

“LIGHTNING IN YOUR HAND”

This activity works best on a cool, dry day. If it is too hot and humid, it will not work well. Humidity is the enemy of static electricity!

EACH GROUP OF STUDENTS WILL NEED

- 3 Styrofoam plates (cut a 1” wide strip out of one plate to use as a handle)
- Clear cellophane tape (Scotch tape)
- Aluminum pie pan (8”–9” diameter)
- A small piece of wool or felt fabric

Place the aluminum pie pan right-side up and use tape to attach the 1” wide strip of Styrofoam to the center. This strip will work as a handle, allowing students to pick the pie pan up without touching it and releasing the charge of static electricity.

Procedure

Tape one Styrofoam plate in an upside-down position on a table or desktop. (Use two small pieces of clear tape at opposite edges of the plate.)

1. Rub the top of the Styrofoam plate with the piece of wool or felt fabric, or rub across the back of the Styrofoam plate using the sleeve of a sweater. The Styrofoam plate is now charged, because electrons from the fabric have traveled to the Styrofoam plate. Lift up the aluminum pie pan with its Styrofoam handle (tell students to make sure not to touch the pie pan itself) and set it on top of the taped Styrofoam plate.
 - What do you feel when you touch the aluminum pie pan?
2. Now lift up the aluminum pie pan by the handle and touch it with your other hand.
 - What happens?
 - What causes this to happen?
 - What happens if you set the aluminum pie pan back on the Styrofoam plate?

- Why do you think this happens?

3. Next, take the second Styrofoam plate and rub the bottom with the piece of wool or your sweater sleeve. Try setting this second plate on top of the upside-down, taped Styrofoam plate that has been charged by rubbing.

- What do you notice?
- What causes this to happen?

Sense-Making

Conduct a discussion about the similarities and differences between what students did in the “Lightning in Your Hand” activity and their experience with the *Monster Music* game. Use the following questions to guide the conversation.

- In this activity you created static electricity. How was the “lightning” able to jump from the Styrofoam plate to the aluminum plate?
- Why do you think that happened?
- In what ways have you experienced static electricity in your daily life?
- How is this similar to the kind of electrical energy people use to light a lamp or charge a computer?
- How is this different from the electrical energy people use to light a lamp or charge a computer?