1.0 Purpose

The purpose of this document is to enhance safety at California State University Fullerton (CSUF) by ensuring that everyone with potential exposure to infectious agents, human materials, human cell culture, recombinant materials, etc. at Biosafety Level 2 (BSL-2) is aware of the risks and the measures that are in place to protect them and avoid exposure to these materials.

2.0 Scope

This procedure applies to all individuals, including Principal Investigators (PIs), students, volunteers, laboratory technicians, visitors and anyone who handles infectious or potentially infectious materials at a Biosafety Level 2 (BSL-2). It covers engineering and work controls, personal protective equipment (PPE), and facility requirements for handling these types of materials.

3.0 Definitions

- Biosafety Level - Designation which describes laboratory practices and techniques, safety equipment and laboratory facilities appropriate for the materials in use and the operations performed.

- Biosafety Level 1 (BSL-1) - A laboratory level suitable for work involving well-characterized agents not known to consistently cause disease in immunocompetent adult humans. These agents present minimal potential hazard to laboratory personnel and the environment.

- Biosafety Level 2 (BSL-2) - A laboratory level suitable for work involving agents of moderate potential hazard to personnel and the environment. It includes various bacteria and viruses that cause disease in humans for which there is often a vaccine or treatment available. Agents handled at BSL-2 often cause common childhood diseases, and are not usually spread via the airborne route in a lab setting, such as *C. difficile*, *Staph aureus*, Salmonella, etc. Potential biohazards and Other Potentially Infectious Materials (OPIM) are also handled at BSL-2. Materials handled at BSL-2 are generally safe to work with if using standard microbiological practices, such as hand washing, wearing gloves, preventing aerosols, etc.

- Biohazard – A biological agent or substance that can cause disease in humans or animals. These include, but are not limited to, infectious organisms (viruses, bacteria, fungi) and parasitic agents, biological toxins, infected animals, infectious clinical specimens, and/or equipment contaminated with infectious agents. A biohazard may be handled at BSL-2, 3, or 4, depending on the severity of the disease it causes, how it is transmitted, the quantities being handled, and the types of operations to be performed.

- Bloodborne Pathogens - Pathogenic microorganisms that may be present in human blood and can cause disease in humans. These pathogens include, but are not limited to, hepatitis B virus (HBV), hepatitis C virus (HCV) and human immunodeficiency virus (HIV).

- BSL-2 Biohazard Signage - Includes the international biohazard symbol, the word "Biohazard" and shall be fluorescent orange-red or predominantly so, with lettering and symbols in a contrasting color, and include a list of the materials in use, contact information, and any special entry requirements or warnings.

- Engineering Controls - Includes devices/equipment (e.g., biosafety cabinet (BSC), sharps containers) that contain or minimize the biological hazards in the workplace.

- Human cell lines – Immortalized cells propagated in vitro from primary explants of human tissue or body fluid. ATCC and OSHA recommend working with human cell lines as if potentially infectious (i.e., at BSL-2) because they cannot be tested for contamination with every potential pathogen and because they may become cross contaminated with potentially infectious materials when handling in the laboratory.

- Non-hazardous material - Generally includes animal specimens and animal cell culture lines (hamster, mouse, etc.) unless these are known to be infected with a pathogen or have been altered through the use of recombinant or synthetic DNA.

- Other Potentially Infectious Materials (OPIM) - (1) The following human body fluids: semen, vaginal secretions, cerebrospinal fluid, synovial fluid, pleural fluid, pericardial fluid, peritoneal fluid, amniotic fluid, saliva in dental procedures, any body fluid that is visibly contaminated with blood, and all body fluids in situations where it is difficult or impossible to differentiate between body fluids; (2) Any unfixed tissue or organ (other than intact skin) from a human (living or dead); and (3) HIV-containing cell or tissue cultures, organ cultures, and HIV- or HBV-containing culture medium or other solutions; and blood, organs, or other tissues from experimental animals infected with HIV or HBV.

- Pathogen - For shipping purposes, microorganisms (including bacteria, viruses, parasites, fungi) and other agents such as prions, which can cause disease in humans or animals.

- Reasonably Expected to Contain a Pathogen - For shipping purposes, this refers to a material that has been tested and found to be or contain a pathogen, or that has been taken from a patient known to be infected with a pathogen.

- Universal Precautions - Refers to the basic biosafety practices for handling all blood, body fluids and cell lines from humans or non-human primates as potentially infectious.

4.0 Responsibilities

- Employees, visitors, students, volunteers and contract workers who work with biohazardous or potentially biohazardous materials are responsible for compliance with this procedure.

- Personnel in supervisory or management positions (e.g., PIs, Lab Managers or other managers) are responsible for ensuring that employees, students and/or visitors are adequately trained to perform their duties safely in keeping with this procedure.

- The Biosafety Officer (BSO) is responsible for coordinating technical support for the implementation of this procedure and updating this procedure as needed.

5.0 Procedure

5.1 Facility requirements for BSL-2 areas

- The laboratory is designed so that it can be easily cleaned. Carpeting and rugs are not allowed in the facility. Chairs and other furniture must be covered with a non-porous material that can be easily cleaned and decontaminated with a disinfectant.

- Laboratory doors should be self-closing and have locks.

- Work surfaces should be impervious to water and resistant to acids, alkalis, organic solvents and moderate heat.

- The laboratory/production area should be kept neat, clean and free of materials not pertinent to the work.

- Each laboratory must contain a sink for hand washing and an eyewash station. Sinks may be manually, hands-free, or automatically operated. It should be located near the exit door if possible. If a sink with running water is not immediately available, waterless hand sanitizer must be provided. Employees must then be instructed to wash hands with soap and water as soon as possible.

- Furniture must be sturdy and placed so that spaces between furniture and equipment are accessible for cleaning.

- A method for decontamination of infectious materials is available.

- Windows that can be opened must be fitted with a fly screen.

- When working with biohazardous materials, Biological Safety Cabinets (BSCs) should be provided for containment of aerosol generating procedures. Personnel are trained on the proper use of the BSC with more information provided in the SOP *Working Safely in a BSC for BSL-2*.

- An insect and rodent control program is in effect.

5.2 Procedural Requirements

- Access to the laboratory is limited to trained or escorted personnel. At BSL-2, persons at increased risk of infection or for whom infection may be unusually hazardous should be aware of the hazards present (via training and/or door signage).

- The entrance to the laboratory must be identified with the appropriate biohazard signage, which lists the biohazardous materials in use and the names and phone number(s) of personnel to contact in case of an emergency, and any special entry requirements.

- At BSL-2, doors must be closed when work with biohazardous material is in progress.

- The laboratory supervisor must ensure that laboratory personnel demonstrate proficiency in standard and special microbiological practices before working with BSL-2 agents.

- The laboratory supervisor must ensure that laboratory personnel receive appropriate training regarding their duties, the necessary precautions to prevent exposures, and exposure evaluation procedures. Personnel must receive annual updates if working with human-sourced materials (Bloodborne Pathogen Training) or additional training when procedural or policy changes occur. See CSUF's EHS website Biosafety Program page at ehs.fullerton.edu for additional information.

- Laboratory personnel must be provided medical surveillance, as appropriate, and offered available immunizations for agents handled or potentially present in the laboratory.

- Personnel who work with human sourced materials or human cell lines should be aware of the HBV vaccination program and who to contact regarding any health issues.

- Personal health status may impact an individual's susceptibility to infection, ability to receive immunizations or prophylactic interventions. Therefore, all laboratory personnel and particularly women of childbearing age should be provided with information regarding immune competence and conditions that may predispose them to infection. Individuals having these conditions (e.g., pregnancy, immune suppression, taking immune suppressing drugs) are encouraged to voluntarily self-identify to the institution's occupational healthcare provider or Student Health and Counseling Center for appropriate counseling and guidance.

- A laboratory-specific biosafety manual must be prepared and adopted as policy for the lab. The biosafety manual must be available and accessible. This manual will contain standard operational procedures as well as equipment-specific and laboratory-specific procedures.

- Laboratory coats or gowns must be worn over street clothes when working with biohazardous/potentially biohazardous materials or in the same area where these materials are handled.
  - The lab coats should not be worn outside of the laboratory, i.e., they shall be removed before entering offices, conference rooms, break rooms, restrooms, etc. Protective lab clothing that has been used in the lab must not be stored in contact with street clothing and must not be taken home for laundering.
  - If a cloth lab coat laundering system is not in place, disposable lab coats will be used. All lab coats should be changed on a regular basis.
  - Soiled lab coats will be collected near where they were used and placed in bags/containers marked "SOILED LAUNDRY, USE UNIVERSAL PRECAUTIONS" or other similar signage that alerts others to the precautions to be taken. Laundry will not be handled or sorted at the location of use.
  - If potentially infectious material is spilled on a cloth reusable coat, it should immediately be removed and treated with a disinfectant, e.g., apply an approved disinfectant for a minimum of 10 minutes, then rinse the coat with water and place it in the soiled laundry bin. Contaminated disposable lab coats must be carefully removed, so as not to contaminate the user, and placed in the solid biohazard waste bin.

- Waterproof gloves must be worn for all procedures that involve contact with potentially infectious material, or surfaces or equipment that may be contaminated with these materials. It is advisable to double glove when working in some situations (e.g., inside the BSC with potentially infectious material).
  - Gloves must be changed immediately if contaminated or damaged.
  - After use, gloves should be removed using a technique to prevent hand contamination.
  - Disposable gloves may not be washed or reused.
  - Alternatives to latex gloves are provided; hypoallergenic gloves, glove liners, and powder-free gloves are available for those with allergies. Various sizes of gloves are provided in the work area.
  - If a rash or reactions develops after wearing gloves, switch to a different brand or type of gloves. If the rash persists, notify your lab supervisor immediately.

- Safety glasses should be worn whenever an employee is handling potentially infectious materials or chemicals, including while working in the BSC. Full face shields or goggles and mucous membrane protection, e.g., a molded face mask or equivalent, must be worn when performing procedures that may involve splashing, spraying, spattering, or generation of droplets. Employees wearing contact lenses may have additional risk from exposure to chemicals (e.g., strong acids) and should consider wearing goggles for certain tasks.

- Open-toed footwear or sling-back or open-back shoes must not be worn in laboratories. Closed heel toe and closed-toed footwear is recommended. Flip-flops are strictly prohibited.

- Persons must wash their hands after handling potentially infectious materials, immediately after removing gloves, and when leaving the work area. If a sink with running water is not immediately available in a work area, a waterless hand sanitizer must be provided for personnel. Lab personnel must then be instructed to wash their hands with soap and water as soon as possible.

- Mouth pipetting is prohibited; mechanical devices must be used.

- Eating, drinking, storing food, smoking, and applying cosmetics or lip balm, or handling contact lenses are not allowed in the laboratory or adjacent desk area. Food may be stored in cabinets or refrigerators designated solely for this purpose outside of the work area. Laboratory materials/equipment must not be placed in the mouth.

- Written documents that are expected to be removed from the work area need to be protected from contamination while in the lab, e.g., while in use, documents are kept on a separate clean work surface, documents are kept in a plastic document holder, etc.

- All procedures must be performed carefully to minimize the creation of aerosols. Aerosol generating procedures (e.g., blending, sonicating, vortexing, etc.) must be performed in a BSC or other containment device.
  - Additional personal protective equipment, which may include a shield or goggles and mucous membrane protection, e.g., a molded face mask or equivalent, may also be used for procedures that do not fit into a BSC or other containment device.

- Sharps should be eliminated when possible; when not feasible to eliminate a sharp, a safe sharp should be substituted (e.g., disposable scalpel, retractable scalpel for razor blade, etc.).
  - Needles/ syringes or other sharps should only be used where no alternatives are available. Sharps with engineered sharps injury protection must be evaluated and substituted where possible. This evaluation should be conducted annually and be documented. In situations where sharps must continue to be used, additional personal protective equipment and/or work practices should be specified. Input shall be solicited from all users in the selection of safer devices and work practices.

- The use of syringes with hypodermic needles attached should be limited to phlebotomy, piercing a septum or animal work. Where used, only sharps with engineered sharps injury protection (e.g., safe syringes, safe needles) should be used and they should be luer-lock or one-piece disposable needle-syringe units. Needles must not be bent, sheared, or recapped. They should be disposed of in a puncture resistant container readily accessible to the work area immediately following use. These sharps containers are never overfilled; they are used in the upright position and closed and sealed when the contents near the "full" line on the container.

- Plasticware should be substituted for glass wherever possible, e.g., blood tubes, capillary tubes, Pasteur pipets, pipets, centrifuge tubes, etc. especially when using with human tissue culture or infectious materials. Use mechanical means (forceps, dustpan and brush, cardboard "shovel") to remove broken contaminated glassware and dispose of into a puncture resistant container. Never handle broken glass with the hands, even if wearing gloves.

- Animal and plants not associated with the work being performed are not permitted in the laboratory.

- When centrifuges are used for processing potentially infectious or potentially infectious materials, they must have sealed heads or be used with safety cups if the unit is not enclosed in a containment device. If possible, cups/rotors are loaded/unloaded inside the BSC in case of leakage.

- When a vacuum is used, the lines must be protected with a liquid disinfectant trap and an in-line HEPA. (See Appendix B of this document).

- All potentially biohazardous waste must be disposed of in accordance with local, state and federal regulations. Where waste needs to be transported for treatment, it must be appropriately packaged and labeled. Consult Appendix A of this document for additional information on disposal of laboratory waste.
  - Solid Waste - Generally, contaminated solid waste is any waste that has been in contact with biohazardous or potentially biohazardous material. This includes, but is not limited to, the following: vials, centrifuge tubes, gloves, paper towels, spill cleanup materials, disposable lab coats, etc. Consult Appendix A of this document for waste disposal procedures.
    i. Pipets and tips should not be placed in the regular trash as they may puncture the bag – these may need to be placed in a lined box or "Broken Glass" bin. Tips can be collected in a plastic bottle. Contaminated pipets and tips should be either collected in a pipet keeper box or a plastic bottle (with a biohazard label) and then placed in the biohazard waste so as to prevent puncturing the biohazard liner bag. Pipets and tips used for water, media and other non-hazardous materials can be discarded into a "Broken Glass" bin in the lab.

ii. For disposal of solid biohazard waste, see the *CSUF's Autoclave SOP* and *BSL-2 Waste Disposal SOP*.

- Sharps
  i. Because of the hazard posed by contaminated sharps, broken glass, Pasteur pipettes, needles, etc., these materials must be placed in a puncture-resistant, leak-proof container. The puncture-resistant container must be marked with a biohazard symbol and the word "Biohazard". The container should be readily accessible to the user, kept in the upright position, and replaced when full (as indicated by the container labeling).

- Liquids

  i. Small quantities of liquid (such as those in a vial or tube) can usually be safely placed in the biohazard solid waste bag. Large quantities of liquid should NEVER be poured into a biohazard collection box, due to the risk of leakage. Larger quantities of potentially infectious liquid can be treated with a liquid disinfectant. During collection, the liquid waste collection container must be labeled with the biohazard symbol and the word "Biohazard". Sufficient absorbent material should be placed around the container to absorb liquid in the event of accidental release during transport.

  ii. Bulk liquids can also be decontaminated with bleach or Wescodyne (see *Selection and Use of Disinfectants SOP*).

- Containers of infectious material must be appropriately labeled with a biohazard label containing the international biohazard symbol, the word "Biohazard", with lettering and symbols in a contrasting color:
  - Where not possible to label each container, the units must be placed in a marked carrier.
  - Refrigerators, liquid nitrogen tanks or freezers used to store these materials must be marked with a biohazard label. Incubators used with potentially biohazardous materials (e.g., human tissue culture), must be labeled with a biohazard label.
  - Containers of material being transported from one lab to another must be placed in a sealed bag, covered carrier, or other suitable secondary container.

- Clean and disinfect work surfaces at least once a day, and after any spill, using an appropriate disinfectant. See *Selection and Use of Disinfectants SOP* for a list of disinfectants. Covers or drapes used on work surfaces must be disposed of after use.

- All cuts or abrasions on potentially exposed skin, especially hands and forearms, must be covered with an occlusive, i.e., waterproof bandage. Skin conditions like dermatitis, psoriasis, etc., need to be similarly protected. If it is not feasible to protect the affected area, the individual should notify their supervisor prior to proceeding.

- All contaminated instruments and equipment must be decontaminated prior to servicing, disposal, or shipping. Follow the manufacturers' directions if available. If not, the unit should be emptied of all potentially infectious materials. The unit should be wiped down with a detergent solution followed by a wipe down with an approved disinfectant. Label decontaminated equipment with an Equipment Decontamination Form (see Appendix C of this document) or other appropriate marking system. Note any areas of the equipment that could not be decontaminated. For biosafety cabinet decontamination procedures, refer to *Working Safely in a BSC for BSL-2 SOP*.

- Contaminated reusables (e.g., glassware, plastic ware, stainless steel, etc.) should be rinsed with an appropriate disinfectant after use and before washing.

- Spills and accidents which result in overt or potential exposure to potentially infectious agents must be reported to the supervisor and safety representative; the exposed individual should seek medical care as soon as possible, as some post-exposure prophylactic treatments are more effective when implemented promptly. The incident must be documented on an EHS *Exposure Incident Report Form.* Incidents involving human sourced materials/human tissue culture and a sharp will be documented on the *Sharps Injury Log and Supplemental Information to Exposure Incident Reporting Form.*

5.3 General Spill Cleanup Procedure

- Spills of infectious/potentially infectious materials must be cleaned up by the laboratory users, who are trained in the process. Spill cleanup materials, such as disinfectant, an aqueous detergent, paper towels, etc. should be available in the laboratory. Consult *Selection and Use of Disinfectants SOP* for a list of detergents and disinfectants.
  - For small spills, wipe the area with a paper towel—discard into the biohazard waste container. Wipe the area again with an aqueous detergent, followed by wiping with a disinfectant.
  - If the disinfectant contains detergent (e.g., Cavicide) the same product can be used for pre-cleaning and disinfecting.
  - Discard all materials into the biowaste container.
  - If the spill is large, avoid contaminating surrounding areas by decontaminating or removing contaminated shoes or clothing as soon as is feasible.
  - If an individual has any exposed skin or mucous membrane contact with the potentially biohazardous material, wash or rinse the affected area immediately and seek medical attention. Alert others about the spill to arrange for cleanup.
  - Change gloves/lab coat if contaminated: don gloves, safety glasses and a lab coat if not already wearing them.
  - Carefully soak up the bulk of the liquid with absorbent material (paper towels, absorbent pads, etc.). Since most disinfectants are less effective in the presence of organic materials, e.g., media with serum, the bulk of the spill should be absorbed prior to disinfection.
  - Dispose of all contaminated materials in a biowaste bag.

- Clean the spill of all visible material using an aqueous detergent such as Alconox, 7X, Vesphene, Cavicide, dish detergent, etc. If the disinfectant contains detergent (e.g., Cavicide) the same product can be used for pre-cleaning and disinfecting.
- To disinfect, wipe the spill site using an approved disinfectant, such as 0.1% sodium hypochlorite, Cavicide, etc.
- Clean and disinfect any furniture or equipment that may have been contaminated in the spill.

5.4 Large spills of ~500 ml or more of biohazardous or other potentially infectious materials

- Avert your face and move away from the area to avoid breathing any aerosols that may have been generated by the spill. In dealing with large spills of potentially infectious material, contain the spread of the spill with absorbent diking material, if possible.
- If an individual has any exposed skin or mucous membrane contact with the material, they must immediately wash or rinse the affected area and seek medical attention as soon as possible. They should alert others about the spill so that appropriate isolation of the area and cleanup procedure can be followed.
- If the spill occurred in a laboratory, leave the room and evacuate other personnel. Post signs if necessary. If the spill occurred in an open area or in a corridor, evacuate the personnel in the immediate area and block off the area to prevent others from entering until the cleanup is complete.
- Wait approximately 30 minutes for aerosols to dissipate before returning to spill area to initiate cleanup.
- Wear a mask, lab coat, goggles, and waterproof gloves for cleanup. If there is a potential for contaminating the shoes, rubber or waterproof protective shoe coverings should be worn.
- Carefully pour undiluted chlorine bleach around the perimeter of the spill, allowing it to flow into the middle of the spill. If the spill is very large, use a long-handled squeegee or similar item to carefully push the disinfectant to the center of the area. Allow at least 20 minutes of contact time.
- Carefully soak up the bulk of the liquid with absorbent material (paper towels, absorbent pads, etc.). Since most disinfectants are less effective in the presence of organic materials, e.g., media with serum, the bulk of the spill should be absorbed prior to disinfection.
- Dispose of all contaminated materials in a biowaste bag.
- Clean the spill of all visible material using an aqueous detergent such as Alconox, 7X, Vesphene, Cavicide, etc. If the disinfectant contains detergent (e.g., Cavicide) the same product can be used for pre-cleaning and disinfecting.
- To disinfect, wipe the spill site using an approved disinfectant, such as 0.1% sodium hypochlorite, Cavicide, etc.
- Clean and disinfect any furniture or equipment that may have been contaminated in the spill.
- **Report all large spills to the BSO at x7233 or safety@fullerton.edu.**

5.5 Spills involving sharps or concentrated infectious materials

- Avert your face and move away from the area to avoid breathing any aerosols that may have been generated by the spill. Avoid contaminating surrounding areas by decontaminating or removing contaminated shoes or clothing as soon as is feasible.
- Disinfect the spill first by covering the spill with paper towels or other absorbent material, and then carefully saturate the area with a 10% or stronger bleach solution or other appropriate approved liquid disinfectant (Cavicide, etc.).
- Allow the disinfectant at least 20 minutes of contact time on the spill.
- Use tongs, forceps cardboard "pushers" or some other mechanical means to remove sharps and place in a biohazard sharps container. DO NOT USE HANDS.
- Carefully soak up the bulk of the liquid with absorbent material (paper towels, absorbent granular material or silica gel). Care should be taken when soaking up the liquid, since glass shards may still be present. Since most disinfectants are less effective in the presence of organic materials, e.g., broth, etc., the bulk of the spill should be absorbed prior to disinfection.
- Dispose of all contaminated materials in a biowaste bag.
- Clean the spill of all visible material using an aqueous detergent such as Alconox, 7X, Vesphene, dish detergent, etc.
- To disinfect, wipe the spill site using an approved disinfectant, such as 0.1% sodium hypochlorite, Cavicide, etc. For a complete list of approved disinfectants, see the *Selection and Use of Disinfectants SOP*.
- Clean and disinfect any furniture or equipment that may have been contaminated in the spill.

5.5 First Aid for Accidental Exposures

- Persons exposed to biohazardous or potentially biohazardous materials must take steps immediately to cleanse the affected area. Stop working and remove PPE if contaminated. If an aerosol exposure is suspected, leave the area immediately and evacuate the area. Post signs to prevent entry.
  - Eyes – rinse with water for 15 minutes.
  - Mouth – rinse with copious amounts water.
  - Skin – wash the affected area with soap and water.
  - Puncture wound – allow to bleed freely. Wash the affected area with soap and water.

- Once the above first aid is administered, Notify the PI/laboratory supervisor and report to:
  - List name and location of offsite medical provider, emergency room, transport company, etc.

- The lab supervisor is responsible for ensuring the appropriate injury/illness report located at CSUF's EHS website is completed and forwarded to EHS, Total Wellness and/or Risk Management.

5.6 Shipment of Potentially Biohazardous Materials

- All materials known or reasonably expected to contain pathogens must be packaged, labeled, and shipped in accordance with the applicable regulations regarding the transportation of infectious substances. "Reasonably expected" means that the material has been tested and found to be or contain a pathogen, or that has been taken from a patient known to be infected with a pathogen. Pathogens are defined as microorganisms (including bacteria, viruses, rickettsia, parasites, fungi) and other agents such as prions, which can cause disease in humans or animals.

- All infectious or potentially infectious materials that are to be air shipped or transported over public highways must also be packaged in accordance with the applicable regulations.

- NOTE: Anyone involved in the shipment (packaging, labeling, manifesting, etc.) of biohazardous materials or non-infectious materials shipped with dry ice must be trained in hazardous material shipping procedures, and this training must reoccur every 2 years, or more frequently if the regulations change.

6.0 References

- Cal OSHA Bloodborne Pathogens, California Code of Regulations, Title 8, Section 5193: https://www.dir.ca.gov/title8/5193.html

- Biosafety in Microbiological and Biomedical Laboratories, CDC-NIH, 6th edition: https://www.cdc.gov/labs/bmbl/index.html

- WHO Laboratory Biosafety Manual, Third edition: https://www.who.int/publications/i/item/9241546506

- *Autoclave SOP*,

- *Selection and Use of Disinfectants SOP*,

- *Working Safely in a Biosafety Cabinet for BSL-2*

7.0 Appendices

- Appendix A - DEHS Waste Disposal Guide for Research Labs

- Appendix B - Protection of Vacuum Lines in Laboratories

- Appendix C - Equipment Decontamination Form

Responsible Executive: Vice President for Administration and Finance
Responsible Office: Environmental Health and Safety
Originally Issued: 02/2021
Revised: 08/2025

APPENDIX A

Waste Disposal Guide for Labs

Waste Type: **SHARPS**
Includes: Contaminated needles, scalpel blades, glass slides, pipette tips, and broken glass
Disposal Container: Sharps waste must be placed in a puncture-resistant container with a universal biohazard symbol. Full containers must be securely closed before transport to the Dan Black Hall (DBH) loading dock biohazard waste bin by laboratory staff.

Waste Type: **BIOHAZARD BIOLOGICAL WASTE**
Contents: Infectious microorganisms or OPIM, recombinant DNA, human cell lines, and/or other biohazardous materials.
Disposal Container: This type of waste is disposed off-site by contracted vendor. Labs must use red biohazard bags.
Transported to the Dan Black Hall (DBH) loading dock biohazard waste bin by laboratory staff.

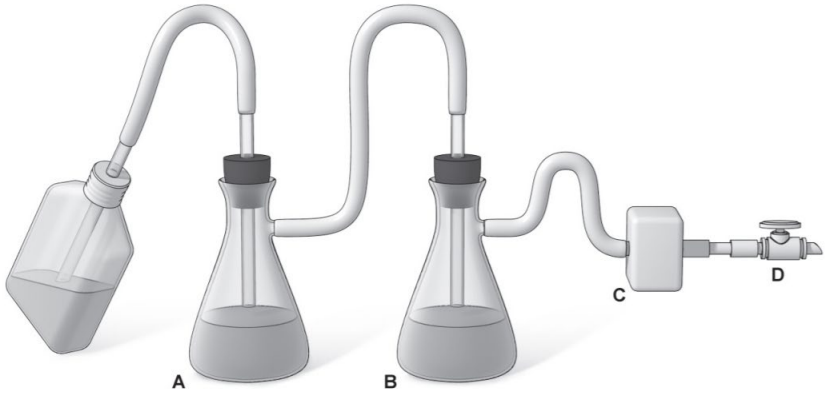
Waste Type: **BIOHAZARD CONTAMINATED PIPETTES AND PIPETTE TIPS**
Contents: Biohazard contaminated serological pipettes and pipette tips
Disposal Container: This type of waste is treated off-site by a contracted vendor. To avoid puncture to primary red bag, items should be placed in a pipet keeper or plastic bag-lined cardboard box, then placed within red bagged lined biohazard waste container. Tips can be collected in a biohazard labeled plastic bottle and the bottle discarded into the biohazard bag.
Transported to the Dan Black Hall (DBH) loading dock biohazard waste bin by laboratory staff.

Waste Type: **UNCONTAMINATED PIPETTES AND PIPETTE TIPS**
Contents: Chemically inactivated by disinfectant and/or **u**ncontaminated serological pipettes and pipette tips.
Disposal Container: This type of waste is managed as non-hazardous trash that can cause problems by puncturing regular trash bags. Discard into a sturdy cardboard box lined with **non-red** colored trash bag. If box is not pre-marked to indicate broken glass, mark box to convey hazard i.e. “Caution Broken Glass”. A “Broken Glass” bin can also be used for disposal. Pipet tips can be discarded into a non-labeled plastic bottle and placed in the regular trash.
Collected by: EHS

APPENDIX B
PROTECTION OF VACUUM LINES FROM BIOHAZARDOUS MATERIAL

Whenever house vacuum or portable vacuum pumps are used with an infectious agent or human-sourced material, the vacuum line must be protected with a disinfectant trap and in-line filter. The configuration will include, working out from the vacuum nozzle, an in-line filter, a disinfectant trap and a collection flask.

If the collected material is to be discarded, the collection vessel (A) should contain the required amount of disinfectant. This is sufficient volume to achieve a final concentration (if the vessel were full) of 10% bleach. Waste treatment time prior to sewering for liquid waste is a minimum of 20 minutes. If the collected material is to be preserved, the collection vessel (A) should be empty, but watched closely so that the vessel does not spill over into the disinfectant trap (B).



The disinfectant trap (B) should be an Erlenmeyer flask with a stopper having plastic tubing extending approximately halfway into the disinfectant solution. A 1-3 L Erlenmeyer flask filled approximately 1/10 - 1/4 full of disinfectant is recommended. Flasks should be plastic, plastic-coated glass or glass covered with safety netting or tape.

The disinfectant solution should be changed at least weekly or whenever the liquid level in the flask approaches the side-arm. If the solution evaporates to below the level of the tubing or becomes contaminated by an overflow of waste, it must be changed at once.

The final in-line filter (C) should be a high efficiency particulate air (HEPA) filter or a filter of equivalent or superior efficiency suitable for use in vacuum lines (e.g., Pall Vacushield™ Vent Device). The filter should be changed every six months or sooner if there is any indication of back-up or overflow.

Drawing: *Office of Health and Safety, Centers for Disease Control and Prevention, 1600 Clifton Road N.E., Mail Stop F05 Atlanta, Georgia 30333, USA Last Modified: 1/2/97*

APPENDIX C
Equipment Decontamination Form

CSUF | Environmental Health and Safety
ADMINISTRATION AND FINANCE

Equipment Decontamination Form

Property Tag #:_____
Building: _____ Room Number(s): _____ Dept:_____
Principal Investigator: _____ Office/Lab Ext: _____
Equipment Name: _____
Model: _____ Serial #: _____

I certify that the lab equipment mentioned above has been cleaned and decontaminated of all asbestos / chemical / biological / radioactive contaminants.
(Circle all that apply)

_____ _____
Principal Investigator's Signature (if available) Date

_____ _____ _____
EHS Staff (Signature) EHS Staff (Printed Name) Date

Additional Notes:

W:\EHS\General\6. Environment\Hazardous Materials Management\Equipment Decontamination Form