

Chapter 8: Pollution

Q. 1. Fill in the blanks:

- (1) Natural pollutants are destroyed in due course of time by **nature's rule**
- (2) Air pollutants with **sulphur** cause colour change in paints, oil paintings, nylon, etc.
- (3) Boards indicating the **air quality index** are displayed in busy squares in metro cities.
- (4) Soil **pollution** decreases due to pollution.
- (5) Problem of **water** pollution increases due to soil pollution.

Q. 2. State whether the following statements are True or False. Explain your statement :

(1) **Water does not get polluted by washing the clothes in running water of river.**

Answer: False. Washing clothes in rivers can introduce detergents, chemicals, and dirt into the water, leading to pollution.

(2) **More the use of electric appliances, more will be the pollution.**

Answer: True. Increased use of electric appliances often leads to higher energy consumption, which can result in more pollution from power generation sources like fossil fuels.

(3) **Polluted water is responsible for diseases such as cholera, hepatitis, typhoid, skin diseases, and diseases of the alimentary canal.**

Answer: True. Polluted water can harbor pathogens and toxins that cause various diseases, including cholera and hepatitis, affecting human health.

(4) **When water is mixed with natural or artificial unwanted material, the dissolved oxygen level of such water increases.**

Answer: False. Mixing water with pollutants usually decreases the dissolved oxygen levels, which is harmful to aquatic life.

(5) **Though any amount of pollutants are added to the water, the toxic substances do not leach into water.**

Answer: False. Pollutants can leach into water, especially when present in large amounts, contaminating the water supply and posing health risks.

Question. 3. Match the columns:

Column 'A'	Answer	Column 'B'
(1) Water containing cobalt	Paralysis	(a) Mental retardation
(2) Methane gas	Skin cancer	(b) Paralysis
(3) Water containing lead	Mental retardation	(c) Inflammation of lungs
(4) Sulphur dioxide	Irritation of eyes	(d) Skin cancer
(5) Nitrogen dioxide	Inflammation of lungs	(e) Irritation of eyes

Question. 4. Identify the odd term:

- (1) Industrialization, Population explosion, Mining. Vehicular transport, Dust storms. **Dust storms**
- (2) Poisoning, asthma, Silicosis, respiratory diseases. **Silicosis**
- (3) Irritation of eyes, respiratory tract, excess mucus, mental weakness. **Mental weakness**
- (4) Volcanic eruption, Earthquake, Atomic explosion, Forest fires. **Atomic explosion**
- (5) Uranium, Sulphur, Thorium, Plutonium. **Sulphur**

Question. 3. Consider the relation between the items in the first pair and write the correlation for second pair:

(1) Industrialization: Sulphur compounds:: Lead compounds: **Use of fuels/Transportation**

(2) City where smoke and soot caused it to be called black city: Petersburg: Indian city where worst ever industrial accident has occurred: **Bhopal**

(3) Arsenic and Cadmium: Inorganic water pollutants: Weedicides and insecticides: **Organic water pollutants**

Question. 6. Questions based on classification of pollutants:

Classify the following pollutants into natural and manmade categories.

Sewage, dust, pollen grains, chemical fertilizers, vehicular smoke, algae, pesticides, waste of animals and birds.

Answer:

Man-made	Natural
Sewage Dust (Construction) Chemical fertilizers Vehicular smoke Pesticides	Dust (Natural) Pollen grains Algae Waste of animals and birds.

Question. 7. Following are some statements about pollution. Which type of pollution do those express:

(1) Fog seems to be appearing in Delhi during day hours.

Answer: Air Pollution.

(2) Many times, vomiting and dysentery occurs after eating 'pani puri'.

Answer: Water Pollution.

(3) Problem of sneezing occurs sometimes during visit to garden.

Answer: Air Pollution

(4) Crop does not grow up in some areas.

Answer: Soil Pollution.

(5) People living in the busy squares face the problems like short breathing and other respiratory problems.

Answer: Air Pollution.

Question. 8. Read the passage and identify the sentences expressing types of pollution.

Nilesh is a student of Std. VIII and lives in urban area. It takes about an hour to go to the school by bus. He faces the heavy traffic of two wheelers, four wheelers, rickshaws, buses while going to school. He is facing the problem of asthma since last few days. Doctors recommended him to stay away from urban area. Since then, his mother sent him to the village of his maternal uncle. Nilesh saw the heaps of garbage at many places in village. Foul smell of human and animal wastes was present at many places. Blackish water with foul smell was flowing in a stream. He developed some abdominal disease within a few days.

Answer:

1. Air Pollution: "He is facing the problem of asthma since the last few days."
2. Solid Waste Pollution: "Nilesh saw the heaps of garbage at many places in the village."
3. Water Pollution: "Blackish water with foul smell was flowing in a stream."
4. Odor Pollution: "Foul smell of human and animal wastes was present at many places."
5. Health Pollution: "He developed some abdominal disease within a few days."

Question. 9. Write definitions:

(1) Air pollution: Contamination of air by harmful substances like poisonous gases, smoke, particulate matter, and microbes is called air pollution.

(2) Water pollution: Contamination of water bodies by harmful substances such as chemicals, waste, and pathogens is called water pollution.

(3) Soil pollution: Degradation of land surfaces due to hazardous chemicals or waste, including pesticides, heavy metals, and plastic waste is called soil pollution.

Question. 10. Distinguish between the following:

(1) Degradable and Non-degradable pollutants:

Degradable Pollutants	Non-Degradable Pollutants
1. Can be broken down by natural processes like microbes.	1. Cannot be broken down naturally.
2. Typically consist of organic materials.	2. Usually consist of synthetic materials or heavy metals.
3. Generally pose less environmental risk over time.	3. Can accumulate in the environment, causing long-term harm.
4. Examples include food waste, paper, and yard waste.	4. Examples include plastics, glass, and electronic waste.

(2) Industrial waste and Domestic waste

Industrial Waste	Domestic Waste
1. Generated from manufacturing and production processes.	1. Produced from household activities and consumption.
2. Often contains hazardous materials and chemicals.	2. Generally includes organic waste, plastics, and paper.
3. Requires specific disposal methods due to toxicity.	3. Usually managed through municipal waste systems.
4. Can significantly impact the environment if not treated.	4. Typically poses less environmental risk but can still contribute to pollution.

Question. 11. Give scientific reasons:

(1) Domestic sewage is harmful for all forms of life.

Answer: Domestic sewage contains organic matter, pathogens, and various chemicals that can contaminate water sources, leading to the spread of diseases and negatively affecting aquatic ecosystems and drinking water quality.

(2) Due to agriculture, there can be a lot of air pollution.

Answer: Agricultural activities release pollutants such as ammonia from fertilizers, methane from livestock, and pesticides into the air, contributing to air pollution and potentially harming both human health and the environment.

(3) A hole has been observed in the ozone layer in the stratosphere near Antarctica.

Answer: The depletion of the ozone layer near Antarctica is primarily caused by the release of chlorofluorocarbons (CFCs) and other ozone-depleting substances, which break down ozone molecules and result in a thinner ozone layer that fails to adequately protect the Earth from harmful ultraviolet (UV) radiation.

Question. 12. Answer the following:

(1) What is pollution?

Answer: Pollution is the introduction of harmful substances or contaminants into the environment, which can adversely affect the health of living organisms and the natural world.

(2) What are Pollutants?

Answer: Pollutants are substances or agents that cause pollution, which can be in the form of solid, liquid, or gas, and may include chemicals, waste products, or other harmful materials.

(3) Which are visible pollutants known to you?

Answer: Visible pollutants include smoke, dust, plastic waste, litter, and oil spills, which can be seen in the air, water, or on land.

(4) Which are invisible pollutants?

Answer: Invisible pollutants include gases like carbon monoxide, sulfur dioxide, nitrogen oxides, and particulate matter, which are not visible to the naked eye but can still cause significant harm to health and the environment.

(5) What is greenhouse effect?

Answer: The greenhouse effect is the warming of the Earth's surface due to the trapping of heat by greenhouse gases (like carbon dioxide, methane, and water vapor) in the atmosphere, which prevents heat from escaping back into space.

(6) Explain relation between greenhouse effect and global warming.

Answer: The greenhouse effect contributes to global warming, as an increase in greenhouse gases intensifies this effect, leading to a rise in Earth's average temperature and resulting in climate change and extreme weather patterns.

(7) How does the pollution occur due to vehicles? Give the names of vehicles causing least pollution

Answer: Pollution from vehicles occurs through the emission of harmful gases and particulate matter during fuel combustion, contributing to air pollution; vehicles causing the least pollution include electric cars, hybrid vehicles, and those running on compressed natural gas (CNG).

(8) What is acid rain?

Answer:

1. Acid rain is formed when pollutants like sulfur dioxide (SO_2) and nitrogen oxides (NO_x) are released into the atmosphere.
2. These pollutants mix with water vapor in the air.
3. They react chemically to form sulfuric acid (H_2SO_4) and nitric acid (HNO_3).
4. The acidic water droplets fall as rain, harming the environment.

(9) Suggest four preventive measures for air pollution.

Answer:

1. Use public transport to reduce vehicle emissions.
2. Adopt renewable energy sources like solar and wind.
3. Implement strict emission regulations for industries and vehicles.
4. Increase green spaces to absorb pollutants and carbon dioxide.

(10) What do you mean by ozone layer depletion? What are the causes of ozone layer depletion?

Answer:

1. Ozone layer depletion is the thinning of the ozone in the Earth's stratosphere.
2. Causes include the release of chlorofluorocarbons (CFCs), halons, and other chemicals.
3. These substances break down ozone molecules, increasing UV radiation exposure.

(11) Describe the effects of air pollution on animals and plants.

Answer:

1. Animals suffer respiratory problems and weakened immune systems.
2. Air pollution decreases reproductive success in animals.
3. Plants experience stunted growth and leaf damage.
4. Decreased photosynthesis in plants leads to lower crop yields and biodiversity loss.

(12) What are natural reasons/causes for water pollution?

Answer:

1. Volcanic eruptions release harmful substances into water.
2. Heavy rainfall causes runoff, carrying pollutants into water bodies.
3. Decomposition of organic matter depletes oxygen in water.
4. Erosion from natural processes increases sediment in water sources.

(13) What are the effects of water pollution on the ecosystem?

Answer:

1. Water pollution leads to the death of aquatic organisms due to toxins.
2. It disrupts food chains by killing key species.
3. Eutrophication occurs, causing algal blooms and oxygen depletion.
4. Contaminated water affects humans and animals through disease transmission.

(14) Describe the effects of air pollution on the environment.

Answer:

1. Air pollution contributes to acid rain, which damages forests and water bodies.
2. It leads to global warming and climate change through greenhouse gas emissions.
3. Polluted air harms wildlife by damaging habitats and food sources.
4. Smog and particulate matter reduce visibility and air quality in cities.

(15) Describe the effects of soil pollution.

Answer:

1. Soil pollution reduces fertility, impacting plant growth and agriculture.
2. It leads to the bioaccumulation of toxic substances in plants and animals.
3. Polluted soil affects groundwater quality, making it unsafe for drinking.
4. It harms soil-dwelling organisms, leading to biodiversity loss.

(16) How do you protect soil from being polluted?

Answer:

1. Use organic fertilizers instead of chemical-based ones.
2. Implement crop rotation and sustainable farming practices.
3. Reduce industrial waste discharge and enforce proper waste disposal.
4. Prevent deforestation and encourage afforestation.

(17) What are the different laws to prevent pollution?

Answer:

1. The Clean Air Act regulates air pollutants to improve air quality.
2. The Clean Water Act aims to reduce water pollution in rivers and lakes.
3. The Environmental Protection Act enforces rules on industrial waste management.
4. The Resource Conservation and Recovery Act regulates hazardous waste disposal.

Question. 13. Use your brain power! (Textbook page 54)

(1) Which types of pollutants are observed?

Answer:

1. Air pollutants (e.g., smoke, gases)
2. Water pollutants (e.g., chemicals, sewage)
3. Soil pollutants (e.g., plastics, pesticides)

4. Noise pollutants (e.g., loud machinery, vehicles)

(2) Whether the pollutants are degradable or non-degradable?

Answer:

1. Some pollutants are degradable (e.g., organic waste).
2. Others are non-degradable (e.g., plastics, heavy metals).

Question. 14. Think about it:

(1) If natural materials are pollutants, why do we not perceive their adverse effects during their use When such materials are referred as pollutants? (Textbook page 54)

Answer: Natural materials typically degrade or are assimilated by the environment, minimizing their adverse effects unless they accumulate in large amounts or in inappropriate locations.

(2) What are the reasons other than those mentioned on the textbook page no. 55 mentioned responsible for air pollution?

Answer:

1. Increased deforestation
2. Industrial expansion
3. Uncontrolled burning of waste
4. Overuse of air conditioners and refrigerators
5. Rapid urbanization and construction activities

(3) Whether the vehicles with two stroke engine cause more pollution than four stroke engine? (Textbook page 55)

Answer:

- Incomplete Fuel Combustion: Two-stroke engines do not burn all the fuel during combustion, leading to the release of unburnt fuel into the air, which increases pollution levels.
- Higher Emissions: These engines emit more hydrocarbons and particulate matter compared to four-stroke engines due to the incomplete combustion process.
- Oil Mixing with Fuel: In two-stroke engines, oil is mixed with the fuel for lubrication. This oil is also partially burnt, resulting in higher emissions of pollutants like carbon monoxide (CO) and nitrous oxides (NOx).
- Efficiency Difference: Four-stroke engines are more fuel-efficient, causing less pollution, while two-stroke engines are less efficient, leading to more waste and air contamination.

(4) Give 5 examples of each of domestic waste, biological waste and agricultural waste and write in your own words about soil pollution due to those wastes. (Textbook page 60)

Answer:

- Domestic Waste: Plastic bags, food waste, glass bottles, paper, detergents.
- Biological Waste: Leaves, animal carcasses, fruit peels, plant stems, manure.
- Agricultural Waste: Pesticides, fertilizers, crop residues, animal waste, farm equipment oil.

Soil Pollution:

1. Domestic waste like plastic and detergents contaminates soil, leading to poor fertility.
2. Biological waste, if not properly managed, can lead to pathogen spread in soil.
3. Agricultural waste like pesticides and fertilizers introduces harmful chemicals, degrading soil quality and affecting plant growth.