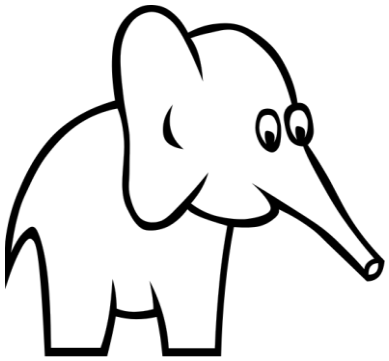

Dynamic Education ADVENTURES The Science Lady

Family Science Time

Dumbo's Elephant Toothpaste

What you'll need:
An empty bottle, a pan or tray, 2 tablespoons warm water, 1 teaspoon yeast, ½ cup 6% hydrogen peroxide (20 Volume Clear Developer from Sally Beauty Supply) *, 4-5 drops food coloring and a squirt of dish soap
*If necessary, you can also use 3% hydrogen peroxide in brown bottle

What to do:
Put your bottle on a pan or tray. Add hydrogen peroxide, food coloring and soap to bottle. In a separate container mix yeast and water and swirl together for about a minute. Once blended, pour yeast mixture into your bottle.

What's going on?
This experiment is a great way to demonstrate a chemical reaction. Hydrogen peroxide naturally breaks down into water and oxygen. It is stored in darker containers to help slow down this process. Catalase (an enzyme in all living things, including yeast) speeds up the reaction. Dish soap catches the oxygen and makes bigger bubbles and the food coloring just makes it look cooler. The foam and bottle feel warm because the reaction is releases heat as energy (exothermic). This reaction is also a chemical change.

Milk Color Party

What you'll need:
Whole milk, small bowl or container, food coloring, Q-tip and liquid dish detergent

What you do:
Pour enough milk in the container to completely cover the bottom and allow it to settle. Add one drop of each of the four colors of food coloring to the milk. Keep the drops close together in the center of the plate of milk. Place the soapy end of the cotton swab back in the middle of the milk and hold it there for 10-15 seconds. Add another drop of soap to the tip of the cotton swab and try it again. Experiment with placing the cotton swab at different places in the milk.

What is going on?
Milk is mostly water but it contains vitamins, minerals, proteins, and tiny droplets of fat suspended in solution. Fats and proteins are sensitive to changes in the surrounding solution (the milk). When you add soap, the weak chemical bonds that hold the proteins in the solution are altered. The molecules of protein and fat bend, roll, twist, and contort in all directions. There's another reason the colors explode the way they do. Since milk is mostly water, it has surface tension like water. The drops of food coloring floating on the surface tend to stay put. Liquid soap wrecks the surface tension by breaking the cohesive bonds between water molecules and allowing the colors to zing throughout the milk.