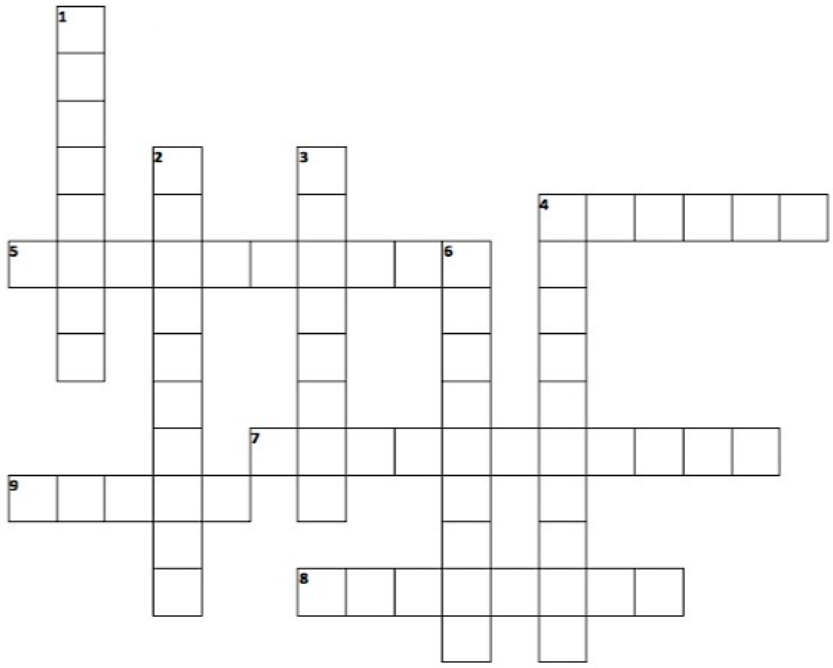
Name: _____ "No Place Like Foam" Activity Worksheet

Utah SEEd Standard 5.2.3 – Properties & Changes of Matter: Plan and Carryout Investigations

Introduction



Across

4. An _ _ _ _ _ _ is a catalyst found inside living things, like your body.
5. A _ _ _ _ _ _ _ _ _ _ is a guess for what will happen in a reaction.
7. An _ _ _ _ _ _ _ _ _ _ _ reaction is a type of reaction that makes things cold.
8. When two or more substances change or become a different substance, we call it a _ _ _ _ _ _ _ _.
9. _ _ _ _ _ is the catalyst in our experiment.

Down

1. A _ _ _ _ _ _ _ _ _ helps speed up a reaction and starts with three letters that meow.
2. _ _ _ _ _ _ _ _ _ _ _ is a sometimes-minty substance that can clean teeth, when you actually brush them!
3. _ _ _ _ _ _ _ _ _ _s are large animals with big ears and big teeth. They need a lot of toothpaste!
4. An _ _ _ _ _ _ _ _ _ _ reaction is a type of reaction that makes things warm and sometimes hot.
6. A new _ _ _ _ _ _ _ _ _ is a specific kind of matter that is different from others.

Word Bank

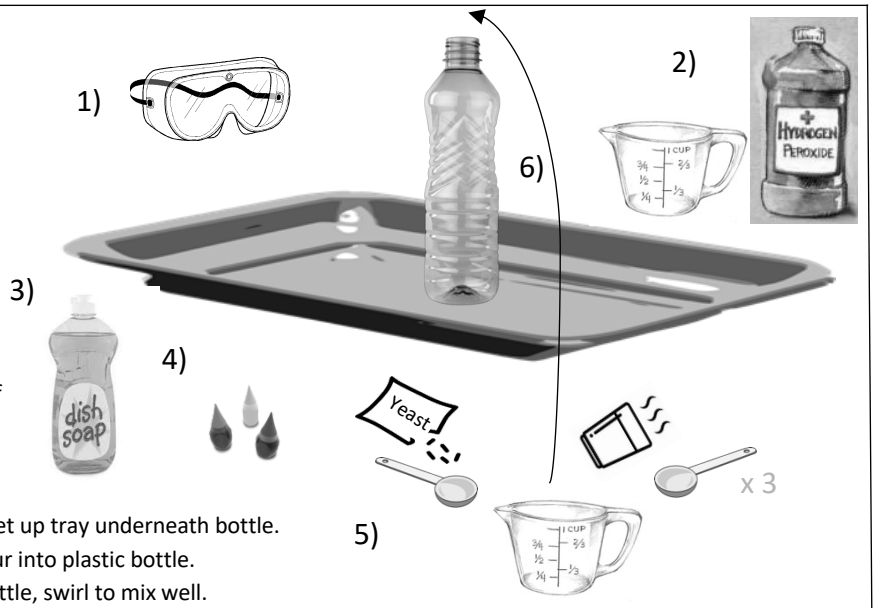
Substance Enzyme Reaction Endothermic Exothermic Catalyst Elephant Hypothesis Toothpaste Yeast

The human body is full of tiny microscopic machines called enzymes. An ***enzyme*** is like a little tiny ball of protein that takes something and turns it into something different. This process is called a ***reaction.*** Today we are going to see what enzymes can do with an experiment outside of our bodies. We will be making a ***substance*** called ***elephant toothpaste*** and we will speed up the reaction using a yeast ***catalyst***!

Plan & Carry Out

Materials Needed

- Safety glasses
- Plastic bottle (16 oz)
- 1 Tbsp Dry yeast (found in baking section of grocery store)
- 3 Tbsp Warm water
- Liquid dish soap
- ½ cup 3% (or 12%) hydrogen peroxide
- 1 cup measure
- 1 Tbsp measure
- Large tub or tray to catch the foam
- Location for activity that can tolerate spills of hydrogen peroxide and/or food coloring
- Liquid food coloring (optional)



Steps

1. Wash your hands. Put on safety glasses and set up tray underneath bottle.
2. Measure ½ cup of hydrogen peroxide and pour into plastic bottle.
3. Add a good squeeze of dish soap to plastic bottle, swirl to mix well.
4. If you want foam a single color, add a drop or two of food coloring directly to hydrogen peroxide soap mix and stir gently. If you want striped foam like some toothpastes, add the drops to the inside rim of the bottle's mouth and let drip down the sides; do not mix.
5. In a measuring cup, mix 1 tablespoon of yeast and 3 tablespoons of warm water. Stir for about 30 seconds until the yeast is dissolved.
6. Feel the temperature of the bottle before and after this step and record your findings. Pour the yeast mixture into the plastic bottle, and watch the reaction go. Here we turn Hydrogen Peroxide into Oxygen and Water using yeast as a catalyst.

Collect Data

Was the reaction exothermic? ☐ Yes ☐ No

Hint: Did you feel the temperature of the bottle before you added the yeast mixture and then after the reaction finished? Was it warmer after the reaction finished? What does exothermic mean?

Draw what you observed happen during the reaction:

Analyze Data

What was the catalyst in this reaction? _____

How would the reaction be different without the yeast? _____

_____

Why did we add the dish soap?

_____

What would have happened if we did not add the dish soap?

_____

_____

Products are what is formed **at the end** of a reaction. What were the products of this reaction? (circle two) Oxygen Hydrogen Peroxide soap water yeast

Explain

Fill in the blanks and/or circle the correct words to complete this statement, using the information above.

This reaction used **Y**_____ as a catalyst to break Hydrogen Peroxide (H_2O_2) apart into two products: **w**_____ (H_2O) and **O**_____ (O_2). We added dish soap to make bubbles that would trap the **O**_____ (O_2) gas when it was released. At the end, this reaction was **warm/cold** (circle one) in temperature, which makes it an **exo- / endo-** thermic reaction.