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When they are disposed of, most lithium-ion (secondary batteries) and lithium primary batteries in use today are likely to be hazardous waste due to ignitability and reactivity (D001 and D003). With the exception of households, generators of lithium battery hazardous waste are responsible for determining whether the spent lithium batteries they generate are hazardous waste and, if they are, the generators need to manage the batteries accordingly under hazardous waste requirements. (Refer to Question #5 for information on safe household battery management.)

In addition, the design of advanced batteries used in electronics, energy storage, and electric vehicles will continue to evolve and may result in new chemistries that become common in use and that will have to be evaluated for potential hazards at end of life.

For these reasons, it can be difficult for a generator to identify which of its used lithium batteries are hazardous waste when disposed of. Therefore, EPA recommends that all lithium batteries be managed with care during use and at end of life and that businesses consider managing all of their used lithium batteries as hazardous waste under the federal "universal waste" regulations in Title 40 of the Code of Federal Regulations Part 273.

Yes. Both rechargeable lithium-ion and single use lithium primary batteries can be managed as universal waste. The universal waste definitions describe batteries as devices consisting of one or more electrically connected electrochemical cells which are designed to receive, store, and deliver electric energy (40 CFR 273.9). While the universal waste battery regulations were developed before lithium-ion and lithium primary batteries were a common technology, the definition of a battery in these regulations broadly captures batteries that would be hazardous waste.

A non-household that generates fewer than 100 kilograms (about 220 pounds) of lithium batteries and all other hazardous waste in a month is a "very small quantity generator" under the federal RCRA regulations and is subject to reduced hazardous waste management requirements that include a limit on how much hazardous waste can be accumulated at any one time and certain requirements regarding where the waste can be sent for disposal. Check with your state regulatory program, as some states are more stringent and may have different requirements.

Under RCRA, household hazardous waste--waste generated by normal household activities such as routine house and yard maintenance--is excluded from the definition of hazardous waste and is not regulated by federal hazardous waste rules as long as it is not mixed with non-household waste. Wastes covered by the household hazardous waste exclusion must satisfy two criteria:

EPA interprets this exclusion to include waste generated in household-like areas, such as bunkhouses, ranger

stations, crew quarters, campgrounds, picnic grounds, and day-use recreation areas.

Household hazardous waste is regulated on the state and local level and state regulatory requirements for batteries may be more stringent than those in the federal program. Be sure to check your state"s battery waste policies.

Damaged, defective, or recalled batteries may not be transported by air. In addition, they must comply with specific Department of Transportation packaging requirements found at 49 CFR 173.185(f).

EPA recommends that beyond following the universal waste standards for storage and DOT"s transportation standards for lithium batteries, handlers of end-of-life lithium batteries take additional precautions to protect against the chance of thermal runaway and fire. These include:

The Bipartisan Infrastructure Law of 2021 directed EPA to develop best practices for the collection of batteries for recycling. Check our website for updates on that initiative.

Universal waste handlers can conduct certain activities when managing all chemistries of batteries. These activities are sorting batteries by type, mixing batteries in one container, discharging batteries to remove the electric charge, regenerating used batteries, removing batteries from products, and removing electrolyte from batteries.