



Learning Objectives

After the completion of this lesson, students will be able to:

- ◆ understand the importance, properties and uses of water.
- ◆ write the chemical equations for the reaction of water.
- ◆ explain water treatment methods.
- ◆ discuss about different methods of softening water.
- ◆ know about the causes and consequences of water pollution.
- ◆ list out the ways by which water pollution may be controlled.



Introduction

நீர்இன்று அமையாது உலகெனின் யார்யார்க்கும்
வான்இன்று அமையாது ஒழுக்கு — குறள்

Thirukkural says, without water there would be no life on the earth. Just like other living organisms, we also need water to survive. We need water for so many activities like cooking, washing, cleaning and irrigation. Water resources are getting depleted nowadays because of growing demand from increasing populations and lifestyle changes. There is also a reduction in the supply of water due to pollution of water sources and climate change which contributes to the rising variability in rainfall. We all depend on water for our living and so every individual is responsible for saving water. In this lesson, we will learn about the sources, properties and uses of water and also about water pollution and water treatment methods.

13.1 Composition

Three fourths of our planet earth is filled with water. Water exists in three states namely solid, liquid and gas. Water on the surface of the

earth is found mainly in oceans (97.25%), polar ice caps and glaciers (2.05%) and the remaining is in lakes, rivers and aquifers - ground water. Even our body is made up of water (65%) but it is not apparent. Water is a chemically stable compound. Its chemical name is dihydrogen monoxide (H_2O). It can be broken up into hydrogen (H_2) and oxygen (O_2) when an electrical current is passed through it. The process of breaking down of water molecules by the passage of electric current is known as electrolysis of water.

13.1.1 Electrolysis of Water

Electrolysis of water can be easily demonstrated with the help of an experiment. In this experimental set up, a glass beaker fixed with two carbon electrodes is filled with water upto one third of its volume. The positive carbon electrode acts as anode and the negative carbon electrode acts as cathode. Two test tubes are placed on the electrodes as shown in Figure 13.1.

The electrodes are connected to a battery and current is passed until the test tubes are