Chemical Nomenclature Review

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Binary Ionic Compounds
(Metal + Non-Metal)

Monovalent
- Metals with 1 oxidation #
- Group 1, group 2, silver, zinc, and aluminium

METAL + NON-METAL + IDE
Ex. $ZnCl_2$ = Zinc chloride

Divalent
- Metals with 2 oxidation #s
- Fe, Cu, Sn, Sb, Hg, As, Au

Stock Method: METAL (roman numeral of O.N.) + NON-METAL + IDE
Ex. Fe_2O_3 = Iron (III) Oxide

Classical Method: LATIN NAME + OUS/IC + NON-METAL + IDE
Ex. Fe_2O_3 = Ferric Oxide

Polyvalent
- Metals with more than 2 oxidation #s
- Typically transition metals

Stock Method: METAL (roman numeral of O.N.) + NON-METAL + IDE
Ex. RhO = Rhodium (II) Oxide

Binary Acids
(Hydrogen + Non-Metal)

Acid: Something that produces a hydrogen ion in an aqueous solution

HYDRO + NON-METAL + IC ACID
Ex. HCl(aq) = Hydrochloric acid

Oxyacids
(Hydrogen + Non-Metal + Oxygen)

- There are 5 main oxyacids:
  Chloric ($HClO_3$)
  Nitric (HNO_3)
  Carbonic (H_2CO_3)
  Sulphuric (H_2SO_4)
  Phosphoric (H_3PO_4)

From these acids you can derive:

- OUS acids (-1 oxygen)
  Ex. Nitrous acid = HNO_2
- HYPO-OUS acids (-2 oxygen)
  Ex. Hyposulphurous acid = H_2SO_2
- PER-IC acids (+1 oxygen)
  Ex. Perchloric acid = $HClO_4$

Stock method can also be used
Ex. $HClO_3$ = Chloric acid or chloric (V) acid

Polyatomic Ionic Compounds
(Metal + Polyatomic Ion)

- If the metal is *MONOVALENT:* Metal + Polyatomic Ion
- If the metal is *DIVALENT:* Stock/Classical methods
- If the metal is *POLYVALENT:* Stock method

Ex. $Fe(NO_3)_2$ = Iron (II) Nitrate or Ferrous Nitrate

Hydrated Salts
(Salt + Hydrate)

- *Salt:* Ionic compounds which when dissolved in water break up into ions
- *Hydrated:* When water molecules are left on the crystalline ionic compound

IONIC/CLASSICAL NAME + GREEK PREFIX + HYDRATE
Ex. $NaCrO_4 \cdot 4H_2O$ = Sodium chromate tetrahydrate

Covalent Compounds
(Non-Metal + Non-Metal)

Prefix System
- Use Latin prefixes: mono (1), di (2), tri (3), tetra (4), penta (5), hexa (6), hepta (7), octa (8), nona (9), deca (10)

Ex. P_4O_5 = Tetraphosphorous pentoxide