Introduction

The University of South Carolina Sumter utilizes various types of biological materials in scientific research. Some of the biological materials used are well-characterized agents not known to consistently cause disease in humans, and present minimal potential hazard to laboratory personnel and the environment. Other biological materials used are pathogenic agents that are capable of causing infectious disease, and present a greater potential hazard to laboratory personnel and the environment. The Biosafety Program seeks to ensure that activities involving biological materials are in compliance with applicable university policies and external regulations. Compliance with these policies and regulations is critical to ensure that appropriate work practices, safety equipment, and laboratory facilities are utilized for the protection of personnel, the general public, and the environment.

Scope and Application

The procedures described in this section apply to all personnel performing work involving recombinant DNA, select agents, materials derived from humans/primates, biological toxins, and other biological materials such as bacteria, viruses, fungi or parasites.

Program Description

The primary purpose of the Biosafety Program is to establish appropriate work practices, safety equipment, and laboratory facilities for the protection of all university personnel with a potential exposure to biological materials. This is accomplished through services such as providing biosafety resources, performing laboratory biosafety inspections, reviewing all work involving biohazardous materials, and providing annual biosafety training. Each of these services promotes an environment where personnel are aware of the necessary precautions to prevent exposure, and also facilitates university compliance with the applicable biosafety regulations and guidelines.

Procedures

Biosafety Approvals

Principal Investigators must receive approval from the Institutional Biosafety Committee (IBC) prior to initiating work involving recombinant DNA, select agents, materials derived from humans/primates, BSL-2 agents, or biological toxins. The appropriate application and registration forms are available on the IBC website.

Biosafety Levels

All research involving biological materials must be performed at the appropriate biosafety level. A description of the laboratory practices and techniques, safety equipment, and facility design guidelines for each biosafety level are included in the CDC/NIH document *Biosafety in Microbiological and Biomedical Laboratories, 5th Edition*. This information can also be found in the USC Health and Safety Manual or on the EHS Biosafety website.

Bloodborne Pathogens

Laboratory workers conducting research involving materials derived from humans (i.e. human blood, certain body fluids, or unfixed tissues) must maintain compliance with OSHA’s Bloodborne Pathogen Standard. More information on this OSHA standard can be found in Section E.3 of the USC Safety Guide. In addition, all work with human materials must be performed in compliance with the biosafety level 2 (BSL-2) guidelines.

Laboratory Inspections

All laboratories performing work with biological materials receive an annual biosafety inspection. These inspections are intended to identify safety or compliance deficiencies, and also provide an opportunity for laboratory personnel to ask questions regarding issues related to biosafety.

Training
Biosafety and Bloodborne Pathogens Training are provided annually to all personnel working in a Biosafety Level 2 (BSL-2) laboratory. All personnel working in BSL-1 labs will attend the Laboratory Safety Training, which includes information regarding BSL-1 compliance and other general laboratory safety topics.

Biological Waste

Laboratories generating infectious waste must follow the guidelines of the Infectious Waste Policy in the USC Health and Safety Manual. All laboratories utilizing an autoclave for sterilization of their biological waste must also follow the guidelines established in the USC Autoclave Safety Policy.

Shipping Biological Materials

All personnel shipping biological materials to locations outside the university must complete the online Biological Shipping Training. This training will provide guidance on the proper procedures for classifying, packaging, labeling, and documenting each shipment involving biological materials. Biological Shipping Training is required every two years.

Biological Safety Cabinets

Biological safety cabinets (BSC) are used as a primary means of containment for working safely with infectious microorganisms. The Class II, Type A2 is the most commonly used cabinet in the USC research laboratories. All Class II BSCs must be tested and certified at least annually to ensure continued proper operation. A copy of the Biosafety Cabinet Program document is available on the EHS website. This document was established to provide a university policy for the selection, use, maintenance, and certification of biological safety cabinets.

Roles and Responsibilities

Principal Investigators

- Never initiate or modify research involving biohazardous materials which requires Institutional Biosafety Committee (IBC) approval prior to initiation until that research or the proposed modification has been approved by the IBC and has met all other requirements.
- Make available to all laboratory staff the protocols that describe the potential biohazards and precautions to be taken.
- Instruct and train laboratory staff in the practices and techniques required to ensure safety, and the procedures for dealing with accidents.
- Inform the laboratory staff of the reasons and provisions for any precautionary medical practices advised or requested (e.g. vaccinations or serum collection).
- Supervise the safety performance of the laboratory staff to ensure that the required safety practices and techniques are employed.
- Correct work errors and conditions that may result in the release of biohazardous materials, and also correct any deficiencies noted during annual biosafety lab inspections.
- Ensure that any biological safety cabinet used to conduct research has received an updated annual certification by the USC approved vendor.
- Report any significant problems, regulatory violations, or any significant research-related accidents and illnesses to the Institutional Biosafety Committee or Biosafety Officer.
- Attend required biosafety training provided by EHS.
- Adhere to the approved emergency plans for handling accidental spills and personnel contamination.
- Comply with requirements for shipping biological materials.
- Provide personal protective equipment (PPE) to laboratory staff free of charge.
- Contact USC’s Biosafety Officer with questions or concerns regarding biosafety.

Laboratory Staff

- Review applicable biosafety policies and procedures.
- Utilize appropriate work practices and personal protective equipment.
- Attend required biosafety training provided by EHS.
- Report any significant problems, regulatory violations, or any significant research-related accidents and illnesses to your supervisor.
Conduct annual inspections for laboratories working with biological materials.
Maintain a database for biosafety inspections, including PI name, list of biological materials used in each lab, and deficiencies noted during inspections.
Provide Biosafety and Bloodborne Pathogens Training.
Provide Shipping Biological Materials Training.
Pick up infectious waste for removal from campus by contracted firm.
Coordinate annual certification of all Class II biological safety cabinets.
Develop and implement biosafety policies and procedures.
Serve as a member of the Institutional Biosafety Committee (IBC).
Provide recommendations to lab personnel concerning containment principles, facility design, laboratory security, regulatory compliance, and work practices and procedures to prevent occupational infections or environmental contamination.
Facilitate compliance with university biosafety policies and procedures, and external biosafety guidelines and regulations.

Occupational Medicine

Provide laboratory personnel with medical surveillance and offer appropriate immunizations for agents handled or potentially present in the laboratory.
Establish institutional policies and procedures describing the collection and storage of serum samples from at-risk personnel.

For More Information

- Contact USC's Biosafety Officer (Mark Robbins) at 777-4042.
- Review the EHS Biosafety website online at http://ehs.sc.edu/BioSafety.htm