Naming Conventions for Chemical Compounds

I. Ionic compounds (metal + nonmetal(s))

A. monoatomic anion with singly-charged cation

[can tell charges by group or family on periodic table]

NaCl = sodium chloride

K_2S = potassium sulfide

B. monoatomic anion with multiply-charged cation

[Cr, Mn, Co, Fe, Cu, Ni, Au, Hg, Sn, Pb]

SnO = tin (II) oxide or stannous oxide

SnO_2 = tin (IV) oxide or stannic oxide

Fe_2O_3 = iron (III) oxide or ferric oxide

C. polyatomic anion [-ate has one more oxygen than –ite]

Na_2SO_4 = sodium sulfate

Na_2SO_3 = sodium sulfite

NaOH = sodium hydroxide

$NaHCO_3$ = sodium hydrogen carbonate (or sodium bicarbonate)

$KMnO_4$ = potassium permanganate

D. polyatomic cation [H_3O^+, NH_4^+]

NH_4Cl = ammonium chloride

$(NH_4)_3PO_4$ = ammonium phosphate

II. Molecular compounds (all nonmetals)

[use Greek prefixes except if only one of first element]

CO = carbon monoxide

CO_2 = carbon dioxide

Cl_2O_7 = dichlorine heptaoxide

III. Acids (has an H in front)

A. Binary acids

HCl(aq) = hydrochloric acid

HI(aq) = hydroiodic acid

H_2S(aq) = hydrosulfuric acid

B. Ternary oxyacids

H_2SO_4 = sulfuric acid (from sulfate, SO_4^{-2})

H_2SO_3 = sulfurous acid (from sulfite, SO_3^{-2})

$HClO_4$ = perchloric acid (from perchlorate, ClO_4^-)

$HClO_3$ = chloric acid (from chlorate, ClO_3^-)

$HClO_2$ = chlorous acid (from chlorite, ClO_2^-)

HOCl = hypochlorous acid (from hypochlorite, ClO^-)

$HC_2H_3O_2$ = acetic acid (from acetate, $C_2H_3O_2^{-1}$)