

Florida Atlantic University

Environmental Health & Safety

Biosafety Containment Laboratory Requirements

The purpose of this document is to aid Project Managers and Principal Investigators in the design and construction/renovation of biosafety containment laboratories. The requirements that are presented here are for Biological Safety Level 1 and Biological Safety Level 2 laboratories only. Work in the laboratory involving higher biological safety containment or using chemicals, radioactive material, or other hazards will require additional design elements not listed here. These requirements comply with those guidelines specified in the Centers for Disease Control and Prevention/National Institutes of Health publication, Biosafety in Microbiological and Biomedical Laboratories (current edition) and the World Health Organization Biosafety Manual. If vertebrate animals are involved in research with biohazardous materials, additional considerations are required, as determined by the Biosafety Officer.

Basic Laboratory Design for Biological Safety Level 1 (BSL-1) Containment

- Each Laboratory shall contain a sink for hand washing.
- The laboratories shall be designed for easy cleaning.
- Rugs shall not be used.
- Bench tops shall be impervious to water and resistant to acids, alkalis, organic solvents and moderate heat.
- Approved and accepted methods for decontamination of infectious or regulated laboratory wastes are available (e.g., autoclave, chemical disinfection, or other decontamination system approved by the Biosafety Officer)
- An autoclave, if present, does not need to be in the actual lab room. Autoclave installations need to be cleared through the Biosafety Officer and the Lab Safety Officer.
- Laboratory furniture shall:
 - Be sturdy,
 - Be capable of supporting anticipated loads and uses,
 - Have upholstery that is liquid-proof and easily cleaned and decontaminated, and
 - Have spaces between and under benches, cabinets and equipment that are accessible for cleaning.
- If the laboratory has windows that open, they shall be fitted with fly screens.
- Doors shall be lockable.
- Laboratories should be designed to incorporate proper ergonomic conditions for the tasks to be performed.

Basic Laboratory Design for Biological Safety Level 2 (BSL-2) Containment

In addition to the requirements for a BSL-1 laboratory, the following are required:

- Floors shall:
 - Have a slip-resistant, smooth, hard finish.
 - Be liquid tight, monolithic/seamless or with welded seams, and
 - Have recommended flooring material coved 4 inches up the wall, or, have a cove base that is installed to create a water-tight seal to the floor.
- Walls shall be durable, washable and resistant to detergents/disinfectants and use durable low-luster acrylic enamel paint as the primary interior partition finish. Paint for interior applications shall be

solvent-free, water-based, latex paint and primer. Application is a three-coat system including one primer coat and two finish coats. The final coat shall provide a semigloss or eggshell finish, except where more durable finishes are required for functional reasons. Epoxy paint and other specialized coatings are required in areas subject to high humidity, frequent decontamination, impact and wear, and other conditions specified by program requirements.

- Exposed corners and walls shall be protected from damage by carts.
- Ceiling height shall provide a minimum of 12 inches of clearance above biological safety cabinets. A ceiling height of at least 10 feet is recommended. (Note: If the laboratory has a sprinkler system, 18 inches or more of clearance is required above fixtures to comply with fire codes.)
- Doors shall:
 - Be self-closing and lockable; and
 - Have fire ratings as required.
- Wall/ceiling penetrations shall be kept to a minimum and be sealed with fire retardant material.
- Eyewashes shall be provided in the laboratory. Installation of safety showers is based on risk assessment. Showers/eyewash stations shall comply with ANSI Z358.1. Contact the Laboratory Safety Officer for consultation.
- Rooms with autoclaves shall be provided with a floor drain or drains.
- Mechanical ventilation systems shall provide an inward flow of air without recirculation to spaces outside of the laboratory.
- Biological safety cabinets shall be installed in such a manner that fluctuations of the room supply and exhaust air do not cause the biological safety cabinets to operate outside their parameters for containment. (Please contact the Biosafety Officer for approval prior to ordering any biological safety cabinets.)
- Biological safety cabinets shall be located away from:
 - Doors,
 - Windows that can be opened,
 - Heavily traveled aisles and passageways, and
 - Other potentially disruptive equipment to maintain the biological safety cabinet's air flow parameters for containment.