

CHAPTER 15 . HANDOUT

AIR AROUND US

CLASS VI

MODULE 1/1

SCIENCE

Air is present everywhere around us .

We can feel the presence of air when the leaves of trees rustle or the clothes hanging on a clothes-line sway. Pages on an open book begin fluttering when the fan is switched on. The moving air makes it possible for you to fly your kite.

The important properties of air are as follows:

1.Air is colourless ,odourless, and tasteless 2.It occupies space3.Air is transparent 4.Air is a mixture of different gases.

Wind: The moving air is called wind.

A weathercock is used to find the direction in which the air is moving at that place.

Atmosphere: The layer of air that surrounds the earth is called atmosphere.

An activity to show that the air occupies space.

Take an empty glass bottle .It is not really empty, something is inside it. Now hold the bottle in inverted position. The inverted glass bottle is put in water, the water does not enter the inverted bottle because the bottle is filled with air. Now tilt the bottle in water. Air present in the bottle goes out in the form of bubbles. As the air from the bottle escapes water starts entering the glass bottle and occupies the place of air. This activity shows that air occupies space. It fills all the space in the bottle.

What is air made up of?

Air is a mixture of many gases like nitrogen, oxygen, carbon dioxide , water vapour and a few other gases.

Water vapour

Air contains water vapour. When air comes in contact with a cool surface, the water vapour present in the air condenses and drops of water appear on the cooled surfaces. The presence of water vapour in air is important for the water cycle in nature.

Nitrogen

The major part of the air is formed of nitrogen. It does not support the process of burning. Nitrogen is needed by plants to make proteins.

Oxygen

Oxygen gas present in the air is essential for respiration. It is a colourless and odourless gas. Oxygen supports burning so it is necessary for the process of burning.

Activity to show that oxygen supports burning.

In the presence of your teacher , fix two small candles of the same length on a table. Light both the candles. Cover one of the candle with an inverted glass tumbler. Observe both the candles carefully. After a short time the candle which is covered stops burning, whereas the other candle continued burning. It seems that the candle got extinguished because the component inside the glass tumbler which supports burning ,is limited. Most of it is used while burning. However , the other candle is getting continuous supply of oxygen.

Carbon dioxide

Carbon dioxide makes up a small component of the air. The carbon dioxide present in the air is important for plants. Green plants need carbon dioxide to prepare food. Plants and animals consume oxygen for respiration and release carbon dioxide. If some material is burning in a closed room, we feel suffocation. This is due to the accumulation of carbon dioxide in the room which is produced by the burning material.

Dust and smoke

The burning of fuel also releases smoke. Smoke contains a few gases and fine dust particles which is harmful. When we inhale air through our nostrils, fine hair and mucus present inside the nose prevent dust particles from getting in to the respiratory system.

Composition of air

Air contains mostly nitrogen and oxygen. In fact these two gases together make up 99% of the air. The remaining 1% is constituted by carbon dioxide and a few other gases and water vapour.

Activity to show that water contains dissolved air in it.

Take water in a beaker and heat it. Before the water begins to boil watch carefully. Tiny bubbles appear on the inside of the beaker. These bubbles are the air which was dissolved in water. Aquatic organisms use the oxygen dissolved in water for breathing.

Experiment to show that soil contains trapped air.

Take a lump of dry soil in a beaker or a glass. Add water to it and note what happens. We can see bubbles coming out from soil. These bubbles indicate the presence of air in the soil. When the water is poured on the lump of soil, it displaces the air which is seen in the form of bubbles. The organisms that live inside the soil and the plant roots respire in this air. However, when it rains heavily, water fills up all the spaces occupied by the air in the soil. In this situation, animals living in the soil have to come out for respiration.

It is obvious that animals cannot live without plants. The balance of oxygen and carbon dioxide in the atmosphere is maintained through respiration in plants and animal and by the photosynthesis in plants. This shows the interdependence of plants and animals.

Some activities that are possible due to the presence of air.

The wind makes the wind mill rotate. The windmill is used to draw water from tubewells and to run flourmills. Windmills are also used to generate electricity. Air helps in the movements of sailing yachts, gliders, parachutes and aeroplanes. Birds, bats and insects can fly due to the presence of air. Air also helps in the dispersal of seeds and pollen of flowers of several plants. Air plays an important role in water cycle.
