

Lamp & Light Ballast Recycling/Disposal Program Procedures

Purpose

The purpose of this document is to ensure the safe and environmentally responsible disposal of all regulated lamps and light ballasts generated on Towson University (TU) property by University employees and contractors.

Scope

The scope of the procedure pertains to University-generated lamps (e.g. light bulbs) and light ballasts disposed under the TU Chemical Hygiene Program, specifically the Hazardous Waste Management Program. The procedure is limited to the recycling and disposal of lamps and ballasts regulated as Universal Wastes by the United States Environmental Protection Agency (EPA).

Responsibilities

A. Facilities Management/University Contractors/Employees (Waste Generators)

1. Generators are responsible for the proper collection, packaging, labeling, and short-term storage of waste lamps and ballasts generated from campus maintenance or construction/renovation activities, in preparation for on-campus transportation for recycling/disposal.
2. Generators are responsible for contacting the appropriate campus organization via email for scheduling pickup and disposal from campus buildings or jobsites:
 - a) **Lamps:** Contact Campus Recycling at recycling@towson.edu to request disposal of accumulated waste lamps or for empty lamp storage fiber tubes.
 - b) **Light Ballasts:** Contact Environmental Health & Safety (EHS) at safety@towson.edu to request disposal of accumulated ballasts or for empty waste ballast drums.

B. Campus Recycling

1. Responsible for all day-to-day lamp recycling operations to include the proper collection and transportation of accumulated waste lamps from the point of generation to the Landscape Services Building (LS).
2. Responsible for the safe, proper storage of all lamps collected pending crushing and all containers of crushed lamps at LS pending off-campus disposal.
3. Responsible for the safe operation of the lamp crusher and maintaining cleanliness of crusher area at LS.

4. Responsible for the proper packaging, labeling, and storage of crushed lamp drums pending off-campus disposal by EHS.

C. Environmental Health & Safety (EHS)

1. Responsible for the management and oversight of the campus Lamp Recycling Program (LRP).
2. Responsible for ballast disposal operations to include the collection and transportation of properly packaged accumulated ballasts.
3. Responsible for the off-campus disposal of recycled lamps and ballasts.

Introduction

EHS has developed the following procedures for the safe, environmentally responsible disposal of used mercury-containing light bulbs (lamps) and light ballasts (both polychlorinated biphenyl (PCB) and non-PCB containing) generated on TU-owned property. This policy encompasses the appropriate procedures from the US Environmental Protection Agency (EPA) and the Maryland Department of the Environment (MDE). All waste lamps and ballasts are shipped off-campus for recycling in an environmentally responsible manner in compliance with all applicable regulations.

Mercury-containing lamps and fluorescent light ballasts (both PCB & Non-PCB containing) are regulated as Universal Wastes under federal and state hazardous waste regulations.

There are strict penalties for the improper disposal of mercury-containing lamps and light ballasts. Mercury-containing lamps and light ballasts will not be disposed of via domestic waste disposal channels. Any fines, penalties, or remediation costs resulting from improper lamp or ballast disposal will be the generators' responsibility.

Procedure

A. Lamps

1. Regulated Lamps

The following lamp types are regulated for disposal and will be collected for recycling:

- a) Fluorescent Light Bulbs (all sizes & types)
- b) Compact Fluorescent Light Bulbs (all sizes & types)
- c) High Intensity Discharge (HID)
- d) Mercury Vapor
- e) High Pressure Sodium
- f) Metal Halide

Contact EHS for disposal guidance for lamps not listed above.

2. Non-Regulated Lamps

Incandescent and halogen bulbs typically do not contain mercury and may be safely disposed of via traditional domestic waste disposal channels.

3. Safe Lamp Handling, Packaging & Labeling

a) Safe Lamp Handling and Packaging

i) All lamps will always be handled to minimize breakage.

ii) *Loose lamps will be segregated by type and stored and transported in closed DOT-approved cardboard tubes (shown in Figure 1). Only containers in good condition will be utilized for storage of recycled lamps. Fiber tubes should only be used with lids.*



Figure 1.
Cardboard Fiber Tube With Lid. Fiber tubes are used for safe storage and transport of lamps.



Figure 2.
Improper Storage. Bundled lamps stored loosely, leaning upright or slanted against walls with incompatible equipment, risks breakage and penalties.

iii) *Any broken lamps will be immediately cleaned up using techniques that will minimize dust production and the debris placed into a separate leak proof container specifically for the collection of broken lamps (See Appendix A). No trash or other debris will be placed into these containers. Broken lamp containers will be labeled as required below in Step A3b.*

iv) *Lamp recycling tubes for campus construction and renovation projects are available from Campus Recycling at recycling@towson.edu. Please allow five (5) business days for delivery.*

v) *Improperly packaged lamps will not be collected for recycling/disposal. It will be the generator's responsibility to repackage waste lamps so that they may be safely transported.*

b) Labeling

- i) Each recycled lamp tube or broken lamp container will be labeled with a TU Universal Waste Lamp Label (shown in Figure 3) available from EHS at (410) 704-5500 or safety@towson.edu. The label shall be placed onto the container in a conspicuous location and the date that the first waste lamp is placed into the container recorded in the "Container Start Date".



- ii) Tubes for construction/renovations projects will have TU Universal Waste Lamp Labels already attached and the "Container Start Date" will be the date of delivery.

3. Temporary Storage

- a) Waste lamps may only be stored in closed packages that show no evidence of leakage, spillage or damage.
- b) Store waste lamp containers in dry locations away from public access and do not allow to become wet.
- c) Waste lamps may be accumulated at the point of generation for up to one (1) year from the date of discard. Waste lamps accumulated for more than one (1) calendar year should be immediately disposed of by emailing Campus Recycling at recycling@towson.edu.
- d) Waste lamps do not require secondary containment devices (SCDs).

5. Waste Lamp Disposal

- a) Once several boxes/tubes of waste lamps have been accumulated in campus buildings or upon construction/renovation project completion contact Campus Recycling via email at recycling@towson.edu to have them picked up for recycling. Please allow five (5) days for pickup. This request should include the number of containers to be collected and if any additional empty containers are required.

- b) Full lamp tubes should be centrally located in one, weather protected location easily accessible with a hand cart.
- c) All waste lamp disposal pickup requests must be in writing via email. **No verbal or telephonic requests will be accepted.**

B. Light Ballasts

1. Safe Ballast Handling, Packaging & Labeling

a) Safe Ballast Handling and Packaging

i) Ballasts will always be handled to minimize leakage.

ii) *Ballasts will be individually inspected and sorted into one of the two following categories listed below. Each type of ballast will be packaged separately.*

1) **PCB Containing**: *If the ballast was manufactured prior to 1979 or does not clearly indicate “NO PCBs” on the ballast it will be considered to be PCB Containing. Drums containing these ballasts will be identified as “PCB Containing Ballasts”.*

2) **Non-PCB Containing**: *The ballast label will clearly state “NO PCBs”. These ballasts will be collected for off-campus recycling. Drums containing these ballasts will be identified as “Non-PCB Containing Ballasts”.*

iii) *Ballasts will only be accumulated in properly labeled DOT-approved 30- or 55-gallon steel drums. Only non-leaking drums in good condition will be utilized for the storage of ballasts (shown in Figure 4). Approved drums are available from EHS at (410) 704-5500 or safety@towson.edu. Please allow five (5) business days for delivery.*



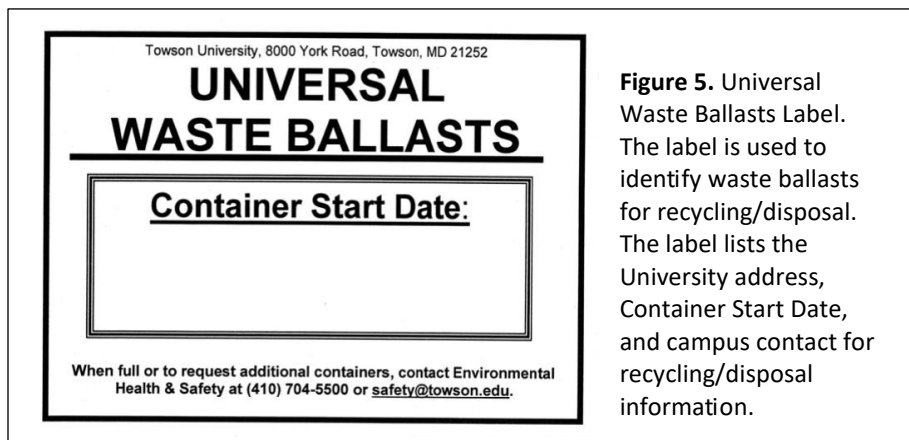
Figure 4. DOT-Approved Steel Drum With Lid. The drum is labeled with appropriate identification and shipment labels.

iv) *To increase drum capacity, clip all ballast wires before placing ballasts into drum.*

v) Ballast drums will be kept closed and tightly sealed at all times except when adding ballasts to the drum. When drums are full or no longer needed, drum rings should be bolted tight. **CAUTION:** Full waste ballast drums are extremely heavy and should never be handled by only one person. Full drums must be tightly sealed prior to being moved.

b) Labeling

- i) Ballast drums provided by EHS will have the proper labels attached (shown in Figure 5) available from EHS at (410) 704-5500 or safety@towson.edu. The label shall be placed onto the container in a conspicuous location and the date of delivery from EHS is recorded as the "Container Start Date".
- ii) Indicate on label whether drum contains "PCB Containing" or "Non-PCB Containing" ballasts.



2. Temporary Storage

a) Storage Requirements

- i) Pending collection for disposal, waste ballast drums must be stored in properly labeled, tightly closed drums that show no evidence of leakage, spillage, exterior contamination, deterioration, or damage.
- ii) Waste ballast drums must be stored away from external conditions (e.g. weather), and secured from accidental damage and public access.
- iii) Waste ballast drums provided by EHS are lined with 30-mil poly drum liners and do not require secondary containment device (SCDs). Unlined drums not provided by EHS will require properly sized SCDs.

b) Accumulation Time Limits

- i) There are no time limits for waste ballast drum accumulated in campus buildings from routine campus building maintenance activities.

- ii) Waste ballast drums generated from campus construction/renovation projects should be removed as soon as possible after completion of the project.

3. Waste Ballast Disposal

- a) For removal of full drums or partially filled construction/renovation drums no longer needed, contact EHS via e-mail at safety@towson.edu. Please allow five (5) business days for pickup. This request should include the location of the drums, the number of drums to be collected, and if any additional empty drums are required.
- b) All waste ballast drum disposal requests must be in writing. **No verbal or telephonic requests will be accepted.**
- c) Bolt drum rings tight and do not move waste ballast drums from the project areas after project completion pending collection for disposal.
- d) Full ballast drums must be centrally located in one, weather-protected location easily accessible with a drum dolly.

Resources

Questions concerning these procedures should be directed to EHS at (410) 704-5500 or safety@towson.edu.

Appendix A:

Cleaning Up a Broken Fluorescent Light Bulb (FLB)

(Per EPA, June 2010)

Fluorescent light bulbs contain a very small amount of mercury sealed within the glass tubing. The U.S. Environmental Protection Agency recommends the following clean-up and disposal steps:

Before Cleanup: Air Out the Room

- Have people and pets leave the room, and don't let anyone walk through the breakage area on their way out.
- Open a window and leave the room for 15 minutes or more.
- Shut off the central forced-air heating/air conditioning system, if you have one.

Cleanup Steps for Hard Surfaces

- Carefully scoop up glass pieces and powder using stiff paper or cardboard and place them in a glass jar with metal lid (such as a canning jar) or in a sealed plastic bag.
- Use sticky tape, such as duct tape, to pick up any remaining small glass fragments and powder.
- Wipe the area clean with damp paper towels or disposable wet wipes. Place towels in the glass jar or plastic bag.
- Do not use a vacuum or broom to clean up the broken bulb on hard surfaces.

Cleanup Steps for Carpeting or Rug

- Carefully pick up glass fragments and place them in a glass jar with a metal lid or in a sealed plastic bag.
- Use sticky tape, such as duct tape, to pick up any remaining small glass fragments and powder.
- If vacuuming is needed after all visible materials are removed, vacuum the area where the bulb was broken.
- Remove the vacuum bag (or empty and wipe the canister) and put the bag or vacuum debris in a sealed plastic bag.