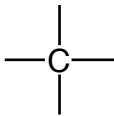
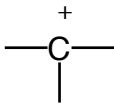
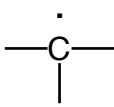
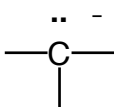
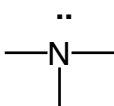
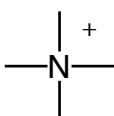
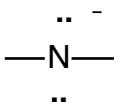


Formal Charges, Reactivity, Acids (electrophiles) & Bases (nucleophiles)

The following table summarizes the formal charge on a central atom, and the reactivity of several of the most important species in organic chemistry.

Species	Lewis Structure	Valence Electrons "Owned" by Central Atom	Valence Electron Count of Neutral Central Atom	Formal Charge of Central Atom	Reactivity
neutral		4	4	0	very low
carbocation		3	4	+1	high: strong electron pair acceptor (ACID)
free radical		4	4	0	high: (due to unpaired electron)
anion		5	4	-1	high: strong electron pair donor (BASE)
ammonia		5	5	0	weak electron pair donor; weak electron pair acceptor (BASE)
ammonium ion (cation)		4	5	+1	strong electron pair acceptor (ACID)
amide ion (anion)		6	5	-1	high: strong electron pair donor (BASE)

Water (neutral)	$\begin{array}{c} \cdot\cdot \\ \text{---O---} \\ \cdot\cdot \end{array}$	6	6	0	weak electron pair donor; weak electron pair acceptor (ACID or BASE)
hydronium ion (cation)	$\begin{array}{c} \cdot\cdot \\ \text{---O---}^+ \\ \end{array}$	5	6	+1	strong electron pair acceptor (ACID)
hydroxide ion (anion)	$\begin{array}{c} \cdot\cdot \\ \text{---O:}^- \\ \cdot\cdot \end{array}$	7	6	-1	strong electron pair donor (BASE)
bonded hydrogen (neutral)	---H	1	1	0	low unless activated by neighboring atom(s)
hydride (anion)	$\begin{array}{c} \cdot\cdot \\ \text{H}^- \end{array}$	2	1	-1	strong electron pair donor (BASE)
proton (cation)	H^+	0	1	+1	strong electron pair acceptor (ACID)
hydrogen atom (free radical)	$\begin{array}{c} \cdot \\ \text{H} \end{array}$	1	1	0	high: (due to unpaired electron)