

What are universal wastes? Universal wastes are specific hazardous waste streams that a company can choose to manage in an alternative manner in place of the more complex hazardous waste requirements. These wastes are generated by numerous businesses and are often not properly managed according to the hazardous waste regulations. Universal wastes include:

- **Electric lamps**, including fluorescent, high intensity discharge, sodium vapor, mercury vapor, neon, incandescent lamps, and cathode ray tubes from computers, televisions, etc.;
- **Batteries**, including spent dry cell and lead-acid batteries;
- **Pesticides**, including certain suspended, canceled, or unused pesticides;
- **Devices containing elemental mercury**, including thermostats, switches, thermometers, manometers, barometers, and various medical devices.

Some advantages of handling these wastes as universal waste include:

- Universal waste volume is not included when determining the hazardous waste generator status [R 299.9205(5)(i)]. This may allow some companies to reduce their generator status level. For example, a large quantity generator who manages part of its hazardous waste stream as universal waste may be able to become a small quantity generator.
- Universal waste can be accumulated up to one year which is a longer accumulation time than allowed for a small quantity and large quantity generator's hazardous waste [40 CFR 273.15 and 273.35].
- Less labeling is required on universal waste [40 CFR 273.14 and 273.34; and R 299.9228(4)(c)].
- A hazardous waste manifest is not necessary to ship universal waste [40 CFR 273.52(a)], unless it is being shipped to or through another state that does not recognize it as universal waste. For example, not all states have adopted electric lamps as universal waste. However, shipping papers are required for universal waste if the waste is a US Department of Transportation (US DOT) hazardous material.
- A handler may use a universal waste transporter to haul the universal waste off-site [40 CFR 273, Subpart D], or the handler may transport the waste themselves if they meet the transporter requirements [R 299.9228(4)(b) and 9228(5)(c)] instead of using a permitted and registered hazardous waste transporter. If the waste is going to or through a state that does recognize it as universal waste, it may be necessary to use a licensed hazardous waste transporter in that state.

What are the universal waste regulations? In Michigan, universal wastes are regulated by the Department of Environmental Quality (DEQ), Waste Management Division, under Part 111 of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (Act 451) and the federal Resource Conservation and Recovery Act (RCRA) of 1976 under 40 CFR Part 273. Universal wastes are also regulated by the US DOT under 49 CFR Parts 171 through 180. R 299.9228 of the Part 111 rules and 40 CFR Part 273 address most of the universal waste requirements overseen by the DEQ. These regulations are designed to encourage proper collection, recycling, treatment, or disposal of these wastes. Universal waste handlers, transporters, and destination facilities have specific regulations. **If these waste streams are not managed as universal waste, then the waste must be managed under the applicable hazardous waste regulations if the waste exhibits any hazardous waste characteristic.**

Regulatory citations are provided in brackets for those who want to refer to the specific regulations. The DEQ regulations can be downloaded from the Internet at www.deq.state.mi.us/wmd or purchased from the Waste Management Division. Federal regulations are available at www.access.gpo.gov/nara/cfr. Contact US DOT at 517-377-1866 regarding their regulations or go to hazmat.dot.gov. Reliance on information from this document is not usable as a defense in any enforcement action or litigation. Refer to the regulations or discuss your requirements with the

What are universal waste handler requirements?

There are two levels of universal waste handlers – small quantity handlers and large quantity handlers. Handlers include universal waste generators and facilities consolidating universal waste for shipment to a destination facility for recycling, treatment, or disposal. Handlers may not treat universal waste.

Do not confuse universal waste handlers with the hazardous waste generator status levels of small quantity generator and large quantity generator.

1. A **small quantity handler** accumulates less than 5,000 kilograms (11,000 pounds) total of all universal wastes at any time [R 299.9109(i)]. A small quantity handler is:
 - ✓ Not required to get an Environmental Protection Agency (EPA) identification number [40 CFR 273.12].
 - ✓ Not required to keep a record of universal waste shipments [40 CFR 273.19]. It is recommended that records be kept so that compliance with other requirements, such as showing how long the universal waste was accumulated, are met.
 - ✓ Required to inform employees who handle or have responsibility for managing universal waste about proper handling and emergency procedures for those wastes at that facility [40 CFR 273.16].
 - ✓ Required to send or take its universal waste to another universal waste handler, destination facility, or foreign destination [40 CFR 273.18].
 - ✓ Required to make prior arrangements if its shipment is to be received by another universal waste handler [40 CFR 273.18].
2. A **large quantity handler** accumulates 5,000 kilograms (11,000 pounds) or more of universal waste at any time [R 299.9109(h)]. This designation as a large quantity handler is retained through the end of the calendar year in which this amount of universal waste is accumulated [R 299.9228(5)]. A large quantity handler is:
 - ✓ Required to get an EPA Identification Number from the DEQ Waste Management Division before meeting or exceeding 11,000 pounds of universal waste [40 CFR 273.32]. Submit form EQP5150 to meet this requirement. Call 517-335-5035 to obtain the form or download it off the Internet at www.deq.state.mi.us/wmd.
 - ✓ Required to keep records of universal waste shipments for at least 3 years [40 CFR 273.39]. This can be in a log, invoice, manifest, bill of lading, or other shipping document. The following must be recorded:
 - Name and address where the waste came from if received from another handler or where it was shipped to;
 - Quantity of each waste type (e.g., batteries, electric lamps, pesticides, or mercury containing devices) received or shipped out; and
 - Date when shipment was received or sent out.
 - ✓ Required to train all employees with proper waste handling and emergency procedures relative to their responsibilities during normal facility operations and emergencies [40 CFR 273.36].
 - ✓ Required to send or take its universal waste to another universal waste handler, destination facility, or foreign destination [40 CFR 273.38].
 - ✓ Required to make prior arrangements if its shipment is to be received by another universal waste handler [40 CFR 273.38].

Storage and Labeling

A universal waste handler can accumulate universal waste up to 1 year after it was generated or received from another handler [40 CFR 273.15 and 273.35]. A longer accumulation time may be allowed if it is demonstrated that it is necessary to accumulate enough universal waste to facilitate proper recovery, treatment, or disposal. A handler must be able to show how long the waste has been held. This can be done by any of the following:

- Labeling the container with the first date universal waste was put into it or when the container was received;
- Labeling the individual item with the date it was considered a waste or received as a universal waste;
- Maintaining an inventory system on site which identifies the date it became a universal waste or was received;
- Placing the universal waste in a specific accumulation area and identifying the earliest date that any universal waste was put in that area; or
- Using any other method that clearly demonstrates how long the universal waste has been accumulated.

All universal waste must be accumulated in a manner that prevents any spills or releases.

Containers must be kept closed, in good condition, and be compatible with the type of universal waste accumulated in them. Additional management and labeling requirements for the specific universal wastes are discussed in the next section.

Shipping Off-Site

If the universal waste is a US DOT hazardous material, then it has to be packaged, labeled, marked, placarded, and shipping papers prepared according to US DOT regulations prior to shipment off-site, in addition to the other universal waste requirements. For example, one pound or more of mercury in one package would be a US DOT hazardous material, along with many pesticides. Contact the

*A 4-foot
fluorescent lamp
can average
between 15 and 50
mg of mercury per
lamp.*

US DOT at 517-377-1866, go to hazmat.dot.gov for more information, or see the Michigan State Police bulletins on shipping papers and placarding at www.msp.state.mi.us/mcd. Also see the transporter section for more information.

If the handler is shipping the universal waste to or through a state that does not recognize the waste as a universal waste, the handler must prepare a waste manifest according to the receiving state's requirements and make arrangements for hauling by a hazardous waste transporter. The manifest must be forwarded to the first transporter to travel in a state where the waste is not a universal waste. If the receiving state does not consider the shipment universal waste, EPA recommends that an explanation be included in block 15 of the manifest (Special Handling Instructions and Additional Information) that the waste is covered under universal waste regulations in Michigan but not in the receiving facility's state. If the waste is shipped out of Michigan and to another state that recognizes it as a universal waste, but it must travel through states that do not recognize it as universal waste, then the transporter must deliver the manifest to, and obtain the signature of either the next transporter or the destination facility.

It is the handler's responsibility to ensure that the manifest is forwarded to the destination facility by any non-hazardous waste transporter and signed copies are sent back to the handler.

What are the additional handler requirements for universal wastes?

Following are the specific requirements that handlers must meet regarding labeling and management for the different universal wastes. In addition, other related regulations are discussed where applicable.

Electric Lamps

Used lamps become waste on the date the handler permanently removes them from their fixtures.

Unused lamps become waste on the date the handler decides to discard them [R 299.228(2)(j)].

- Label the individual lamps or storage containers with the words "Universal Waste Electric Lamp(s)" or "Waste Electric Lamp(s)" or "Used Electric Lamp(s)" [R 299.9228(4)(c)].

- Package the lamps in a structurally sound container so there will be minimal breakage during normal handling conditions.
 - ✓ If the lamps are broken, they must be packaged so there will be no releases of lamp fragments or residues [R 299.9228(4)].
- Must **not** crush or break the lamps [R 299.9228(4)].
- Contain any release of lamp fragments or residues immediately [R 299.9228(4)]. For example, unintentionally broken lamps may be placed in closed, wax fiberboard drums or other puncture proof containers.
 - ✓ If the released material is a hazardous waste, then it must be handled as required under Part 111 of Act 451. If the waste is not hazardous waste, then it is managed as a solid waste under Part 115 of Act 451.

The box used to ship the new bulbs, or another double or triple ply cardboard container, is usually suitable to package the intact waste bulbs.

Request a listing of electric lamp and mercury recycling companies from your DEQ Waste Management Division District Office. Or, request the list or the *Recycled Materials Market Directory* from the DEQ Environmental Assistance Division by calling 800-662-9278. You can also download the directory from the Internet at www.deq.state.mi.us/ead/recycle. The directory includes information about companies that accept additional materials for recycling.

Ballasts containing PCBs are regulated under the federal Toxic Substances Control Act (TSCA). Assume the ballast contains PCBs if it was manufactured prior to 1978 or the ballast does not contain the statement "No PCBs." Small capacitors (e.g., containing less than 3 pounds of fluid) are generally not subject to TSCA disposal requirements. However, a ballast is subject to all the TSCA requirements if the ballast is leaking. The DEQ recommends that **all** PCB-containing ballasts be managed as PCB waste. For more information about handling leaking ballasts, obtain the "PCBs in Fluorescent Light Fixtures" fact sheet from a DEQ Waste Management District Office or call 800-662-9278. Direct questions about PCB management and disposal to EPA Region V at 312-886-6878 or go to www.epa.gov/pcb.

Additional Regulations Regarding Spent Lamps

Spent lamps not managed as universal waste must be characterized to determine if the lamps exhibit one or more hazardous waste characteristic. This characterization can be done by either using knowledge of the waste (e.g., Material Safety Data Sheet or other documentation) or by testing the lamps [e.g., using the Toxicity Characteristic Leaching Procedure (TCLP)]. Fluorescent, sodium vapor, high- and low-pressure mercury vapor, and high-intensity discharge (HID) lamps often contain mercury in concentrations that exceed the TCLP limit (D009 waste number), while incandescent light bulbs may contain lead (D008 waste number) and cadmium (D006) at levels that exceed the TCLP limit. **If the waste is considered hazardous and is not recycled, it must be managed according to the applicable hazardous waste regulations** (Part 111 of Act 451). If the spent lamps are not hazardous waste or were generated by a conditionally exempt small quantity generator, they may be sent to a licensed solid waste landfill for disposal if approved by landfill authority. It is recommended that all lamps be recycled, even those labeled "low mercury."

The Waste Management Division recommends generators do **not** crush their own lamps due to the risk of environmental contamination and human health concerns. There are additional regulations that also must be met. These include container management and inspections, use of secondary containment, and emergency preparedness and prevention requirements. **Lamp crushing does not require a hazardous waste permit or license** from the Waste Management Division *if the crushing is done as part of a recycling process* in which the mercury is captured and recycled. See page 7 for the requirements if lamps will be stored before recycling. In addition, it is recommended the other lamp components, such as metal end caps, glass, and phosphor powder are also collected and recycled. *A treatment permit and license would be required by the Waste Management Division if the lamps are crushed and sent for disposal.* Depending on the lamp crushing and recycling process, an *air permit may also be required.* Discuss your process with the Air Quality Division District Office staff. Any wastes generated from crushing and recycling processes must be characterized. If this waste residue is determined not to be hazardous waste and is in a solid form, it may be disposed of in a licensed solid waste landfill or recycled. If the waste residue is a hazardous waste, it must be managed according to the applicable hazardous waste regulations.

Other Devices Containing Elemental Mercury

A *used* thermostat, mercury switch, or other device containing only elemental mercury as its hazardous waste constituent becomes a waste on the date it is discarded. An *unused* device becomes a waste on the date the handler decides to discard it [R 299.9228(2)(h)].

- Label or clearly mark each thermostat or the container storing them with the words “Universal Waste-Mercury Thermostat(s)” or “Waste Mercury Thermostat(s)” or “Used Mercury Thermostat(s)” [40 CFR 273.14(d) and 273.34(d)]. If you have other mercury containing devices, replace “thermostat” with the other device’s name.
- Contain any mercury device which shows evidence of leakage, spillage, or damage that could cause leakage [40 CFR 273.13(c)(1) and 273.33(c)(1)]. Other regulations require you to contain and cleanup all spills involving regulated substances.
- Removal of mercury-containing ampules from devices is allowed if done in a manner that prevents breakage and the following requirements are met:
 - ✓ Removal must be done over or in a containment device (e.g., tray or pan sufficient to collect and contain any mercury released from the ampule in case of breakage).
 - ✓ A mercury clean-up system must be readily available to transfer spilled or leaked mercury to another approved container.
 - ✓ The area must be well ventilated and monitored.
 - ✓ Employees must be trained in proper waste handling and emergency procedures [40 CFR 273.13(c)(2) and 273.33(c)(2) and R 299.9228(4)(d) and (5)(e)].
- Characterize mercury or clean-up residues resulting from spills or leaks, and/or other solid waste generated when removing mercury from devices, to determine if it is hazardous waste.
 - ✓ If the waste is hazardous, then it is managed under Part 111 of Act 451. For example, if the laboratory result from the Toxicity

Characteristic Leaching Procedure (TCLP) indicates concentrations of mercury ≥ 0.2 mg/L, it would be a hazardous waste.

- ✓ If the waste is not hazardous waste, then it must be properly managed either as a liquid industrial waste under Part 121 or solid waste under Part 115 [40 CFR 273.13(c)(3) and 273.33(c)(3)].

Waste characterization is required for any waste generated. Test results or other documentation indicating its characteristics must be kept at least 3 years after the waste was last generated [R 299.9302].

Batteries

A *used* battery becomes a waste when it is discarded. An *unused* battery becomes a waste when the handler decides to discard it.

- Label or mark clearly each battery or any containers storing batteries with any of the following: “Universal Waste-Battery(ies)” or “Waste Battery(ies)” or “Used Battery(ies)” [40 CFR 273.14(a) and 273.34(a)].
- Place any battery showing signs of leaking, or damage that could cause it to leak, into another container [40 CFR 273.13(a)(1) and 273.33(a)(1)].
- A handler may do any of the following if the battery casings are in good condition and kept closed [40 CFR 273.13(a)(2) and 273.33(a)(2)].
 - ✓ Remove the electrolyte but the cells must be immediately closed after removal of the liquid,
 - ✓ Sort the batteries by type,
 - ✓ Mix the batteries into one container,
 - ✓ Discharge batteries to remove the electric charge,
 - ✓ Regenerate used batteries,
 - ✓ Disassemble batteries or battery packs into individual batteries or cells, or
 - ✓ Remove batteries from consumer products.
- Determine if any removed electrolyte or other waste, such as battery pack material, is a hazardous waste. If it is, then the waste is regulated under Part 111 of Act 451. If the waste is not a hazardous waste, it must be managed as a liquid industrial or solid waste [40 CFR 273.13(a)(3)].

Recommendations for battery storage areas include:

- Floors and curbing be constructed with an impervious surface, such as concrete coated with acid-resistant epoxy;
- Well ventilated;
- Protected from freezing;
- Secure from vandalism and away from children and pets;
- Protected from sparks and flames and where no smoking is allowed nearby; and
- Posted with signs which identify safety directions and that indicate hazardous waste is present.

Additional Regulations Regarding Batteries

Lead acid batteries may also be managed according to R 299.9804 in place of the universal waste option. Persons who generate, transport, collect, store, or regenerate lead acid batteries are exempted from most of the hazardous waste requirements under this rule. It is not required to include lead acid batteries when determining your generator status if the batteries are sent to a recycler [R 299.9205(5)(h)]. There are no time limits on how long you may accumulate the batteries before shipping. No manifests are required to ship them, and permits and licenses from the Waste Management Division are not required to accumulate, transport, and regenerate them. Reclaimers have different requirements.

Retailers must accept their customer's used lead acid batteries. Retailers must post a sign that tells customers recycling is the only correct way to dispose of lead acid batteries [Part 171 of Act 451]. **Disposal of lead acid batteries is banned in Michigan's landfills and incinerators.**

Dry cell batteries containing intentionally introduced mercury are not allowed to be sold or offered for promotional purposes in Michigan. These dry cell batteries include zinc carbon batteries, mercuric oxide button cell batteries, and alkaline manganese button cell batteries that have more than 25 milligrams of mercury. If a manufacturer participates in a voluntary collection program for nickel cadmium batteries, the manufacturer must provide retailers a written notice about the program. Retailers can voluntarily display this notice [Part 171 of Act 451]. Most used dry cell batteries must be managed as a hazardous or universal waste.

Household hazardous waste collections accepting batteries from households are exempt from the Part 111 of Act 451 requirements. **Programs accepting hazardous waste, including batteries, from conditionally exempt small quantity generators** must meet the requirements in R 299.9205.

Pesticides

Recalled, suspended, and canceled pesticides, and unused pesticides that have not been recalled but are collected and managed as part of a waste pesticide collection program, may be managed as a universal waste. *Recalled, suspended, and canceled* pesticides become a waste on the first date on which the generator agrees to participate in the voluntary or mandatory recall and the person conducting the recall decides to discard it. An *unused* pesticide becomes a waste on the date the generator decides to discard it [R 299.2228(1)(b) and (f)].

- Label or mark container, tank, or transport vehicle or vessel with the label that was on or accompanied the product as sold or distributed. Also include the words "Universal Waste-Pesticide(s)" or "Waste-Pesticide(s)" [40 CFR 273.14(b) and (c); 273.34(b) and (c)].
- Overpack any original container that is not structurally sound and is not compatible with the pesticide in it, or has evidence of leakage, spillage or damage that could cause leakage, into a container in good condition [40 CFR 273.13(b) and 273.33(b)].
- Meet the applicable federal requirements of 40 CFR Part 265, Subpart J if the pesticides are contained in a tank [40 CFR 273.13(b)(3) and 273.33(b)(3)].

Contact the Michigan Department of Agriculture, Clean Sweep Program, for pesticide collections in your area. Call 517-335-6529 or download the list of collection programs and local contacts from the Internet at www.mda.state.mi.us/environment/groundwater/cleansweep/index.html.

What are universal waste transporter requirements?

A universal waste transporter is a person who engages in off-site transportation of universal wastes by air, rail, highway, or water [R 299.9109(k)]. Universal handlers can transport their own universal waste if they meet the transporter requirements

[R 299.9228(4)(b) and 9228(5)(c)]. A transporter is:

- Not required to get an EPA identification number unless they are also a permitted and registered hazardous waste and/or liquid industrial waste transporter.
- Not required to get a hazardous waste transporter registration and permit under Part 111 from DEQ Waste Management Division for shipments within Michigan. If being shipped out of Michigan, check with the other states regarding their transporter requirements. However, if the waste is a liquid, then a liquid industrial waste transporter permit and registration would be required under Part 121. Generators hauling only their own generated waste are not required to get transporter permits and registrations [Act 138 of 1998].
- Not allowed to dispose, dilute, or treat universal waste [40 CFR 273.51].
- Required to comply with all applicable US DOT regulations, including having the shipment properly packaged, labeled, marked, placarded, and transported with the proper shipping papers [40 CFR 273.52]. Contact the US DOT at 517-377-1866, go to hazmat.dot.gov for more information, or see the Michigan State Police bulletins on shipping papers and placarding at www.msp.state.mi.us/mcd.
- Required to deliver the shipment to a universal waste handler, destination facility, or foreign destination [40 CFR 273.55].
- Allowed to store universal waste up to 10 days at their universal waste transfer facility. A transfer facility is any transportation related area including loading docks, parking areas, storage areas, or similar areas used to store shipments of universal wastes during the normal course of transportation. If a transporter exceeds this period, he or she must manage the universal waste according to the applicable handler requirements [R 299.9228(6)(b)].

- Not required to use a waste manifest unless the waste is being transported in a state that does not recognize it as a universal waste. If a waste manifest is used, then the transporter must meet all that state's applicable manifest requirements.

What are the destination facility requirements?

A destination facility is a company that treats, disposes of, or recycles a particular category of universal waste. The destination facility and recycler requirements are too complex to adequately address in this publication. Contact a Waste Management Division Hazardous Waste Program permit engineer to discuss how these requirements apply to your business by calling 517-373-9875.

Generally, a destination facility must:

- Meet the DEQ Waste Management Division Part 111 construction permit and operating license requirements [R 299.9228(7)(a)]. This includes financial capability requirements, along with regulations pertaining to treatment, storage, and disposal facilities, and other hazardous waste regulations. Destination facilities are exempt from the permit and license requirements **if**:
 - ✓ They do not store the waste prior to recycling [R 299.9228(8)].
 - ✓ They only recycle electric lamps in accordance with R 299.9206(6) [R 299.9228(9)].
- Get an EPA Identification Number from the DEQ Waste Management Division [R299.9228(7)(a) and 9228(8)]. Submit form EQP5150 to meet this requirement. Call 517-335-5139 to obtain the form or download off the Internet at www.deq.state.mi.us/wmd.
- Keep records of universal waste shipments for at least 3 years [40 CFR 273.62]. This can be in a log, invoice, manifest, bill of lading, or other shipping document. The following must be recorded:
 - ✓ Name and address where the waste came from;
 - ✓ Quantity of each waste type (e.g., batteries, electric lamps, pesticides, mercury containing devices) received or shipped out; and
 - ✓ Date when shipment was received.

- Follow the manifest system requirements as described in R 299.9608 if receiving waste for recycling that is accompanied by a manifest [R 299.9228(8)].
- Immediately notify the DEQ Director if hazardous waste that is not universal waste is received, and provide the name, address, and phone number of the shipper [40 CFR 273.61(c)].
- Send or take universal waste to another handler, destination facility, or foreign destination [40 CFR 273.61(a)].

Electric Lamp Recyclers

A recycling company storing electric lamps before recycling must meet the requirements of

R 299.9206(5). This includes:

- Getting an EPA Identification number from the DEQ Waste Management Division. Submit form EQP5150 to meet this requirement. Call 517-335-5139 for a copy or download off the Internet at www.deq.state.mi.us/wmd.
- Submitting a map and a description of the recycling units at the facility to the DEQ Waste Management Division.

- Training employees regarding hazardous waste handling and emergency response.
- Meeting air pollution control requirements.
- Keeping a written record on-site showing the quantity of batteries and/or lamps received and recycled and documentation the waste has not been stored longer than 1 year.
- Locating the facility at an appropriate site.
- Meeting facility design and operating standards.

Lead Acid Battery Reclaimers

A company reclaiming lead acid batteries must meet the requirements of R 299.9804. It does not apply to a company regenerating these batteries.

Requirements include:

- Getting necessary permits and operating licenses;
- Meeting treatment, storage, and disposal facility regulations; and
- Meeting financial capability regulations.

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