

Subject: Science

Activity - Electrolysis of water

Chapter- Chemical Effects of Electric Current

Class: VIII

Duration: 30 minutes

Nature of the activity: Group

Learning Outcome: Students will be able extrapolate that the chemical effect of passing Electric Current through water is evolution of gases.

What we have to do?

To study the electrolysis of water.

What do we need?

Water in a 250 mL beaker, common salt, a battery of 3 D type 1.5 V cells, cell holder, double cotton covered copper connecting wires, a switch.

What you need to know?

A considerable amount of energy is needed to get the atoms apart from each other. A battery can supply power. The water connects these terminals and acts as a bridge for energy flow. An electrolyte is a kind of solution which can be split by electrolysis. Electro refers to electricity and energy and lysis denotes splitting.

How do we proceed?

- **Teacher's activity:**

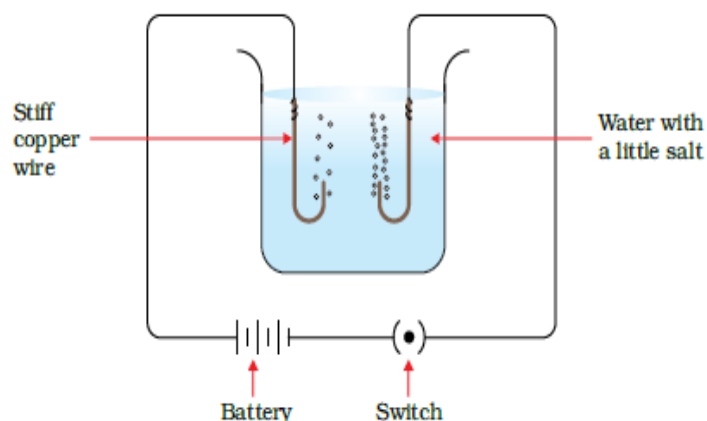
Teacher will arrange activity kits and demonstrate the working of one kit.

- **Student's activity:**

1. Take two long dcc (double cotton covered) copper wires and fold one end of each into U-shape.
2. Fill the beaker about half with water. Add half a teaspoonful of common salt to water to make it more conducting.
3. Insert the U-shaped connecting wire in water. Connect its other end to the positive terminal of the battery.
4. Connect the negative terminal of the battery to a plug key.
5. Connect the second U-shaped connecting wire to the negative terminal of the cell through the key.
6. Insert the key into plug. Wait for a few minutes.
7. The wire connected to the positive terminal of the battery is called the positive electrode and the wire connected to the negative terminal of the battery is called negative electrode.

8. Observe carefully.

9. Now remove the key from the plug.



What do we observe?

1. Do you observe gas bubbles on the electrodes? – Yes/No
2. On which electrode do you observe larger number of bubbles? – cathode/anode
3. After removing the key from the plug. Do you still observe the bubbles on the electrodes? – Yes/No

What have you learnt?

In the above activity, when an electric current passes through it, water splits into two gases-_____ and _____. Hydrogen collects at _____ terminal and oxygen at _____ terminal. The volume of these two gases formed suggests that the water is formed by hydrogen and oxygen combined together in _____ ratio.

What more can we do?

- The activity may be repeated taking water from various sources (tap water, distilled water, river water, etc.) and also by taking electrodes of different materials.
- Bubbles released on the electrodes can be collected in a small (glass/ plastic) bottle inverted over the electrodes.
- The distance between the electrodes can be increased and its effect on the number of bubbles released at the electrodes can be studied.

EXTENDED LEARNING WORKSHEET:

1. In this experiment, why do we add common salt to water?

2. How can you capture the gas released at both the electrodes?

3. How will you confirm that hydrogen gas is released at the negative electrode?

4. Why it is dangerous to touch electrical appliances with wet hands?

5. How will you prepare a tester to test conduction based on magnetic effect of the electricity.
