4.4C Naming Compounds Containing Multivalent Metals

Definition

Multivalent Metal- metal that has more than one possibility for cationic charge

Common multivalent metals and their charges

Cobalt	Co^{+2}	Co^{+3}
Copper	Cu^{+1}	Cu^{+2}
Iron	Fe^{+2}	Fe^{+3}
Lead	Pb^{+2}	Pb^{+4}
Manganese	Mn^{+2}	Mn^{+3}
Mercury	Hg_2^{+2}	Hg^{+2}
Tin	Sn^{+2}	Sn^{+4}

Identifying & Naming Multivalent Metals

- These compounds have:
  - One of the multi-valent metals in that chart
- To name these compounds:
  - Write the name of the metal element (cation)
  - Write the name of the anion (element name with “-ide” or polyatomic ion name)
  - Determine the total negative charge
  - Total negative charge = total positive charge for all neutral compounds
  - Determine the charge on each metal atom
  - Write the charge in roman numerals in parenthesis after the metal’s name

Common Ions

Use the periodic table to determine charges on common elemental anions

Periodic table--Charges of common ions																	
														N^{3-}	O^{2-}	F^{-}	
														P^{3-}	S^{2-}	Cl^{-}	
															Se^{2-}	Br^{-}	
																I^{-}	

Example #8

CuCl

Example #9

$$Fe_2(CO_3)_3$$

Let's Practice

Example:
Write the name for the following compounds

$PbCl_2$

$PbCl_4$

MnO

Mn_2O_3