

## **Biohazards & Biosafety**

**biohazards**, refer to biological substances that pose a threat to the health of living organisms, primarily that of humans. This can include medical waste or samples of a microorganism, viruses, or toxins (from a biological source) that can affect human health. Symbolized by



### **classified of Biohazard**

Individual biohazards may be classified in several ways, One method of classification – type of agent

#### **1. Infectious agents**

Infectious agents are capable of causing disease and can be classified according to size, properties, and morphological characteristics (e.g. viruses, bacteria, fungi, protozoa).

#### **2. Plant and plant products**

Contact with certain plants, plant materials or fungi may cause non-infectious poisoning, allergic reactions and irritant-contact or allergic-contact dermatitis.

### 3. Animals and animal products

Zoonosis are infectious diseases that can be vector-borne or transmitted directly from wild or domestic animals. Other forms of transmission of zoonosis include those due to exposure to bacteria, viruses

**Biosafety:** Development of protective policies and procedures to ensure safe environment when working with hazardous organisms

#### Major components of Biosafety program

##### 1. Good lab work practice

Laboratory practice and techniques, Regular training

##### 2. Safety equipment and facilities

Laminar air flow cabinet

##### 3. Personal protective equipment

Glove, eye and mouth mask

##### 4. Administrative controls

Access control, Security clearance

### biosafety levels

Four **biosafety levels (BLs)** are described below, which consist of combinations of laboratory practices and techniques, safety equipment, and laboratory facilities.

#### 1. Biosafety Level 1

are appropriate for undergraduate and secondary educational training and teaching laboratories, and for other facilities in which work is done with defined and characterized strains of viable microorganisms not known to cause disease in healthy adult humans such as *Bacillus subtilis*.. Biosafety Level 1 represents a basic level of containment that relies on standard microbiological practices.

## 2. Biosafety Level 2

are applicable to clinical, diagnostic, teaching and other facilities in which work is done with a broad spectrum of indigenous moderate-risk agents present in the community and associated with human disease of varying severity such as *Salmonella* spp. and *Shigella* spp.

## 3. Biosafety Level 3

are applicable to clinical, diagnostic, teaching, research, or production facilities in which work is done with foreign agents with a potential for respiratory transmission, and which may cause serious and potentially lethal infection such as *Mycobacterium tuberculosis*.

## 4. Biosafety Level 4

are applicable for work with dangerous and foreign agents which pose high individual risks from life-threatening diseases, which may be transmitted via the aerosol route, and for which there is no available vaccine or therapy, such as Ebola (hemorrhagic fever).

