Can you tell ?

What are the people in the pictures doing ?

Try this.

- Take water in a big container.
- Take a small narrow container.
- Hold it upside down on the surface of the water and without tilting it, push it down into the water.
- Now allow it to tilt.

What do you see ?

- Bubbles rise at once to the top.

What does this tell us ?

Air is lighter than water. So air bubbles rise to the top as soon as the container is tilted.

It means that there was air even in the container that appeared to be empty.

There is air all around us. It is present even in places that appear to be empty. Then, how far around us does air spread?

Try this.

Take large sheets of any waste paper. Or, obtain old newspapers of about one month and tear each of the sheets into four pieces. Now place these sheets of paper one at a time in a pile on the floor.

As the pile grows, observe the difference that can be seen in the layers of paper at the top of the pile and those near the floor.

When all the sheets have been placed, observe the difference in the upper and lower layers of the papers.

What do you see?

As we place more and more papers on the pile, the sheets at the lower level are pressed down by the sheets above them. The distance between the papers in the lower part of the pile becomes less while the papers in the upper part appear to be further apart.

What does this tell us?

The nearer a sheet of paper is to the floor, the greater is the number of papers above it. It means that the lower layers bear more weight than the upper layers of paper. Compared to that the upper layers bear less weight.

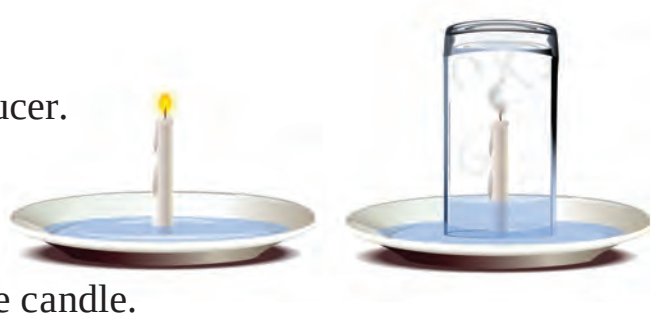
The atmosphere : The earth on which we live is round in shape like a ball. There is air all around the earth. This covering of air around the earth is called the atmosphere.

As we go farther from the earth, the layers of air become thinner. That is, the layers of air closest to the earth are very close to each other, while the ones at higher levels are not so close. The air at greater heights is rare.

The air around the earth

Try this.

- Take a slightly deep dish like a saucer.
- Stand a candle at its centre.
- Fill water in the dish.
- Light the candle.
- Now place a glass tumbler over the candle.



What do you see?

Soon the candle goes out and the level of water inside the tumbler rises up to a certain level.

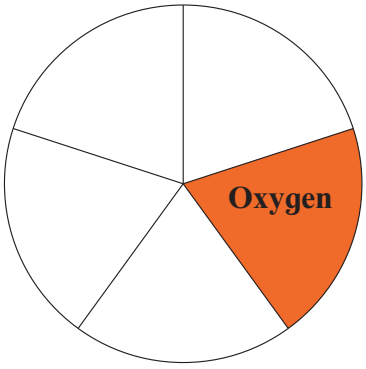
Why does this happen?

One of the constituents of air helps burning. As it gets used up, water rises in the tumbler. When that constituent is finished, the candle goes out. The water level too stops rising.

This constituent of air that helps burning is called oxygen gas.

- The earth's atmosphere is made of air. The circle in this picture shows all the air in the atmosphere. If we divide the circle into five equal parts, then the oxygen in the air will be equal to one of the parts.

Apart from oxygen, there are other gases in the atmosphere. Which could those be?



The oxygen in the air is used both for burning as well as respiration.

Which are the other uses of air you know about?

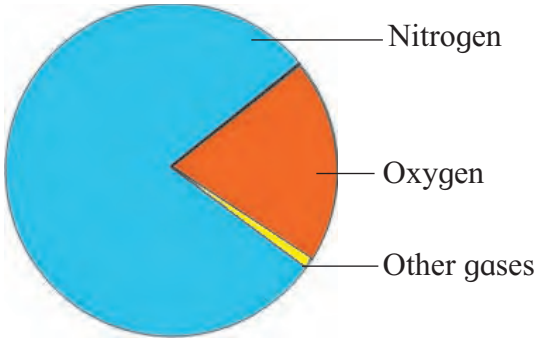
- You have learnt that the gas that fizzes out of soda-water is carbon dioxide. This gas is present in small quantities in air, too. You have also learnt that plants make their food using air and water in the presence of sunlight. When plants make their food, they use the carbon dioxide from the air.

- You have seen that when you place ice in a glass and it becomes very cold, droplets of water settle on its outside. It means that water, too, is present in air in the form of a gas.

- However, the largest part of air is made up of still another kind of gas. This gas is called nitrogen.

Thus, there are several gases present in air. In other words, air is a mixture of several gases.

Now if we draw a circle to represent air, then the quantity of each gas in the mixture will be as shown alongside.



Do you know ?

- The burning that takes place in factories, vehicles, stoves in kitchens, etc. gives out smoke. This smoke, too, mixes with the air around us.

What we have learnt –

- Air is present all around us even in places that appear to be empty.
- There is a covering of air all around the earth. It is called the atmosphere.
- The layers of air in the atmosphere close to the earth are pressed closer to each other while the upper layers are rarer.
- Air is a mixture of several gases. Oxygen, nitrogen, carbon dioxide and water vapour are its main constituents.

Always remember –

Fuels like coal, petrol and diesel give out smoke while burning which mixes with the air. This can cause ill health.

Exercises

(A) Find out.

Before drawing a medicine into the syringe, why is the plunger first pressed to the bottom of the barrel?

(B) Think and tell.

1. Name some things of everyday use in which air is filled under pressure.
2. What is seen mixing with the air when wood or coal burns?
3. What gets mixed with the air when water boils?

(C) Fill in the blanks.

1. There is ..... even in an empty container.
2. The air at a greater height from the earth is ..... than the air nearer to the earth.
3. If all the air were divided into five parts, the oxygen in the air would equal ..... part.
4. The layers of air nearer the earth bear ..... weight than the upper layers.

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