Chapter 14. Pollution of Air and Water

Very Short Q&A:

Q1: Which of the following is not a greenhouse gas

a. **Sulphur dioxide**
b. **Carbon dioxide**
c. **Nitrogen**
d. **Methane**

Ans: Nitrogen

Q2: Air contains _____ nitrogen

a. **78%**
b. **21%**
c. **0.03%**
d. **None of this.**

Ans: 78%

Q3: Name some air pollutants.

Ans: Smoke, dust, gases like carbon monoxide, carbon dioxide, nitrogen oxides and smoke.

Q4: How carbon monoxide is produced?

Ans: Carbon monoxide is produced from incomplete burning of fuels like petrol and diesel.

Q5: Carbon monoxide reduces oxygen carrying capacity of _____.

Ans: Blood

Q6: What is the full form of CFC?

Ans: Chlorofluorocarbon

Q7: What is the effect of pollution on Taj Mahal?

Ans: Marble of Taj Mahal is getting discoloured because of the pollutants in air.

Q8: Define greenhouse effect.

Ans: The greenhouse effect is the rise in temperature that the Earth experiences because certain gases in the atmosphere like water vapour, carbon dioxide, nitrous oxide, and methane, trap energy from the sun. Without these gases, heat would escape back into space and Earth average temperature would be about 60 F colder. Because of how they warm our world, these gases are referred to as greenhouse gases.

Q9: Does acid rain affect soil and crops also?

Ans: Yes

Q10: Name some cleaner fuels.

Ans: CNG, LPG, unleaded petrol etc.

Q11: What is the full form of CNG and LPG?

Ans: CNG stands for Compressed Natural Gas, and LPG stands for Liquefied Petroleum Gas.

Q12: _____ leads to increase in amount of CO_2 in the atmosphere.

Ans: Deforestation

Q13: Name some greenhouse gases.

Ans: Methane, carbon dioxide, nitrous oxide and water vapour.

Q14: Name some water pollutants.

Ans: Sewage, toxic chemicals, silts etc.

Q15: Name an ambitious plan to save the Ganga River.

Ans: Ganga Action Plan.

Q16: Pesticides and _____ seep into the ground to pollute ground water.

Ans: Weedicides

Q17: In which year Ganga Action Plan was launched?

Ans: 1985

Q18: What is the aim of Ganga Action Plan?

Ans: To save rivers by reducing pollution levels in the river.

Q19: What is potable water?

Ans: Water which is suitable for drinking is called potable water.

Q20: _____ is the method of obtaining safe drinking water.

Ans: Chlorination

Q21: Boiling kills germs present in water. True/False.

Ans: True

Q22: What is chlorination?

Ans: Chlorination is the chemical method for purifying water, by adding chlorine tablets or bleaching powder to the water.

Q23: Name the three R principles to save water and not waste it.

Ans: Reduce, reuse and recycle.

Q24: What is Van Mahotsav?

Ans: Van Mahotsav is an annual pan-Indian tree planting festival, occupying a week in the month of July, during this week lakhs of trees are planted.

Q25: What is a compost pit?

Ans: Compost pit is a hole in ground in which organic wastes are deposited and covered with soil. It is the cheap and good for disposing of a one-time large load of waste. It allows you to improve the soil structure and fertility in a future garden bed.

Q26: Gangotri glacier in the Himalayas has started melting because of _____.

Ans: Global warming.

Q27: Name the air pollutants released by vehicles.

Ans: Carbon monoxide, carbon dioxide, nitrogen oxides and smoke.

Q28: What is smog?

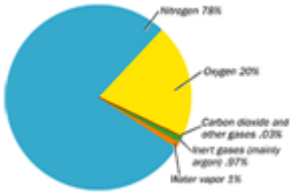
Ans: Smog is the fog like layer in the atmosphere which is made up of smoke and fog.

Q29: What are the harmful effects of smog?

Ans: The smog causes breathing difficulties like asthma, cough and wheezing in human beings.

Q30: State the composition of gases in air.

Ans:



Q31: Which water is fit for drinking?

Ans: Potable water which is free from all kinds of germs and harmful chemicals.

Q32: Name the gas responsible for global warming.

Ans: Carbon dioxide.

Q33: Water is _____, we must conserve it.

Ans: Precious

Q34: How chlorination is done to purify water?

Ans: By adding chlorine tablets or bleaching powder.

Q35: The bacteria present in the faeces of mammals are indicator of _____.

Ans: Quality of water.

Q36: What do you mean by water pollutants?

Ans: The substances that pollute water are called water pollutants.

Short Q&A:

Q1: Why it is dangerous to burn polymers?

Ans: When polymers such as plastics are burned carbon containing gases are released. During the burning process, the carbon combines with oxygen present in the atmosphere & forms oxides of carbon. These gases have been linked with global warming, depletion of the ozone layer, acid rain, etc. They create harmful effects on our ecosystem and on health of living beings.

Q2: What is the cause of acid rain?

Ans: Oxides of nitrogen, sulphur, carbon produced by combustion of coal, petroleum, etc. dissolve in atmospheric water vapour. They form their corresponding acids like nitric acid, sulphuric acid, etc., and reach the earth's surface as acid rain.

Q3: How does industry pollute the environment?

Ans: Factories pollute the air by pumping out chemicals that are harmful for all living things. Factories can pollute the environment through thermal pollution, chemical pollution, air pollution, noise pollution, for a few examples. Thermal pollution is when hot water is dumped into cool water in a river, lake, pond or bay. The difference in temperatures can promote algae growth, kill of native fish or wildlife, or it might cause disruptions in the water that causes the water to change temperature, also causing major problems with wildlife. Chemical Pollution is when chemicals are exposed to the environment, either by dumping them into sewage plants, where excess waste ends up in the ground. A good example of this is nuclear waste. This needs to be treated carefully or else it could completely destroy an area. Air pollution is when

pollution is mixed in with the air. Noise pollution is when a factory causes a lot of noise... enough to effect the surrounding environment.

Q4: What steps should be taken to minimise air pollution?

Ans: Air pollution cab be reduced by adopting following ways:

1. Reduce the use of car and other vehicles as these are the significant source of air pollution, so switching to a more gas-efficient vehicle will be a big help. Taking public transport to work rather than driving will reduces the number of carbon dioxide into the air. Using eco-friendly fuels in vehicles like CNG can also be beneficial.
2. Reduce Waste: Manufacturing of unnecessary or disposable goods often produces air pollution, so reduced purchasing of disposables will help. In general, follow the solid waste mantra - "Reduce, Reuse, Repair, And Recycle" - and this will reduce air pollution as well from transporting, treating, or disposing of unnecessary wastes.
3. Eliminate Toxic Chemical Use at Home --- A surprising number of household or home shop chemicals are toxic and volatile. Many release vapours into the air, inside the home and out. This can be serious health threat to your family, and contributes to community-wide levels of air pollutants.
4. Plant leafy trees and shrubs --- Deciduous trees and shrubs (the kinds that drop leaves in the fall) are excellent air filters to help reduce smog and cool the air on hot summer days.

Q5: What are factory fumes?

Ans: Nitrous Oxides (NO, NO2 and N2O), Sulphur Dioxide, Carbon Dioxide and Carbon Monoxide are the famous ones, depending on the reactions that are taking place in the factory.

Q6: What are the harmful effects of acid rain?

Ans:

- It irritates eyes and skin of human beings.
- It inhibits germination and growth of seedlings.
- It changes the fertility of the soil, destroys plants and aquatic life.
- It causes corrosion of many buildings, bridges, etc.

Q7: How acid rain does effects the environment?

Ans: Acid rain affects the environment in several ways:

- It can leach nutrients from the soil making then unavailable to plant life.
- It can affect the growth of plants as many plants have a specific soil pH for optimum growth
- Acid precipitation can change the ionic balance in clayey soils affecting their structure.
- In some soils acid precipitation may free up metals (e.g. lead) in the soil that can be taken up by the plants and contaminate the associated seeds or fruit.
- It can affect fish and amphibians by reducing the pH of the water impacting their health and breeding success.

Q8: How acid rain does effects water ecosystem?

Ans: Together, biological organisms and the environment in which they live are called an ecosystem. The plants and animals living within an ecosystem are highly interdependent. For

example, frogs may tolerate relatively high levels of acidity, but if they eat insects like the mayfly, they may be affected because part of their food supply may disappear. Because of the connections between the many fish, plants, and other organisms living in an aquatic ecosystem, changes in pH or aluminium levels affect biodiversity as well. Thus, as lakes and streams become more acidic, the numbers and types of fish and other aquatic plants and animals that live in these waters decrease.

Q9: What are the causes of increasing amount of carbon dioxide in air?

Ans: Human activities are the main reason for increasing the amount of carbon dioxide (CO_2) in the atmosphere. The major sources of human emissions are the burning of fossil fuels such as coal, oil and natural gas for industry, driving our transport, heating our homes and generating electricity. Another factor is deforestation which increases the amount of carbon dioxide in the atmosphere, because new trees are not allowed to replace those removed.

Q10: Explain the three R principles to reduce pollution.

Ans: The three R principle includes recycle, reuse, and reduce of the available resources

Q11: Define water pollution.

Ans: Water pollution is the contamination of water bodies such as lakes, rivers, oceans, and groundwater caused by human activities, which can be harmful to organisms and plants which live in these water bodies.

Q12: List three major man-made source of air pollution.

Ans: Three major man-made source of air pollution are: industrialisation, urbanisation and automobiles

Q13: How does environment problem effect people health?

Ans: Air pollution is a significant risk factor for multiple health conditions including respiratory infections, heart disease, and lung cancer. The health effects caused by air pollution may include difficulty in breathing, wheezing, coughing and aggravation of existing respiratory and cardiac conditions.

Q14: How does burning of fossil fuels effects carbon dioxide level in the atmosphere?

Ans: Fossil fuels contain carbon, hydrogen, Nitrogen, Oxygen and some other elements. But the majority is Carbon. So when such fuels burn they combine with the Oxygen and Nitrogen in air to form Carbon dioxide, Nitrogen oxides etc. Even though Carbon monoxide is also formed, since they get converted to carbon dioxide when combustion gets completed. Any form of carbon when burns produce carbon dioxide.

Q15: What gastrointestinal problems may occur with antihistamine use?

Ans: Gastrointestinal problems include increased appetite, decreased appetite, nausea, vomiting, diarrhoea, and constipation.

Q16: Why acid rain and rust a harmful effect?

Ans: Acid rain and rust are harmful because it contains harmful gases like sulphuric acid etc... mainly sulphur gases because of this harmful gases when they reach the atmosphere when it rains it forms acid rain as the harmful gases mix with the atmosphere .This acid rain will affect plants, animals humans and all living organism. The acid mainly occurs at industrial areas because of these harmful gases which are released by the industrial effluents, they are definitely harmful to the atmosphere.

Q17: How does water get polluted?

Ans: It gets polluted by acid rain, oil spills, litter, insecticide mixing with fertilizers etc. The emission of waste heat from an electric generating station into a lake, causing common change through their stress. The discharge of nutrients containing sewer wastes, in a water body causing eutrophication.

Q18: Explain Ganga Action Plan.

Ans: The Ganga action plan was, launched by Sri Rajeev Gandhi, the then Prime Minister of India on 14 Jan. 1985 with the main objective of pollution abatement, to improve the water quality by Interception, Diversion and treatment of domestic sewage and present toxic and industrial chemical wastes from identified grossly polluting units entering in to the river. The other objectives of the Ganga Action Plan are as under.

- Control of non-point pollution from agricultural runoff, human defecation, cattle wallowing and throwing of unburnt and half burnt bodies into the river.
- Research and Development to conserve the biotic, diversity of the river to augment its productivity.
- New technology of sewage treatment like Up-flow Anaerobic Sludge Blanket (UASB) and sewage treatment through afforestation has been successfully developed.
- Rehabilitation of soft-shelled turtles for pollution abatement of river have been demonstrated and found useful.
- Resource recovery options like production of methane for energy generation and use of aquaculture for revenue generation have been demonstrated.
- To act as trend setter for taking up similar action plans in other grossly polluted stretches in other rivers.

Q19: How the disposal of garbage etc. would affects the living organisms in the river?

Ans: Disposal of garbage can affect badly the living organisms present in water, they will not be able to survive in water and may die.

Q20: What are the different ways in which water get contaminated?

Ans: Whenever harmful substances such as sewage, toxic chemicals, silt etc. get mixed with water, the water becomes polluted. Water get contaminated by the addition of agricultural chemicals like pesticides and fertilizers , these chemicals get carried away to the water bodies due to rains and flood which lead to water pollution, apart from this industrial wastes like harmful chemical wastes also causes water pollution. Sewage wastes like waste material from kitchens, toilets and laundry sources are also responsible for contaminating water.

Q21: What are the differences between pure water and polluted water?

Ans:

Pure water	Polluted water
1. It is transparent. 2. It is essentially free of harmful chemicals and pollutants.	1. It is not water is cloudy and contains visible toxins, but it can also appear to be as clear as pure water. 2. It contains toxic substances that are harmful for the health of living beings.

Q22: Describe greenhouse effects.

Ans: The greenhouse effect is the process which leads to increase in average earth's temperature. That is the global warming. It results because of the greenhouse gases like water vapour, carbon dioxide, nitrous oxide, and methane, trap energy from the sun. When solar radiation reaches earth some of these radiations are absorbed by earth and rest are released back to the atmosphere. Greenhouse gases trap these radiations and do not allow them to go back. This helps in keeping earth warm and in survival of human beings. However an increase in amount of greenhouse gases can lead to excessive increase in earth's temperature leading to global warming.

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Q24: Describe the threat to the beauty of Taj Mahal.

Ans: The major threat the beauty of Taj Mahal is the- "acid rain". When acid rain falls on the monument that is made up of marble they react with marble to form a powder like substance that gets washed away by the rain, this phenomenon is known as marble cancer.

Q25: Explain some of the air pollutants.

Ans: Water pollutants refer to contaminants that enter a waterway from a single, identifiable source, such as a pipe or ditch. Examples of sources in this category include discharges from a sewage treatment plant, a factory, or a city storm drain, that altogether makes water unfit for drinking of human beings.

Q26: Differentiate between deforestation and van Mahotsav?

Ans: Deforestation refers to the removal of forest or stands of trees, but van Mahotsav is an annual pan-Indian tree planting festival, occupying a week in the month of July, during this week lakhs of trees are planted.

Q27: What are the respiratory disorders caused by air pollution?

Ans: Asthma: Asthma is a disorder that causes the airways of the lungs to swell and narrow, leading to wheezing, shortness of breath, chest tightness, and coughing.

Chronic obstructive pulmonary disease (COPD), also known as chronic obstructive lung disease is a progressive disease that makes it hard to breathe.

Emphysema is a long-term, progressive disease of the lungs that primarily causes shortness of breath.

Bronchitis is inflammation of the mucous membranes of the bronchi, the airways that carry airflow from the trachea into the lungs.

Q28: List some of the sources of air pollutions

Ans: Smoke released from the vehicles, dust and gases like carbon monoxide, carbon dioxide, nitrogen oxides and smokes that are released by industries and by burning of fossil fuels are the major air pollutants.

Q29: How chlorofluorocarbon is harmful to us?

Ans: Chlorofluorocarbons damage the ozone layer of atmosphere which protects us from harmful ultra violet radiation of sun.

Q30: How smog is harmful to us?

Ans: Smog causes breathing difficulties like asthma and cough in human beings and wheezing in children.

Q31: What do you mean by marble cancer?

Ans: When acid rain falls on the monument that is made up of marble they react with marble to form a powder like substance that gets washed away by the rain, this phenomenon is known as marble cancer.

Q32: Write short notes on greenhouse gases.

Ans: Greenhouse gases are, sulphur dioxide carbon dioxide, nitrous oxide, and methane. These are the gas in the atmosphere that absorbs and emits radiation within the thermal infrared range. This process is the fundamental cause of the greenhouse effect. The primary greenhouse gases in the Earth's atmosphere are water vapour, carbon dioxide, methane, nitrous oxide, and ozone. Atmospheric concentrations of greenhouse gases are determined by the balance between sources (emissions of the gas from human activities and natural systems) and sinks (the removal of the gas from the atmosphere by conversion to a different chemical compound.

Long Q&A:

Q1: Explain Ganga Action Plan.

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Q2: Clear transparent water is always fit for drinking, do you agree?

Ans: No, clear and transparent water is not always fit for the purpose of drinking. There are possibilities of disease causing microbes and dissolved impurities in the clear and transparent water. So, it is important to purify water before drinking , water can be purified by using water purifiers, by chlorination and by boiling.

Q3: Explain air pollution and its harmful effects. Also list some important measures to reduce air pollution.

Ans: Air pollution cab be reduced by adopting following ways:

1. Reduce the use of car and other vehicles as these are the significant source of air pollution, so switching to a more gas-efficient vehicle will be a big help. Taking public transport to work rather than driving will reduces the number of carbon dioxide into the air. Using eco-friendly fuels in vehicles like CNG can also be beneficial.
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