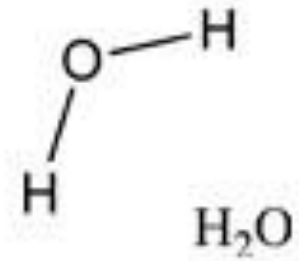
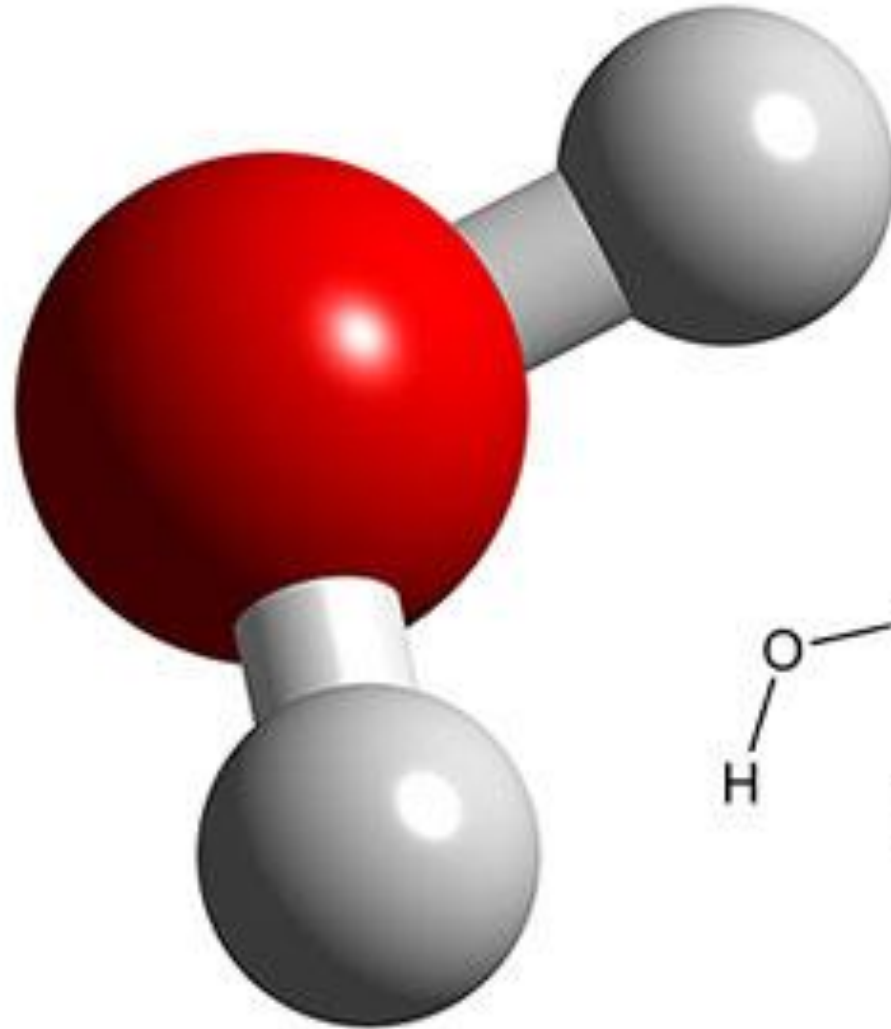


A molecular model is shown on the left side of the page. It consists of several spheres of different colors (black, white, and grey) connected by thin black rods. The spheres are arranged in a way that suggests a chemical structure, with some spheres appearing to be bonded to each other. The background is a light, neutral color.

Compounds

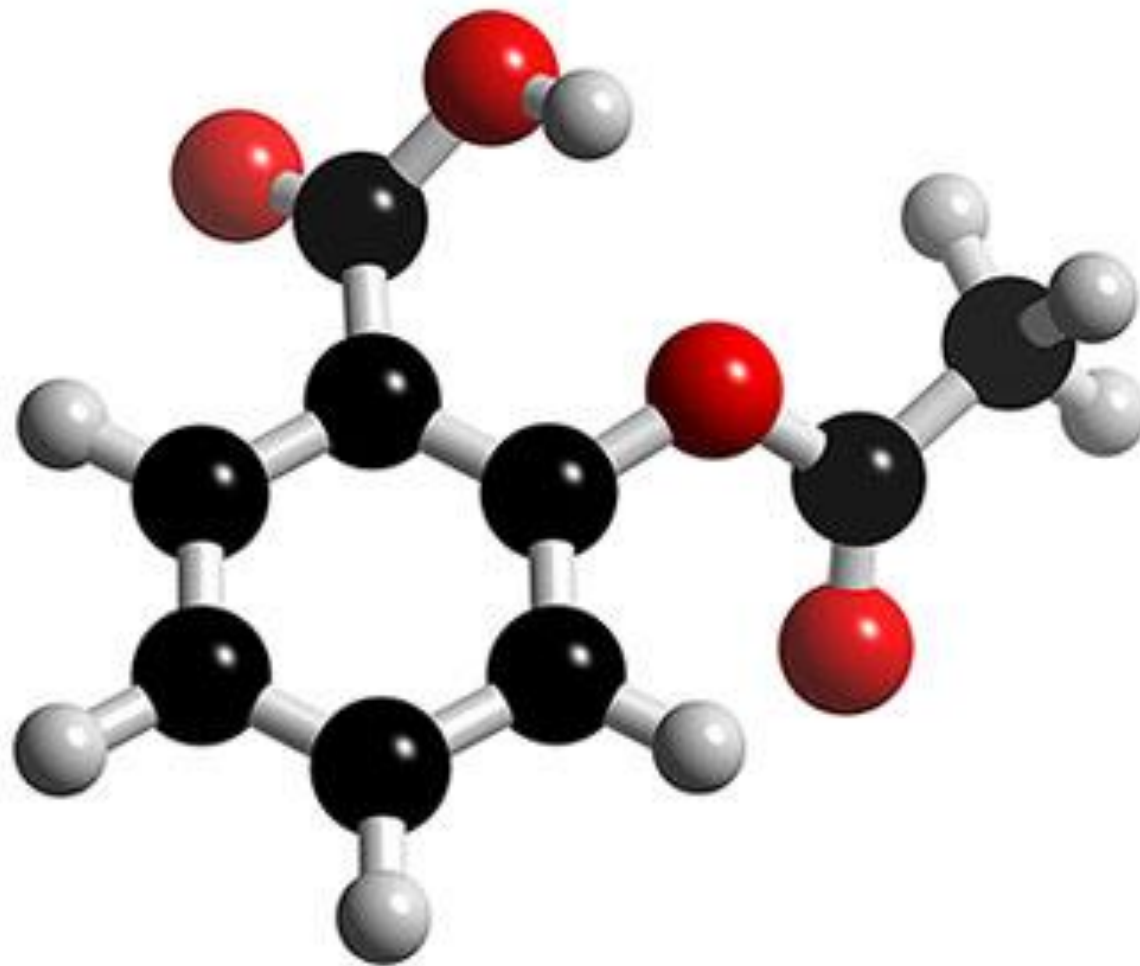
Water (a single particle)



Water (many particles)



Aspirin ($C_9H_8O_4$)



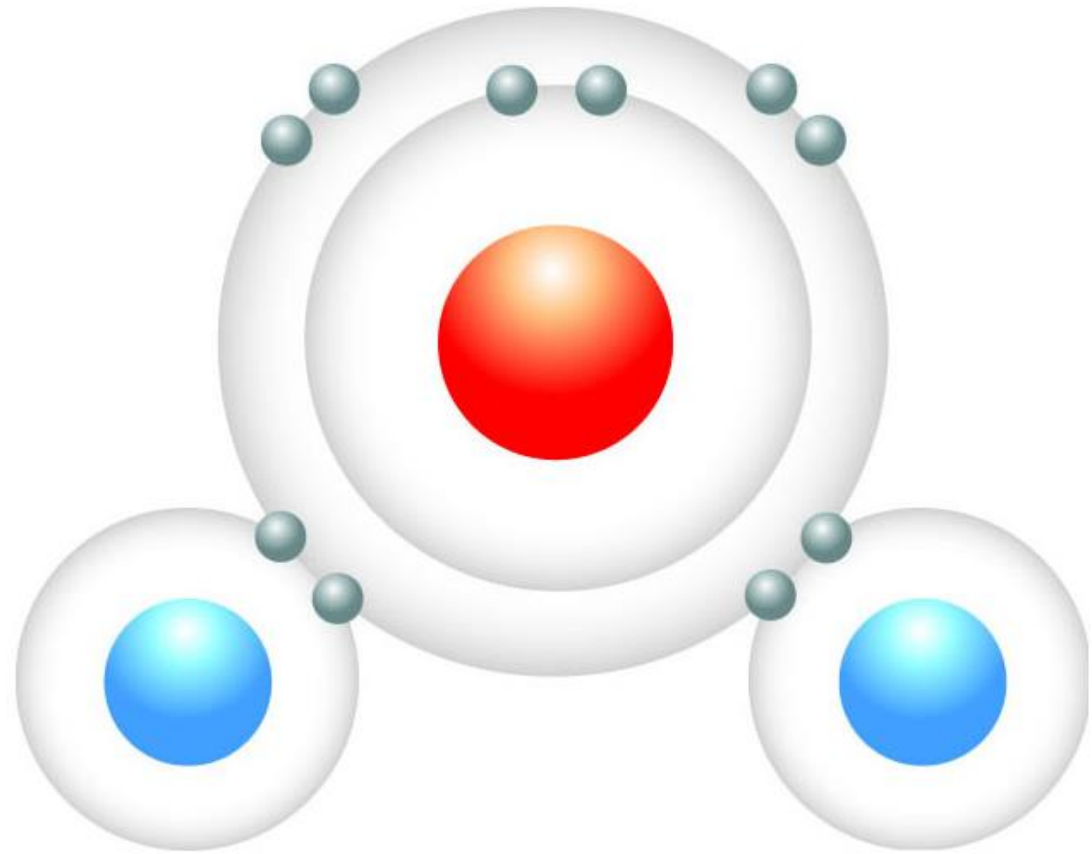
Napalm





Covalent Compounds (Molecules)

- Atoms combine by sharing valence electrons to form a molecule
- A **molecule** is a group of atoms connected by the sharing of one or more pairs of electrons
- The shared pairs of electrons form “covalent bonds”
- Ex : CO_2 and H_2O



**The Bohr model for water →
notice how the electrons are
shared**



Hydrogen

Ionic Compounds

- Atoms gain or lose one or more electrons to form a compound
- Ex : Na and Cl form NaCl

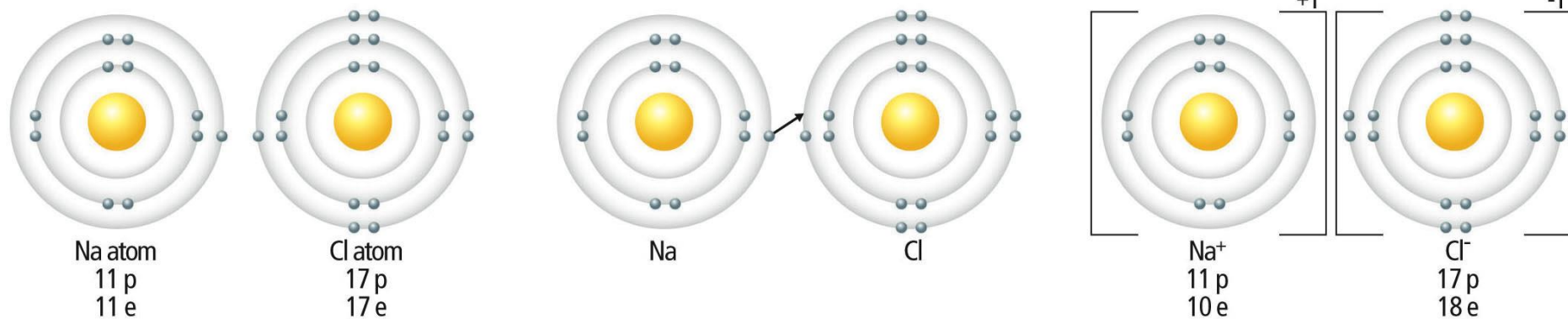
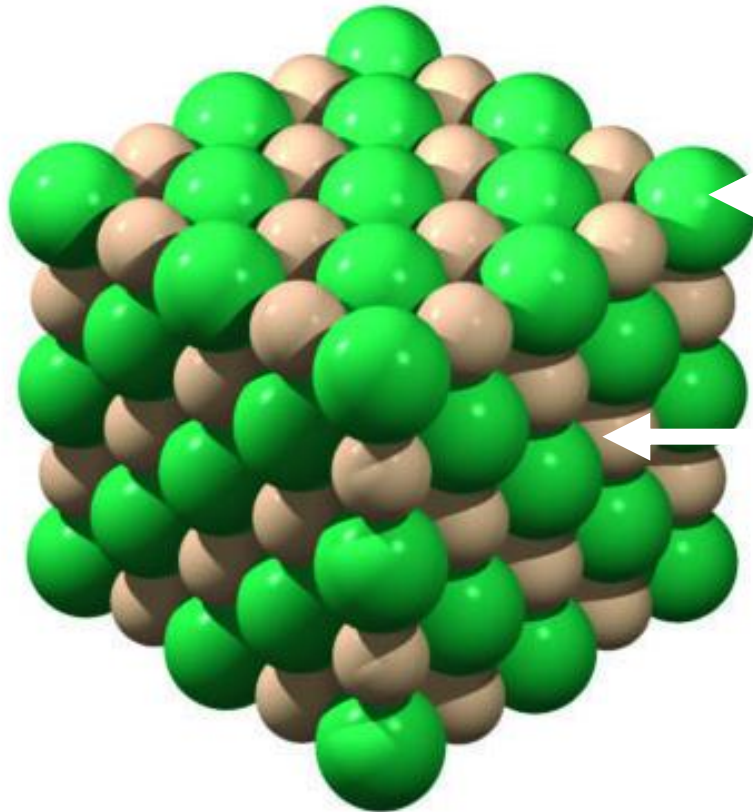


Figure 3.3 An ionic compound forms when an electron on a metal atom transfers to a non-metal atom, creating oppositely charged ions.

Ionic compounds form when a metal transfers its valence electron(s) to a non-metal

Ionic lattice

- A repeating pattern of positive and negative ions



Chloride

Sodium

Sodium chloride
compound

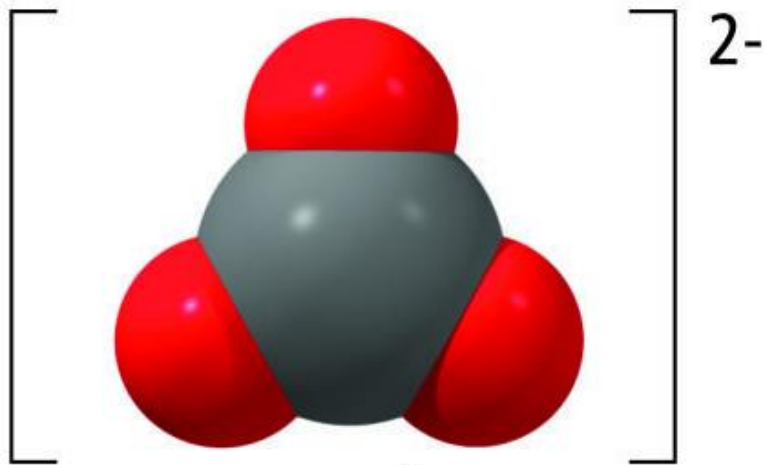
Na

Cl

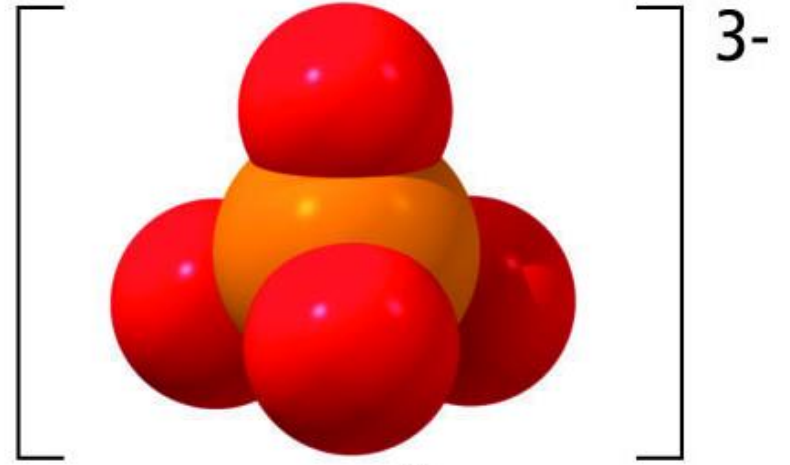


Polyatomic Ions

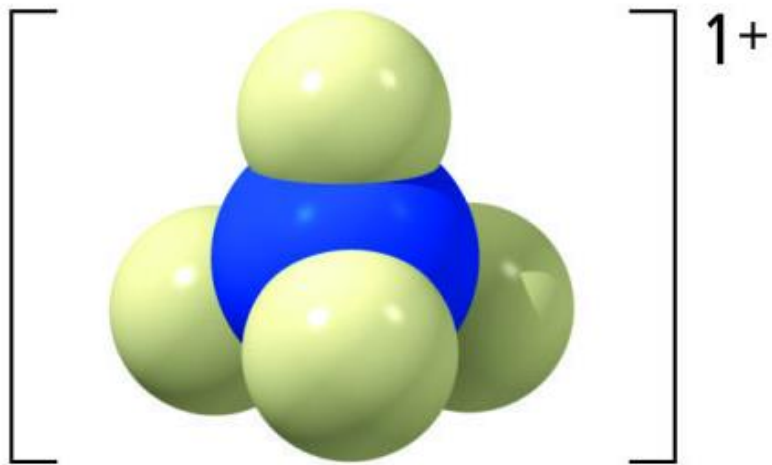
- An ion made up of more than one type of atom
- « poly » means more than one
- Ex : Ammonium NH_4^+ ; see p.92 for the table of Common Polyatomic Ions



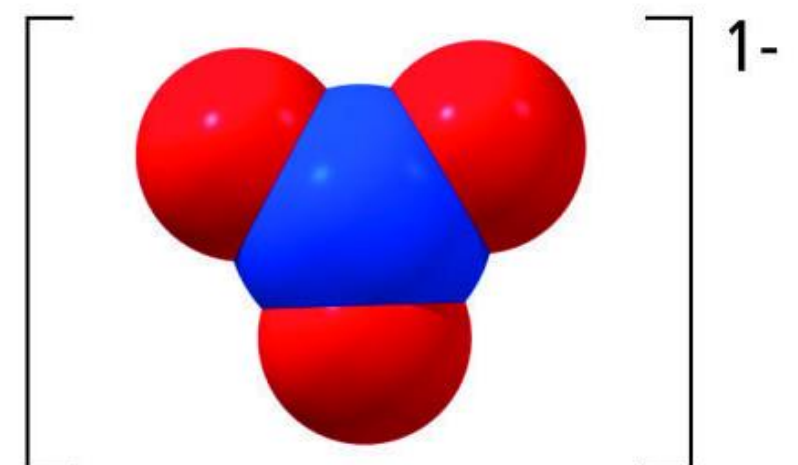
carbonate



phosphate



ammonium



nitrate