

# Naming Oxy-ions

The Element at  
the center  
of the ion

Chg the  
element  
prefers

Chg of  
the ion

3/4 ions

P	-3	-3	4 oxygens	$\text{PO}_4^{3-}$	Phosph <del>ate</del> ion
			3 oxygens	$\text{PO}_3^{3-}$	Phosph <del>ite</del> ion
S	-2	-2	4 oxygens	$\text{SO}_4^{2-}$	Sulf <del>ate</del> ion
			3 oxygens	$\text{SO}_3^{2-}$	Sulf <del>ite</del> ion

2/3 ions

C	-4/+4	-2	3 oxygens	$\text{CO}_3^{2-}$	Carbon <del>ate</del> ion
			2 oxygens	$\text{CO}_2^{2-}$	Carbon <del>ite</del> ion
N	-3	-1	3 oxygens	$\text{NO}_3^{1-}$	Nitr <del>ate</del> ion
			2 oxygens	$\text{NO}_2^{1-}$	Nitr <del>ite</del> ion
Cl, Br, I	-1	-1	4 oxygens	$\text{BrO}_4^{1-}$	<i>Per</i> brom <del>ate</del> ion
			3 oxygens	$\text{BrO}_3^{1-}$	Brom <del>ate</del> ion
			2 oxygens	$\text{BrO}_2^{1-}$	Brom <del>ite</del> ion
			1 oxygen	$\text{BrO}_1^{1-}$	<i>Hypo</i> brom <del>ite</del> ion

Think of a party, and remember: I "ate more". The ate ion has more oxygens.



Ammonium ion



Hydroxide ion



Acetate Ion



Cyanide Ion

- ▶ All 20 oxy-ions have the same charge as their central atom normally prefers – except carbon and nitrogen
- ▶ P and S oxy-ions have 3 or 4 oxygens.
- ▶ C, N, Cl, Br, and I oxy-ions have 2 or 3 oxygens.
- ▶ The "ite" ion is always the one with less oxygens.
- ▶ The "ate" ion is always the one with more oxygens.
- ▶ The 3 halogens can super size: 4 oxygens = perchlorate ion
- ▶ The 3 halogens can also have a really small ion: 1 oxygen = hypochlorite ion
- ▶ There are four misc polyatomic ions you should also know:  $\text{NH}_4^{1+}$ ,  $\text{OH}^{1-}$ ,  $\text{OAc}^{1-}$ , and  $\text{CN}^{1-}$ .

**HELLO**  
my name is

*Ferric Chloride*

*You can call me "FeCl3"*