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Hands-on Activity

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The Happy Scientist

Listen to Lightning

When you see a flash of lightning, you expect the sound of thunder to follow it. However, there is another way to hear the spark of lightning. You can listen to the radio signals that the giant sparks broadcast. The next time a thunderstorm is approaching, set up an AM radio near a window. Tune it to a setting where you can hear only static. When you see the flash of a lightning bolt, you should hear a *pop* on the radio at exactly the same time.

You don't have to wait for a storm to try this experiment. You can produce your own miniature lightning to broadcast radio waves anytime you want.

What You Need

- an AM radio
- a balloon
- a blow-dryer

Jim Paillot

What to Do

1. Blow up a balloon and tie it closed.
2. Charge the balloon with static electricity by rubbing it briskly against the hair on your head or a piece of cloth.
3. Position the balloon near the small hairs on your arm. If the charge is strong enough, you should feel the hair stand up. If you don't feel that, use the blow-dryer to dry the balloon and the hair on your head and try rubbing it again.
4. When you have a good charge, position your knuckle near the balloon at the place where you rubbed it. If you listen very carefully, you should hear a tiny *pop*.
5. Tune the radio to a setting where you can hear only static.
6. Charge the balloon again, and hold it near the radio. Use your knuckle to produce another spark.

What Happens

When you make a spark near the radio, you should hear a *pop* from the radio. Why do you hear the pops? As the spark jumps, some of its electrical energy is changed into electromagnetic waves. Some of the waves are the light you see. Other waves are radio waves that make the pop that the radio picks up.

Anytime a spark jumps through the air, it produces radio waves. That is true for everything from a massive lightning bolt to the tiny sparks you get when your socks stick to the other clothes in the dryer.