WATER POLLUTION and CONTROL

Radioactive Wastes

Radionucleides originate from natural sources due to leaching from minerals.

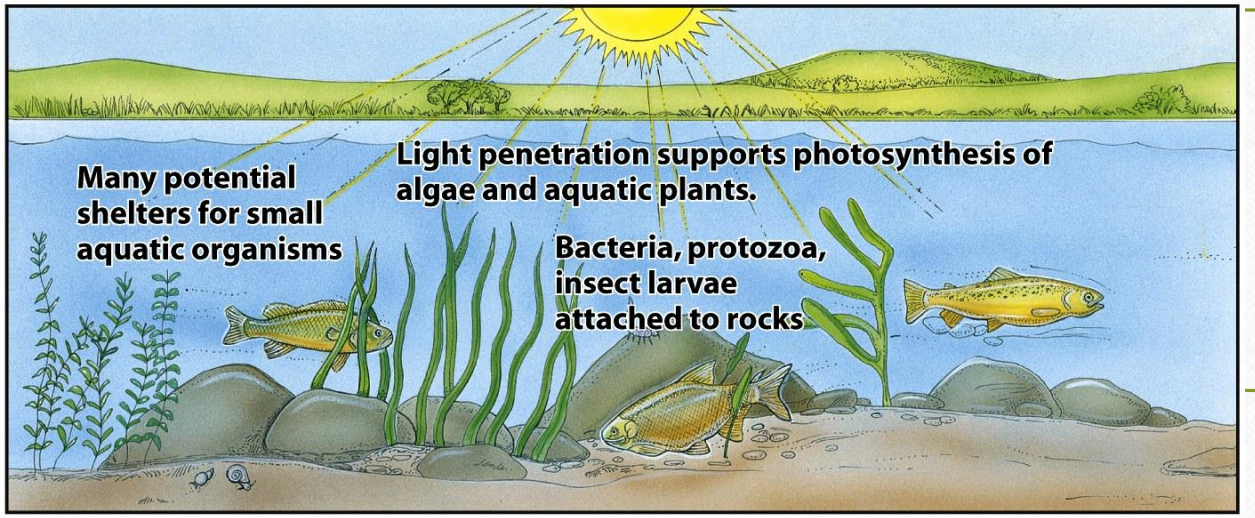
Radioactive materials enter human body through water and food, and may be accumulated in blood and certain vital organs. They cause tumours and cancer.

Thermal Sources

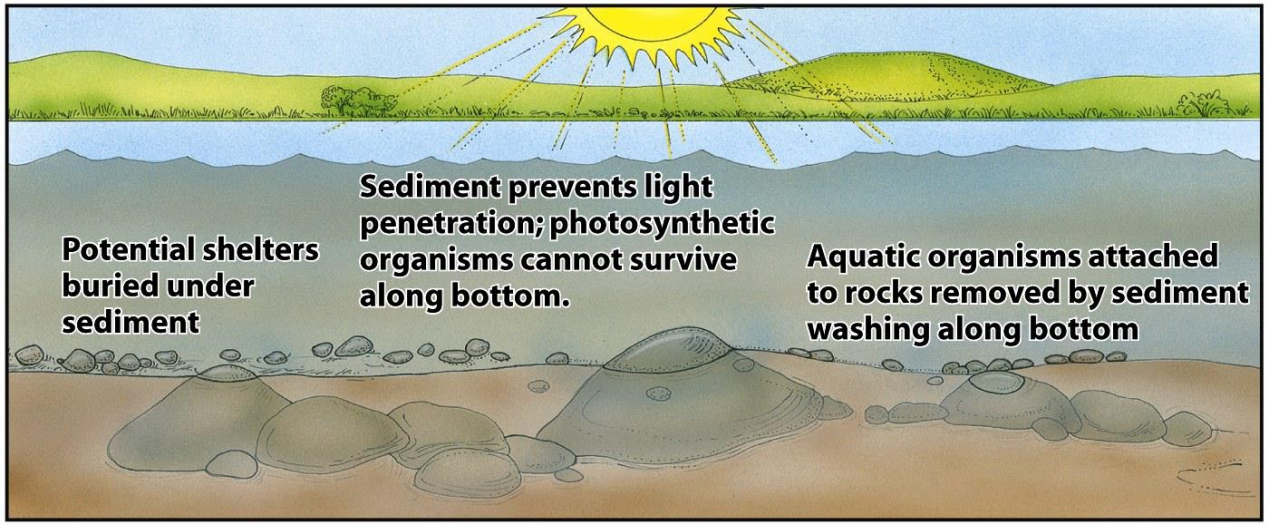
- Various industries, nuclear power plants and thermal plants require water for cooling and the resultant hot water is often discharged into rivers or lakes.
- Higher temperature lowers the dissolved oxygen level (which is very essential for aquatic life) by decreasing the solubility of oxygen in water.

Sediments

- Soil particles carried to streams, lakes or oceans form the sediments.
- The sediment become polluting due to their large amount.
- The sediments may damage the water body by introducing a large amount of nutrient matter.



Stream ecosystem with low level of sediment



Same stream with high level of sediment

Taken from http://www.nios.ac.in/media/documents/313courseE/L34.pdf

Petroleum Products

- Petroleum products are widely used for fuel, lubrication, plastics manufacturing, etc. and happen to be poisonous in nature.
- Crude oil and other related products generally get into water by accidental spillage from ships, tankers, pipelines etc.
- Besides these accidental spills, oil refineries, oil exploration sites and automobile service centres pollute different water bodies.
- Oil slick which floats on the water surface causes death of marine life and severely affects the ecosystem of the ocean.

Table Types of water pollutants, their sources and effects

	Pollutant	Sources of Pollutants	Effects and Significance
1	Pathogens	Sewage, human and animal wastes, natural and urban runoff from land, industrial waste	Depletion of dissolved oxygen in water (foul odour) health effects (outbreaks of water borne diseases)
2	Organic pollutants ● Oil and grease ● Pesticides and weedicides ● Plastics ● Detergents	Automobile and machine waste, tanker spills, offshore oil leakage Chemicals used for better yield from agriculture Industrial and household waste Industrial and household waste	Disruption of marine life, aesthetic damage Toxic effects (harmful for aquatic life), possible genetic defects and cancer; kills fish Eutrophication, aesthetics
3	Inorganic pollutants Fertilizers (phosphates and nitrates)	Agricultural runoff	Algal bloom and eutrophication, nitrates cause methemoglobenemia
	Acids and alkalies	Mine drainage, industrial wastes, natural and urban runoff	Kill fresh water organisms, unfit for drinking, irrigation and industrial use.
4	Radioactive materials	Natural sources, uranium mining and processing, hospitals and research laboratories using radioisotopes	Cancer and genetic defects
5	Heat	Cooling water for industrial, nuclear and thermal plants	Decreases solubility of oxygen in water, disrupts aquatic ecosystems
6	Sediments	Natural erosion, runoff from agricultural land and construction sites	Affects water quality, reduces fish population

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