

BIOSAFETY IN MEDICAL PRACTICES



- RISHIK S L (106)



INTRODUCTION

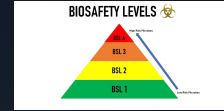
Biosafety guidelines are a set of policies, rules, and procedures necessary to observe by personnel working in various facilities handling microbiological agents such as bacteria, viruses, parasites, fungi, prions, and other related agents and microbiological products.

UNIVERSAL PRECAUTIONS

- **Key Principle:**
Treat all blood and body fluids as potentially infectious.
- **Personal Protective Equipment (PPE):**
Gloves, masks, gowns, and eye protection.
- **Hand Hygiene:**
Wash hands before and after all procedures.
- **Needle Safety:**
Proper disposal in puncture-resistant containers to prevent accidental exposure.
- **Specimen Handling:**
Use of gloves and proper containers when handling samples, including postmortem fluids.



BIOSAFETY LEVELS



Four biosafety levels (BSL-1 to BSL-4) each indicating the level of containment required based on risk.

01

LEVEL 1

Low Risk, non-pathogenic organisms

02

LEVEL 2

Moderate Risk; agents with moderate health hazard

03

LEVEL 3

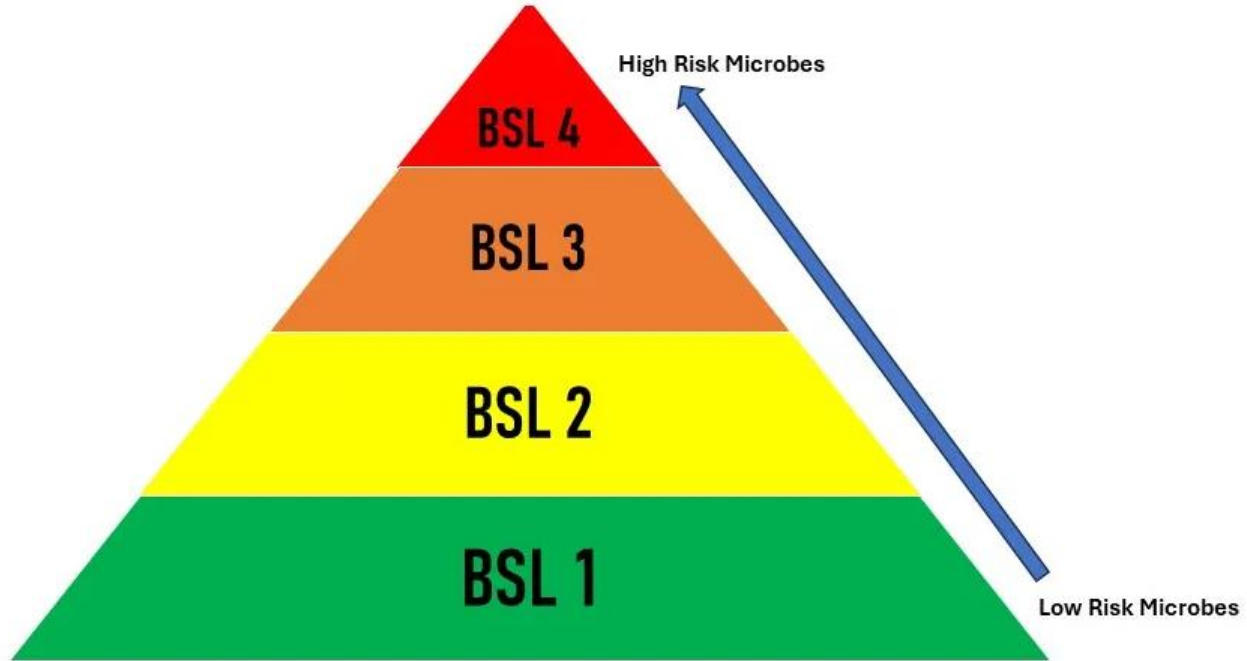
High Risk; agents with serious health risks

04

LEVEL 4

Extreme Risk; life-threatening agents

BIOSAFETY LEVELS





BIOSAFETY LEVELS

01

LEVEL 1

- **Risk Level:** Low; non-pathogenic organisms (e.g., *Escherichia coli* strain K-12).
- **Requirements:**
 - Basic lab practices; no special containment needed.
 - Standard PPE: lab coats, gloves.
 - Hand washing and disinfecting surfaces.

02

03

04





BIOSAFETY LEVELS

01

LEVEL 2

- **Risk Level:** Moderate; agents that pose a moderate health hazard (e.g., Salmonella, HIV).
- **Requirements:**
 - Limited access to lab; training in handling pathogens.
 - PPE: lab coats, gloves, eye protection.
 - Use of biosafety cabinets for procedures that may produce aerosols.
 - Proper waste disposal and decontamination protocols.

02

03

04





BIOSAFETY LEVELS

01

LEVEL 3

- **Risk Level:** High; agents with serious health risks or those that may spread through airborne transmission

(e.g., *Mycobacterium tuberculosis*).

- **Requirements:**

- Restricted access with secure entry and controlled ventilation.
- PPE: Respirators, lab coats, gloves, and face shields.
- Biosafety cabinets for all open manipulations.
- Decontamination of waste and all lab materials.





BIOSAFETY LEVELS

01

LEVEL 4

• **Risk Level:** Extreme; life-threatening agents with no available treatments or vaccines (e.g., Ebola, Marburg virus).

• **Requirements:**

- Maximum containment: isolated labs, negative pressure, strict access.
- Full-body, air-supplied suits; dedicated entry and exit with shower-out procedures.
- All activities performed within Class III biosafety cabinets or by personnel in suits.
- Decontamination of air, water, and waste exiting the facility.

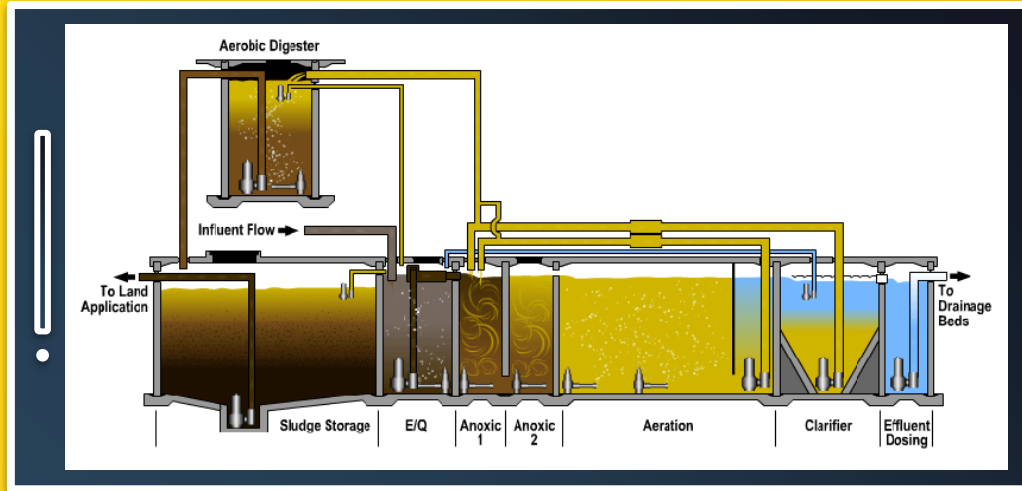
02

03

04



TREATMENT OF EFFLUENT



To prevent contamination of the environment from infectious medical waste and effluent.

Use of on-site wastewater treatment systems to treat liquid waste before discharge.

Other Decontamination Methods



Incinerator, Autoclave, Chemical Disinfection



**THANK
YOU**