

# BSL2 Exposure Control Plan: Human or Non Human Primate Materials

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## A. Hazards

Human blood or other primate cells and tissue have the potential to harbor infectious agents and other Bloodborne pathogens such as Hepatitis B Virus (HBV), Hepatitis C Virus (HCV), and Human Immunodeficiency Virus (HIV). Such materials may become infected either before/during harvest or in subsequent passages/manipulations or act as reservoirs for virus, bacteria, or fungi capable of infecting lab personnel. Consequently, these materials should be afforded the same amount of caution as materials known to be infectious (Universal Precautions).

Additional hazards exist for:

- a) Cell lines which have been transformed with viral agents, such as SV-40 and EBV;
- b) Primate-derived materials from rhesus macaque, which may be infected with herpesvirus simiae (Herpes B virus);
- c) Work with autologous (your own) cells, as they could evade normal immune defenses if reintroduced via an exposure incident;
- d) Human tumor cell lines, which may be tumorigenic as a result of self-inoculation.

According to CDC Guidelines, Biosafety Level 2 containment is appropriate for handling human or other primate cells and tissues.

## B. Modes of Transmission

The likely modes of transmission in the laboratory include mucosal membrane exposure (eyes, nose, mouth), parenteral inoculation by needle or broken glass, and ingestion of liquid suspension or contaminated hand to mouth exposure.

## C. Engineering Controls

1. A certified Biosafety Cabinet must be used for all manipulations of the agent that may create aerosol or splashing (i.e., pipetting, harvesting, filling tubes/containers, opening sealed centrifuge tubes/rotors, shaking, mixing, etc.) and for handling infected cells.
2. Safety Engineered Sharps, such as those with retracting needles, shall be used for injections. In addition, the use of other sharps (i.e., glass Pasteur pipettes) must be eliminated wherever possible.
3. For animal injections, the animal must be mechanically restrained or anesthetized.
4. Biohazard Sharps Containers shall be available to dispose of sharps waste, including broken glass, needles, blades, etc.
5. When centrifuging, use aerosol containment devices such as safety cups that fit in the centrifuge bucket, covers for the centrifuge bucket, heat sealed tubes, or sealed centrifuge rotors. Rotors should be removed and opened inside a BSC. Centrifuge tubes should be filled and opened in BSC.
6. An in-line HEPA filter must be used for vacuum aspiration of spent media.

## D. Administrative and Work Practice Controls

1. All lab personnel must complete initial Bloodborne Pathogens (BBP) Training through the Safety Office. Refresher training is required annually and may be conducted by the PI:  
<https://ehs.usc.edu/training/catalog/>
2. All employees with potential for exposure must be offered the Hepatitis B vaccine. The vaccine is offered during classroom training for Bloodborne pathogens.
3. Access to the lab shall be restricted while work is in progress, doors shall remain closed during experimentation
4. A sign incorporating the universal biohazard symbol shall be posted at the entrance of the laboratory or tissue culture room where agent is used (see last page, Biohazard Precautions signage)
5. All lab personnel must be informed of the hazards of agent
6. All lab personnel must be trained in proper handling, use, and disposal prior to working with agent
7. All lab personnel are advised to avoid rubbing eyes as a precautionary measure against eye infections
8. All lab personnel will remove lab coat, discard gloves, and wash hands before exiting the lab

## E. Personal Protective Equipment (PPE)

1. **Lab coat** shall be worn while working in the lab
2. **Safety glasses or goggles** shall be worn when handling lentiviral vectors
3. **Gloves** shall be worn while working in the lab
4. **No aerosol-producing procedures shall be performed outside of a biosafety cabinet.** If respirators are required for aerosol-producing procedures performed outside of a biosafety cabinet, personnel must contact the EH&S office at (323) 442-2200 for enrollment in the USC EH&S Respiratory Protection program and fit-testing prior to use of respirators.

## F. Disinfection

For general surface disinfection, use freshly prepared 10% bleach (1:10 dilution household bleach, such as clorox) and allow a contact time of 15 minutes. For stainless steel surfaces, follow bleach disinfection with 70% ethanol wipedown to avoid corrosion.

Liquid waste may be treated by exposing to bleach (final volume 10%) for 15 minutes before disposing into sink.

## G. Disposal

Solid biohazardous waste, such as culture vials, plates, plastic tubes, etc., are disposed of into biohazard waste bins lined with red bags for pickup by EH&S. Biohazard bins are labeled with biohazard stickers, and lids are to remain secured when not in use.

Sharps waste, such as broken glass, pasteur pipets, razor blades, and needles, are disposed of into biohazard sharps containers. When the fill line on the sharps container is reached, the lid will be secured and the container placed next to the biohazard bin for pickup by EH&S. To request a pickup, contact EH&S (HSC and UPC, 323-442-2200).

## H. Accidental Spill

**In case of spill inside of biosafety cabinet:**

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1. Lower sash and let biosafety cabinet continue to run (at least 5 minutes) in order to contain aerosols
2. Immediately notify others around you
3. Contaminated personal protective equipment(PPE), such as gloves, labcoat, and safety glasses, should be removed and disposed of as biohazardous waste or set aside for disinfection
4. For exposures/contamination, see "Personnel Contamination/Exposure Response" guidelines below
5. Don appropriate PPE if not already wearing
6. Use forceps to remove any broken glass or other sharp items; sharps should be placed into biohazard sharps containers
7. Cover the spill with paper towels or other absorbent materials
8. Apply 10% bleach directly around and onto the paper towels covering the spill
9. Allow 15 minute contact time before cleaning, starting at the perimeter and working inwards towards the center
10. Dispose of materials into biohazard bins
11. Disinfect all surfaces of the biosafety cabinet with freshly prepared 10% bleach with a 15 minute contact time, followed by a wipedown with 70% ethanol to reduce corrosion
12. Allow biosafety cabinet to run for at least 10 minutes before resuming work or turning off
13. For large spills, you may contact the EH&S office for assistance at (323)442-2200

## In case of spill in lab (outside of biosafety cabinet):

1. Immediately notify others around you
2. Contaminated personal protective equipment(PPE), such as gloves, labcoat, and safety glasses, should be removed and disposed of as biohazardous waste or set aside for disinfection
3. For exposures/contamination, see "Exposure Response" guidelines below
4. Use forceps to remove any broken glass or other sharp items; sharps should be placed into biohazard sharps containers
5. Cover the spill with paper towels or other absorbent materials
6. Apply 10% bleach directly around and onto the paper towels covering the spill
7. Allow 15 minute contact time before cleaning, starting at the perimeter and working inwards towards the center
8. Dispose of materials into biohazard bins
9. For large spills, you may contact the EH&S office for assistance at (323)442-2200

## I. Exposure Response

In the event of an exposure, take the following precautions:

1. Remove any contaminated clothing
2. Wash all affected areas; for eye exposures, rinse for 15 minutes in eyewash or flush area with water, for needle-stick or other sharps exposure, wash wound area with soap and water for 15 minutes
3. Report the exposure to your supervisor immediately
4. For **students**, seek treatment at one of the following locations:

### Health Science Campus (HSC):

Eric Cohen Student Health Center  
Healthcare Consultation Center (HCC 1)  
1510 San Pablo St., Suite 104  
(323) 442-5631

### University Park Campus (UPC):

University Park Health Center  
1031 W. 34<sup>th</sup> St.  
Los Angeles, CA, 90089-0311  
(213) 740-8742

5. For **employees**, seek treatment at one of the following locations:

### Health Science Campus (HSC):

### University Park Campus (UPC):

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Internal Medicine  
Healthcare Consultation Center 2 (HCC 2)  
1520 San Pablo St.  
(323) 442-5100

**Or**

**White Memorial Medical Center(24hr  
emergency)**

1720 Cesar E. Chavez Ave.  
Los Angeles, CA 90033  
(323) 268-5000

University Park Health Center  
1031 W. 34<sup>th</sup> St.  
Los Angeles, CA, 90089-0311  
(213) 740-8742

**Or**

**Good Samaritan Hospital(24hr emergency)**

1225 Wilshire Blvd.  
Los angeles, CA 90017  
(213) 977-2121

6. For any **emergency**, you may also contact the Department of Public Safety at (323) 442-1000(**HSC**) or (213) 740-4321(**UPC**)
7. Healthcare personnel treating exposed patients should be informed of the nature of the agent (e.g. human or primate-derived materials, potential for exposure to bloodborne pathogens)
8. Information on workers' compensation and additional approved medical facilities can be found at this website: <http://benefits.usc.edu/timeoff/workers-comp>, or you may call: (213)740-6205
9. Incidents should be reported to the Institutional Biosafety Committee as soon as possible: [biosafety@usc.edu](mailto:biosafety@usc.edu) or (323)442-2200 (press 1 and 4 for biosafety group)

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## BIOSAFETY PRECAUTIONS

Authorized Personnel Only When

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Work is in Progress



Biohazard:	
Biosafety Level:	
Building:	
Room:	

Principal Investigator

Department

Phone

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Emergency Contact Person

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Phone

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IBC Number

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Date:

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Authorized Personnel: