

**University of Utah  
Chemistry  
Demonstration:**

**Elephant's Toothpaste**

Reagents

For 2 L graduated cylinder:

50 mL 30% H<sub>2</sub>O<sub>2</sub>

~ 5 mL dish soap

~ 8 g KI

Food coloring

For 6 L volumetric flask:

100 mL 30% H<sub>2</sub>O<sub>2</sub>

~ 10 mL dish soap

~ 15 g KI

Food coloring optional

Long matches

Instructions:

Since this reaction will fizz over, place graduated cylinder/volumetric flask in something easy for clean up (we recommend using the large rectangular plastic container). **Be sure to wear gloves when handling the hydrogen peroxide.**

- Add H<sub>2</sub>O<sub>2</sub> to the graduated cylinder/volumetric flask – please measure carefully as the cost of the H<sub>2</sub>O<sub>2</sub> is significant.
- Add dish soap
- If you like, add food coloring
- Add KI

The reaction will occur instantaneously. The reaction is exothermic. The foam generated is hot.

If you use the volumetric flask you can light a long match and drop it into the flask. Turn off the lights in the room, and you can see the oxygen in the flask light on fire. This will burn out shortly.

Disposal: Once the foam has cooled, clean up the foam and rinse down the drain.

Before the KI is added to the flask, H<sub>2</sub>O<sub>2</sub> is very slowly breaking down into H<sub>2</sub>O and O<sub>2</sub>. KI is added to act as a catalyst. As H<sub>2</sub>O<sub>2</sub> rapidly breaks down, the soap combines with the H<sub>2</sub>O and turns into foam. The O<sub>2</sub> gas also produced will push out, which makes the foam shoot out of the flask. Because there is an excess of O<sub>2</sub> produced, when you drop a match into the flask the O<sub>2</sub> bubbles will catch on fire.

**SAFETY**

*Wear gloves for this experiment*

30% H<sub>2</sub>O<sub>2</sub>.....highly corrosive

Note: peroxide available in drugstores is only 3%.

**Wear gloves.** Rinse under H<sub>2</sub>O for at least 15 mins. if skin/eyes come into contact with H<sub>2</sub>O<sub>2</sub>. Skin will appear white from a peroxide burn.

If you choose to ignite the oxygen that is produced:

- Remove all flammable materials within 10 ft. Choose a non-flammable surface.
- Bring the fire extinguisher and locate closest safety shower or sink.
- Be sure that the audience is at a safe distance from the table (at least 5 feet away).
- Do not perform this demo directly below a fire sprinkler.

