

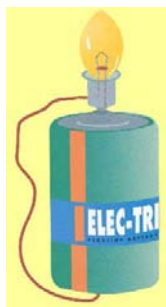
Batteries and Bulbs – Get the Connection!

To understand how an electric circuit works, you can make your own out of 1 battery, 1 wire, and 1 flashlight bulb. But before you try it, let's look at the different parts of a flashlight bulb and a battery. This will make it easier to understand how an electric circuit works and how to make your first simple circuit to make a bulb light.

If you look closely at a flashlight bulb, you should see that it has two wires sticking up that are connected by a very thin wire called a filament. The two wires go down inside the base of the bulb where you can't see them. One wire is connected to the very bottom of the base and the other is connected to the side of the base. This is important to know if you want to make a circuit to light the bulb.



To make a complete circuit, you need to connect the battery, the wire, and the bulb so that electricity will have a path to flow from the bottom of the battery, through the wire, into the little wire on the side of the bulb, up that wire, through the filament, down the other bulb wire to the bottom of the bulb base and to the other end of the battery.



Materials:

Flashlight battery (1.5 volts D cell)

Flashlight bulb

Insulated wire

Tape

Parent or Teacher Preparation:

Cut 2 pieces of wire about 15 centimeters (cm) long. Carefully strip off about 1 cm of insulation from both ends of each wire. If the exposed wire is frayed, twist it together.

Procedure:

1. Tape one end of your wire to the negative (flat end) end of the battery. Be sure that the metal part of the wire is firmly attached to the battery.
2. Place the base of the bulb on the positive end (with the little bump) of the battery.
3. While holding the bulb in place, touch the unattached end of the wire to the side of the bulb base. If your bulb lights, you have made a complete electric circuit.
4. If the bulb does not light, check to be sure the wire is taped securely to the negative end of the battery. You could even hold it tightly to the battery to be sure it is making good contact.
5. Look at the picture and at your own complete circuit with the battery, wire, and bulb. Think about how the path of the electricity in your circuit is just like the path of the electricity shown in the picture.

Think about this ...

Could you make a complete circuit and make the bulb light with 1 battery, one flashlight bulb, and 2 wires instead of one? Hint: You do not need to touch the bulb directly to the battery.

Where's the Chemistry?

One rule about electricity is that it will only flow through a complete circuit. That means that electricity has to start from some source like one end of a battery and travel through some kind of conductor like a wire or other material that electricity can flow through. The electricity then goes through a device like a bulb, and out through a wire or some other conductor. The electricity then ends up at the other end of the battery. The energy of the electricity is used to light the bulb.



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".

