



## SHS LEARNING ACTIVITY

CHEM1-04-01

Name: \_\_\_\_\_ Score/Mark: \_\_\_\_\_

Grade and Section: \_\_\_\_\_ Date: \_\_\_\_\_

Strand:  STEM  ABM  HUMSS  ICT (*TVL Track*)

Type of Activity :  Concept Notes  Skills: Exercise/Drill  Illustration

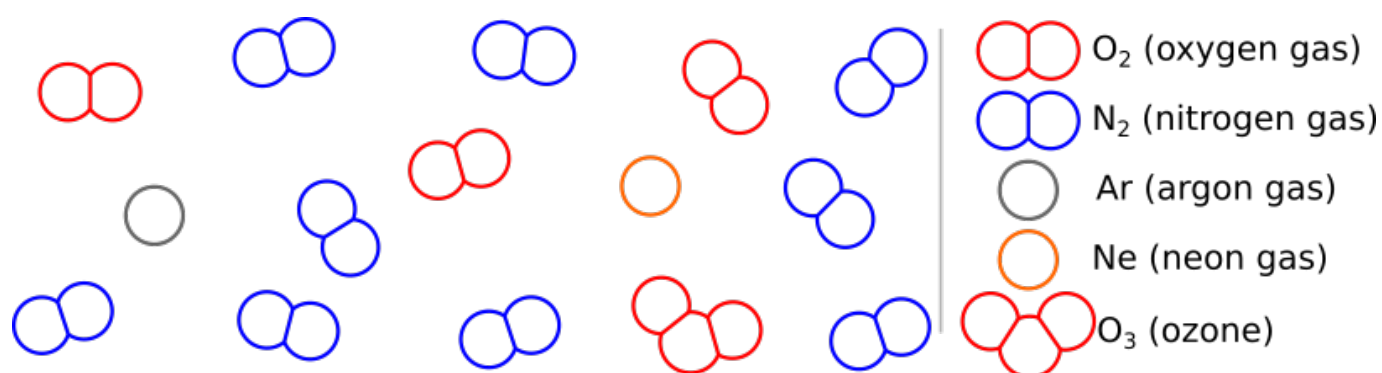
Laboratory Report  Essay/Task Report  Other: \_\_\_\_\_

Activity Title: 04-01.Elements as atoms, molecules, and lattices v02

Learning Target: To identify that pure elements exist in different structures

Authors/References: Victor Sojo / Wikipedia: Element; Brown, *Chemistry* 14ed.

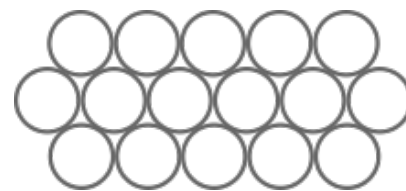
Some elements are typically found in the Universe just as **single atoms** that float around on their own and don't interact much with any other atoms. This is the case of the noble gases such as Neon and Argon, both of which are present in very small concentrations in the air we breathe:



There are many more **molecules** of nitrogen (N<sub>2</sub>) in the air, formed by two atoms of the element nitrogen. There is also plenty of oxygen (O<sub>2</sub>), formed by two atoms of oxygen. O<sub>2</sub> is the most common form of the pure element oxygen on Earth. However, you will notice that there is also a little bit of ozone (O<sub>3</sub>). Up in the stratosphere (about 20 to 30 km upwards), there's a little more ozone than down on the ground.

**All molecules are formed by two or more atoms.** These atoms don't have to be of the same element. For example, carbon dioxide (CO<sub>2</sub>) and water (H<sub>2</sub>O) are both molecules also present in the air in small amounts.

Some elements don't form molecules, but they are also not alone as atoms. This is the case of **metals** such as gold, silver or aluminium, which form a **lattice**, a kind of three-dimensional pattern.



**Question:** Try to draw the H<sub>2</sub>O and CO<sub>2</sub> molecules (hint: C is in the middle of the CO<sub>2</sub> molecule). We will see their exact shapes later.

