

time it is generated until its ultimate disposal, in effect "from cradle to grave." In practical terms, this means regulating a very large number of hazardous waste handlers. In August 1983, EPA had received notification from almost 52,000 major generators, 13,000 transporters, and almost 9,000 treatment, storage or disposal facilities (Table 3).

Generators	51,463
Transporters	12,598
Treatment, Storage, Disposal Facilities*	8,906

\*Some facilities perform more than one function. Not all facilities actually processed hazardous waste in regulated quantities.

The RCRA regulations were developed over several years and published in phases. In the first phase EPA identified those solid wastes that were "hazardous" and established various administrative requirements for the three categories of hazardous waste handlers: generators, transporters, and owners or operators of treatment, storage and disposal facilities. This was in May 1980, when EPA published regulations which defined hazardous waste, and established recordkeeping and reporting requirements for owners and operators. In November 1980, the RCRA regulations became effective.

In the second phase, technical standards were set in January 1981 for design and safe operation of the various types of treatment, storage, and disposal facilities. These are the standards which will serve as the basis for issuing permits to such facilities. At that time EPA published technical (permitting) standards for incinerators and treatment and storage facilities, along with financial responsibility and liability insurance requirements for all facilities. Next, in February 1981, EPA promulgated temporary technical (permitting) standards for new land disposal facilities. In July 1982, EPA published final technical (permitting) standards for both new and existing land disposal facilities.

**Transporters Must:**

- Deliver hazardous waste to designated facility
- Carry manifest with the shipment
- Report and clean up spills

**TSD Facilities Must:**

- Apply for permit from EPA
- Meet design and operating standards until permit is issued
- Meet financial responsibility and liability insurance requirements
- Keep records

Each set of technical standards became final six months after publication, and EPA now plans to "fine tune" the hazardous waste regulations to meet specific circumstances, making additions and refinements to the existing regulations wherever practicable.

**EPA/State Programs.** Now that the regulatory core of the hazardous waste program is complete, EPA and the states can begin issuing permits to hazardous waste treatment, storage, and disposal facilities as soon as EPA authorizes their programs. Issuing permits is essential to making the regulatory program work, since it is through the permitting process that EPA or a state actually applies the technical standards to facilities. In reviewing a permit application, the waste handling process is evaluated, taking into consideration site-specific factors as well as the nature of the wastes being handled.

At present, facilities which were in existence in November 1980 (when the first hazardous waste regulations became effective) are operating under interim permits. The owners/operators obtained these by notifying EPA of their hazardous waste activities and applying for permits.

EPA issued the first RCRA permit on October 1, 1981, to Oil and Solvent Process Co., a new storage facility in Colorado. The first waste incinerator permit was issued by EPA on October 4, 1982, to Pennwalt Corp., a new treatment facility in Kentucky. In April 1983, Mississippi became the first state to be fully authorized to run its own permitting program under RCRA. EPA is now calling for full permit applications from these ex-

- Determine if waste is hazardous
- Prepare and follow up manifest for waste moving on site
- Keep records

isting facilities. Current plans are to issue RCRA permits to all treatment, storage, and disposal facilities as expeditiously as possible.

RCRA's success in improving hazardous waste management practices in this country depends heavily on the cooperative efforts of waste generating industries. If some companies fail to meet environmental standards, vigorous state and federal enforcement of the regulations can compensate. RCRA provides EPA and the states with a full complement of enforcement tools for bolstering compliance with the hazardous waste regulations.

Frequent compliance inspections are the cornerstone of RCRA enforcement efforts. Where these inspections reveal noncompliance, EPA and the states have a range of administrative and legal remedies. The administrative remedies include issuance of information-gathering letters, warning letters, complaints, and administrative orders to take remedial steps. Legal remedies include both civil and criminal actions, which can result in penalties of up to \$1 million or imprisonment of up to five years.

The pace of inspections for compliance by the states and the federal government almost doubled from FY 1981 to FY 1982 (Table 4). Some 25 percent of all hazardous waste producers and handlers in the United States were covered in the first two years of the program. All 76,000 of them should be inspected in another two years, as additional states take over more and more of the task.

Action	Sec *	FY 1981	FY 1982	Total
Compliance inspections	-	6,561	11,855	18,416
Warning letters	3008	475	982	1,457
Complaints	3008	157	226	383
Final orders requiring remedies	3008	no data	140	140
Penalties	3008	\$1.2 M	\$1.6 M	\$2.8 M
Administrative ("monitoring")	3013	1	6	7
Orders ("imminent hazard")	7003	1	4	5
Civil cases referred to Department of Justice	-	12	11	23
Criminal cases referred to Department of Justice	3008	8	8	16

\*(Section of RCRA authorizing this kind of action)

**State Programs.** Congress intended that the states eventually assume responsibility for the RCRA hazardous waste program, and EPA has authorized states to implement their own hazardous waste programs when

**State Programs** that control nonhazardous waste disposal practices must be based on federal guidelines and employ federal criteria for facility classification. The criteria permit the states to define acceptable and unacceptable disposal facilities in terms of effects on surface and groundwater, air quality, and public safety. Facilities that allow open burning, for example, or facilities sited in wetlands, flood plains, the habitats of endangered species, or in recharge zones for principal sources of local drinking water are generally determined to be unacceptable. Such facilities will eventually have to be phased out through state control efforts.

The states have responded strongly to federal encouragement under RCRA in the nonhazardous waste management field. Almost all states now have EPA-approved, or partially approved, solid waste management plans or have submitted plans for EPA approval or review.

Of the more than 400 million tons of industrial solid waste produced each year, we do not yet know what percent can be characterized as hazardous to human health and the environment. The wastes are generated by the full range of major American industries, many coming from the chemical and primary metals industries, but a significant portion from the electroplating, petroleum refining, and textile, rubber, and plastics manufacturing industries (Table 2) as well.

Chemical and allied products	62%
Paper and allied products	3%
Fabricated metal products	5%
Petroleum & coal products	5%
Transportation equipment	3%
Primary metals industries	10%
Electric & electronic equipment	3%
Non-manufacturing	5%
All other	4%

SOURCE: Booz, Allen and Hamilton. *Hazardous Waste Generation and Commercial Hazardous Waste Management Capacity*. (Unpublished report to the U.S. Environmental Protection Agency, 1980.)

**The Federal Role** The congressional mandate under RCRA for federal regulation of hazardous waste—its generation, transport, treatment, storage, and disposal—resulted in perhaps the most comprehensive regulations EPA has been called upon to develop. RCRA required EPA to establish a system for controlling hazardous waste from the

Unfortunately, many of the materials—both hazardous and nonhazardous—discarded over recent decades have endured wherever and however they may have been disposed of, often with negative consequences to the environment. The Love Canal, the Valley of the Drums, and Times Beach are well-known examples of places severely damaged from careless hazardous waste disposal—all occurring before the implementation of the national regulatory program under RCRA.

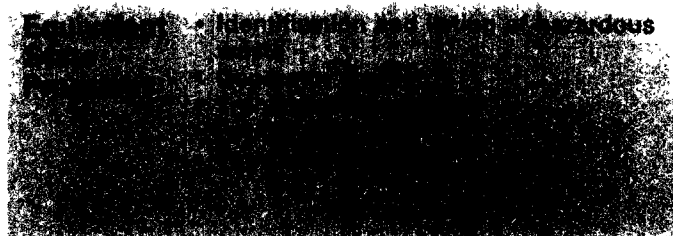
EPA has identified some 17,000 problem hazardous waste sites. Many of these are associated with contaminated groundwater—the source of drinking water for about half of the U.S. population. This often results from poorly situated or poorly operated landfills or from wastes deposited carelessly in pits, ponds, and lagoons. Improper handling and disposal of wastes has also caused other kinds of environmental damage—such as fires, explosions, pollution of surface water and air—as well as serious threats to human health by poisoning via the food chain or by direct contact.

One of RCRA's goals is to encourage states to develop comprehensive programs so that communities can better manage non-hazardous solid waste. This process is well under way. State programs are now improving municipal waste disposal practices throughout the Nation, while at the same time they encourage resource recovery, recycling, and energy conservation.

**The Federal Role** in this effort has been to establish guidelines for states to develop waste management plans, to design criteria for classifying land disposal facilities in terms of environmental soundness, and to publish a national inventory of unacceptable disposal facilities. In undertaking these federal responsibilities, EPA has:

- In July 1979, published guidelines for identifying regions and agencies to develop state solid waste management plans.
- In September 1979, published criteria for classifying land disposal facilities in terms of environmental protection.
- In May 1981, April 1982, and May 1983, published and updated a national inventory of open dumps and land disposal facilities that fail to meet minimal environmental criteria.

they qualify. States may apply for and receive interim authorization by setting regulations that are "substantially equivalent to" EPA's regulations. Within two years after the first-phase RCRA regulations had appeared, 35 states and territories had received interim authorization. These state programs include identification and listing of hazardous wastes and requirements for generators, transporters, and owners and operators of treatment, storage, and disposal facilities. By June 1983, seven states—Georgia, North Carolina, Arkansas, Texas, Mississippi, South Carolina, and Oklahoma—had received second-phase interim authorization and thus could issue permits to treatment, storage, and disposal facilities.



To receive final authorization to operate the entire RCRA hazardous waste program, states must adopt regulations fully "equivalent to" and "consistent with" federal standards, as was done by Mississippi. EPA anticipates that a majority of states will reach this final stage in the next two years.

EPA will continue to review state solid waste management plans. This encourages states to follow the federal guidelines for nonhazardous waste disposal and to employ federal criteria for facility classification.

EPA's focus will be on expanding the scope of the regulations. The Agency will, for example, be listing new hazardous materials to be controlled, addressing the burning of hazardous waste in boilers, studying the need for surveillance of small-quantity generators, considering additional restrictions on the use of landfills, and judging requirements for controlling air emissions from hazardous waste facilities.

EPA is now working on regulatory impact analyses of the existing regulations, conducting studies of the major waste-producing industries, and developing a way that degree-of-hazard criteria might be incorporated into the regulatory program. These efforts should help in avoiding both

over-regulation and under-regulation, as the RCRA rules for hazardous wastes are adjusted.

As RCRA is implemented, different kinds of activities are required throughout the Nation.

- The states are setting in place their own nonhazardous and hazardous waste management programs;
- Improved waste management practices for both kinds of solid wastes are getting under way at the community level; and
- EPA is working on improving the hazardous waste control system.

Citizens are participating in the decisionmaking going on at each of those governmental levels. Since there are indeed many hard issues to be decided, public involvement was encouraged by the Congress and provided for in every step of RCRA's implementation. This process is the beginning of the answer to the original question addressed by the legislation—how to dispose safely of this Nation's huge volumes of solid wastes. We have today the start of a national waste management program. Careless waste generation and disposal are no longer easy. The new systems are beginning to force waste reduction and recycling, better use of technology, and wiser use of natural resources.

### Definition of Hazardous Waste

- A solid waste
- Not excluded from regulation
- And either:
  - A listed hazardous waste
  - A mixture containing a listed hazardous waste (with certain exceptions)
  - An unlisted waste possessing any of four characteristics

### Exclusions

- These are not considered hazardous wastes:
- Garbage - household
  - Municipal resource recovery wastes
  - Agriculture residues
  - Overburden
  - Certain chromium-containing wastes

**As The Resource Conservation and Recovery Act** of 1976 (RCRA) begins to take shape in actual programs, the work of Congress can be seen. A problem of national magnitude—how to safely dispose of this country's huge volumes of municipal and industrial solid waste—is now being firmly addressed at federal, state, and community levels.

RCRA and the first national solid waste legislation\* (which RCRA amends), authorized and funded programs that would provide federal research and development in the solid waste field, and financial and technical assistance to state waste management agencies. RCRA also required EPA to develop regulatory controls for those solid wastes that are hazardous. These RCRA programs are now beginning to actually meet the goals set by Congress in establishing national solid waste legislation.

The goals are:

- to protect human health and the environment
- to reduce waste and conserve energy and natural resources.

Every year, five to six billion metric tons of solid waste are discarded in the United States (Table I). These wastes range from municipal garbage to industrial wastes that contain complex, and sometimes hazardous, substances. Solid wastes also include sewage sludge, agricultural refuse, demolition wastes, and mining residues. Technically, "solid" waste may also be liquids and gases if containerized.

Waste Source	Metric Tons (millions)	% of Total
Municipal	177.5	3.1
Industrial	326—362	6.4
Utility (Includes boiler ashes and scrubber sludge, excludes radioactive waste)	70	1.2
Mining/Milling (Includes uranium tailings)	2,086	39.0
Agricultural	2,265-3,014	50.3
Total	4,924.5-5,709.5	100.0

\*\*Source: JRB Associates. *Solid Waste Data; A Compilation of Statistics on Solid Waste Management within the United States*. (Washington) U.S. Environmental Protection Agency, 1981. 73 pp.

\*The first federal solid waste legislation was the Solid Waste Disposal Act of 1965. Congress amended the Act in order to reauthorize it in 1970 (as the Resource Recovery Act), in 1976, and is in the process of doing so again in 1983. Congress has also enacted minor amendments over the years.

Our environment has been degraded, and our health threatened, by a multitude of human activities initiated without regard to long-range effects upon the life-supporting properties, the economic uses, and the recreational values of water, air and land.

Recognizing this, Congress has enacted a number of laws to protect life and the environment. These laws have led to significant improvements in the environment in many parts of the country. Nevertheless, the task remaining is still great, as is the need for constant vigilance against new environmental assaults.

The United States Environmental Protection Agency (EPA) is responsible for executing the federal laws aimed at protecting the environment. EPA was formed in 1970 to consolidate in one agency much of the federal authority and expertise in controlling pollution and dealing with other threats to health and the environment. Its activities affect nearly every aspect of our lives. This leaflet describes the activities of EPA and the states under one of the federal environmental laws.

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State Waste Management Programs: Call the Hotline for address and telephone number of your state program:

**RCRA/Superfund Hotline (800) 424-9346** for technical or regulatory information on programs.

Call the National Response Center: (800) 424-8802 to report oil and hazardous substance releases.

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# The Resource Conservation and Recovery Act

## What It Is; How It Works

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