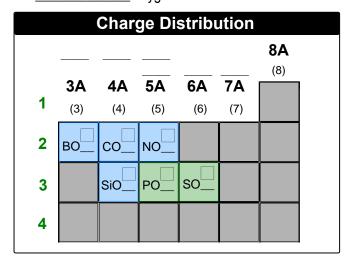
CONCEPT: POLYATOMIC IONS

• 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.

Number of Oxygens						
					A8	
3Δ	4Δ	5Δ	6Δ	7Δ	(8)	l
(3)				(7)		
B O	c o_	NO_				
	SiO_	P O	so_			
	3A (3)	3A 4A (3) (4) BOCO	3A 4A 5A (3) (4) (5) BOCONO	3A 4A 5A 6A (3) (4) (5) (6) BO CO NO	3A 4A 5A 6A 7A (3) (4) (5) (6) (7) BO	8A (8) 3A 4A 5A 6A 7A (3) (4) (5) (6) (7)



Trioxides						
Borate	Carbonate		Nitr ate		Silicate	

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__ so__

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

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

 NO_2 -

CONCEPT: POLYATOMIC IONS PRACTICE: Give the systematic name for the following polyatomic ion. CO2 ²⁻
PRACTICE: Give the systematic name for the following polyatomic ion. AsO ₄ ² -
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

L		^	Δv	mi	ana
Πа	ıog	en	UX)	/aiii	ons

 Polyatomic ions con 	taining <mark>halogen</mark> s		or halog	en oxyanions.	
□ The Base N	lame is the begin	nning of the nonmet	al's name th	nat is unchanged.	
□ The number	nese polyatomic ions	s affect eith	er the prefix and/or s	suffix.	
□ All the halo	gen oxyanions p	ossess a charge of			
	Halogen	Base Name		# of Oxygens	Base Name

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

# of Oxygens	Base Name
	perate
	ate
	ite
	hypoite

EXAMPLE: Name each of the following compounds: **a.** CIO₄⁻

b. BrO₂-

Polyatomic Cations

•	Most polyatomic ions are	e negatively charge	d except for the NH ₄	⁺ ion and the Hg ₂ 2+ ion.
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□ NH₄+: the _____ ion is the only major polyatomic ion with a +1 charge.

□ **Hg**₂²⁺: 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.