; (2) an amendment is proposed for additional uses of a registered pesticide, and sufficient data are submitted indicating that there is no significant additional risk; or (3) data requirements for a new active ingredient require more time to generate than normally allowed, and use of the pesticide during the period will not cause any unreasonable adverse effect on the environment and will be in the public interest.

Tolerance Setting

Any person who has registered a pesticide may petition EPA proposing establishment of a tolerance or an exemption for that pesticide to permit its use on food-related crops.[71] Tolerance petitions must include information about pesticide application rates, measured concentrations of pesticide residues on the food after the pesticide has been applied according to directions on its label, and safety of pesticide use on food crops. The FFDCA requires EPA to respond to each petition by establishing a tolerance or exempting the pesticide from the requirement. If the pesticide will not leave residues above an established safe level, EPA will register the pesticide for use on that food product and set the tolerance level by issuing a regulation. EPA tolerances for pesticide residues preempt state and local restrictions on food, if the state and local restrictions are based on lower residue levels. States may petition for an exception if the EPA-set residue level threatens public health.

The FFDCA, Section 408, as amended, requires EPA to assess safety in terms of total exposure to the pesticide (that is, to the concentration of pesticide allowed by the tolerance, together with all other dietary and non-food exposures for which there is reliable information) as well as to other pesticides that have the same toxic effects on people. No quantitative standard of safety is established by law, but the House Committee on Commerce (now the Committee on Energy and Commerce) noted in its report on the bill that became the FQPA that EPA should continue setting standards to ensure safety as it had in the past:

> ... the Committee expects that a tolerance will provide a 'reasonable certainty of no harm' if the Administrator determines that the aggregate exposure to the pesticide chemical residue will be lower by an ample margin of safety than the level at which the pesticide chemical residue will not cause or contribute to any known or anticipated harm to human health. The Committee further expects, based on discussions with the Environmental Protection Agency, that the Administrator will interpret an ample margin of safety to be a 100-fold safety factor applied to the scientifically determined 'no observable effect' level when data are extrapolated from animal studies.[72]

In determining a safe level, the FFDCA directs EPA to take into account many factors, including available information on dietary exposure to pesticides among infants and children. FQPA strictly limited the nature and influence of benefits considered in tolerance setting under Section 408 of the FFDCA. As amended, Section 408 allows EPA to maintain or modify existing tolerances (but not to establish new tolerances) at higher than "safe" residue levels *only if* the pesticide use avoids other greater risks to consumers, or is necessary to avoid significant disruption in domestic production of an adequate, wholesome, and economical food supply. Such higher tolerance levels may be set only for pesticides that are potential carcinogens (or have some other health effect) for which there is no known level of exposure at which no harm is anticipated (known as a non-threshold effect).

The higher tolerance level allowed for such pesticide residues must be "safe" for infants and children, as well as with respect to health effects for which there is a known threshold (that is, a level below which exposure is known to be harmless). The higher cancer (or other non-threshold)

[71] That is, use on food crops, animal feed crops, or food products directly (e.g., grains, fruits, or vegetables after harvest).

[72] U.S. House, Committee on Commerce, *Food Quality Protection Act of 1996*, H.Rept. 104-669, part 2, 104th Congress, 2nd sess., 1996, p. 6.

risk posed by the tolerance on an annual basis may not be more than 10 times the risk at a "safe" level of exposure and not more than twice the risk of a "safe" level over a lifetime.

For non-threshold effects, the House Commerce Committee provided additional guidance for establishing a level of residue that should be considered "safe."

> In the case of a nonthreshold effect which can be assessed through quantitative risk assessment, such as a cancer effect, the Committee expects, based on its understanding of current EPA practice, that a tolerance will be considered to provide a 'reasonable certainty of no harm' if any increase in lifetime risk, based on quantitative risk assessment using conservative assumptions, will be no greater than 'negligible.' It is the Committee's understanding that, under current EPA practice, ... EPA interprets a negligible risk to be a one-in-a-million lifetime risk. The Committee expects the Administrator to continue to follow this interpretation.[73]

The "safe" standard applies to both raw and processed foods, and requires EPA to consider cumulative and aggregate exposure to pesticides in food, drinking water, air, and consumer products. Congress directed EPA to reevaluate all existing tolerances against this standard before August 2006.

FFDCA directs the FDA in the Department of Health and Human Services and USDA to monitor pesticide residue levels in food in interstate commerce and to enforce tolerances through their food inspection programs. USDA is responsible for inspecting meat and poultry; FDA inspects all other foods. States also may monitor pesticide residues in food sold within their jurisdictions.

FIFRA-FFDCA Coordination

EPA has long coordinated pesticide registrations for food uses under FIFRA with tolerance setting under the FFDCA. The Food Quality Protection Act of 1996 (FQPA; P.L. 104-170) codified this policy. Thus, if EPA revokes a residue tolerance under FFDCA, it cancels the FIFRA pesticide registration for that food use. Similarly, if a pesticide registration for use on a food crop is canceled, EPA also cancels the residue tolerance for food. However, just as FIFRA allows continued use of remaining pesticide stocks after a registration is canceled, FFDCA allows continued commerce in commodities legally treated with a pesticide. Thus, EPA does not immediately revoke the tolerance for the pesticide residue when it cancels the corresponding registration.

Public Disclosure, Exclusive Use, and Trade Secrets

FIFRA Section 3 directs EPA to make the data submitted by the applicant for pesticide registration publicly available within 30 days after a registration is granted. However, applicants may claim certain data are protected as trade secrets under FIFRA, Section 10. If EPA agrees that the data are protected, the agency must withhold those data from the public, unless the data pertain to the health effects or environmental fate or effects of the pesticide ingredients. Information may be protected if it qualifies as a trade secret and reveals (1) manufacturing processes; (2) details of methods for testing, detecting, or measuring amounts of inert ingredients; or (3) the identity or percentage quantity of inert ingredients.

[73] Ibid.

Companies sometimes seek to register a product based upon the registration of similar products, relying upon the data provided by the original registrant that are publicly released. This is allowed. However, Section 3 of FIFRA provides for a 10-year period of "exclusive use" by the registrant of data submitted in support of an original registration or a new use. In addition, an applicant who submits any new data in support of a registration is entitled to compensation for the cost of data development by any subsequent applicant who supports an application with that data within 15 years of its submission. If compensation is not jointly agreed upon by the registrant and applicant, binding arbitration can be invoked.

Reregistration

Most pesticides currently registered in the United States are older pesticides and were not subject to modern safety reviews when first registered. Amendments to FIFRA in 1972 directed EPA to "reregister" approximately 35,000 older products, in order to assess their safety in light of current standards. The task of reregistering older pesticides has been streamlined by reviewing groupings of products having the same active ingredients, on a generic instead of individual product basis. For food-use pesticides, EPA evaluated a pesticide's eligibility for reregistration at the same time the agency reassessed the tolerance for that pesticide under the FFDCA. The FQPA required EPA to reassess pesticides posing the greatest risks first. Many of the 35,000 pesticide products were not reviewed and their registrations were canceled, because registrants did not request reregistration. At least 14,000 products are no longer in use. Nevertheless, the task for registrants and EPA was immense and costly.

To accelerate the process of reregistration, Congress, in 1988 amendments to FIFRA, imposed a 10-year reregistration schedule. To help pay for the additional costs of the accelerated process, Congress directed EPA to require registrants to pay reregistration and annual registration maintenance fees on pesticide ingredients and products. The 1996 amendments to FIFRA extended EPA's authority to collect maintenance fees through FY2001. Exemptions from, or reductions in, fees were allowed for minor-use pesticides, public health pesticides, and small business registrants. Congress extended authority for fees annually through appropriations legislation after FY2001, until the omnibus appropriations legislation signed January 23, 2004 (P.L. 108-199), modified the types and amounts of fees that EPA could collect, potentially through FY2008.

The 2004 FIFRA amendments (PRIA) reauthorized collection of annual "maintenance" fees to support registration, designated a portion of those fees for the review of inert ingredients, and extended the deadline for completion of reregistration. PRIA directed EPA to complete Reregistration Eligibility Decisions (REDs) for pesticides with food uses/tolerances by August 3, 2006, and to complete REDs for all remaining non-food use pesticides by October 3, 2008. The reregistration process will continue for several years after that date, as explained on the EPA reregistration website:

> After EPA has issued a RED and declared a pesticide eligible for reregistration, individual end-use products that contain the pesticide active ingredient still must be reregistered. Through this concluding part of the process, known as "product reregistration," the Agency makes sure that the risk reduction measures called for in REDs are reflected on individual pesticide product labels. In some cases, the Agency uses Memoranda of Agreement or other measures to include risk reduction measures on pesticide labels sooner, before product

> reregistration is completed. EPA plans to complete the last product reregistration decisions several years after the last REDs are signed.[74]

EPA authority for administering these fees would have expired at the end of FY2008, but it was extended by the Pesticide Registration Improvement Renewal Act, or PRIA2 (P.L. 110-94), enacted October 9, 2007, effective retroactively to the beginning of FY2008 through FY2012. PRIA2 also made some technical revisions, primarily modifications to the fee payment process and an expansion of the range of categories of pesticide registration (licensing) activities subject to fees.

Special Review

EPA continues to evaluate the safety of pesticides after they are registered as new information becomes available. FIFRA requires registrants to report promptly any new evidence of adverse effects from pesticide exposure. If evidence indicates that a registered pesticide may pose an unreasonable risk, EPA may initiate a special review of available information to reevaluate the risks and benefits of each registered use. FIFRA also authorizes EPA to require registrants to conduct new studies to fill gaps in scientific understanding to assist risk assessments. As a result of a special review EPA may conclude that registration is adequate, needs amendment, or should be canceled.

Canceling or Suspending a Registration

If a special review or reregistration evaluation finds that a registered use may cause "unreasonable adverse effects," EPA may amend or cancel the registration.[75] FIFRA also allows registrants to request cancellation or amendment of a registration to terminate selected pesticide uses. Requesting voluntary cancellation sometimes reflects a registrant's conclusion that the cost of additional studies is not worth the expected benefit (that is, profit) from sales if the registration would be maintained.

If a registration is canceled for one or more uses of a pesticide, FIFRA does not permit it to be sold or distributed for those uses in the United States, although for a specified period of time, U.S. farmers may use remaining stocks, and commerce may continue for commodities that were legally treated with the pesticide. FIFRA allows registrants to appeal an EPA decision to cancel a registration. An appeal initiates a lengthy review process during which the product may continue to be marketed. However, if there is threat of an "imminent hazard" during the time required to cancel a registration, FIFRA authorizes EPA to suspend registration. Suspension orders, which also may be appealed, stop sales and use of the pesticide. In the event of suspension and cancellation, FIFRA Section 15 directs EPA to request an appropriation from Congress to compensate anyone who owned any of the pesticide and suffered any loss due to the suspension or cancellation. The registrant of the suspended and canceled product is responsible, however, for all of the transportation and disposal costs, and most storage costs.

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[74] EPA. Pesticide Reregistration Facts. August 12, 2008. See http://www.epa.gov/oppsrrd1/reregistration/reregistration_facts.htm.

[75] Registrations also may be canceled under other conditions, for example, if data are not submitted in response to EPA's request for additional information to maintain a registration, or if a registrant fails to pay the maintenance fee.

Use of Unregistered Pesticides

FIFRA also allows for unregistered use of pesticide products in special circumstances. Section 5 allows experimental use permits for purposes of research and to collect data needed to register a pesticide. Section 18 allows "emergency exemptions" from the provisions of FIFRA to be granted to federal or state agencies, for example, if there is a virulent outbreak of a disease that cannot be controlled by registered products. In addition, Section 24(c) permits states to allow additional uses of a federally registered product to meet "special local needs."

Enforcement

Generally, EPA has the authority to enforce FIFRA requirements. However, FIFRA Section 26 gives primary enforcement authority for pesticide use under FIFRA to states that have adequate enforcement procedures, laws, and regulations, including inspection authority. EPA is authorized by Section 27 to rescind a state's primary enforcement responsibility if it is not being carried out.

FIFRA Section 11 authorizes EPA to form cooperative agreements with states, giving them the responsibility for training and certifying applicators of restricted use pesticides. States also may initially review and give preliminary approval to applications for emergency exemptions and special local needs registrations, (although under some conditions FIFRA allows EPA later to deny state-approved applications).

Section 9 authorizes inspections by EPA and authorized state officials of pesticide products where they are stored for distribution or sale. Section 13 authorizes EPA to issue orders to stop sales and to seize supplies of pesticide products. Civil and criminal penalties for violations of FIFRA are established in Section 14, while Section 15 provides indemnity payments for end users, distributors, and dealers of pesticides when registrations are suspended and canceled.

Federal district courts are authorized in Section 16 to review EPA final actions and omissions when action is not discretionary. People adversely affected by an EPA order may file for judicial review of the order following a hearing. But, FIFRA does not authorize citizen suits against violators.

Export of Unregistered Pesticides

FIFRA does not give EPA the authority to regulate domestic production for export of unregistered pesticides, even if U.S. registration has been canceled for health or environmental reasons. However, FIFRA does require exporters to prepare or pack pesticides as specified by the purchaser and in accord with some of the FIFRA labeling provisions. For example, exporters must translate warning information into the language of the destination. FIFRA also requires exporters of unregistered pesticides to obtain the purchaser's signature on a statement acknowledging that the pesticide is unregistered and cannot be sold in the United States. EPA is required to notify governments of other countries and international agencies whenever a registration, cancellation, or suspension of any pesticide becomes or ceases to be effective in the United States.

Table 20. Major U.S. Code Sections of the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), as Amended

(codified generally at 7 U.S.C. 136-136y)

7 U.S.C.	Section Title	FIFRA, as Amended
Chapter 6—Insecticides And Environmental Pesticide Control		
Subchapter II—Environmental Pesticide Control		
136	Definitions	Sec. 2
136a	Registration of pesticides	Sec. 3
136a-1	Reregistration of registered pesticides	Sec. 4
136c	Experimental use permits	Sec. 5
136d	Administration review; suspension	Sec. 6
136e	Registration of establishments	Sec. 7
136f	Books and records	Sec. 8
136g	Inspection of establishments, etc.	Sec. 9
136h	Protection of trade secrets and other information	Sec. 10
136i	Restricted use pesticides; applicators	Sec. 11
136j	Unlawful acts	Sec. 12
136k	Stop sale, use, removal, and seizure	Sec. 13
136l	Penalties	Sec. 14
136m	Indemnities	Sec. 15
136n	Administrative procedure; judicial review	Sec. 16
136o	Imports and exports	Sec. 17
136p	Exemption of federal and state agencies	Sec. 18
136q	Storage, disposal, transportation, and recall	Sec. 19
136r	Research and monitoring	Sec. 20
136s	Solicitation of comments; notice of public hearings	Sec. 21
136t	Delegation and cooperation	Sec. 22
136u	State cooperation, aid, and training	Sec. 23
136v	Authority of states	Sec. 24
136w	Authority of Administrator	Sec. 25
136w-1	State primary enforcement responsibility	Sec. 26
136w-2	Failure by the state to assure enforcement of state pesticide use regulations	Sec. 27
136w-3	Identification of pests; cooperation with Department of Agriculture's program	Sec. 28
136w-4	Omitted (Annual report)	Sec. 29
136w-5	Minimum requirements for training of maintenance applicators and service technicians	Sec. 30
136w-6	Environmental Protection Agency minor use program	Sec. 31
136w-7	Department of Agriculture minor use program	Sec. 32

7 U.S.C.	Section Title	FIFRA, as Amended
136w-8	Pesticide registration service fees	Sec. 33
136x	Severability	Sec. 34
136y	Authorization of appropriations	Sec. 35

Note: This table shows only the major code sections. For more detail and to determine when a section was added, consult the official version of the U.S. Code.

Table 21. Major U.S. Code Sections of the Federal Food, Drug, and Cosmetic Act (FFDCA), as Amended, Related to Pesticides

(codified generally at 21 U.S.C. 321-346a)

21 U.S.C.	Section Title	FFDCA, as Amended
Chapter 9—Federal Food, Drug, and Cosmetic Act		
Subchapter II—Definitions		
321	Definitions; generally	Sec. 201
Subchapter III—Prohibited Acts and Penalties		
331	Prohibited acts	Sec. 301
332	Injunction proceedings	Sec. 302
333	Penalties	Sec. 303
334	Seizure	Sec. 304
Subchapter IV—Food		
342	Adulterated food	Sec. 402
343	Misbranded food	Sec. 403
346	Tolerances for poisonous or deleterious substances in food; regulations	Sec. 406
346a	Tolerances and exemptions for pesticide chemical residues	Sec. 408
346a(a)	Requirement for tolerance or exemption	Sec. 408(a)
346a(b)	Authority and standard for tolerance	Sec. 408(b)
346a(c)	Authority and standard for exemptions	Sec. 408(c)
346a(d)	Petition for tolerance or exemption	Sec. 408(d)
346a(e)	Action on Administrator's own initiative	Sec. 408(e)
346a(f)	Special data requirements	Sec. 408(f)
346a(g)	Effective data, objections, hearings, and administrative review	Sec. 408(g)
346a(h)	Judicial review	Sec. 408(h)
346a(i)	Confidentiality and use of data	Sec. 408(i)
346a(j)	Status of previously issued regulations	Sec. 408(j)
346a(k)	Transitional provision	Sec. 408(k)
346a(l)	Harmonization with action under other laws	Sec. 408(l)
346a(m)	Fees	Sec. 408(m)
346a(n)	National uniformity of tolerances	Sec. 408(n)
346a(o)	Consumer right to know	Sec. 408(o)

21 U.S.C.	Section Title	FFDCA, as Amended
346a(p)	Estrogenic substances screening program	Sec. 408(p)
346a(q)	Schedule for review	Sec. 408(q)
346a(r)	Temporary tolerance or exemption	Sec. 408(r)
346a(s)	Savings clause	Sec. 408(s)

Note: This table shows only the major code sections. For more detail and to determine when a section was added, consult the official version of the U.S. Code.

National Environmental Policy Act[76]

The National Environmental Policy Act (NEPA, 42 U.S.C. 4321 et seq.) was enacted in 1969 and signed into law by President Nixon on January 1, 1970 (P.L. 91-190). NEPA was the first of several major environmental laws enacted in the 1970s. Under Title I of the act, Congress declared a national policy that stated, in part, that it is "the continuing policy of the Federal government ... to use all practicable means and measures ... to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans." NEPA also created the Council on Environmental Quality (CEQ) in the Executive Office of the President. Among other duties, CEQ was required to develop and recommend to the President national policies to foster and promote the improvement of environmental quality. In the 1970's, CEQ played a key role in shaping regulations for implementation of NEPA.

One of the best-known elements of NEPA is its directive to federal agencies to incorporate environmental considerations in their planning and decision-making through a systematic interdisciplinary approach. Specifically, NEPA requires all federal agencies to prepare a detailed statement of the environmental impact of and alternatives to major federal actions significantly affecting the environment. The "detailed statement" was subsequently referred to as an environmental impact statement (EIS).[77]

Judicial interpretation of NEPA ultimately determined that the act did not require agencies to elevate environmental concerns over other considerations. Rather, the courts determined, NEPA requires only that the agency take a "hard look" at a project's environmental consequences before taking action. If the adverse environmental effects of the proposed action are adequately identified and evaluated, the agency is not constrained by NEPA from deciding that other benefits outweigh the environmental costs.

In 1978, CEQ formally promulgated regulations, binding on all federal agencies, implementing NEPA's provisions. In addition to CEQ, Congress authorized EPA to perform certain duties to ensure the proper implementation of NEPA's EIS requirements (discussed below).

Table 22. National Environmental Policy Act, Amendments, and Related Acts

(codified generally at 42 U.S.C. 4321-4347)

Year	Act	Public Law Number
1970	National Environmental Policy Act	P.L. 91-190
1971	Clean Air Act Amendments of 1970 (§309) [Did not amend NEPA, but specified EPA responsibilities in the NEPA process]	P.L. 91-604
1975	Authorizations—Office of Environmental Quality	P.L. 94-52
1975	National Environmental Policy Act [Administrative Delegation to State] Amendment	P.L. 94-83

[76] Prepared by Linda Luther, Analyst in Environmental Policy, Environmental Policy Section, Resources, Science, and Industry Division.

[77] 42 U.S.C. §4332(2)(C).

The NEPA Process

NEPA applies to all major federal actions, including projects and programs entirely or partly funded, assisted, conducted, regulated, or approved by federal agencies. To ensure that environmental impacts of those actions are considered before final decisions are made, NEPA requires the preparation of an environmental impact statement (EIS) for any major federal action significantly affecting the quality of the human environment. An EIS is a full disclosure document that provides a description of the proposed action, and the existing environment, as well as analysis of the anticipated beneficial and adverse environmental effects of all reasonable alternatives.[78]

As required under CEQ's regulations, some level of analysis is also required when environmental impacts are uncertain or not significant. Projects for which it is not initially clear whether impacts will be significant require the preparation of an environmental assessment (EA). An EA is a concise public document that analyzes the environmental impacts of a proposed federal action and provides sufficient evidence to determine the level of significance of the impacts.[79] It is followed by either a Finding of No Significant Impact (FONSI) or a decision to prepare an EIS. Categorical exclusions are actions that do not individually or cumulatively have a significant social, economic, or environmental effect, and which the applicable agency has determined from past experience have no significant impact. Such actions are excluded from the requirement to prepare an EIS or EA.

Prior to completing the appropriate NEPA documentation, the responsible federal official (the "lead agency") is required to consult with and obtain the comments of any federal agency which has jurisdiction by law or special expertise (a "cooperating agency") with respect to any environmental impact involved. For any given federal action, compliance with a wide variety of legislative and regulatory requirements, enforceable by multiple agencies, may be required. NEPA documentation may be required to document compliance with all applicable environmental laws, executive orders, and other related requirements. Most agencies use the NEPA process as a means of coordinating or demonstrating compliance with all applicable environmental requirements. In this capacity NEPA may function as an "umbrella statute," meaning any study, review, or consultation required by law, that is related to the environment, may be conducted within the framework of the NEPA process.

Complex federal projects such as highway construction projects, forest thinning, or oil and gas development projects, may trigger compliance with literally dozens of federal, state, tribal, and local environmental statutory and regulatory requirements. These, in turn, require the participation or input of possibly dozens of agencies. Some Members of Congress have expressed concerns that the interagency coordination required of such projects is often inefficient, leading to unnecessary delays in needed projects. Improved interagency cooperation has been identified by some Members of Congress as a critical element to the success of streamlining the NEPA process.[80] The CEQ's regulations implementing NEPA currently include a variety of provisions intended to expedite the compliance process. In particular, CEQ's regulations specify procedures

[78] For more information, see CRS Report RL33152, *The National Environmental Policy Act (NEPA): Background and Implementation*, by Linda Luther.

[79] 40 C.F.R. §1508.9.

[80] For more information see CRS Report RL33267, *The National Environmental Policy Act: Streamlining NEPA*, by Linda Luther.

to reduce paperwork and delay. The regulations also direct agencies to efficiently facilitate the process of complying with multiple statutory and regulatory requirements. To do so, the regulations direct agencies, among other requirements to:

- Integrate NEPA's requirements with other required planning and environmental review procedures.
- Prepare environmental reviews concurrently with one another, rather than consecutively.
- Establish appropriate time limits on EISs.
- Integrate the NEPA process into early planning and prepare the EIS early in the process.
- Emphasize interagency cooperation before the EIS is prepared, rather than submission of adversary comments on a completed document.
- Insure the swift and fair resolution of lead agency disputes.[81]

Environmental Protection Agency Functions Under NEPA

NEPA is broad, with requirements potentially affecting all federal agencies. Also, EPA is not authorized to enforce NEPA's requirements; instead, federal agencies are required to implement its requirements themselves.[82] However, EPA does have two distinct roles in the NEPA process. The first regards its duty, under Section 309 of the Clean Air Act, to review and comment publicly on the environmental impacts of proposed federal activities, including those for which an EIS is prepared. After conducting its review, EPA rates two elements of the action: the adequacy of the EIS and the environmental impact of the action.[83] The EIS may be rated "adequate," "needs more information," or "inadequate." The lead agency would be required to respond appropriately depending upon EPA's rating. With regard to rating the environmental impacts of an action, EPA would rate a project in one of the following four ways: lack of objections, environmental concerns, environmental objections, environmentally unsatisfactory. If EPA determines that the action is environmentally unsatisfactory, it is required to refer the matter to CEQ to resolve any interagency dispute.

EPA's second duty is an administrative one, in which it carries out the operational duties associated with the EIS filing process. In 1978, these duties were transferred to EPA by CEQ in accordance with a Memorandum of Agreement (MOA) entered into by EPA and CEQ. Under the terms of the MOA, EPA's Office of Federal Activities is designated the official recipient of all EISs prepared by federal agencies. EPA maintains a national EIS filing system. By maintaining the system, EPA facilitates public access to EISs by publishing weekly notices in the Federal Register of EISs available for public review, along with summaries of EPA's comments.

[81] 40 C.F.R. §§1500.2 and 1500.4-1500.5

[82] In CEQ's regulations (40 C.F.R. §1507.3), federal agencies were required to prepare their own NEPA procedures that address that agency's compliance in relation to its particular mission.

[83] An explanation of EPA's "Environmental Impact Statement (EIS) Rating System Criteria" is available at http://www.epa.gov/compliance/nepa/comments/ratings.html.

Apart from these duties, like any other federal agency, EPA may participate in the NEPA process as a lead agency when it is sponsoring its own federal actions. Currently, NEPA documentation is required of EPA for research and development activities, construction of EPA facilities, wastewater treatment plant construction under the Clean Water Act, EPA-issued National Pollutant Discharge Elimination System (NPDES) permits for new sources,[84] and for certain projects funded through EPA annual Appropriations Acts. Legislation has specifically limited EPA's requirement to comply with NEPA for certain actions. For example, Section 7(c) of the Energy Supply and Environmental Coordination Act of 1974 (15 U.S.C. 793(c)(1)) exempts actions taken under the Clean Air Act from the requirements of NEPA. EPA is also exempted from the procedural requirements of environmental laws, including NEPA, for response actions pursuant to requirements under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Courts also have consistently recognized that EPA procedures or environmental reviews under enabling legislation are functionally equivalent to the NEPA process and thus exempt from the procedural requirements in NEPA.

[84] Such permits are more likely to be issued by states authorized to implement provisions of the Clean Water Act, and hence would not be considered "federal actions" subject to NEPA compliance. Section 511(c) of the Clean Water Act exempts other EPA actions under the law from the requirements of NEPA.

Table 23. Major U.S. Code Sections of the National Environmental Policy Act, as Amended

(codified generally at 42 U.S.C. 4321-4347)

42 U.S.C.	Section Title	National Environmental Policy Act, as Amended
Chapter 55—National Environmental Policy		
4321	Congressional Declaration of Purpose	Sec. 2
Subchapter I—Policies and Goals		
4331	Congressional declaration of national environmental policy	Sec. 101
4332	Cooperation of agencies; reports; availability of information; recommendations; international and national coordination of efforts	Sec. 102
4333	Conformity of administrative procedures to national environmental policy	Sec. 103
4334	Other statutory obligations of agencies	Sec. 104
4335	Efforts supplemental to existing authorizations	Sec. 105
Subchapter II— Council on Environmental Quality		
4341	Omitted (annual environmental quality report to Congress)	Sec. 201
4342	Establishment; membership; chairman; appointments	Sec. 202
4343	Establishment of personnel, experts and consultants	Sec. 203
4344	Duties and functions	Sec. 204
4345	Consultation with Citizens' Advisory Committee on Environmental Quality and other representatives	Sec. 205
4346	Tenure and compensation of members	Sec. 206
4346a	Travel reimbursement by private organizations and federal, state, and local governments	Sec. 207
4346b	Expenditure in support of international activities	Sec. 208
4347	Authorization of appropriations	Sec. 209

Note: This table shows only the major U.S. Code sections. For more detail and to determine when a section was added, consult the official printed version of the U.S. Code.

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