Guide to Universal Waste

How to Manage Batteries, Lamps, and Mercury-Containing Equipment

Hazardous Waste and Toxics Reduction Program

Washington State Department of Ecology
Olympia, Washington

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Contact Information

Hazardous Waste and Toxics Reduction Program

P.O. Box 47600
Olympia, WA 98504-7600
Phone: 360-407-6700
Website: Washington State Department of Ecology[1]

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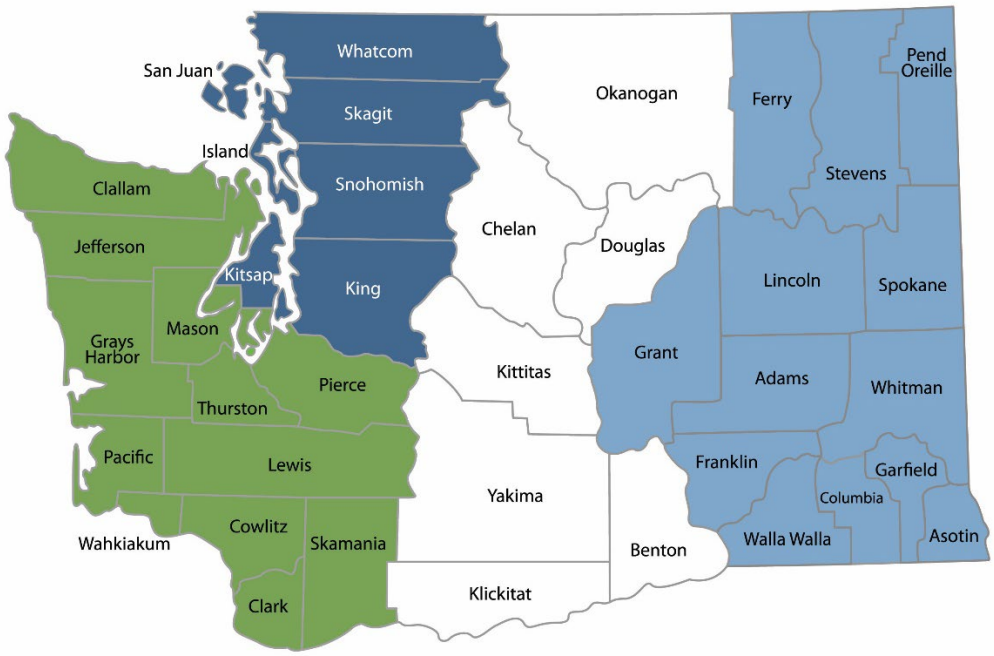

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Region	Counties served	Mailing Address	Phone
Southwest	Clallam, Clark, Cowlitz, Grays Harbor, Jefferson, Mason, Lewis, Pacific, Pierce, Skamania, Thurston, Wahkiakum	PO Box 47775 Olympia, WA 98504	360-407-6300
Northwest	Island, King, Kitsap, San Juan, Skagit, Snohomish, Whatcom	PO Box 330316 Shoreline, WA 98133	206-594-0000
Central	Benton, Chelan, Douglas, Kittitas, Klickitat, Okanogan, Yakima	1250 W Alder St Union Gap, WA 98903	509-575-2490
Eastern	Adams, Asotin, Columbia, Ferry, Franklin, Garfield, Grant, Lincoln, Pend Oreille, Spokane, Stevens, Walla Walla, Whitman	4601 N Monroe Spokane, WA 99205	509-329-3400
Headquarters	Across Washington	PO Box 46700 Olympia, WA 98504	360-407-6000

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What is the Universal Waste Rule?

Figure 1: Universal waste labels.

If your business generates dangerous waste, you must follow the dangerous waste regulations.

However, if you're managing batteries, lamps, and equipment that contains mercury and other toxic metals, it's easier to manage these wastes under Washington state's **universal waste rule**. This rule is based on the federal universal waste rule, which encourages environmentally sound disposal and recycling.

Benefits of the universal waste rule

Benefits of managing universal waste under this rule include:

- You may accumulate more quantities of universal waste for a longer period of time.
- You don't need to count universal waste totals when making your monthly dangerous waste generator determination.
- You aren't required to use manifests when shipping universal waste off site.
- It encourages recycling.

Note: If you generate and manage both universal wastes and dangerous wastes, you're considered both a dangerous waste generator and a universal waste handler. You're responsible for ensuring your waste is properly managed once it leaves your site.

Why are universal wastes hazardous?

Universal wastes are batteries, lamps, and mercury-containing equipment that contain toxic metals (mercury and lead are the most common). These wastes must be handled carefully and disposed of properly—especially lamps and other mercury-containing devices that may easily break. When broken, those handling the waste may inhale the toxic mercury vapors or get them on their skin and clothing and track the contamination back to their homes.

It's important to prevent universal waste releases to the environment. Substances like mercury and lead are toxic to humans and wildlife. If they're not managed correctly, they can leach into the groundwater and make their way to our water supply.

Mercury specifically is persistent in the environment and increases in concentration as it moves up the food chain. Any mercury released into the atmosphere is eventually deposited back to the soil and water. From there it enters the food chain, and eventually accumulates in fish that we consume.

Washington state's universal wastes

Washington state has three categories of universal waste:

- Batteries[3]
- Lamps[4]
- Mercury-containing equipment[5]

Although pesticides and aerosol cans are federal universal wastes, we don't include them under Washington state's universal waste rule. You must follow the full designation and management requirements in the Dangerous Waste Regulations[6] for pesticides and aerosol cans.

You may use a petition process to add other wastes to the universal waste regulations if they meet certain criteria.[7] If we approve your petition to add other wastes, they will be added as universal waste in future rulemakings.

Note: Universal waste regulations and categories differ from state to state. Make sure your waste is considered universal waste in another state if you ship it out of Washington.

[3] WAC 173-303-573(2): https://apps.leg.wa.gov/WAC/default.aspx?cite=173-303-573
[4] WAC 173-303-573(5): https://apps.leg.wa.gov/WAC/default.aspx?cite=173-303-573
[5] WAC 173-303-573(3–4): https://apps.leg.wa.gov/WAC/default.aspx?cite=173-303-573
[6] WAC 173-303: https://apps.leg.wa.gov/wac/default.aspx?cite=173-303
[7] Described in WAC 173-303-573(39): https://apps.leg.wa.gov/WAC/default.aspx?cite=173-303-573

Types of Universal Waste

Batteries

Figure 2: Batteries in various sizes.

Why are batteries hazardous?

Mercury, lead, cadmium, lithium, and other metals (or even acid) can leak from batteries. These metals pose environmental risks when released to the environment through improper disposal practices. Because these metals are toxic, it's very important to manage batteries appropriately.

Alkaline batteries also contain an electrolyte that can corrode metals and damage the environment.

One concern with waste batteries is their potential to cause fires. Stored batteries can short circuit, generate heat, and start a fire.

What types of waste batteries are universal waste?

All dangerous waste batteries can be managed as universal waste, so you can assume any battery is dangerous waste and manage it under the universal waste rule if your recycler or vendor will take them.

Examples of battery types you can manage as universal waste include:

- Miniature button cell batteries.
- Zinc air, alkaline, and silver oxide batteries.
- Lithium-ion batteries.
- Consumer products with difficult-to-remove batteries (such as the power packs of rechargeable cordless tools).

- Spent lead-acid batteries (typically automotive batteries), although you may also manage and recycle them under the optional lead-acid battery exemption.[8]

If you have test results or manufacturer safety data sheets showing a particular brand, type, and size of battery isn't dangerous waste, you don't need to manage it as universal waste.

How do I manage batteries as universal waste?

You can choose to manage batteries as universal waste or under the more stringent dangerous waste requirements. In most cases, universal waste management is easier.

In addition to the following battery requirements, you must also follow all general accumulation requirements for universal waste.

Prevent releases to the environment

Prevent your battery waste from releasing to the environment:

- Store damaged or leaking batteries in closed and structurally sound containers to prevent toxic materials from releasing to the environment.
- Ensure batteries are compatible with one another and the container. We encourage you to segregate batteries by type for a couple of reasons:
    - Some battery types may not be compatible and could react when stored together.
    - Not all batteries are recycled in the same way.

Allowed battery-management activities

You may conduct the following routine battery-management activities. These are not considered dangerous waste treatment:

- Sorting batteries by type.
- Discharging batteries.
- Regenerating used batteries.
- Disassembling battery packs.
- Removing batteries from discarded consumer products.
- Taping over the terminals of lithium-ion batteries to prevent reactions.
- Removing electrolyte.

[8] WAC 173-303-520: http://apps.leg.wa.gov/wac/default.aspx?cite=173-303-520.

Lamps

Figure 3: CFL light bulbs.

Why are waste lamps hazardous?

Some types of lamps—such as fluorescents—contain a small amount of mercury that's released when the lamp breaks. During waste handling and disposal, many lamps break. This releases mercury vapor, which waste handlers may inhale. When lamps containing mercury are incinerated, they release mercury into the atmosphere.

Some lamps also contain lead in the glass and lead solder in the base.

How can I tell if lamps are dangerous waste?

It's easiest assume your waste lamps are dangerous waste and manage them under the universal waste rule.

If you'd like to be sure, you can designate[9] your lamps. EPA test procedures show most lamps designate as dangerous waste because of their mercury and lead content.

What types of lamps are considered universal waste?

These types of lamps may be universal waste:

- Fluorescent.
- Compact fluorescent.
- High intensity discharge (e.g., mercury vapor, metal halide, high pressure sodium).
- Neon.
- Any other lamps that designate as dangerous waste.

[9] The process of determining if a waste is hazardous is called designation: https://ecology.wa.gov/Designation.

How do I manage lamps as universal waste?

Universal waste lamps require specific handling procedures because glass bulbs break so easily.

In addition to these lamp requirements, you must also follow all general accumulation requirements for universal waste.

Lamp crushing is prohibited

- You cannot crush waste lamps under the universal waste regulations.
    - You may crush lamps when accumulating them as a regulated dangerous waste treatment activity, but we discourage this practice because crushing increases the risk of mercury releases. See our focus sheet about using fluorescent lamp crushing equipment[10] for more details.
- Immediately clean up broken lamps. See EPA's guidance on their cleaning up a broken CFL webpage.[11]
    - Store debris in a closed container and manage it as dangerous waste.
    - Don't vacuum the spill debris as it can spread mercury through the air.

Accumulation and packaging

Prevent your waste lamps from releasing hazardous components to the environment:

- Accumulate universal waste lamp containers indoors.
- Contain lamps in structurally sound containers such as cardboard boxes or fiber drums.
- Keep accumulation containers closed when not adding lamps.
- Store containers in a way that prevents lamps from breaking.

[10] https://apps.ecology.wa.gov/publications/SummaryPages/1104009.html
[11] https://www.epa.gov/cfl/cleaning-broken-cfl

Mercury-containing equipment

Figure 4: Mercury switch.

Why is mercury-containing equipment hazardous?

Mercury-containing equipment or devices can designate as dangerous waste when discarded because they may contain high levels of mercury.

For example, thermostats and thermometers were once one of the largest sources of mercury in landfills. When thrown in the garbage, the ampule or glass sometimes broke, which spilled the mercury.

Because mercury is persistent in the environment and increases in concentration as it moves up the food chain, any mercury released enters the food chain and eventually accumulates in fish that we consume.

To decrease the risk of toxic spills, replace mercury-containing equipment with non-mercury alternatives.

What is considered mercury-containing equipment?

Mercury-containing equipment is a broad category of universal waste that includes any device—or part of a device—that contains elemental mercury. Mercury is used in a wide range of devices at varying amounts, ranging from less than a gram up to several pounds.

A few examples include:

- Thermometers
- Thermostats[12]
- Barometers
- Tilt switches
- Manometers
- Flame sensors

[12] A mercury-containing thermostat is defined as a temperature control device that contains metallic mercury in an ampule attached to a bi-metal sensing element.

Mercury-containing equipment **doesn't include**:

- Mercury waste generated as a by-product of manufacturing or waste treatment.
- Elemental mercury, such as in vials or jewelry containing drops of mercury.
- Dental amalgam.
- Rubber flooring made with mercury.
- Chemical compounds containing mercury (e.g., pharmaceuticals, pesticides, paints, or lab chemicals).
- Intact devices or toys with removable batteries or lamps (batteries and lamps can be removed and handled according to their universal waste type).

Note: While the above examples don't fall under the universal waste rule, they may be managed by the Dangerous Waste Regulations.

How do I manage mercury-containing equipment as universal waste?

In addition to these requirements for mercury-containing equipment, you must also follow all general accumulation requirements for universal waste.

Accumulation and packaging

Prevent your mercury-containing waste from releasing hazardous components to the environment:

- As an option, you may remove ampules from thermostats and other mercury-containing equipment, if removal can be done safely.
    - Use a containment system (such as a plastic tub) to prevent spills.
- Store and transport ampules in closed containers and in a manner that prevents them from breaking.
- Accumulate leaking ampules or other mercury-containing equipment in an air-tight container.

You can manage mercury-containing equipment with mercury in an open housing (e.g., barometers) as universal waste if you take appropriate precautions.

- Remove the open housing, seal it airtight, and manage it the same way as ampules.
- If you don't remove the housing, seal it prior to transport and place the whole device in a closed container.

General Accumulation Requirements

Figure 5: Universal waste must be correctly labeled.

These requirements apply to all universal waste: batteries, lamps, and mercury-containing equipment.

Labeling and marking

Clearly label or mark individual items or containers with one of the following phrases:

- Universal Waste—Batteries
- Waste Batteries
- Used Batteries
- Universal Waste—Lamps
- Waste Lamps
- Used Lamps
- Universal Waste—Mercury-containing Equipment
- Universal Waste—Thermostat(s)
- Waste Mercury-containing Equipment
- Used Mercury-containing Equipment

Accumulation time

Used lamps, unused lamps, batteries, and mercury-containing equipment become waste on the date you discard them.

You can accumulate batteries, lamps, and mercury-containing equipment for one year from the date they become a waste. To document this, mark the collection container or individual universal waste device with the first date of accumulation.

You can also use any other method that demonstrates accumulation time, such as:

- A log that identifies the first date of accumulation.
- Shipping documents that demonstrate the disposal date.

You may extend the one-year accumulation limit if you need more time to collect enough items to facilitate proper recovery, treatment, or disposal. But you're responsible for providing evidence the extension was for accumulation only.

Universal Waste Handler Categories and Requirements

Figure 6: Properly labeled and closed containers of universal waste batteries and fluorescent tubes.

A universal waste handler is either:

- A generator of universal waste.
- A business that receives universal waste from other handlers and ships it to another handler or destination facility.

There are two categories of handlers: small quantity handlers of universal wastes and large quantity handlers of universal wastes. These two categories don't influence your dangerous waste generator category. For example, it's common for a large quantity generator of dangerous waste to be a small quantity handler of universal wastes.

Small Quantity Handler of Universal Wastes (SQHUWs)

SQHUWs accumulate up to 11,000 pounds of all types of universal waste, but no more than 2,200 pounds of waste lamps.

SQHUW requirements

SQHUWs must follow these requirements:

- Properly label or mark universal waste items or containers.
- Only accumulate universal waste for one year from the date it was first generated or received from another handler.
- Properly manage universal wastes to prevent releases to the environment.
    - Keep waste lamp containers closed.
- Immediately contain spills and releases.
    - Handle residues appropriately (as either solid or dangerous waste).
        - Manage and dispose of the waste based on designation, or

        - Assume they're dangerous waste and manage them according to Dangerous Waste Regulations.
    - If residues are dangerous, manage them according to the Dangerous Waste Regulations.
- Follow waste-specific regulations for each type of universal waste you handle.
- Send or take universal waste to another handler that acts as a collection center, a destination facility, or a foreign destination.
- Ensure the receiving facility will accept the load before you send it.
    - If it's rejected, you must accept the waste back or both parties must agree on a new destination receiving facility.
- Follow the export notification procedures for foreign destinations.
- Train employees on how to properly manage universal wastes.

Large Quantity Handler of Universal Wastes (LQHUWs)

LQHUWs accumulate more than 11,000 pounds of all types of universal waste or more than 2,200 pounds of lamps. You maintain your LQHUW status through the end of the calendar year in which you accumulate LQHUW quantities of universal waste.

LQHUW requirements

LQHUWs must follow these requirements:

- Follow all the SQHUWs management requirements.
- Maintain records to track waste shipments.
    - Records may be in the form of a log, invoice, manifest, bill of lading, or other shipping documents.
    - You must maintain records for three years. Include receiving facility names and addresses, quantities and types of wastes, and shipment dates.
- Notify us[13] and obtain an EPA/State Identification (ID) Number using a Site ID Form.
    - If you anticipate accumulating LQHUW quantities of universal waste at any one time, you must have an EPA/State ID Number before exceeding the SQHUW accumulation limit.
- File a dangerous waste annual report[14] by March 1 of each year.

Universal waste generation and management aren't included in the annual report the same way other dangerous waste streams are. However, you must check the appropriate boxes on the Site ID Form to account for universal waste activities.

[13] https://ecology.wa.gov/DWNotification
[14] https://ecology.wa.gov/DWReport

Transporter Requirements

Figure 7: Universal waste is often transported by highway in a truck.

A universal waste transporter is someone who transports universal waste off site by air, rail, highway, or water. As a handler, you may transport your own waste as long as you follow the transporter requirements:

- Manage universal waste in compliance with all applicable U.S. Department of Transportation (DOT) regulations. DOT requirements apply if a universal waste meets the definition of hazardous materials under 49 CFR 171–180.
- Use a hazardous waste manifest if you transport the waste through a state where it's not regulated as universal waste.
- Don't dispose, dilute, or treat universal waste.
- Store universal waste up to ten days at a universal waste transfer facility (e.g., a loading dock, parking area, or storage area) during the normal course of transportation.
- Contain releases and handle residues appropriately.
- Only transport universal waste to one of the following:
    - A universal waste handler acting as a collection center (through prior agreement).
    - A destination facility.
    - A foreign destination (export requirements must be followed).

How to transport universal waste

If you're a universal waste generator or a handler, you're responsible for ensuring your waste is properly managed once it leaves your site.

- You may self-transport universal waste batteries, lamps, and mercury-containing equipment as long as you comply with applicable DOT regulations.
- You may use a universal waste hauler to transport mercury-containing equipment.

- The Light Recycle Program provides locations to bring waste lamps. Visit Lightrecycle.org for details.
- The Thermostat Recycling Corporation (TRC) provides thermostat recycling at participating thermostat wholesale stores. Visit thermostat-recycle.org for details.

Destination facilities

Destination facilities treat, dispose of, or recycle universal waste. Ultimately, all universal waste must go to a destination facility. If a facility only accumulates universal waste, then it's not a destination facility, it's a handler.

Destination facilities must meet all Dangerous Waste Regulations for:

- Treatment, storage, disposal (TSD) facilities.[15]
- Recycling facilities,[16] except for manifesting.

Destination facilities must keep the same records for receipt of universal waste shipments as those kept by LQHUW facilities:

- Records may be in the form of a log, invoice, manifest, bill of lading, or other shipping documents.
- You must maintain records for three years. Include names, addresses, quantities and types of wastes, and shipment dates.

A destination facility may reject a shipment by shipping the waste back to the original shipper, or both parties must agree to a new destination facility.

[15] Found in WAC 173-303-800 (https://apps.leg.wa.gov/wac/default.aspx?cite=173-303-800) through -840 (https://apps.leg.wa.gov/wac/default.aspx?cite=173-303-840).
[16] Found in WAC 173-303-120(4)(c): https://apps.leg.wa.gov/wac/default.aspx?cite=173-303-120.