

Science Class 10 Notes for Our Environment

Introduction

The environment includes our physical surroundings like air (or atmosphere), water bodies, soil (land) and all the organisms such as plants, animals, human beings and micro organisms like bacteria and fungi (called decomposers).

The waste materials produced by the various activities of man and animals are poisonous to some extent and can be divided into two main groups :

1. Biodegradable wastes, and
2. Non-biodegradable wastes.

Ecosystem

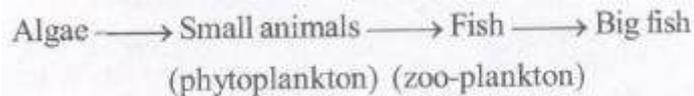
- An ecosystem is a self-contained unit of living things (plants, animals and decomposers), and their non-living environment (soil, air and water). e.g. a forest, a pond, a lake, a greenland etc.
- There are two components of an ecosystem : **biotic component and abiotic component.**
- **Biotic component** : It includes three types of organisms:
 - Producer
 - Consumer
 - Decomposer/saprophyte
- Abiotic component
- Consumers can be further divided into three groups : herbivores, carnivores and omnivores.
- Planktons are very minute or microscopic organisms freely floating on the surface of water in a pond, lake, river or ocean. Planktons are of two types : Phytoplanktons and Zooplanktons.
- The microscopic aquatic plants freely floating on the surface of water are called phytoplanktons.
- The microscopic aquatic animals freely floating on water are called zooplanktons. The freely floating protozoa are an example of zooplankton.
- The micro-organisms which break down the complex organic compounds present in dead organisms like dead plants and animals and their products like faeces, urine, etc. into simpler substances are called decomposers.

Food Chains and Webs

The sequence of living organisms in a community in which one organism consumes another organism to transfer food energy, is called a food chain.

A food chain is unidirectional where transfer of energy takes place in only one direction.

In aquatic ecosystem of the biosphere, like fresh water ponds, lakes or sea, the food chain starts with microscopic free floating plants (phytoplankton)



The various steps in a food chain at which the transfer of food (or energy) takes place are called trophic levels.

The inter-connected food chains operating in an ecosystem which establish a network of relationships between various species, is called a food web.

How do our activities affect the environment Global Warming

The addition of certain pollutants like the carbon dioxide gases increases the temperature of the earth.

The reduction in the forest cover also contributes to the heating of earth. This is called global warming.

Ozone Layer formation and importance Ozone (O_3) is a molecule formed by three atoms of oxygen. Ozone, is a deadly poison. It shields the surface of the earth from ultraviolet (UV) radiation from the Sun. This radiation is highly damaging to organisms.

Ozone at the higher levels of the atmosphere is a product of UV radiation acting on oxygen (O_2) molecule. The higher energy UV radiations split apart some molecular oxygen (O_2) into free oxygen (O) atoms.

The depletion of ozone layer is due to CFC (chloro fluorocarbons).

SOME IMPORTANT POINTS

Flow of materials in an ecosystem is cyclic but flow of energy is unidirectional.

There is a continuous transfer of energy from one trophic level of organisms to the next in a food chain.

Ten percent law states that only 10 percent of the energy entering a particular trophic level of organisms is available for transfer to the next higher trophic level.

The increase in concentration of harmful chemical substances like pesticides in the body of living organisms at each trophic level of a food chain is called biological magnification.

The disposal of waste should be done in a scientific way. There are different methods of waste disposal. The method to be used depends on the nature of the waste. Some of the important modes of waste disposal are :

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- (i) Recycling
- (ii) Preparation of compost
- (iii) Incineration
- (iv) Landfill
- (v) Sewage treatment