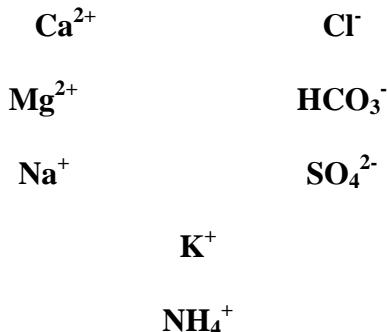


Major Freshwater/Seawater Ions



Essential Plant Nutrients

<i>Macronutrients</i>	<i>Chemical Speciation</i>
Carbon	CO_2
Hydrogen	H_2O
Oxygen	H_2O
Nitrogen	NO_3^-
Phosphorous	PO_4^{3-}
Potassium	K^+
Sulfur	SO_4^{2-}
Magnesium	Mg^{2+}
Calcium	Ca^{2+}

Micronutrients
B, Cl, Co, Cu, Fe, Mo, Mn, Na, Si, V, Zn

Important Trace Elements in Natural Waters

	<i>Element</i>	<i>Sources</i>	<i>Effects/Significance</i>
<i>Metalloids</i>			
	Arsenic		
	Selenium		
<i>Transition Metals</i>			
	Chromium		
	Iron		
	Manganese		
	Molybdenum		
	Zinc		
“Heavy Metals”			
	Cadmium		
	Lead		
	Mercury		
<i>Halogens</i>			
	Fluorine		
	Iodine		
<i>Other</i>			
	Berylium		
	Boron		

General Types of Water Pollution

Trace Elements

- Heavy metals
- Organically bound metals

Radionuclides

Inorganic Pollutants

- Asbestos
- Algal nutrients (N/P)
- Excess acidity, alkalinity, salinity

Trace Organic Pollutants

- Polyhalogenated organics
- Pesticides
- Petroleum products

Sewage (human and animal waste)

- Biochemical oxygen demand
- Pathogens
- Detergents

Chemical carcinogens

Sediments

Taste, Odour and Colour