

CBSE class IX Science
NCERT Solutions
Chapter - 14
Natural Resources

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1. How is our atmosphere different from the atmospheres on Venus and Mars?

Ans. On Earth air is a mixture of a number of gases mainly nitrogen (78%) and oxygen (21%) while carbon dioxide is only 0.03% while on planets such as Venus and Mars the major component of the atmosphere is found to be carbon dioxide. In fact, carbon dioxide constitutes up to 95-97% of the atmosphere on Venus and Mars.

2. How does the atmosphere act as a blanket?

Ans. The atmosphere covering the Earth is like a blanket because air is a bad conductor of heat. The atmosphere keeps the average temperature of the Earth fairly steady during the day and even during the course of the whole year. The atmosphere prevents the sudden increase in temperature during the daylight hours. And during the night, it slows down the escape of heat into outer space.

3. What causes winds?

Ans. When air is heated by radiation from the heated land or water, it rises. But since land gets heated faster than water, the air over land would also be heated faster than the air over water bodies. Therefore, during the day, the air above the land gets heated faster and starts rising. As this air rises, a region of low pressure is created and air over the sea moves into this area of low pressure. The movement of air(wind) from one region to the other creates winds.

4. How are clouds formed?

Ans. When water bodies are heated during the day, a large amount of water evaporates and

goes into the air. Some amount of water vapour also get into the atmosphere because of various biological activities. This air also gets heated. The hot air rises up carrying the water vapour with it. As the air rises, it expands and cools. This cooling causes the water vapour in the air to condense in the form of tiny droplets. This condensation of water is facilitated if some particles could act as the 'nucleus' for these drops to form around. Normally dust and other suspended particles in the air perform this function. An enormous collection of tiny droplets of water appear as clouds. When the droplets have grown big and heavy, they fall down in the form of rain.

5. List any three human activities that you think would lead to air pollution.

Ans. following are the human activities that lead to air pollution.

1. Burning of fossil fuels like coal and petroleum releases different oxides of nitrogen and sulphur in air.
 2. Burning of wood release suspended particles and smoke in air.
 3. Use of harmful chemicals like aerosols, CFCs etc.
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1. Why do organisms need water?

Ans. All organisms are made up of cells. All cellular processes take place in a water medium. All the reactions that take place within our body and within the cells occur between substances that are dissolved in water.

Substances are also transported from one part of the body to the other in a dissolved form. Hence, organisms need to maintain the level of water within their bodies in order to stay alive.

2. What is the major source of fresh water in the city/town/village where you live?

Ans. Major sources of water are:

- rain water that provides water to all other sources
 - lakes, ponds and pools
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- rivers, wells and tube wells
 - dams
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3. Do you know of any activity which may be polluting this water source?

Ans. The fertilisers and pesticides used in our farms, sewage from our towns and cities and the waste from factories, specific industries also use water for cooling in various operations and later return this hot water to water-bodies. Such activities are polluting the water bodies.

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1. How is soil formed?

Ans. Over long periods of time, thousands and millions of years, the rocks at or near the surface of the Earth are broken down by various physical, chemical and some biological processes. The end product of this breaking down is the fine particles of soil. Factors responsible are as follows:

The Sun: The Sun heats up rocks during the day so that they expand. At night, these rocks cool down and contract. Result is formation of cracks.

Water: Water helps in the formation of soil in two ways. One, water could get into the cracks in the rocks formed due to uneven heating by the Sun. If this water later freezes, it would cause the cracks to widen.

Wind: In a process similar to the way in which water rubs against rocks and wears them down, strong winds also erode rocks down.

Living organisms: The lichens grows on the surface of rocks. While growing, they release certain substances that cause the rock surface to powder down and form a thin layer of soil. Other small plants like moss are able to grow on this surface now and they cause the rock to break up further. The roots of big trees sometimes go into cracks in the rocks and as the roots grow bigger, the crack is forced bigger.

2. What is soil erosion?

Ans. The removal and transportation of top soil from its original position to another place with the help of certain agents such as strong winds and fast running water is called soil erosion.

3. What are the methods of preventing or reducing soil erosion?

Ans. The methods of preventing or reducing soil erosion are as follows:

- prevention of deforestation and overgrazing.
 - afforestation and reforestation
 - improved methods of agriculture
 - Making strong embankments along the river banks
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1.What are the different states in which water is found during the water cycle?

Ans. Water occurs in all three states of matter during the water cycle:

1. Water vapours in the air which ultimately form clouds, and
 2. Rain water that falls on Earth and is available to us in water bodies or as underground water.
 3. Dew, snow, sheet or hail
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2. Name two biologically important compounds that contain both oxygen and nitrogen.

Ans. Urea, Nucleic acids (DNA and RNA), Proteins.

3.List any three human activities which would lead to an increase in the carbon dioxide content of air.

Ans. Three human activities which would lead to an increase in the carbon dioxide content of air are:

- burning of coal and petroleum
 - combustion of wood
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- deforestation(cutting down forests)
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4. What is the greenhouse effect?

Ans. An increase in the percentage of gases which trap solar radiations, cause the average temperatures to increase worldwide and this is called Greenhouse effect. Carbon dioxide , methane etc. are greenhouse gases. An increase in the carbon dioxide content in the atmosphere for example, would cause more heat to be retained by the atmosphere and lead to global warming.

5. What are the two forms of oxygen found in the atmosphere?

Ans. Molecular oxygen (O_2) and Ozone (O_3)

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1. Why is the atmosphere essential for life?

Ans. We need atmosphere for following reasons:

- (i) It works like a blanket and traps the radiations reflected back from earth surface that keeps the average temperature of earth quite steady and suitable for sustenance of life.
 - (ii) It provides carbon dioxide for photosynthesis and oxygen for respiration and combustion.
 - (iii) Prevents sudden change in temperature.
 - (iv) Enables us to hear sounds.
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2. Why is water essential for life?

Ans. Water is essential for life because:

1. All organisms are made up of cells. All cellular processes take place in a water medium. All the reactions that take place within our body and within the cells occur between substances that are dissolved in water.

2. Substances are also transported from one part of the body to the other in a dissolved form.
 3. Essential for digestion.
 4. Helpful in excretion and egestion.
 5. Regulates our body temperature by sweating and evaporation.
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3. How are living organisms dependent on the soil? Are organisms that live in water totally independent of soil as a resource?

Ans. Plants need simple nutrients like certain elements for their proper growth and they get most of these elements from soil. With the help of these elements plants prepare their own food in the presence of sunlight. Since all other organisms are dependent upon plants for their nutrition hence we can say that organisms that live in water are not totally independent of soil as a resource. Another reason is that organic matter from soil dissolves into water and provides nutrients to the aquatic organisms.

4. You have seen weather reports on television and in newspapers. How do you think we are able to predict the weather?

Ans. The informations about the weather are recorded by meteorological laboratories present in different cities of the country. Information such as direction and speed of wind, average daily minimum and maximum temperature, relative humidity, patterns of cloud formation, etc., are recorded with the help of instruments and then displayed on television, published in newspapers and broadcasted on the radio.

5. We know that many human activities lead to increasing levels of pollution of the air, water-bodies and soil. Do you think that isolating these activities to specific and limited areas would help in reducing pollution?

Ans. Many human activities lead to increasing levels of pollution of the air, water-bodies and soil. Isolating such activities to specific and limited areas may help in reducing water and soil pollution but it may hardly make any difference to air pollution severity. The reason is gases will spread from isolated places and reach everywhere. Instead of isolating we must stress on sustainable management of our resources and cut down or replace their use like using

cleaner fuels like CNG in place of fossil fuels.

6. Write a note on how forests influence the quality of our air, soil and water resources.

Ans. Quality of air: Forests have trees and plants that absorb carbon dioxide and liberate oxygen thus maintaining their levels in the biosphere.

Quality of soil: Roots of trees hold the soil particles and prevent soil erosion from taking place. Dead trees and plants or their parts add humus and organic matter to soil thus making it fertile.

Quality of water: Forest allows easy going of the water cycle in nature with cloud formation and condensation in the form of rain.