Catalog

14 Water

0652CH14

Suppose for some reason your family gets only one bucket of water everyday for a week. Imagine what would happen? Would you be able to cook, clean utensils, wash clothes or bathe? What are the other activities you would not be able to do? What would happen if we do not have easy access to water for a long period of time?

Apart from drinking, there are so many activities for which we use water (Fig. 14.1). Do you have an idea about the quantity of water we use in a single day?

Fig. 14.1 *Uses of water*

14.1 How Much Water do we Use?

Activity 1

List all the activities for which you use water in a day. Some activities are listed in Table 14.1. Make a similar table in your notebook. Throughout the day, measure the amount of water used for each activity by you and other family members. You may use a mug, a glass, a bucket or any other container to measure the amount of water used.

Table 14.1 Estimation of the amount of water used by your family in a day

Activity	Amount of water used
Drinking	
Brushing	
Bathing	
Washing utensils	
Washing clothes	
Toilets	
Cleaning floor	
Any other	
Total water used in a day by a family	

You now have a rough idea as to how much water your family uses in a day. Can you estimate the amount of water used by you for personal cleanliness in a day. Using this information, calculate the amount of water needed by your family in a year. Now, divide this amount by the number of members of your family. This will give an idea of the amount of water needed by one member of your family in a year. Find the number of people that live in your village or town.

You may now get an idea of the amount of water needed by your village or town in a year.

Boojho wonders whether people living in different regions of our country get the same amount of water. Are there regions where people do not get adequate amount of water? How do they manage?

You have listed a number of activities for which you use water. Do you think, our water requirement is limited to activities like these? We use wheat, rice, pulses, vegetables and many other food items everyday. We know that some of the fibres that we use for making fabric come from plants. Is water not needed to grow these? Can you think of some more uses of water? Water is used in industries for producing almost all the things that we use. So, we need water not only for our daily activities but also for producing many things.

Paheli wants to tell you that about two glasses of water are required to produce each page of a book.

14.2 Where do we get Water From?

Where do you get the water that you use? Some of you may say, "We draw water from a river, spring, pond, well or a hand pump". Some others might say, "We get water from taps". Have you ever wondered where water in the taps comes from? Water that we get from taps is also drawn from a lake or a river or a well (Fig. 14.2). It is then supplied through a network of pipes.

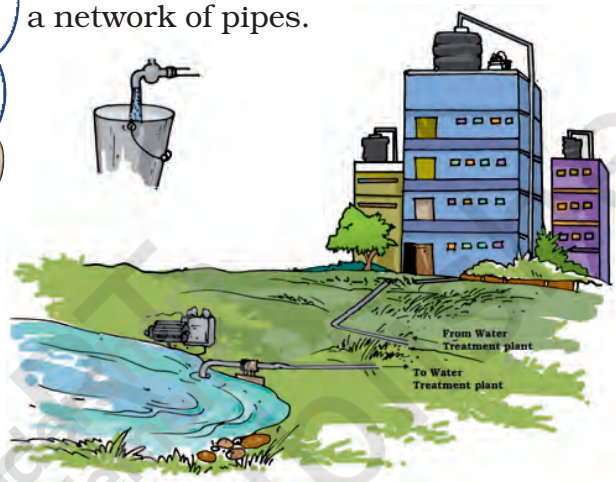


Fig. 14.2 *Water in taps comes from rivers, lakes, borewell or wells*

Each of us may be getting water into our homes in different ways. But, finally, all of us get water from the same sources such as ponds, lakes, rivers and wells.

We have discussed some of the sources of water. Where does the water come from, to fill these ponds, lakes, rivers and wells?

Boojho wants you to imagine a day in your life when water supply through taps is not available. So, you have to fetch it yourself from a far away place. Would you use the same amount of water as on any other day?

Fig. 14.3 *Oceans cover a major part of the earth*

Do you know that about two thirds of the Earth is covered with water? Most of this water is in oceans and seas (Fig. 14.3).

The water in the oceans and seas has many salts dissolved in it — the water is saline. So, it is not fit for drinking and other domestic, agricultural and industrial needs. You might have heard the famous lines of the poem "*Rime of the Ancient Mariner*" written by S.T. Coleridge in 1798:

"Water water every where

Nor any drop to drink"

Here the poet has described the plight of sailors on a ship lost in the ocean.

Yet, oceans play an important role in supplying the water that we use. Do you find this surprising? After all, the water that we use is not salty. Many of us live in places far away from the oceans. Does the water supply in these places also depend on the oceans? How does the ocean water reach ponds, lakes, rivers and wells, which supply us water? How come the water from these sources is not saline anymore?

That is where the water cycle comes in!

14.3 Water Cycle

Disappearing Trick of Water

How many times have you noticed that water spilled on a floor dries up after some time? The water seems to disappear. Similarly, water disappears from wet clothes as they dry up (Fig. 14.4). Water from wet roads, rooftops and a few other places also disappears after the rains. Where does this water go?

Fig. 14.4 *Clothes drying on a clothes-line*

Do you remember Activity 6 in Chapter 5 in which water with salt dissolved in it was heated? What did we find? The water evaporated and the salt was left behind. This activity gives us an idea that, on heating, water changes into its vapour. We also realise from this activity, that water vapour does not carry away the salt with it. Water vapours so formed become a part of the air and cannot usually be seen. We also found that heating is essential to convert water into its vapour. However, we have seen that water changes into its vapour also

from the fields, roads, rooftops and other land areas. We also discussed in Chapter 5 that to obtain salt, water from the sea is left in shallow pits to let the water evaporate. From where does this water get the heat it needs to evaporate? Let us find out.

Activity 2

Take two similar plates. Place one of the plates in sunlight and keep the other under shade. Now, pour equal amount of water in each of the plates (Fig. 14.5). You can use a cap of a bottle to measure water. Make sure that water does not spill over. Observe the two plates after every 15 minutes. Does the water seem to disappear? From which plate does it disappear first? What is the source of heat for this evaporation?

During the daytime, sunlight falls on the water in oceans, rivers, lakes and ponds. The fields and other land areas also receive sunlight. As a result, water from all these places continuously changes into vapour. However, the salts dissolved in the water are left behind.

In Activity 2, did you find that water also disappeared from the plate kept in the shade, though it could have taken more time? Does the heat from the sunlight reach here? Yes, during the daytime all the air surrounding us gets heated. This warm air provides heat for evaporation of water in the shade. Thus, evaporation takes place from all open surfaces of water. As a result, water vapour gets continuously added to air. However, evaporation of water is a slow process. That is why we rarely notice its loss from a bucket full of water. In sunlight, evaporation takes place faster. On heating water on a burner, its evaporation takes place even faster. Is there any other process through which water vapour gets transferred into air?

Fig.14.5 *Evaporation of water in sunlight and in shade*

Loss of Water by Plants

You have learnt in Chapter 7 that plants need water to grow. Plants use a part of this water to prepare their food and

Boojho has been reading about transpiration. He asked himself - how much water is lost through transpiration by wheat plants that give us one kilogram of wheat? He found out that this is nearly 500 litres, that is, roughly 25 large sized buckets full of water. Can you now imagine the amount of water lost by plants of all the forests, crops and grasslands together?

retain some of it in their different parts. Remaining part of this water is released by the plants into air, as water vapour through the process of transpiration. Do you remember observing transpiration of water by plants in Activity 4 in Chapter 7?

Water vapour enters the air through the processes of evaporation and transpiration. Is it lost for ever? No, we get it back again, as we will see.

How are clouds formed?

Activity 3

Take a glass half filled with water. Wipe the glass from the outside with a clean piece of cloth. Add some ice into the water. Wait for one or two minutes. Observe the changes that take place on the outer surface of the glass (Fig. 14.6).

From where do water drops appear on the outer side of the glass? The cold surface of the glass containing iced water, cools the air around it, and the water vapour of the air condenses on the surface of the glass. We noticed this process of condensation in Activity 7 in Chapter 5.

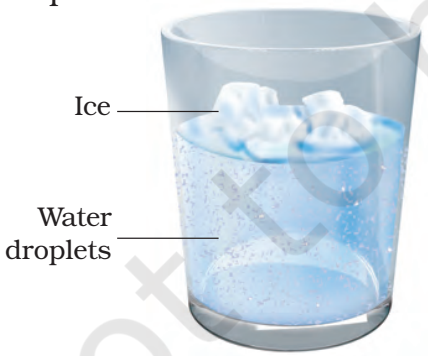
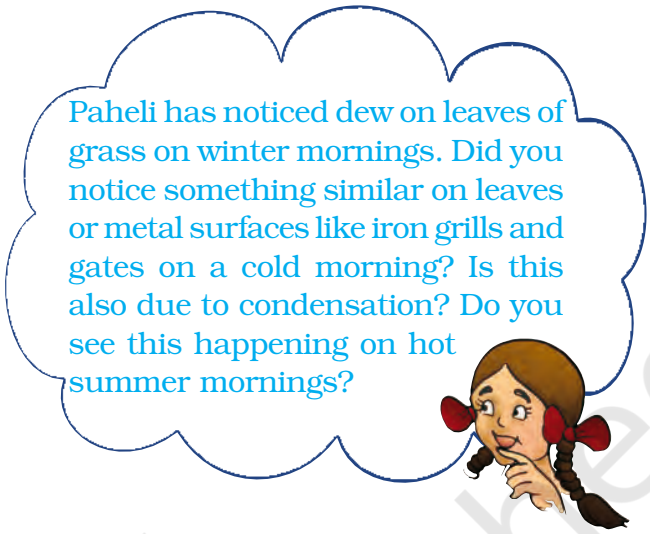


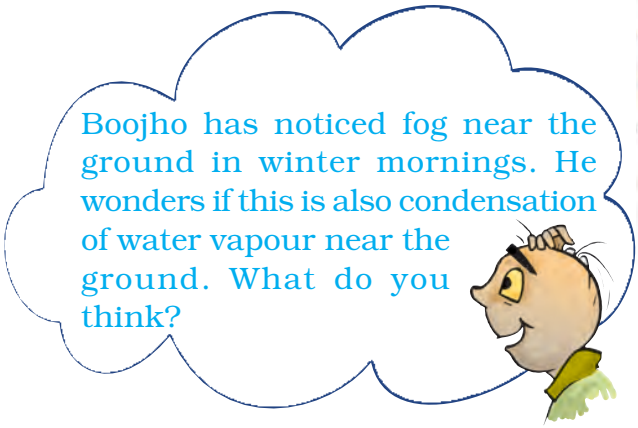
Fig. 14.6 *Drops of water appear on outer surface of the glass containing water with ice*



The process of condensation plays an important role in bringing water back to the surface of earth. How does it happen? As we go higher from the surface of the earth, it gets cooler. When the air moves up, it gets cooler and cooler. At sufficient heights, the air becomes so cool that the water vapour present in it condenses to form tiny drops of water called droplets. It is these tiny droplets that remain floating in air and appear to us as clouds (Fig. 14.7).

It so happens that many droplets of water come together to form larger sized

Fig. 14.7 *Clouds*



drops of water. Some drops of water become so heavy that they begin to fall. These falling water-drops are, what we call rain. In special conditions, it may also fall as hail or snow.

Thus, water in the form of vapour goes into air by evaporation and transpiration, forms clouds, and then comes back to the ground as rain, hail or snow.

14.4 Back to the Oceans

What happens to the water that rain and snow bring to different regions of earth? Almost all land surfaces are above the level of oceans. Most of the water that falls on the land as rain and snow sooner or later goes back to the oceans. This happens in many ways.

Snow in the mountains melts into water. This water flows down the mountains in the form of streams and rivers (Fig. 14.8). Some of the water that falls on land as rain, also flows in the form of rivers and streams. Most of the rivers cover long distances on land and ultimately fall into a sea or an ocean. However, water of some rivers flows into lakes.

Fig. 14.8 *Rainwater flows down in the form of streams and rivers*

The rainwater also fills up the lakes and ponds. A part of the rainwater gets absorbed by the ground and seems to disappear in the soil. Some of this water is brought back to the air by the process of evaporation and transpiration. The rest seeps into the ground. Most of this water becomes available to us as **ground water**. Open wells are fed by ground water. Ground water is the source for many lakes as well. It is also this ground water which is drawn by a handpump or a tubewell. The more handpumps or tubewells that are used in an area, the deeper we need to dig to find this ground water. The loss in the level of ground water due to over use, is worrisome.

Paheli wants to share a concern with you. In those areas where the land has little or no vegetation, the rainwater flows away quickly. Flowing rainwater also takes the top layer of the soil away with it. There are few areas where most of the land is covered with concrete. This reduces the seepage of rainwater into the ground which ultimately affects the availability of ground water.

We now know that water brought back to the surface of the earth by rain, hail or snow, goes back to oceans. Thus, water from the ocean and surface of the earth goes into air as vapour; returns as rain, hail or snow and finally goes back to the oceans. The circulation of water in this manner is known as the **water cycle** (Fig.14.9). This circulation of water between ocean and land is a continuous process. This maintains the supply of water on land.

14.5 What if it Rains Heavily?

The time, duration and the amount of rainfall varies from place to place. In some parts of the world it rains throughout the year while there are places where it rains only for a few days.

Fig. 14.10 *A scene after heavy rains*

In our country, most of the rainfall occurs during the monsoon season. Rains bring relief especially after hot summer days. The sowing of many crops depends on the arrival of monsoon.

However, excess of rainfall may lead to many problems (Fig. 14.10). Heavy

Fig. 14.9 *Water cycle*

Fig. 14.11 *A scene of a flooded area*

rains may lead to rise in the level of water in rivers, lakes and ponds. The water may then spread over large areas causing floods. The crop fields, forests, villages, and cities may get submerged by water (Fig. 14.11). In our country, floods cause extensive damage to crops, domestic animals, property and human life.

During floods, the animals living in the water also get carried away with the waters. They often get trapped on land areas and die when floodwater recedes. Rains also affect the animals living in the soil.

14.6 What Happens if it does not Rain for a Long Period?

Can you imagine what would happen if it does not rain in a region for a year or more? The soil continues to lose water by evaporation and transpiration. Since it is not being brought back by rain, the soil becomes dry. The level of water in ponds and wells of the region goes down and some of them may even dry up. The ground water may also become scarce. This may lead to drought.

In drought conditions, it is difficult to get food and fodder. You might have heard about droughts occurring in some parts of our country or the world. Are you aware of the difficulties faced by the people living in these areas? What happens to the animals and the vegetation in these conditions? Try and find out about this by talking to your parents and neighbours and by reading about it from newspapers and magazines.

14.7 How Can We Conserve Water?

Only a small fraction of water available on the Earth is fit for use of plants, animals and humans. Most of the water is in the oceans and it cannot be used directly. When the level of the ground water decreases drastically, this can not be used any more. The total amount of water on Earth remains the same, but, the water available for use is very limited and is decreasing with over usage.

The demand for water is increasing day-by-day. The number of people using water is increasing with rising population. In many cities, long queues for collection of water are a common site (Fig. 14.12). Also, more and more water is being used for producing food and by the industries. These factors are leading

Fig. 14.12 *A queue for collecting water*

to shortage of water in many parts of the world. Hence, it is very important that water is used carefully. We should take care not to waste water.

14.8 Rainwater Harvesting

One way of increasing the availability of water is to collect rainwater and store it for later use. Collecting rainwater in this way is called **rainwater harvesting**. The basic idea behind rainwater harvesting is "Catch water where it falls".

What happens to the rainwater that falls in places that are mostly covered with concrete roads and buildings? It flows into the drains, isn't it? From there water goes to rivers or lakes, which could be far away. A lot of effort will then be required to get this water back into our homes as the water did not seep into the ground.

Here two techniques of rainwater harvesting are discussed

1. *Rooftop rainwater harvesting*: In this system the rainwater is collected from the rooftop to a storage tank, through pipes. This water may contain soil from the roof and need filtering before it is used. Instead of collecting rainwater in the tank, the pipes can go directly into a pit in the ground. This then seeps into the soil to recharge or refill the ground water (Fig. 14.13).
2. Another option is to allow water to go into the ground directly from the roadside drains that collect rainwater.

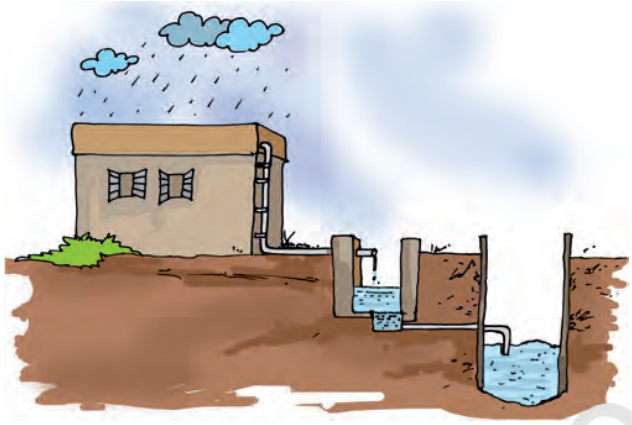


Fig. 14.13 *Rooftop rainwater harvesting*

Key words

Clouds	Hail
Condensation	Ocean
Drought	Rainwater harvesting
Evaporation	Snow
Flood	Water vapour
Ground water	Water cycle

Summary

- Water is essential for life.
- Water vapour gets added to air by evaporation and transpiration.
- The water vapour in the air condenses to form tiny droplets of water, which appear as clouds. Many tiny water droplets come together and fall down as rain, snow or hail.
- Rain, hail and snow replenish water in rivers, lakes, ponds, wells and soil.
- The circulation of water between ocean and land is known as the water cycle.
- Excessive rains may cause floods while lack of it for long periods may cause droughts.
- The amount of usable water on earth is limited so it needs to be used carefully.

Exercises

1. Fill up the blanks in the following:
   (a) The process of changing of water into its vapour is called _____.
   (b) The process of changing water vapour into water is called _____.
   (c) No rainfall for a year or more may lead to _____ in that region.
   (d) Excessive rains may cause _____.
2. State for each of the following whether it is due to evaporation or condensation:
   (a) Water drops appear on the outer surface of a glass containing cold water.
   (b) Steam rising from wet clothes while they are ironed.
   (c) Fog appearing on a cold winter morning.
   (d) Blackboard dries up after wiping it.
   (e) Steam rising from a hot girdle when water is sprinkled on it.
3. Which of the following statements are "true" ?
   (a) Water vapour is present in air only during the monsoon. ( )
   (b) Water evaporates into air from oceans, rivers and lakes but not from the soil.( )
   (c) The process of water changing into its vapour, is called evaporation.( )
   (d) The evaporation of water takes place only in sunlight.( )
   (e) Water vapour condenses to form tiny droplets of water in the upper layers of air where it is cooler.( )

4. Suppose you want to dry your school uniform quickly. Would spreading it near an *anghiti* or heater help? If yes, how?
5. Take out a cooled bottle of water from refrigerator and keep it on a table. After some time you notice a droplets of water around it. Why?
6. To clean their spectacles, people often breathe out on glasses to make them wet. Explain why the glasses become wet.
7. How are clouds formed?
8. When does a drought occur?

SUGGESTED PROJECTS AND ACTIVITIES

1. List three activities in which you can save water. For each activity describe how you would do it.
2. Collect pictures relating to floods or droughts from old magazines or newspapers. Paste them in your notebook and write about the problems that people would have faced.
3. Prepare a poster on ways of saving water and display it on your school notice board.
4. Write a few slogans of your own on the topic 'Save Water'.
5. Can the interlinking of rivers be a solution for mitigation of flood? Discuss.

0652CH15

15 Air Around us

We have learnt in Chapter 9 that all living things require air. But, have you ever seen air? You might not have seen air, but, surely you must have felt its presence in so many ways. You notice it when the leaves of the trees rustle or the clothes hanging on a clothes-line sway. Pages of an open book begin fluttering when the fan is switched on. The moving air makes it possible for you to fly your kite. Do you remember Activity 3 in Chapter 5 in which you separated the sand and sawdust by winnowing? Winnowing is more effective in moving air. You may have noticed that during storms the wind blows at a very high speed. It may even uproot trees and blow off the rooftops.

Have you ever played with a *firki* (Fig. 15.1)?

Fig. 15.1 *Different types of firki*

Activity 1

Let us make a *firki* of our own, following the instructions shown in Fig. 15.2.

Hold the stick of the *firki* and place it in different directions in an open area.

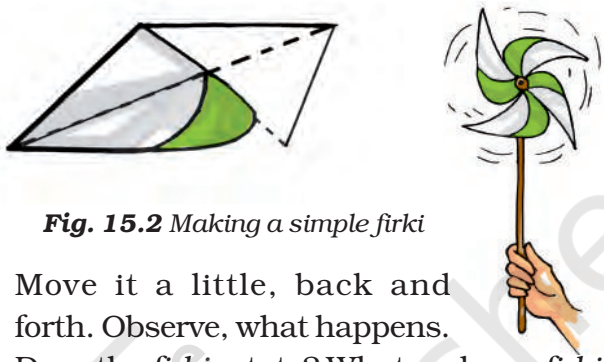


Fig. 15.2 *Making a simple firki*

Move it a little, back and forth. Observe, what happens. Does the *firki* rotate? What makes a *firki* rotate — moving air, isn't it?

Have you seen a weather cock (Fig. 15.3)? It shows the direction in which the air is moving at that place.

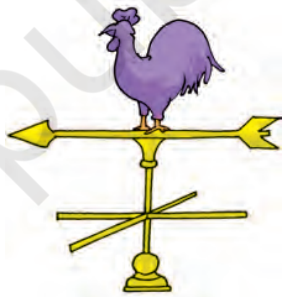


Fig. 15.3 *A weather cock*

15.1 Is Air Present Everywhere Around us?

Close your fist — what do you have in it? Nothing? Try the following activity to find out.

Activity 2

Take an empty open bottle. Is it really empty or does it have something inside? Turn it, upside down. Is something inside it, now?

Fig. 15.4 *Experiments with an empty bottle*

Now, dip the open mouth of the bottle into the bucket filled with water as shown in Fig. 15.4. Observe the bottle. Does water enter the bottle? Now tilt the bottle slightly. Does the water now enter the bottle? Do you see bubbles coming out of the bottle or hear any bubbly sound? Can you now guess what was in the bottle?

Yes! You are right. It is "air", that was present in the bottle. The bottle was not empty at all. In fact, it was filled completely with air even when you turned it upside down. That is why you notice that water does not enter the bottle when it is pushed in an inverted position, as there was no space for air to escape. When the bottle was tilted, the air was able to come out in the form of bubbles, and water filled up the empty space that the air has occupied.

This activity shows that air occupies space. It fills all the space in the bottle. It is present everywhere around us. Air has no colour and one can see through it. It is transparent.

Our earth is surrounded by a thin layer of air. This layer extends up to many kilometres above the surface of the earth and is called atmosphere. As we move higher in the atmosphere, the air gets rarer.

Fig. 15.5 *Mountaineers carry oxygen cylinders with them*

Now can you think, mountaineers carry oxygen cylinders with them, while climbing high mountains (Fig. 15.5)?

15.2 What is Air Made up of?

Until the eighteenth century, people thought that air was just one substance. Experiments have proved that it is really not so. Air is a mixture of many gases. What kind of a mixture is it? Let us find out about some of the major components of this mixture, one by one.

Water vapour

We have learnt earlier that air contains water vapour. We also saw that, when air comes in contact with a cool surface, it 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.

Oxygen

Activity 3

In the presence of your teacher, fix two small candles of the same length on a

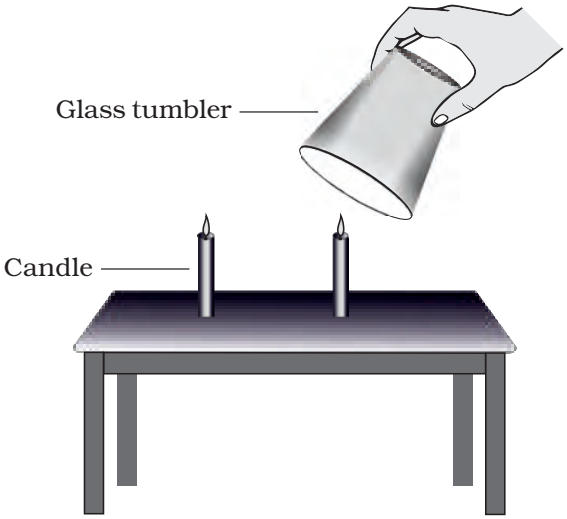


Fig. 15.6 *Air has oxygen*

table. Light both the candles. Cover one of the candles with an inverted glass tumbler. Observe both the candles carefully.

Do both the candles continue to burn or go off?

You must have observed that the candle covered with glass tumbler got extinguished after some time, whereas the other candle continued burning.

What can be the reason for this? Think about it.

It seems that the candle got extinguished because the component inside of the glass tumbler, which supports burning, is limited. Most of the component is used up by the burning candles. However, the other candle is getting continued supply of air. This component of air, which supports burning, is known as oxygen.

Nitrogen

In Activity 3 did you observe that air is still present in the glass bottle even after the candle blew out? This indicates the presence of some component in the air, which does not support burning. The major part of air (which does not support burning candle) is **nitrogen**.

Carbon dioxide

In a closed room, if there is some material that is burning, you may have felt suffocation. This is due to excess of carbon dioxide that may be accumulating in the room, as the burning continues. Carbon dioxide makes up a small component of the air around us. Plants and animals consume oxygen for respiration and produce carbon dioxide. Plant and animal matter also consumes oxygen on burning and produces mainly carbon dioxide and a few other gases. It is advisable not to burn dry leaves and discarded remains of the crop, which pollute our surroundings.

Dust and smoke

The burning of fuel also produces smoke. Smoke contains a few gases and fine dust particles and is often harmful. That is why you see long chimneys in factories. This takes the harmful smoke and gases away from our noses, but, brings it closer to the birds flying up in the sky!

Dust particles are always present in air.

Activity 4

Find a sunny room in your school/ home. Close all the doors and windows with curtains pulled down to make the

Fig. 15.7 *Observing presence of dust in air with sunlight*

Fig.15.8 *Policemen regulating traffic at a crowded crossing often wear a mask*

room dark. Now, open the door or a window facing the sun, just a little, in such a way that it allows sunlight to enter the room only through a slit. Look carefully at the incoming beam of sunlight.

Do you see some tiny shining particles moving in the beam of sunlight (Fig. 15.7)? What are these particles?

During winters you might have observed similar beam of sunlight filter through the trees in which dust particles appear to dance merrily around!

This shows that air also contains dust particles. The presence of dust particles in air varies from time to time, and from place to place.

We inhale air when we breathe through our nostrils. Fine hair and mucus are present inside the nose to prevent dust particles from getting into the respiratory system.

Do you recall being scolded by your parents when you breathe through your mouth? If you do that, harmful dust particles may enter your body.

We may conclude, then, that air contains some gases, water vapour and dust particles. The gases in air are mainly nitrogen, oxygen, small amount of carbon dioxide, and many other gases. However, there may be some

Boojho is asking you, why do you think, the policeman in Fig. 15.8 is wearing a mask?

Paheli wants to know, why the transparent glass of windows, if not wiped off regularly, appears hazy?

Boojho wants to know, why during an incident of fire, one is advised to wrap a woollen blanket over a burning object.

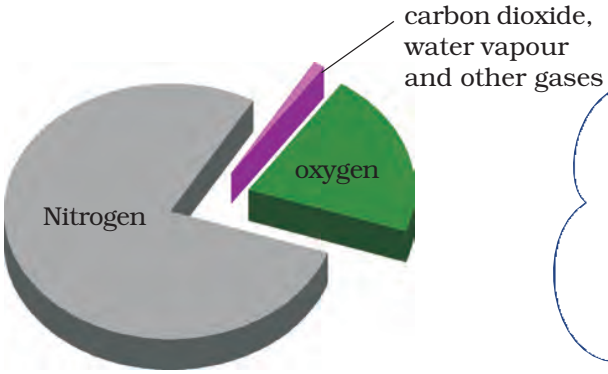


Fig.15.9 *Composition of air*

variations in the composition of air from place to place. We see that 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 (Fig. 15.9).

15.3 How does Oxygen Become Available to Animals and Plants Living in Water and Soil?

Activity 5

Take some water in a glass or metal container. Heat it slowly on a tripod stand. Well before the water begins to boil, look carefully at the inner surface

Fig. 15.10 *Water contains air*

Here is a question from Paheli, "Will the tiny air bubbles seen before the water actually boils, also appear if we do this activity by reheating boiled water kept in an air tight bottle?" If you do not know the answer you may try doing it and see for yourself.

of the container. Do you see tiny bubbles on the inside (Fig. 15.10)?

These bubbles come from the air dissolved in water. When you heat the water, to begin with, the air dissolved in it escapes. As you continue heating, the water itself turns into vapour and finally begins to boil. We learnt in Chapters 8 and 9, that the animals living in water use the dissolved oxygen in water.

The organisms that live in soil also need oxygen to respire, isn't it? How do they get the air they need, for respiration?

Activity 6

Take a lump of dry soil in a beaker or a glass. Add water to it and note what happens (Fig. 15.11). Do you 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. A lot

Fig. 15.11 *Soil has air in it*

of burrows and holes are formed in deep soil by the animals living in the soil. These burrows also make spaces available for air to move in and out of the soil. 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. Could this be the reason why earthworms come out of the soil, only during heavy rains?

Have you ever wondered why all the oxygen of atmosphere does not get used up though a large number of organisms are consuming it? Who is refilling the oxygen in the atmosphere?

15.4 How is the Oxygen in the Atmosphere Replaced?

In Chapter 7, we read about photosynthesis. In this process, plants make their own food and oxygen is produced along with it. Plants also consume oxygen for respiration, but they produce more of it than they consume. That is why we say plants produce oxygen.

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 animals and by the photosynthesis in plants. This shows the interdependence of plants and animals.

We can now appreciate, how important air is for life on earth. Are there any other uses of air? Have you heard about a windmill? Look at Fig. 15.12.

Fig. 15.12 *A windmill*

The wind makes the windmill rotate. The windmill is used to draw water from tubewells and to run flour mills. 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.

Key words

Atmosphere
Carbon dioxide
Composition of air
Oxygen
Nitrogen
Smoke
Windmill

Summary

- Air is found everywhere. We cannot see air, but we can feel it.
- Air in motion is called wind.
- Air occupies space.
- Air is present in water and soil.
- Air is a mixture of nitrogen, oxygen, carbon dioxide, water vapour and a few other gases. Some dust particles may also be present in it.
- Oxygen supports burning and is necessary for living organisms.
- The envelope of air that surrounds the earth is known as atmosphere.
- Atmosphere is essential for life on earth.
- Aquatic animals use dissolved air in water for respiration.
- Plants and animals depend on each other for exchange of oxygen and carbon dioxide from air.

Exercises

1. What is the composition of air?
2. Which gas in the atmosphere is essential for respiration?
3. How will you prove that air supports burning?
4. How will you show that air is dissolved in water?
5. Why does a lump of cotton wool shrink in water?

6. The layer of air around the earth is known as _____.
7. The component of air used by green plants to make their food, is _____.
8. List five activities that are possible due to the presence of air.
9. How do plants and animals help each other in the exchange of gases in the atmosphere?

SUGGESTED PROJECTS AND ACTIVITIES

1. On a clear glass window facing towards an open area, fix a small rectangular strip of paper. Remove the strip after a few days. Do you notice a difference between the rectangular section that was left covered with paper and the rest of the glass window? By repeating this exercise every month, you can have an idea about the amount of dust present in air around you at different times of the year.
2. Observe the leaves of trees, shrubs or bushes planted by the roadside. Note whether their leaves have some dust or soot deposited over them. Take similar observations with the leaves of trees in the school compound or in a garden. Is there any difference in deposition of soot on leaves of trees near the roadside? What could be the possible reasons for this difference? Take a map of your city or town and try to identify regions in the map where you have noticed very thick layer of soot on the plants by the roadside. Compare with results obtained by other classmates and mark these areas on the map. Perhaps the results from all the students could be summarised and reported in newspapers.