

Biosafety Levels

- **BSL1:** well characterized agents not known to cause disease in healthy adult humans of minimal potential hazard to laboratory personnel and the environment
- The laboratory is not necessarily separated from the general traffic patterns . Work is generally conducted on open bench tops using standard microbiological practices.
Example: *Bacillus subtilis*.
- **BSL2:** agents of moderate potential hazard to personnel and the environment
- It differs from BSL-1 in that (1) laboratory personnel have specific training in handling pathogenic agents (2) access to the laboratory is limited (3) extreme precautions are taken with contaminated sharp items; and (4) procedures conducted in biological safety cabinets .Examples : hepatitis B virus, *Salmonellae*, and *Toxoplasma*
- **BSL3:** Applicable to indigenous or exotic agents which may cause serious or potentially lethal disease as a result of exposure by the inhalation route. Laboratory personnel have specific training in handling pathogenic and potentially lethal agents, and are supervised by competent scientists who are experienced in working with these agents.
- All procedures involving the manipulation of infectious materials are conducted within biological safety cabinets or other physical containment devices, or by personnel wearing appropriate personal protective clothing and equipment. The laboratory has special engineering and design features.
- Example : *Mycobacterium tuberculosis*
- **BSL4:** is required for work with dangerous and exotic agents that pose a high individual risk of aerosol-transmitted laboratory infections and life-threatening disease.
- Example: Marburg or Congo-Crimean hemorrhagic fever viruses

