

## Batteries and the Environment

When batteries are thrown into the trash they end up in landfills, which cause problems for the environment.



Batteries in landfills will eventually crack open and release their contents. The metals and chemicals will enter the ground and water. This can cause harm to animals and eventually humans, as the metals and chemicals are ingested.

### Lithium

The lithium in batteries can cause fires when it is exposed to the environment. These batteries have caused fires in landfills and could cause fires in your garbage can if something heavy is dropped on them.

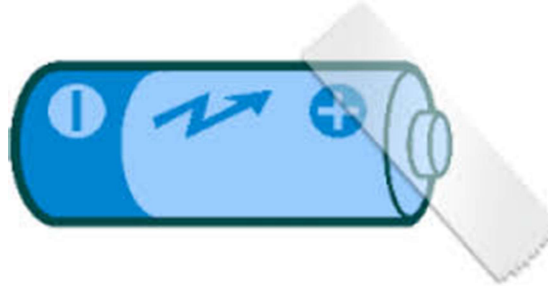


## Recycle Batteries on Campus

It's easy!

### Step 1:

Tape the positive terminal.



This makes sure the batteries won't short-circuit and catch fire when they're all together in the bin.

### Step 2:

Place taped batteries in one of the battery recycling containers on campus.



Look for the containers by the paper and bottle recycling bins on campus.

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# Battery Recycling



Environmental Health and Safety



## Batteries

Every year more than 3 billion batteries are sold in the United States. These batteries are used to power our lives; they keep our phones, cars, games, and medical devices running.



## Inside Batteries

The basic power unit inside a battery is called a cell; these consist of three main parts two electrodes, made of metals, and an electrolyte separating the electrodes. The metals and chemicals inside our batteries are harmful to people and the environment.

## Metals

Metals make up the two electrodes in a battery. The metals used include cadmium, lead, zinc, manganese, nickel, silver, mercury and/or lithium.

## Chemicals

Batteries contain electrolytes that allow electrons to flow. Electrolytes used in batteries include sodium chloride, chloric acid, nitric acid, potassium nitrate, hydrochloric acid, potassium nitrate, sulfuric acid, sodium hydroxide, magnesium hydroxide and sodium acetate.

## Batteries and Your Health

If batteries are thrown away, their contents leach into the ground and the water. When the metals reach the water, they can affect the health of anyone who drinks the water or who eats fish from the water. When batteries split open they can expose people to the metals and chemicals inside.



### Cadmium

Cadmium is a human carcinogen. It can be absorbed through the skin by touching a battery that has split open and leaked. When these batteries end up in landfills, they can contaminate the soil and the surrounding areas. Eating crops that were grown from cadmium-contaminated soil can damage or destroy the kidneys.

### Lead

Lead causes birth defects, neurological and developmental damage. Children are the most vulnerable to lead poisoning.

### Acids and bases

The acids and bases in batteries can burn the skin and eyes. Generally, this occurs with the sulfuric acid in lead-acid car batteries.

## Battery Safety

- Wear gloves and eye protection when dealing with batteries that can be opened.
- Store batteries at room temperature (you don't need to refrigerate batteries) away from things that could damage the casing.
- Wear gloves when dealing with leaking batteries.

## Recycling Benefits



Recycling batteries helps in two ways.

1. **Keeps batteries out of the landfill.** This keeps the hazardous materials found in batteries from entering our land and water and prevents the fires that are caused by lithium-ion batteries when they crack open.
  - a. In 2017, 65% of waste facility fires in CA began with lithium-ion batteries.
  - b. In 2018, lithium-ion batteries caused a five-alarm fire in New York City. It burned for 2 days and shut down 4 railroad branches because of thick smoke blowing onto the tracks.
2. **Allows the metals to be reused in new batteries.** When recycled, the metals in batteries are collected and sent back for reuse. This reduces the amount of mining that needs to be done to produce new batteries.

## Use Rechargeable Batteries

When possible, use rechargeable batteries. They reduce the number of batteries that need to be recycled.

