

USE BLUE/BLACK INK!!!!

Goals:

The goals of these labs are to (a) experiment with electrolysis and (b) decompose water into the elements it is made of.

Research:

1) Write out and balance the equation for the decomposition of liquid water into its elements:

2) Write the expected half-reactions for the decomposition of water.

3) What gas do you expect to be produced in the oxidation half-reaction? _____

4) What gas do you expect to be produced in the reduction half-reaction? _____

Materials:

1 Petri dish (top or bottom)
2 paper clips
1 9V battery
1 test tube brush

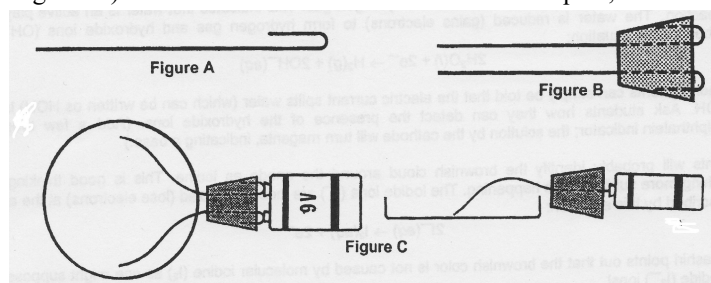
1 dropper bottle of universal indicator
1 #6 two-hole stopper
3 squirts of sodium sulfate solution
1 piece of scrap paper

Hazards:

The student safety contract applies. Sodium sulfate solution is a body tissue irritant. Water is not considered hazardous. Universal indicator is flammable.

Procedure:

1. Physically and chemically clean the Petri dish.
2. Fill the Petri dish more than half-full with water (decide on tap or distilled)
3. Prepare the electrodes
 - a. open the paperclips, leaving only smallest loop closed (see Figure A)
 - b. push the clips into the holes of the stopper so the small loops are the same distance apart as the contacts on a 9V battery (see Figure B)
 - c. bend the long ends of the clips apart and downward so they fit into the Petri dish (see Figure C)—note that the more metal under the liquid, the better



4. Add 3 full squirts of sodium sulfate solution to the water in the Petri dish.
5. Put the piece of scrap paper under the Petri dish
6. Press the battery against the two loops of the paper clips protruding from the stopper (see Figure C) until bubbles are seen.
7. Add universal indicator drop-by-drop to the water in the Petri dish until two different colors are seen.
 - a. note if/where gases are formed
 - b. note color changes
 - c. note where things happen in terms of the positive and negative ends of the battery
8. The lab may be repeated with another indicator, another type of water, or a change in another variable.
9. Clean up!
 - a. Return the paper clips and battery to Miss Gurganus
 - b. Liquid in the Petri dish may be poured down the drain
 - c. Physically clean the Petri dish

Data:

type of water chosen: _____

color in Petri dish before battery was used: _____

sketch of lab set-up and results:

what happened at the positive end of the battery:

what happened at the negative end of the battery:

Clean-up signatures:

Teacher: _____ Yours: _____ Partner's: _____

Post-lab question:

Do the results that occurred during the lab match up with the pre-lab research? If yes, explain how. If no, explain why not.