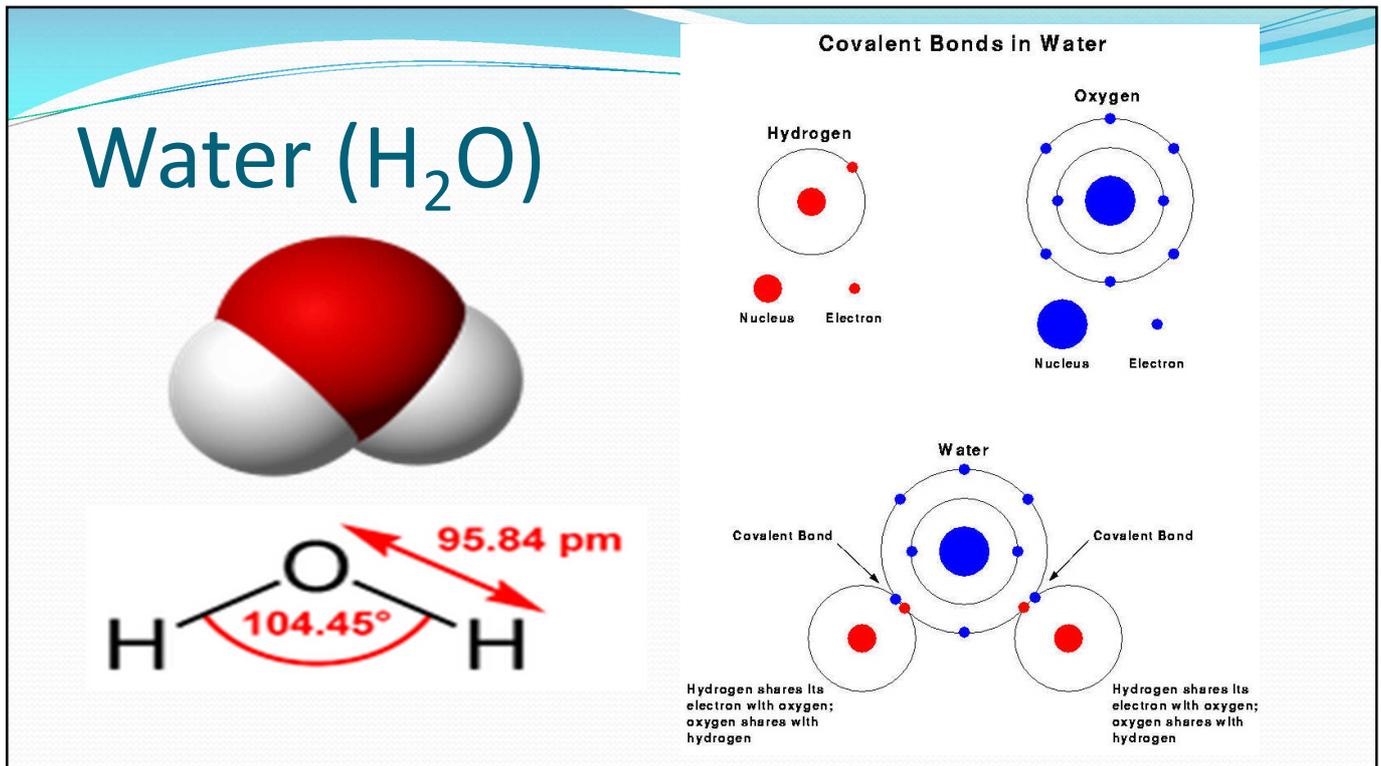


Water

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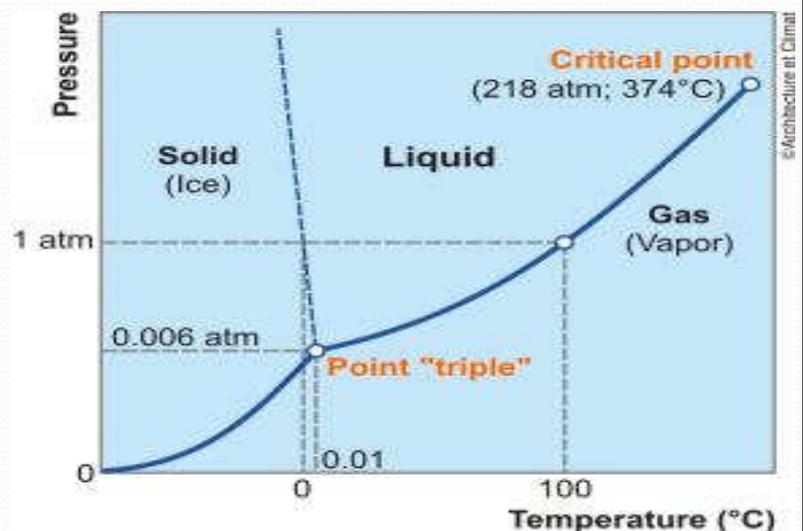
Water

- Water is a transparent and nearly colorless chemical substance that is the main constituent of Earth's streams, lakes, and oceans, and the fluids of most living organisms.
- Its chemical formula is H_2O , meaning that its molecule contains one oxygen and two hydrogen atoms, that are connected by covalent bonds.
- Water strictly refers to the liquid state of that substance.

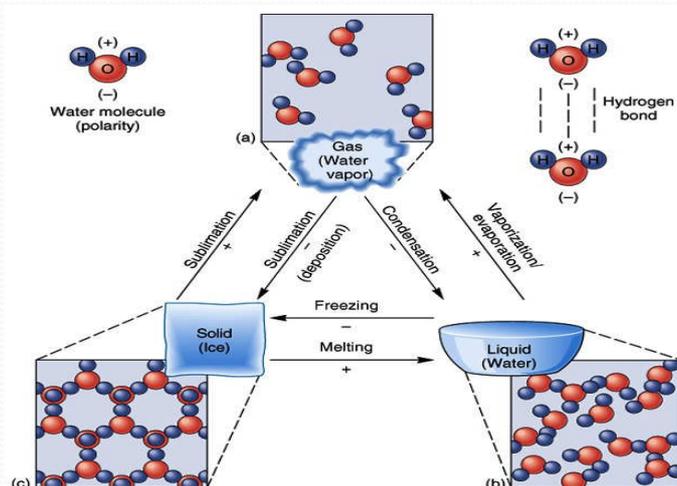


Characteristics of water

- Water coexists in its three forms:
- Solid (ice)
- Liquid
- Gas (vapor)



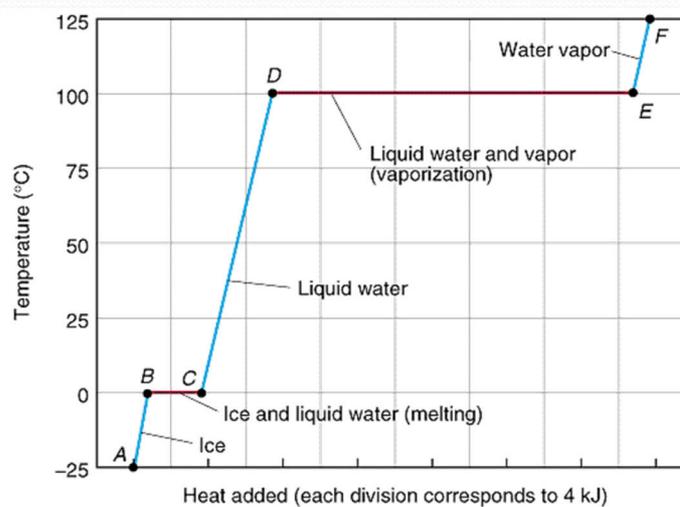
Phases of Water



<http://atocwatervapor.blogspot.com.tr/>

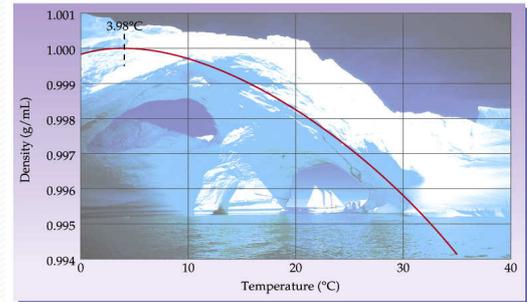
Freezing and boiling points

	°F	°C	K
Boiling point of water	212	100	373
Freezing point of water	32	0	273
Freezing point of dry ice (CO ₂)	-109	-78	195
Boiling point of nitrogen	-321	-196	77
Absolute zero	-460	-273	0



Density of water

- **Density** is the amount of mass per unit of volume.
- Density of pure water is 1.0 g/mL
- Density of pure ice is 0.92 g/mL
- Density of sea water is 1.03 g/mL



Pure water

- Water in its pure state is...
 - Colorless
 - Odorless
 - Transparent
- Distilled water is considered “pure” (pH=7)
- Rain water is not pure (pH=5.6)

Physical parameters of water pollution

- Temperature
- Color
- Smell
- Taste
- Turbidity

Chemical parameters of water pollution

- Dissolved substances
- Alkalinity
- Hardness
- pH
- Biochemical oxygen demand (BOD)
- Chemical oxygen demand (COD)
- Nutrients (nitrogen & phosphorus)
- Heavy metals

Biological parameters of water pollution

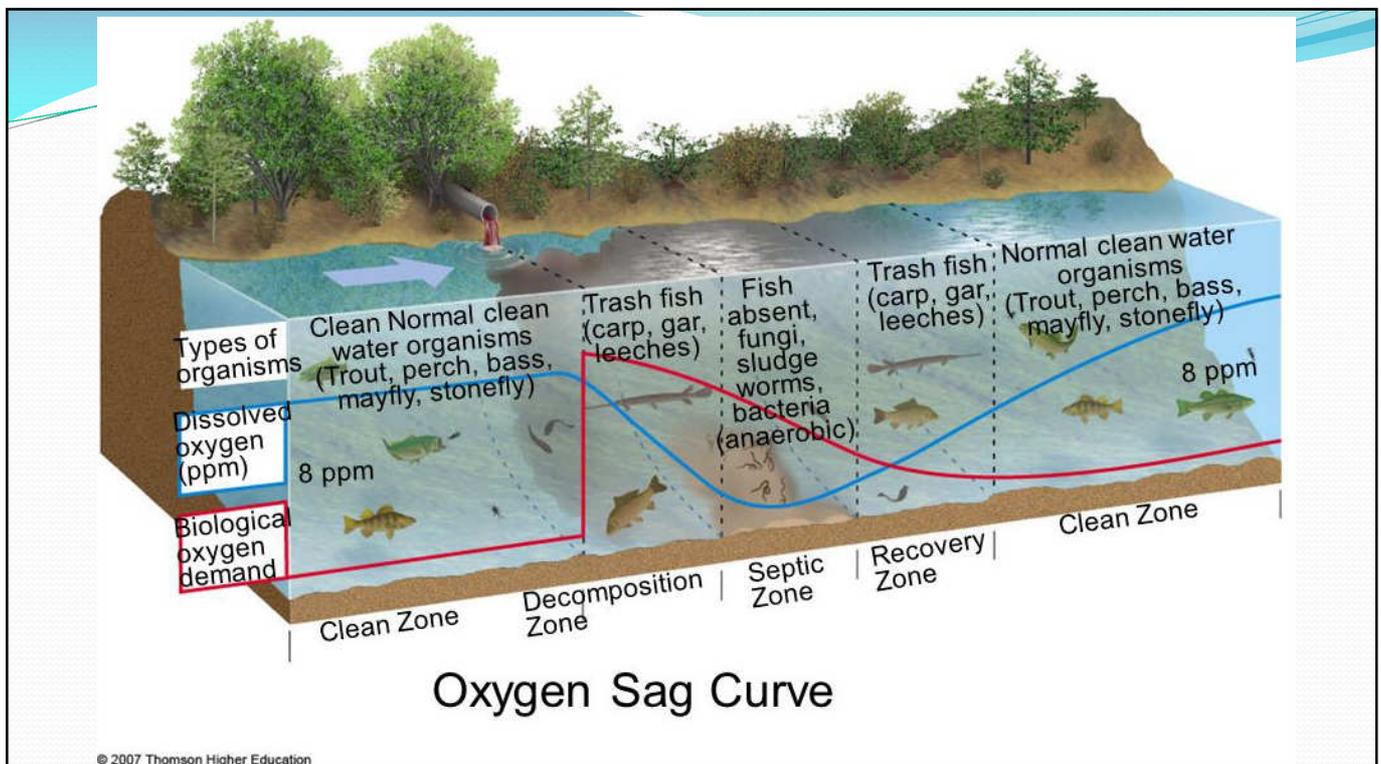
- Bacteria (mainly coliforms)
- Virus
- Protozoa

Some definitions

- **Alkalinity** refers to the capability of water to neutralize acid.
- **BOD** is the amount of oxygen required for microorganisms in decomposing organic matter in water.
- **COD** is a measure of the capacity of water to consume oxygen during the decomposition of organic matter and the oxidation of inorganic chemicals.

Water Pollution

- Water pollution is defined as the contamination of a water bodies (e.g. lakes, rivers, oceans and aquifers) through the infiltration of chemical, physical or biological agents.
- Water pollution occurs when pollutants are discharged directly or indirectly into water bodies without adequate treatment to remove harmful compounds.



Water pollution cause

- Reduction in water quality
- Water can not be used for:
 - Drinking
 - Irrigation
 - Industry
 - Recreation
- Spread of water borne diseases