

JOB AID

**Resource Conservation and
Recovery Act (RCRA)**
Part 1

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The Resource Conservation and Recovery Act (RCRA) directed the U.S. Environmental Protection Agency (EPA) to develop and implement a program to protect human health and the environment from improper hazardous waste management practices.

Hazardous Waste Determination

Solid waste includes:

- Any garbage
- Sludge from a waste treatment plant, water supply treatment plant or air pollution control facility
- Other discarded material, including solid, liquid, semi-solid, or contained gaseous material resulting from industrial, commercial, mining and agricultural operations and from community activities

Solid waste does not include solid or dissolved material in domestic sewage. Remember, the law dictates that a solid waste doesn't have to be a solid.

Hazardous waste is a "solid waste" or combination of solid wastes that, because of its quantity, concentration, or physical, chemical, infectious, or radioactive characteristics, may cause injury or death, cause damage, or pollute land, air or water.

A solid waste is hazardous if it is not excluded from regulation as hazardous waste and it meets any of these conditions:

- Exhibits any of the characteristics of hazardous waste
- Has been named as hazardous waste and has been listed as such in regulations
- Consists of a mixture of listed hazardous waste as well as non-hazardous solid waste
- Is derived from the treatment, storage or disposal of a listed hazardous waste

There are two ways a waste may be brought into the hazardous waste regulatory system:

- By identification of hazardous characteristics
- By specific chemical listing determined by the EPA

Hazardous Waste Lists

Solid waste may be hazardous if it is on one of three lists developed by the EPA.

- F-List (EPA 40 CFR 261.31 for non-specific sources)
 - Dirty solvents
 - Paint thinners
 - Wastes from electroplating
- K-List (EPA 40 CFR 261.32 Hazardous wastes from specific sources)
 - Wood preserving
 - Petroleum refining
 - Organic chemical manufacturing
- P-List and U-List (EPA 40 CFR 61.33 Discarded commercial chemical products, off-specification species, container residues and spill residues thereof)
 - Commercial chemical products that are no longer usable

Hazardous Waste Characteristics

The EPA has identified four characteristics of hazardous waste. If solid waste exhibits one or more of these characteristics, the material is classified as hazardous waste.

Characteristic 1: Ignitability

Ignitable wastes are easily combustible or flammable. Solid waste that exhibits any of the following properties is considered hazardous waste due to its ignitability:

- A liquid (except aqueous solutions containing less than 24% alcohol) that has a flash point of less than 140 °F (60 °C)
- A non-liquid capable, under normal conditions, of spontaneous and sustained combustion
- An ignitable compressed gas per Department of Transportation (DOT) regulations
- An oxidizer per DOT regulations

Characteristic 2: Corrosivity

Corrosive wastes are capable of dissolving metal or other materials or burning skin. Solid waste that exhibits any of the following properties is considered hazardous waste due to its corrosivity:

- An aqueous material possessing a $\text{pH} \leq 2$ or ≥ 12.5
- A liquid that corrodes steel at a rate greater than a $\frac{1}{4}$ inch per year at a temperature of 130 °F (55 °C)

Characteristic 3: Reactivity

Solid waste that exhibits any of the following properties is considered hazardous waste due to its reactivity:

- Normally unstable and reacts violently without exploding
- Reacts violently with water or forms an explosive mixture with water
- Generates toxic gases, vapors or fumes when mixed with water
- Releases cyanide or sulfide at a pH between 2 and 12.5
- Is capable of detonation or is listed as an explosive by DOT

Characteristic 4: Toxicity

One of the most significant dangers posed by hazardous waste is the leaching of toxic chemicals into groundwater. The toxicity of a waste is determined by the Toxicity Characteristic Leaching Procedure (TCLP). During this procedure, a leachate sample is extracted from the waste and then analyzed for up to 40 different hazardous chemicals.

Mixtures

A waste mixture containing even one listed hazardous waste should be considered hazardous overall and must therefore be managed under EPA regulations. This "mixture rule" applies no matter how little listed hazardous waste is contained in a waste mixture. Do not mix hazardous and non-hazardous waste. It will result in even more hazardous waste than you started with.

Waste Generation

It is the generator's responsibility to determine whether the company's wastes are hazardous. Make waste determinations at the point of generation before waste becomes mixed. You may

be held liable for improper waste management and disposal if you are part of your company's hazardous waste management team.

Categories of Hazardous Waste Generators

Very Small Quantity Generator (VSQG) Status: If you generate no more than 220 lbs (25 gal) (100 kg/95 L) of hazardous waste and no more than 2.2 lbs (1 kg) of acutely hazardous waste in any calendar month, you are a very small quantity generator (VSQG) and the federal hazardous waste laws require you to:

- Identify all hazardous waste you generate
- Send this waste to a hazardous waste treatment, storage and disposal facility (TSDF) or other state-approved facility
- Never accumulate more than 2,200 lbs (1,000 kg) of hazardous waste on your property

Small Quantity Generator Status: If you generate more than 220 but less than 2,200 lbs (25-300 gal) (100-1,000 kg/95-1,135 L) of hazardous waste and no more than 2.2 lbs (1 kg) of acutely hazardous waste in any month, you qualify as a small quantity generator (SQG). The federal hazardous waste laws require you to comply with the RCRA rules for managing hazardous waste and reapply for an EPA permit every four years and whenever your generator status changes.

Large Quantity Generator Status: If you generate 2,200 lbs (300 gal) (1,000 kg/1,135 L) or more of hazardous waste or more than 2.2 lbs (1 kg) of acutely hazardous waste in any month, you are a large quantity generator (LQG) of hazardous waste. Federal hazardous waste laws require you to comply with all applicable hazardous waste management rules and apply for an annual update to your EPA permit. EPA requires a quantitative measurement to meet and maintain status. All personnel who work with hazardous wastes, oversee operations or could cause non-compliance issues need to receive training within 90 days of initial hire and annually thereafter.

Acutely Hazardous Wastes

Some wastes are considered to be "acutely hazardous." These are wastes that the EPA has determined to be so dangerous in small amounts they are regulated the same way as large amounts of other hazardous wastes. Acutely hazardous wastes are found on the P-List and they also include 6 dioxin-containing wastes on the F-List. If your company generates more than 2.2 lbs (1 kg) of acutely hazardous waste in any month or accumulates more than that amount for any period of time, you are subject to LQG requirements.

Determining Generator Status

To determine your generator status, you must count *all* quantities of "Listed" and "Characteristic" hazardous wastes that your facility generates per month. This includes wastes that you:

- Accumulate on-site for any period of time prior to subsequent management, including wastes in a Satellite Accumulation Area (SAA)
- Package and transport off-site to a hazardous waste TSDF
- Place directly in a regulated on-site treatment or disposal unit
- Generate as still bottoms or sludges and remove from product storage tanks

Two options are available to limit counting:

- Large quantity generators can apply to accept, count and manage waste from VSQGs under the same control as the LQG
- VSQGs and SQGs may be allowed "episodic generation" allowances for excess generation once per calendar year

Generators must include all hazardous waste in various SAAs in their monthly quantities for determining generator status.

Exempted Waste

You do not have to count wastes that:

- Are specifically exempted from counting (including but not limited to: spent lead-acid batteries that will be sent off-site for reclamation; used oil that has not been mixed with hazardous waste; universal wastes such as fluorescent bulbs, batteries, and inerted aerosol containers)
- May be left in the bottom of containers that have been completely emptied through conventional means. Containers that held an acutely hazardous waste must be more thoroughly cleaned
- Are left as residue in the bottom of product storage tanks
- You reclaim continuously on-site without accumulating the waste prior to reclamation
- You manage in an elementary neutralization unit, a totally enclosed treatment unit, or a wastewater treatment unit
- Are discharged directly to a publicly owned treatment works (POTW) without being accumulated first. This discharge to a POTW must comply with the Clean Water Act
- You have already counted once during the calendar month, and treated on-site or reclaimed in some manner and used again

On-Site Management

To help you remember the three most important things about managing your hazardous waste on-site, think of the acronym **T.O.C.**

- **Take** adequate precautions to prevent accidents, and be prepared to handle them properly in the event they do occur
- **Obtain** a generator permit if you accumulate hazardous waste on-site. You must obtain a separate treatment, storage and disposal facility (TSDF) permit if you plan to store, treat or dispose of hazardous waste at your facility
- **Comply** with accumulation time, quantity and handling requirements for containers and tanks

On-Site Storage

If you are a large quantity generator (LQG), you may accumulate hazardous waste on your site for up to 90 days. If you exceed this time limit, you will be classified as a storage facility. Small quantity generators (SQG) are allowed to accumulate waste for as long as 180 days, or 270 days if they are located more than 200 miles from the TSDF.

Accumulation Container Management

You can accumulate hazardous waste in 55-gallon (200 L) drums, tanks, totes, intermediate bulk containers (IBCs) or other containers suitable for the type of waste generated.

Inspect containers for leaks or corrosion every week, without fail, and document the inspections.

Mark each container with:

- A "Hazardous Waste" label
- The type of hazard the waste presents
- The date the container is filled or removed from the satellite accumulation area (SAA)

Keep containers:

- In good condition; handle them carefully, and replace any leaking ones
- With ignitable and/or reactive wastes at least 50 feet (15.2 meters) from your property line
- Tightly closed at all times except when you fill or empty or must vent them
 - For *typical containers* (e.g., 55-gallon/200-liter drums), properly secure the cover with snap rings tightly bolted; bungholes capped; and, where appropriate, pressure-vacuum relief valves that maintain the container's internal pressure to avoid explosions
 - For containers accumulating *free liquids or liquid hazardous wastes* to be "closed," all openings or lids must be properly and securely affixed to the container, except when wastes are actually being added to or removed from the container. Liquid hazardous wastes also can be accumulated in open-head drums or open-top containers (e.g., where the entire lid is removable and typically secured with a ring and bolts or snap ring) and meet the definition of "closed" provided the rings are clamped or bolted to the container. The container could be considered closed if the lid covers the container top securely
 - For containers accumulating *solid and semi-solid hazardous wastes*, the EPA considers the container "closed" as long as there is complete contact between the lid and the rim all around the top of the container

Accumulate wastes following these rules:

- If you are accumulating waste at the point of generation (or satellite accumulation area), you must move the waste to a secure storage area (central accumulation area, or CAA) **within 3 consecutive calendar days** of the accumulated waste volume filling the container, such as a 55-gallon drum, and label the container with the date it reached this amount
- Never accumulate wastes in the same container if they could react together to cause fires, leaks, ruptures, corrosion, or other releases or failures
- Designate accumulation areas with signage to aid responders

Tank Management

If you accumulate waste in tanks, you must follow similar rules:

- Do not accumulate hazardous waste in a tank if it may cause ruptures, leaks, corrosion or otherwise cause the tank to fail

- Keep a tank covered, or provide at least 2 feet (0.61 meters) of freeboard (space at the top of the tank) in uncovered tanks
- If your tanks have equipment that allows the waste to flow into them continuously, provide waste feed cutoff or bypass systems to stop the flow in case of problems
- Inspect any monitoring or gauging systems each operating day and inspect the tanks themselves for leaks or corrosion every week
- Use the National Fire Protection Association's (NFPA's) buffer zone requirements for tanks containing ignitable or reactive wastes
- Make sure that the accumulated waste is taken off-site or treated on-site within 90 days

Universal Wastes and Used Oil

Universal wastes, such as fluorescent light bulbs, aerosol cans and batteries, must follow the same rules for labeling, packaging, closing and storing. Universal wastes can be accumulated up to 1 year (some states and jurisdictions may be shorter). Empty aerosol cans may be recycled if made inert or punctured. Note that green-capped fluorescent bulbs are not mercury-free, they just contain less mercury than other fluorescent lamps. LED lights are another choice to help save energy and disposal costs. Batteries for reclamation and recycling are another type of universal waste that must be managed until disposition.

Commonly used oil in many industries must be managed similarly to other hazardous wastes for labeling, storing, and spill prevention control and countermeasure (SPCC).

Shipping

When shipping your hazardous waste off-site, remember to:

- Choose a transporter and facility with EPA identification numbers
- Package and label your waste for shipping
- Prepare a hazardous waste manifest
- Sign and file copies of the manifest

Choose a Transporter

Carefully choose a reputable transporter and designate a qualified waste management facility to work with. Ensure all parties have EPA identification numbers. The transporter will handle your waste beyond your control while you are still responsible for their proper management. Generators are responsible for the hazardous waste they generate until final disposition. The manifest will help you track your waste during shipment and make sure it arrives at the proper destination.

Package and Label

When you prepare hazardous waste for shipment, you must put the waste in containers that are acceptable for transportation and make sure the containers are properly labeled. If you need additional information, you may wish to consult the requirements for packaging and labeling hazardous wastes found in the Department of Transportation (DOT) regulation (40 CFR 172.704).

Prepare a Hazardous Waste Manifest

A hazardous waste manifest is a multi-copy shipping document that you must fill out and use to accompany your hazardous waste shipments. The manifest form is designed so that

shipments of hazardous waste can be tracked from their point of generation to their final destination – the "cradle-to-grave" concept. Electronic, or e-Manifest, is an option for managing hazardous waste manifests.

Sign and File Copies

The following entities must sign and keep a copy of the manifest document:

- Hazardous waste generator
- Transporter
- Designated facility where the waste will be treated or disposed of

Hazardous Waste Manifest Delays

If you are a large quantity generator (LQG) and you do not receive a signed copy from the designated hazardous waste management facility within 35 days of the date the waste was accepted, you must contact the designated TSDf and determine the status of the hazardous waste. If you have not received a signed copy within 45 days from the date the waste was accepted, you must submit an exception report to your EPA Regional Administrator.

If you are a small quantity generator (SQG) and you do not receive a signed copy from the designated hazardous waste management facility within 60 days of the date the waste was accepted, you must report it to your EPA Regional Administrator. The submission to the EPA need only be a handwritten or typed note on the manifest itself, or on an attached sheet of paper, stating that the return copy was not received.

VSQG to LQG Shipping Requirements

A very small quantity generator (VSQG) does not have to use a registered hazardous waste transporter or a uniform hazardous waste manifest to ship their hazardous waste to an LQG under control of the same person or organization provided the VSQG marks its containers of hazardous waste with the words "Hazardous Waste" and an indication of the hazards of the contents, such as:

- The waste's applicable characteristics (ignitable, corrosive, reactive, toxic)
- Appropriate DOT labels and placards
- A hazard statement or pictogram
- An NFPA chemical hazard label