FACTS ABOUT RCRA

REGULATING HAZARDOUS WASTE FACILITIES

Hazardous Waste

Hazardous wastes are generated by thousands of commercial, industrial and governmental operations across our nation. Every state has hazardous waste producers, and waste is often transported through several states before it is ultimately disposed of, treated, or recycled. Hazardous wastes can be in numerous forms: solid, liquid, or sludge, and the nature of their hazardous characteristics are varied. Under the federal Resource Conservation and Recovery Act (RCRA), a waste is "hazardous" if it exhibits any of the following characteristics: ignitability, corrosivity, reactivity or toxicity. The U.S. Environmental Protection Agency (EPA) has made the determination that certain wastes are hazardous and has published a list of these wastes. Thus, wastes fall under the RCRA hazardous waste regulatory program if they are "listed" by EPA or exhibit any of the four characteristics of a hazardous waste. Under RCRA, facilities which treat, store, dispose of, or recycle hazardous wastes — so-called "TSDR facilities"— must meet strict technical and performance requirements.

"Cradle-to-Grave" Management

Prior to RCRA there was no national regulatory system for tracking hazardous wastes and for establishing accountability of waste management practices. Thus, wastes were often disposed of by placing them into unsecured landfills or even by dumping on roadsides and open fields, leaving no record of what the wastes were or who had disposed of them.

Under the "cradle-to-grave" system established under RCRA, this situation has changed dramatically. The key to this system is the uniform manifest program, illustrated in Figure 1, which keeps strict tabs on hazardous wastes from their production (cradle) to their disposal (grave). RCRA requires generators of solid wastes to determine whether their wastes are hazardous as defined by the EPA. If they are hazardous, the generator must obtain an EPA identification number for the facility and must comply with RCRA regulations governing the safe handling of hazardous wastes while they are handled at the facility.

If the generator does not send wastes off site, a RCRA permit must be obtained for managing the wastes on site. If the wastes are transported off site (e.g., to a commercial TSDR facility), the generator must prepare a manifest for each waste shipment which identifies the waste, the generator, the transporter and the facility to which the waste is being shipped. The manifest provides the basis for tracking the waste through the entire transportation cycle, including intermediate stops. If the wastes do not reach their intended destination as scheduled, the generator must notify EPA or the authorized state agency so that the situation can be investigated.

The TSDR facility that is the ultimate repository of the wastes

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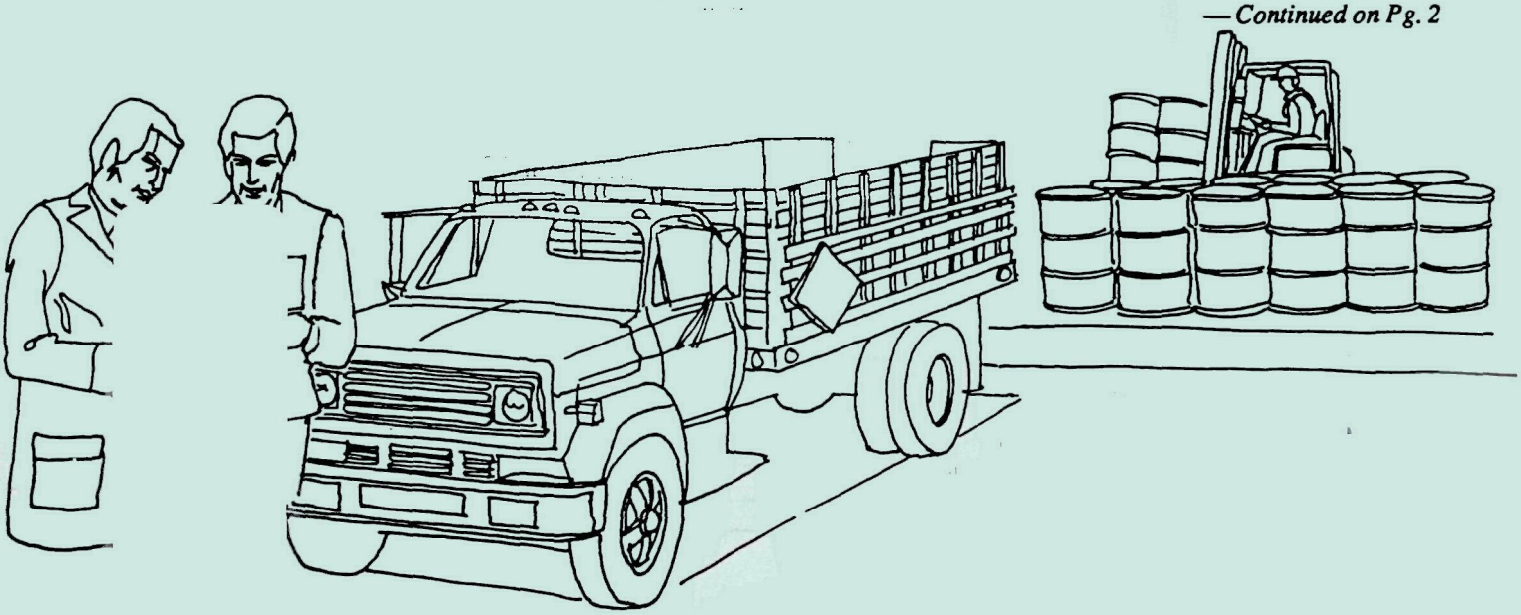


"Cradle-to-Grave"
Continued from Pg. 1

must meet strict technical and performance standards to ensure that the wastes are handled in an environmentally protective manner. The facility cannot receive hazardous wastes unless it has obtained a RCRA operating permit from EPA or an authorized state, or is in compliance with "interim status" standards specified by EPA or the state. As will be explained shortly, because of the time required to obtain a RCRA permit, TSDR facilities can be authorized to manage hazardous wastes under interim status if they meet certain waste management requirements established by EPA.

The RCRA "cradle-to-grave" system does not end with the secure arrival of the waste at its intended TSDR facility. Regardless of whether the TSDR facility is operating under interim status or a permit, the facility's owner does not have the option of simply closing down the facility and walking away from it when he or she no longer wishes to handle waste or goes out of business. Under RCRA, the owner must be prepared to close the hazardous waste facility under environmental requirements established by EPA and must provide financial assurances to pay for proper closure measures. If the facility is to be closed by removing wastes, the owner must demonstrate that RCRA clean-up standards are met, which could involve an environmental sampling and analysis program and site remediation, as necessary. If the facility is a land disposal operation and is to be closed with wastes left in place (e.g., placing a cap over a landfill), the facility must continue to monitor groundwater for at least 30 years after closure.

The Cradle: Hazardous Waste

Ninety-nine percent of hazardous wastes are generated by large quantity generators, each producing over 1,000 kilograms of hazardous waste per month. Ninety-six percent of these wastes are managed on site, requiring large quantity generators to obtain RCRA permits as TSDR facilities. The remaining four percent have their wastes transported off site to commercial TSDR facilities.

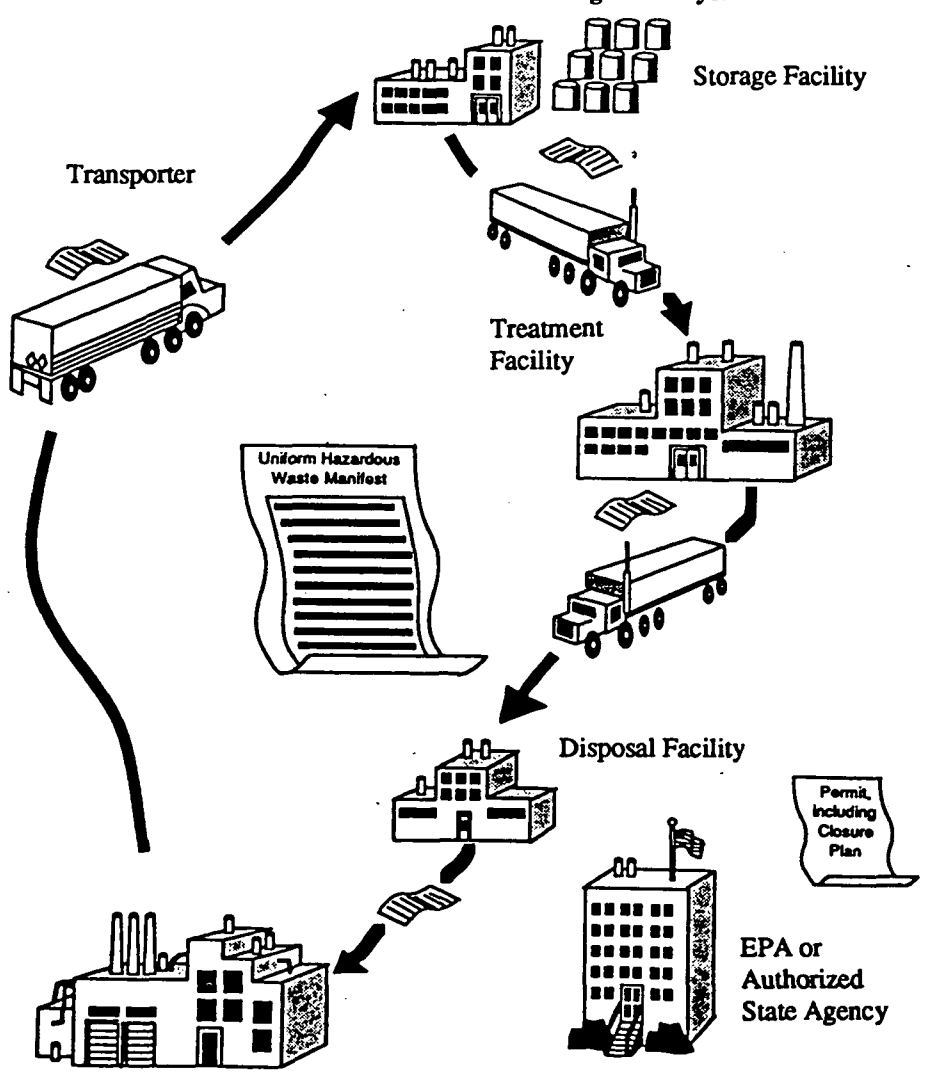
About one million tons are produced each year by small quantity generators, each producing 100 to 1,000 kilograms per month. Small quantity generators typically range from construction and automotive repair firms, laundromats and dry cleaners, to photographic processors and electroplaters.

Generators of less than 100 kilograms per month are exempt from RCRA regulations. These generators most often have their wastes transported off site to be treated or disposed of by commercial TSDR facilities.

Transporting Hazardous Waste

The transportation of hazardous wastes is regulated by EPA and the Department of Transportation (DOT). EPA's manifest system provides strict accountability for each shipment and confirms its acceptance by the TSDR facility. DOT's regulations establish standards for the safe packaging and handling of hazardous wastes while in transit and for clearly marking the transporting vehicles. Most hazardous waste is transported over highway and rail, although water and air transportation is sometimes used.

Figure 1.
The RCRA Hazardous Waste Management System



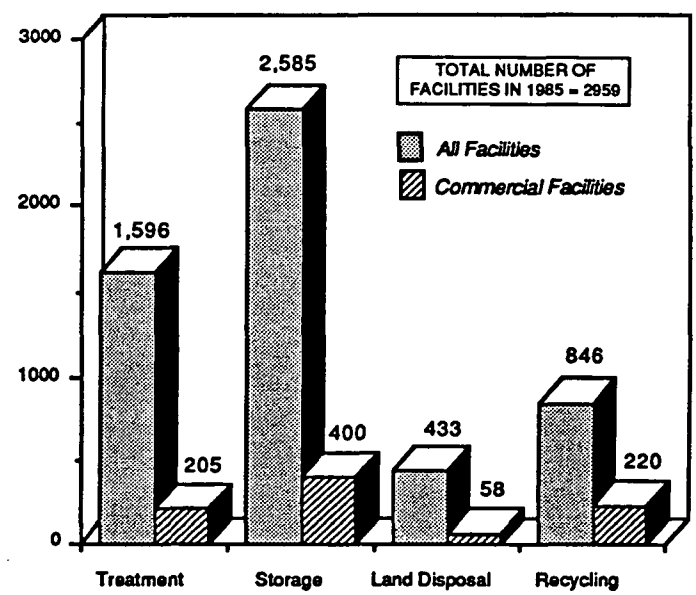
The Grave: Hazardous Waste Treatment, Storage, Disposal and Recycling

Often a facility requiring a RCRA permit will have more than one type of activity — treatment, storage, disposal or recycling — on site. Figure 2 provides a summary of the facilities active in 1985.

Treatment, which changes the character of hazardous waste in order to render it less hazardous, commonly includes:

- Incineration, or burning hazardous wastes at high temperatures in order to ensure near-complete combustion;
- Biological and chemical treatment of wastewaters;
- Steam-stripping technologies, which volatilize wastewaters and capture hazardous elements with air pollution control equipment; and
- Solidification, which involves mixing a stabilizing agent (like cement) with hazardous waste to create a solid or impermeable material.

Figure 2. Number of Active Facilities by Type of Technology



Source: National Screening Survey, U. S. EPA, Office of Solid Waste, 1986

Note: Some facilities have more than one process.

Storage facilities hold hazardous wastes for more than 90 days and must apply for RCRA permits. Storage facilities must meet RCRA standards for above- and below-ground tanks and for storage of portable containers such as 55-gallon drums.

Recycling facilities are used to treat hazardous wastes to convert them to useful materials, such as raw materials for manufacturing processes and saleable products. There is a variety of recycling techniques, including filtration and heat and chemical treatment. Generators of hazardous waste commonly recycle solvents, acids and metals.

Land Disposal was the most economical and commonly used method for disposing of hazardous waste until the 1984 amendments to RCRA placed stringent limitations on the types of wastes which can be disposed of in or on the land. It is expected that the future use of land disposal will decrease significantly. The types of land disposal facilities in use are:

- *Landfills*, units in which wastes are placed in or on the land and covered when filled;
- *Surface impoundments*, natural or man-made depressions or diked areas filled with water which can be used to treat, store or dispose of hazardous wastes;
- *Waste piles*, noncontainerized accumulations of solid, nonflowing hazardous waste;
- *Underground injection wells*, consisting of steel and concrete-encased shafts placed deep in the earth for the injection of liquid hazardous wastes by force and under pressure; and
- *Land treatment*, a disposal process in which hazardous waste is applied onto or incorporated into the soil surface. Natural microbes in the soil break down or immobilize the hazardous constituents.

More TSDR Sites Needed

Many existing contamination problems associated with hazardous wastes are the result of disposal practices which predated the RCRA program. EPA is committed to ensuring that the unsound methods which characterized much of the hazardous waste management practices of the past will not take place at facilities which are regulated under RCRA. EPA believes, however, that the greater environmental threat comes from practices at facilities which are not regulated under RCRA, since they may not be complying with the performance and technical standards of RCRA TSDR facilities. Because of this concern, EPA is striving to assure that there are a sufficient number of RCRA-permitted facilities to provide capacity for the environmentally sound management of all hazardous wastes.

Unfortunately, the lack of environmentally sound regional and waste-specific treatment and disposal sites is already a problem. It is important that environmentally sound alternatives to land disposal be put into place to assure that there are safe, regulated places to put hazardous waste. Incineration is one such important alternative. More incinerators are needed, particularly ones that can burn solids and sludges contaminated by hazardous wastes. This need will become even more important as more solids and sludges are added to the hazardous waste system as a result of contaminated site clean-ups under Superfund and RCRA.

Technologies exist to safely treat and dispose of wastes, but siting and permitting the facilities which will employ these technologies are difficult — it is not uncommon to take three to five years to site, permit and construct an incinerator. More effective siting and permitting are, therefore, among the most important solutions to the capacity problem.

RCRA Permitting of TSDR Facilities

Under RCRA, all existing TSDRs must apply for a permit by November 1988 in order to continue operation. A RCRA permit is a legally binding document which establishes the hazardous waste management activities which can be conducted at a TSDR facility in accordance with RCRA requirements. Permits limit these activities and require specified measures (like monitoring and reporting). Violations of permit conditions are subject to enforcement actions by EPA or the authorized state agency.

Many TSDR facilities are operating today without a final permit, but have "interim status" under RCRA. When RCRA began, interim status was given to facilities which submitted the first part of the two-part RCRA permit application, including basic information about the hazardous waste they manage and descriptions of each waste management unit at the facility. Interim status does not apply indefinitely — the RCRA amendments of 1984 established a schedule for TSDR facilities to receive operating permits: November 1988 for land disposal facilities, November 1989 for hazardous waste incinerators and November 1991 for all other facilities.

To receive an operating permit the facility must submit a highly detailed application, called the "Part B" application, which includes technical information about the facility's hazardous waste activities, measures proposed to ensure compliance with RCRA requirements, and demonstrations that these measures are sufficient to ensure protection of human health and the environment.

Once a Part B application is found to fully meet RCRA requirements, EPA or the state prepares a draft RCRA permit which specifies all proposed hazardous waste activities to be allowed at the facility and includes conditions and stipulations applicable to these activities. Each permitted facility must meet RCRA requirements designed specifically for that facility's environmental conditions. These requirements include, for example, procedures for analyzing wastes, technology requirements, recordkeeping and reporting requirements, and a contingency plan establishing emergency response procedures.

An opportunity for public review and comment on a draft RCRA permit must be provided before any final decisions are made by the regulatory agency to issue a final permit. This can include a public hearing if interest in a hearing is requested by any member of the public. EPA encourages public participation throughout the RCRA permitting process.

Suggested Readings

Solving the Hazardous Waste Problem: EPA's RCRA Program, U.S. Environmental Protection Agency, Office of Solid Waste, EPA/530-SW-86-037, November 1986.

The Hazardous Waste System, U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, June 1987.

1986 National Screening Survey of Hazardous Waste Treatment, Storage, Disposal and Recycling Facilities, U.S. Environmental Protection Agency, Office of Solid Waste, December 1986.

Hazardous Waste Regulation : The New Era, by Richard C. Fortuna and David J. Lennett, McGraw-Hill Book Company, 1987.

RCRA Hazardous Wastes Handbook, 7th Edition, Government Institutes, Inc., January 1987.

Standards and Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities. (Title 40, Code of Federal Regulations, Parts 264 and 265).

For Further Information

For further information, contact the **RCRA-Superfund Hotline**, Office of Solid Waste (WH-562), U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, D.C. 20460. (800) 424-9346 (toll free) or (202) 382-3000.

For information on specific aspects of treatment, storage, disposal and recycling facilities and on where to obtain other RCRA fact sheets, contact your EPA Regional Office.

EPA RCRA Fact Sheets

Land Disposal
Public Involvement
The State and Federal Partnership
Regulating Hazardous Waste Facilities
Health & Risk Assessment
Corrective Action
Closure/Post Closure
RCRA / CERCLA Comparison
Enforcement

Official Business
Penalty for Private Use
$300