

LABORATORY SAFETY FOR NON-LAB EMPLOYEES

QUICK SHEET

Common Lab Hazards & How They Are Controlled

Most basic science lab operations (sometimes referred to as “wet labs”) will include one or more of the following hazards:

Radioactive Materials

Radioactivity is the spontaneous emission of particles or electromagnetic waves from the nucleus of an unstable atom as it decays to a more stable form. Chronic exposure to low levels of ionizing radiation can cause cancer or reproductive health effects. Exposure to high levels of ionizing radiation can cause burns or radiation poisoning (nausea, weakness, hair loss, skin burns, organ damage) resulting in premature aging or death.

Radioactive materials and areas where they are stored are identified with lab signage and labels and secured from unauthorized personnel. Personnel must be trained and approved through the EHS Radiation Safety Section before handling radioactive materials. Special waste collection and area monitoring procedures are used to ensure that there is zero potential for non-lab personnel to be exposed to levels of radioactive materials that would cause an adverse health effect.

Chemical Reagents

Chemical reagents can present a physical hazard (such as a flammable or explosion hazard), or a health hazard, or both. Chemicals that can be a health hazard can cause short term effects such as dizziness, drowsiness, irritation of eyes, nose or throat, dermatitis, and nausea. Long term effects could include damage to eyes, skin, other body organs, birth defects, reproductive damage, cancer, or death. In most cases, direct handling of the reagents or responding to a spill or damaged storage container would be the scenario where one could experience health effects from a chemical reagent.

All chemical reagent containers are marked with the contents and primary hazard identification. A compilation of hazards is also posted by the lab door (like shown below). Personnel handling the chemicals must be trained regarding the hazards of the chemicals in use and adhere to the safety practices that apply to the chemical hazards. Special waste collection procedures apply to most chemical reagents. With these precautions under normal circumstances, non-lab personnel should not be exposed to any chemical agent in a laboratory that would cause an adverse health effect.

Biological Agents and Specimens

Biological materials (or “biohazards”) used in basic research labs include genetically modified microbiological agents, infectious agents, human-derived cells, tissues and body fluids, nonhuman primate-derived (or monkey-derived) cells, tissues and body fluids. Some of these materials are potentially infectious to humans, while others are not an infection hazard, but could be hazardous in other ways if they were released outside the lab environment. The majority of Infectious agents used in Vanderbilt’s basic research settings are those that are commonly found in the community and cause infections through accidental ingestion or rubbing one’s eyes, nose, or mouth after handling a contaminated item.

All lab equipment used to process or store biohazards is labeled with the biohazard symbol. Wastes contaminated with biohazards are collected in designated containers, and these wastes are heat killed before disposal. Lab personnel working with biohazards must complete biosafety training appropriate for the specific biohazards in use and follow safety practices. Labs that work with biohazards regarded as potentially infectious to humans will be designated as BSL-2 on the door sign. With these precautions under normal circumstances, non-lab personnel should not be exposed to any biological agent in a laboratory that would cause an adverse health effect.

Lab Animals

Some research labs require the use of lab animals (mostly rodents) to support their studies, and this may require that the animals be brought to the lab for certain procedures. Rodents are a common source of allergens that can trigger allergy symptoms (runny nose, itchy or watery eyes, etc.) for sensitized individuals.

All lab spaces where live animal procedures are carried out are reviewed and approved by the Office of Animal Welfare Assurance (OAWA). As part of that approval process, an “allergen exposure” sign is posted in the designated procedures area to alert anyone in the lab space of this hazard and preventive actions to take.

Safety Best Practices for Non-Lab Personnel Entering Lab Spaces

- Avoid entering lab spaces when possible.** While there are control measures in place to minimize your exposure to hazards while in this environment, the best way to reduce your exposure risk is to not enter the lab at all.
- If you must enter, prearrange your visit if at all possible.** For BSL-2 labs, it is expected that lab visitors are informed of the biohazards present and safety practices needed to enter and exit the lab. This is a good practice regardless of the BSL designation to minimize disruption of planned lab activities and maximize your safety.
- Don't take food or drink into the lab.** The hazard control programs for all 4 of the hazards outlined previously prohibit the consumption and/or storage of food and drink in the lab.
- Don't touch (or place personal items on) benches or lab surfaces when you enter the lab.** This practice not only protects you from accidentally contaminating your hands, but also protects lab materials that can become easily contaminated from human skin.
- If you accidentally touch items while in the lab, wash your hands.** While you should not touch any surfaces or equipment in the active lab area, it may happen inadvertently or accidentally. In this case, you should proceed to the lab sink and wash your hands thoroughly with soap and water to remove any potential contamination from your hands.
- If you have an exposure while in the lab, respond appropriately.** This scenario is not anticipated to occur provided that #1-#5 are followed. Even so, if you sustain a splash to the eyes, nose, or mouth, or cut your skin while in the lab, thoroughly flush the affected body area with running water. Report to Occupational Health as soon as possible to initiate exposure assessment and notify your supervisor.

CAUTION

Safety Guidelines for Non-Lab Personnel Who Support Vanderbilt Research Lab Activities

Research labs in academic institutions like Vanderbilt are diverse environments that require collaboration and support from both personnel working at the bench and also those in administrative roles. It is not uncommon for administrative personnel to need to enter the labs, or maybe even work in the lab, in order to support the research effort. This document is intended to provide an overview on:

1. recognizing common lab hazards,
2. understanding how these hazards are controlled, and
3. employing basic safety practices to protect yourself when entering or working in a space within a lab environment

Additional Safety Practices for Non-Lab Personnel with Work Areas Located within Active Lab Spaces

- 1. Be aware of the hazards that are worked with in the area that you must pass through to get to your work area.** If you have questions or concerns about anything that you are seeing that does not appear to support personnel safety, please report this to the Principal Investigator or Lab Manager in charge of the space.
- 2. Do not consume food or drink in your office unless it can be physically separated/isolated from the lab environment.** If your workstation is located within the active lab area, you will need to leave the lab to eat or drink. If you have an office within the lab, close your door when eating, drinking, or handling items for consumption.
- 3. If others visit your work area in the lab space, assure that they follow the food and drink restrictions that apply to your situation.**

Questions or Concerns

Contact Environmental Health, Safety, and Sustainability (EHSS) at ehs@vanderbilt.edu if you feel additional support is needed.