

## Synthetic Elements and Nonmetals

1-All of the elements discovered since 1937 are not found in nature. The first synthetic element made was Technetium, #43, so named since technology was needed to make it.

2-Most of the synthetic elements have higher atomic #'s than uranium are called the transuranic elements. All are made by bombarding existing elements with other atoms or atomic particles using various types of 'atom smashing' machines.

3-The synthetic elements are unstable and break apart through the process of radioactive decay.

4-Some of these synthetic elements have little practical use other than to make other elements. Some, like plutonium for nuclear reactors and americium in smoke detectors have found widespread use.

5-Nonmetals make up just a small portion of the elements on the periodic table; 11 are gases, 5 solid, and 1 is a liquid at room temperature.

6-Hydrogen is the simplest and smallest element but makes up about 90% of the matter in the universe.

7-The more reactive nonmetals are found in group 17. These are the halogens (salt formers) and are too reactive to be found in pure form in nature.

- a. Fluorine is used in hydrofluoric acid and is used to etch glass. Compounds of it are added to toothpaste to reduce cavities.
- b. Chlorine is important as a disinfectant in public pools and drinking water.
- c. Bromine is used in water purification and in making plastics flame retardant.
- d. Iodine, a solid that can sublime, is needed by the thyroid gland to make the hormone thyroxin. An iodine salt is usually added to table salt to prevent goiter and to make sure there is enough in our diet. A goiter looks as though a grapefruit or melon is lodged in your neck. Also found in an antiseptic solution.

8-The noble gases in group 18 don't form compounds in nature.

- e. Helium-balloons, lasers;
- f. Neon-lasers, lights.
- g. Argon-incandescent lights.
- h. Xenon-lights.

9-Nonmetals are brittle, have a dull luster, and are nonconductors of heat and electricity.