

1. FLUORESCENT AND MERCURY LIGHT/LAMP DISPOSAL

1.1 PURPOSE

The Contractor is responsible for the proper disposal of PCB and “NO PCB” light ballasts from NSU property and when removing or replacing mercury-containing lamps.

1.2 GENERAL

The primary concern regarding the disposal of used fluorescent ballasts is the health risk associated with polychlorinated biphenyls (PCB's). Fluorescent and high-intensity discharge (HID) ballasts contain a small capacitor that may contain high concentrations of PCBs (>90% pure PCBs or 900,000ppm). The Toxic Substances Control Act (TSCA) was enacted in 1976 and subsequently banned the production of PCBs in the United States. PCBs are regulated because they are carcinogenic and pose a long-term hazard due to their persistence in the environment. Ballasts produced after 1978 are usually marked “NO PCB”. The specific regulations governing the use and disposal of PCBs are found in 40 CFR Part 761.

Florida regulations for PCB ballast and mercury-containing lamp disposal – PCB capacitors or other contaminated ballast material cannot be disposed in any solid waste management facility in Florida. Recycling of non-PCB ballast components is highly recommended with an approved facility. Mercury-containing lamps may not be disposed in any municipal waste container. Generators of > 10 lamps/month must arrange for disposal in permitted lined landfills or recycling at mercury reclamation facilities. Lamps that are recycled are subject to streamlined, universal-waste regulations (Chapter 62-737, FAC). See Appendix A for the Florida fact sheet on Managing Spent Fluorescent and High Intensity Discharge (HID) lamps.

Di (2-ethylhexyl) phthalate (DEHP) is a substance that was used to replace PCBs in certain ballast capacitors beginning in 1979. DEHP in its pure form is listed as hazardous waste but once it has been used, it is no longer hazardous as defined by RCRA.

Fluorescent and high-intensity discharge (HID) lamps contain a small quantity of mercury that can be harmful to the environment and to human health when improperly managed. Mercury is regulated under RCRA, which is administered by EPA.

1.3 RESPONSIBILITIES

Before starting any projects of repair, renovation or construction, Contractors shall follow the below requirements and regulations:

I. Identification and Removal of Lighting Ballasts.

Ballasts are rectangular shaped electrical boxes that are usually black in color. Fluorescent ballasts are located above or between the lamps in a fluorescent lighting fixture.

Sometimes a metal plate must be removed to access them.

HID ballasts can be found in HID lighting fixtures and light posts.

Identifying PCB ballasts

- All ballasts manufactured through 1979 contain PCB's
- Ballasts manufactured after 1979 that do not contain PCBs are labeled "No PCBs"
- If ballasts are not labeled "No PCBs" assume it contains PCBs.
- It is extremely important to establish if a ballast containing PCBs is leaking before you remove it from the fixture, so that it can be handled properly.

Removal

- 1) Contractor shall submit a Plan describing the procedure to be used to detach ballasts from lamp fixtures and the stripping of all wiring.
- 2) Contractor shall submit a Plan describing the collection and segregation of PCB and No-PCB ballasts for disposal/recycling purposes.
- 3) The Contractor is to coordinate with Facilities Management prior to the start of the planned work activity as to the location for the storage drums which will contain the disposed ballasts.
- 4) EPA recommends packing and sealing the intact ballasts in 55 gallon steel drums. For disposal purposes, the ballasts must be separated into drums marked "PCBs" and "No- PCBs" based on the identification procedure discussed above.
- 5) One drum holds 150 to 300 ballasts depending on how tightly the ballasts are packed.
- 6) It is recommended that all void spaces be filled with an absorbent packing material for safety reasons and all drums are to be labeled according to DOT regulations. NOTE: tightly packed drums may weigh more than 1,000 pounds which may present a safety risk.
- 7) If there is a puncture or other damage to ballasts exposing an oily tar-like substance, then the PCB ballast is leaking and should be placed immediately in a heavy- plastic, zip-lock type bag and handled as hazardous waste.
- 8) Contractor is to immediately notify the EH&S office of leaking ballasts.
- 9) The contractor is to use trained personnel to handle and dispose of leaking PCB-containing ballasts.
- 10) An average of 30 seconds per fixture is required for ballast removal.
- 11) PCBs are very harmful upon contact with the skin and mucous membranes. Use caution.
- 12) Safety equipment recommended by OSHA includes gloves made of neoprene, polyvinyl alcohol, FEP Teflon and Viton fluorocarbon rubber. These may be worn inside leather or cloth work gloves to prevent tearing or puncturing.
- 13) The Contractor is to coordinate with Facilities Management prior to the start of the planned work activity as to the location for the storage of the drums.

Disposal

- 1) Ballasts containing PCBs cannot be disposed in Florida.
- 2) The Contractor is to coordinate with the EH&S office for the disposal/recycling of the ballasts.
- 3) The EH&S office is to ensure that all PCB ballasts/components are removed by a processor and disposed at an approved facility outside of Florida.
- 4) Non-PCB ballasts/components may be managed and recycled at an approved facility in Florida.
- 5) About 25% of non-PCB ballasts contain DEHP which is classified as a hazardous substance and regulated under CERCLA. Disposal of about 1600 of these ballasts or 100 pounds would trigger the "Reportable Quantity" requirement under the federal Superfund law (40 CFR, Section 304.2) and require you to notify the National Response Center.
- 6) If more than a pound (12-16 fluorescent ballasts) of PCBs is being disposed within a 24-hour period, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requires that you notify the EPA National Response Center at (800) 424-8802.
- 7) The EH&S office shall keep a record of all TSCA transported or hazardous waste.
- 8) The EH&S office must sign the waste manifest prior to transportation. The recycler or transporter can supply the generator with a Uniform Hazardous Waste Manifest that identifies the type and quantity of the waste, the generator, the transporter and its ultimate destination.
- 9) The manifest must accompany the waste and each handler of the waste must sign the manifest and keep one copy. When the waste reaches its destination, the owner of that facility returns a copy of the manifest to the generator to confirm that the waste arrived.
- 10) If the waste does not arrive as scheduled, the Contractor must immediately notify the EH&S office who are responsible for notifying EPA or the authorized state environmental agency immediately so they can investigate and act appropriately.

II. Identification and Removal of Mercury-containing Lamps.

Although fluorescent and HID lights save energy and money, they do present special disposal considerations. Low-mercury fluorescent and HID lamps contain less mercury than conventional lamps but they may still be considered hazardous waste when disposed.

Mercury-containing lamps will include all fluorescent and high-intensity discharge lights, bulbs, tubes and lamps, which at NSU is most of the indoor and outdoor lighting. Mercury-containing tubes will not be transported from one campus to another; each campus has at least one designated storage site.

Identifying mercury-containing lamps

- Fluorescent lights can be found in over-head-light fixtures and exit signs.
- Most HID lamps are used in security, outdoor or warehouse applications.

- Probable locations for HID are parking-lot light poles, warehouse rafters and the outside walls of buildings.

Removal

- 1) The Contractor shall notify Facilities Management of the project nature relating to mercury-containing lamps, the duration and storage requirements prior to starting the planned work activity.
- 2) The Contractor shall submit a Plan explaining the removal procedure of the light tubes from service and the manner in which the tubes will be stored to prevent unnecessary breakage.
- 3) The Contractor shall document training of employees in the proper lamp handling, packaging and emergency cleanup and containment procedures.
- 4) Light bulbs should be immediately placed in the appropriate closed containers to prevent breakage and for disposal. Recycling facilities require that the lamps/tubes are not taped together for storage or shipment.
- 5) If bulbs/tubes break, the Contractor is to immediately contact the EH&S office for consultation on clean-up and disposal in accordance with federal and local regulations.
- 6) Average time to remove individual bulb/tube is 60 seconds.
- 7) A 15-inch diameter drum for 8 foot lamps holds between 80 to 90 fluorescent bulbs, while a 21-inch diameter drum for 4 foot lamps holds between 160 to 170 bulbs.
- 8) For HID lamps, the best way to remove the lamps is to remove the entire lighting unit.
- 9) Ballasts and batteries should be placed separately from the bulbs and in their respective appropriate containers.
- 10) HID lamps should be placed in cardboard boxes wrapped in newspaper and/or cushioned with cardboard "peanuts."
- 11) The Contractor is to ensure the containers are labeled as "Spent Mercury-Containing Lamps for Recycling" or Universal Waste Mercury Lamps"
- 12) EH&S office and the Contractor are to designate a space solely for bulb storage to ensure the bulbs are not damaged prior to recycling by an approved facility.
- 13) Average time to remove HID item is 90 seconds.

Disposal

- 1) The Contractor is to coordinate with the EH&S office for the disposal/recycling of tubes.
- 2) Florida regulations regarding the disposal of mercury-containing lamps are either recycling or landfill.
- 3) It is encouraged that fluorescent and HID lamps, even the low mercury content lamps be recycled.
- 4) Hazardous waste lamps destined for recycling and managed in accordance with FAC Chapter 62-737 regulations are considered to be universal wastes in Florida and do not count towards the facility's hazardous waste generator status.
- 5) Recycling is the recommended management option for all lamps.

- 6) Generators of 10 or less spent lamps per month per location may dispose of these lamps with the regular trash going to a permitted, lined solid waste landfill.
- 7) Low-mercury, non-hazardous waste spent lamps may also be disposed of at permitted, lined solid waste landfills in any quantities.
- 8) The EH&S office shall contact the local solid waste management department for any final guidance or restrictions on the landfill disposal of these lamps.
- 9) If more than 10 spent hazardous waste lamps are generated per month, they may be disposed of at a permitted hazardous waste landfill and would count towards NSU's hazardous waste generator status.
- 10) The EH&S office is to obtain and keep receipts for shipments of lamps off-site to show DEP and local inspectors that lamps were properly handled.
- 11) Receipts should have the following information; quantity of lamps shipped/received, the date of the shipment, and the name and address of the handler/recycling facility.
- 12) Records of receipts and shipments of lamps shall be kept for 3 years from the date of shipment.

1.4 REGULATIONS

EPA 40 CFR 761	Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions
Toxic Substances Control Act (TSCA)	
FAC 62-701	Solid Waste Management Facilities
FAC 62-737	The Management of Spent Mercury-containing Lamps and Devices Destined for Recycling
EPA 40 CFR 273	Standards for Universal Waste Management
EPA 40 CFR 262	Standards Applicable to Generators of Hazardous Waste
EPA 40 CFR Subchapter I	Solid Wastes

1.5 ACCOUNTABILITY

All contactors will be responsible for complying with the guidelines as described above. Contractors are to communicate to their employees and Subcontractors all the guidelines and relevant information. All work shall be performed in accordance with University policies and procedures as well as all applicable laws and regulations.