November 1 - Snowflakes

After seeing snow last weekend, it reminded me of an experiment that creates your own snowflakes inside, with a few simple steps. I am hoping that these are the only snowflakes that we will see for a while yet.

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

Materials:

Bowl
Cole water
Blue food coloring
Candle
Matches
Spoon

Procedure:

1. Fill the bowl with the cold water and add about 5 drop of blue food coloring, stir well to mix the color into the water.
2. get an adult to help you light the candle and let it burn for a few minutes
3. Carefully hold the candle up about 50 cm above the bowl and let the liquid wax drip into the water below.
4. Watch your snowflakes form

Explanation:

As the wax drips and hits the cold water it spreads out solidifies almost instantly, appearing like snowflakes.

Each week I write up these experiments for the Praxis Science Smarts column and I wonder if people even know what Praxis is or what we do. So I thought that I would take a few minutes this week to explain it to everyone. Praxis is a non-profit organization here in Medicine Hat, our vision is to provide positive science experiences to the residents of south-eastern Alberta, especially youth, through the provision of access to science and technology resources. A lot of the work that we do is with teachers in Medicine Hat and surrounding area, but we also attend festivals, such as spectrum and Canada Day to provide hands on activities for people. To learn more about Praxis please check out our website at www.praxismh.ca. We are also always looking for new volunteers to go into classrooms as guest speakers or to sit on our board of directors, if this interests you please call us 403-527-5365.

Erin Greggains
Associate Executive Director
Praxis the Science and Technology Hotline

November 8 – Acidic Pop

This week I thought that we could take a look at a drink that as much as we all love to drink, most of us, myself included, should probably drink a lot less than we do, POP. We all know about the sugar that is in pop, and that it isn't good for us, but did you also know that pop has acid in it, and this acid is strong enough to eat metal. Try out this experiment to see what I am talking about.

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

Materials:

Can of pop
Scissors
Nail or file
2 containers with lids
Tweezers or tongs

Procedure:

1. Label your two containers, one control and one test sample
2. Pour the pop into the two containers, you want an equal amount in each container
3. Carefully cut the pop can into 8 equal sized pieces, you will probably want an adult to help you with this, and watch out for sharp edges of metal
4. Take four pieces of the metal and use the nail or file to deeply scratch the inside part and few times on each piece.
5. Put the four unscratched pieces in your control container and put the lid on
6. Put the four scratched pieces in your test sample container and put the lid on
7. Leave your containers for a day and then using the tweezers pull out the metal pieces and compare them. Once you have looked at them and noted any differences put them back in their container.
8. Check your metal pieces every day of about a week to see what happens to them.
9. Make sure you put the pieces back into the same container they came from each time.

Explanation:

The metal of the pop can is treated with a chemical to coat it which protects it from the acid in the pop so that it doesn't get eaten away. When you scratched the inside of the metal you removed the protective coating which let the acid eat away at the metal. You can see the evidence of this when you compare the pieces from the two different containers. The pieces that have been scratched have evidence of acid erosion on them where as the unscratched ones won't have acid erosion on them. If the cans didn't have the coating on them, then the acid in the pop could eat through the metal of the can and then the pop would spill out of the can.

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November 15 – Magic Mudd

Last weekend I was at my parents helping my mom grind up potatoes for supper and it reminded me of when I was a kid helping my mom and then playing with the starch that was collected from the potatoes and I thought that I would use it for the jumping off point for my experiment. I am sure many people have seen this before, but I don't think Magic Mudd as I call it ever gets old. You might get a bit messy with this experiment so be careful.

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

Materials:

1 box Cornstarch
Water
Bowl
Food coloring

Procedure:

1. Pour the box of corn starch into the bowl and play with it for a few minutes, see how it feels in your hands
2. Add some water, about a quarter of a cup and see how it mixes with the cornstarch. Mix it together.
3. Gradually add more water and see how the mixture changes. You want to add enough water to mix all the cornstarch into the mixture. In total you should add about a cup and a half of water. Be careful not to add too much water.
4. Stir in some food coloring.
5. Play around with your mixture, run your hands through it quickly, and slowly, and see what the difference is.
6. You can store your mixture in a container in the fridge for a week or so and play with it, then when you are all done playing with your Magic Mudd, put it in the garbage, don't wash it down the sink as it can clog the drains.

Explanation:

Cornstarch and water form a very interesting mixture, when you move your hands through it slowly, it seems to act like a liquid and you can move your hands quite easily, this is because when the cornstarch molecules are evenly spaced out they can slide past each other easily, like liquids do. When you try and move your hands through the mixture fast, you cause pressure in the mixture which pushes the cornstarch molecules together in a different and they act like a solid, so you mixture is hard and seems to be a solid. If you stop moving your hand quickly you remove the pressure on the mixture and it will go back to acting like a liquid.

Have fun this week deciding if it is a liquid or a solid.

Erin Greggains
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November 22 – Dropping Egg

I remember a while ago looking at Newton's second law of motion in one of my experiments and this week I have an experiment that looks at Newton's first law of motion, which basically says that an object that is not moving doesn't want to move. To see just what I am taking about try this experiment, you can even show it off to your friends and family.

Materials:

Egg (I would recommend using a hard boiled one so that you don't make a huge mess) or you could use a ball instead too.
Cardboard tube (a toilet paper or paper towel roll is perfect)
Foil pie plate
Glass
Water
Paper towel to clean up with

Procedure:

1. Fill you glass about three quarters full of water and place it on a table.
2. Put your pie plate on top of the glass, make sure it is centered on the glass.
3. In the middle of the pie plate stand up the cardboard tube
4. Rest your egg on the cardboard tube.
5. Now you need to hit the pie plate and send it flying out from under the egg. You need to make sure you hit the pie plate horizontally, and follow through with your hand. You will likely need to go chasing after your plate and tube if you hit them hard enough.
6. Watch what happens to the egg, it should fall right into the glass of water.
7. Practise makes perfect.

Explanation:

This experiment works because of Newton's First Law of Motion, the egg isn't moving and doesn't want to move. When you hit the pie plate, you applied enough force to move it out from under the cardboard tube, which is then moved by the lip of the pie plate catching it and pulling it out from under the egg. The egg no longer has any support under it, and for a fraction of a second it doesn't move, to see this you would need to video tape the experiment and watch it in slow motion, after the fraction of a second the egg falls into the water because gravity pulls it down. The water in the glass stops the egg and provides a safe cushion for it to fall into, and some of the water gets displaced by the egg, that is why you likely get a little bit of a splash as the egg hits the water.
What would happen if you used a longer tube, or a heavier item in place of the egg? Try it out.

Erin Greggains
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Praxis the Science and Technology Hotline

November 29 - Eruption

This is one of my favourite experiments, and it seems to be a huge success with the kids. I was recently out to a couple of guiding groups and the girls loved this experiment, as have all the kids that I have shown it too, so I thought that I would put it in the paper again (it was in last year) and remind people of how to make a fun foaming eruption in your own kitchen, that is safe for kids to play with.

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

Materials

500 ml Bottle
Half a cup 3% Hydrogen peroxide
Squirt of dish detergent
3 – 4 drops Food coloring
1 teaspoon yeast dissolved in 2 tablespoons warm water
Funnel
Ice cream pail or foil pan
Cup

Procedure

1. Place the bottle into the ice cream pail or foil pan, and put the funnel in the mouth of the bottle
2. Put the yeast into the bottle and add the warm water.
3. Add the dish soap to the yeast and water mixture.
4. Measure out your hydrogen peroxide into a cup and add some food coloring to it.
5. Swirl your cup of hydrogen peroxide to mix the food coloring into it.
6. Pour the hydrogen peroxide into the bottle and quickly remove the funnel
7. Watch what happens. Feel the sides of the bottle – what is happening?

It is safe to play with the erupting foam as it is only soap and water with oxygen bubbles in it.

Explanation

Hydrogen peroxide is water with an extra oxygen molecule on it; the addition of the yeast which works as a catalyst makes the peroxide release its extra oxygen molecule faster, turning the peroxide into water. The bottle should feel warm as you are producing a chemical reaction and the heat is proof of this.

Have fun!

Erin Greggains
Associate Executive Director