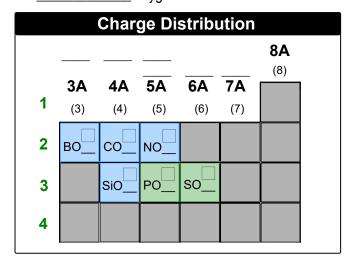
CONCEPT: POLYATOMIC IONS

• Polyatomic lons are tightly bound groups made of multiple elements that possess an overall _____.

Polyatomic Oxyanions

- Negatively charged polyatomic ions that end with oxygen.
 - □ Trioxides: When their name ends with –ate they possess _____ oxygens.
 - □ Tetraoxides: When their name ends with –ate they possess _____ oxygens.

		Num	ber o	f Oxy	gens		
						8A	
	3A	4A	5A	6A	7A	(8)	
1	(3)		(5)		(7)		
2	B O_	c o_	NO_				
			D O	00			
3		SiO_	P O				
4							



Trioxides						
Bor ate	Carbon ate		Nitrate		Silic ate	

Tetraoxides			
Phosphate	Sulfate		

Deriving Oxyanions

• Decreasing the number of oxygens by 1 changes the ending to —_____, while keeping the overall charge the same.

so__ so__ _

EXAMPLE: Give the formal or systematic name for the following polyatomic ion: PO₃³–

PRACTICE: Give the systematic name for the following polyatomic ion.

NO₂-

CONCEPT: POLYATOMIC IONS PRACTICE: Give the systematic name for the following polyatomic ion. CO_2^{2-}
PRACTICE: Give the systematic name for the following polyatomic ion. $AsO_4{}^{3-}$
PRACTICE: The formula for the sulfate ion, SO ₄ ² If the term of "thio" means the replacement of an oxygen by a sulfur, what is the formula for the thiosulfate ion?

CONCEPT: POLYATOMIC IONS

Halogen Oxyanions

- Polyatomic ions containing halogens are referred to as _____ or halogen oxyanions.
 - ☐ The **Base Name** is the beginning of the nonmetal's name that is unchanged.
 - □ The number of oxygens in these polyatomic ions affect either the prefix and/or suffix.
 - □ All the **halogen** oxyanions possess a charge of _____.

Halogen	Base Name
Fluorine (F)	
Chlorine (CI)	
Bromine (Br)	
lodine (I)	

# of Oxygens	Base Name
	perate
	ate
	ite
	hypoite

EXAMPLE: Give the formal or systematic name for the following polyatomic ion: PO₃³–

Polyatomic Cations

- Most polyatomic ions are negatively charged except for the NH₄+ ion and the Hg₂²⁺ ion.
 - □ NH₄+: the _____ ion is the only major polyatomic ion with a +1 charge.
 - □ Hg₂²⁺: the ______ ion is composed of 2 mercury ions that are bonded together.

The Other Polyatomic Ions

• The other polyatomic ions don't fit into predictable patterns and so must be memorized.

The Other Tetraoxides				
Permanganate	Chromate		Oxalate	

The Other Polyatomic Ions					
Cyanide		Hydroxide		Peroxide	
Dichromate		Cyanate		Acetate	

EXAMPLE: Based on your understanding of the polyatomic oxyanions, provide the structure for the thiocyanate ion.

CONCEPT: POLYATOMIC IONS PRACTICE: Give the systematic name for the following polyatomic ion. FO-
PRACTICE: Give the systematic name for the following polyatomic ion. IO ₃ -
PRACTICE: The silicate ion is the silicon version of the carbonate ion. Based on this description, provide the structure of the silicate ion.