

## ATTACHMENT B

### Description of Biosafety Levels (BSL levels) and Biological Safety Cabinets

Adapted from: "Biosafety in Biomedical and Microbiological Laboratories"; U.S. Department of Health and Human Services, National Institutes of Health, 5<sup>th</sup> Edition (2007).

#### Summary of Recommended Biosafety Levels for Infectious Agents

BIO-SAFETY LEVEL	AGENTS	PRACTICES	SAFETY EQUIPMENT (PRIMARY BARRIERS)	FACILITIES (SECONDARY BARRIERS)
<b>1</b>	Not known to consistently cause disease in healthy adults.	Standard Microbiological Practices	None required	Laboratory bench and sink required.
<b>2</b>	<ul style="list-style-type: none"> <li>• Associated with human disease</li> <li>• Routes of transmission include percutaneous injury, ingestion, mucous membrane exposure</li> </ul>	BSL-1 practice plus: <ul style="list-style-type: none"> <li>• Limited access</li> <li>• Biohazard warning signs</li> <li>• "Sharps" precautions</li> <li>• Biosafety manual defining any needed waste decontamination or medical surveillance policies.</li> </ul>	Primary barriers = Class I or II BSCs or other physical Containment devices used for all manipulations of agents that cause splashes or aerosols of infectious materials; PPEs* <ul style="list-style-type: none"> <li>• Laboratory coats; gloves; face protection as needed.</li> </ul>	BSL-1 plus: <ul style="list-style-type: none"> <li>• Autoclave available</li> </ul>
<b>3</b>	<ul style="list-style-type: none"> <li>• Indigenous or exotic agents with potential for aerosol transmission</li> <li>• Disease may have serious or lethal consequences.</li> </ul>	BSL-2 practice plus: <ul style="list-style-type: none"> <li>• Controlled access</li> <li>• Decontamination of all waste</li> <li>• Decontamination of lab clothing before laundering</li> <li>• Baseline serum</li> </ul>	Primary barriers <ul style="list-style-type: none"> <li>• Class I or II BSCs or other physical containment devices used for all open manipulation of agents.</li> </ul> PPEs <ul style="list-style-type: none"> <li>• Protective laboratory clothing; gloves; respiratory protection as needed.</li> </ul>	BSL-2 plus: <ul style="list-style-type: none"> <li>• Physical separation from access corridors</li> <li>• Self-closing, double- door access</li> <li>• Exhaust air not recirculated</li> <li>• Negative airflow into laboratory.</li> </ul>
<b>4</b>	<ul style="list-style-type: none"> <li>• Dangerous/exotic agents that pose high risk of life-threatening disease</li> <li>• Aerosol-transmitted laboratory infections have occurred; or related agents with unknown risk of transmission.</li> </ul>	BSL-3 practices plus: <ul style="list-style-type: none"> <li>• Clothing change before entering;</li> <li>• Shower on exit;</li> <li>• All material decontaminated on exit from facility.</li> </ul>	Primary barriers <ul style="list-style-type: none"> <li>• All procedures conducted in Class III BSCs or Class I or II BSCs in combination with full-body, air-supplied, positive pressure personnel suit.</li> </ul>	BSL-3 plus: <ul style="list-style-type: none"> <li>• Separate building or isolated zone</li> <li>• Dedicated supply and exhaust, vacuum, and decontamination systems</li> <li>• Other requirements outlined in the text.</li> </ul>

**\*PPE- Personal Protective Equipment**