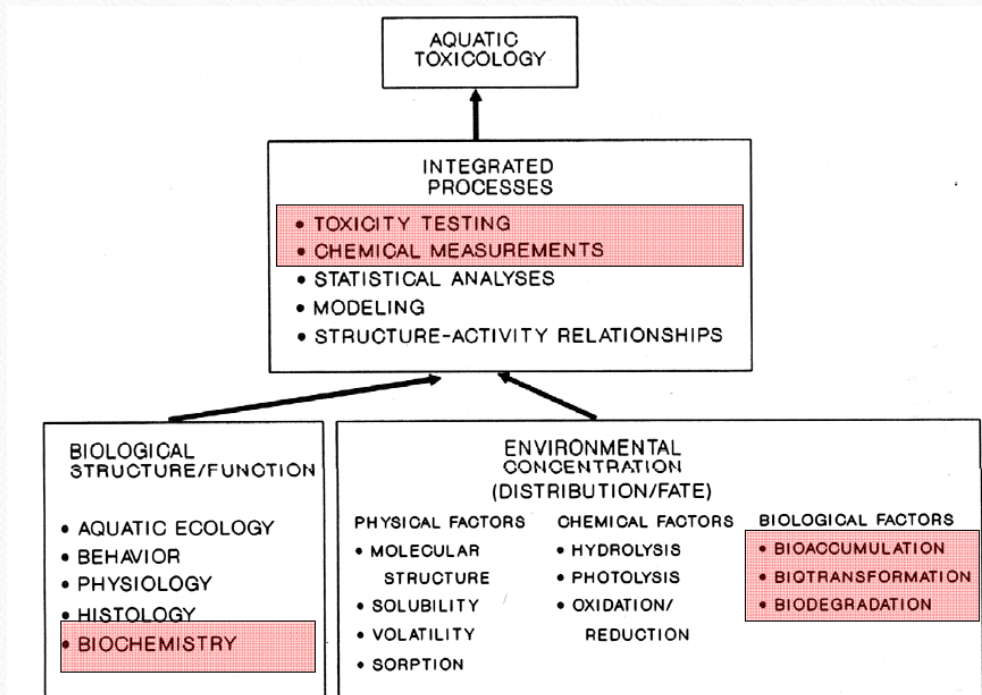


WATER TOXICOLOGY

AQUATIC TOXICOLOGY A MULTIDICIPLINER SCIENCE



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- **However toxic response is complex and predicated upon a number of biological, physical and chemical factors that are often hard to measure and control.**

Important Properties of Water

Property	Comparison with other substances	Importance in aquatic environment
Specific Heat Capacity	Higher than all solids and other liquids except liquid ammonia, liquid hydrogen and lithium	Prevents wide fluctuations in temperature in water and stabilization of body temperatures in organisms
Latent Heat of Fusion	Higher except for ammonia	Temperature stabilization at freezing point of water due to absorption or release of latent heat
Latent Heat of Vaporization	Higher than any other substance	Determines transfer of heat and water molecules between atmosphere and aquatic systems
Density (or Thermal Expansion)	Maximum density for pure fresh water is at 4°C and for sea water it is near its freezing point (-1.9°C)	Freshwater and dilute seawater reach maximum density at temperatures above freezing; controls temperature distribution and vertical circulation in stratified lakes
Surface Tension	Higher than any liquid except mercury	Controlling factor in cell physiology; surface phenomena and drop formation
Dissolving (Solvent) Power	Dissolves more substances and in greater amounts than any other naturally occurring liquid	Facilitate chemical reactions (e.g., hydrolysis) and transport of nutrients and by-products in biological processes
Dielectric Constant	Pure freshwater higher than all liquids except hydrogen peroxide and hydrogen cyanide	High solubility of inorganic substances because of ionization
Transparency	Absorption of radiant energy is high for infrared and longer wave lengths of ultraviolet light; little selective absorption in visible portion	Allows light for photosynthesis and photolysis to occur at significant depths

Sources: Drever (1988), Libes (1992), Pytkowicz (1983), Reid and Wood (1976).

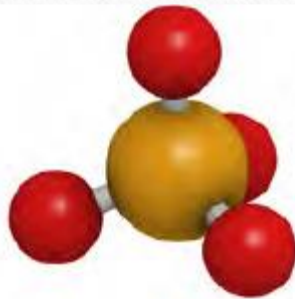
Sources of Water Pollution

Agriculture (crops and livestock)
Atmosphere (acid rain)
Aquaculture
Forestry
Illegal dumping of waste
Industry
Mines
Sewage
Urban areas and roads

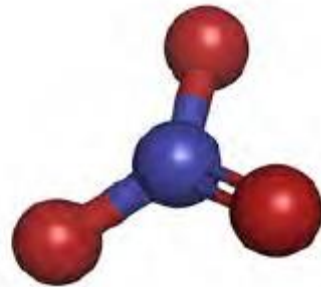


EUTROHICATION

Excessive nutrient concentrations as
phosphate, nitrogen



Example of
a phosphate
molecular model



Example of a nitrate
molecular model



Endocrine disruptors

Are chemicals which can interfere with the normal function of hormones in aquatic animals.



Oil Spills

When an oil spill occurs in water all living organisms can be effected negatively....

Polycyclic aromatic hydrocarbons in oil is the cause for these negative effects.

