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Chapter:- 3. ATOMS AND MOLECULES.

CLASS:- IXth **SUBTEACHER:-VIKASH KR. RAJAK**

SUBJECT:-CHEMISTRY **DATE :-04/06/2020**

🕮 Topic:- Atomicity, Molecules of Compound.

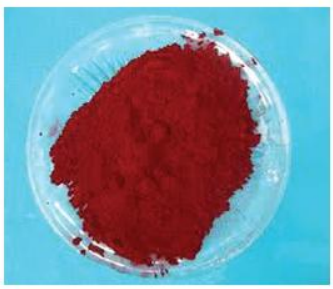
➢ Atomicity:-

i. Noble gases (helium, neon, argon, krypton, etc.) have one atom each in their molecules such as He, Ne, Ar and Kr. So, the atomicity of noble gases is 1. Noble gases are said to be *monoatomic* (having 1-atom molecules). The atomicity of metal elements like sodium (Na), magnesium (Mg), aluminium (Al), copper (Cu) and iron (Fe), etc., is also taken to be 1. Thus, metals are considered to be *monoatomic*. The atomicity of carbon element is also 1. So, carbon is *monoatomic.*

ii. Hydrogen (H_2), nitrogen (N_2), oxygen (O_2), chlorine (Cl_2), bromine (Br_2) and iodine (I_2), all have 2 atoms each in their molecules. So, the atomicity of hydrogen, nitrogen, oxygen, chlorine, bromine and iodine is 2 each. In other words, the elements hydrogen, nitrogen, oxygen, chlorine, bromine and iodine are *diatomic* (having 2-atom molecules).

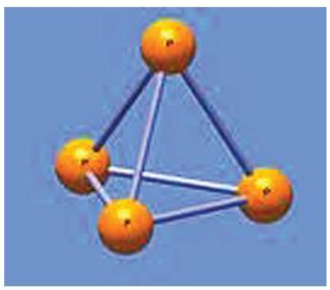
iii. Ozone (O_3) has 3 atoms in its molecule, so the atomicity of ozone is 3. Ozone is said to be *triatomic* (having 3-atom molecules).

iv. Phosphorus (P_4) has 4 atoms in its molecule, so the atomicity of phosphorus is 4. Phosphorus is said to be *tetra-atomic* (having 4-atom molecules).



Red phosphorus.

Yellow phosphorus (kept under water).



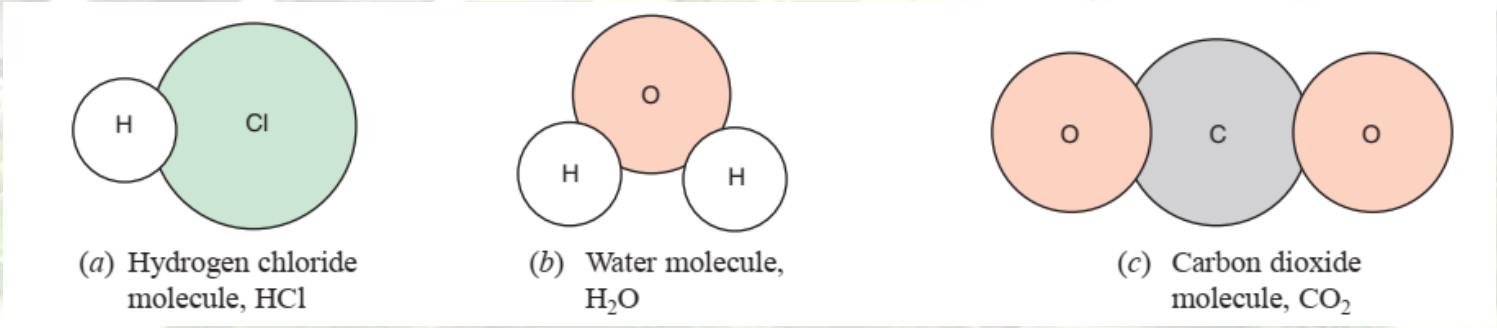
Model of a phosphorus Molecule (P 4) showing 4 phosphorus atoms joined together.

v. **Solid sulphur (S_8) has 8 atoms in its molecule, so the atomicity of sulphur is 8. Sulphur is said to be *octa-atomic* (having 8-atom molecules).**

➢ ***Molecules of Compound*:-**

The molecule of a compound contains two (or more) different types of atoms chemically combined together. For example, hydrogen chloride is a compound. The molecule of hydrogen chloride (HCl) contains two different types of atoms: hydrogen atom (H) and chlorine atom (Cl). Water is a compound. A molecule of water (H_2O) is made up of two different types of atoms : hydrogen atoms (H) and oxygen atom (O). Carbon dioxide (CO_2) is also a compound whose molecule consists of two different types of atoms : carbon atom (C) and oxygen atoms (O). Some more examples of the molecules of compounds are : sulphur dioxide (SO_2), methane (CH_4) and ammonia (NH_3).

☞ **A compound which consists of molecules is called a molecular compound. Hydrogen chloride, water, carbon dioxide, sulphur dioxide, methane and ammonia, are all molecular compounds (which consist of molecules and not ions).**



(*a*) Hydrogen chloride molecule, HCl

(*b*) Water molecule, H_2O

(*c*) Carbon dioxide molecule, CO_2

✍ **Home Work (Based on study material of 03-06-20)**

Answer the following questions:-

1. **What is Molecules?**
2. **What is Atomicity**
3. **Define Molecules of Elements?**
4. **What Atomic Mass Unit?**