

Welcome to Family Science Night!

### **What Is Static Electricity?**

How many of you have shocked yourself when touching something? If it was dark, you may have seen a spark. This is static electricity. When your hair is sticking up or your clothing is sticking to you, static electricity is occurring.

**Questions** to ponder:

- ◇ How can you create static electricity?
- ◇ How strong is the static you create?
- ◇ Can you use static to stick materials to other things?
- ◇ How else can you use static electricity?

### **Investigate:**

Create static electricity.

**Remember that scientists do not taste any of the supplies.**

### **Materials:**

Balloon  
Unflavored Jell-o  
Flavored Jell-o  
Sugar  
Salt  
Paper Plate  
Piece of Wool  
Fruity Pebbles Cereal  
Plastic Ruler  
Paper Towel

1. Pour some unflavored Jell-o powder crystals onto a paper plate.
2. Inflate a balloon and tie it shut.
3. Rub the balloon with a piece of wool for at least 10 seconds. Now you have stuck electrons from the wool on the balloon.
4. Hold the charged area of the balloon (the part that you rubbed with the wool) an inch above the Jell-o powder crystals. Don't let the balloon touch the gelatin,
5. What happens to the Jell-o? Why is this happening?
6. Slowly raise the balloon. Now what happens?

Extend:

7. Pour some Fruity Pebbles onto a paper plate. Rub an inflated balloon with a piece of wool for at least 10 seconds. Hold the charged area of the balloon an inch above the Fruity Pebbles. What happens to the Fruity Pebbles? Why is this happening?
8. Pour some salt onto a paper plate. Rub an inflated balloon with a piece of wool for at least 10 seconds. Hold the charged area of the balloon an inch above the salt. What happens to the salt? Is this different from the unflavored gelatin and fruity pebbles?
9. Pour some sugar onto a paper plate. Hold the charged area of the balloon an inch above the sugar. What happens to the sugar? Is this different from the unflavored gelatin, fruity pebbles, and salt?

**Additional Investigations:**

10. Rub a balloon on your head. Does this create a charge? How can you tell?
11. Rub a plastic ruler with paper towel. Does this create a charge? How can you tell?
12. Drag your sneakers on the carpet. Does this create a charge? How can you tell?
13. What else do you think will create static electricity?

***Record your observations in the chart below.***

**Investigate:**

Rub a balloon with both wool and paper towel. Place the balloon about 1 inch from each item below. Observe what happens.

**Electric Jell-o**

| Test              | Prediction<br>What do you think will happen? |             | Observations<br>Describe what you see. |             |
|-------------------|--|-------------|--|-------------|
|                   | Wool   | Paper Towel | Wool                                   | Paper Towel |
| Unflavored Jell-o |  |             |  |             |
| Fruity Pebbles    |  |             |  |             |
| Salt              |  |             |  |             |
| Sugar             |  |             |  |             |
| Flavored Gelatin  |  |             |  |             |
| Hair              |  |             |  |             |

**More questions** to ponder:

- ◇ What happened when you tried to use flavored gelatin instead of unflavored gelatin?
  
- ◇ How was rubbing the balloon with a paper towel different than using the wool?

**When the balloon is rubbed with wool, the balloon is charged with static electricity. Static electricity is what makes your hair stick up when you take off your sweater, or it is what makes socks stick to other clothes when you take them out of the dryer. When the balloon is charged with static electricity, it attracts the gelatin particles. When the charged balloon is brought near the gelatin, the Jell-o becomes charged too. That is why the gelatin sticks together.**

**Everything is made of atoms! People, flowers, food, furniture, and paper are all made of atoms. Atoms are made up of smaller particles. One kind of particle is called an electron. Electrons have negative charges. Some materials pick up electrons really well, like a balloon. Other materials are really good at giving electrons away, like a piece of wool. When the wool rubs the balloon, electrons from the wool stick to the balloon. This is called static electricity. Now the balloon has a negative charge. Negative charges don't like to be near other negative charges. The balloon pushes away some of the electrons in the Jell-o and the gelatin becomes positively charge. Since the Jell-o and the electrons on the balloon now have opposite charges, the balloon attracts the Jell-o. The attraction is strong enough to lift the pieces of Jell-o up, against the force of gravity. When the Jell-o touches the balloon, electrons on the balloon move to the gelatin. Now the gelatin has a negative charge. Negative charges don't like to be near each other, and they repel each other. Jell-o particles jump down from the balloon. When the gelatin hits the plate, the extra electrons get away, and the cereal is no longer positively or negatively charged. To start again, rub the balloon with wool, which will stick more electrons on the balloon.**