Standard Operating Procedure (SOP):

Enter title here

|  |  |
| --- | --- |
| Date last updated: |  |
| Principal Investigator: |  |
| SOP Prepared By: |  |
| Lab Phone: |  |
| Location(s) covered by this SOP: |  |
| (Building/Room Number) |

**References:**

**Chemical SOP Hazards:**

* [Safety Data Sheets](https://www.ehs.harvard.edu/news/material-safety-data-sheets-msds)
* [Lab Safety Guidelines](https://www.ehs.harvard.edu/programs/safe-chemical-work-practices)
* [LabPoint](https://ehs.labpoint.sph.harvard.edu/inventories) Chemical Inventory Summary (ask your LSO) – Boston Only

**PPE guides:**

* Safety Data Sheets
* General Lab Safety PPE
	+ By [Type of PPE](https://www.ehs.harvard.edu/sites/ehs.harvard.edu/files/ppe_selection_guide_by_type_0.pdf)
	+ By [Task or Activity (chemical, biological, radiation)](https://www.ehs.harvard.edu/sites/ehs.harvard.edu/files/ppe_selection_guide_by_task_or_activity.pdf)

**COMS requirements**

* [BL1 Practices](https://hms.harvard.edu/departments/committee-microbiological-safety/registering-coms/coms-policies/minimum-biosafety-level-1-laboratory-requirements-coms-approved-projects)
* [BL2 Practices](https://hms.harvard.edu/departments/committee-microbiological-safety/registering-coms/coms-policies/minimum-biosafety-level-2-laboratory-requirements-coms-approved-projects)
* [BL2+ Practices](https://hms.harvard.edu/departments/committee-microbiological-safety/registering-coms/coms-policies/minimum-biosafety-level-2-laboratory-requirements-coms-approved-projects-0)

**Required** [**Training**](https://trainingportal.harvard.edu/Saba/Web_spf/NA1PRD0068/app/dashboard)**:**

|  |  |
| --- | --- |
| Training  | Yes |
| General Laboratory Safety  |  |
| Laboratory Biosafety  |  |
| Laser Safety  |  |
| Radioactive Materials Safety  |  |
| Machine Shop and Makerspace Safety  |  |
| Respiratory Protection  |  |
| Other: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |  |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Hazardous Chemicals Used | Acutely Toxic | Corrosive | Flammable | Oxidizer | Irritant | Explosive | Health Hazard | Compressed Gas | Environmental Hazard |
|  |[ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]
|  |[ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]
|  |[ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]
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|  |[ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

**Storage considerations/segregation:** (Segregate Acids and bases, oxidizers from flammables and combustibles).

This document is designed to separate steps that may require different PPE, engineering, and administrative controls.

**Step #\_\_:**

|  |  |
| --- | --- |
| PPE |  |
| Gloves | [ ]  Nitrile [ ]  Latex [ ]  Neoprene [ ]  Insulated ☐ Other: \_\_\_\_ |
| Eye Protection | [ ]  Goggles [ ]  Face shield [ ]  Safety Glasses [ ]  Other: \_\_\_\_\_ |
| Body Protection | [ ]  Lab coat [ ]  Apron [ ]  Flammable Lab coat [ ]  None [ ]  Other: \_\_\_\_  |
| Respiratory Protection | [ ]  N95 [ ]  Other: \_\_\_\_\_ |
| Other |  |

|  |
| --- |
| Administrative and Engineering Controls |
| Air quality | [ ]  Fume Hood [ ]  BSC [ ]  Snorkel [ ]  Filter (isoflurane)  |
| Work area | [ ]  Fume Hood [ ]  BSC [ ]  Bench [ ]  Core/facility \_\_\_\_\_ [ ]  Other: \_\_\_\_\_ |
| System controls | [ ]  Pressure relief [ ]  Emergency stop button [ ]  Other \_\_\_\_\_ |
| Signage | [ ]  Yes, specify:  |
| Clean/Decontaminatework area | [ ]  water & soap [ ]  70% Ethanol [ ]  \_\_% Bleach[ ]  None [ ]  Specify \_\_\_\_\_\_\_\_\_ |

|  |  |
| --- | --- |
| Waste |  |
| Generated | [ ]  Yes [ ]  No |
| Disposal of waste | [ ]  Hazardous liquid [x]  Hazardous solid [ ]  Biological liquid ☐ Biological solid [ ]  Sink [ ]  Trash [ ]  Regulated [ ]  Other \_\_\_\_\_\_\_ |
| Hazardous Waste Label  | Liquid:Solid:  |
| Decontamination | Procedure:  |

|  |  |
| --- | --- |
| Spills |  |
| Spill containment procedure |  |
| Spill Supplies |  |

**Procedure:**

**Step # \_\_:**

|  |  |
| --- | --- |
| PPE |  |
| Gloves | [ ]  Nitrile [ ]  Latex [ ]  Neoprene [ ]  Insulated ☐ Other: \_\_\_\_ |
| Eye Protection | [ ]  Goggles [ ]  Face shield [ ]  Safety Glasses [ ]  Other: \_\_\_\_\_ |
| Body Protection | [ ]  Lab coat [ ]  Apron [ ]  Flammable Lab coat [ ]  None [ ]  Other: \_\_\_\_  |
| Respiratory Protection | [ ]  N95 [ ]  Other: \_\_\_\_\_ |
| Other |  |

|  |
| --- |
| Administrative and Engineering Controls |
| Air quality | [ ]  Fume Hood [ ]  BSC [ ]  Snorkel [ ]  Filter (isoflurane)  |
| Work area | [ ]  Fume Hood [ ]  BSC [ ]  Bench [ ]  Core/facility \_\_\_\_\_ [ ]  Other: \_\_\_\_\_ |
| System controls | [ ]  Pressure relief [ ]  Emergency stop button [ ]  Other: \_\_\_\_\_ |
| Signage | [ ]  Yes, specify:  |
| Clean/Decontaminatework area | [ ]  water & soap [ ]  70% Ethanol [ ]  \_\_% Bleach[ ]  None [ ]  Specify \_\_\_\_\_\_\_\_\_ |

|  |  |
| --- | --- |
| Waste |  |
| Generated | [ ]  Yes [ ]  No |
| Disposal of waste | [ ]  Hazardous liquid [ ]  Hazardous solid [ ]  Biological liquid ☐ Biological solid [ ]  Sink [ ]  Trash [ ]  Regulated [ ]  Other \_\_\_\_\_\_\_ |
| Hazardous Waste Label  | Liquid: Solid:  |
| Decontamination | Procedure:  |

|  |  |
| --- | --- |
| Spills |  |
| Spill containment procedure |  |
| Spill Supplies |  |

**Procedure:**

**Appendix A**

[*Lab Safety Guidelines*](https://www.ehs.harvard.edu/programs/lab-safety-guidelines-sops)

**Personal Protective Equipment (PPE)**

* Use appropriate personal protective equipment (PPE)
* [Respirator](https://www.ehs.harvard.edu/programs/lab-personal-protective-equipment-ppe) – Respirator selection, personnel training, medical evaluations and fit-test are prerequisites and must be successfully completed before any required respirator can be used. Contact EHS for assistance.

**Special Handling and Storage Requirements**

*Any special handling or storage requirements not noted in other sections.*

* Return all original chemical containers to storage area following Harvard University [Laboratory Chemical Storage Guide](https://www.ehs.harvard.edu/node/7968)
	+ Store in original containers or other appropriate containers;
	+ Store primary container in designated and compatible secondary containers;
	+ Store away from incompatibles;

**Decontamination/Waste Disposal Procedure**

* Dispose of waste following Harvard University [Hazardous Waste Procedures](https://www.ehs.harvard.edu/programs/chemical-waste)
* Wash hands and forearms thoroughly with soap and water before leaving the lab.

**Spill and Accident Procedure**

**Before beginning work**

* Review manufacturer’s Safety Data Sheet and additional chemical information at [ehs.harvard.edu/safety-data-sheets-sds](http://www.ehs.harvard.edu/safety-data-sheets-sds);
* Ensure that a written experimental protocol including safety information is available;
* Be familiar with general University emergency procedures in the [EHS Lab Emergency Response Guide](https://ehs.harvard.edu/sites/ehs.harvard.edu/files/lab_emergency_response_guide_.pdf);
* Order the most dilute solutions available that will meet experimental needs. Order only the quantity that you need;
* Identify the location of the nearest eyewash and shower and verify that they are accessible;
* Locate and verify that appropriate spill cleanup materials are available, including the following:
	+ Spill pillows, tweezers located in drawer across from fume hood
	+ Do not remove contaminated spill materials from fume hood until dry to prevent inhalation.

**First Aid**

For serious medical emergencies, go to the closest emergency room or call 911.

SKIN CONTACT

* Wash with plenty of tepid water for at least 15 minutes using the closest available sink, safety shower or drench hose. Remove any exposed clothing as well as any jewelry.
* Seek medical attention;

EYE CONTACT

* Using eyewash, flush eyes while holding eyelids open;
* Seek medical attention;

INHALATION

* Remove person immediately to fresh air;
* Seek medical attention;

INGESTION

* Never give anything by mouth to an unconscious person as it can block their airway;
* Seek medical attention;

**Spill Response**

OUTSIDE FUME HOOD OR VENTILATED ENCLOSURE

* Alert others and evacuate to a safe distance and prevent entry.
* Assess spill hazard (location, volume, volatility, health risk, etc..) and follow guidance in [Emergency Response Guide](https://www.ehs.harvard.edu/system/files/lab_emergency_response_guide.pdf).
* Call Operations immediately for spills involving elemental mercury, any spill/hazard requiring respiratory protection to clean, spills where appropriate spill supplies are not available, spills that individuals are not comfortable cleaning, and/or spills has been released into the environment (down a drain, spilled outside, etc.).
* Contact the University Operations Center at (617) 49**5-5560** [HMS/HSDM (617) 43**2-1901**]
* Remain in a safe location until EH&S or other response personnel arrive.
* If trained and confident, you may assist in the clean-up effort of small amounts, wearing PPE described above and using appropriate spill supplies.
	+ Click here to enter the specific spill cleanup procedure
	+ Collect debris in appropriate container and move to your Satellite Accumulation Area. Label with appropriately completed hazardous waste tag and request a waste pickup.

INSIDE FUME HOOD OR VENTILATED ENCLOSURE (< 500 ml)

* If trained and confident, you may assist in the clean-up effort of small amounts, wearing PPE described above and using appropriate spill supplies.
	+ Click here to enter the specific spill cleanup procedure
	+ Collect debris in appropriate container and move to your Satellite Accumulation Area. Label with appropriately completed hazardous waste tag and request a waste pickup.
* Otherwise close the fume hood sash and await support.