

## Managing Universal Waste Lamps for Businesses – March 2014

### Background:

The U.S. Environmental Protection Agency (EPA) finalized the Universal Waste Rule (40 CFR Part 273) on May 11, 1995, to provide a streamlined approach for businesses to collect and manage certain widely generated hazardous wastes. The rule was intended to facilitate environmentally sound collection and encourage proper recycling and treatment of these wastes.

This fact sheet summarizes universal waste regulations for lamps, EPA's recommendations for management of fluorescent lamps, and ADEQ's adoption of the Universal Waste Rule for lamps.

### What is a universal waste lamp?

A lamp is the bulb or tube portion of an electric lighting device that is designed to produce radiant energy. It includes, but is not limited to, fluorescent tubular and compact fluorescent lamps (CFLs); high intensity discharge; neon; mercury vapor; high pressure sodium; and metal halide lamps.

EPA encourages the use of fluorescent lamps because they use about 20 percent to 25 percent less electricity, which in turn reduces mercury and greenhouse gas emissions from power generating stations.

The amount of mercury in a standard fluorescent lamp varies depending on the type and manufacturer of the lamp, but typically ranges from 8 milligrams – 14 mg, and can possibly be as high as 50 mg with some older lamps. The amount of mercury in a low-mercury bulb (often referred to as "green-tipped" lamps) can typically range from 3.5 – 4 mg depending on the manufacturer. Newer fluorescent lamps in general will typically have less mercury, but mercury is an essential



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component in fluorescent lamps and cannot be eliminated completely.

An unused mercury-containing lamp becomes a waste on the date the handler decides to discard it.

### Who is affected by this rule?

#### Businesses

Businesses that generate less than 100 kilograms of hazardous waste in one calendar month [Conditionally Exempt Small Quantity Generators (CESQG)] are strongly encouraged to participate in voluntary collection and recycling programs by taking these spent lamps to collection centers for recycling or proper treatment and disposal.

Under federal regulations, the Toxicity Characteristic Leaching Procedure (TCLP) determines if a lamp is a hazardous waste. This test measures the leachability of certain metals, including mercury and organic constituents. Lamps that pass the TCLP test for mercury are not hazardous and not subject to federal regulation. The amount of mercury in a fluorescent lamp

typically exceeds and fails the TCLP limit. Therefore, the lamp is a hazardous waste when disposed.

Small and large quantity hazardous waste generators are required to manage spent lamps under 40 CFR Part 273 or under 40 CFR Part 261.

#### Households

Households that generate spent lamps are not regulated as hazardous waste. Households are encouraged to recycle spent lamps at local retailers or collection centers that accept spent lamps (see back page).

#### "Green-Tipped" fluorescent lamps

Green-tipped lamps usually will not fail the TCLP limit for mercury and can be managed as a solid waste. Check the manufacturer literature to confirm that these lamps have been tested and do not fail the TCLP. However, ADEQ recommends that you have your spent green-tipped lamps analyzed to confirm they are non-hazardous; alternatively, assume they are hazardous waste and handle them accordingly. ADEQ also recom-

mends that the facility keep hazardous and/or non-hazardous waste determination records on file and periodically retests or checks for updated literature.

Green-tipped lamps still contain mercury and should be managed to prevent breakage. ADEQ encourages the recycling of all mercury-containing lamps, regardless of the mercury content. Spent lamps can be recycled to recover mercury, glass, and metal.

## Management:

### Regulatory Determination

Lamps can be managed as hazardous waste (regulations found in 40 CFR Part 262 and A.A.C. R18-8-262) or as universal waste (regulations found in 40 CFR Part 273 and A.A.C. R18-8-273). If managing the lamps as hazardous waste, the facility must make a determination of how many lamps are generated per month to determine the generator status (ADEQ estimates that 350 four-foot lamps will generate 100 kg of hazardous waste). If managing the lamps as universal waste, the facility must make

a determination of how many lamps are accumulated on-site at any one time to determine the handler status (<5,000 kg on-site is considered a Small Quantity Handler of Universal Waste).

### Location

Identify an area in your facility where universal waste lamps will be stored. This area should be away from high-traffic areas, should be clean, dry, and free of broken lamp debris, and should ideally have an independent air handling system to help minimize employee exposure to mercury in the event a lamp is broken.

### Handling of Lamps

Employees handling lamps must understand the Universal Waste Rule for lamps. The lamps should be handled carefully to prevent breakage, placed immediately in a sturdy container, and brought to the universal waste storage area.

### Storage of Spent Lamps

Lamps must be stored in a container that is structurally sound and compatible with the contents of the lamp. It also should lack evidence of leakage, spillage, or damage that could cause

releases of mercury.

The container should be stored in such a way that it will not tip over and must be closed unless actively adding or removing universal waste lamps. The container must be labeled or marked with the words "Universal Waste – Lamp(s)," or "Waste Lamp(s)," or "Used Lamp(s)." A label with those words can be affixed to or the words can be written on the container.

A handler of universal waste lamps must be able to demonstrate the length of time that the lamps have been accumulated as a waste. The handler may not accumulate universal waste for longer than one year. Demonstrating accumulation time can be accomplished by:

- a.) marking or labeling the container or storage area with the first date a lamp was placed in the container, or
- b.) maintaining an inventory system on-site that identifies the date each lamp became a waste or the earliest date that a lamp in a group of lamps became a waste.

## Developing a recycling program:

1. Assess your facility with the following questions:
  - *How many lamps are in your facility?*
  - *Where are they located?*
  - *How many lamps are replaced per month or year?*
  - *How do you currently manage and store spent lamps?*
  - *Do employees know who to call if a lamp is burned out?*
2. Consult federal and state regulations concerning universal waste lamps.
3. Select a recycler that will best serve your needs and can provide assurance that your lamps are being properly managed. Consider the following criteria in selecting a recycler:

- **Service:** responsiveness, timeliness, flexibility, capabilities
  - **Risk Management:** environmental record and compliance history, government permits and approval for facility operations and transportation, maintained debris and dust-free public areas, insurance requirements for general and pollution liability are met, and indemnities or other assurances offered to clients.
4. Establish a process for handling and storing spent lamps. See the above section for recommendations.
  5. Getting your spent lamps to the recycler is important.
    - **Pick-Up Service:** offered by transportation companies or the recycler.
    - **Mail-In or Box Program:** the recycler may provide a container for your spent lamps, which can be

shipped when filled. In this program, your facility must ensure the containers meet all proper packaging, labeling, and shipping requirements.

- **Self-Transport:** you can transport the lamps to the recycling facility yourself. Ensure the lamps are managed in a way that prevents breakage.
6. Educate employees about the dangers of mercury, importance of minimizing the release of mercury, and your management procedures for lamp handling and storage. Employees must be trained in accordance with applicable state and federal requirements.
  7. Keep records of your recycling efforts, including documentation like a receipt or certificate that the recycler is properly recycling the lamps.

Containers holding lamps should not be overfilled or underfilled when shipped. Care should be used when stacking boxes to keep the lamps from being crushed. Do not secure lamps together with tape or rubber bands.

### **Broken Lamps**

Once a lamp breaks, it releases mercury vapors into the air so it is important to ensure the immediate cleanup and containment of the lamp debris. Make sure your facility has proper procedures for reporting and managing broken lamps. Accidentally broken lamps and their debris can be managed as universal waste, whereas, intentionally broken lamps and their debris must be managed as hazardous waste unless other exemptions apply (i.e. lamps were generated in a household or a CESQG facility).

EPA recommends that broken lamps are to be kept in a sealed container, preferably glass or metal. Containers should be removed from the building as soon as possible and kept in a cool place, away from high-traffic areas, in the Universal Waste Storage Area or the 180/90-Day Hazardous Waste Storage Area. Containers of broken lamps should not be opened to add or remove broken lamps. Follow OSHA, EPA, and state regulations when managing broken lamps.

### **Drum Top Crushers:**

Drum-top crushers (DTCs) are devices that fit on the top of a 55-gallon drum and crush fluorescent lamps into the drum; they are typically used to reduce waste lamp storage and transport.

Arizona allows the use of DTCs but all manufacturer requirements must be followed. A business that uses a DTC must follow applicable hazardous waste generator rules found in 40 CFR Part 262 and A.A.C. R18-8-262. Intentionally crushed lamps must be counted towards the generator's monthly hazardous waste generation and must be managed as hazardous waste at the point of generation.

A generator must minimize the release of hazardous waste to the environment.

Facilities using DTCs must minimize the release of mercury from the device. For example, facilities could prevent a release of mercury by having a control device on all DTCs to prevent emissions and by not transferring crushed lamps to another container. DTCs must be used in a cool room with adequate ventilation that does not recirculate the air per manufacturer requirements. Filters used in DTCs may be hazardous waste. Facilities must have a waste determination for these filters per 40 CFR Part 261.

Facilities using DTCs to crush "green-tipped" lamps must ensure that only "green-tipped" lamps are being crushed. EPA has found that DTCs can cause exposures of mercury even with low mercury "green-tipped" lamps. ADEQ highly recommends that these facilities monitor mercury levels and install control devices to minimize the release of mercury from the "green-tipped" lamps.

ADEQ does not endorse nor discourage the use of DTCs, but highly encourages the recycling of all mercury-containing

lamps, regardless of the mercury content. ADEQ highly recommends that facilities periodically perform waste determinations on these crushed lamps, and keep this documentation on file.

The Arizona Industrial Commission may specify additional requirements for businesses operating bulb crushers. For additional information, please call (602) 542-5795.

### **Where can I get more information?**

For additional information please contact ADEQ:

#### **Hazardous Waste Inspections and Compliance Unit**

Waste Programs Division  
1110 W. Washington St.  
Phoenix, AZ 85007  
(602) 771-4673 or  
Toll free at (800) 234-5677 Ext. 771-4673  
Hearing impaired persons call  
ADEQ's TDD line: (602) 771-4829  
[www.azdeq.gov/enviro/waste/index.html](http://www.azdeq.gov/enviro/waste/index.html)



*Drum top crusher use is regulated by applicable hazardous waste generator rules.*

The following Web sites offer additional information:

EPA's Universal Wastes:	<a href="http://www.epa.gov/osw/hazard/wastetypes/universal/">www.epa.gov/osw/hazard/wastetypes/universal/</a>
EPA's Compact Fluorescent Light Bulbs (CFLs):	<a href="http://www.epa.gov/bulbrecycling">www.epa.gov/bulbrecycling</a>
EPA's Spent Mercury-Containing Lamp Recycling:	<a href="http://www.epa.gov/wastes/hazard/wastetypes/universal/lamps/index.htm">www.epa.gov/wastes/hazard/wastetypes/universal/lamps/index.htm</a>
EPA's Management and Disposal of Mercury-Containing Light Bulbs (Lamps):	<a href="http://www.epa.gov/wastes/hazard/wastetypes/universal/lamps/faqs.htm#43">www.epa.gov/wastes/hazard/wastetypes/universal/lamps/faqs.htm#43</a>
EPA's Mercury and Mercury Containing Products:	<a href="http://www.epa.gov/mercury">www.epa.gov/mercury</a> <a href="http://www.epa.gov/epawaste/conserve/tools/stewardship/products/mercury.htm">www.epa.gov/epawaste/conserve/tools/stewardship/products/mercury.htm</a>
EPA's Broken Lamps Clean-up Procedures:	<a href="http://www.epa.gov/mercury/spills/index.htm#fluorescent">www.epa.gov/mercury/spills/index.htm#fluorescent</a>
EPA's Local Recycling Options for Households:	<a href="http://www.epa.gov/bulbrecycling">www.epa.gov/bulbrecycling</a>
EPA's Mercury Lamp Drum-Top Crusher Study:	<a href="http://www.epa.gov/waste/hazard/wastetypes/universal/drumtop/index.htm">www.epa.gov/waste/hazard/wastetypes/universal/drumtop/index.htm</a>
Energy Star on Compact Fluorescent Lamps (CFLs):	<a href="http://www.energystar.gov/cfls">www.energystar.gov/cfls</a>
Earth 911:	<a href="http://www.earth911.org">www.earth911.org</a>

**Spent Lamp Management Facilities in Arizona:**

Recycling your lamps can be accomplished through regular pick up by hazardous waste transporters, mail-in prepaid boxes offered by a number of different retailers, or by dropping off your lamps at one of the following facilities:

<b>WM LampTracker, Inc.</b>	10 S. 48th St., Suite #4 Phoenix, AZ 85043	(602) 353-9282 (800) 414-0443
<b>Lighting Resources, LLC</b>	1522 E. Victory St., Suite #4 Phoenix, AZ 85040	(602) 276-4278
<b>Veolia Environmental Services</b>	5752 W. Jefferson St. Phoenix, AZ 85043	(602) 233-2955

**Treatment, Storage, & Disposal Facilities in Arizona**

<b>Clean Harbors</b>	1340 W. Lincoln St. Phoenix, AZ 85007	(602) 258-6155
<b>Heritage Environmental Services, LLC</b>	284 E. Storey Rd. Coolidge, AZ 85228	(520) 723-4167
<b>Safety-Kleen Corporation</b>	4161 E. Tennessee St. Tucson, AZ 85714	(520) 790-7714
<b>Safety-Kleen Corporation</b>	6625 W. Frye Rd. Chandler, AZ 85226	(480) 940-7202