



Why regulate waste batteries?

Batteries may be hazardous wastes because they contain heavy metals and corrosive electrolyte solutions that are the source of their energy. There are eight metals commonly used in batteries including lead, mercury, nickel, cadmium, lithium, silver, zinc, and manganese. While residential consumers are exempt from the Colorado Hazardous Waste Regulations, businesses, schools and government facilities that generate hazardous wastes must follow these requirements regarding proper management and disposal of hazardous wastes applicable for their generator category. Generators of waste batteries are responsible for determining if their wastes are hazardous. If the waste batteries are hazardous, they must be managed in compliance with the Colorado Hazardous Waste Regulations [6 CCR 1007-3]. A used battery becomes a waste on the date it is discarded. An unused battery becomes a waste on the date the handler decides to discard it.

LEAD ACID BATTERIES

How should lead-acid batteries be managed?

Lead-acid batteries are most frequently used in automobiles, boats, and other vehicles. Each battery contains about eighteen pounds of lead and one gallon of highly corrosive sulfuric acid electrolyte solution. Smaller sealed lead-acid batteries have been used in computers and cellular telephones (refer to "Other Batteries" section).

Management of vehicle-type lead-acid batteries is specifically addressed in the Colorado hazardous waste regulations in Part 267 Subpart G. A battery is "reclaimed" if it is processed to recover the lead and sulfuric acid solution.

Facilities that regenerate spent lead-acid batteries by recharging them or replacing the electrolyte solution, and facilities that generate, transport, collect, or store spent lead-acid batteries but do not reclaim them, are not subject to the hazardous waste regulations under the generator, transporter, financial assurance, notification or permitting regulations. [6 CCR 1007-3 Section 267.80(a)] Such facilities are instead

responsible for storing the lead acid batteries in a way that prevents releases of hazardous chemicals to the environment, for timely remediation and proper disposal of any spills that do occur, and to ultimately get them to a legitimate recycling facility or permitted hazardous waste disposal facility.

Owners or operators of facilities that store spent lead-acid batteries before reclaiming the lead and sulfuric acid electrolyte solution are subject to the notification, permitting, and financial assurance requirements of the hazardous waste regulations. [6 CCR 1007-3 267.80 (b)] While storage of lead-acid batteries prior to recycling requires a hazardous waste storage permit, the recycling process itself does not require a permit from the Hazardous Materials and Waste Management Division.

OTHER BATTERIES

Non-household users of batteries are required by the Colorado Hazardous Waste Regulations to evaluate their wastes and determine which wastes are hazardous. [6 CCR 1007-3 Section 262.11] Battery identification is important in determining if it is a hazardous waste and in selecting the proper disposal method. However, the type of battery often appears only on the packaging material and not on the battery itself. It is good management practice to keep the packaging material for batteries and to minimize the variety of batteries purchased to simplify the identification and management of battery wastes.

In general, NiCad, silver-oxide, mercury-oxide, lithium, zinc-air, zinc-carbon, and some alkaline batteries are hazardous wastes when disposed. These batteries are commonly used in pagers, cameras, cell phones and computers. Silver-oxide, mercury-oxide, zinc-air, and many zinc-carbon can contain significant amounts of mercury. NiCad batteries contain 10-15% cadmium per cell, while lithium batteries may be reactive characteristic wastes. Newer alkaline and zinc-carbon batteries may contain significantly lower amounts of mercury, generally 0.025% by weight or less, and are not be considered hazardous wastes when disposed. Low mercury content is usually prominently printed on the packaging material, but not necessarily

on the batteries themselves. Nonhazardous batteries, such as low- or no-mercury alkaline and zinc-carbon, may be recycled or disposed of as nonhazardous solid wastes.

How should batteries determined to be hazardous waste be managed?

The preferred disposal alternative for hazardous batteries is recycling. Although many components of batteries may be recycled, the primary focus has been on metals recovery, chiefly mercury, silver, and cadmium. Mercury-oxide, silver-oxide, and Ni-Cad batteries are the most easily recycled batteries. Batteries such as high mercury alkaline and carbon-zinc, zinc-air, and lithium contain smaller amounts of metals and are therefore not as readily recycled. If these batteries are not recycled, they must be managed and disposed of as hazardous waste at a permitted hazardous waste disposal facility.

Hazardous waste batteries can either be managed in full compliance with the Colorado Hazardous Waste Regulations [6 CCR 1007-3] Parts 260-268, 99 and 100, or they can be managed in compliance with the reduced requirements of the Universal Waste Rule in Part 273. The “Guide to Generator Requirements of the Colorado Hazardous Waste Regulations” describes the requirements applicable to each generator category if the generator decides to manage their waste batteries under the full requirements of Parts 260-268, 99 and 100. The Guide is available on the Division website or by calling the Hazardous Materials and Waste Management Division.

The Universal Waste Rule provides an alternative set of reduced management standards that the generator can follow instead of the full hazardous waste requirements. This rule was designed to reduce the regulatory burden on non-residential entities that generate these wastes and to encourage recycling, while at the same time reducing the amount of hazardous waste items illegally sent to municipal solid waste landfills.

What are Universal Wastes?

The Universal Waste Rule [Colorado Hazardous Waste Regulations 6 CCR 1007-3 Part 273] includes certain hazardous wastes that are commonly generated by very small to very large non-residential sources such as businesses, government agencies, and schools. Universal wastes are subject to wide spread use, which makes disposal of these hazardous wastes difficult to control.

Universal Wastes include many:

- batteries
- pesticides
- mercury-containing devices
- mercury-containing lighting wastes
- aerosol cans
- electronic devices and components

Materials included as universal wastes are regulated under the Resource Conservation and Recovery Act (RCRA) and have been required to be handled as hazardous wastes since the early 1980s. In the past, if these wastes were determined to be a hazardous waste, small and large quantity generators of hazardous waste needed to manage them in full compliance with the hazardous waste regulations, including labeling, employee training, manifest requirements, and restrictive time limits.

Why manage a waste as universal waste?

Managing wastes as universal wastes is most beneficial to small and large quantity generators of hazardous waste, or conditionally exempt small quantity generators that would otherwise be small quantity generators if they did not manage some of their wastes as universal wastes. The primary benefits of choosing the reduced management standards of the universal waste rule are that the waste does not count toward the monthly total of hazardous waste in determining generator category; the waste can be shipped without a hazardous waste manifest; the waste can be shipped by common carrier instead of a hazardous waste transporter; there are reduced notification and record-keeping requirements, and the storage time limits are less restrictive. Because universal waste does not require a hazardous waste manifest for shipment in Colorado, it is not considered hazardous waste under US Department of Transportation regulations, though other regulations may apply. State requirements for universal waste transporters are included in 6 CCR 1007-3 Part 273 Subpart D.

What are the requirements for universal waste management?

Categories of Universal Waste Handlers

Under the Universal Waste Rule, persons who generate or accumulate waste batteries are considered “handlers” of universal waste. [6 CCR 1007-3 Section

273.9] [Note: this definition is different from that of a **generator** of hazardous waste].

There are two categories of universal waste handlers, Small Quantity Handlers and Large Quantity Handlers. A small quantity handler of universal waste is one who does not accumulate more than 5,000 kilograms of universal at any one time. A large quantity handler of universal waste is a handler of universal waste who accumulates 5,000 kilograms or more of universal waste. [6 CCR 1007-3 Section 273.9] The designation of small quantity or large quantity handler of universal waste has no relationship to a facility's hazardous waste **generator** status. Thus a small quantity generator of hazardous waste may be a large quantity handler of universal waste, and vice versa.

If, at any time during a calendar year, a facility exceeds the quantities for a small quantity handler of universal waste, they would be considered a large quantity handler until the next calendar year when they can re-evaluate their status. [6 CCR 1007-3 Section 273.9]

Labeling

When a universal waste is generated, it must be labeled as either "Waste Battery(ies)," "Used Battery(ies)" or "Universal Waste Battery(ies)." If the waste is placed into an accumulation container, only the accumulation container needs to be labeled as containing universal waste batteries, not the individual batteries within it. If an individual waste battery is not in good condition and is showing signs of breakage, leakage or damage, it must be individually over-packed in a closed packing container that is properly labeled and capable of preventing leakage or releases of hazardous constituents to the environment under reasonably foreseeable conditions. [6 CCR 1007-3 Sections 273.13, 273.33] If the accumulation container is not in good condition, it must be over-packed, or the wastes must be removed and put into a container that is in good condition.

Accumulation of Waste

Universal waste handlers are required to manage their waste in a manner that prevents releases of the waste or waste constituents. [6 CCR 1007-3 Sections 273.13, 273.33] There is a one-year accumulation time limit, and handlers must be able to demonstrate that universal waste on-site has not been accumulated for more than one year. [6 CCR 1007-3 Sections 273.15, 273.35] Although it is not required to be marked with the accumulation start date, this would be the easiest way

to document that the waste is in compliance with the one-year accumulation limit.

Shipment of Waste

A universal waste handler cannot dispose of universal waste on site without a permit, and treatment by the handler is not allowed except under limited conditions (see the section on handler treatment). Universal waste can only be shipped to another universal waste handler, a destination facility or a foreign destination. Shipment to another universal waste handler is allowed to aid in consolidation of wastes. A destination facility is a facility that is permitted to treat, dispose, or recycle the waste. [6 CCR 1007-3 Section 273.9]

Shipment of universal waste in Colorado does not require the use of the hazardous waste manifest system. Therefore, universal waste is not considered hazardous waste under US DOT regulations. The US DOT regulates some universal wastes as hazardous materials because they meet criteria for one or more hazard classes, but the word "waste" may not be used in the shipping name. [6 CCR 1007-3 Section 273.52]

Other states may have different requirements for wastes that are managed as universal waste in Colorado. The handler should always confirm the regulatory status of universal wastes in the destination state and all intervening states the waste will travel through.

Notification

Small quantity handlers of universal waste are not required to notify the Division of their universal waste management activities. [6 CCR 1007-3 Section 273.12]

Large quantity handlers of universal waste are required to notify the Division of their universal waste management activities and obtain an EPA identification number using EPA Form 8700-12. [6 CCR 1007-3 Section 273.32] This must be done even if the facility has previously given notification and received an EPA identification number for its hazardous waste activities. The EPA identification number will remain the same.

Employee Training

Small quantity handlers of universal waste are required to inform all employees who manage universal waste

about the proper handling and emergency procedures appropriate to the types of universal waste at the facility. [6 CCR 1007-3 Section 273.16]

Large quantity handlers of universal waste are required to ensure that personnel are thoroughly familiar with the requirements for universal waste management and emergency response relative to their level of responsibilities in dealing with the waste. [6 CCR 1007-3 Section 273.36]

Spills

All handlers of universal waste are required to immediately containerize and appropriately manage any spills or residues from releases of universal wastes. [6 CCR 1007-3 Sections 273.17(a), 273.37(a)] The waste generated from a release of universal waste would be considered newly generated waste, and a hazardous waste determination would need to be made. If it is determined that any or all of the released material or residue is hazardous, it must be managed in accordance with the hazardous waste regulations and not the universal waste requirements. [6 CCR 1007-3 Sections 273.17(b), 273.37(b)] The handler of the universal waste at the time of the release would be the generator of the newly generated hazardous waste and must adhere to all applicable requirements of the Colorado hazardous waste regulations.

Record Keeping Requirements

A small quantity handler of universal waste is not required to maintain records. [6 CCR 1007-3 Section 273.19] However, it is strongly advisable to keep adequate records to document waste management practices and substantiate the facility's universal waste handler status.

A large quantity handler of universal waste must keep written records for universal wastes shipped to and from its facilities. These records must be kept for at least three years and include: the types and quantities of universal waste shipped or received, the date the waste was shipped or received, and to whom the waste was shipped. [6 CCR 1007-3 Section 273.39] There is no requirement to maintain formal training records for either category.

Transporters of universal waste are required to keep records in accordance with US DOT requirements. A destination facility is subject to all applicable requirements of 6 CCR 1007-3 Parts 264-268, 99 &

100. If the destination facility recycles the universal waste without storing it, they need only notify the Department of their activity under 6 CCR 1007-3 Part 99 and keep records of each shipment. If the destination facility is a Treatment Storage and Disposal Facility (TSDF), they are required to keep records in accordance with their hazardous waste permit.

Can a universal waste handler treat its hazardous wastes?

Universal waste handlers can't dispose of universal wastes on site without a permit and treatment by the handler is not allowed except under the limited conditions of Part 273.13 or 273.33 of the Colorado Hazardous Waste Regulations. A universal waste handler may remove electrolyte solutions from batteries as long as the battery cell is closed immediately after removal of the solution. The universal waste handler is considered the generator of the electrolyte and/or other solid wastes generated during this process. If the electrolyte and/or other solid wastes exhibit a characteristic of hazardous waste, it is subject to the requirements of Parts 260 through 268 and Parts 99 and 100. These materials are no longer considered universal wastes.

What about Conditionally Exempt Small Quantity Generators (CESQG)?

Conditionally exempt small quantity generators are those that generate less than 100 kilograms (approximately 25 gallons or 250 pounds) of total hazardous waste and no more than one kilogram of acutely hazardous waste per calendar month AND never accumulate more than 1000 kilograms of hazardous waste on site at one time. In Colorado, conditionally exempt generators are not excused from identifying which of their wastes are hazardous wastes and must ensure that their wastes are sent to a facility that is permitted to accept it.

Conditionally exempt small quantity generators may choose to manage their mercury-containing lights as conditionally exempt wastes or as universal wastes. [6 CCR 1007-3 Section 273.8] Because of the reduced management requirements already applicable to conditionally exempt small quantity generators of hazardous waste, it is generally not to their benefit to manage their wastes as universal waste, unless they would otherwise be small quantity generators. Unlike small and large quantity generators of hazardous waste, conditionally exempt generators are not required to notify the State of their regulated waste activity or to

get an EPA identification number. There is no time limit on how long they may store their hazardous waste on site as long as they don't exceed the quantity limits for conditionally exempt small quantity generators, and they may transport their hazardous waste without a hazardous waste manifest under a standard bill of lading.

Conditionally exempt generators may not dispose of their hazardous wastes on site or send them to a solid waste landfill in Colorado. These wastes must be sent to a permitted hazardous waste treatment, storage or disposal facility (TSDF), sent to a legitimate recycler of the waste, or sent to an out-of-state solid waste disposal facility that is permitted to accept conditionally exempt small quantity generator hazardous wastes.

For more information:

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This Compliance Bulletin is intended to provide guidance on the appropriate management of wastes based on Colorado solid and hazardous waste statutes and regulations only. The wastes described in this guidance may also be regulated under other statutes and regulations.