Naming Ionic Compounds

Chem Worksheet 8-2

Name _____

An **ionic compound** is a combination of oppositely charged ions. Ionic compounds generally contain a metal bonded to a non-metal (or non-metals). When naming ionic compounds we simply name the cation (the positive ion) then the anion (the negative ion). The cations generally retain the name of the element, so Na^+ is named sodium. The **monatomic anions** are formed when a non-metal gains an electron and these ions have an –ide ending, so S^{2-} is named sulfide. There are a group of **polyatomic ions** as well that have their own unique names. A list of these appears below.

Some metals can form more than one positive ion. Copper for example forms Cu^{1+} and Cu^{2+} ion. These ions are named using Roman numerals: copper (I) and copper (II) respectively. Most metals that form more than one type of cation are found in the transition metal family or below the non-metals in the *p*-block.

Rules for naming Molecular Compounds

1. Name the positive ion. Most cations have the same name as their elements.
2. Name the negative ion. Monatomic anions have an –ide ending. Polyatomic anions names' must be memorized.
3. If the positive ion is a transition metal or located on the right side of the table it may have more than one charge. In this case use Roman numerals to designate the charge.

Common Polyatomic Ions	
NH_4^+	Ammonium
OH^{1-}	Hydroxide
CN^{1-}	Cyanide
NO_3^{1-}	Nitrate
ClO_3^{1-}	Chlorate
$C_2H_3O_2^{1-}$	Acetate
SO_4^{2-}	Sulfate
CO_3^{2-}	Carbonate
PO_4^{3-}	Phosphate
HCO_3^{1-}	Bicarbonate
HSO_4^{1-}	Bisulfate

Examples

Name the following compounds:

Formula	Name
NaCl	Sodium chloride
K_2S	Potassium sulfide
$MgSO_4$	Magnesium sulfate
$Mn(OH)_2$	Manganese (II) hydroxide

Write the names for the following ionic compounds.

	Formula	Name
1.	Li_2S	
2.	KF	
3.	Mg_3N_2	
4.	$Ca(OH)_2$	
5.	$Ba(NO_3)_2$	
6.	$CuCl_2$	
7.	PbO	
8.	ZnF_2	
9.	$NaC_2H_3O_2$	
10.	$SrCO_3$	
11.	$CrSO_4$	
12.	Na_3PO_4	

	Formula	Name
13.	$CaBr_2$	
14.	$Ni(CN)_2$	
15.	$Al(NO_3)_3$	
16.	$Sn(OH)_2$	
17.	HgI_2	
18.	$Fe_2(SO_4)_3$	
19.	$Ca(C_2H_3O_2)_2$	
20.	$TiCl_3$	
21.	$KClO_3$	
22.	$ZnCO_3$	
23.	$NaHCO_3$	
24.	$Co(HSO_4)_2$	