Temple University
Environmental Health and Radiation Safety

BIO SOP 2.4: BIOSAFETY LEVEL 2 (BSL2) PROCEDURES FOR TEACHING LABS

BSL2 Biological Agents:

_____

BSL2 Procedures:

_____

Teaching Laboratories Location (Buildings/Rooms):

_____

Preparation/Storage Laboratories Location (Buildings/Rooms):

_____

Course Instructor(s): _____

Course Director: _____

Laboratory Preparation Personnel:

_____

A. The course instructor is responsible for the training of all students in all aspects of this SOP 2.4.

B. General considerations:

1) Eating, drinking, chewing gum, applying cosmetics or lip balm, or manipulating contact lenses is absolutely prohibited in the laboratory. Avoid any hand to mucous membrane contact while in the laboratory.

2) Under no circumstances pipette by mouth.

3) Minimize the amount of personal items which are brought into the laboratory, to avoid possible contamination of these items.

4) All personal protective equipment (lab coat, gloves, and goggles) must be removed prior to exiting the laboratory. Dispose of as directed by the course instructor.

5) Wash hands well with soap and water prior to leaving the lab.

6) Immediately notify the course instructor of any potential personal contamination (including clothing) by the BSL2 agent or injury which may involve contact with the BSL2 agent.

C. Security

1. The course instructor must enforce the institutional policies that control access to the teaching laboratory performing BSL2 procedures.

2. Security includes but is not limited to:
    a. All laboratory and preparation room doors must be closed and locked when those rooms are not in use.
    b. Access to preparation/storage room(s) is limited to teaching or preparation personnel.
    c. Access to the laboratory should be limited to staff and registered students.
    d. All BSL2 agents and Biohazardous waste must be secured.

D. **Signage**

1. Post the specific BSL2 agent summary and biohazard signage on the door to the room when performing BSL2 procedures (contact EHRS at 2-2520 with any questions about it).

2. Post a biohazard symbol and agent's name on the incubators, refrigerators and -80C freezers where BSL2 agents are stored or administered. List Building(s) and Room(s): _____

3. Remove BSL2 agent summary and biosafety signage from the door to the room when the agent is no longer present in the room.

E. Safety Equipment

1. Biosafety Cabinet (BSC)

    1) Biosafety cabinets are required to be certified annually by a qualified, outside vendor to ensure continued, proper operation of the BSC.
    Location of BSC(s). Building(s)/Room(s): _____

    2) Biosafety cabinets which have exceeded the annual certification date should not be used until they have been recertified.

    3) Aspirator systems must consist of two traps containing bleach (10% of the trap total volume) and a Hydrophobic/HEPA filter, connected in series, to protect the house vacuum line system from potential contamination by BSL2 agent aspirant.

2. Used sharps (needles, syringes, pipette tips, serological or Pasteur pipettes, or any solid objects which have sharp edges or may produce sharp edges when broken, that are capable of puncturing a solid waste bag) must be carefully placed in conveniently located red, biohazard-labelled, leak proof, puncture-resistant sharps containers.

    Recapping used needles by hand is prohibited.

3. Autoclave

    1) Place a biological indicator (BI) inside the autoclave along with the materials to be autoclaved to ensuring the effectiveness of the autoclave cycles once every week or once every 40 hours of operations.

    2) Records of the autoclave BI testing must be readily available.

4. Emergency eyewash must be readily available.

    1) Check the eyewash station weekly. Facilities management checks the eyewash station annually. Records of the weekly check must be readily available.

    Location of eyewashes. Building(s) and Room(s) _____.

F. Working with BSL2 agents:

1) Handle BSL2 agents as directed by the course instructor.

2) Identify the location of laboratory safety equipment (e.g., eyewash stations) prior to commencing work in the lab.

3) Open plates, tubes or flasks containing BSL2 agents or manipulate BSL2 agents in a BSC, if so directed by the course instructor.

4) Avoid the generation of aerosols. Repeated pipetting and vortexing uncapped tubes may generate aerosols.

5) Use a secondary container (pan or tray) to transport multiple culture dishes, tubes or flasks.

6) Decontaminate or discard (in sharps or biohazardous waste, as appropriate) equipment or tools which has come into contact with the BSL2 agent.

7) Use a bench top incinerator, not an open flame, to sterilize inoculation loops between uses.

G. Personal Protective Equipment (PPE)

1. PPE

1) PPE for *in vitro* work in the laboratory are: lab coat or disposable gown, goggles or safety glasses, and gloves appropriate for working with BSL2 agents.

2) Dispose of gloves or any other solid, non-sharps waste that has been in contact with the BSL2 agent(s) in a red bag which is labelled with the universal biohazard symbol, and the certifications ATSM D 1922 and ATSM D 1709. This red bag should be contained within a biohazard symbol-labelled, puncture-proof, leak-proof receptacle, which has a self-closing lid.

Solid container required to have a lined red bag, a lid, and a biohazard symbol.

3) Method of glove removal to prevent the spread of potential contamination.

4) All students and instructors must wash their hands with soap and water, for at least 15 seconds, after work with BSL2 materials, glove removal and before leaving the laboratory.

H. Decontamination

1. A freshly prepared 10% bleach solution must be used to wipe down equipment and work surfaces for decontamination before and after performing BSL2 procedures. (Note: diluted bleach solution degrades with time and should be replaced every 24 hours, to be effective.)

2. Alternatively, an EPA approved disinfectant which is labelled to be effective against HIV, HBV, and HCV may be used.

I. Biological Waste Management

1. For teaching lab(s) (list buildings/rooms) _____, place all solid, non-sharp, potentially contaminated waste in a red biohazard bag, for removal and disposal by a certified vendor.

2. All sharps waste must be disposed of in a sharps container, for removal and disposal by a certified vendor.

3. Potentially infectious liquid waste must be chemically disinfected (10% bleach, final concentration; mix, allow 20 minutes contact time) prior to release to the sanitary sewage system.

J. Spill Management

1. Small Spill

    1) Notify the course instructor and all individuals in the area of the spill.

    2) Don appropriate PPE (lab coat or disposable gown, goggles, and gloves) prior to cleaning a small spill in the laboratory..

    3) Contain the small spill by covering with absorbent pads or paper towels.

    4) Disinfect the spill by treating it with 10% bleach and allowing 20 minutes wet contact time.

    5) DO NOT PICK UP ANY BROKEN GLASS, or sharp other objects by hand. Use forceps, tongs, or a brush/dust pan to pick up this material. (Dispose of as sharps waste.)

    6) Dispose all non-sharp solid wastes generated from spill in a red, biohazard bag.

    7) Carefully remove potentially contaminated protective clothing. Avoid contact with the contaminant by turning the PPE inside out in the process of removal.

    8) Place the contaminated PPE in a red biohazard bag.

9) Wash hands with soap and water, after removing the PPE.

2. Large Spill (any spill involving concentrated BSL2 agents, more than 100 ml of BSL2 agent container liquid, aerosol generated incident, and incident involving the centrifuge)

   1) Notify all individuals in the room to evacuate the area.

   2) Leave the room and notify the course instructor, course director and EHRS.

   3) Notify Housekeeping (on Main Campus, Ambler Campus) or Aramark (on Health Science Campus). They have been trained to clean large spills.

   4) Carefully remove potentially contaminated protective clothing. Avoid contact with the contaminant by turning the PPE inside out in the process of removal.

   5) Place the contaminated PPE in a red biohazard bag.

   6) Do not enter the room until the area has been cleared for entry by the EHRS.

K. Exposure Response

1. In the event exposure of the skin to a BSL2 agent, wash the exposed area with copious amounts of soap and water. Note: Skin contamination is only considered an exposure event if the skin area which has been contacted by the BSL2 agent has been compromised (e.g., a cut, rash, inflamed, needle stick or other parenteral contact), such that percutaneous entry is possible.
2. In the event exposure of eyes, nose, or mouth or mucous membranes to a BSL2 agent, flush the exposed area with copious amounts of lukewarm water.

3. Report the exposure to the teaching lab instructor.

4. Seek immediate medical evaluation if there is personnel exposure. Medical facility locations:

   1) **Main Campus**
   Employees: Employee Health Services, 1700 North Broad Street, fourth floor, M-F 8:30 am - 5:00 pm. Phone: 215-204-2679.

Students: Student Health Services, 1700 North Broad Street, fourth floor, M-F 8:00 am - 5:00 pm, Phone: 215-204-7500.

After hours: Emergency Department at Temple University Hospital, 3401 N. Broad Street, Philadelphia, PA 19140.

2) **Health Science Center**
Employees: Occupational Health Department at Temple Hospital, basement of Rock pavilion M-F, 8:00 am - 5:00 pm, Phone: 215-707-4455

Students: Student Health Services, Student Faculty Center, Lower Basement, Room 43, M-F, 8:30 am - 4:30 pm, Phone: 215-707-4088.

After hours: Emergency Department at Temple University Hospital, 3401 N. Broad Street, Philadelphia, PA 19140.

3) **Contact Campus Safety** (x1-1234; 215-204-1234) if you are unable to transport yourself to a medical facility or in the case of a serious incident.

5. The course instructor must contact EHRS as soon as possible (2-2520; 215-707-2520)

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L. **Log of SOP 2.4 training**

1) Enter the SOP 2.4 training date, for the laboratory students: _____

2) List and signatures of all students who have been instructed in this specific SOP #2.4:

Name (please print)	Signature	TUID Number	Department	Position / Title