March 1, 2008

I have an experiment this week that will teach us about a process that is essential for life. Most if not all living things use osmosis at some point, but what is osmosis and how does it work? To find out try this quick experiment with potatoes to find out.

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

Materials:

1 or 2 potatoes
2 bowls
Salt
Water

Procedure:

1. Cut the potatoes into slices lengthwise (you want to flat sides on the potatoes that have no skin on them). You will probably want to have a parent do this for you or help you out.
2. Fill the bowls with water, into one bowl stir in two tablespoons of salt and label the bowls
3. Place the potato slices into that bowls, put equal amounts into each of the bowls
4. leave the potatoes soak for about a half hour then come back and check them
5. Pick up a potato slice from each bowl and compare them. What do you notice?

Explanation:

You should have noticed a big difference in the potatoes, the one that was in the salt water should now be a big mushy mess. So what is going on here? Well we are observing osmosis. Osmosis is the diffusion (movement) of water from a place of low concentration to a place of high concentration. In our example we are concerned with the salt concentration. We made an area of high salt concentration when we made the salt water, so the water that is in the potato flows out of the potato (which has a low salt concentration) into the salt water where there is an area of higher salt concentration, thus why you get left with the mushy mess instead of a normal potato slice, like in the plain water bowl. Osmosis is important to many living things, plants and animals depend on osmosis to do many things for life. Osmosis is also the reason why you can't put salt-water fish in freshwater and freshwater fish in salt-water; they can't live in another water concentration. So having an understanding of osmosis is good.

If you are looking for something to do today, the 33rd Annual Kiwanis Regional Science Fair is being held today at the Medicine Hat College. Come and look at the over 125 projects from over 200 students in Medicine Hat and surrounding area. Projects will be set up from 9a.m. until 2p.m.

March 8, 2008

Would you eat a blue banana? How about green eggs? This week we are going to look at the connection between color and taste. Can the colour of a food really affect how it tastes? Well let's try out this experiment and see if we can trick our taste buds.

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

Materials:

Different flavour water drinks, they can be the fizzy ones
(If you don't have the flavoured water, you can make your own by adding flavour extracts used for baking to soda water)
*Just make sure whatever you are using for your drinks they are clear
Food Coloring
Clear drinking glasses

Procedure:

1. Pour a small sample of each drink into a cup
2. Put a drop or two of food coloring into each cup to color the drink, make sure that the color doesn't match the flavour – for example make a lemonade flavoured drink blue or purple
3. Taste each of the drinks, does the color of the drink change its taste at all?
4. Get your family and friends to try the drinks and see what they notice about the taste and color combination.

Explanation:

What is going on here? Did you notice that the water didn't taste the same when it was a color that was different than you expected? You should have been surprised at how the water tasted based on the color that you made it. You wouldn't expect a pink drink to taste like coffee. The color of a food plays an important role in how the food tastes.
Food companies have noticed this and that is why a lot of the foods we like have color additives in them, so that they will always be the same color. One example of this is peanut butter, peanuts from different areas or different seasons have different colors, but we all have an idea of what color peanut butter should be, so the manufacturers put in coloring so that the peanut butter will always be the same color.

March 15, 2008

Most days when I come to work I bring my lunch with me and a lot of times it needs to be heated up in the microwave, which got me thinking about how the microwave works to heat up my food, and why some foods heat up better in the microwave than others. Have any of you ever heated something up in the microwave and wondered the same thing as me? I have an

experiment this week that will hopefully try and explain things to you and show why some foods just don't heat up in the microwave.

***Always remember to ask an adult before doing any Science experiment.**
*** This experiment deals with possibly hot liquids you need to be very careful with them***

Materials:

Three microwave safe containers
Water
Cooking Oil
Microwave

Procedure:

1. Fill one of your containers about half way with water, and one with the cooking oil leave the third one empty
2. Feel the temperature of the oil and water with your finger tip.
3. Place all three containers in the microwave and turn it on for about 15 - 20 seconds
4. Carefully take the containers out of the microwave; you may want to have an adult do this for you.
5. Feel the containers on the outside at the level of the liquid, the one with the water should feel warm.
6. Carefully feel the liquids with your finger tip. The water should feel warm or even hot and the oil should still feel the same temperature.
7. Touch the empty container it should feel the same temperature as it did before you put it in the microwave

Explanation:

Why did the water heat up while the oil didn't? It has to do with the nature of the liquid and the way that your microwave works. Microwaves work by emitting microwave radiation from their magnetron. This radiation (which does not make your food radioactive) causes the water molecules to vibrate. The water molecules vibrate because they are polar molecules, meaning they have a positively charged end and a negatively charged end. The microwaves cause the water molecules to vibrate back and forth, as the microwave passes them, the vibrations cause them to heat up, which then heats food that has water in it. Oil doesn't heat up because oil doesn't have polar molecules in it, so the microwaves don't have any effect on the molecules in the oil, so they don't vibrate and heat up. And the empty container had nothing in it to vibrate and heat up, so that is why it stayed cool too.
All this explains why dry food doesn't heat up in a microwave and why wet food (or food with water in it does). And microwaves don't harm your food or make it bad for you to eat; the radiation that your microwave emits is safe.

March 22, 2008

With all the talk that has been going on in my office about the Science Fair I was reminded of my very first science fair project that I did back in grade 3. We wanted to see what happened when you put an egg in vinegar, I thought that with Easter being this weekend there would be a lot of eggs around, so why not use that project of mine as an experiment in this column. So here it is, bouncing eggs.

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

Materials

Eggs
Vinegar
Jar (One for each egg that you want to use)
Paper towel (to clean up with)
A flat surface

Procedure

1. Get an egg and check it for cracks, if there are any cracks you will want to get a new egg as this one won't work
2. Place the clean egg into the jar, and cover with vinegar, you may want to cover it (so that the vinegar smell doesn't get too strong)
3. Sit on a counter and watch what is happening
4. Leave sitting for 3 days on a flat surface. Daily you will need to check the egg to make sure that there is enough vinegar on it still to keep it completely covered in.
5. After 3 days check the egg. Carefully take it out of the vinegar and wash it off in cold water and gently rub the shell off.
6. If the shell isn't completely removed return the egg to the vinegar and wait one more day. And repeat step 5. You may need to wait a few more days.
7. Once the shell is all washed off you have your very own home made bouncing egg. You can now carefully drop the egg from a small height of no more than 10 cm and see what happens. It works best if you drop the egg form a low height and then gradually work up to higher heights. But be careful if the egg breaks you will have a mess to clean up and it doesn't smell the greatest either.
8. Wash up after you play with your egg, or after it breaks

Explanation

What is happening here? Vinegar contains acetic acid, the acetic acid in the vinegar reacts with the shell of the egg which is made of calcium carbonate. We can see this when we first put the egg into the vinegar by the bubbles that formed, these bubbles were carbon dioxide being released from the chemical reaction. This reaction erodes the shell leaving us with just the thick membrane surrounding the egg left to protect it. This membrane allows us to bounce the egg without breaking it.