Los Angeles Department of Water & Power

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EXPERIMENT TIPS

Electrolysis

This advanced experiment illustrates how electrolysis works. It appears in the section *Dangerous Waters.*

Materials

- 1 glass beaker or jar
- 2 test tubes or clear vials
- 6-volt battery
- two 8-inch pieces of coated wire (18–22 gauge) with ends stripped
- 2 cups tap water
- 2 tbsp. baking soda
- 1 measuring cup
- 1 measuring tablespoon
- wire cutters

Safety First

Students should be supervised by an adult while doing this experiment.

Objective

Using test tubes and simple ingredients, students separate the hydrogen and oxygen atoms of water molecules, and can witness the production of hydrogen and oxygen gases. Students will see how the decomposition reaction of water breaks it down into its two elements, hydrogen and oxygen.

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EXPERIMENT TIPS

Electrolysis (continued)

Questions and Answers

1. Which test tube contains more gas? Which test tube do you think contains hydrogen gas? Which contains oxygen gas?

The test tube that contains more gas will be readily apparent; it is the one that has the largest air space at the top of the tube. The tube that contains hydrogen gas is the one that has the most gas in it. The tube that contains oxygen gas has less (about half as much).

2. The baking soda was added to the water to speed up the electrolysis reaction. What would be another way to speed it up?

Theoretically, another way to speed up the electrolysis reaction would be to use more electricity; however, students should NOT do this.

3. What do you think would happen if you repeated the experiment with a hydrogen chloride solution instead of water? (Why would this be dangerous?)

If the experiment were repeated with hydrogen chloride, you would get hydrogen gas in one test tube and chlorine gas in the other. Do not actually do the experiment with hydrogen chloride, as chlorine gas is poisonous.

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