

CHAPTER 7 OPERATIONS AND CONTINGENCY PLANS/TRAINING

7-1. Operations

a. Purpose. The designer of hazardous waste land disposal/land treatment facilities must have an understanding of their basic operations. Such an understanding is fundamental to the development of design plans that take into account day-to-day operations, required equipment, health and safety provisions, and operator needs. A summary of general operations for landfills, surface impoundments and land treatment facilities is presented below. For a brief discussion of procedures for injection wells and waste piles, see paragraph 5-5 and 5-6, respectively.

b. Landfill operations. Typical operations at a hazardous waste landfill include the following activities:

- Unloading wastes onto the active lift by forklift or front-end loader.
- Segregating wastes in cells or subcells to prevent mixing of incompatible wastes.
- Covering wastes with soil to prevent wind dispersal.
- Grading cover soil to facilitate collecting any direct precipitation in a sump.
- Placing cover soil on areas of the landfill that have been brought to final grade.

(1) To minimize infiltration of rainfall during very wet conditions, tarps may be used to cover the active area of the landfill. In areas of very high rainfall, wastes are often containerized or stored until the rainfall season is over.

(2) Equipment for landfill operations is used for handling wastes and cover material, spill and fire control, and decontamination. Typical equipment includes:

- Forklift and front-end loader to unload and place solid waste and containers.
- Dozens and self-loading scrapers to spread and compact cover material.
- Road graders and water pickup and vacuum trucks to provide support functions such as maintenance of site roads.
- Fire control, spill control and decontamination equipment.

c. Surface impoundment operations. During the time that liquid wastes are impounded, the following inspection activities are required:

- Monitoring to ensure that liquids do not rise into the freeboard (prevention of overtopping).
- Monitoring leak detection system.
- Inspecting containment berms for signs of leakage or erosion.
- Periodic sampling of the impounded wastes for selected chemical parameters.

- Inspecting periodically for floral and faunal activities (such as animal burrows) that could cause leaks through earthen dikes, levees or embankments.

(1) Liquid wastes may be removed from an impoundment by a variety of methods, including (but not limited to) decanting, pumping and settling, solar drying, and chemical neutralization. Details concerning removal methods are presented in SW-873.

(2) Typical equipment used for closing an impoundment includes:

- Centrifugal pump or hydraulic pipeline dredge to remove impounded liquids.
- Vacuum truck to pump slurried sediment from the impoundment.
- Rotary cutter to extract hardened sediments.
- Dragline or front-end loader to excavate solidified sediments.

d. Land treatment operations. Typical land treatment operations include:

- Applying liquid wastes (less than 8 percent solids) by either spraying the waste on the land with sprinklers or by using flood or furrow irrigation techniques.
- Spreading semiliquid sludges (8 to 15 percent solids) on the land or injecting them 4 to 8 inches below the soil surface.
- Applying low-moisture solids (> 15 percent solids) to the surface and later incorporating into the soil.

(1) Regardless of which waste application method is used, the most important objectives are uniform application of wastes, and use of application rates that are tailored to the assimilative capacity of the soil.

(2) Equipment used for land treatment varies, depending on application technique selected. Typically, this includes:

- Piping and a pump to transport wastes to the point of discharge (for surface irrigation by furrow or flooding).
- Truck or trailer-mounted tank if wastes are to be applied by gravity flow or through a sprayer or manifold.
- Vacuum truck with flotation tires and rear sprayer or manifold for surface spreading of sludge.
- Moldboard plow, disk or rotary tiller for incorporating waste into the soil.
- Truck or tractor with two or more chisels if wastes are to be injected into the subsurface.

7-2. Permit application assistance

a. The design engineer should develop a detailed operations plan for the facility that will include preclosure, closure and post-closure operations. These plans are usually required as part of the state permit application process. Generally such plans describe the characteristics of the wastes handled at the facility, equipment and operating procedures, site personnel, and provisions for emergencies and other contingencies.

b. Typical components of operations plans include:

- Access Procedures
- Waste Identification
- Entry Procedures
- Waste Handling and Control
- Management and Personnel
- Operations and Safety Training
- Safety
- Facility Equipment
- Security
- Monitoring

7-3. Contingency plans

a. Section 3004(s) of the Resource Conservation and Recovery Act (RCRA) stipulates that regulatory standards for hazardous waste facilities shall include "contingency plans for effective action to minimize unanticipated damage from any treatment, storage or disposal of any such hazardous waste."

b. Subpart D (Contingency Plan and Emergency Procedures) of 40 CFR 264.50-56 outlines the required contents of the plan, personnel responsibilities and emergency procedures. Specifically, the plan must be designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste constituents to air, soil or surface water. Section 264.52(b) of subpart D states that if the owner/operator has a SPCC plan, "he need only amend that plan to comply with the requirements of this part."

c. From a facility design perspective, the contingency plan must include the facility provisions which will aid in quick and effective emergency response procedures as well as those features that will help to avoid emergency situations. These might include the following:

- (1) Primary and secondary spill containment structures and methods.
- (2) Structures and equipment used for the containment and suppression of fires (e.g., installed sprinkler or foam systems, fire breaks).
- (3) Location of facility:
 - away from active faults
 - away from sources of ignition
 - away from flood zones or low-lying coastal areas

- (4) Adequate ground-water monitoring program.
- (5) Communication and alarm systems.

d. Specific design features are not required by the contingency plan, however, an acceptable contingency plan is based on the intrinsic safety features of the individual facilities. Surface impoundments require additional contingency planning, as well as development of emergency repair procedures; similar regulations are proposed for waste piles.

7-4. Personnel requirements, training, and safety

a. Regulations promulgated under RCRA on May 19, 1980, require owners or operators of hazardous waste management facilities to train their personnel. Specifically, 40 CFR 264.16 states: "Facility personnel must successfully complete a program of classroom instruction or on-the-job training that teaches them to perform their duties in a way that ensures the facility's compliance with the requirements of this Part ..."

b. This program must be directed by a person trained in hazardous waste management procedures and must include instruction which teaches facility personnel hazardous waste management procedures (including contingency plan implementation) relevant to the positions in which they are employed. At a minimum, the training program must be designed to ensure that facility personnel are able to respond effectively to emergencies by familiarizing them with emergency procedures, emergency equipment, and emergency systems, including where applicable:

- (1) Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment;
- (2) Key parameters for automatic waste feed cutoff systems;
- (3) Communications or alarm systems;
- (4) Response to fires or explosions;
- (5) Response to ground-water contamination incidents; and
- (6) Shutdown of operations.

c. This training must be completed within six months from the date of employment or assignment to a facility or to a new position at a facility, whichever is later.

d. The regulations state explicitly that facility personnel must be trained and that the training must be correlated to job classification. The regulations do not provide criteria for acceptable training programs.

e. For some types of activities existent at hazardous waste management facilities, personnel training is required under the Occupational Safety and Health Act (29 CFR 1910 et seq.). However, personnel training which is required under RCRA has been interpreted as going beyond that designed to protect workers and ex-

tending into the area of community protection as well.

f. States requiring training as part of their hazardous waste regulatory program may impose training

requirements more restrictive than the RCRA requirements. As a minimum, however, all states must comply with the federal training requirements.