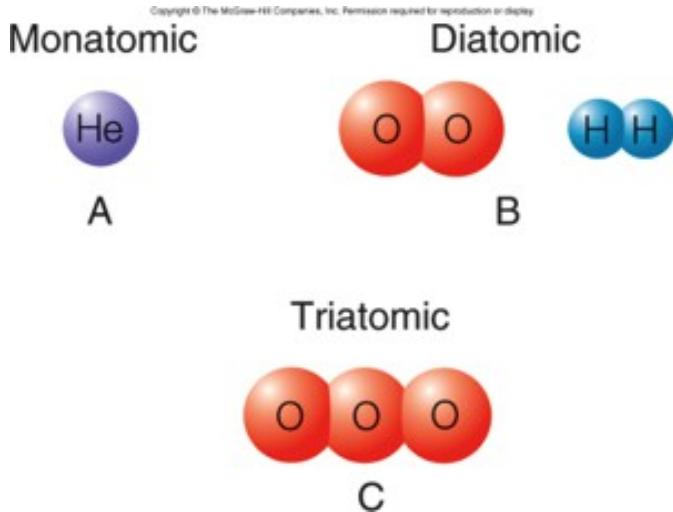


Science in Civilization: Exam 4

CHAPTER 9: Chemical Bonds

Molecule - smallest particle still retaining the characteristic chemical properties of a substance



Chemical Bonds - Attractive forces holding atoms together in compounds

- **Ionic**
 - Electrons transfer $\rightarrow$ between atoms
 - Electrostatic force = binding force
 - *example:* $\text{NaCl} \rightarrow \text{Na loses}; \text{Cl gains}$
 - Forms a nonionized substance
 - Taking electrons (1,2,7 outer shell)
- **Covalent**
 - Octets achieved through sharing electrons
 - Typically between nonmetallic elements, r.h.s of periodic table
 - Sharing electrons (4,5,6 outer shell)
- **Water**

Buffer – resists a change in pH, usually produces a salt and water

Macro Molecules

1. Carbohydrates
 - Long chain branching polysacs, building block of glucose
2. Proteins
 - Amino acids
3. Lipids
 - Glycerol and fatty acids
4. Nucleic Acids
 - Nucleotides

Glucose most common molecule in universe

Disaccharides

- sucrose
- maltose (glucose + glucose)
- lactose

Polysaccharides

1. Starch $\rightarrow$ plant storage molecule
2. Glycogen
3. Cellulose $\rightarrow$ plants/nature, different bonding, paper
4. Chitin $\rightarrow \text{NH}_2$ group, strong

Dehydration Synthesis – drawn out in naturally drawn nature, water removed

Hydrolysis – add water back to break glucose (molecule) down

[diagram]

Proteins – building block – amino acid

Acids & Bases

