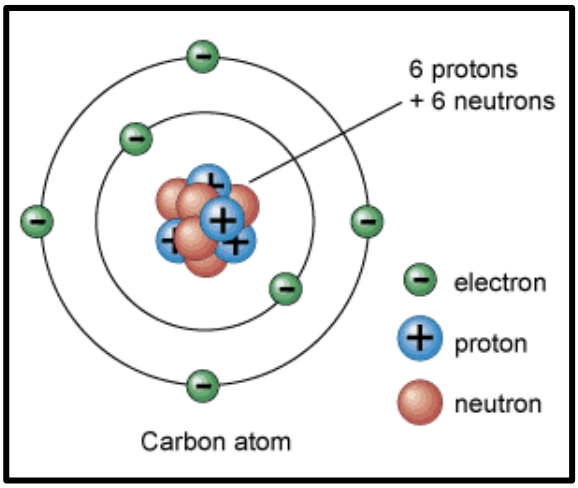
This magnificent booklet is owned by _____from the Kingdom of 8EIP.

Elements, Mixtures and Compounds

Introduction



An ***atom*** has some ***protons*** and ***neutrons*** in the ***nucleus*** and some ***electrons*** going around in ***orbitals***. The type of atom can be ***identified*** by counting the number of protons it has. If you have eight protons, neutrons and electrons, you will have an oxygen (O) atom. If you have seven protons, neutrons, and electrons, you will have a nitrogen (N) atom. Oxygen and nitrogen are both elements. The atoms for each element are unique, even though they are all made of similar subatomic parts.

Everything is made of atoms. The term ***'element'*** is used to describe atoms with ***specific characteristics***. There are almost 120 known elements, 92* of which are ***natural***. For example, you are made up of billions of billions of atoms but you probably won't find more than 40 elements (types of atoms) in your body. Chemists have learned that over 95% of your body is made up of hydrogen (H), carbon (C), nitrogen, oxygen, phosphorus (P), and calcium (Ca). (*chem4kids.com*)

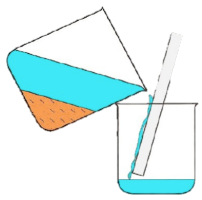
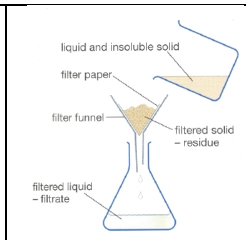
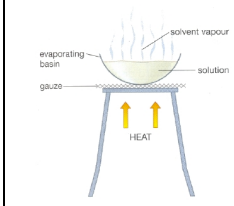
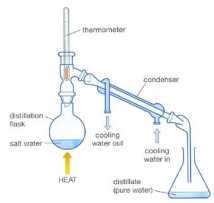
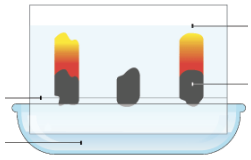
** There are debates on the actual number of naturally occurring elements. Some scientists exclude elements 43 and 61 as they are deemed unstable. (https://www.angelo.edu/faculty/kboudrea/periodic/physical_natural.htm)*

Mixtures

Anything material or substance that is ***physically combined*** is a ***mixture***. The air we ***inhale***, the food we eat, the M&Ms in a pack, the soda we drink are all examples of mixtures. Substances or materials that are in a mixture ***keep*** their ***appearance*** and ***properties***.




Mixtures can be separated by ***physical means*** such as ***decantation***, ***filtration***, ***evaporation***, ***distillation***, ***chromatography*** and by actually grouping the items.

Compounds

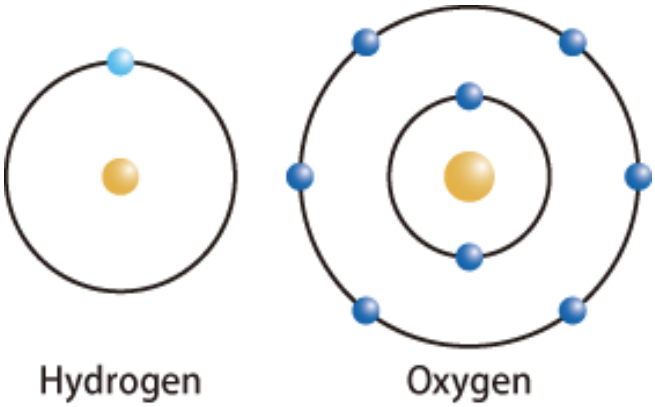
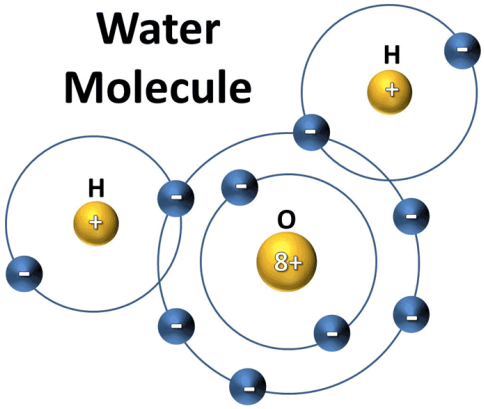
Compounds are two or more elements that are ***chemically combined***. They cannot be ***separated*** by physical means. Compounds can be separated into their elements by a ***chemical reaction***.

Water (H_2O) can be split into its chemical elements, hydrogen and oxygen, by passing an electric current through it. Can you identify which tube contains the hydrogen and which contains the oxygen? **Fig 5.8.4**

This picture shows how water is separated by _____.

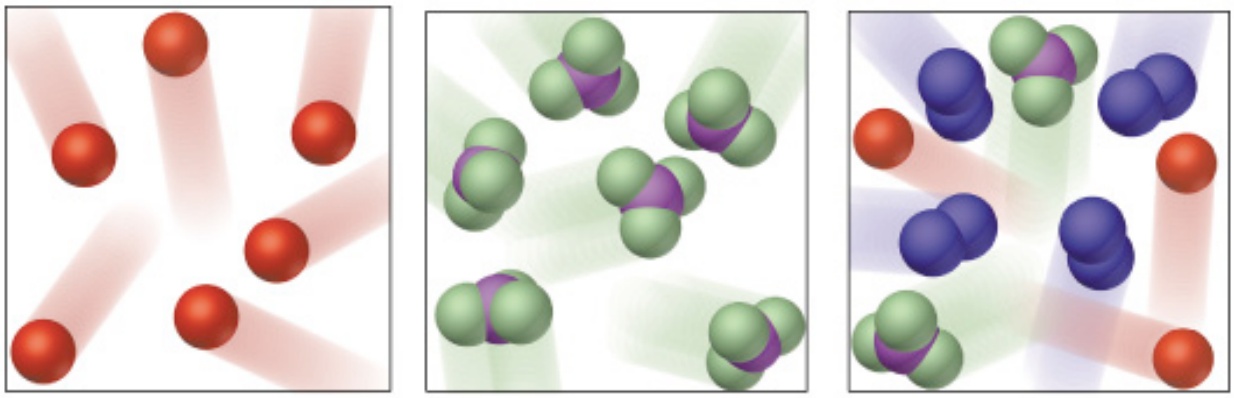
While a ***single unit*** of an element is called an atom, a single unit of a compound is called a ***molecule***. A compound is represented by a ***chemical formula*** while an element is represented by a ***chemical symbol***.

Visual Representations

Atoms of elements		Molecules of a compound
		
H	**O**	**H_2O**

Notes:

What do these diagrams represent?



_____ _____ _____

Notes:

Check for understanding.

1. What are elements?

2. What are mixtures?

3. What are compounds?

4. What is the difference between an element and a compound?

5. **List** 2 differences between a mixture and a compound?

6. **List** and **explain** six (6) ways mixtures can be separated.