

Lead-Acid Batteries

What are Lead-Acid Batteries and why are they of concern?

Lead-acid batteries, which are commonly used in motor vehicles, forklifts, golf carts, garden tractors, and wheelchairs, utilize a sulfuric acid electrolyte solution to convert potential chemical energy to electrical energy. A typical automobile battery contains 18-20 pounds of lead (plates) and 11 pounds of sulfuric acid, and if handled improperly, poses hazards to human health and the environment. Lead is a toxic substance that can contaminate soil and water, while sulfuric acid is corrosive and can cause severe bodily injury upon contact. Lead-acid batteries also present a fire and explosion hazard.

How are Lead-Acid Batteries regulated?

Spent lead-acid batteries that are generated by businesses are regulated as hazardous waste unless they are managed:

- 1) According to the recycling exemption (discussed below) provided in section 7-204(f) of the Vermont Hazardous Waste Management Regulations (VHWMR); OR
- 2) As universal waste by following the standards outlined in Subchapter 9 of the VHWMR and Part 273 of the Code of Federal Regulations Title 40 (refer to the "Universal Waste" fact sheet for more information about this option).

In Vermont, most businesses manage lead-acid batteries under the recycling exemption because state law requires retailers to accept spent lead-acid batteries in return for those that they sell. The law also requires that collected batteries be recycled. Retailers can usually send spent batteries for recycling using the same company that delivers new batteries.

Although household wastes are exempt from the VHWMR, all spent lead-acid batteries, including those generated by households, are *banned from landfill disposal* and should be recycled through a solid waste district or battery retailer.

What conditions must be met to satisfy the recycling exemption?

Spent lead-acid batteries are exempt from regulation as hazardous waste provided:

- ✓ Businesses that generate or collect the batteries store them under cover and on an impervious surface;
- ✓ The batteries are transported in accordance with Department of Transportation requirements (49 CFR 171-177 specifies regulations for packaging, shipping, labeling, and placarding); and
- ✓ The batteries are recycled.

continued ►

Environmental Fact Sheet: Lead-Acid Batteries

Best Management Practices

- ✓ Avoid stockpiling spent lead-acid batteries.
- ✓ Check batteries for leaks and cracks prior to storing.
- ✓ Store batteries upright to prevent acid leaks through vent holes.
- ✓ Keep spent batteries from freezing to avoid cracking their cases.
- ✓ Place cracked or leaking batteries in a closed, watertight, acid-resistant storage container such as a five-gallon plastic (polyethylene) pail or bin.
- ✓ Store waste battery electrolyte as a corrosive hazardous waste in a compatible container.
- ✓ Keep a neutralizing agent, such as baking soda, lime or bicarbonate soda nearby in case acid leaks or spills.
- ✓ Place same-size batteries on pallets and separate layers with a shock-absorbing material.
- ✓ Stack batteries in layers no more than five high, with the pole side of each battery facing toward the outside of the stack to maximize stability.
- ✓ When handling batteries, always wear safety equipment (e.g., gloves, apron, and eye protection) to prevent contact with corrosive materials (sulfuric acid).

For more information contact:

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