



# **BIOSECURITY AND BIOSAFETY**

## Lecture 3

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Biosafety levels : are individual safeguards designed to protect laboratory personnel as well as the surrounding environment and community

BSL:	BSL 1	BSL 2	BSL 3	BSL 4
Type of infection	Nonpathogenic ( defined )	Pathogenic infectious	Serious lethal (inhalation)	Fatal infections (exotic )
Microbe :	<ul style="list-style-type: none"> <li>• non pathogenic E. coli</li> </ul>	<ul style="list-style-type: none"> <li>• Staphylococcus</li> <li>• Hepatitis</li> <li>• HIV</li> </ul>	<ul style="list-style-type: none"> <li>• Yellow fever</li> <li>• tuberculosis</li> </ul>	<ul style="list-style-type: none"> <li>• Ebola</li> <li>• Marburg virus</li> </ul>
risk	Minimum	Moderate	high	Maximum
Basic safety practice	<ol style="list-style-type: none"> <li>1. Hand wash</li> <li>2. Personal protective equipment</li> <li>3. Limit access to people</li> <li>4. No mouth pipetting</li> <li>5. Decontamination</li> <li>6. Warning signs</li> <li>7. not need special containment</li> </ol>	<u>BSL 1 +</u> <ol style="list-style-type: none"> <li>1. Biosafety cabinet</li> <li>2. Trained personal</li> <li>3. Eye wash station and hand free sink</li> <li>4. Worker vaccination</li> <li>5. Self closing doors</li> </ol>	<u>BSL 2 +</u> <ol style="list-style-type: none"> <li>1. Periodic testing for workers and immunization</li> <li>2. Full body garment with respiratory protection</li> <li>3. Restricted access all time</li> <li>4. Unidirectional air flow</li> <li>5. Eye wash station and hand free sink</li> </ol>	<u>BSL 3 +</u> <ol style="list-style-type: none"> <li>1. Documentation of material before exiting</li> <li>2. Full body garment</li> <li>3. Change clothing before entering and taking shower after exiting the facility</li> <li>4. Biosafety cabinet and positive pressure suit</li> </ol>



## **biological safety cabinet**

(BSC) is a primary engineering control used to protect personnel against biohazardous or infectious agents and to help maintain quality control of the material being worked with as it filters both the inflow and exhaust air