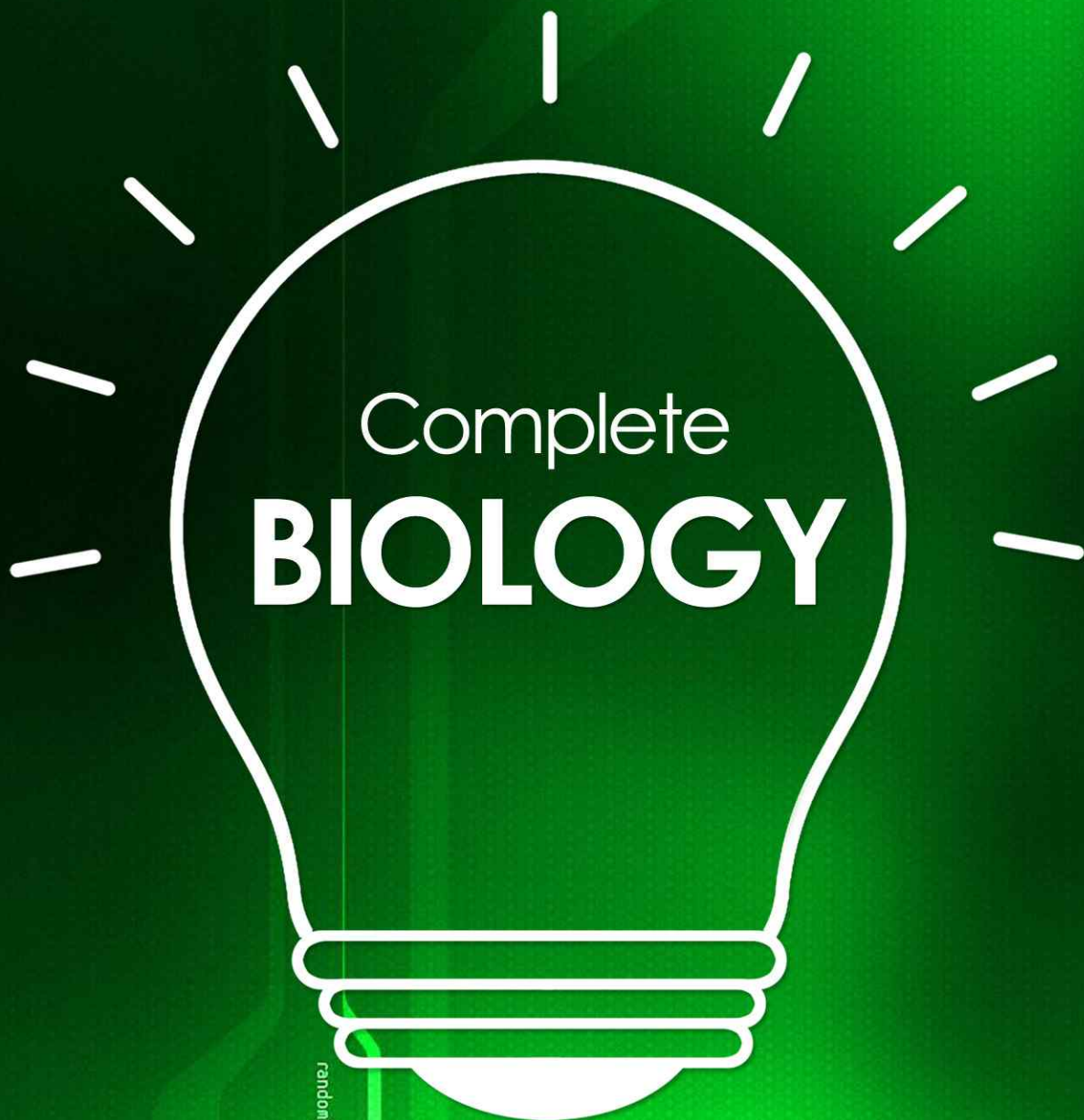




NEET · CBSE eBOOKS

CLASS 11 & 12th



Learning Inquiry
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CLASS 12th

Environmental Issues

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01. Introduction

“Any undesirable change in physical, chemical or biological characteristic of air, water and land which is harmful to the man directly or indirectly through the animals, plants industrial unit or raw material is called **pollution**.”

Pollutants: “Any material or product of man or nature which leads to pollution is called pollutants”

Type of Pollutants Usually Pollutants are Divided into Following Categories

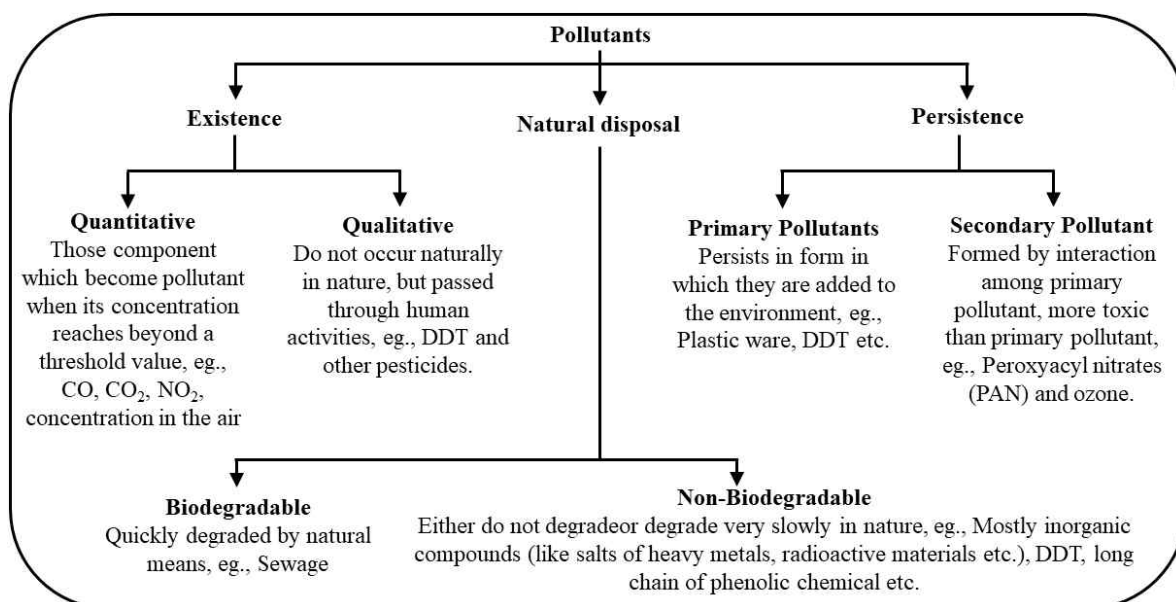
- (i) **Nondegradable Pollutants** - Many of such pollutants are usually not degraded or degraded partially in environment. Such as aluminium pecks, Mercury compounds of phenols, Glass, D.D.T., Benzene, BHC pesticides, etc.
- (ii) **Biodegradable Pollutants** - The **domestic sewage papers, woods, garbage, live stock wastes**, etc. are easily **degraded completely by microorganism**, it becomes useful. But if these materials enter the environment in such large quantities, that they can not be degraded completely then addition of these materials cause pollution in environment.
- (i) **Primary Pollutants** - These persists in the form in which they are added to the environment. eg., DDT, CO etc.
- (ii) **Secondary Pollutants** - These are formed by chemical reaction amongst primary pollutants.
eg., **Photochemical smog, London smog, PAN, O₃**.
Synergism – Formation of secondary pollutants is known as synergism. Secondary pollutants are more toxic than primary pollutants.
- (i) **Quantitative Pollutants** - These are the substance which occur in nature but become pollutant when their concentration reaches beyond a threshold value in the environment.
eg., CO₂, Nitrogen oxide.
- (ii) **Qualitative Pollutants** - These are the substance which do not occur in the environment but are passed in through human activity.
eg., Fungicides, Herbicides, DDT etc.

Types of Pollution

- (i) **Natural Pollution** - Caused by natural sources like, **CH₄ from paddy fields and cattle, marsh, forest fire**.
- (ii) **Anthropogenic Pollution** - Caused by **human activities**.

Main sources of pollution :

- (a) **Point source pollution** - Where the effluent discharge occur at a specific site.
eg., factory outlet and Municipal sewage
- (b) **Line source pollution** - It is passed along a narrow belt, Roads,
eg., Roads, Railway tracks.
- (c) **Diffuse source pollution** - It is over a large area.
eg., sprayed fertilizer or pesticides through run off.
- (d) **Area source pollution** - Industrial estate and mining area.



Air Pollution

- The air pollution is caused due to addition of unwanted substances or gases. The atmospheric pollution is mainly caused by the activities of man and concentrated to the inhabited and the industrial complexes in cities.
- There are two main categories of air pollutants:

(i) Gases

(ii) Particulates

- The gaseous material include various gases and vapours of volatile substance or the compound with a boiling point below 200°C.
- Particulate matter consist of solid particles or liquid droplets (aerosols) small enough to remain suspended in air. eg., soot, smoke, dust, asbestos, fibres, pesticides, some metals (including Hg, Pb, Cu and Fe) and also biological agent like tiny dust mites and flower pollen.
- Suspended particulate matter in the lower atmosphere (troposphere) causes and aggravates human respiratory illness, like asthma, chronic bronchitis etc.
- According to **Central Pollution Control Board (CPCB)** particulate size **2.5 micrometers** or less diameter (PM 2.5) are responsible for causing harm to human health as inhaled deep into lungs can cause breathing and respiratory symptoms, irritation, inflammations, damage to lungs & premature death.

Major Air Pollutants And Their Effects

(i) Carbon monoxide (CO)-

Source – It is the main air pollutant released from smoke of automobiles.

Effect – Carbon monoxide is highly toxic gas, it **combines with haemoglobin** of the blood and blocks the **transportation of oxygen**. Thus, it **impairs respiration** and it cause **death due to asphyxia** when inhaled in large amount.

(ii) Unburn Hydrocarbons - (3, 4 Benzopyrine, CH₄, Benzene)

Source – These are mainly released from **automobiles and burning of fossil fuel (coal, petrol, diesel)**. **Methane (CH₄)** is the most abundant hydrocarbon in atmosphere and its main marshy area and paddy field.

Effect – Hydrocarbons cause **lungs cancer**.

Polynuclear hydrocarbon is major hydrocarbon pollutant which cause cancer.