WORKSHEET 2

CHAPTER 8 – ATMOSPHERIC POLLUTION

A. Tick (✓) the correct option.

1. The greenhouse which on combustion produces another greenhouse gas is
   a. nitrous oxide. b. ozone. c. methane. d. carbon dioxide.
2. The gas which in the presence of ultraviolet radiation gives two atoms of the same gas is
   a. oxygen. b. ozone. c. carbon dioxide. d. water vapour.
3. An ozone hole was first appeared over
   a. North america. b. Antarctica. c. Europe. d. Africa.
4. In the atmosphere, sulphur dioxide combines with water vapour and oxygen to form
   a. ozone. b. smog. c. sulphuric acid. d. chlorofluorocarbons.
5. The principal gaseous pollutants are oxides of the following elements except
   a. carbon. b. nitrogen. c. sulphur. d. lead.

B. Fill in the blanks from the choices given within the brackets.

1. _____ (SPM/Smog) is a smoky mixture of unburnt organic compounds.
2. Nitrogen oxides cause _____ as well as _____ (ozone layer depletion/smog/greenhouse effect)
3. _____ (Nitrons oxide/Methane) is colourless, odourless, flammable gas found in massey areas.
4. Natural greenhouse effect is caused by _____ (carbon dioxide/water vapour)
5. Volcanic eruptions are the cause of release of _____ (nitrogen oxides/sulphur dioxide/hydrocarbons) gas into air.

C. Give reasons for the following.

1. Natural rain water does not have a pH of 7.
2. In the presence of right amount of greenhouse gases, the surface temperature of the earth is maintained.
3. Depletion of ozone layer is harmful for both humans and plants.
4. Acid rain affects marine organisms.
5. Carbon dioxide leads to global warming.

D. Give balanced chemical equations for the following conversions.

1. Sulphur trioxide to sulphuric acid, a constituent of acid rain.
2. Nitrogen to nitrogen dioxide when fuel combustion takes place in vehicle's engine.
3. Methane to carbon dioxide, a greenhouse gas.
4. A molecule of ozone on dissociation gives two molecules of oxygen gas.
5. Oxygen to ozone.

Name: ..... Teacher's signature: .....

Class: IX Date: .....

E. Answer the following.

1. State one natural and one man-made source of the two pollutants responsible for acid rain.
2. What is meant by the term atmospheric pollution? Name any two gaseous atmospheric pollutants?
3. a. What do you understand by ozone depletion?
   b. State two effects of ozone depletion.
4. Write down the harmful effects of the following pollutants
   a. Radon b. SPM c. Chlorofluorocarbons d. Hydrocarbons
5. a. What are greenhouse gases? Give any two examples.
   b. State the main causes of increasing level of carbon dioxide in the atmosphere?
   c. How can we reduce the emission of greenhouse gases?

ANSWERS

WORKSHEET 2

A. Tick (✓) the correct option.

1. c
2. b
3. b
4. c
5. d

B. Fill in the blanks from the choices given within the brackets.

1. Smog
2. smog, greenhouse effect
3. Methane
4. water vapour
5. sulphur dioxide

C. Give reasons for the following.

1. Natural rain water is slightly acidic due to the presence of small amount of carbonic acid. Therefore, natural rain water does not have a pH of 7.
2. The surface temperature of the earth is maintained due to the presence of greenhouse gases in right amount. When the heat radiations emitted by the solar radiations pass through the atmosphere and reach the earth's surface, these are absorbed and retained by the greenhouse gases. Some of the absorbed heat radiations are reflected back into the atmosphere. Thus, a balance is maintained due to absorption and reflection of heat radiations.
3. Ozone layer prevents harmful ultraviolet radiations from reaching the surface as ultraviolet radiations cause skin cancer, affect the human immune system and destroy terrestrial and aquatic life. Therefore, depletion of ozone layer is harmful for both humans and plants.
4. Acid rain affects marine organisms because toxic metals like mercury, lead and zinc present in the soil, get leached by acid rain. Thus, toxic metals enter rivers and streams and hence, destroy aquatic plants and animals.
5. The increase in the concentration of carbon dioxide leads to an increase in the atmosphere temperature which is not confine to one region but has a global impact. Therefore, carbon dioxide leads to global warming.

D. Give balanced chemical equations for the following conversions.

1. $SO_3 + H_2O \rightarrow H_2SO_4$
2. $N_2 + 2O_2 \rightarrow 2NO_2$
3. $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$
4. $O_3 \xrightarrow[\text{light}]{\text{UV}} O_2 + O$

   $O + O_3 \rightarrow 2O_2$
5. $O_2 \xrightarrow[\text{light}]{\text{UV}} O + O$

   $O_2 + O \rightarrow O_3$

E. Answer the following:

1.

Pollutants	Natural source	Man-made source
SO_2	volcanic eruptions	burning of fossil fuels
NO_2	lightening discharge	automobile exhausts

2. The contamination of the indoor or outdoor environment by any chemical, physical or biological agent that modifies the natural characteristics of the atmosphere is called **atmospheric pollution.**

   Sulphur dioxide and carbon dioxide are the two gaseous atmospheric pollutants.

3. Dissociation of ozone into oxygen molecules in the atmosphere by the action of chlorofluorocarbons is called ozone layer depletion.

   Ozone depletion has the following effects:

   a. If ozone layer depletes then the increased amount of harmful ultraviolet radiations reach the earth which cause skin caner, cataract and eye damage in humans.

   b. In plants, it reduces chlorophyll content, disrupts ecosystem and retards the plant growth.

4. a. Radon: It causes lung cancer and other respiratory problems.

   b. SPM: They cause asthma, bronchitis, heart disease and affect the respiratory system of animals.

   c. Chlorofluorocarbons: These are the chemicals which damage the protective ozone layer in the atmosphere and as a result more harmful ultraviolet rays from the sun reach the earth's surface.

   d. Hydrocarbons: These compounds cause smog and decrease visibility, and hence responsible for occurring accidents.

5. a. The gases responsible for greenhouse effect are called greenhouse gases. For example, methane, carbon dioxide.

   b. The main cause of increasing level of carbon dioxide in the atmosphere are:

      i. burning of coal and natural gas.

      ii. exhausts from automobiles, power plants.

   c. i. Use of fules like L.P.G., natural gas, C.N.G.

      ii. Planting more trees.

      iii. Use less automobiles for transportation.