Thunderstorms
Learning Activity 2

How Lightning Forms

Objective:

Explain how lightning forms in a thunderstorm.

Overview:

You will demonstrate how opposite charges attract in a thunderstorm.

Total Time:

10 minutes

Supplies:

Plastic spoons, small paper plates and pepper.

Procedure:

Place a small amount of pepper on the plate and place the spoon about one half inch from the plate. Observe what happens. Nothing should happen since a charge has not been built up on the spoon.

Next rub the bottom of the spoon on your shirt or pants. Now hold the spoon again about half an inch above the plate for five seconds. Turn the spoon over and you will notice that some of the pepper is now attached to the bottom side of the spoon. Clean the spoon off and try it again to see if you get the same results.

Discussion:

When the spoon was first held over the plate there was no charge built up on the spoon. Therefore there was not an opposite charge to cause an attraction. After the spoon was rubbed on a shirt or pant leg, a charge was built up that was opposite of that in the pepper. As a result, the pepper jumped off the plate onto the spoon.

This is essentially the same occurrence in a thunderstorm environment. When a positive charge intensifies along the earth's surface, there is an attraction to the negative charge in the base of the thunderstorm cloud. Since air is a poor conductor, the positive charge

travels up other objects such as towers, trees, etc. This is why it is dangerous to be outside during an electrical storm. If you were to hold the spoon far enough away from the plate, the pepper would not jump to the spoon because the air in between is a poor conductor for the current to travel though.