

# Elephant's Toothpaste

## Purpose

To demonstrate the effect of a catalyst (KI) on the decomposition of hydrogen peroxide.

## Materials

|                             |                          |
|-----------------------------|--------------------------|
| 1.0 liter cylinder          | Sat'd potassium iodide   |
| 50 mL liquid detergent      | food coloring (optional) |
| 50 mL 30% hydrogen peroxide | plastic tub              |

## Procedure

1. Place a 1.0 liter cylinder in the plastic tub.
2. Add 50 mL of 30% hydrogen peroxide to the cylinder.
3. Add 50 mL of liquid detergent to the cylinder and mix by swirling.
4. Food coloring may be added to alter color.
5. Add 50 mL of Saturated KI solution (72 g KI/50 mL DI H<sub>2</sub>O).
6. The reaction will occur quickly and copious amounts of foam with result.

## Additional Information

1. Avoid contact with skin and eyes while handling H<sub>2</sub>O<sub>2</sub>. Store in the original container.
2. The reactions are:  
$$\text{H}_2\text{O}_2 (\text{aq}) + \text{I}^- (\text{aq}) \rightarrow \text{H}_2\text{O} (\text{l}) + \text{OI}^- (\text{aq})$$
$$\text{H}_2\text{O}_2 (\text{aq}) + \text{OI}^- (\text{aq}) \rightarrow \text{H}_2\text{O} (\text{l}) + \text{O}_2 (\text{g}) + \text{I}^- (\text{aq})$$
3. A 6L Erlenmeyer flask can be used in place of the Graduated cylinder. Use double volume of all solutions for this variation.

## Disposal

Foam/excess solutions can be washed down the drain with excess water.

## Reference

ICE, Chemical Demonstrations Workshop, University of Arizona, 1987.