5.2 Salts

- Salts are ionic compounds formed when acids & bases react OR when oxides or carbonates react with acids OR when metals react with acids.
- Table salt, (NaCl) is only one kind of salt:
 - is found in seawater, salt lakes or rock deposits.
- Salts are found in many things: in batteries, explosives, fertilizers, multivitamins and many living cells



Salt crystals in Death

 Neutralization reactions occur when an acid and a base react to produce a salt and water.

$$\begin{array}{c} -\operatorname{HCl}_{(aq)} + \operatorname{NaOH}_{(aq)} \to \operatorname{NaCl}_{(s)} + \operatorname{H}_2\operatorname{O}_{(f)} \\ \textit{acid} \quad \textit{base} \quad \textit{salt} \quad \textit{water} \end{array}$$

• Metal oxides react with water to form bases.

$$- Na_2O_{(s)} + H_2O_{(s)} \rightarrow 2NaOH_{(aq)}$$

- Non-metal oxides react with water to form acids
 SO_{2(g)} + H₂O_(g) → H₂SO_{3(aq)}
 - Non-metal oxides are formed from the burning of fossil fuels
 - Add water in the atmosphere = acid precipitation

The effects of acid rain on a forest



- Acids and Carbonates
 - Carbonates (CO₂) neutralize acids, protecting locations with natural carbonate supplies from acid precipitation.

- Acids and Metals
 - The most reactive metals, at the bottom of groups 1 and 2, react vigorously with water and acids.
 - When metals do react with acids, H₂ gas is usually released and a salt is formed.
 - $-2HCl_{(aq)} + Mg_{(s)} \stackrel{\sim}{\vdash} MgCl_{2(s)} + H_{2(g)}$