



# Lead-Acid Batteries— Hazards and Responsible Use

## Introduction

More than 35 million motor vehicles are registered in California. Each vehicle uses a lead-acid battery. The average battery contains between 16 to 21 pounds of lead according to [Battery Council International \(BCI\)](#)<sup>1</sup> and 1.5 gallons of sulfuric acid. Improperly and illegally disposed of batteries present a threat to our health and to the environment.

## What Are Lead-Acid Batteries?

Lead-acid batteries are used in cars, trucks, motorcycles, boats, and other motorized equipment. Each battery consists of a polypropylene plastic case containing lead plates immersed in a sulfuric acid electrolyte.



## Health and Environmental Effects

Lead-acid batteries contain chemicals that have the potential to be hazardous to your health and the environment. The batteries contain lead, a

highly toxic metal, and sulfuric acid, a corrosive electrolyte solution. Since both of these materials are classified as hazardous, it is very important that the battery be handled properly.

Contact with the sulfuric acid solution may lead to irritation or burns to the skin, or irritation to the mucous membranes of the eyes or the upper respiratory system.

Symptoms of low-level lead exposure include fatigue, impaired central nervous system functions, and impaired learning. Severe lead poisoning can result in coma, convulsions, irreversible mental retardation, seizures, and even death.

If lead-acid batteries are disposed of in a solid waste landfill or illegally dumped, the lead and sulfuric acid can seep into the soil and contaminate groundwater, potentially affecting the quality of our drinking water supply. If batteries are disposed of near rivers, streams, lakes, or marine waters, the lead and sulfuric acid can also threaten aquatic life.

## Maintain Batteries Properly

Following a few simple tips can extend battery life.

**Note:** These steps do not apply to a “maintenance-free” sealed battery where no removable caps are present on the top of the battery.

- Check the fluid levels frequently. Remove the plastic caps from the top of the battery to ensure that the fluid reaches indicator marks located inside the battery. If fluid levels are low, fill the battery up to the specified height with deionized water only.

<sup>1</sup> “About 60% of the weight of an automotive-type 32lb lead-acid battery is lead or internal parts made of lead; the balance is electrolyte, separators, and the case.”

<https://batteryCouncil.org/page/RecyclingStudy?>

Linden, David; Reddy, Thomas B., eds. (2002). *Handbook Of Batteries (3rd ed.)*. New York: McGraw-Hill. p. 23.5. [ISBN 978-0-07-135978-8](#).

- Check the battery cable connections. If the connection is bad, a buildup of lead sulfate will be present on the cable connections. This white substance can be easily removed using a battery terminal cleaner tool that can be purchased at your local automotive store.
- Check the battery for cracks. If cracks are present, replace the battery and put the old one in a leakproof container or thick plastic bag.

**Remember:** Always protect yourself when checking a battery. Wear protective gloves and goggles that completely cover your eyes when checking battery fluid levels and recharging a battery.



## How Can I Recycle My Lead-Acid Batteries?

Several recycling options are available to the public:

- Exchange your old battery when you buy a new one. State law requires that lead-acid battery retailers accept old batteries when a new battery is sold.
- Take your battery to a scrap metal dealer who collects these batteries. Some dealers will even compensate you for your old battery. Prior to recycling, store the old battery in a safe place away from children and pets.
- Take your battery and any other type of household hazardous waste (HHW) to your collection facility or a local HHW collection event. Store the old battery in a safe place away from children and pets prior to recycling.

## What Happens to My Old Batteries?

The battery recycling process separates the lead plates, polypropylene plastic, and sulfuric acid. The lead and the polypropylene are reclaimed for use in new batteries, and the sulfuric acid is neutralized so it can be disposed of safely.

## For More Information

To find the location of an HHW collection facility in your area, call Earth911 at 1-800-CLEANUP or visit Earth911's website at <https://earth911.com/>.

## Grants

Perhaps your city or county can benefit from a grant that helps provide HHW and used oil collection opportunities in your community. For information on HHW and used oil grants, call (916) 341-5062 or visit our Web site at <https://www.calrecycle.ca.gov/usedoil/grants>.

## Hazardous Waste Management

The California Department of Resources Recycling and Recovery (CalRecycle) provides information on household hazardous wastes. The Department of Toxic Substances Control (DTSC), one of our sister organizations under the California Environmental Protection Agency (Cal/EPA), regulates hazardous waste management in California and offers a FAQ on Management of Spent Lead-Acid Batteries at [https://www.dtsc.ca.gov/HazardousWaste/upload/FS\\_DutyOfficer\\_LeadAcidBatteries1.pdf](https://www.dtsc.ca.gov/HazardousWaste/upload/FS_DutyOfficer_LeadAcidBatteries1.pdf).

Contact the nearest Department of Toxic Substances Control Regulatory Assistance Office for more information on hazardous waste management practices in California. To locate the nearest field office, check the department's Web site at [www.dtsc.ca.gov](http://www.dtsc.ca.gov) or call DTSC's main information number: (800) 728-6942. From outside California, call (916) 324-2439.