



Lab Classifications Guide

REFERENCE GUIDE

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This reference guide aims to establish laboratory classifications at Mississippi State University. Laboratories that meet classification criteria are subject to routine EH&S Lab Safety Reviews.

Laboratory Classifications

- ❑ **General Purpose Laboratory:** These labs support an expansive array of research pursuits and may involve work with hazardous chemicals, engineering equipment, or potentially other hazards such as radionuclides/lasers. Purely computational labs are excluded from this classification. Additionally, general purpose lab environments are distinct from labs involving biological samples/organisms.
- ❑ **Biosafety Level (BSL)-1:** Labs that work with Risk Group 1 biological agents that do not present a risk of infection to otherwise healthy humans. Scope of work in these labs may include plant pathogens, animal pathogens, human commensals, nonpathogenic microbes, along with benign recombinant/synthetic nucleic acids.
- ❑ **BSL-2:** These labs are suitable for work with Risk Group 2 biological agents that are infectious to otherwise healthy humans. These labs are also suitable for work with human or primate blood, fluid, tissues, OPIM, and cells derived thereof. It is important to note that infectious agent diagnostic laboratories typically fall under this classification.
- ❑ **BSL-2+:** Structurally meets BSL-2 criteria, but implements extra (+) precautions to further reduce risk of exposure.
- ❑ **BSL-3:** These labs are suitable for work with Risk Group 3 biological agents that are infectious to otherwise healthy humans.
- ❑ **Animal Biosafety Level (ABSL)-1:** Suitable for avenues of research encompassed in BSL-1 setting, but in the presence of animals. Containment for these studies may involve defined lab/vivarium space or may include field settings.
- ❑ **ABSL-2:** Suitable for avenues of research encompassed in BSL-2 setting, but in the presence of animals. Biocontainment laboratories are necessary to mitigate the risk of exposure and/or environmental release.
- ❑ **Plant Biosafety Level (PBSL)-1:** Suitable for avenues of research encompassed in BSL-1 setting, but in the presence of plants. These studies may be performed in designated labs/greenhouses/growth chambers or may include field studies.
- ❑ **PBSL-2:** Suitable for avenues of research encompassed in BSL-2 setting, but in the presence of plants. Containment labs/greenhouses/growth chambers are necessary to mitigate the risk of exposure and/or environmental release.



- **Arthropod Containment Level (ACL)-1:** Suitable for avenues of research encompassed in BSL-1 setting, but in the presence of arthropods. Containment for these studies may involve defined labs/insectaries or field collections. Minimal additional containment considerations are necessary for endemic, wild-type arthropods; however, more stringent precautions are necessary to ensure biocontainment of transgenic arthropods or those inoculated with genetically-modified microorganisms. Extra (+) considerations may include a double-door entry vestibule, HVAC screening, and other means to prevent the environmental release of incidental escaped arthropods.
 - **ACL-2:** Suitable for avenues of research encompassed in BSL-2 setting, but in the presence of arthropods. Furthermore, ACL-2 Containment laboratories with unique precautions are necessary to mitigate the risk of personnel exposure and/or environmental release of infected arthropods.
 - **Academic Laboratories:** Depending upon course focus area, academic teaching labs may meet any of the previously detailed lab classifications.
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References

- It is important to note that there is no prescriptive standard that dictates laboratory design. Rather, unique design features vary depending upon intended applications, regulatory requirements, and health and safety risk assessments. Design considerations are largely established through the following key resources:
 - [Biosafety in Microbiological and Biomedical Laboratories \(BMBL\), 6th edition.](#)
 - [NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules \(NIH Guidelines\)](#)
 - [Arthropod Containment Guidelines, Version 3.2](#)
 - [A Practical Guide to Containment: Plant Biosafety in Research Greenhouses](#)
 - Consensus standards (e.g., ANSI/ASHRAE)
 - [Fire Codes & Standards](#)