Standard Operating Procedure for Disinfection of Lab Surfaces in the BSL-2 Laboratory, Bloodborne Pathogens

A Standard Operating Procedure (SOP) is a written set of instructions that document how to safely perform work involving hazardous materials or hazardous operations. An SOP should be written for all procedures that pose an identified potential risk to the health and safety of the laboratory personnel. Print out the completed form and keep a readily accessible hard copy in the lab (also keeping an electronic copy is highly recommended).

**Chemical Name or Process:**

Disinfection of lab benches, centrifuges, and work areas where human blood, fecal matter, urine or pathogens associated with bodily fluids and excrement are present.

**Purpose:** This procedure is for the use of a disinfectant to clean work areas daily after tissue, fecal matter, blood or the pathogens associated with human body fluids and excrement are isolated, manipulated or analyzed in the laboratory. Bloodborne pathogens are infectious microorganisms present in blood that 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), the virus that causes AIDS. Workers exposed to bloodborne pathogens are at risk for serious or life-threatening illnesses. Blood borne pathogens are enveloped viruses. Effective disinfectants will must be able to penetrate the envelope.

**Potential Hazards/Toxicity:** Disinfectants can be irritants, flammable, or corrosive to skin and eyes. Care should be taken to read the label on any commercial disinfectant used and follow the manufacturer’s guidance on personal protection equipment and first aid procedures as listed on the safety data sheet for the disinfectant used. Wear PPE and wash hands thoroughly after handling all disinfectants.

2 common disinfecting liquids for bloodborne pathogens:

**Ethanol** (you will dilute to **70%)** is a highly flammable in both the liquid and the vapor. It can cause serious eye irritation. It is irritating to skin. Keep away from heat, sparks, open flames and hot surfaces. Do not breath fumes/vapors.

**Bleach (sodium hypochlorite),** can be irritating to skin, eyes, and is an inhalation hazard. Care should be taken when diluting bleach. Never mix bleach solution with any other cleaning products. Combining bleach with ammonia, ammonium containing products, or phosphoric acid could result in the release of chlorine gas, which can cause nausea, headache, tearing, and shortness of breath. Leave the room immediately if this combination is suspected and seek fresh air. Bleach can be damaging to some surfaces in a lab. Follow manufacturer’s guidance in the use of bleach on all lab surfaces.

**Engineering Controls:**

No

**Personal Protective Equipment (PPE)-**

**Hand Protection:**

Use gloves appropriate for the disinfectant used. Remember, ALL gloves are permeable over time.

NOTE: Consult with your preferred glove manufacturer, the (M)SDS and other sources to ensure that the gloves you plan on using are compatible with chemical(s) being used.

Refer to glove selection chart from the links below:

<http://www.ansellpro.com/download/Ansell_8thEditionChemicalResistanceGuide.pdf>

OR

<http://www.allsafetyproducts.biz/page/74172>

OR

<http://www.showabestglove.com/site/default.aspx>

OR

<http://www.mapaglove.com/>

**Eye Protection :**

Wear safety glasses at a minimum when spraying or applying a liquid disinfectant.

Safety glasses or chemical splash goggles, as directed by advisor/P.I.. Goggles are required whenever there is a potential for a hazardous liquid splash, as per the Chemical Hygiene Plan Sec 3.1.b

**Skin and Body Protection:**

Lab personnel working with the chemicals need to wear full-length pants or its equivalent, closed-toe footwear with no skin being exposed, and a lab coat.

**Hygiene Measures:**

Wash hands after working with disinfectants and when leaving the lab.

**First Aid Procedures for Chemical Exposures**

**If inhaled:**

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, seek medical attention. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

**In case of skin contact:**

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention, as necessary.

**In case of eye contact:**

Immediately flush eyes with plenty of water for at least 15 minutes. Check for and remove any contact lenses. Get medical attention.

**If swallowed:**  Follow manufacturer’s guidelines for disinfectant used.

**Special Handling and Storage Requirements**

 It is important that disinfectants are not stored past expiration date. **Departments should buy ONLY what is needed and can be used in order to avoid generating hazardous waste.** See manufacturer’s safety data sheet Section 7 for handling and storage considerations.

**Spill and Accident Procedure**

**Chemical Spill Dial 911 and 756-6661**

**Spill** – Assess the extent of danger. Help contaminated or injured persons. Evacuate the spill area. Avoid breathing vapors. If safe, confine the spill to a small area using a spill kit or absorbent material. Keep others from entering contaminated area (e.g., use caution tape, barriers, etc.).

**Small (<1 L)** – If you have training, you may assist in the clean-up effort. Use appropriate personal protective equipment and clean-up material. Double bag spill waste in plastic bags, label and arrange hazardous waste pick-up.

**Large (>1 L)** – Evacuate spill area. Dial **911** and EH&S at 756-6661 for assistance.Remain available in a safe, nearby location for emergency personnel.

**Chemical Spill on Body or Clothes** – Remove clothing and rinse body thoroughly in emergency shower for at least 15 minutes. Seek medical attention. *Notify supervisor, advisor or P.I. immediately.*

**Chemical Splash Into Eyes** – Immediately rinse eyeball and inner surface of eyelid with water from the emergency eyewash station for a minimum of 15 minutes by forcibly holding the eye open. Seek medical attention. *Notify supervisor, advisor or P.I. immediately.*

# **Medical Emergency Dial 911 or 756-6661**

**Life Threatening Emergency, After Hours, Weekends And Holidays** – Dial 911

*Note: All serious injuries must be reported to Supervisor/PI within 8 hours. Note: Any and all loss of consciousness requires a 911 call*

**Non-Life Threatening Emergency** –

* Students: Seek medical attention at the campus Health Center **M, T, Thu, Fr 8:00 am – 4:30 pm and W 9:00 am – 4:30 pm**
* Emergency Medical services in the community are available at any time at hospital emergency rooms and some emergency care facilities.

***All injuries must be reported to PI/Supervisor immediately and follow campus injury reporting. Follow procedures for reporting of student, visitor injury on the EH&S website at:*** <http://afd.calpoly.edu/riskmgmt/incidentreporting.asp>

* Paid staff, students, faculty: seek initial medical attention for all non-life threatening injuries at:
	+ MED STOP, 283 Madonna Road, Suite B (next to See's Candy in Madonna Plaza)
	(805) 549-8880 Hours: M-F 8a - 8p; Sat/Sun 8a - 4p
	+ **After MED Stop Hours:** Sierra Vista Hospital Emergency Room
	1010 Murray Avenue (805) 546-7651, Open 24 hours

***All injuries must be reported to PI/Supervisor immediately and follow campus injury reporting for employee injuries (Workmen’s Comp.). Follow procedures on the EH&S website at:*** [***http://afd.calpoly.edu/riskmgmt/incidentreporting.asp***](http://afd.calpoly.edu/riskmgmt/incidentreporting.asp)

**Needle stick/puncture** **exposure** (as applicable to chemical handling procedure) – Wash the affected area with antiseptic soap and warm water for 15 minutes. For mucous membrane exposure, flush the affected area for 15 minutes using an eyewash station. Seek medical attention. *Note: All needle stick/puncture exposures must be reported to supervisor, advisor or P.I. and EH&S office immediately.*

**Decontamination/Waste Disposal Procedure**

* Diluted ethanol solution that is past the expiration date is hazardous waste.
* 10% bleach that is expired can be poured down the sink.
* If using a commercial disinfectant, please check with EH&S before disposing. Depending on material, it may need to be packaged as hazardous waste.

**General hazardous waste disposal guidelines:**

**Label Waste**

* Affix a hazardous waste tag on all waste containers as soon as the first drop of waste is added to the container. Generic waste labels can be found here: <http://afd.calpoly.edu/ehs/docs/hazwaste_label_template.pdf>

**Store Waste**

* Store hazardous waste in closed containers, in secondary containment and in a designated location
* Double-bag dry waste
* Waste must be under the control of the person generating & disposing of it

**Dispose of Waste**

* Dispose of regularly generated chemical waste as per guidelines on EH&S website at: <http://afd.calpoly.edu/ehs/docs/csb_no6.pdf>
* Prepare for transport for pick-up. Use secondary containment.

Call EH&S at 756-6661 for questions.

**Empty Containers-**

* All other containers are legally empty once a concerted effort is made to remove, pour out, scrape out, or otherwise completely empty the vessel. These may be disposed of as recycling or common trash as appropriate.

**Safety Data Sheet (SDS) Location**

Online SDS can be accessed at: <http://siri.org/msds/index.php>

or MSDSOnline at: <http://hq.msdsonline.com/csuedusl/Search/Default.aspx>

**Protocol/Procedure:**

1) Wear proper personal protective equipment while disinfecting work surfaces, at a minimum gloves will be worn when applying disinfectants to lab surfaces. When diluting disinfectants to proper concentration, safety glasses or goggles must be worn.

2) Clear lab surfaces of all items **where active work with blood, fecal matter, or human tissues was being performed daily.**

3) Any instruments used (centrifuge) should be cleaned with disinfectant for the correct contact time after use.

4) Check expiration on bottle of disinfectant. All disinfectants have a shelf life:

* Sodium hypochlorite (active ingredient in household Bleach) at concentration of 0.5% to <2%; check manufacturer’s concentration for correct dilution; usually 5.25% so 10% bleach yields concentration of 0.53%; expires in 30 days
* 70% Ethanol or isopropanol; expires in 180 days
* Commercial disinfectant, check label

5) If using a commercial spray or liquid disinfectant, spray disinfectant onto lab surface and **let sit for appropriate contact time**, example below for the lipovirus HBV, HCV, HIV:

* 10 % Bleach- 10 minute contact time
* 70 % ethanol- 10 minute contact time
* Commercial Disinfectant- check manufacturer’s label. See below for examples of effective commercial disinfectants effective for bloodborne pathogens and their contact time.

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6) After appropriate contact time, wipe off all lab surfaces with clean paper towels until all surface is mostly dry. If using 10% bleach in a BSC, always follow with a 70% ethanol rinse.

**NOTE:**

Any deviation from this SOP requires approval from PI.

**Date:** Click here to enter a date. **P.I. or Supervisor:** Click here to enter name.

**Documentation of Training** (signature of all users is required)

* The Principal Investigator must ensure that his/her laboratory personnel have attended appropriate laboratory safety training or refresher training within the last one year.
* Training must be administered by PI or Lab Manager to all personnel in lab prior to start

of work with particularly hazardous substance or newly synthetic chemical listed in the

SOP.

* Refresher training will need to be provided when there is a change to the work

procedure, an accident occurs, or repeat non-compliance.

I have read and understand the content, requirements, and responsibilities of this SOP:

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| **Name** | **Signature** | **Date** |
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