



California State University of Bakersfield, Department of Chemistry

## Exploding toothpaste



### Standards:

MS-PS1-2. Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.

### Introduction:

*Mix two solutions together and you get an amazing eruption of foam that looks like a giant stream of toothpaste exploding from the cylinder. Some people refer to this foam as elephant's toothpaste. This demonstration is guaranteed to produce a room full of ooohs and ahhs the moment the foam begins to erupt from the bottle.*

### Materials:

- Hydrogen peroxide (30%)
- Sodium iodide crystals
- 250-milliliter beaker
- Liquid dish soap

- Food coloring
- 1,000-milliliter graduated cylinder
- Measuring spoons
- Safety glasses
- Rubber gloves
- Sink to place the 1,000 milliliter graduated cylinder
- Or tarp

**Safety:**

- Always have an adult with you to help you during your experiment.
- Always wear eye protection and gloves when doing chemistry experiments
- Rubbing alcohol is flammable, so it must be kept away from any open flames or heat.
- Conduct this experiment in a well-ventilated area.

**Procedure:**

1. Fill the beaker with 4 ounces (approximately 120 mL) of room temperature water. Add about a tbs. of sodium iodide crystals to the water and stir with a spoon until all of the crystals no longer dissolve in the water. When this happens, you have what is called a saturated solution. Label the beaker “sodium iodide catalyst” and set it aside to use later.
2. Place the 1,000-milliliter graduated cylinder in a large sink or over a tarp to make clean up easier.
3. Measure 2 ounces (60 mL) of the 30% hydrogen peroxide into the graduated cylinder. Position the graduated cylinder in the middle of the plastic tarp or sink.
4. Add 5 mL of dish soap to the graduated cylinder containing the 30% hydrogen peroxide.
5. Add as many drops of food coloring as you please to the graduated cylinder.
6. The last step is to pour a tablespoon (5 mL) of the sodium iodide catalyst into the graduated cylinder and to quickly step back. Within seconds, the reaction will occur and a mountain of erupting foam will cover the table.

**Data and Observations:**

Write what you observed in this space.

**Questions:**

Did your experiment work?

How can you improve the experiment?

**References:**

1. Exploding Toothpaste. pp 139-145.