



Biosafety Levels

Laboratory Locations

BSL-1: high schools, community colleges, municipal drinking water treatment facilities.

BSL-2: local health departments, universities, state laboratories, private laboratories (hospitals, health care systems), industrial laboratories (clinical diagnostic companies)

BSL-3: state health departments, universities, private companies, industry, the federal government (NIH, CDC)

BSL-4: only 15 facilities in the US

- 9 federal (CDC, NIH), 4 universities (Georgia State University, University of Texas Medical Branch), 1 state, 1 private.
- Renovations are underway at several labs, new facilities proposed at additional sites.

1. Biosafety Level -1 (BSL-1)

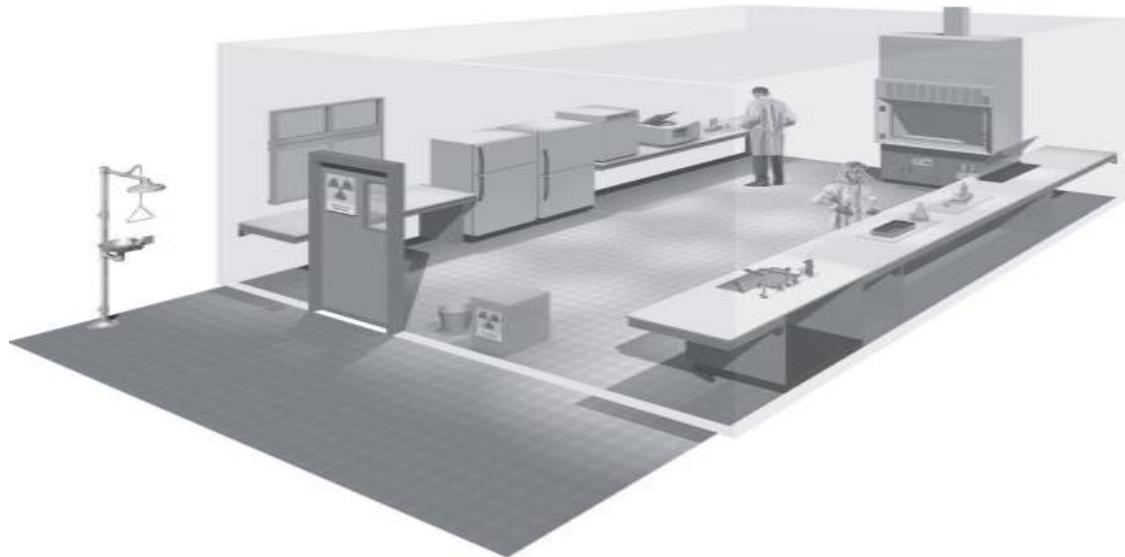
Biosafety Level 1 (BSL-1)

- Work with **microorganisms not known to consistently cause disease** in healthy adult humans
- Basic level of containment:
 - *Standard microbiological practices*
 - *No special primary or secondary barriers recommended (other than a sink for hand washing)*
 - *No special practices*

Biosafety Level 1 (BSL-1)

Design

- *Access controls*
- *Sinks*
- *Impervious bench tops*
- *Easily cleaned surfaces*
- *Adequate illumination*



Organisms

The common organisms that require Biosafety Level-1 containment include less hazardous organisms like *Agrobacterium radiobacter*, *Aspergillus niger*, *Bacillus thuringiensis*, *Escherichia coli* strain K12, *Lactobacillus acidophilus*, *Micrococcus leuteus*, *Neurospora crassa*, *Pseudomonas fluorescens*, *Serratia marcescens*.

2. Biosafety Level-2 (BSL-2)

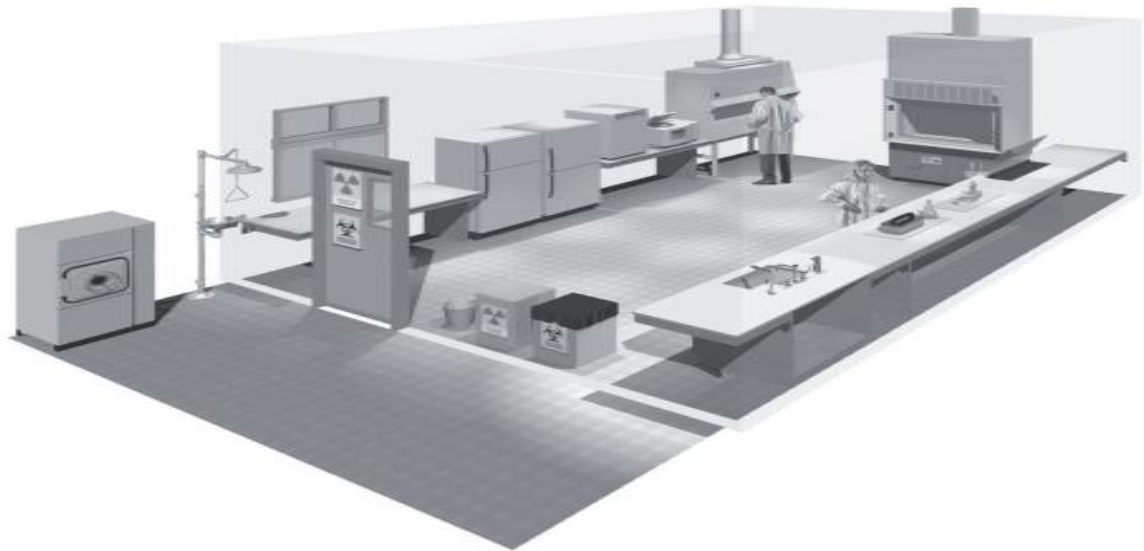
Biosafety Level 2 (BSL-2)

Design

- Lockable doors
- Sinks with hands-free operation
- Impervious bench tops resistant to moderate heat & organic solvents
- Easily cleaned surfaces
- Eyewash available
- BSCs installed properly; away from doors

Biosafety Level 2 (BSL-2)

- Work with **moderate-risk microorganisms** and agents (i.e. Hepatitis B virus, HIV, Salmonella, etc.)
- Basic level of containment:
 - Standard microbiological practices
 - Secondary barriers (i.e. hand washing sinks, segregated waste, BSCs available)
 - Special practices (i.e. immunization program, access controls)



Organisms

The organisms that require BSL-2 laboratories include the pathogenic strains of *E. coli*, *Staphylococcus*, *Salmonella*, *Plasmodium falciparum*, *Toxoplasma*, Measles, Mumps, Rubella and Herpes Simples Viruses.
