



Battery Hazards

As batteries are energy storage devices, they are prone to make many threats to human life and safety. A short circuit is one of the common battery perils. The most important reason for short circuits is overcharging or over discharging. Other causes for cell short circuits include faulty separators, aggregation of lead particles or other metals between both the plates, buckling of the plates and excessive sediments in the bottom of the jar.



Another battery hazard is the generation of gasses. "Battery gassing" is a normal product of charging. Passage of electricity through water dissociates the water into hydrogen and oxygen. These are the gases that emanate from an open cell battery. When hydrogen reaches an intensity of 4% in air, it can be explosive. Therefore, it is essential that the

area is well ventilated and there is no chance of open flame.

High-power lithium cells should be maintained with extreme care because a short circuit can lead to internal overheating thereby making an explosion or battery rupture. These lithium cells are more sensitive to physical stress than alkaline batteries and are commonly found in today's cellular phones. Electrical burns, strains, and sprains are some of the common hazards that arise when servicing, charging, or jumping the common lead-acid battery. Lead-acid batteries can also cause danger when the acid spills out. For these types of batteries, the occurrence of short circuit while replacing can be minimized by disconnecting the earth lead first and replacing them last. One way to reduce battery hazards in a vehicle is to switch off all the vehicle electrical equipment before the charger leads are removed from the vehicle.

Environmental Hazards of Batteries

People are using more and more household batteries. The average person owns about two button batteries, ten normal batteries, and throws out about eight household batteries



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per year. A battery is an electrochemical device with the ability to convert chemical energy to electrical energy to provide power to electronic devices. Batteries contain heavy metals such as mercury, lead, cadmium, and nickel, which can contaminate the environment when batteries are improperly disposed of. When incinerated, certain metals might be released into the air or can concentrate in the ash produced by the combustion process.

Batteries may produce the following potential problems or hazards:

- ❖ Pollute the lakes and streams as the metals vaporize into the air when burned.
- ❖ Contribute to heavy metals that potentially may leach from solid waste landfills.
- ❖ Expose the environment and water to lead and acid.
- ❖ Contain strong corrosive acids.
- ❖ May cause burns or danger to eyes and skin.



In landfills, heavy metals have the potential to leach slowly into soil, groundwater or surface water. Dry cell batteries contribute about 88 percent of the total mercury and 50 percent of the cadmium in the municipal solid waste stream. In the past, batteries accounted for nearly half of the mercury used in the United States and over half of the mercury and cadmium in the municipal solid waste stream. When burned, some heavy metals such as mercury may vaporize and escape into the air, and cadmium and lead may end up in the ash.

Prevention of Household Battery Waste

To reduce waste, start with prevention. Starting with prevention creates less or no leftover waste to become potentially hazardous waste. The following are steps to take to prevent household battery waste.

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- ❖ Check to see if you already have the batteries on hand before buying more.
- ❖ Look for the batteries that have less mercury and heavy metals.
- ❖ Consider rechargeable batteries for some needs, but remember that they also contain heavy metals such as nickel-cadmium.



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