

Air Pollution

- **Definition:** Contamination of air by harmful substances (gases, dust, fumes) harmful to humans, animals, and plants.
 - **Health Impacts:**
 - **Outdoor air pollution:** Causes 4.2 million premature deaths yearly.
 - **Household air pollution:** Causes 3.2 million deaths yearly, mostly in low-income countries.
 - Diseases include **stroke, ischemic heart disease, COPD, and lung cancer.**
 - **Common Air Pollutants:**
 - **Carbon oxides (CO, CO₂):** Greenhouse gases; toxic at low concentrations.
 - **Nitrogen oxides (NO_x):** Cause smog, acid rain, and respiratory issues.
 - **Sulfur compounds (SO₂, H₂S):** Contribute to acid rain and irritate respiratory systems.
 - **Particulate Matter (PM₁₀, PM_{2.5}):** Penetrates lungs, causing cardiovascular and respiratory diseases.
 - **Smog:** Forms from sunlight reacting with nitrogen oxides and VOCs; includes **ozone (O₃)** and **PAN**.
 - **Solutions:** Sustainable transport, renewable energy, emission controls, awareness.
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Water Pollution

- **Definition:** Introduction of harmful materials (natural or man-made) into water, affecting its quality.
 - **Sources:**
 - **Point Source:** Specific locations like factories or pipes.
 - **Non-Point Source:** Diffuse areas like agriculture or urban runoff.
 - **Pollutants:**
 - Fertilizers (nitrogen, phosphorus), pesticides, sediment, pathogens.
 - **Eutrophication:** Nutrient enrichment leading to algae growth and oxygen depletion.
 - **Groundwater Pollution:** Hard to clean; common pollutants include fertilizers, pesticides, and industrial chemicals.
 - **Solutions:** Preventive measures like pollution control, reducing runoff, and community awareness.
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Environmental Health

- **Definition:** Study of environmental factors affecting human health (e.g., air, water, sanitation).
- **Key Facts:**
 - Environmental factors cause 25% of deaths worldwide.
 - Healthier environments can prevent nearly one-quarter of diseases.
- **Basic Requirements:** Clean air, safe water, adequate food, and stable ecosystems.
- **Global Initiatives:**
 - **World Environment Day (WED):** Raises awareness about environmental issues. Themes:
 - 2024: "Our Land, Our Future" (Focus on land restoration, drought resilience).
 - 2023: "Beat Plastic Pollution."

Occupational Health

- **Definition:** Promotion of workers' well-being by preventing health hazards at work.
 - **Key Statistics:**
 - 2+ million die yearly from work-related diseases.
 - 70% lack insurance for work-related injuries.
 - **Hazards:**
 - **Physical:** Noise, radiation, heat/cold stress.
 - **Chemical:** Pesticides, heavy metals.
 - **Biological:** Viruses (e.g., COVID-19, tuberculosis).
 - **Psychosocial:** Stress, burnout, workplace violence.
 - **Musculoskeletal Disorders:** Common in heavy industries.
 - **Solutions:** Ergonomic designs, workplace regulations, and personal protective equipment (PPE).
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