

Lab Set-Up Pointers for New Investigators

Working with Biological Materials



This guidance document is intended to help new investigators set up their labs in a manner that supports biosafety standard requirements applicable to their work. The items below are those that are commonly cited during biosafety inspections and are simplest to address before lab work gets underway.

- 1. Plan to keep food & drink separate from the lab environment.** Consuming and/or handling food/drink in the lab or storing food/drink in the lab in a way that it can be exposed to lab hazards can lead to accidental ingestion and lab-acquired infections. For this reason, [CDC/NIH biosafety standards](#), prohibit these practices. Before settling into your new lab space, work with your team to identify where food/drink can be stored, handled and consumed that is physically separated from the lab environment.
- 2. Assure that all lab chairs have non-porous coverings.** Spills and accidental releases of biomaterials in the lab can impact all items in the immediate area, including lab furniture. Porous fabric coverings cannot be effectively cleaned and disinfected. For this reason, [CDC/NIH biosafety standards](#), call for furniture with non-porous, cleanable coverings. Do not bring fabric chairs into the lab unless necessary. If these MUST be present, they need to be restricted to lab areas and workstations where viable biological materials (or other lab reagents) are not being used.
- 3. Don't bring non-research plants or animals (i.e., pets) into the lab.** Unless these are directly related to the research underway, plants and animals are not permitted in labs performing BSL-2 activities. Regardless of biosafety level, plants and animals in the lab will draw in pests and can harbor contaminants that can impact the quality of cell culture and other microbiological processes.
- 4. Assure that your lab has a handwashing sink and an eyewash station.** Under the [CDC/NIH biosafety standards](#), handwashing is expected to be performed at the conclusion of procedures before exiting the lab, regardless of biosafety level. Handwashing as a routine exit practice will help to assure that biomaterial contaminants do not inadvertently leave the lab on one's person. If your lab will perform BSL-2 activities, an eyewash must be readily available where that work takes place. Ideally, the eyewash should be located within the BSL-2 designated space to minimize the spread of contamination outside of that area if the eyewash needs to be activated.
- 5. Install and maintain biosafety cabinets in accordance with the [OCRS Biosafety Guidelines: Maintaining, Moving & Transferring Class II Biological Safety Cabinets \(BSCs\)](#) document.** New BSC installations should not include gas connections as this creates a potential explosion hazard. BSCs should be positioned away from doors, heavy traffic areas, and air supply vents for maximum performance. BSC's need to be certified by a vendor with an NSF49 certification designation prior to first use, annually, and after certain repairs. Gas decontamination to treat the filters needs to be performed before certain repairs and any move when the BSC is used for BSL-2 activities. **Please notify OCRS Biosafety of new BSC installs and any scheduled gas decontamination activities.**
- 6. Acquire sharps containers appropriate for your sharps waste. Don't use sharps containers for collection of non-sharps waste.** Sharps containers come in all shapes and sizes. If your lab will use a limited number of smaller devices, acquire smaller benchtop containers, ideally with a horizontal drop configuration. Avoid acquiring or using large, floor model containers if possible. These larger containers take a large amount of floor space, they do not promote ready disposal of sharps, and it is difficult to dispose of them. Additionally, do not "adapt" large sharps containers for use as a non-sharps biohazardous waste receptacle. Refer to [Biohazardous Waste: Segregation, Collection & Disposal Guide](#) on the OCRS Biosafety website for more information regarding management of all forms of biohazardous waste.

- 7. Determine your method of biohazardous waste disposal before starting work with biological materials.**
 - a. If your lab is located in a VUMC-owned building, your bagged biohazardous waste and permanently closed sharps containers will likely be picked up by Environmental Services. Touch base with the Environmental Services representative that services your lab to assure that they know you are generating biohazardous waste and notify them of the pickup point inside your lab where your waste will be placed. Use red biohazard bags to assure reliable pickup of your waste.
 - b. If your lab is located within a VU-owned building, you will need to establish a pickup with the contract service that serves that building. Because the waste is shipped over public roads, your lab will also need to become qualified in accordance with US Department of Transportation rules to prepare and sign off on shipments of your waste. Detailed information is available on the OCRS Biosafety website under the “Biohazardous Waste” heading.
 - i. [Biohazardous Waste Disposal Contacts & Practice Tips \(Biowaste, LLC\)](#)
 - ii. [Biohazardous Waste Disposal Contacts & Practice Tips \(Stericycle\)](#)
 - iii. [Regulated Medical Waste Shipping – USDOT Training](#)
- 8. If your lab will perform BSL-2 work, plan for personal protective clothing.** The [CDC/NIH biosafety standards](#) require the use of a lab coat, smock or gown (along with fluid-resistant disposable gloves) by those who are working at BSL-2. Before purchasing lab coats, you should contact your departmental administrative officer to determine the availability of laundering services for these items. (They cannot be sent home for personal laundering.) In some instances, purchasing fluid-resistant disposable smocks or gowns may be an easier and more economical option. (OCRS Biosafety will assist with product identification if needed.) Regardless of the protective clothing chosen, it should be configured to allow for total coverage of the forearm (i.e., gathered cuff or cuff with thumb loop).
- 9. If you will be working with human-derived materials (including cells), select an EPA-registered product for disinfection.** The OSHA Bloodborne Pathogens (BBP) Standard requires that disinfectants used in conjunction with BBP-risk materials be EPA-registered for destruction of HIV and HBV. Ethanol alone does not meet this requirement. Check your product labels to assure that your product meets this requirement. If it does not, please review [OCRS Biosafety's Ready-to-Use Disinfectant Guide](#) for examples of products used by others at Vanderbilt.
- 10. Determine the biosafety training needs for your research team's activities and start a training file.** OCRS Biosafety has developed a [Biosafety Training Guide](#) that has a decision tree to determine applicable training needs. The second page of the guide outlines the various options that could be used to satisfy the training requirements. Generally speaking, all new personnel who will be working with biological materials (and their supervising Principal Investigators) need to complete the [Biosafety 101: Standard Microbiological Practices](#) course as a first step in satisfying training requirements. This online module is available for self-assignment in the VUMC Learning Exchange and in VU Oracle Learn.
- 11. Prepare and submit an Institutional Biosafety Committee registration when you are ready to begin working with biological materials.** Biomaterials included in the purview of the Institutional Biosafety Committee (IBC) are recombinant or synthetic nucleic acid molecules, infectious agents, human-derived materials, nonhuman primate-derived materials, and biological toxins. The IBC meets monthly and usually, OCRS Biosafety can help you get your registration ready for the agenda within one month's time. More information about the IBC review process can be found in the [Register Your Biological Materials](#) area of the OCRS Biosafety website. The current IBC registration form is available upon request by emailing biosafety@vumc.org.

For more biosafety guidance, visit <https://www.vumc.org/safety/bio>, or contact Robin Trundy, OCRS Assistant Director & Biosafety Officer at 615-322-0927 or robin.trundy@vumc.org.