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EPA

Safer Disposal For Solid Waste

The Federal Regulations for Landfills

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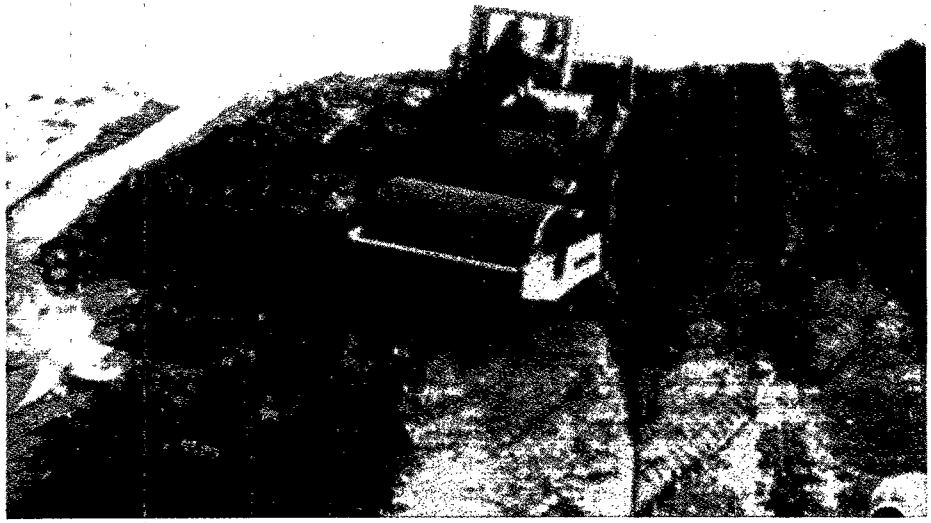
Safer Disposal For Solid Waste

The Federal Regulations for Landfills

It's not news that many communities in America are faced with a garbage disposal problem. In 1990, Americans generated over 195 million tons of municipal solid waste, and the annual amount is expected to increase to more than 220 million tons by 2000. At the same time, some landfills are closing and the siting of new landfills has become increasingly difficult because of public opposition.

Past problems sometimes associated with older landfills might have contributed to this situation. Landfills that were poorly designed, or were located in geologically unsound areas, or that might have accepted toxic materials without proper safeguards, have contaminated some ground-water sources. Many communities use ground water for drinking, and people living where contamination has occurred understandably worry about its threat to their health and the cost of cleaning it up. Communities where new landfills are needed share these concerns. Consequently, at a time when we need more of them, there is increasing resistance to building new landfills.

Owners and operators must ensure that each day's waste is covered with soil to control litter and disease-bearing vermin.



The federal regulations set minimum requirements for final cover of landfills.

To ease these worries and to make waste management work better, federal, state, Indian tribal, and local governments have adopted an integrated approach to waste management. This approach involves a mix of three waste management techniques: decreasing the amount and/or toxicity of waste that must be disposed of by producing less waste to begin with (source reduction); increasing recycling of materials such as paper, glass, steel, plastics, and aluminum, thus recovering these materials rather than discarding them; and providing safer disposal capacity by improving the design and management of incinerators and landfills.

Source reduction and recycling will keep a lot of waste out of municipal landfills, *but we will still need landfills.* (In 1990, 67 percent of municipal solid waste was sent to landfills.) The challenge is to make them safe in order to protect our communities and our environment — and that requires a strong partnership of federal, state, and tribal governments; industry; and citizens.

The federal regulations described in this booklet are an important step in the right direction. They greatly reduce the possibility that landfills will become sources

of pollution. We also think the safety and environmental protection measures they require will boost public confidence in landfills.

The regulations establish a cost-effective and practical system for managing the nation's waste by:

- Encouraging source reduction and recycling to maximize landfill life.
- Specifying safe design and management practices that will prevent releases of contaminants into ground water.
- Specifying operating practices that will protect human health.
- Protecting future generations by requiring careful closure procedures, including monitoring of landfill conditions and the effects of landfills on the surrounding environment.

Landfills may not be built in unstable areas prone to landslides, mudslides, or sinkholes, such as the one shown here.

The regulations also say what measures must be taken to guard against and clean up ground-water contamination and describe the kinds of areas where landfills may not be built.

The Federal, State, Tribal, and Citizen Roles

The federal government sets minimum national standards applicable to municipal solid waste disposal, but state, tribal, and local governments are responsible for actually implementing and enforcing waste programs. States are required to develop their own programs based on the federal regulations. EPA is offering the same opportunity to tribes. EPA's role is to evaluate states' and tribes' programs and decide if they are adequate to ensure safe disposal of municipal solid waste.

States and tribes that apply for and receive EPA approval of their programs have the opportunity to provide a lot of flexibility in implementing the regulations. This added flexibility allows states and tribes to take local conditions and needs into account, and can make the costs of municipal solid waste management more affordable. States and tribes also may establish requirements that are more stringent than those set by the federal government.

Private citizens have a role, too. Individuals can help ensure that adequate landfill capacity exists for their wastes by supporting the siting and development of facilities that comply with the regulations. Individuals can exercise their responsibility through grassroots activities, such as participating in public meetings regarding landfill siting, by taking part in permitting processes, and by working closely with the responsible state or tribal

officials. Citizens also have the right to sue landfill owners/operators who are not in compliance with the federal regulations.

Some Definitions Under the Regulations

Municipal solid waste landfill (MSWLF): A discrete area of land or an excavation that receives household waste, and that is not a land application unit, surface impoundment, injection well, or waste pile, as those terms are defined in the law. (Household waste includes any solid waste, including garbage, trash, and septic tank waste, derived from houses, apartments, hotels, motels, campgrounds, and picnic grounds.) An MSWLF unit also may receive other types of wastes as defined under Subtitle D of the Resource Conservation and Recovery Act (RCRA), such as commercial solid waste, nonhazardous sludge, small quantity generator waste, and industrial solid waste. Such a landfill may be publicly or privately owned. An MSWLF unit can be a new unit, an existing unit, or a lateral expansion (see definitions below).

Existing unit: A municipal solid waste landfill unit that is receiving solid waste as of October 9, 1993. Waste placement in existing units must be consistent with past operating practices or modified practices to ensure good management.

Lateral expansion: A horizontal expansion of the waste boundaries of an existing unit; does not include expansion in the vertical dimension.

New unit: Any municipal solid waste landfill unit that has not received waste prior to October 9, 1993.

Small landfill: A landfill serving a community that disposes of less than 20 tons of municipal solid waste per day, averaged yearly.

Exemptions for Small Landfills

Nearly half of the 6,000 municipal landfills covered by the regulations serve small communities of generally fewer than 10,000 people. The regulations allow exemptions from some of the more costly requirements for small landfills that are less likely to contaminate ground water. To qualify, a landfill must receive less than 20 tons of waste per day (averaged yearly), receive less than 25 inches of rainfall per year, and have no other practical waste disposal alternative. In addition, there must not be any evidence of ground-water contamination from the landfill. Extremely remote communities that have no ready access to other disposal sites for extended periods of time also are eligible for an exemption. For example, some remote Alaskan villages may not be able to reach larger disposal sites during the winter months.

Some small landfills serving small communities, such as this one in the dry, western United States, may qualify for exemptions from some of the regulations' requirements.

Who Is Affected and When?

In general, the federal regulations apply to all municipal solid waste landfills that are active (receiving waste) on or after October 9, 1993. If a landfill owner/operator stops taking waste between October 9, 1991, and October 9, 1993, only compliance with the federal requirements for final cover is required. The federal requirements do not apply to any landfill that stopped taking waste before October 9, 1991.

Because of the complex technology needed, the federal requirement for installing ground-water monitoring systems is phased in over a period of five years. To protect drinking water sources, landfills nearest to them must comply before those that are farther away.

Owners/ operators must set up a system to ensure that hazardous wastes are kept out of municipal landfills.

By April 9, 1994, landfill owners/operators also must be able to demonstrate the ability to pay the costs of closure, post-closure care, and cleanup of any known releases.

Summary of the Regulations

The federal regulations for municipal solid waste landfills cover the following six basic areas:

- Location
- Operation
- Design
- Ground-water monitoring and corrective action
- Closure and post-closure care
- Financial assurance

The following discussion explains the federal regulations. However, states and tribes with EPA-approved programs have the opportunity to exercise flexibility in implementing these regulations. Some of the exceptions described below are only available in states and tribes with EPA-approved programs.

Location

Airport Safety

Because landfills can attract birds that can interfere with aircraft operation, owners/operators of sites near airports must show that birds are not a danger to aircraft. This restriction applies to new, existing, and laterally expanding landfills.

Floodplains

Landfills may not be located in areas that are prone to flooding unless the owner/operator can prove the landfill is designed to withstand flooding and prevent the waste from washing out. This restriction applies to new, existing, and laterally expanding landfills.

Wetlands

Since wetlands are important ecological resources, new landfills and laterally expanding ones may not be built in wetlands unless the landfill is in a state or on tribal lands with an EPA-approved program and the owner/operator can show that it will not pollute the area. The

owner/operator must also show that no alternative site is available. This restriction does not apply to existing landfills.

Fault Areas and Seismic Zones

To prevent pollution that could be caused by earthquakes or other kinds of earth movement, new and laterally expanding landfills may not be built in areas prone to them. This restriction does not apply to existing landfills.

Location Criteria Summary

Location	Applicability*	Closure If Demonstration Cannot Be Met?
Airport Safety	N,E,L	Yes
Floodplains	N,E,L	Yes
Wetlands	N,L	No
Fault Areas	N,L	No
Seismic Impact Zones	N,L	No
Unstable Areas	N,E,L	Yes

*(N=New, E=Existing, L=Lateral Expansion)

Unstable Areas

Landfills cannot be located in areas that are subject to landslides, mudslides, or sinkholes. This restriction applies to new, existing, and laterally expanding landfills.

Operation

Keeping Out Hazardous Waste

EPA and the states have developed regulations specifically covering the disposal of hazardous wastes in special landfills. Owners/operators of municipal

landfills must develop programs to keep these regulated hazardous wastes out of their units.

Covering Materials and Controlling Vectors

In general, each day's waste must be covered to prevent the spread of disease by rats, flies, mosquitoes, birds, and other animals that are naturally attracted to landfills.

Controlling Explosive Gases

Methane gas, which occurs naturally at landfills, must be monitored routinely. If emission levels at the landfill exceed a certain limit, the proper authorities must be notified and a plan must be developed to solve the problem.

Restricting Access

Owners/operators must restrict access to their landfills to prevent illegal dumping and other unauthorized activities.

Controlling Storm Water and Protecting Surface Water

So that no pollutants are swept into lakes, rivers, or streams, landfills must be built with ditches and levees to keep storm water from flooding their active areas and to collect and control storm-water run-off.

Restricting Liquids

Landfills cannot accept liquid waste from tank trucks or in 55-gallon drums. This restriction helps reduce both the amount of leachate (liquids that have passed through the landfill) and the concentrations of contaminants in the leachate.

Controlling Air Emissions

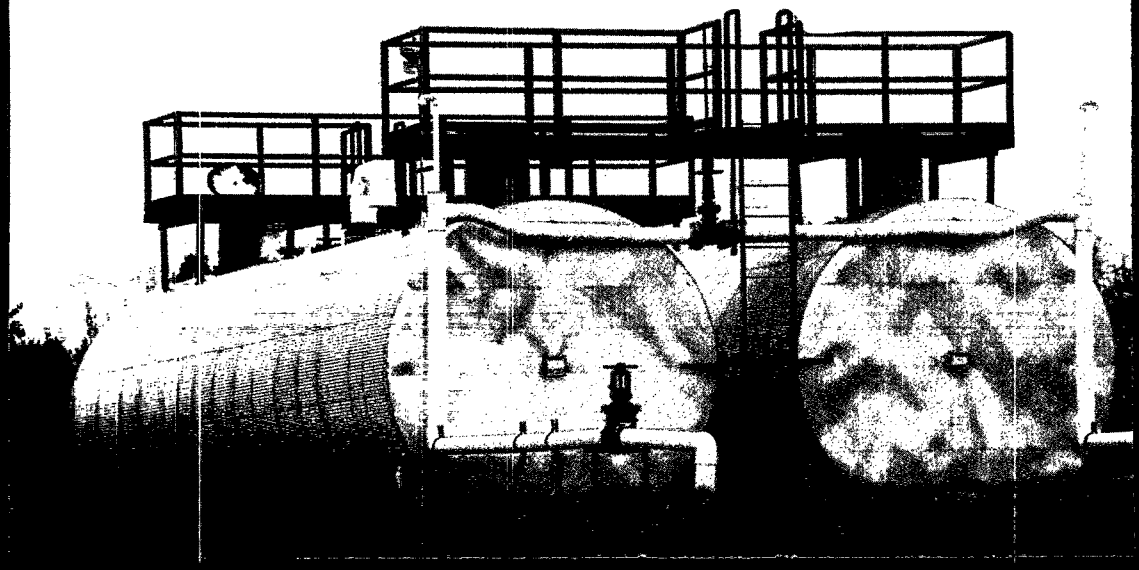
Landfills must be operated so they do not violate state and federal clean air laws and regulations. This means, among other things, that the burning of waste is prohibited at landfills, except under certain conditions.

Design

New and expanding landfills must be designed for ground-water protection by making sure that levels of contaminants do not exceed federal limits for safe drinking water. In states and tribes with EPA-approved programs, landfill owners/operators have flexibility in designing their units to suit local circumstances, providing the state or tribal program director approves the design. This allows owners/operators to ensure environmental protection at the lowest possible cost to citizens served by the landfill. This flexibility means, for example, that the use of a liner, and the nature and thickness of the liner system, may vary from state to state, and perhaps from site to site.

In states and tribal areas without EPA-approved programs, owners/operators must build their landfills according to a design developed by EPA, or seek a waiver. The EPA design lays out specific requirements for liners and leachate collection systems. Liners must be composite, that is, a synthetic material over a 2-foot layer of clay. This system forms a barrier that prevents leachate from escaping from the landfill into ground water. The design also requires leachate collection systems that allow the leachate to be captured and treated.

Leachate collection systems, such as the one shown here, are designed to collect any fluids that seep down through the landfill. The fluids can be recycled in the landfill or treated for disposal elsewhere.



Ground-Water Monitoring and Corrective Action

Generally, landfill owners/operators must install monitoring systems to detect ground-water contamination. Sampling and analysis must be conducted twice a year. States and tribes with EPA-approved programs have the flexibility to tailor facility requirements to specific local conditions. For example, they may specify different frequencies for sampling ground water for contaminants, or phase in the deadline for complying with the federal ground-water monitoring requirements.

If the ground water becomes contaminated, owners/operators in approved states and tribal areas must clean it up to levels specified by the state or tribal director. In states and tribes without EPA-approved programs, the federal regulations specify that contaminants must be reduced below the federal limits for safe drinking water.

Closure and Post-Closure Care

When a landfill owner/operator stops accepting waste, the landfill must be closed in a way that will prevent problems later. The final cover must be designed to keep liquid away from the buried waste. For 30 years after closure, the owner/operator must continue to maintain the final cover, monitor ground water to ensure the unit is not leaking, collect and monitor landfill gas, and perform other maintenance activities. (States and tribes with approved programs may vary this period based on local conditions.)

Financial Assurance

To ensure that monies are available to correct possible environmental problems, landfill owners/operators are required to show that they have the financial means to

cover expenses for site closure, post-closure maintenance, and cleanups. The regulations spell out ways to meet this requirement, including (but not limited to) surety bonds, insurance, and letters of credit.

Conclusion

The main emphasis of the federal regulations is to protect ground water and prevent pollution from inadequately designed and operated landfills. Landfills are an important part of our nation's system for managing garbage, and we all have an important stake in their safe operation. We encourage you to learn more about those in your community.

For More Information

This pamphlet provides an overview of the federal regulations. For more information about specific requirements for solid waste landfills in your area, contact your state solid waste agency. If you don't know how to reach them, call one of the resources listed at right. The Resource Conservation and Recovery Act (RCRA) Hotline maintains current lists of all state solid and hazardous waste management officials. While these information centers are the best place to start collecting information, it may still be useful to ask these contacts if some other source may be able to give you additional help. In addition, you can order a copy of the federal regulations or the booklet "Criteria for Solid Waste Disposal Facilities: A Guide for Owners/Operators" (EPA 530/SW-91-089).

RCRA Hotline

Provides information about RCRA regulations and policies, and takes document requests.

Hours: Monday-Friday, 8:30 a.m. to 7:30 p.m., EST
Telephone: Toll-free — (800) 424-9346
TDD (hearing impaired) — (800) 553-7672
Washington metro area — (703) 412-9810
TDD — (703) 412-3323

EPA RCRA Information Center (Docket)

Maintains and tracks policy and guidance documents; provides nontechnical assistance and written reference services; develops and disseminates public information materials.

Hours: Monday-Friday, 9:00 a.m. to 4:00 p.m., EST
Telephone: (202) 260-9327
Address: RCRA Information Center
U.S. Environmental Protection Agency
401 M Street, SW. (OS-305)
Washington, DC 20460

Solid Waste Assistance Program

Collects and distributes information on all aspects of municipal solid waste management.

Hours: Monday-Friday, 8:30 a.m. to 5:00 p.m., EST
Telephone: Toll-free — (800) 677-9424
Address: Solid Waste Assistance Program
P.O. Box 7219
Silver Spring, MD 20910

National Response Center

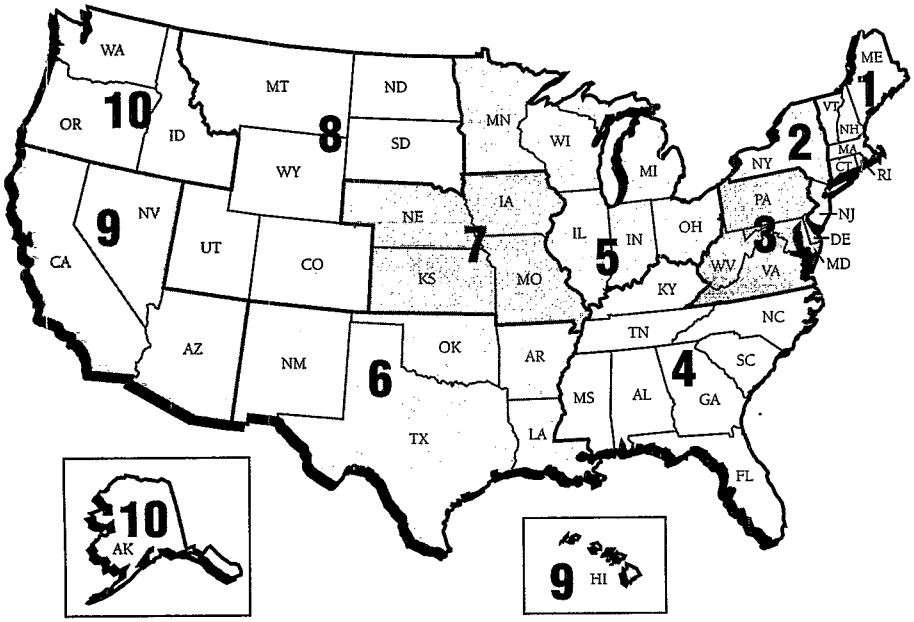
Accepts reports of oil and chemical spills or any other environmental incident.

Hours: 24 hours a day, 365 days a year.
Telephone: Toll-free — (800) 424-2675
Washington metro area — (202) 426-2675

EPA Small Business Ombudsman

Helps small businesses comply with environmental laws and EPA regulations.

Hours: Monday-Friday, 8:30 a.m. to 5:00 p.m., EST
Telephone: Toll-free — (800) 368-5888
Washington metro area — (703) 305-5938



EPA Regional Contacts

U.S. EPA Region 1
Waste Management Division
(HEE-CAN 6)
JFK Federal Building
Boston, MA 02203
(617) 573-9656

U.S. EPA Region 2
Air & Waste Management
Division (2AWM-SW)
26 Federal Plaza
New York, NY 10278
(212) 264-0002

U.S. EPA Region 3
RCRA Solid Waste Program
(3HW53)
841 Chestnut Street
Philadelphia, PA 19107
(215) 597-7936

U.S. EPA Region 4
Waste Management Division
(4WD-RCRA-FF)
345 Courtland Street, NE
Atlanta, GA 30365
(404) 347-2091

U.S. EPA Region 5
Waste Management Division
(H-7J)
77 West Jackson Blvd.
Chicago, IL 60604
(312) 353-4686

U.S. EPA Region 6
RCRA Programs Branch
First Interstate Bank Tower
1445 Ross Avenue,
Suite 1200
Dallas, TX 75202
(214) 655-6655

U.S. EPA Region 7
Waste Management Division
726 Minnesota Avenue
Kansas City, KS 66101
(913) 551-7666

U.S. EPA Region 8
Hazardous Waste
Management Branch
(HWM-WM)
999 18th Street, Suite 500
Denver, CO 80202-2466
(303) 293-1661

EPA Region 9
Hazardous Waste
Management Division
(H-3-1)
75 Hawthorne Street
San Francisco, CA 94105
(415) 744-2074

U.S. EPA Region 10
Hazardous Waste Division
(HW-114)
1200 Sixth Avenue
Seattle, WA 98101
(206) 553-2857

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U.S. Environmental Protection Agency
Office of Solid Waste
Communications Services Branch (OS-305)
401 M Street, SW.
Washington, DC 20460

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