

Exercise :8 C

What do you understand by Green House effect?

Solution:

Green house effect is the heating of earth and its environment as a result of trapping solar radiations by carbon dioxide and water vapour.

1. What are green house gases? How are they responsible for global warming?

Solution:

Gases which contribute for the green house effect are called as green house gases. Green houses gases are carbon dioxide, water vapour, oxides of Nitrogen, methane, chloro fluoro carbons etc.

Mechanism:

Sunlight reaching Earth consists of three types of radiation-UV radiation, visible radiation and IR radiation. As sunlight passes through the atmosphere, most UV radiation is absorbed by ozone; 30% of IR radiation reaches the Earth's surface, heating it up. As the Earth's surface becomes hot, it starts emitting radiation with less energy than the incoming radiation and thus with longer wavelength. Some emitted IR radiation escapes from the Earth's surface and some are absorbed by CO₂, thus remaining on the Earth. Trapped radiation warms the Earth's surface and lower layers of the atmosphere.

2. State the sources and effects of the following gases:

- 1. Carbon dioxide**
- 2. Methane**
- 3. Water vapour**

Solution:

1. Carbon dioxide:

- Burning of fossil fuels like Coal, natural gas and petroleum
- Industrial processes like manufacture of lime and these seen in fermentation units.
- Biological decay of plants
- Respiration by animals and humans beings

2. Methane

- During anaerobic decomposition of organic matter in soil, water and sediments.
- Incomplete combustion of fossil fuels.

3. Water vapour

- Burning of hydrocarbons

4. State the ways of reducing the presence of green house gases.

Solution:

Below are a few steps to reduce the presence of greenhouse gases.

- Use of automobiles should be reduced by using public transport, bicycles and electric vehicles.
- Trees should be planted and grown
- Burning of dry leaves and wood should be avoided.
- Smoking should be avoided
- Educate the people about the harmful effects caused by the greenhouse effect.

5. State the effects of green house gases on the atmosphere.

Solution:

Effects of the greenhouse effect on the atmosphere are as follows.

- The rise in temperature:
- Greenhouse gases lead to an increase in temperature, which is called global warming.
- Increase in temperature leads to the melting of glaciers, and polar ice caps are taking place which is leading to an increase in the sea level. This poses a threat of floods in the coastal areas.
- Global warming increases the evaporation of water from water bodies which will increase water vapour in the atmosphere. Increase in water vapour further increases the temperature.
- Global warming leads to change in rain pattern, which in turn results in a climatic shift and adversely affects plants and animals.
- Greenhouses gases are responsible for ozone depletion

6. State the role of a greenhouse in growing plants.

Solution:

Greenhouse gases increase the temperature of the earth to the optimum level. Temperature moderation provides a controlled environment for plants to grow and thrive.

7. Our atmosphere acts as a greenhouse. Explain.

Solution:

Atmosphere comprises of greenhouse gases such as CO₂, water vapour, O₃, CH₄, oxides of nitrogen and CFCs. These greenhouse gases allow the sunrays to get trapped inside the earth. Sunlight reaching the Earth consists of three types of radiation-UV radiation, visible radiation and IR radiation. As sunlight passes through the atmosphere, most UV radiation is absorbed by ozone; 30% of IR radiation reaches the Earth's surface, heating it up. As the Earth's surface becomes hot, it starts emitting radiation with less energy than the incoming radiation and thus with a longer wavelength. Some emitted IR radiation escapes from the Earth's surface and some are absorbed by CO₂, thus staying in the Earth. Trapped radiation warms the Earth's surface and lower layers of the atmosphere. Thus atmosphere acts as a greenhouse.

8. How can we reduce global warming?

Solution:

We can reduce global warming by taking the following measures.

- Use of automobiles should be reduced by using public transport, bicycles and electric vehicles.
- Trees should be planted and grown
- Burning of dry leaves and wood should be avoided.
- Smoking should be avoided
- Educate people about the harmful effects caused by global warming.

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