

Learning Target: I can carry out an investigation to determine if a chemical change occurred based on observable evidence (color change, gas, temperature change, odor, new substance produced).

### Chemical Reactions – Elephant Toothpaste Lab

Directions Part 1: Use the word bank to fill in the reading on chemical changes.

odor	changes	irreversible	substance	reverse	heat
color	reaction	chemical	reversible	bubbles	

A **chemical change** occurs whenever matter \_\_\_\_\_ into an entirely different \_\_\_\_\_ with different \_\_\_\_\_ properties. A chemical change is also called a chemical \_\_\_\_\_. Notice that when fireworks go off, you cannot \_\_\_\_\_ the changes back into a firework. It is now changed into completely different substances that are \_\_\_\_\_. So what are some signs of chemical changes? Most chemical changes are not as dramatic as exploding fireworks, so how can you tell whether a chemical change has occurred? There are usually clues. You need to know what to look for. A chemical change has probably occurred if \_\_\_\_\_ are released, a change of \_\_\_\_\_ or an \_\_\_\_\_ is produced. Other clues include the release of \_\_\_\_\_ or light.

### Elephant Toothpaste Lab

#### Materials:

- Plastic bottle
- Dry yeast
- Warm water
- Dish soap
- Food coloring
- 3% hydrogen peroxide
- Measuring cups and spoons
- Safety glasses
- Tray, pan, or plastic plate

#### Instructions:

1. Measure and pour  $\frac{1}{2}$  cup of hydrogen peroxide into the bottle.
2. Add a squirt of dish soap and shake in a circular motion.
3. Mix 1 tablespoon of yeast with 3 tablespoons of warm water and stir for 30 seconds in a cup.
4. Add 3 drops of food coloring to the bottle on both sides.
5. Pour the yeast mixture into the bottle. Step back and watch it go!
6. Congratulations! You just made elephant toothpaste.

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**Post-lab Questions: Use the following words to fill in questions 1 through 3. Not all words will be used**

Oxygen	Water	Liquid	Warm	Releases
Cold	Endothermic	Exothermic	Takes in	

1. How does it work? Yeast removes \_\_\_\_\_ from the hydrogen peroxide and gets trapped in the dish washing \_\_\_\_\_.
2. This made your bottle feel warm or cold? \_\_\_\_\_
3. That means that this is an (endothermic or exothermic) \_\_\_\_\_ reaction because it (takes in or releases) \_\_\_\_\_ heat.
4. Is this experiment a chemical or physical reaction? \_\_\_\_\_  
Provide evidence to support your claim. \_\_\_\_\_  
\_\_\_\_\_
5. How can you determine if a physical change has occurred? \_\_\_\_\_  
\_\_\_\_\_
6. How can you determine if a chemical change has occurred? \_\_\_\_\_  
\_\_\_\_\_

7. Fill out the following T-chart by listing the properties of chemical and physical changes.

Chemical Change	Physical Change