

Batteries – Energy to Go!

We use batteries in lots of games, toys, and other devices. But did you ever stop to think how a battery really works? What's going on in there? Where does that electrical energy come from? You can use wires, a flashlight bulb, and a battery to investigate what makes a battery so energetic!

Materials:

- 1 Battery (D cell)
- 2 wires
- 1 flashlight bulb

Procedures:

1. Tape one end of each wire securely to each end of the battery. Have your partner squeeze the wires against the ends of the battery so that they make good contact.
2. Hold the end of one wire so that it touches the side of the bulb.



3. Now touch the end of the other wire to the bottom of the bulb. What happens?

Think about this ...

The electricity a battery produces is a result of a type of chemical reaction that takes place inside the battery. The design of the battery is clever because when the battery is not

being used, the chemical reaction happens very, very slowly. Why do you think this is a good idea?

Where's the Chemistry?

The battery contains two different metals surrounded by a thick paste made of special chemicals. The metals, like all substances, are made up of atoms. Atoms are made of protons, neutrons, and electrons. One of the metals in the battery gives up lots of its electrons and the other metal is ready to accept them. If the electrons were free to go from one metal to the other they would zoom across as fast as they could. The key thing is that the two metals are separated in such a way that the electrons can't easily travel from one metal to the other. That's where the wires and bulb come in. Connecting the bulb and wires to the ends of the battery gives the electrons a path to travel from one metal to the other. And those traveling electrons are electricity!



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The American Chemical Society develops materials for elementary school age children to spark their interest in science and teach developmentally appropriate chemistry concepts. The *Activities for Children* collection includes hands-on activities, articles, puzzles, and games on topics related to children's everyday experiences.

The collection can be used to supplement the science curriculum, celebrate National Chemistry Week, develop Chemists Celebrate Earth Day events, invite children to give science a try at a large event, or to explore just for fun at home.

Find more activities, articles, puzzles and games at www.acs.org/kids.

Safety Tips

This activity is intended for elementary school children under the direct supervision of an adult. The American Chemical Society cannot be responsible for any accidents or injuries that may result from conducting the activities without proper supervision, from not specifically following directions, or from ignoring the cautions contained in the text.

Always:

- Work with an adult.
- Read and follow all directions for the activity.
- Read all warning labels on all materials being used.
- Wear eye protection.
- Follow safety warnings or precautions, such as wearing gloves or tying back long hair.
- Use all materials carefully, following the directions given.
- Be sure to clean up and dispose of materials properly when you are finished with an activity.
- Wash your hands well after every activity.

Never eat or drink while conducting an experiment, and be careful to keep all of the materials used away from your mouth, nose, and eyes!

Never experiment on your own!

For more detailed information on safety go to www.acs.org/education and click on "Safety Guidelines".

