PAPER

MINIMIZE HAZARDOUS WASTE DISPOSAL BY

RECYCLING UNIVERSAL WASTES

How to Minimize Your Hazardous Waste Disposal by Recycling Universal Wastes

Recycling isn't just for soda cans and cardboard. Did you know that you can also recycle some types of hazardous industrial wastes? The Environmental Protection Agency (EPA) encourages facilities to look for recycling options for every waste stream they generate. To sweeten the deal, facilities that choose to recycle certain types of hazardous wastes instead of disposing of them are eligible for streamlined management requirements and other benefits, such as lower hazardous waste generator status and limited future liability. Recycling also minimizes the volume of common hazardous wastes entering landfills and commercial incinerators.

The Universal Waste Rule [40 CFR 273] is one example of the EPA's effort to help facilities recycle hazardous wastes. Eligible universal wastes include batteries, pesticides, mercury-containing equipment, mercury lamps and aerosol cans. Wastes managed under the Universal Waste Standard also don't count toward the facility's hazardous waste generator status because they are recycled, not landfilled.

Each of these wastes has a hazardous component that would traditionally subject it to full management and regulation under the EPA's Resource Conservation Recovery Act (RCRA). But because each of these waste streams has components that can be effectively recycled and reused, the EPA provides less stringent management rules for these wastes for facilities that choose to recycle them. Recycling helps keep countless tons of wastes out of landfills and recovers materials for reuse in new products.

When the EPA created the Universal Waste Rule, they established the following criteria for a hazardous waste to become a Universal Waste:

1. The waste is a listed or characteristic hazardous waste generated by a wide variety of generators
2. The waste is not exclusive to any particular industry or group of industries
3. The waste is generated in relatively small quantities
4. Systems used to collect the waste ensure close stewardship of that waste
5. The risk of accumulating and transporting the waste is relatively low
6. Regulation as a universal waste would encourage recycling or other proper hazardous waste management
7. Regulation would improve compliance with hazardous waste regulations

In this paper, we'll look at the five types of universal wastes that are eligible for relaxed management standards under the Universal Waste Rule when they will be recycled. We'll also cover how to properly manage each waste for recycling.

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General Requirements for Universal Waste Management

Although the management standards for universal wastes are relaxed, facilities are still responsible for managing these wastes in a way that won't harm the environment. Employees must also be trained on the facility's specific handling procedures for each waste stream to ensure that the hazardous materials in each of the wastes aren't released to the environment.

Each universal waste stream has requirements that are specific to the waste stream, but there are some commonalities, such as storing universal wastes in containers that are:

- Structurally sound
- Properly labeled
- Compatible with the materials stored
- Closed when materials are not being added or removed
- Not leaking

Generators must also be prepared to respond to releases and manage any spills, leakage and related wastes as hazardous waste. Universal wastes may be stored onsite for up to one year unless the generator can show that a longer time is needed to accumulate enough waste necessary to facilitate proper recycling. Continue reading to learn how to manage five haz waste streams as universal waste.

1. Batteries

Many different types of batteries are eligible for universal waste management. The rule defines a battery as "a device consisting of one or more electrically connected electrochemical cells which is designed to receive, store and deliver electric energy." Some examples include:

- Alkaline
- Mercuric-oxide
- Alkaline-manganese
- Zinc carbon nickel cadmium (Ni-Cad)
- Button cell
- Silver oxide
- Lithium ion (Li-Ion)

Not all batteries are universal wastes. For example, lead acid batteries that can be managed by 40 CFR 266 (spent automotive batteries that are going to be reclaimed) are ineligible.

Different types and styles of batteries may be stored together. The terminals of each battery must be taped or otherwise shielded to prevent unintended discharges and fires while the batteries are in storage or being transported. If tape is used, it must not be duct tape or any tape that has aluminum or other metal components in its composition.

Individual battery cells may be opened to remove the electrolyte, but must be resealed as soon as the electrolyte has been removed. Any electrolyte that has been removed is not a universal waste and must be properly managed.

2. Pesticides

Waste pesticides that prevent, destroy, repel or mitigate pests or formulas that regulate exfoliated or desiccated plants are pesticides that may be managed under universal waste rule [40 CFR 273.9]. Examples include:

- Recalled, suspended and canceled pesticides that are part of a voluntary or mandatory recall
- Pesticides that are not in compliance with the Federal Insecticide, Fungicide, Rodenticide Act (FIFRA)
- Unused pesticides that are collected and managed as part of a waste pesticide collection program

More than 25,000 different types of pesticides are available in the United States, and more than one billion pounds are used each year. Proper management helps to prevent these materials from contaminating water and soil. Pesticides may be managed in either containers or tanks that are nonleaking, properly labeled and compatible with pesticides being stored.

3. Mercury-Containing Equipment

Because batteries and lamps are specifically designed as universal wastes, they are not managed as mercury-containing equipment. The devices that may be managed as mercury-containing equipment have elemental mercury somewhere inside them to function properly. Examples include:

- Thermostats
- Thermometers
- Mercury switches
- Ballasts
- Barometers
- Manometers

The mercury in these devices is contained in ampules. Under universal waste management standards, ampules may be managed intact in the device that contains them or the ampules may be removed from the device if it can be done so without damaging the ampule.

Facilities that choose to remove mercury ampules must properly train their personnel, perform the removal over a containment device and ensure that the area is properly ventilated. Broken mercury ampules must be properly cleaned up and managed under RCRA standards.

4. Lamps

Unlike mercury-containing equipment, facilities are not permitted to remove mercury from lamps. The lamps must be kept intact to qualify for management as universal waste. Although different styles or lengths of lamps may be managed together, it can sometimes be more difficult to do this without the risk of breaking the lamps.

The universal waste management requirements are clear about the bulbs remaining intact if facilities are going to manage them as a universal waste. Crushing bulbs can help some facilities better manage the amount of space required to store them, but it disqualifies the lamps for management as universal waste and makes them subject to full RCRA regulation as a hazardous waste.

5. Aerosol Cans

Aerosol cans hold anything from solvents and paints to food, beauty product and pesticides. The hazards presented by "empty" aerosol cans are often two-fold: the can may contain residual hazardous materials, such as solvents, paints or flammable propellants that can harm the environment; plus, it remains pressurized and can explode if it is subject to heat.

The EPA sought to include all types of products when developing the Universal Waste Rule for Aerosol Cans — no matter what is in the can, they all may be managed under the same standard. The broad definition of an aerosol can is:

> "a non-refillable receptacle containing a gas compressed, liquefied, or dissolved under pressure, the sole purpose of which is to expel a liquid, paste, or powder and fitted with a self-closing release device allowing the contents to be ejected by the gas." [40 CFR 260.10]

Facilities that manage aerosol cans as universal waste must meet the general requirements for universal waste management, but they have two options for what happens to the waste. They can either:

- Keep the cans intact and send them to a universal waste handler for processing and recycling; or
- Safely puncture the cans then recycle the empty, punctured cans and manage any residual liquids appropriately

If cans will be punctured onsite, the facility must also:

- Develop written procedures for safely puncturing the cans in a device designed for can puncturing
- Maintain the manufacturer's specifications and instructions for the can puncturing device
- Train employees

The EPA estimates that more than 25,000 facilities in the United States use aerosol cans each year and that recycling those aerosol cans can save up to $47.8 million annually.

Universal Waste Checklist

Type(s) of Universal Waste	
❑ Batteries	Volume/number:
❑ Mercury-containing equipment	Volume/number:
❑ Lamps	Volume/number:
❑ Aerosol Cans	Volume/number:
❑ Pesticides	Volume/number:
Note: Small Quantity Generators of Universal Waste may not accumulate more than 5,000 kg of universal waste at any time.	

General Universal Waste	Y/N	Corrective Action	Employee Responsible
Containers are structurally sound (no leaks, spillage or damage)			
Containers are compatible with the materials being stored			
Containers are kept closed when materials are not being added or removed			
Containers are properly labeled for the type(s) of waste			
Universal waste that is leaking or damaged is properly managed			
Employees are trained to properly and safely manage universal waste stream(s)			
Written procedures are developed for universal waste management			
Written procedures are developed for leak and spill cleanup			
Spill cleanup kits are provided, and employees are trained to use them			
Universal wastes are not disposed of, diluted or treated except as permitted by regualtion			
Universal waste is not accumulated for more than one year [unless the conditions of 40 CFR 273.15(b) or 40 CFR 273.35 (b) are met]			
An inventory system is maintained for each type of universal waste			
Other:			

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