**Longwood University Biological Research Registration**

**Appendix C: Biosafety levels and risk groups**

**Centers for Disease Control - Biosafety Level (BSL) Definitions**

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| **BSL** | **AGENTS** | **PRACTICES** | **PRIMARY BARRIERS AND SAFETY EQUIPMENT** | **FACILITIES (SECONDARY BARRIERS)** |
| **1** | Not know to consistently cause diseases in healthy adults | Standard Microbial Practices as described in section 5.1.1 of the Longwood University Biosafety Manual | None Required | Laboratory bench and sink required, BSL-1 signage required at Longwood |
| **2** | Agents associated with human disease • Routes of transmission include percutaneous injury, ingestion, mucous membrane exposure | BSL-1 from above plus: • Limited access • Biohazard warning signs • "Sharps" precautions • Biosafety manual defining any needed waste decontamination or medical surveillance policies | 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 • PPE: Laboratory coats, gloves, face protection as needed | BSL-1 from above plus: • Autoclave available • Negative airflow into laboratory • Exhaust air from laboratory spaces 100% exhausted, not recirculated |
| **3** | **(NOT ALLOWED AT LONGWOOD)**Indigenous or exotic agents with potential for aerosol transmission • Disease may have serious or lethal consequence  | BSL-2 practice plus: • Controlled access • Decontamination of all waste • Decontamination of laboratory clothing before laundering • Baseline serum | Primary barriers: • Class I or II BSCs or other physical containment devices used for all open manipulations of agents PPE : • Protective laboratory clothing, gloves, respiratory protection as needed  | BSL-2 plus: • Physical separation from access corridors • Self closing, double-door access  |
| **4** | **(NOT ALLOWED AT LONGWOOD)**Dangerous/exotic agents which pose high risk of life threatening disease  | BSL-3 practices plus: • Clothing change before entering • Showering on exit • All material decontaminated on exit from facility | Primary barriers: • All procedures conducted in a Class III BSC or Class I or II BSCs in combination with full-body, air-supplied, positive pressure personnel suit | BSL-3 plus: • Separate building or isolated zone • Dedicated supply and exhaust, vacuum, and decontamination systems |
| *Source: adapted from BMBL 5th ED., 2007* |

**National Institutes of Health - Risk Group Definitions**

* + **Risk Group 1:** Agents are not associated with disease in healthy adult humans. Use BSL-1 standards of practice.
	+ **Risk Group 2:** Agents are associated with human disease which is rarely serious and for which preventive or therapeutic interventions are often available. Apply Biosafety Level 2 standards of practice and facilities as appropriate to the activities undertaken.
	+ **Risk Group 3:** Agents are associated with serious or lethal human disease for which preventive or therapeutic interventions may be available. Apply Biosafety Level 3 standards of practice and facilities (**not allowed at Longwood University**).
	+ **Risk Group 4:** Agents are likely to cause serious or lethal human disease for which preventive or therapeutic interventions are usually not available. Apply Biosafety Level 4 standards of practice and facilities (**not allowed at Longwood University**).