

## BIOLOGICAL RISK ASSESSMENT

### Risk Groups

Microorganisms are classified into Risk Groups according to the degree of risk of infectivity, pathogenicity, the availability of preventive measures and effective treatments, and potential damage to the environment. Risk Groups correlate to, but do not always equate with, biological safety levels. For some recombinant organisms, the [NIH Guidelines](#) prescribes the risk group. See the [ABSA Risk Group Database](#) for help in determining the risk group of an agent. The table below describes the four Risk Groups with examples of organisms.

Risk Group (RG)	Description	Examples
Risk Group 1 (RG1)	Agents that are not associated with disease in healthy adult humans	<ul style="list-style-type: none"> <li>▪ <i>E.coli</i> K12 cloning strains</li> <li>▪ <i>Bacillus subtilis</i></li> <li>▪ Canine hepatitis virus</li> </ul>
Risk Group 2 (RG2)	Agents that are associated with human disease which is rarely serious or for which preventive and therapeutic interventions are <i>often</i> available	<ul style="list-style-type: none"> <li>▪ <i>Salmonella typhimurium</i></li> <li>▪ <i>Pseudomonas aeruginosa</i></li> <li>▪ Pathogenic <i>E.coli</i></li> <li>▪ Respiratory syncytial virus (RSV)</li> </ul>
Risk Group 3 (RG3)	Agents that are associated with serious or lethal human disease for which preventive or therapeutic interventions <i>may</i> be available (high individual risk but low community risk)	<ul style="list-style-type: none"> <li>▪ <i>Yersinia pestis</i></li> <li>▪ <i>Francisella tularensis</i></li> <li>▪ Hantavirus</li> <li>▪ West Nile virus</li> </ul>
Risk Group 4 (RG4)	Agents that are likely to cause serious or lethal human disease for which preventive or therapeutic intervention are <i>not usually</i> available (high individual risk and high community risk)	<ul style="list-style-type: none"> <li>▪ Ebola virus</li> <li>▪ Marburg virus</li> <li>▪ Lassa virus</li> </ul>

## Biological Safety Levels

Biological safety level or biosafety level (BSL) classification refers to containment engineering and safety practices. The biosafety level usually correlates with the Risk Group but not always. For more details regarding specific facility design requirements for laboratories, see Section 4.A. of the UW Biosafety Manual. The table below describes the different biological safety levels. See also the CDC's [Biosafety Level Criteria](#). There is no research requiring BSL-4 containment at UW.

Biosafety Level (BSL)	Description
Biosafety Level 1 (BSL-1)	<ul style="list-style-type: none"> <li>▪ Suitable for work involving well-characterized agents not known to cause disease consistently in immunocompetent adult humans.</li> <li>▪ Agents present minimal potential hazards to laboratory personnel and the environment.</li> </ul>
Biosafety Level 2 (BSL-2)	<ul style="list-style-type: none"> <li>▪ Builds upon BSL-1.</li> <li>▪ Suitable for work involving agents that pose moderate hazards to personnel and the environment.</li> </ul>
Biosafety Level 2 with Biosafety Level 3 practices (BSL-2 with BSL-3 practices)	<ul style="list-style-type: none"> <li>▪ Not an official biosafety level but refers to increased practices required by the Institutional Biosafety Committee (IBC) for some agents.</li> </ul>
Biosafety Level 3 (BSL-3)	<ul style="list-style-type: none"> <li>▪ Builds upon BSL-2.</li> <li>▪ Applicable to facilities where work is performed with indigenous or exotic agents that may cause serious or potentially lethal disease through the inhalation route of exposure.</li> </ul>
Biosafety Level 4 (BSL-4)	<ul style="list-style-type: none"> <li>▪ Builds upon BSL-3.</li> <li>▪ Required for work with dangerous and exotic agents that pose a high individual risk of aerosol-transmitted infections and life-threatening disease that is frequently fatal and for which there are no vaccines or treatments.</li> <li>▪ Required for related agents with unknown risk or route of transmission.</li> </ul>

### Questions?

Contact EH&S for assistance at [ehsbio@uw.edu](mailto:ehsbio@uw.edu) or 206.221.7770.