**1. IMPORTANCE OF STERILIZATION IN THE PRODUCTION OF PHARMACEUTICAL PRODUCTS**

**STERILIZATION**

Sterilization can be defined as any process that effectively kills or eliminates transmissible agents (such as fungi, bacteria, viruses and prions) from a surface, equipment, foods, medications, or biological culture medium. In practice sterility is achieved by exposure of the object to be sterilized to chemical or physical agent for a specific time. Various agents used as sterilants are; Elevated temperature, ionizing radiation, chemical lipids or gases e.t.c.the success of the process depends on upon the choice of method adopted for sterilization.

As much for the drugs as the MD and other pharmaceutical devices,​they should be properly sterilized to guarantee their quality and safety. Indeed the commercialized products sold by the pharmaceutical industry are usually subjected to very strict regulations and standards with the purpose to ensure the safety of our health. Then the pharmaceutical companies have to take seriously this phase during their production.

**2. GASEOUS STERILIZATION**

Gas sterilization is a chemical process resulting from reaction of chemical groups in the bacterial cell with the gas. Factors influencing gas sterilization include time of exposure, gas concentration, penetration of the gas, and temperature and humidity in the sterilizing chamber.

Sterilizing gases are typically used when exposure to any other methods (heat and radiation) could damage the materials or equipment. The most common gases used for sterilization include; ethylene oxide (EO), ozone, mixed oxides of nitrogen, and chlorine dioxide. According to USP, "EO's ability to penetrate through polymers, cellulosic, and other materials allows it to be used for the terminal sterilization of medical devices in their final packaging."

 **3. RADIATION STERILIZATION**

Radiation sterilization relies on ionizing radiation, primarily gamma, x-ray or electron radiation, to deactivate microorganism such as bacteria, fungi, viruses and spores. Due to numerous advantages over heat and chemical based sterilization techniques, this method is particularly attractive in medicine and healthcare related fields.rrr