

Chapter 34: [Biosafety](#)

General Requirements

Product ID: [721](#) | Revision ID: 2183 | Date published: 23 March 2020 | Date effective: 23 March 2020

URL: <https://www-group.slac.stanford.edu/esh/eshmanual/references/biosafetyReqGeneral.pdf>

1 Purpose

The purpose of these requirements is to ensure work with *biohazardous materials* is performed safely. They cover use, storage, transportation, and disposal of biohazardous materials. They apply to researchers, principal investigators, laboratory managers, ESH coordinators, the biosafety program manager, and the Occupational Health Center.

2 Requirements

Work involving biohazardous materials and/or *recombinant DNA (rDNA)* is classified by *risk group* and *biosafety safety level (BSL)*. Only work classified as BSL 1 or 2 is currently permitted at SLAC. Work classified as BSL 3 or 4 is not permitted at SLAC as the site currently does not have the appropriate facilities to safely manage the hazards associated with this level of work.

2.1 Review and Approval

All work with biohazardous materials and/or recombinant DNA (rDNA) must be reviewed and approved following the [Biosafety: Review Procedure](#) before work may begin. This includes the development and approval of standard operating procedures (SOPs) and protocols.

2.2 Standard Work Practices

At a minimum, all researchers working with biohazardous materials must adhere to the following standard biosafety work practices:

- Long pants and closed-toe shoes must be worn at all times.
- Hands must be washed with soap after handling materials, after removing gloves and before leaving the laboratory.
- Eating, drinking, smoking, handling contact lenses, applying cosmetics, and storing food for human consumption are not permitted in the work areas.
- Mouth pipetting is prohibited.
- Work surfaces must be decontaminated at least once a day and after any spill of biological materials.
- A biohazard sign must be posted at the entrance to the laboratory. The sign must include the name of the material in use and the name and phone number of the researcher.

2.3 Transportation

Transportation of biohazardous materials on-site, including transportation between laboratories and buildings, requires the use of leak-proof secondary containment with a tight-fitting cover. Off-site transportation requires the use of tertiary containment. The outside of the largest containment container must be labeled with a biohazard sticker, biosafety level, and contact information. (See the Stanford [Biosafety Manual](#).)

All biohazardous materials being shipped from SLAC must be performed under the supervision of a trained Department of Transportation (DOT) or International Air Transport Association (IATA) handler and shipper. Contact SLAC Shipping and Receiving for more details. Non-trained researchers can assist in packing their own biohazardous materials as long as the packing is supervised by a trained shipper and handler.

2.4 Material Storage

All biohazardous materials stored on-site must be in a storage area approved via the SOP and protocol. Areas must be labeled with a biohazard sign. Refrigerators and freezers used to store materials and samples must be labeled with a biohazard sign, current emergency contact information, and NOT FOR FOOD. Secondary containment is needed for sample storage.

2.4.1 Biosafety Cabinets

Biosafety cabinets must be maintained properly and certified annually by a certified vendor. The biosafety program manager is responsible for ensuring maintenance and certification.

2.5 Decontamination

Decontaminants are specific to the biohazardous materials within the protocol. Refer to the Stanford [Biosafety Manual](#) for the specific decontamination procedure for the biohazardous materials (this information should also be included in the protocol). (See Stanford's [Comparing Different Disinfectants](#).)

2.6 Biohazardous Waste Disposal

Biohazardous waste includes all laboratory waste that may contain any biohazardous material or were in contact with said material.

2.6.1 Solid Waste

All non-sharps biohazard wastes must be placed in a red bag marked with a biohazard symbol. Arrangements must be made through [Waste Management](#) for pickup and disposal. (See [Chapter 17, "Hazardous Waste"](#) and [Chapter 46, "Blood-borne Pathogens"](#).)

2.6.1.1 Sharps

Do not throw biohazardous sharps in the red bag or regular trash; instead, sharps containers are available for the proper disposal of these materials. Arrangements must be made through [Waste Management](#) for pickup and disposal.

2.6.2 Liquid Waste

Biohazardous liquid waste may be decontaminated and disposed down the sewer with running water if approved in the protocol and SOP. Otherwise, biohazardous liquid waste must be collected into designated waste containers. These containers must have secondary containment and a properly completed waste label on the primary collection container. Arrangements must be made through [Waste Management](#) for pickup and disposal.

2.7 Spill Response

The following is the general procedure for biohazardous spill cleanup. For specific situations, refer to the SOP or contact your ESH coordinator for further assistance.

1. Evacuate the area for 30 minutes for the aerosols to settle.
2. Find a spill kit and put on appropriate personal protective equipment (PPE) including safety glasses, lab coat, gloves, and shoe covers.
3. Contain the spill with absorbent sheets or paper towels.
4. Decontaminate the spill with disinfectant (for example, freshly prepared 10 percent bleach). Let it sit for at least 20 minutes.
5. Dispose the absorbent sheets into a biohazard waste bag, and apply fresh absorbent sheets and disinfectants to wipe up the area.
6. Dispose used PPE into the same biohazard waste bag. Arrangements must be made through [Waste Management](#) for pickup and disposal.
7. Wash hands with soap before leaving the area
8. Report the incident to your supervisor (as indicated on the SOP), call ext. 5555, and follow the notification and reporting procedures in [Chapter 16, "Spills"](#).

2.8 Biological Agent Inventory

At the beginning of each calendar year, the biosafety program manager is required to provide the DOE Bay Area Site Office, and the Occupational Health Center, with an inventory of *biological etiological agents* used at SLAC throughout the year and any updates to this biosafety program. The inventory includes a list of agents, the principal investigator's or owner's name, and location(s) of the work.

To assist in this inventory, ESH coordinators are required to submit, before the end of the calendar year, reports describing the status and inventory of biohazardous materials used in their areas over the previous year to the biosafety program manager. Principal investigators are required to maintain this information and to provide it to their ESH coordinator.

Past inventories can be viewed on [Biological Safety Program](#).

2.9 Medical Surveillance and Immunization

Any required medical surveillance must be completed by the Occupational Health Center (OHC) before work may begin. The OHC provides immunizations for persons working with biological agents as needed based on the evaluation of risk and benefit of immunization and performs titer checks, or similar blood testing, as indicated, based on the evaluation of risk related to bioagent work. The OHC also treats personnel exposed to biohazardous materials or refers them out for appropriate care. (Exposure can result from skin punctures or inhalation of aerosols or direct contact with mucous membranes.)

3 Forms

The following forms are required by these requirements:

- [SLAC eShipper](#). System used to document off-site transportation

4 Recordkeeping

The following recordkeeping requirements apply for this procedure:

- The biosafety program manager maintains a record of annual biosafety agent inventories (see [Biological Safety Program](#)).
- Principal investigators maintain information describing the status and inventory of biohazardous materials used in their areas.
- The biosafety program manager maintains records of annual biosafety cabinet certification.
- Shipping and Receiving keeps records of off-site transportation of biohazardous materials (using [SLAC eShipper](#)).
- The Occupational Health Center maintains medical records for medical surveillance and immunizations.

5 References

[SLAC Environment, Safety, and Health Manual](#) (SLAC-I-720-0A29Z-001)

- [Chapter 34, “Biosafety”](#)
 - [Biosafety: Review Procedure](#) (SLAC-I-730-0A21C-035)
- [Chapter 16, “Spills”](#)
- [Chapter 17, “Hazardous Waste”](#)
- [Chapter 46, “Blood-borne Pathogens”](#)

Other SLAC Documents

- [Biological Safety Program](#) (SharePoint)
- [Field Services Department - Hazardous Waste Management](#)
- [SLAC Occupational Health Center](#)

Other Documents

- Stanford University. Office of Environmental Health and Safety. [Biosafety Manual](#)
- Stanford University. Office of Environmental Health and Safety. [Comparing Different Disinfectants](#)