Current and Static Electricity

Static Electricity

Pull a wool hat off and your hair tries to stand on end. Walk across a carpet and you may get a shock when you touch something. Why does this happen?

When objects rub, a charge builds up on the surface. The charge can be positive or negative, like the poles on a battery. You cannot see the charge on an object, but you might see what the charge does. The charge makes hairs stand up and balloons stick to walls. The charge can also make a stream of water bend toward the charge.

Because the charge stays in place for a while, we call this charge static electricity. When the charge moves from one object to another, you may see—and feel—the spark.

Current Electricity

Current electricity flows along a path called a circuit. A circuit connects the source of electricity to a load that does something useful. The source might be a power plant, or it might be a battery. A light bulb is one type of load.

Think About It!

1. Circle the examples that use current electricity.

shock from walking on carpet	**flashlight**	**lightning**
power lines in a house	**solar calculator**	**light switch**

2. Items with the same charge push apart from each other. Items with opposite charges are attracted to each other. Do these items have the same charge or opposite?

a) A balloon sticks to a wall. _____

b) Hairs push away from each other so hard that they stand straight up. _____

3. When clothes come out of the dryer, some may stick together. We call this "static cling" because static electricity causes the clothing to cling. Explain what happens to make the clothes stick together.

_____

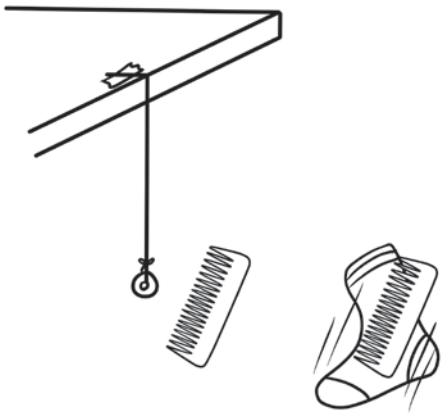
_____

Experiment: Electric Cereal

Try this experiment to see static electricity at work.

What You Need

- Hard plastic comb
- Liquid soap
- Dish towel or paper towel
- 30 cm of thread
- Piece of dry O-shaped cereal
- Wool mitten or sock
- Table
- Tape
- Balloon (optional)



What You Do

1. Tie one end of the thread to a piece of cereal.

2. Tape the other end of the thread to the top of a table, so the cereal hangs in the air. The cereal should not be too close to anything.

3. Wash the comb with soap to make sure there is no oil on the comb. Carefully rinse away all of the soap. Dry the comb with the towel. (Make sure the comb is completely dry.)

4. Rub the comb quickly on the wool for several moments. Predict what will happen when you bring the comb close to the cereal.

5. a) *Slowly* bring the comb close to the cereal. Do not touch the comb to the cereal. At a certain point, the cereal should move. Record what happens.

b) Hold the comb still until the cereal moves again. Note how the cereal moves this time.

6. Once again, slowly bring the comb closer to the cereal. See if you can make the comb touch the cereal. Record what happens.

Optional

7. If a balloon is available, blow the balloon up and tie off the end. Repeat steps 4 through 6, using the balloon instead of the comb. Note any differences in the results.

"Experiment: Electric Cereal"—Think About It!

1. Record the results of your experiment in the chart below. Use drawings or words.

What I Did	What I Saw
Slowly moved the comb close to the cereal **(Step 5 a)**	
Held the comb still until the cereal moved again **(Step 5 b)**	
Tried to touch the comb to the cereal **(Step 6)**	

2. How does the comb become electrified?

_____

_____

3. Is this an example of static electricity or current electricity? Explain.

_____

_____

4. Did the comb and wool cause the effect you saw? Did the cereal cause the effect you saw? Describe a step you could add to test this.

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