Biosafety

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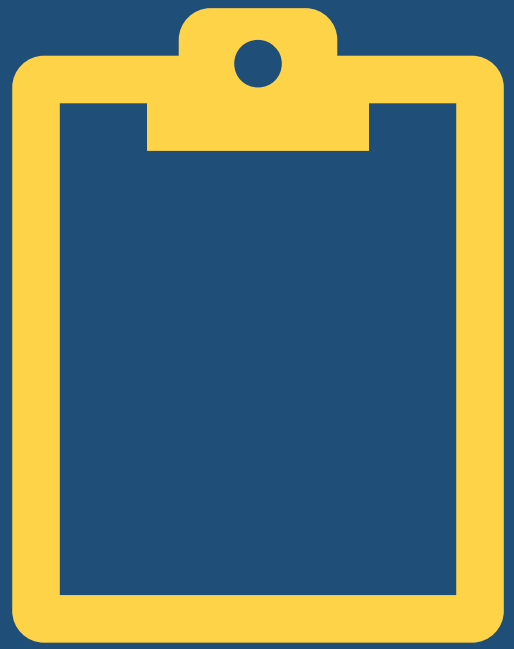
Introduction to Biosafety

- **Biosafety** is the safe working practices associated with handling of biological materials, particularly infectious agents.
- **It's meaning** apply technologies and practices to prevent the accidentally exposure to pathogens and toxins, or their accidental release.



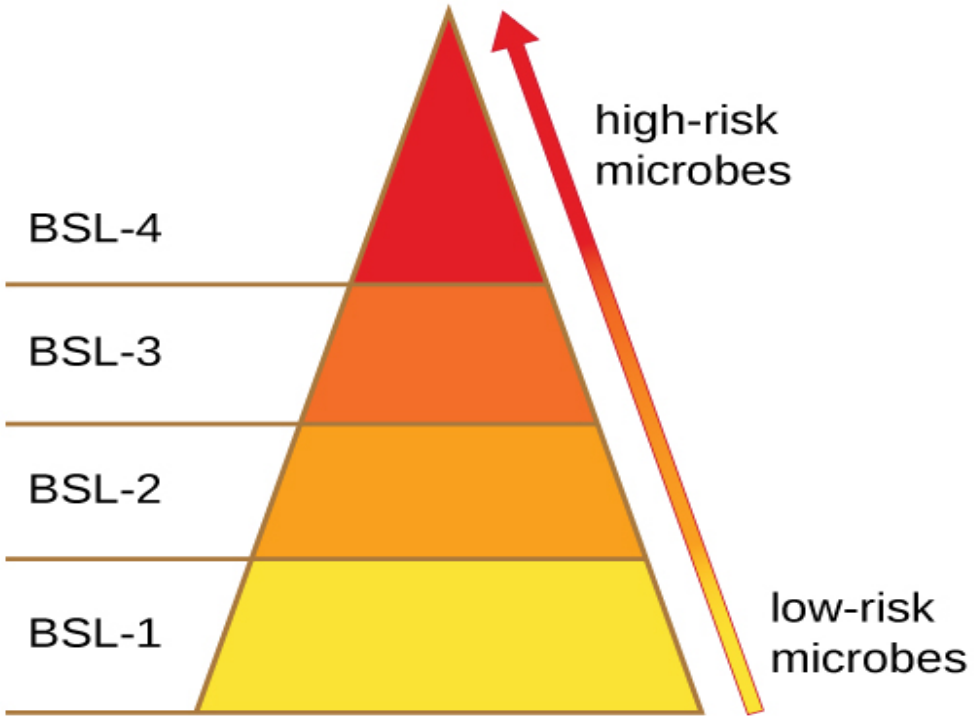
Biosafety Levels

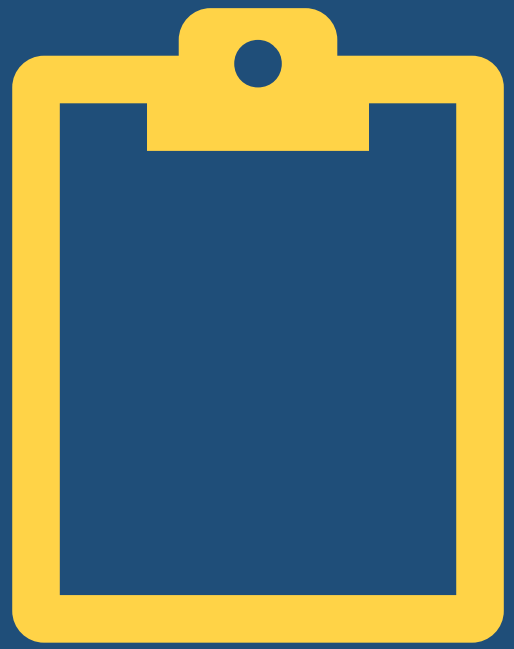
- Each level has specific controls for containment of microbes and biological agents.
- The risks that determine levels of containment are **infectivity, severity of disease, transmissibility, and the nature** of the work conducted.

Biosafety Levels

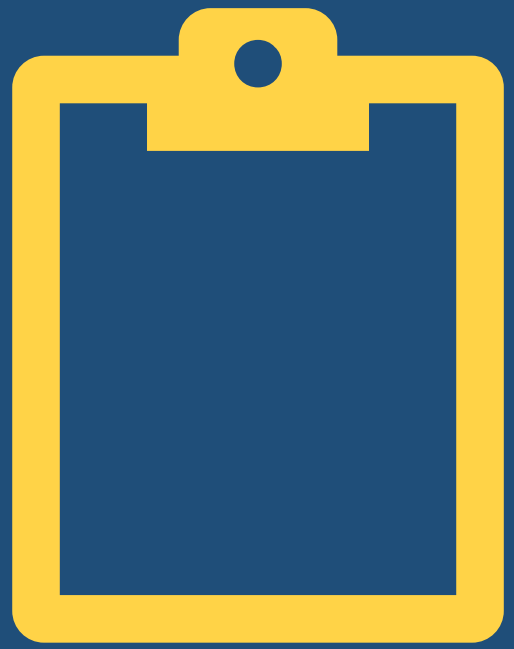
- 1. Biosafety Level -1 (BSL-1)
- 2. Biosafety Level-2 (BSL-2)
- 3. Biosafety Level-3 (BSL-3)
- 4. Biosafety Level 4 (BSL-4)

Biosafety Levels

Biological Safety Levels	Description	Examples	CDC Classification
BSL-4	Microbes are dangerous and exotic, posing a high risk of aerosol-transmitted infections, which are frequently fatal without treatment or vaccines. Few labs are at this level.	Ebola and Marburg viruses	
BSL-3	Microbes are indigenous or exotic and cause serious or potentially lethal diseases through respiratory transmission.	*Mycobacterium tuberculosis*	
BSL-2	Microbes are typically indigenous and are associated with diseases of varying severity. They pose moderate risk to workers and the environment.	*Staphylococcus aureus*	
BSL-1	Microbes are not known to cause disease in healthy hosts and pose minimal risk to workers and the environment.	Nonpathogenic strains of *Escherichia coli*	



- **Biohazard :** The potential source of harm caused by biological agents or toxins.
- **Biorisk** :A combination of the probability of occurrence of harm and the severity of that harm where the source of harm is a biological agent or toxin



- The source of harm may be an **accidental exposure, accidental release or loss, misuse.**
- **Biorisk management** The management of biorisk places responsibility on **manager** (director) to demonstrate that biorisk reduction (minimization) procedures have been established.

- Biological laboratory: A facility that dealing with microorganisms, their components or their derivatives are collected or stored.
- Biological laboratories include:
- 1- clinical laboratories, 2- diagnostic facilities, 3-research centers (academic, pharmaceutical, environmental, etc.) , 4- production facilities (manufacturers of vaccines, pharmaceuticals) for human, veterinary and agricultural purposes.

Biorisk Management of Biological Hazards

can be broadly divided into:

- 1.Actions that take place before the biological hazard has been found (preventive measures);
- 2. Actions that take place during an outbreak
- 3. Actions aimed at reducing the consequences of the presence of the hazard.

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