Nomenclature Information

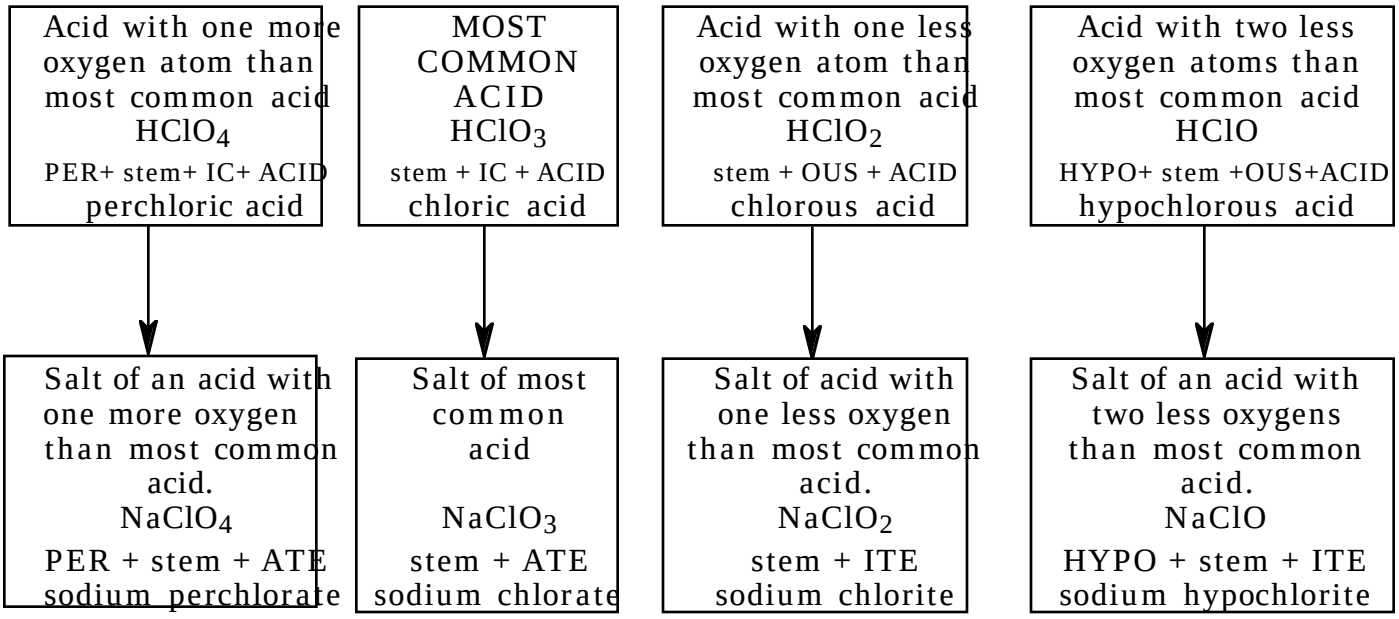
There is one really major rule to remember when trying to write a formula. Here it is:

The sum of all positive and negative charges in the formula **MUST** equal zero.

You can't write a correct formula without following this rule. That's pretty clear, isn't it?

Recommended Skills for Naming Compounds

1. Using the periodic table, identify any element as a metal, nonmetal, or metalloid. (Metals are elements which donate electrons assuming a positive charge in compounds. Nonmetals are elements which accept electrons taking on a negative charge in compounds. Metalloids are elements which accept or donate electrons, depending on the circumstances. Hydrogen acts as a postive, but all other properties label it a non-metal. It can also form a –1 charge, so most do not even categorize it with others. Think of it as a category of one.
2. Learn the correct spelling of names and symbols of selected elements. (1 - 20, 24 - 30, 35, 47, 50, 53, 56, 79, 80, 82 are recommended for your study.)
3. Learn the names, formulas, and oxidation numbers of selected polyatomic ions. Note that a compound which has a polyatomic ion must have more than two elements (examples: sulfate, nitrate, carbonate, acetate, phosphate, chlorate, hydroxide, ammonium, cyanide, iodate).
4. Learn the rules for deriving the names and oxidation numbers of related polyatomic ions which differ in the number of oxygen atoms. Learn the connection between the polyatomics and their related acids. Most common to learn are sulfate, nitrate, chlorate, phosphate.



5. Using the periodic table, determine the most probable charge of non-transition elements.
6. Learn a list of selected common metals which have more than one oxidation number. (Fe, Cu, Sn, Hg, Pb, Co, Cr, Au are commonly used in introductory classes like this one.)
7. Determine the oxidation number of the elements from the formula of the compound.

8. Learn the seven diatomic gases, sometimes called diatomic elements. They are:

Names	hydrogen	oxygen	nitrogen	chlorine	bromine	iodine	fluorine
Formulas	H_2	O_2	N_2	Cl_2	Br_2	I_2	F_2

On the periodic table, six of them are located in the upper right portion of the table.

N	O	F
		Cl
		Br
		I

Notice that these six make a block number 7 and that the top bar of the 7 points (sort-of) in the direction of the seventh diatomic element, hydrogen.

Others like to use the mnemonic HONClBrIF and pretend it is the name of a famous chemist. Whenever you see the name of one of there, write its formula as above.

"Bromine" or "bromine gas" means Br_2. However "bromide" means Br^{-1}, **NOT** Br_2. Br^{-1} is also called "bromide ion."

Common Misconceptions

1. Because a given element is diatomic, that the same element will always be diatomic when combined with some other element in a compound. Notice that the number of oxygens is not limited to two in these compounds: CO NO_2 HNO_3 H_2SO_4 P_2O_5 Note that the 2 in NO_2 **DOES NOT** mean that there is a diatomic oxygen molecule involved, it means that there are two oxygen atoms. Or in H_2SO_4, there are not two oxygen molecules, but 4 distinct oxygen atoms.

2. Because some of the diatomic elements are gases that all gaseous elements (or even molecules) must be diatomic. Only five of the diatomic molecules are gases at room temperature. Bromine is liquid and iodine is a solid at room temperature. All noble gases are monoatomic. Also greater than diatomic gases exist, P_4 and S_8.