

Salt Lake Community College, Chemistry Department

Chem 1110 Workshop 4

Topic: Ionic compounds/ Acid and Bases Nomenclature

Objective:

- Naming Monoatomic Ions
- Polyatomic Ions
- Naming Ionic Compounds
- H^+ and OH^- Ions: An Introduction to Acids and Bases

Naming Monoatomic Ions:

Type 1- Positive Ions (cations):

Cations formed from metal atoms have the same name as the metal: for example, Na^+ - sodium ion.

Type 2- Positive Ions (transition metals):

If one metal forms more than one cation, the charge is indicated by a Roman numeral in parentheses: Fe^{2+} - iron (II) ion

Type 1- Negative Ions (anions):

Monoatomic anions: by replacing the ending of the element's name with the ending -ide. H^- (H hydrogen) - hydride ion

Some polyatomic anions have names ending -ide:

OH^- - hydroxide

CN^- - cyanide

O_2^{2-} - peroxide

Type 2- Negative Ions (anions)

Polyatomic anions containing oxygen: names ending in -ate or -ite.

-ate for most common oxyanion of an element

-ite for an oxyanion with the same charge but one O atom fewer

NO_3^-	Nitr ate ion
NO_2^-	Nitri te ion
SO_4^{2-}	Sulf ate ion
SO_3^{2-}	Sulf ite ion

Negative Ions (anions):

Polyatomic anions containing oxygen (when more than 2 anions are formed):

In addition to: names ending in -ate or -ite .

Prefixes: per- one more O atom

hypo- one O atom fewer

ClO_4^- - perchlorate ion (one more O atom than chlor ate)

ClO_3^- - chlor ate ion (most common)

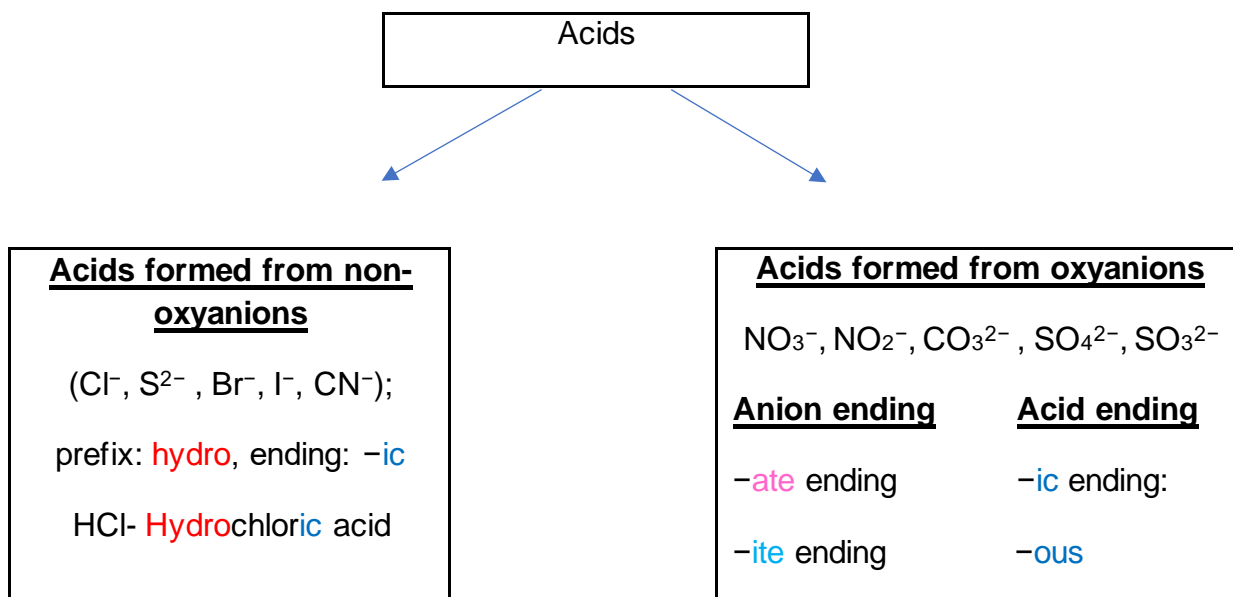
ClO_2^- - chlor ite ion (one O atom fewer than chlor ate)

ClO^- - hypochlor ite ion (one O atom fewer than chlor ite)

H^+ and OH^- Ions: An Introduction to Acids and Bases:

Acids: substances whose molecule yield hydrogen ions H^+ when dissolved in water.

Bases: substances whose molecule yield hydroxide ions OH^- when dissolved in water.



Practice Problems:

1. Name the following:

Ionic Compounds/ Acid/bases	Name
Fe ₂ O ₃	
Ag ₂ S	
BaCl ₂	
HBr	
Mg(OH) ₂	
CaCl ₂	
HClO	
FeOH	
Co ₃ (PO ₄) ₂	
HNO ₂	
Pb(NO ₃) ₄	
BaO	
LiBr	

2. Give the chemical formula of the following chemical names:

Chemical name	Chemical formula
Lead (II) perchlorate	

Ammonium sulfate	
Perchloric acid	
Calcium carbonate	
Aluminum oxide	
Zinc (II) sulfide	
Hydrofluoric acid	
Barium hydroxide	
Sodium oxide	
Lead (IV) nitrate	
Strontium hydroxide	
Chloric acid	