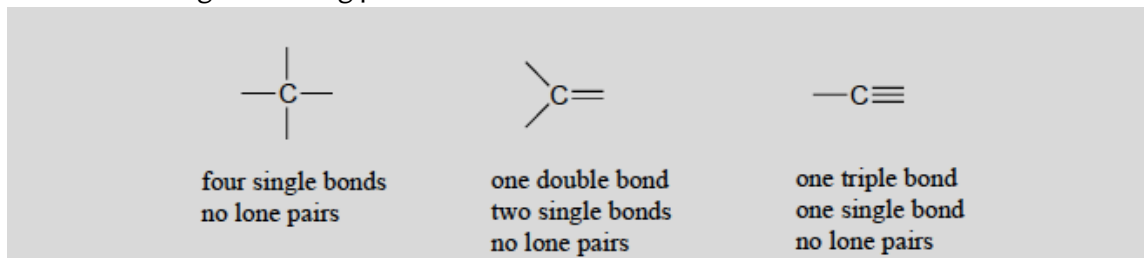
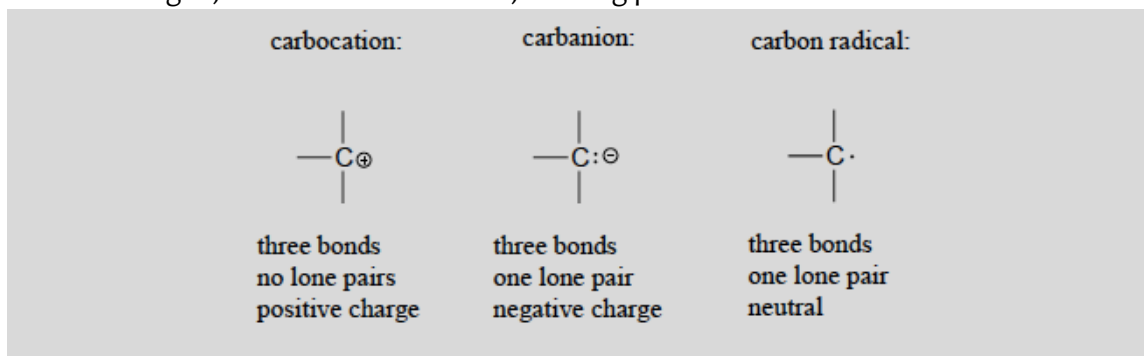


CHE 2060: Common bonding patterns

Carbon: uncharged bonding patterns

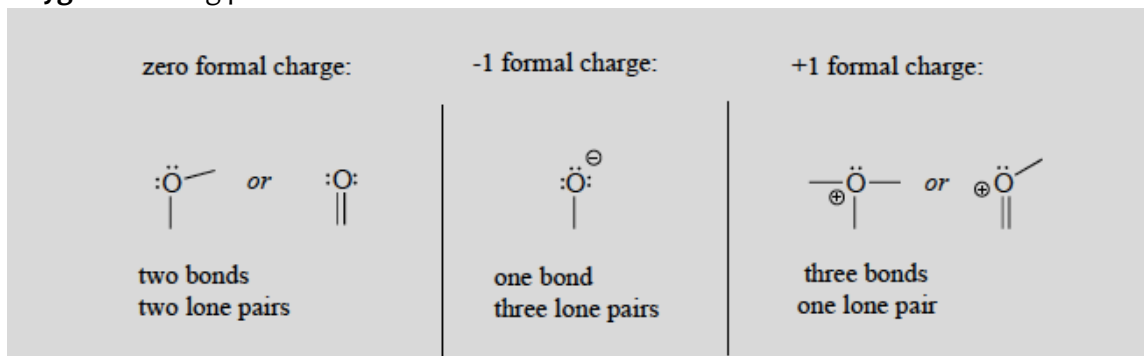


Carbon: charged, and therefore unstable, bonding patterns

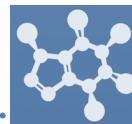


Hydrogen forms a single covalent bond, or becomes a hydrogen cation (no electrons) or a hydride anion (one lone pair).

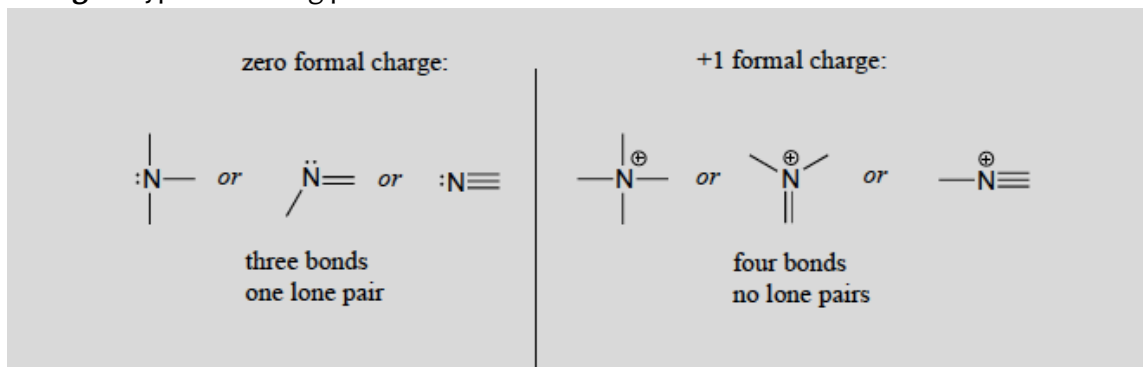
Oxygen: bonding patterns



Sulfur generally forms the same bonding patterns as oxygen, but can also be hexavalent and form structures that give the sulfur atom more than an octet.



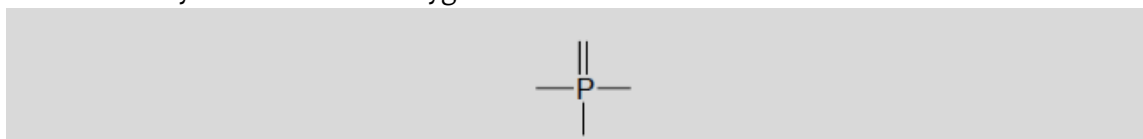
Nitrogen: typical bonding patterns



- Nitrogen can also form amide anions, NH_2^- , with two lone pairs on the N.

Phosphorus typically forms five bonds without a formal charge.

- Usually P bonds to four oxygen atoms.



Halogens are the elements found in column 7 of the periodic table.

- These atoms are important tools in organic chemistry labs.
- They are less common in nature.

