

Managing Fluorescent Lamps

THIS POLICY DOES NOT HAVE THE FORCE OF LAW

Hazardous Waste Program

This guidance is intended to help businesses understand their options for managing spent lamps under Ohio EPA's Universal Waste Rules. By managing hazardous waste lamps as universal waste, businesses can reduce their regulatory requirements and help protect the environment.

Does your business use lamps?

EVERYONE uses lamps! However, many businesses don't realize that the Ohio EPA has special regulations for how spent (waste) lamps should be handled and disposed of. When Ohio EPA uses the term "lamp" it includes the following types of lights:

- incandescent;
- fluorescent;
- metal halide;
- neon;
- high-intensity discharge (HID);
- high-pressure sodium;
- mercury-vapor;
- and LED.



Why are there specific requirements for managing waste lamps?

Lamps can contain mercury and other heavy metals such as lead, cadmium and barium. If the levels of mercury or other toxic metals in the lamp are high enough, the lamp can be a hazardous waste when it is discarded (including recycled). Waste lamps that are improperly managed or improperly disposed of can lead to environmental contamination and can pose a threat to public health. Therefore businesses, schools, retail stores, restaurants, offices and other non-household places that generate waste lamps may be subject to Ohio EPA's hazardous waste rules. It is important for businesses to understand the requirements for hazardous waste lamps. **If you are throwing your lamps in the dumpster, you may be illegally disposing of hazardous waste.**

How do I know if my waste lamps are hazardous?

Before you throw your lamps in the trash, you must evaluate them to determine if they are hazardous. In order to determine if your waste lamps are hazardous you may:

- rely on the analytical data provided by the lamp manufacturer; provided that the lamps were tested for all relevant hazardous waste characteristics and the analytical data is current;
- have the *lamps tested* yourself by TCLP to determine if the levels of metals are below the regulatory limits found in Ohio Administrative Code (OAC) rule [3745-51-24](#); or
- assume that the lamps are hazardous.

What if my lamps are low-mercury or "green-marked"?

Some fluorescent lamp manufacturers have created "green" lamps that they claim are not hazardous. Although it's true that green lamps contain less mercury than other lamps, this may not be enough for them to avoid being regulated as hazardous waste. For the spent lamps to be nonhazardous, and therefore not subject to the hazardous waste rules, the laboratory test results must be less than all the regulatory limits found in Ohio Administrative Code (OAC) rule [3745-51-24](#). Some examples are:

- mercury - 0.2 mg/L;
- lead - 5.0 mg/L;
- cadmium - 1.0 mg/L; and
- barium - 100.0 mg/L.



Improper packaging is a common universal waste violation

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What is the best way to manage the hazardous lamps I generate?

There are two methods for managing your hazardous waste lamps. We recommend that you manage your waste lamps under the *Universal Waste Rules* (UWR) found in Ohio Administrative Code (OAC) Chapter **3745-273**. The UWR streamlines collection requirements for certain hazardous wastes including batteries, pesticides, mercury-containing equipment (such as thermostats) and lamps (such as fluorescent lamps). Many businesses find that managing used lamps under the UWR eliminates many regulatory requirements and is easily implemented as part of their recycling programs. By following the UWR, your business can reduce the financial and regulatory requirements of managing hazardous waste and can help protect the environment.

If you do not manage your hazardous waste lamps under the UWR then you must manage them under Ohio EPA's *hazardous waste rules* found in OAC Chapter **3745-52**.

What are my requirements for managing hazardous lamps under the Universal Waste Rules?

Managing waste lamps as universal waste requires that they are stored, labeled and disposed of in a specific manner. Your specific requirements depend on the amount of universal waste your business accumulates at any one time. Most businesses are small quantity handlers of universal waste, accumulating less than 11,000 pounds (5,000 kg or approximately 17,000 four-foot lamps) of universal waste at any time. The specific *requirements* for universal waste handlers are contained in *Ohio EPA's universal waste rules*. The table on the following page will explain the different requirements for each method.

Who can I send or transport my UW lamps to?

As a universal waste handler, you can only send or take your waste lamps to another UW handler or to a permitted destination facility (if in Ohio). If you are sending your UW lamps to a facility outside of Ohio, the out-of-state destination facility must be authorized by that state to accept lamps. Ohio EPA maintains a *list of recyclers* on our recycler website and our *Fluorescent Lamp website*. If you transport your own waste lamps to either another universal waste handler or to a universal waste destination facility you must comply with the universal waste *transporter requirements*. If you are using a universal waste transporter to transport your waste lamps, the transporter must comply with *DOT packaging/labeling requirements*, transfer facility storage requirements and must immediately *contain all releases* of universal waste in the event of a spill.

May I use a lamp crusher to crush the lamps I generate?

If you manage waste lamps under the UWR you are **not allowed to crush the universal waste lamps**. If you want to crush your own lamps you must to *evaluate* the spent lamps to demonstrate that they are non-hazardous, or manage them under the hazardous waste rules following the generator requirements in OAC Chapter **3745-52**. See the table below noting that a satellite container is not applicable to this type of treatment unit.

You cannot send crushed hazardous waste lamps to another universal waste handler. They must be transported, by a hazardous waste transporter, to a destination facility which is otherwise known as a *permitted hazardous waste facility*. These crushed lamps must be accompanied by a *hazardous waste manifest*. While some commercially available lamp crushers are designed to control *mercury emissions* when properly maintained, please beware that due to the unique properties of mercury, there is a high potential for exposure to harmful mercury vapors when lamps are crushed. Ohio EPA also recommends that these lamp crushing operations should be carried out following the OSHA guidelines recommended in their fact sheet titled: *Protecting Workers from Mercury Exposure While Crushing and Recycling Fluorescent Bulbs*.

Crushing lamps is prohibited under the UWR. If you crush your lamps, you must manage them as hazardous waste

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Comparison of Generator Requirements for Managing Hazardous Lamps Under Universal Waste Rules and the Hazardous Waste Rules

Requirement	Universal Waste Rules (Small Quantity Handler)	Hazardous Waste Rules
Hazardous Determination	<input type="checkbox"/> Required <input checked="" type="checkbox"/> Not Required	<input checked="" type="checkbox"/> Required <input type="checkbox"/> Not Required
Include in Hazardous Waste Quantity Status	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
Ohio EPA Notification	<input type="checkbox"/> Required <input checked="" type="checkbox"/> Not Required	<input checked="" type="checkbox"/> Required <input type="checkbox"/> Not Required For SQGs and LQGs
Packaging & Container Management	<input checked="" type="checkbox"/> Required (but limited) <input type="checkbox"/> Not Required Stored in a container that: - minimizes breakage - is designed to contain potential releases - labeled as - "Universal Waste Lamps" or - "Waste Lamps" or - "Used Lamps" - closed unless adding or removing lamps <i>Many businesses use the same packaging in which new lamps are shipped from the manufacturer.</i>	<input checked="" type="checkbox"/> Required <input type="checkbox"/> Not Required For SQGs and LQGs waste must be stored in a container that: - meets all container management requirements per OAC rules 3745-52-16(B)(2) or 3745-52-17(A)(1) including: - good condition - compatible with waste - closed unless adding or removing waste - labeled as hazardous waste - labeled with accumulation start date - maintained with adequate aisle space - inspected weekly (daily for tanks)
Storage Time Limits	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Up to 1 year	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Depends on the <i>generator category</i> ≤ 180 days - SGQ ≤ 90 days - LQG
Special Transporter	<input type="checkbox"/> Required <input checked="" type="checkbox"/> Not Required	<input checked="" type="checkbox"/> Required <input type="checkbox"/> Not Required
Transporting Your Own Waste Allowed	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No - Must comply with transporter requirements - To another universal waste handler or - <i>permitted UW destination facility</i>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No - Must be a hazardous waste transporter - EPA Hazardous Waste ID required
Personnel Training	<input checked="" type="checkbox"/> Required <input type="checkbox"/> Not Required - Formal program not required - Training documentation not required	<input checked="" type="checkbox"/> Required <input type="checkbox"/> Not Required Depends on the <i>generator category</i> . May include recordkeeping and annual refresher
Inspections	<input type="checkbox"/> Required <input checked="" type="checkbox"/> Not Required	<input checked="" type="checkbox"/> Required <input type="checkbox"/> Not Required Specific requirements depend on the <i>generator category</i>
Recordkeeping	<input type="checkbox"/> Required <input checked="" type="checkbox"/> Not Required	<input checked="" type="checkbox"/> Required <input type="checkbox"/> Not Required Specific requirements depend on the <i>generator category</i> . May include annual reporting
Manifesting	<input type="checkbox"/> Required <input checked="" type="checkbox"/> Not Required	<input checked="" type="checkbox"/> Required <input type="checkbox"/> Not Required For SQGs and LQGs
Lamp Crushing Allowed	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Follow requirements in OAC Chapter <i>3745-52</i>

This table presents a general summary of the requirements for Small Quantity Handlers of UW. For additional information, UW generators should refer to the Ohio EPA UW rules in OAC Chapter 3745-273. Generators of hazardous waste should refer to the specific *generator requirements for your category*.

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OSHA Guidance – Reducing Mercury Exposure in the Workplace

All workplaces where fluorescent bulbs are deliberately broken or crushed should have:

- **A cleanup plan** that informs workers how to safely clean up incidental mercury releases from broken bulbs.
- **Training** to educate workers about mercury exposure, safe practices for working with fluorescent bulbs and procedures for ensuring that air filtration systems and seals are functioning properly.
- **Process isolation** so that areas where fluorescent bulbs are broken or recycled are physically separated from areas where workers are not involved with bulb processing.
- **Flooring materials** that are easy to clean (e.g., hard, smooth surfaces). Carpeting can absorb mercury and is difficult to clean
- **Well-ventilated** work areas. Drum-top crushing machines and bulb recycling machines are equipped with air filtration systems; however, there is still potential for mercury vapor to be released. Where feasible, these machines should be located in rooms with a ventilation system that does not recirculate air or exhaust air near intake vents.
- **Evaluation and maintenance programs** to ensure that crushing or recycling equipment and ventilation systems are functioning properly.
- **Air monitoring** to measure the amount of mercury present in the air. Air monitoring should be conducted as necessary to ensure that workers are not being exposed to hazardous levels of mercury.
- **Respiratory protection** is required if feasible engineering and administrative controls do not prevent concentrations of mercury from exceeding OSHA's permissible exposure limit (PEL). If respirators are used, the employer must establish and implement a respiratory protection program in accord with OSHA's Respiratory Protection standard (29 CFR 1910.134).
- **Personal protective equipment (PPE)** such as coveralls, booties, gloves, face shields and safety goggles to prevent skin and eye contact. Employers must assess the workplace to identify hazards and provide appropriate protective equipment under OSHA's General Requirements for Personal Protective Equipment (29 CFR 1910.132). Protective equipment must be cleaned and periodically replaced to maintain its effectiveness.

What if I have non-hazardous lamps?

If you determine your lamps are not hazardous and have supporting documentation, you have the option to manage them as solid waste. However, due to the unique hazards presented by mercury, we recommend you manage them as UW even though the UW compliance standards are not required.

Contact

If you have questions about managing your fluorescent lamps, other *universal waste* including the *Ohio specific universal waste* or Ohio EPA's hazardous waste rules please check the *Answer Place*. For more information, contact the *Office of Compliance Assistance & Pollution Prevention* on their confidential hotline at 800-329-7518, the Compliance Assurance Section of the *Division of Environmental Response and Revitalization's Hazardous Waste Program* at 614-644-2924, or contact your local *district inspector*.