Naming acids and Bases

Acids have names that are slightly different than the ionic naming rules we learned before. Bases simply use the same rules we learned before. Let's examine what we learned before:

Ionic Naming Rules

Acids always have hydrogen as the cation and some other anion:

Cation	Anion	Formula	Name
H^+	Cl^{-1}	HCl	Hydrogen chloride
H^+	Br^{-1}	HBr	Hydrogen bromide
H^+	I^{-1}	HI	Hydrogen iodide
H^+	CN^{-1}	HCN	Hydrogen cyanide
H^+	ClO_4^{-1}	$HClO_4$	Hydrogen perchlorate
H^+	NO_3^{-1}	HNO_3	Hydrogen nitrate
H^+	SO_4^{-2}	H_2SO_4	Hydrogen sulfate
H^+	PO_4^{-3}	H_3PO_4	Hydrogen phosphate
H^+	ClO_2^{-1}	$HClO_2$	Hydrogen chlorie
H^+	NO_2^{-1}	HNO_2	Hydrogen nitrite
H^+	SO_3^{-2}	H_2SO_3	Hydrogen sulfite
H^+	PO_3^{-3}	H_3PO_3	Hydrogen phosphate

Bases always have OH^{-1} as the anion with some metal as the cation:

Na^+	OH^{-1}	NaOH	Sodium hydroxide
K^+	OH^{-1}	KOH	Potassium hydroxide
Ca^{+2}	OH^{-1}	$Ca(OH)_2$	Calcium hydroxide
Al^{+3}	OH^{-1}	$Al(OH)_3$	Aluminum hydroxide

Acid/Base Naming Rules

Naming bases does not necessitate any change in the rules. The names seen above are the names of the bases.

Acids, however, are named slightly differently based upon whether or not they are *oxyacids* or *non-oxyacids*. Oxyacids are acids that have oxygen in the formula. Non-oxyacids are acids that do NOT contain oxygen in the formula. From the list above:

Examples of Non-oxyacids:	HCl	HBr	HCN
Examples of Oxy-acids:	$HClO_4$	HNO_2	H_3PO_3

Oxyacids: Drop "hydrogen"
-ate ending becomes –ic acid
-ite ending becomes –ous acid

Non-oxyacds: "hydrogen" becomes "hydro-"
-ide ending becomes –ic acid

Consequently each name changes to the following:

Cation	Anion	Formula	Name	Acid Name
H^+	Cl^{-1}	HCl	Hydrogen chloride	Hydrochloric acid
H^+	Br^{-1}	HBr	Hydrogen bromide	Hydrobromic acid
H^+	I^{-1}	HI	Hydrogen iodide	Hydroiodic acid
H^+	CN^{-1}	HCN	Hydrogen cyanide	Hydrocyanic acid
H^+	ClO_4^{-1}	$HClO_4$	Hydrogen perchlorate	Perchloric acid
H^+	NO_3^{-1}	HNO_3	Hydrogen nitrate	Nitric acid
H^+	SO_4^{-2}	H_2SO_4	Hydrogen sulfate	Sulfuric acid
H^+	PO_4^{-3}	H_3PO_4	Hydrogen phosphate	Phosporic acid
H^+	ClO_2^{-1}	$HClO_2$	Hydrogen chlorie	Chlorous acid
H^+	NO_2^{-1}	HNO_2	Hydrogen nitrite	Nitrous acid
H^+	SO_3^{-2}	H_2SO_3	Hydrogen sulfite	Sulfurous acid
H^+	PO_3^{-3}	H_3PO_3	Hydrogen phosphate	Phosphorous acid