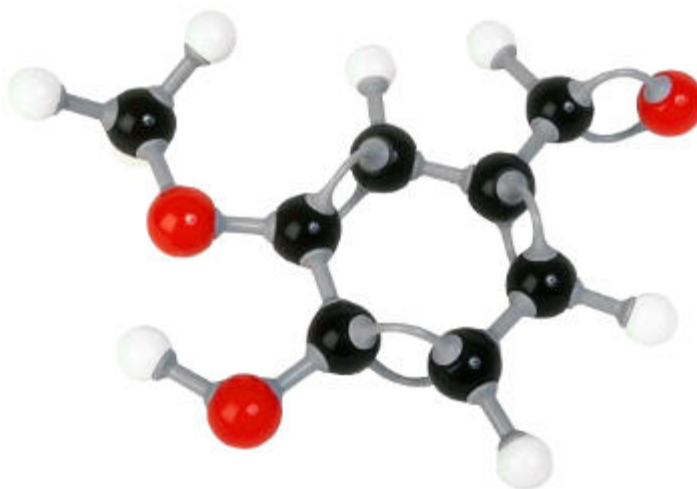


## ***What are Molecules?***



Every substance is made up of very tiny particles called molecules. A molecule is the smallest part of matter that can exist independently and exhibits all the properties of that substance. For example, if we take a molecule of sugar, it will exhibit all the properties of sugar such as taste, shape, color etc. Molecules of different substances differ in size. Some are only few billionths of a centimeter in size while some other molecules are thousand times larger. Molecules of gases are small in size. One cubic centimeter of air contains about  $2.5 \times 10^{19}$  (25,000, 000,000, 000, 000, 000) molecules.

Even though a tiny piece of matter contains a very large number of molecules, there are empty spaces in between them. Molecules of matter are constantly in random motion. As the temperature increases, the motion of the molecules also increases. The hotter the substance, the faster is the motion of the molecules. Molecules of a gas move very fast in comparison to the molecules of liquids and solids. Even the molecules of ice are in motion. Isn't it surprising then that though molecules of all substances are in motion, substances don't appear shaky? Why? The reason is that there exists between the molecules a force of attraction which keeps them together. If this force is not present, the molecules of matter will scatter away in all directions.

When the molecules of a solid are heated, their speed increases and the force of attraction between them decreases, If we continue adding heat, -the speed of the molecules would be still faster and the solid will change into the liquid state and, finally, to the gaseous state.