



California State University of Bakersfield, Department of Chemistry



# Elephant Toothpaste

## Introduction

Hey kids! Today you get to make a cool explosion happen that looks like toothpaste an elephant would use. For this simple reaction, we will mix hydrogen peroxide and liquid soap. Then, we will add a catalyst to the mixture. This will help speed up the reaction by making hydrogen peroxide turn into oxygen and water. The water will then mix with the soap and makes foam, while the oxygen builds up pressure and pushes it out of the container. You will see foam shooting out like fireworks in a color of your choice!

## Materials

- 50 mL of 13% hydrogen peroxide (1/4 cup)
- Half a pack of yeast
- 10 mL of water (2 teaspoons)
- 1 tsp Liquid soap
- Food coloring
- 125 mL Erlenmeyer flask (or other small container with a narrow neck)
- Safety glasses
- Rubber gloves for clean-up

## Safety

- Always wear your safety glasses while doing this experiment.
- Don't look straight down into the graduated cylinder while the reaction is occurring.
- Don't move the graduated cylinder while the reaction is occurring.
- Be careful the reaction is exothermic.

## Procedure

1. Mix ½ pack of yeast in 10 mL of water and add it to the 125mL flask.
2. Add 1 tsp of concentrated dish soap to the flask along with 2 drops of food coloring of your choice and mix the contents well.
3. Measure 50mL of the hydrogen peroxide to a 50 mL beaker.
4. Add the hydrogen peroxide to the 125 mL flask very quickly and stand back to watch the reaction.

## Data and Observations

Record your observations and measurements here.

## Questions

Why is yeast added to the reagents?

Where does all the oxygen come from?

Real scientists change variables to see how they affect the experimental outcome. What do you think happens if you add a less concentrated solution of hydrogen peroxide? More concentrated?

## References

<http://www.stevespanglerscience.com/experiment/hydrogen-peroxide-eruption>

<http://www.using-hydrogen-peroxide.com/elephant-toothpaste.html>

