



PHARMACOLEARN

It's Important to Know!

BP206T — Environmental Sciences

B.Pharm Semester 2 · Unit 3 — Environmental Pollution

Unit III: Environmental Pollution

Pollution is the introduction of substances or energy into the environment at levels that cause or may cause harmful effects. The effect depends on concentration, duration, route, persistence, susceptibility and interactions with other stressors.

Air pollution

Air pollutants include particulate matter and gases such as sulfur oxides, nitrogen oxides, carbon monoxide and ozone. Sources include combustion, transport, industry, dust and biomass burning. Effects can include respiratory irritation, cardiovascular stress, reduced visibility, acid deposition and climate effects.

Control measures include cleaner fuels, emission control equipment, dust suppression, efficient combustion, public transport and monitoring. Indoor air quality also depends on ventilation, combustion sources, mould and particulate control.

Water pollution

Water pollution may arise from sewage, industrial effluent, agricultural runoff, oil, metals, pathogens and persistent chemicals. High organic load can reduce dissolved oxygen as microorganisms decompose waste. Nutrient enrichment can cause algal growth and oxygen depletion.

Control measures include source reduction, treatment, safe sanitation, monitoring and protection of catchments. Potable water requires treatment appropriate to the contaminants present.

Soil pollution and waste

Soil can be contaminated by pesticides, metals, petroleum products, industrial waste and improper disposal of medicines or laboratory chemicals. Contamination can affect soil organisms, crops, groundwater and human health.

Waste management follows prevention, reduction, reuse, recycling, recovery and safe disposal where appropriate. Hazardous waste requires identification, segregation, labelled containment, trained handling and authorised treatment.

Unit III: Frequently asked questions

Q: What is eutrophication?

A: Eutrophication is nutrient enrichment of water that can promote excessive algal growth and later reduce oxygen during decomposition.

Q: Why is particulate matter important in air pollution?

A: Small particles can remain airborne and enter the respiratory tract, where they may cause irritation and other health effects.

Q: What is the first priority in waste management?

A: Preventing or reducing waste at the source is preferred before reuse, recycling, recovery or disposal.

Unit III: Key takeaways

- Pollution effects depend on dose, time, route and susceptibility.
- Air pollution includes particles and gases from natural and human sources.
- Water pollution can reduce dissolved oxygen and transmit pathogens.
- Soil contamination can move through crops, groundwater and food webs.
- Safe waste management starts with prevention and correct segregation.

Unit III: Practical correlation

Practical correlation: biomedical and laboratory waste. Waste from healthcare and laboratories must be segregated at the point of generation and handled according to current authorised rules.