



সিঙ্গাৰাংগেৰাৰ ডেপুটী নক্সাৰাংগেৰাৰ (ডেপুটী)

**DEPARTMENT OF EDUCATION (S)**  
Government of Manipur

## CHAPTER 18

### POLLUTION OF AIR AND WATER

#### **SOLUTIONS:**

#### **EXERCISES:**

Q1. What are the different ways in which water gets contaminated?

Answer: The different ways in which water get contaminated are:

1. Throwing of untreated sewage, quantities of garbage, dead bodies, idols of gods and goddesses directly in the river.
2. Throwing of chemicals which are harmful and poisonous from various industrial units.
3. Practice of bathing or washing in or near water body.
4. Excessive quantities of chemical used in the fields are carried away to water bodies due to rain.

Q2. At an individual level, how can you help reduce air pollution?

Answer: At an individual level we can help to reduce air pollution by the following ways:

1. If travelling alone, it is better to use public transport instead of private car.
2. Avoid vehicle for short distance, instead use bicycle or can walking on foot.
3. Using of clean fuels in automobiles and industries instead of diesel and petrol.
4. Instead of burning leaves, it is better to put them in compost pit.
5. Reduce the use of woods and dung cakes in kitchen or replace with LPG gas.

Q3. Clear transparent water is always fit for drinking. Comment?

Answer: Water might be clear, transparent but it may contain some disease carrying micro organisms and dissolved impurities. So, it's essential to purify water before drinking by boiling or using water purifying system. Hence, clear transparent water is not always fit for drinking.

Q4. You are a member of Municipal Body of your town

Make a list of measures that would help your town to ensure the supply of clean water to all its residents.

Answer: To ensure the supply of clean water to all residents the following steps must be taken:

1. The main water source must be built in clean surrounding and should be maintained properly.
2. Chemical methods such as chlorination or bleaching powder must be used for purifying water.
3. To check the sewage treatment plant whether they are following the physical and chemicals processes to clean water before discharging it into water bodies.

Q5. Explain the difference between pure air and polluted air.

Answer: Air is a mixture of many gases. A Pure air consists of 78% of nitrogen, about 21% of oxygen, 0.03% of carbon dioxide and other gases such as argon, methane, ozone and water vapour are also present in very small quantities. When this composition of air is contaminated by unwanted substances or gases such as carbon monoxide, nitrogen oxides, smoke and high level of CO<sub>2</sub>, then the air is said to be polluted.

Q6. Explain circumstances leading to acid rain. How acid rain does affect us?

Answer: Various industries like automobiles chemicals, rubber processing and oil refineries releases pollutants like sulphur dioxide, nitrogen oxide into the atmosphere. These gases react with water vapour present in the atmosphere to form sulphuric acid and nitric acid. The acid drop down with the rain thereby resulting acid rain.

The affect of acid rain are:

1. Acid rain corrodes marbles of the monuments such as Taj Mahal.
2. Acid rain also corrodes many building.
3. Many Crops are also damaged by this acid rain.

Q7. Which of the following is not green house gas?

- a) Carbon dioxide
- b) Sulphur dioxide
- c) Methane
- d) Nitrogen

Answer: d) nitrogen

Q8. Describe the 'Green House Effect' in your own words.

Answer: Green house Effect is a natural process that warms the earth surface. When the solar radiations reached the earth, a part of it is absorbed by the earth and a part of it is released back to the atmosphere. Green house gases such as carbon dioxide, methane and water vapour trap these radiations and do not allow heat to leave. This helps in keeping our planet warm and thus helps in human survival. However, due to many human activities the amount of green house gases mainly the carbon dioxide increases and this result in the excessive increase of the earth's temperature leading to global warming.

Q9. Prepare a brief speech on Global Warming. You have to deliver the speech in your class.

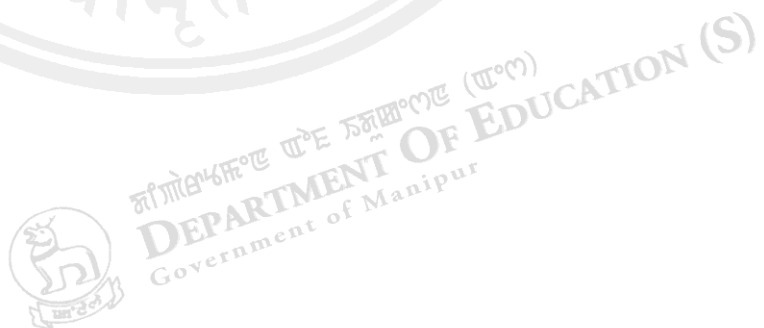
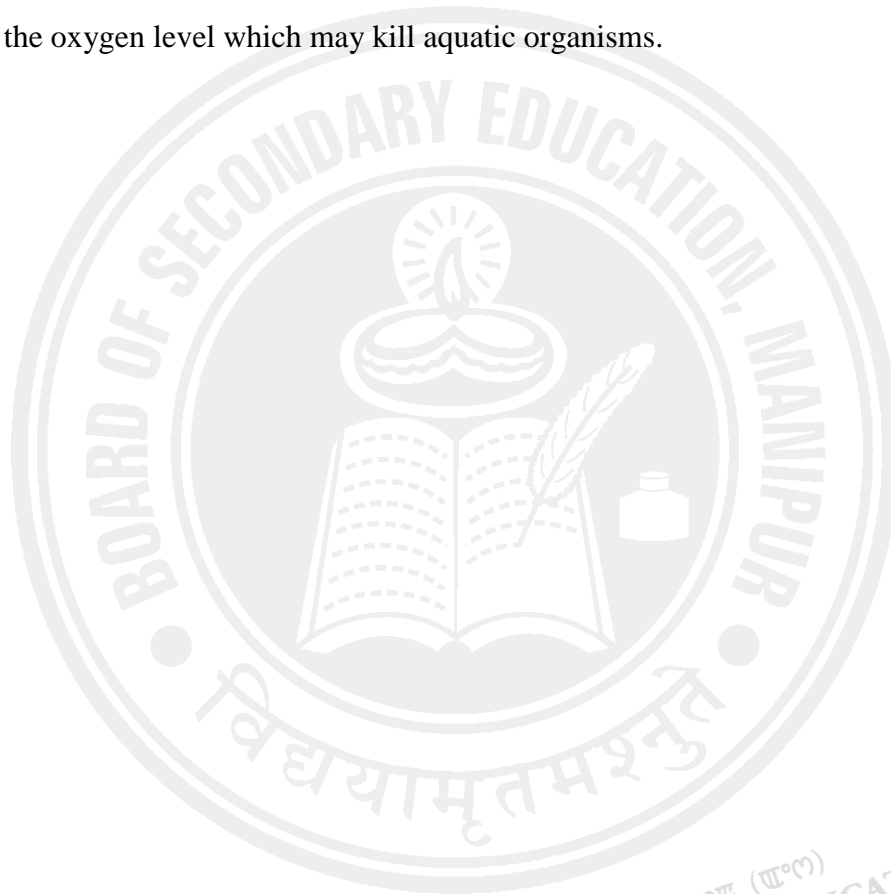
Answer: Global Warming is an increase of earth temperature due to green house gases released from human activities such as burning fossil fuels, deforestation etc. The green house gases include carbon dioxide, methane, nitrous oxide and water vapour. Excess of carbon dioxide in the air is one of the measure factors responsible for global warming. Carbon dioxide and green house gases trap heat and does not allow escaping into space. As a result the average temperature of the earth atmosphere is gradually increasing. Global Warming could result in wide ranging effects on rainfall patterns, agriculture, forests, plants and animals. It can also cause sea level to rise dramatically flooding many coastal areas.

Q10. Describe the threat of the beauty of the Taj Mahal.

Answer: Acid rain is the main threat to the beauty of Taj Mahal. Acid rain is formed due to the pollutants sulphur dioxide, and nitrogen dioxide released from the automobiles chemicals, rubber processing industries located in and around Agra. This corrodes the marble of the monument and the phenomenon is called "marble cancer". Suspended particulate matters such as soot particles emitted by Mathura oil refinery has also contributed towards the yellowing of the marble.

Q11. Why does the increased level of nutrients in the water affect the survival of the aquatic organisms?

Answer: chemicals like nitrate and phosphate used as fertilizers in agriculture dissolved in water and are washed into water bodies from the field. The excessive quantity of the chemicals acts as nutrients for algae to flourish. Once these algae die they serve as food for decomposer like bacteria. A lot of oxygen in the water body gets used up resulting in a decrease in the oxygen level which may kill aquatic organisms.



### EXTRA QUESTIONS AND ANSWERS:

Q1. What is pollution?

Answer: Pollution is the introduction of harmful materials into the environment. These harmful materials are called pollutants.

Q2. Name the major pollutants of air.

Answer: Carbon monoxide, nitrogen oxide, carbon dioxide, methane and sulphur dioxide are the major pollutants of air.

Q3. Which poisonous gas reduces oxygen carrying capacity of blood in human body?

Answer: Carbon monoxide.

Q4. Which gas is the major responsible for the green house effect?

Answer: Carbon dioxide

Q5. What are green house gases?

Answer: Gases that causes green house effect on earth are called Green house gases. Examples are CO<sub>2</sub>, methane, nitrous oxide and water vapour.

Q6. What is water pollution? Give major contaminants of water.

Answer: Water pollution is the contamination of water by substances harmful to life. Major contaminants of water are sewage, agricultural chemicals and industrial wastes.

Q7. Why do we need to minimize the use of vehicle?

Answer: We need to minimize the use of vehicle because vehicles produce high level of pollutants carbon monoxide, carbon dioxide, nitrogen oxides and smoke. Carbon monoxide is a poisonous gas produced from incomplete burning of fuels such as petrol and diesel. It reduces the oxygen carrying capacity of the blood.

Q8. What is smog? How it is harmful to us?

Answer: Smog is a kind of air pollution, which is made up of smoke and fog in the air. Smoke may contain oxides of nitrogen which combine with other air pollutants and fog to form smog.

It is harmful to us as it causes breathing difficulties such as asthma, cough and wheezing in children.

Q9. What is the source of sulphur dioxide? Write its negative effects.

Answer: Sulphur dioxide is produced by combustion of fuels like coal in power plants. It can cause respiratory problems including permanent lung damage in human being.

Q10. What are CFCs? Why are they considered as pollutants?

Answer: CFCs stands for chlorofluorocarbons and are used in refrigerators, air conditioners and aerosol sprays.

CFCs are considered as pollutants because they cause damage to the ozone layer of the atmosphere which protects us from harmful ultra violet radiations.

Q11. How does deforestation lead to an increase in carbon dioxide?

Answer: Plants utilize  $\text{CO}_2$  from the atmosphere for photosynthesis thereby decreasing the amount of  $\text{CO}_2$  in the air. Deforestation leads to an increase in the amount of  $\text{CO}_2$  in the air because the number of trees which consume  $\text{CO}_2$  is reduced.

Q12. Why do we need to purify water before drinking?

Answer: We need to purify water before drinking to protect ourselves from germs and other contaminants.

Q13. How the disposal of garbage etc would affects the living organisms in the river?

Answer: Disposal of garbage increases concentration of pollutants in the river. These act as nutrients for algae to flourish. Once these algae die they serve as food for microorganisms like bacteria. A lot of oxygen in the water body gets used up resulting in a decrease in the oxygen level which may kill aquatic organisms.

Q14. What is portable water?

Answer: Water which is purified and fit for drinking is called portable water.

Q15. How do industries pollute water?

Answer: Many industries like oil refineries, paper factories, textile and sugar mills and chemical factories discharge harmful chemical into river and streams. These industries cause chemical contamination of water with arsenic, lead and fluoride etc which lead to toxicity in plants and animals.

Q16. What will happen if we drink polluted water?

Answer: Polluted water may contain bacteria, viruses, fungi and parasites which can cause diseases like cholera, typhoid, jaundice etc.

Q17. Is soil affected by impure water?

Answer: Yes, soil is affected by impure water causing changes in acidity, growth of worms etc.

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