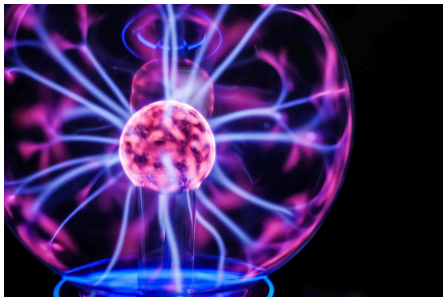
15-Minute STEAM: Static Electricity



Note that any static electricity demonstration will work the best on a low humidity day.
If these experiments don't work, try them on a drier day.

Experiment #1
Separate Salt & Pepper

Supplies:
Balloon
Salt & Pepper combined

Needed From Home:
Piece of scrap paper

1. Pour the salt & pepper mixture onto a piece of scrap paper. Ask your child if there is a way we could separate salt and pepper

2. blow up the balloon & rub it on your hair or a sweater or your hair for about 10 seconds

3. Hold the balloon up to the salt and pepper mixture. The balloon should be above the mixture, close but not touching.

4. As if by magic, you should see a few particles jumped from the paper up to the balloon.

Experiment #2
Pushing Balloons

Supplies:
2 Balloons
Yarn

Needed From Home:
Tape
Somewhere to hang a balloon

1. Blow up two balloons. Tie yarn to one of the balloons, and hang it from the ceiling so that it sits an your child's eye level.

2. Grab the hanging balloon, and rub it in your hair. We will call this "charging the balloon".

3. Then "charge" the other balloon by rubbing it in your hair.

4. Hold the balloon so that it's close to the hanging balloon. Don't let the balloons touch each other – just hold the second balloon close to the first one and see what effect they have on each other. (It should push the hanging balloon away)

5. Now "get rid of" the charges by touching the balloons and letting them touch each other. This allows electrons to move between objects and even out.

6.. Now try charging just ONE of the balloons.

7. What happens when you bring the balloons close? (The balloons should now attract each other)

The Science

Opposite charges attract, but like charges repel each other.

When the balloon is rubbed against your hair or a sweater, it becomes negatively charged. The salt and pepper are both positively charged, which means they will form a natural attraction to the static from the balloon. Both salt and pepper are attracted to the static balloon, but pepper is lighter. This makes it jump first and cling longer to the balloon.

Something similar is happening when you try experiment #2. When you rub both balloons against your hair, both balloons pick up electrons from your hair, and so they both have a negative charge, which will make them push each other away. When only one balloon is negatively charged (the one you rubbed on your hair), and the other is positively charged or not charged at all (neutral), they will attract.

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74 North Main St
Attleboro, Massachusetts 02703 | (508) 222-0157
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