



Spent Fluorescent Lamps Containing Mercury Technical Guidance Document HW-1995-G1

This technical guidance document (TGD) answers some of the more common questions posed about managing different types of spent mercury-containing lamps that will be recycled or disposed of.

Many lamps contain mercury, including fluorescent, high intensity discharge (HID), neon, mercury vapor, high-pressure sodium, compact fluorescent (CFL), and metal halide lamps. These lamps contain elemental mercury in a phosphor powder, usually coating the lamp interior. When mismanaged, this mercury presents a danger to public health and the environment. If a lamp is broken in an unconfined area or incinerated, mercury can become airborne as a vapor; if broken within a landfill, mercury can enter the landfill leachate.

Low-Mercury Lamps

Some manufacturers are now producing lamps that contain less mercury. Many of these lamps no longer meet the definition of hazardous waste: they no longer exceed 0.2 milligrams per liter (mg/L) mercury when analyzed using the Toxicity Characteristic Leaching Procedure (TCLP). These lamps do not need to be managed as hazardous waste or universal waste, however the Kansas Department of Health and Environment (KDHE) encourages the recycling of these lamps. All attempts should be made to prevent the mercury in these lamps from entering the environment.

Lamps that are not Low in Mercury

Mercury lamps that are not designated by the manufacturer as low in mercury will typically be a hazardous waste due to the amount of mercury in the lamp (greater than or equal to 0.2 mg/L when analyzed by the TCLP test). These lamps pose a threat to human health and the environment when discarded. Anyone disposing of these lamps should make all attempts to ensure that they do not break and to recycle them if possible.

Households

Households generating any type of mercury-containing lamps are encouraged to have those lamps recycled. Most Kansas counties are covered by a Household Hazardous Waste (HHW) disposal facility, and most will recycle these lamps from homeowners. Several retailers will accept CFLs for recycling but do not advertise this service, so check with their customer service department.

Non-Generators of Hazardous Waste

Businesses that do not normally generate hazardous waste (non-generators) and who only generate a few spent lamps each month through normal use may also utilize a HHW facility or a retail facility to recycle their bulbs. If a business that does not normally generate hazardous waste decides to replace all of their fluorescent lamps at one time, they may become a generator of hazardous waste at that time. This will happen if the business generates, within a single calendar month, 55 pounds or more of mercury-containing lamps that meet the definition of hazardous waste. Generally, it takes about 100 four-foot fluorescent lamps to reach a total weight of 55 pounds. Any business that becomes a generator due to a temporary event may contact KDHE for direction on what to do. Alternatively, the business may hire a lighting contractor who is familiar with the regulations and who will properly manage the lamps.

Generators of Hazardous Waste

Any business generating hazardous waste in Kansas must do an adequate hazardous waste determination on all of their waste streams, including mercury containing lamps.

Generators may use information provided by the lamp manufacturer (usually available on the manufacturer's website) in making their determination. A generator has made an adequate waste determination if the generator knows that all of the lamps used at the facility are low-mercury lamps and has retained the supporting information from the manufacturer. The generator may dispose of this non-hazardous waste in the regular trash or (preferably) recycle the lamps.

If a generator determines that some or all of the facility's mercury-containing lamps are hazardous, the hazardous lamps must be managed either as hazardous waste or as universal waste. If the lamps are managed as universal waste, they do not count toward the amount of hazardous waste generated (generator status), but the lamps must be recycled. See the "Universal Waste Management" section for more information.

If a business generates less than 55 pounds of hazardous waste in a calendar month and disposes of that waste as it is generated, the business retains all of the options of a non-generator of hazardous waste.

Universal Waste Management

If a generator of hazardous waste chooses to recycle the facility's mercury-containing lamps, the lamps may be managed as a universal waste. The universal waste regulations are a subset of the hazardous waste regulations and are designed to facilitate recycling of certain hazardous wastes, including mercury-containing lamps. Lamps managed as universal waste do not count towards the amount of hazardous waste that a business generates (generation rate). The universal waste regulations are found in 40 CFR Part 273 and are adopted in Kansas by KAR 28-31-273.

The requirements for persons desiring to manage waste lamps as universal wastes fall into two categories based upon whether the person is a large quantity or small quantity handler of universal wastes. A person who

accumulates a total of 5,000 kilograms (11,023 pounds) or more of universal waste at any time is a large quantity handler of universal waste (LQHUW). Universal waste handlers who accumulate less than this amount are Small Quantity Handlers of Universal Wastes (SQHUWs). Universal waste handlers do not need to count their lamps toward their hazardous waste generation rate. Most generators in Kansas are SQHUWs.

The following is an overview of the regulatory requirements that apply to SQHUWs and LQHUWs. Handlers of universal waste must:

- Package lamps in containers or packages that are structurally sound, adequate to prevent breakage, and compatible with the contents of the lamps. These containers and packages must remain closed.
- Label each universal waste lamp or container holding lamps with the words "Universal Waste - Lamp(s)," "Waste Lamp(s)," or "Used Lamp(s)."
- Respond to releases of universal wastes. Any broken lamp must be immediately cleaned up and the waste must be properly managed. A leaking container must be replaced or over-packed inside a new container.
- Comply with employee training requirements for employees who manage universal waste.
- Send universal waste only to another universal waste handler, a destination facility, or a foreign destination. Prior to sending a shipment to another universal waste handler, the originating handler must ensure that the receiving handler agrees to the shipment.
- Comply with the requirements for rejected shipments of universal waste.
- Accumulate universal waste lamps for no more than one year. If lamps are stored longer than one year, the handler must be able to demonstrate that such accumulation is necessary to facilitate proper recovery, treatment, or disposal. Handlers must be able to demonstrate the length of time that the universal waste lamps have been stored,

starting from the date the lamps became a waste. This can be accomplished by a number of methods, including marking the container with the earliest date that a spent lamp was placed in the container or maintaining an inventory system onsite that specifies the date each spent lamp became a waste.

- If the handler will meet or exceed the 5,000 kg (11,023 pound) storage limit, complete the following before reaching the limit:
 - ✓ Notify KDHE of universal waste management activities; and
 - ✓ Obtain an EPA identification number.
- If the handler is an LQH UW, track waste lamp shipments by maintaining records that document shipments received by, and sent from, the LQH UW.

Drum-Top Bulb (Lamp) Crushing Units

Managing 4-, 6-, and 8-foot lamps can be difficult. Many businesses want to crush the lamps so the lamps will take up less space and be easier to manage and transport. If a business deliberately breaks lamps, they may not manage those lamps as a universal waste.

Breaking lamps that are hazardous waste is considered treatment of a hazardous waste. This type of treatment is exempt from permitting

requirements if the treatment is done in a unit that meets the container management requirements of 40 CFR 262.34. The container must be:

- Labeled with the words “Hazardous Waste”;
- Marked with the accumulation start date;
- Closed;
- In good condition; and
- Routinely inspected.

For more detailed information, please refer to TGD HW-2005-G1, Container Management for Hazardous Waste Generators.

The Environmental Protection Agency (EPA) conducted a study in 2006 of Mercury Lamp Drum-Top Crushers which showed that mercury may be released from these units under normal operating conditions. KDHE recommends that anyone choosing to use these units take extra precautions to protect themselves and their employees from mercury exposure.

Recommended steps may include using the units in a well ventilated area where mercury is not likely to accumulate, following or exceeding manufacturer’s recommendations for maintaining the equipment including changing filters, and routinely inspecting the unit to ensure that it is being operated according to all manufacturer specifications.

For additional information regarding proper management of solid or hazardous waste in Kansas, you may contact the Bureau of Waste Management at (785) 296-1600 or the address at the top of this document, or visit the Bureau’s website at <http://www.kdheks.gov/waste/>.