

WATER POLLUTION



The alteration in physical, chemical & biological characteristics of water which causes harmful effects on humans and aquatic life.

The major pollutants are sewage, effluents, bacteria.

Infections Agents: Bacteria, viruses, protozoa, parasitic worms

Human Source- Human and animal works

Health Effect – Variety of diseases.

Oxygen demanding wastes: Organic wastes, such as animal manure & Plant debris that are decomposed by aerobic bacteria.

Human Source- Sewage, animal feedlots, paper mills, food processing facilities.

Health Effect – Depletion of dissolved O₂ in water. This causes death of aquatic life.

Inorganic Chemical water soluble chemicals like acids. Compounds of toxic metals like Lead, arsenic and selenium. Salts like NaCl in sea water and fluorides found in some soils

Human Source- Industrial effluents, street wash, household waste.

Health Effect – Causes skin cancer & neck damage. Damage nervous system, liver & Kidney. harm fish and other aquatic life

Organic Chemical Plastics, pesticides, detergents

Human Source- Industrial effluents, household waste.

Health Effect – Damages nervous system, causes some cancers

Plant Nutrients- Water soluble compounds containing Nitrates, (NO_4^{-3}) phosphates (PO_4^{-3}) and NH_4^+ ions

Human Source- Sewage, manure, runoff of agriculture, urban fertilizer.

Health Effect – Drinking water with high levels of nitrate lowers the O_2 carrying capacity of Blood and kills urban children and infants

Sediment – Soil, silt

Human Source- Land Erosion

Health Effect – Clouds water and reduces photosynthesis. Disturbs aquatic food web carry Pesticides, bacteria and other harmful substances.

Radio active materials – Radio isotopes of I_2 , radon, uranium and thorium

Human Source- I^{131} , Co^{60} , Fe^{55} Nuclear power plants, mining and processing of thorium.

Health Effect – Genetic mutation, birth defects and certain cancers.

Thermal Pollution Excessive heat

Human Source- Water cooling of electric power plants and some types of industrial plants.

Hence the temperature of water increases. The rise in temperature decreases the dissolved O_2 and affects the aquatic organisms.

Controlling of water pollution:

1. All domestic and municipal effluents be drained to water bodies only after treatment
2. Use of pesticides in agriculture should be limited. Only standard quality pesticides should be used.
3. Chemicals like potassium permanganate should be sprayed regularly to protect water from micro organisms.
4. Radio active substances can be removed by Ion-exchange method.
5. Plants, trees and forests control pollution and they act as natural air conditions.
6. Bacteria are killed by passing chlorine gas into water bodies.

7. Highly qualified and experienced persons should be consulted from time to time for effective control of water pollution.
8. Inorganic wastes can be treated chemically.
9. Acids and bases are removed by neutralization
10. Sewage is treated by biochemical oxidation. The chemicals retard the growth of plants and retard reproduction process.



Source : <http://nprcet.org/e%20content/eee/EVS.pdf>