## March 7 – Spraying Water

This week I thought that we could do a quick experiment that teaches us a little bit about air pressure again. Air pressure is so important that a lot of experiments teach us about it, and this is just another one that I have.

***Always remember to ask an adult before doing any Science experiment.**

**Materials:**

Water
Glass
Straw
White Paper
Food Coloring
Scissors
Newspaper

**Procedure:**

1. Use the scissors to carefully cut a slit across the straw about 1/3 of the way from one end, make sure you don't cut all the way through the straw.
2. Bend the straw at the slit to a 90 degree angle, and set the straw aside
3. Fill the glass with water and add some food coloring, the more food coloring you add the darker the color will be.
4. Put some newspaper down to protect the surface you are working on. Set the glass of water on the newspaper.
5. Have someone hold the white paper up in front of the glass.
6. Put the short end of the straw into the water, you want to keep the slit out of the water and above the edge of the glass.
7. Blow hard from the long end of the straw and watch what happens.

**Explanation:**

Water should have shot out of the straw and hit the paper, making a design on it. As you blew through the straw air flows over the opening of the short straw reducing the pressure right there, the pressure underneath pushes the water up into the straw and the air flowing over the straw pushes it out in little droplets. This works similarly to spray cans and atomizers.
If you use a couple of different glasses of different color water you can make a picture on your paper.

Have a great week

Erin Greggains
Regional Executive Director
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## March 14 - Swirls

This is another one of my favourite experiments to do, especially when I am going out and doing activities with kids. In honour St. Patrick's Day on Tuesday, and a nod to my Irish heritage, I thought that we could do this experiment with green food coloring.

***Always remember to ask an adult before doing any Science experiment.**

### Materials

Milk (the higher fat content the better)
Plate of some sorts
Green Food Coloring
Liquid dish soap
Cotton swab

### Procedure

1. Pour some milk into the plate, enough to cover the bottom, and let the milk settle.
2. Add four drops of food coloring to the milk, close to the middle of the plate.
3. Take the cotton swab and touch the tip of it into the middle of the milk. Make sure that you just touch the milk, be careful not to stir the milk. What happens?
4. Place a drop of the liquid dish soap on the cotton swab. Now touch this end of the cotton swab to the center of the milk, if nothing happens right away hold it there for a few seconds. What happened this time?
5. Now add another drop of dish soap to the cotton swab and try touching the milk with it again, try placing the cotton swab in different spots on the plate.
6. You can also try carefully dropping a drop of dish soap directly into the middle of the plate and watching what happens.

### Explanation

What is going on here, what is causing the color to swirl around like this? Well let me explain it too you. Milk is made up of many things, including fat and protein, which is what this experiment uses. The fat and the protein in the milk are very sensitive to changes in the milk surrounding them, and when you add the soap to the milk, you are changing the milk. This change causes the chemical bonds that are holding the fat and protein in place to be altered, letting the fat and protein move around in all directions. The quick movement of the fat and protein bump the food coloring molecules shoving them all around the plate, letting us see the invisible activity that is going on in the milk. This is why a higher percentage of fat in your milk is better for this experiment, the more fat, the more molecules there are to move around, giving us a much better result to see.

Have a great week!

Erin Greggains
Regional Executive Director
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## March 21 – Pencil Through It

This week we are going to have doing something we are probably told not to usually, stick pencils into cups and bags full of water, but it is all in the name of science, and you will learn something from it.

***Always remember to ask an adult before doing any Science experiment.**

**Materials:**

Paper cup
Plastic zip baggie
Water
Pencil

**Procedure:**

1. Fill your cup with water about ¾ of the way.
2. Holding the cup over a sink or bowl, carefully push the pencil through one side of the cup, and out the other side, leaving the pencil sticking out from both sides of the cup about halfway down the cup.
3. Leave the pencil in the cup for a couple of minutes and watch to see if any water leaks out of the cup.
4. Carefully remove the pencil and dump out any remaining water.
5. Examine the hole made by the pencil in the side of the cup, how big is it? What shape is it?
6. Fill the zip baggie about ¾ the way with water, and seal the baggie
7. Hold the bag over the sink or bowl and carefully push the sharp end of the pencil through the bag, the same way you did the cup.
8. Leave the pencil in place for a couple of minutes and wait to see if any water leaks out.
9. Now pull the pencil out and examine the hole left in the bag, what size and shape is it?

**Explanation:**

You should have noticed a couple of differences between the cup and the bag experiments. When you pushed the pencil into the cup water should have leaked out from around the pencil, but when you push the pencil into the bag, no water should have leaked out. Also the cup should have had a hole in the sides about the same shape and size of the pencil when you pulled it out, the bag however should have had a hole in it that was slightly smaller around than the pencil and somewhat stretched out at the edges. What is causing these differences? It has to do with the chemical make up of the cup and the bag, both are made up of things called monomers, but they are arranged in different ways. The cup has monomers that are arranged in straight chains, so when you push the pencil into the cup you break the monomer chains making a hole them, and leaving a space between the pencil and the cup for the water to leak out of. The bag on the other hand has monomers that are all wound together like a ball of yearn and there is no specific order to them, when you stick the pencil into the bag the monomers move out of the way to make room

for the pencil but they don't break, so the bag forms a seal around the pencil and doesn't let any water escape out.

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## March 28 – Book Stacks

I have an experiment this week that looks really neat when you do it properly and teaches us about the center of gravity of an object. If you saw someone else do this experiment and didn't know the science behind it you might think that it was an illusion, or that they had done something to the books or the table, but there are no tricks to it just science, try it out and see what I mean.

**Materials:**

Table
5 or 6 thin books

**Procedure:**

1. Stack the books in a neat pile on the table close to the edge.
2. Carefully slide the top book until it is about halfway off the book underneath it, make sure the book balances then slide it back just a little.
3. Slide the next book in the stack out until the books balance and then slide it back a little.
4. Continue this with each book in the stack until all the books are staggered out over the table.
5. Examine the structure you have built.

**Explanation:**

Your books should be hanging over the edge of the table, looking as if they are floating in mid air, but they don't fall over, why is this? The books stay up because you have found their center of gravity, which is the point that all the weight of the book seems to be concentrated. You found the center of gravity when you slide the book out until the balanced on the stack. With the stack it looks like the top book is suspended but more than half of its weight is still on the table, because you slid it back just a fraction from its center of gravity.

Have a great week

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