**SALTS**

**Salt History**

* Ghandi led a 400km march of thousands of Indians to the ocean to gather salt from the beach in protest of the tax on salt required by the ruling British.
* Civilizations around the world have placed a great value on table salt because it is so necessary to life!
  + At various times throughout human history, table salt was worth its weight in gold, wages were paid in salt, and wars were fought over the salt trade.
* Common table salt is chemically sodium chloride and is normally obtained from seawater, salt lakes, or rock deposits.
* Both sodium and chlorine are chemical elements that are necessary for our survival

**How are Salts connected with Acids and Bases?**

* Sodium chloride is only one of many types of salts, all of which can trace their origin to acids and bases
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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* In chemistry, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that

can be formed during:

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**Importance**

* Different kinds of salts are used in a variety of ways, such as:
  + Making of batteries
  + Explosives
  + Fertilizers
  + Multivitamins
  + In many living cells
    - Cytoplasm in cells
    - Sap in plants
    - Blood and urine in animals

**Acid-Base Neutralization**

* Neutralization: the name for the type of chemical reaction that occurs when:

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* Example: HCl + NaOH 🡪 NaCl + H2O
  + Acid + base 🡪 salt + water
  + In this reaction, the salt produced is sodium chloride, or table salt.

**Example**

* 3H2SO4 + 2 Al(OH)3 🡪 Al2(SO4)3 + 6H2O

ACID + BASE 🡪 SALT + WATER

* Aluminum Sulfate is used to reduce pH of garden soil and used in water purification because it helps impurities stick together and settle out.
* Aluminum sulfate is prepared by dissolving sodium hydroxide in sulfuric acid.

**Quick Review**

* Practice Problems: Complete the reaction (Hint\*: make sure it is also balanced!)
* HCl + KOH 🡪
* H2CO3 + Mg(OH)2🡪
* HNO3 + Ca(OH)2🡪

**Metal Oxides and Non-Metal Oxides**

* Metals react with oxygen to form oxides
* **Oxide**: chemical compound that includes at least 1 oxygen atom or ion along with 1 or more other elements
* **Metal Oxide:** chemical compound that contains a

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* When a metal oxide dissolves in water, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Na2O(s) + H2O(l) 🡪 2NaOH(aq)­ [sodium hydroxide🡪 a base]

* Non-metals also react with oxygen to form oxides, such as carbon dioxide and sulfur dioxide
* **Non-Metal Oxide:** chemical compound that contains a

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* When non-metal oxides dissolve in water, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

SO2(g) + H2O(l) 🡪 H2SO3(aq)

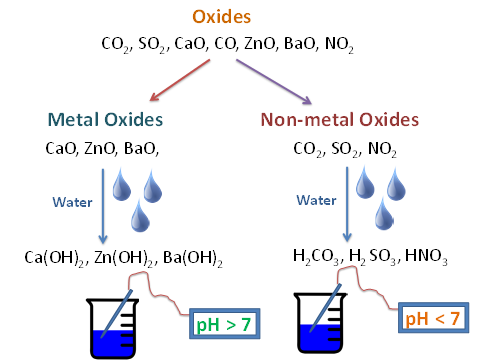
2NO2(g) + H2O(l) 🡪 HNO2(aq) + HNO3(g)

**Human Impacts**

* When fuels such as coal and gasoline are burned, they combine with oxygen.
  + The products are non-metal oxides which are released into the atmosphere
  + The non-metal oxides dissolve in rainwater to produce acid precipitation (rain)

**Environmental Concerns**

* Acid precipitation gets into freshwater ecosystems and harms plants and farm crops
* It also reacts chemically to damage limestone in buildings and monuments



**Recall:**

* Periodic table organizes elements based on similar chemical properties

**Quick Review**

* What 2 types of pure substances are produced from the neutralization of an acid and a base?
* What environmental problem is associated with the burning of coal and gasoline?
* When a non-metal oxide is mixed with water, does the water become acidic or basic?
  + A metal oxide?