Elephant Toothpaste

Grades 6-8

Ingredients:

- Dry Yeast – 1 packet
- Warm Water - 3 tablespoons
- Hydrogen Peroxide – 1 cup
- Dawn Blue dish soap – 1 big squirt
- Food Color – A few drops
- A container for the reaction (a small glass soda bottle would work!)
- Safety Glasses
- Gloves
- A tub to catch the foam

Video Link:

https://youtu.be/9w93rdcCOCQ

Directions:

1. Put on your safety glasses and gloves!
2. Get all your materials set up in front of you.
3. Add 1 cup Hydrogen peroxide to the bottom of your container.
4. Add one BIG squirt of dish soap into the container.
5. Swirl it around so it is mixed well!
6. Add a few drops of your favorite food coloring color.
7. Mix 1 packet of yeast into 3 tablespoons of warm water and stir until it is dissolved.
8. Quickly pour the yeast solution into the peroxide and stand back!
9. Observe the experiment for evidence of chemical reactions!

Scientific Background:

You all know Hydrogen Peroxide is used to clean up cuts and scrapes! But did you know it is a liquid made from hydrogen atoms and oxygen atoms (its chemical formula is H_2O_2). You usually find it in a 3 percent concentration (there are higher concentrations, but they are harder to find and can be dangerous). When hydrogen peroxide breaks down, it turns into oxygen (O_2) and water (H_2O). This happens naturally but you can add a catalyst (a material that makes reactions happen faster) to speed up the reaction! Catalase is a catalyst that is found in yeast makes hydrogen peroxide break down faster.

This means that if you mix yeast with hydrogen peroxide, the hydrogen peroxide quickly breaks down into water and oxygen which forms bubbles from the soap. As the bubbles are forming you

will also notice that the reaction is heating up! This is because it is an exothermic reaction (a chemical reaction that releases heat). The bottle will feel warm, and if you pay close attention you may see steam coming off the top of the foam!

The elephant toothpaste is an example of a chemical reaction. A chemical reaction is when two substances combine with one another and form something new with new characteristics! Think about rush forming from metal exposed to water, a log burning and turning into ash, or a cake being baked in the oven! Examples of chemical reactions are all around us. How can you tell what is a chemical reaction and what is something just changing the way it looks? The best way is to look for a new substance that is nothing like the original substance because it has completely different properties! Chemical reactions are also often either exothermic (release heat and feel warm) or endothermic (absorb heat, and feel cold).

Look at our elephant toothpaste experiment, what is some evidence of a chemical reaction that you see?