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ENVIRONMENTAL EFFECTS

Pollution

The pollution may be defined as the presence of undesirable substances / foreign matters (like Organic, inorganic, biological or radiological or heat etc.) into the environment thereby adversely altering that nature's quality of the environment and causing damage to human / plants / animal life.

A substance whose presence causes pollution is known as pollutant.

"A pollution may also be defined as an unwanted / undesirable foreign matters added to the environment."

⇒ Causes of Pollution

i). The uncontrolled growth in number, i.e., tremendous increase in population all over the world.
ii). The rapid industrialization.
iii). The rapid urbanisation.
iv). The exploitation of nature by cutting tress.

Besides this, natural phenomenon like (a). Radioactivity (b). volcanic eruption (c). Strong

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winds (d). Forest ~~trees~~ fires, minerals (e), sands, dust etc. also cause pollution.

v). Excessive use of insecticides, pesticides and other chemicals.

Types of Pollution

i). Air Pollution
ii). Water Pollution
iii). Soil Pollution

⇒ Air Pollution

It is very serious problem in industrialised, congested cities. Pollutants include gases, smoke, fumes, dust and particulate matter and odur. Once in the air, all these pollutants get dispersed over a great distance. They go on circulating alongwith the air. Some of these pollutants react with the moisture from the air and make them more hazardous.

TYPES OF AIR POLLUTANTS

There are four major groups of air pollutants are:-

(a). Gases:- Gases are freely miscible with air, without settling down. The concentration

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Of gases pollutants are expressed in "parts per million" (ppm) by volume (no. of molecule of pollutant per 1000,000 or 10^6 molecules 0.001 ppm value is quite significant.

Pollutant	Major Sources	Principal Effects
1. Sulphur dioxide (SO_2)	Thermal power plants, petroleum industry, Sulphuric acid plants, oil refinery, sulphide ore roasting plants.	SO_2 is main air pollutant which causes heart, respiratory diseases, throat troubles; eye irritation etc.
2. Sulphur trioxide (SO_3)	Formed by oxidation of SO_2 in presence of sunlight. Both SO_2 and SO_3 are converted into H_2SO_3 and H_2SO_4 in presence of water vapour in air. Droplets of these acid remain suspended in air.	1 ppm SO_3 causes breathing severe and irritation in respiratory tracts. SO_3 is destructible to vegetation. It corrodes iron and steel. It also destructive to lungs, tissues and heart failure.
3. Carbon Monoxide (CO)	Partial combustion of fuel in automobiles, industries, oil refineries, cigarette, bidi, smoke and domestic heat appliances.	It causes headche, visual difficulty, paralysis and even death. It also affects cardiovascular system.

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4.	Carbon dioxide (CO_2)	Combustion process, respiration of plants and animals, by deforestation.	CO_2 is non-poisonous, non-corrossive but causes pollution, respiratory disorders and suffocation.
5.	Nitrogen Oxides (NO, NO_2)	Combustion of fuels, (coal, diesel, petroleum), manufacturing acid, explosives and acid-picking plants.	It causes respiratory illness among children, irritation of eyes, lung congestion, limit visibility of roads and difficulty in breathing causes lung asthama, bronchitis.

). Particulates :-

. Dust :- House cleaning dust, power houses, mines, and quarries, vehicles traffic, furnace ashes, natural winds, forest fires, pottery and ceramic factory stacks, combustion operations and several other activities.

⇒ Effects :- It causes allergic and respiratory diseases 'silicosis'. Dust causes corrosion and soiling.

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2. Smoke:- It composes of tiny particle of carbon, ash, oil etc. Smoke is formed by incomplete combustion of fuel. Major sources are rail roads, locomotives, diesel engines automobiles, petrol engines, furnaces, hearths etc.

→ Effects:- Loss of calorific value through incomplete combustion. The possibility of cancer due to smoke spoiling of clothings, rags, exterior-finish of buildings.

3. Smog:- It is combination of Smoke and Fog (a natual phenomenon in which minute liquid particles remain suspended in air).

Effects:- ~~It causes lead poisoning as lead-dust settles down on plants and food-stuffs meant for human and animal consumption.~~

→ Effects:- Smog has some effects similar to smoke, but somewhat prolonged one.

4. Abestos dust:- Its main sources are mining, processing and manufacturing of abestos gaskets and ropes used in automobiles, buildings, flooring and insulating materials.

→ Effects:- In addition to the effects of dust, it causes 'asbestosis' disease.

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5. Lead dust :- The main sources are lead mining and smelting works, lead batteries, lead paints and manufacture of lead-base alloys, automobile exhausts (TEL is used to added to gasoline so as to increase its octane rating).

→ Effects :- It causes lead poisoning as lead-dust settles down on plants and food-stuffs meant for human and animal consumption.

(C). Deforestation :- Green leaves of plants absorb CO_2 for the manufacturing of their food by photosynthesis and give out O_2 in the processes, & thereby purifying the atmospheric air. Plants also control H_2S, HNO_3 and Cl_2. Thus, plants help in controlling the air pollution. Excessive deforestation (cutting of trees) causes indirectly air pollution.

(D). Radioactive gases :- The radioactive elements, which occur in rocks and soils are derivatives of uranium (^{238}U), thorium (^{232}Th) and actinium (^{231}Ac). They evolve radioactive gases, which mainly consist of radon (Rn) and thoron. These gases are harmful to human health.

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CONTROL OF AIR POLLUTION

1. Dust:- To eliminate dust, 'extraction ventilation' is frequently applied.

2. Smoke:- May be reduced by installing "cottrell-electrostatic precipitators".

3. The emissions from automobiles and vehicles may be reduced by cleaning the exhaust after combustion by the use of a catalyst.

4. The use of tall chimneys, reduces the concentration of air pollutants near the ground level. The gases discharged through stack get diluted and are dispersed into the atmosphere. The stacks thus act to provide low concentration pollutants.

5. SO_2 and H_2S evolved in refineries in air, can reduced by adopting 'Claus process' which yields elementary sulphur as a by-product.

6- The use of wood and coal as a fuel should be reduced and modern energy resources electricity, nuclear power, tidal power, geothermal power and solar energy as domestic fuel.

7. Growing More Trees

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AIR POLLUTION DUE TO INTERNAL COMBUSTION

One of the major man-made air pollutant is the internal combustion ~~engine~~ engine used for running motor cars, buses, planes, trucks, scooter, auto-rickshaw etc.
When fuels like kerosene, diesel, petrol is burnt, it releases lot of smoke into the atmosphere. These fuels are the mixtures of various hydrocarbons. Out of these, Octanes (C_8H_{18}) constitutes a major component of gasoline.
When a mixture of gasoline vapour and air burns in I.C engine of an auto-vehicle, the following rxn takes place:

$$2C_8H_{18} + 25O_2 \longrightarrow 16CO_2 + 18H_2O + \text{Heat}$$
(Octane) (Oxygen) (Carbon dioxide) (Water)

Besides CO_2, CO unburnt C, SO_2, acids, alcohols, NO_2 etc. leads to ~~smog~~ petrochemical smog due to the photo-chemical reaction with O_2 and oxides of nitrogen act as physicological poisons for human life.

Methods to reduce air pollution due to I.C engine:
- By using engine with better design:- The extent of unburnt fuel takes place and pollution is controlled.

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2. By Using Suitable Catalyst :- The Complete oxidation of fuel takes place and pollution is controlled to a large extent.

3. By Supplying more air for combustion :- The lesser toxic exhaust gases will enter the atmosphere.

4. By improving the quality of gasoline :- Gasoline mixed with Tetra-Ethyl-Lead (TEL), known as leaded gasoline, emit less smoke and hence it causes less pollution.

DEFORESTATION

Deforestation can be defined as the large-scale removal of trees from forests (or other lands) for the facilitation of human activities. It results loss of biodiversity; damage to natural habitats, disturbances in the water cycle, and soil erosion. It also change climate and global warming.

→ Causes of Deforestation

- Agriculture — Small-scale and large-

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scale farming

- Logging :- Cutting of trees for use as raw material.

- Mining and urban expansion :- The clearing of forest area for the construction of infrastructure.

→ Effects of Deforestation

- Loss of biodiversity
- Climate change
- Soil Erosion
- Rainfall patterns influenced
- Water and soil quality decreases.
- Desertification
- Leads to Flooding
- Decrease in production of crops.

→ Control and Some measures for deforestation

Implementation of security measures and strict laws to prevent illegal logging
Increasing the count and range of forests under government protection.

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- Carefully planning the construction of infrastructure to minimize the loss of forest
- Investing in technology in agriculture industry and implementation of eco-friendly agricultural practices.
- Launching new relevant campaigns to restore the ~~dtorg~~ drought land.

- Use of 3R

→ Reduce :- Reducing the amount of paper consumed by using alternatives wherever possible.

→ Reuse :- Avoid use-and-throw products to prevent wastage.

→ Recycle :- Diligently recycle all used wood and paper products.

DEPLETION OF OZONE

Ozone is produced in the upper layer of the atmosphere, about 20 km above the earth's surface, from oxygen gas by the absorption of ultraviolet light.

- Ozone is quite destructive to fabrics, rubber goods, crops, etc., but it checks the entry

$$3O_2 \xrightarrow[\text{light}]{U.V} 2O_3$$

of u.v radiations from sunlight. This upper layer of the atmosphere enveloped by ozone is commonly known as "ozone layer or protective layer" or "ozone umbrella".

$$O_3 + NO \longrightarrow NO_2 + O_2$$
$$O_3 + O \longrightarrow O_2 + O_2$$
$$O_3 + HO \longrightarrow HO_2 + HOO^-$$
$$HOO^- + O \longrightarrow HO^- + O_2$$

$$O_2 + h\nu \longrightarrow O + O$$
$$O + O_2 + M\,(N_2 \text{ or } O_2) \longrightarrow O_3 + M$$

Causes of Ozone depletion

The chlorine which is released in the atmosphere due to volcanic activity and due to the reaction with nitric oxide, atomic oxygen, reactive hydroxyl radical causes the Ozone destruction.

$$O_3 + NO \longrightarrow NO_2 + O_2$$
$$O_3 + O \longrightarrow O_2 + O_2$$
$$O_3 + HO \longrightarrow HO_2 + HOO^-$$
$$HOO^- + O \longrightarrow HO^- + O_2$$

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- NO is present in atmosphere due to photochemical and chemical reactions, supersonic jets, nuclear explosions etc.
- Chlorine comes from CIFCs, (Chlorofluorocarbons) and volcanoes, while OH comes from biomass burning.

ii) Chloro-Fluoro-carbons (CIFCs) are used in refrigerators, air-conditioner, propellants in aerosol sprays and in plastic foams like 'thermocole'.

$$Cl + O_3 \longrightarrow ClO + O_2$$
$$ClO + O \longrightarrow Cl + O_2$$

* Effects of Ozone depletion

- It causes skin cancer, swelling of skin, sunburns, burning sensation, skin aging, leukemia, breast cancer, contracts of eyes, haemorrhage, lung cancer, dizziness, premature ageing, DNA breakage.

* Control and Measures of Ozone depletion

- Reduce use of more vehicle.
- Use - eco-friendly products.

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- Use renewable energy.
- Use of 3R
- By using Ozone-friendly appliances like that do not use HCFCs in air conditioner and refrigerator.
- Buy Ozone-friendly aerosol products.

GREEN HOUSE EFFECT

The greenhouse effect is also called as "atmospheric effect" or "carbon dioxide problem".
A part of heat from sunlight so trapped in these atmospheric gases is re-emitted to the earth's surface. The net result is the heating of earth's surface by this phenomenon called the "greenhouse effect".

The four major gases of green house are Carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), Chloro-Fluoro-Carbon (CIFCs). The other gases like Ozone and SO_2 also cause some global warming.

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* EFFECTS OF GREENHOUSE GASES:-

- The greenhouse gases are responsible for keeping our plant and animals warm.
- The concentration of the green house gases are continuously increasing due to industsridization, deforestation, burning of fossil fuels, automobile exhausts and other anthropogenic activity leads to an increasing "global warming"

⇒ Consequences of Green House Effect:
(GROWTH)

i) With the increased level of CO_2, the increased in earth's surface temperature leads to more evaporation of surface water.
ii) Due to high temperature, melting of ice-caps in polar regions. This will increase the level of sea water.
iii) Due to much warmer tropical oceans leads to more cyclones and snow melting in mountains will more floods during monsoons.
iv) Global warming adversely affect the world food production and biological productivity
v) It also affect the photosynthesis activities and growth of plants.
vi) At higher altitudes in the atmosphere, CO_2 undergoes photochemical reactions producing CO is which is drastically dangerous.

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Some Questions Related to Pollution :-

1. What is environmental pollution?

Ans: Environmental pollution is ~~unwanted~~ the introduction of harmful substances into the environment, which can damage the ecosystem and harm human health. It is also the introduction of foreign and potentially harmful elements into the environment.

2. Give causes of pollution?

Ans: The following are the causes of pollution are:-

- Burning of fossil fuels:- Burning coal, oil, and gasoline for transportation and electricity releases CO_2 and SO_2 into the air.
- Chemicals:- Polluted water contain toxic chemicals like pesticides, fertilizers, and heavy metals.
- Biological substances:- Polluted water can contain organic matter and microorganisms that can cause waterborne diseases.
- Waste:- waste left by human is a cause of soil pollution.
- Loud sounds:- Loud or inescapable sounds from traffic noise or rock concerts can cause hearing loss, stress, and high blood pressure.

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3. What is pollutant?

Ans: A pollutant is a substance or agents that harms the environment or disrupts natural processes. It is a dangerous substance that is released into the environment.

4. Define biodegradable and non-biodegradable pollution?

Ans:
- Biodegradable pollution
Pollution that can broken down by natural processes, like bacteria and fungi. Ex:- Sewage, cow dung, paper, vegetables waste, fruit waste, dust particle etc.
→ It is considered non-polluting and less harmful because they can be recycled back into nature.

- Non-Biodegradable Pollution
The pollution that can't be broken down by natural processes.
Ex:- Plastic, mercury, aluminium, DDT etc.
→ Harmful and contribute to environmental pollution because they accumulate in landfills and ecosystems.

5. Write effects of pollution on Environment?

Ans: The following are the effects of pollution

on Environment are as :-
Increased risk of respiratory illness and cardiovascular problems.
Increased risk of skin diseases and cancer.
Reduce the visibility and blocking sunlight.
Reduced growth and survivability of tree seedlings.
It causes acid rain and harming forests.

Write ~~effects~~ nature and causes of pollution?

The causes of pollution and its nature :-
Chemicals and other harmful substances emission from industries.
Sewage is not properly treated before released into water bodies.
The burning of natural gas and fossil fuels releases pollutants into the air.

It is very harmful and leads to many natural phenomena like volcanic ash, damage the quality of air, waters, and land.

Define Pollutants and Classification of pollutant ?

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Ans: Pollutants are the substances that contamina the environment, causing harm to living things and the ecosystems.

→ On the basis of existence in nature
a). Quantitative Pollutants
b). Qualitative Pollutants

→ On the basis of the form in which they persist
a). Primary Pollutants
b). Secondary Pollutants

→ On the basis of Disposal
a) Bio-degradable Pollutants.
b). Non bio-degradable Pollutants.

9. Explain environmental pollution and its type?

Ans: Environmental Pollution is the introduction of harmful substances or energy into the environment. The addition of unwanted chemicals that cause a change to the environment.

⇒ Types of Pollution

1. Air Pollution:- The release of chemicals and particle into the atmosphere. This can include gases like CO_2 and SO_2 or particles

like dust, soot, and pesticides.

2. Water Pollution:- The contamination of bodies of water, such as rivers and oceans. This can include dumping solid waste, untreated sewage, or agricultural run off.

3. Land Pollution:- The contamination of soil, which can occur from chemical spills or underground leaks.

4. Noise Pollution:- The introduction of unwanted sound into the environment, such as from roadways, aircraft, or industrial activity.

Light Pollution:- The introduction of unwanted light into the environment, such as from over-illumination or light trespass.

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SHORT QUESTIONS

1. Define Air Pollution?

Ans→ The harmful or unwanted substances released into the air that contaminate the concentration air such as chemicals, gases, and particles is known as air pollution.

3. Write ~~natural~~ man-made causes of air pollution?

Ans→ The following are the natural causes that leads to air pollution are:-

i) Burning of Fossil fuels.
ii) Burning of trees (wildfires)
iii) Agricultural activities.
iv) Smoke emission from industry.
v) Dust particles that released during mining activities.
vi) The volcanic activity also leads to air pollution.

2. Write natural causes of air pollution?

- Volcanic Eruptions.
- Wildfires: (Forest fires):-
- Release smoke and particulate matter.
- Dust storms:-
- Transport large amount of particulate matter.
- Natural Gas leeps:-
- Release Methane and other gases.

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Q4. Give classification of air pollutants?

Ans: The classification of air pollutants are as:-

→ On the basis of existence in nature
i). Quantitative Pollutants
ii). Quali

i). Primary Pollutants
- These are emitted directly from air source
- Ex:- Carbon monoxide (CO), Carbon dioxide (CO_2), oxides of nitrogen and sulfur, DDT, Plastic.

ii). Secondary Pollutants
- These are created when primary pollutants react with other substances in atmosphere.
- Ex:- Peroxyacetyl nitrate (PAN), Nitrogen dioxide (NO_2)

Other types of air pollutants

i). Ozone (ii). Particulate matter
iii). Sulfur dioxide (SO_2).

Q5. Give names of gaseous air pollutants.

Ans: The names of gaseous air pollutants are as:-

i). Carbon monoxide (CO)
ii). Ozone (O_3)
iii). Sulfur dioxide (SO_2)
iv). Nitrogen dioxide (NO_2)
v). Hydrocarbons
vi). Chlorofluorocarbons
vii). Ammonia (NH_3)
viii). Hydrogen sulfide (H_2S)
ix). Methane (CH_4)
x). Nitrous oxide (N_2O)

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6. What are the sources of Carbonmonoxide?

Ans: CO is a colorless, odorless, and tasteless gas that can be produced by various processes. Here are some sources are:-

i). Fossil Fuel combustion:- The combution of coal, oil and natural gas releases CO.

ii). Vehicle Emission:- The smoke releases from vehicle is the main souce of CO.

iii). Wood Burning:- The burning of wood for heating, cooking, or recreational pusposes releases CO

iv). Wildfires:- Wildfires, whether natural or man-made releases large amount of CO.

v). Garbage burning:- The burning of garbage, including plastics can produce CO.

7. What is the control of carbon monoxide?

Ans:- The following are the measures to control of Carbonmonoxide are as:-

- Proper maintenance of fuel-burning appliances.
- Use of catalytic converters.
- Improved combustion process.
- Alternative fules in the place of fossil fuels.
- CO detectors in the mixing of various gases.
- ventilation and Regulation.

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8. Give particulate air pollutants?

Ans: The following are the particulate of air pollutants are as:-

1. Dust :- From construction, mining, and natural sources
2. Soot :- From fossil fuel combustion, wildfires, and industrial processes.
3. Pollen :- From Plants and trees.
4. Abestos :- From Building material and industrial processes.
5. Mold :- From damp environment and decaying organic matter.

9. What is the cause of deforestation?

Ans: The following are the cause of deforestation are as follows:-

- For expanding the areas for agriculture.
- The cutting of trees for urbanisation due to growing of people.
- The extraction of oils, minerals and gas inside the Earth called mining.
- The infrastructure development needed clearance of forests.
- Government policies and corruption.

10. What is the effect of air pollution on human health?

Ans: The following are the effect of air

pollution on human health are as:-

- It can exacerbate conditions like asthma, Chronic obstructive pulmonary diseases (COPD).
- Increase the risks of heart attacks, strokes and other cardiovascular events.
- It increases the risk of cancer.
- It also linked to neurological damage including visual impairment (cognitive).

11. How to control air pollution?

Ans:- There are some ways to control air pollution:-

- Reduce the consumption of non-renewable energy.
- Uses of clean energy sources.
- To promote the sustainable transportation.
- Using of air purifiers.
- By planting more or more trees because plants absob ~~gases~~ harmful gases and give oxygen.

12 What is ozone depletion?

Ans:- The Ozone depletion refers to the thinning of the ozone layer in the Earth's atmosphere, primarily caused by the release of chlorofluorocarbons (CFCs) and other halogeriated gases. These gases react with ozone molecules, breaking them down and reducing the ozone layer's thickness.

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13. What is green house effect?

Ans-> The green house effect is a natural process in which certain gases in the Earth's atmosphere, such as carbon dioxide, methane, and water vapour, trap heat from the sun, keeping the planet warm enough to support life.

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WATER POLLUTION

The concept of water pollution may be defined as "any change in the physical, chemical and biological properties of water, as well as contamination with foreign substance, which results in the decrease in the utility of water or cause diseases".

* Causes of Water Pollution

1. Industrial Waste :- Industrial wastes (effluent) containing toxic substances the biological activity and kill useful organisms in water.

2. Domestic Sewage :- When domestic sewage like ~~waste~~ household waste, kitchen wastes, municipal wastes and organic wastes is discharged into a stream of water sources like lake, rivers help to grow bacteria very fast.

3. Suspended Particles :- The surface water may contain a high concentration of suspended solid (organic as well as inorganic) bacteria,

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algae, etc. This makes water unfit for domestic as well as industrial purposes.
- It is best to use combination of washing soda and soap for washing clothes and use smaller quantities of synthetic detergents.

5. Clay, ores, fine particles of soil through which water flows are added to water and cause water pollution.
6. Atomic explosion and processing of radioactive materials near the sources of water causes water pollution.

SEWAGE

"Sewage is defined as the liquid flowing in ditch."

1. Physical characteristics:-

(a). Fresh sewage is odourless and has an earthy or grey clour.

(b). Sewage is normally turbid and turbidity goes on increasing as sewage becomes stronger.

(c). The normal temperature of sewage is higher than that of municipal water supply, because of heat added during the utilisation of water.

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Ashish Kumar Rawani

2. Biological characteristics :- These are due to the presence and other living micro-organisms (algae, fungi etc.) in sewage. The former are much more active.

The harmless bacteria are of two types

i) 'Aerobic bacteria' exist in the presence of light only. These are taking dissolved oxygen from sewage or free oxygen from air.

ii) 'Anaerobic bacteria' exist in dark and develop in the absence of free oxygen.

* Sewage treatment

i) To render sewage less offensive so that it causes no odour or nuisance.

ii) To reduce or eliminate danger to the public health by possible contamination of water supplies.

iii) To prevent destruction of fish and other aquatic life in rivers, canals, etc. into which sewage discharge is generally made.

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BIO-CHEMICAL OXYGEN DEMAND (BOD)

The amount of free oxygen required in water for bacteria which consume organic matter (i.e, the biochemical oxidation of the organic matter) under aerobic conditions 20°C for a period of 5 days.

* Significance of BOD

- Environmental monitoring :- BOD is a primary indicator of water quality, used to assess the impact of wastewater discharge on receiving water bodies.
- Wastewater treatment :- Wastewater treatment plants use BOD tests to monitor the effectiveness of their process in removing organic matter.
- It also impact on aquatic life.

Factors effecting BOD :-

Organic matter concentration :- Higher levels of organic matter result in higher BOD.
Temperature :- Higher temperatures accelerate microbial activity leads to increased BOD.

- Microorganism population: The abundance and type of bacteria present affect the rate of organic matter decomposition.

* Measuring BOD:-

i). BOD test:- In laboratory where a water sample is incubated with a known volume of oxygen for a set period, and the decrease in dissolved oxygen is measured.

ii). Units:- BOD is typically expressed in miligrams of oxygen per litre (mg/L).

CHEMICAL OXYGEN DEMAND (COD)

COD is a measure of the amount of oxygen needed to chemically oxidize organic matter present in a water sample, essentially indicating the level of organic pollution in a water body; a higher COD value signifies a greater presence of organic pollutants, making it crucial parameter for monitoring wastewater treatment processes

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and assessing water quality.

* Measurement of COD

It is determined by adding a strong oxidizing agent (usually potassium dichromate) to a water sample, then measuring the amount of oxygen consumed during the oxidation process.

* Significance of COD

- Pollution Indicator :- High COD levels indicate significant organic pollution in water, which can deplete dissolved oxygen levels, harming aquatic life.
- Wastewater treatment monitoring :- The effect of wastewater treatment plants, it allows for tracking the removal of organic matter throughout the treatment process.
- Regulatory Compliance :- COD is used to ensure compliance with regulations that protect water quality.
- COD is also used in scientific research environment monitoring.

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COMPARISON ~~BEWT~~ BETWEEN COD and BOD

1. COD is a measure of oxidisable impurities present in sewage, whereas BOD measures the oxygen consumed by living organisms while assimilating organic matter present in a
2. COD takes about 3 hrs for determination, while BOD takes more than 5 days for same.
3. BOD measures amount of decomposible organic matter, while COD measures both biologically oxidisable and biologically inert organic matter such as cellulose. So, COD values are higher than BOD values

METHODS OF PREVENTING WATER POLLUTION

1. Stabilisation of the ecosystem :- This process includes harvesting and removal of biomass, trapping of nutrients, fish management and aeration.
2. By proper treatment of waste.
3. By Reutilization and Recycling of waste.
4. By use of suitable chemicals such as chlorination.
5. By aeration and exposure to sunlight.

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BIOMEDICAL WASTE

Biomedical waste is hazardous and infectious waste from hospitals and pathological laboratories. It contains discarded human blood, blood products, plasma, serum and body fluids. The fluids that generated or removed during surgery, autopsy etc.

* Origin of Biomedical waste

- Animal waste, Human tissues and organs.
- Blood and body fluids
- Microbiological waste, discarded medicines.
- Discarded glassware, waste sharp such as needles, syringes, blades etc.

* ~~Control~~ Effects of Biomedical wastes:-

- It may spread diseases like ~~that~~ cholera.
- The wastes from hospital may cause diseases like TB.
- It causes pollution and hazardous problems for the society.

* Control measures of Biomedical waste

- Use of incinerator and safety boxes.
- It should be disposed carefully.
- Autoclaving or steam sterilisation.
- By awareness, education and training.

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