2024 Corrosive Solids and Liquids SOP

*Highlighted instructions may be deleted*: At SJSU, the documentation for Standard Operating Procedures is managed through the RSS SOP App. Please contact your college/dept safety staff OR the SJSU Chemical Hygiene Officer if you need help navigating the app. We recommend directly editing the SOPs in the app itself instead of in the Word document.

All personnel required to perform these procedures or work with the hazards identified in this SOP must review all safety requirements and sign the training record. SOPs and training records must be annually updated according to the [SJSU Chemical Hygiene Plan](https://www.sjsu.edu/fdo/services/ehs/laboratory-safety/chemical-hygiene.php). Electronic or physical copies of SOPs must be readily accessible to personnel. This SOP must be accompanied by hands-on training or demonstration.

 Lab/Shop Contact Information .

|  |  |  |
| --- | --- | --- |
| Lab/Shop Supervisor Name(s) |  |  |
| Lab/Shop Supervisor Email/Phone |  |  |
| Department |  |  |
| Building & Rooms |  |  |
| Lab phone |  |  |
| Emergency | Emergency Contact | Emergency Phone |
| Contact for emergencies, injuries, or severe hazards | UPD Emergency Dispatchers | 911 (or 408-924-2222 from a non-campus phone) |
| Contacts for safety questions or help with minor hazards | SJSU Environmental Health & Safety ehs@sjsu.edu | 408-924-1969 |
| . | SJSU Chemical Hygiene Officer skye.kelty@sjsu.edu | 408-924-1978 |
| . | College/Dept Safety Contact EMAILREQUIRED | REQUIRED |

Chemical Bands

* Corrosive

# HAZARD OVERVIEW

**Corrosive materials** cause immediate destruction of living tissue and other materials by chemical action at the site of contact and can be solids, liquids, or gases. Direct exposure to corrosives may cause ocular damage resulting in blindness and/or skin burns within seconds of exposure. Corrosive gases, dust from solids, or aerosolized/evaporated liquids can be inhaled and cause serious damage to mucous membranes and the airways. The severity of chemical burns depends on the type and concentration of the chemical, the body parts contacted, and the duration of exposure. Corrosives can be identified using the Globally Harmonized System Hazard Codes:

***H290*, *H314*, and *H318.***

Most Corrosives fit under the categories of strong/oxidizing, concentrated organic acids, or strong bases. Strong acids are liquids and are most likely to cause immediate pain when they contact the body. Conversely, body contact with strong bases may not immediately cause pain leading to possible delays in treatment. Other Corrosive types vary widely so a chemical-specific Safety Data Sheet must be consulted prior to use.

 ***Note that some chemicals are subject to several Hazard Class SOPs based on usage and hazard codes.***

*(highlighted instructions may be deleted)* Particularly dangerous corrosive materials may require process or chemical specific SOPs. If this template does not adequately cover the items noted in a product's safety data sheet, please contact the Chemical Hygiene Officer for help.

Hydrofluoric acid template can be found [here.](https://www.sjsu.edu/fdo/services/ehs/laboratory-safety/chemical-sop.php)

[This SOP does not cover corrosive gases. Contact the Chemical Hygiene Officer and refer to the Compressed Gas SOP.](https://www.sjsu.edu/fdo/services/ehs/laboratory-safety/chemical-sop.php)

If you must use picric acid, perchloric acid, or perchlorate salts, contact the Chemical Hygiene Officer.

# ENGINEERING/VENTILATION CONTROLS

1. Use containment devices approved by Environmental Health & Safety for ventilation control (chemical fume hoods, glove boxes, exhaust snorkels, or paint booths) when using volatile and/or semi-volatile substances, manipulating substances that may generate aerosols, and performing lab/shop procedures that may result in an uncontrolled release.
2. Chemical dispensing equipment should be considered to reduce potential exposures.
3. IF APPLICABLE: Continue to describe any additional lab-specific engineering or ventilation controls and equipment safety features that will be used to reduce the risk of chemical exposures. (*highlighted instructions may be deleted*)
4. *(highlighted instructions may be deleted)* If you must use Corrosives at elevated temperatures, you must contact ehs@sjsu.edu for an exposure assessment.

# ADMINISTRATIVE CONTROLS

1. Do not deviate from this SOP without prior approval from the lab/shop supervisor.
2. Notify the lab/shop supervisor of any accidents, incidents, near-misses, or unexpected outcomes involving the Hazardous Materials described in this SOP.
3. **Training Requirements:**
	1. Complete lab/shop safety awareness training prior to working in the lab/shop.
	2. Complete lab/shop-specific safety training on procedures, techniques, and safety equipment (for example: emergency eyewash, safety shower, fire extinguisher, spill kits) prior to working in the lab/shop.
	3. Demonstrate competency to perform the SOP to the designated trainer, document training, and maintain records in case of inspection by regulating authorities.
4. **Inventory Requirements:** Know the location and content of Safety Data Sheets for all the chemicals used or in storage.
	1. Inventory website: [ehs.ucop.edu/chemicals](http://ehs.ucop.edu/chemicals) => log in with SJSU email => search chemicals
	2. Inventory app: RSS Chemicals App => log in with SJSU email => search chemicals
	3. Safety Data Sheet Library: [ehs.ucop.edu/sds](http://ehs.ucop.edu/sds) => log in with SJSU email => search chemicals
	4. *Make sure you select the correct inventory if your account is linked to multiple labs/shops.*
5. *(highlighted instructions may be deleted)*  If you need help adding Safety Data Sheets to Chemicals app or using chemical inventory, you must request help from your college/dept safety staff or the Chemical Hygiene Officer.
6. **Procurement:** The amount of hazardous material in any room or floor is limited by CA Fire Code to protect occupants and first responders during emergencies. Do not store excess hazardous materials that are not critical for current operations. The Chemical Hygiene Officer can help you find existing campus supplies for small projects to help avoid the need to purchase excess supplies. The lab/shop supervisor must complete a New Chemical Procurement Form ([single](https://apps.docusign.com/send/templates/details/5230c720-8581-4c5e-9440-02042c04b460) or [multiple](https://apps.docusign.com/send/templates/details/1b14d021-997b-4454-8903-89abe5f8225c)) before adding a new chemical to the inventory.
7. **NEVER WORK ALONE.** All work involving hazardous materials described in this SOP must be performed in the presence of at least one safety buddy in visible and audible range. The safety buddy must be a person who has been trained in this SOP and who is proficient with the emergency protocols set forth in this SOP. Risks may also be controlled by scheduling operations with the highest exposure risk at a time when fewer workers are present in the area, preferably within normal business hours when the most safety and technical staff are on-duty (9AM-4PM). *(highlighted instructions may be deleted)* Labs with extensive training and practice related to toxic materials can refine this rule to include/exclude specific hazards OR to develop special requirements to allow some individuals with proven training/experience records to work alone.
8. **Transport:** Use a bottle carrier or secondary containment when transporting hazardous materials between work areas.
	1. **Up to 2 containers of liquids < 1 gal (4 L) or solids < 4 lb (5 kg)** **can be hand carried in a bottle carrier or secondary container.**
	2. Use a cart to transport any larger containers of hazardous materials between rooms, in hallways, or in elevators. The cart must be well-maintained, must have a lip on the edge to prevent items from sliding off the cart, and must have secondary containment capacity to contain spills and separate incompatible materials. Do not obstruct routes of egress or leave a cart of hazardous materials unattended in public areas. **If an elevator is used, only one occupant is allowed to be in the elevator to transport the materials. Do not allow additional passengers to enter the elevator.** If your building has a hazardous materials elevator or service elevator, follow college/department guidance about access and use of these specialized elevators.
	3. **DO NOT transport hazardous materials by carrying them in stairwells.** Accidental spills in the staircase block emergency evacuation routes for the whole building and spills in staircases are extremely challenging to clean up.
	4. Safety staff must be called to assist with transportation of any individual chemical containers over 5 gallons (18.9 L). Special training is required to transport large chemical containers like drums.
9. **Storage:** Store chemicals in secondary containers that are segregated based on chemical compatibility (see [SJSU Chemical Hygiene Plan](https://www.sjsu.edu/fdo/services/ehs/laboratory-safety/chemical-hygiene.php) or contact college/department safety staff for additional guidance).
	1. Containers should always be tightly-sealed, cleaned, and free of leftover chemicals before storage.
	2. Store corrosives in a manner that is consistent with their properties. Flammable acids must be stored in their own dedicated acid secondary container within a flammable storage cabinet. Glacial acetic acid is an example of a flammable material and an organic acid– concentrated acetic acid (>50% v/v) must be stored in flammable storage cabinets.
	3. Store corrosives in a corrosion-resistant, chemically compatible container and in secondary containment that facilitates flushing and other cleanup procedures in the event of leaks or spills.
	4. Stored on shelves below eye level or in corrosion-resistant acid/base storage cabinets. Plastic laminate construction with plastic shelves is optimal. Epoxy-painted wood shelving is acceptable but DO NOT store nitric acid or perchloric acid in unprotected wood shelving.
	5. Segregated from incompatible materials, such as:
		* 1. Separate acids and bases from each other and other materials to prevent mixing.
			2. Keep acids away from active metals such as sodium, potassium, and magnesium.
			3. Keep strong bases and hydrofluoric acid away from glass.
			4. Keep oxidizing acids away from organic acids and flammable/combustible materials. Nitric acid is an example of an oxidizing acid.
10. **Process Setup:**
	* 1. Confirm the presence of required safety equipment (for example: appropriate spill kit and Class ABC fire extinguisher). Inspect all equipment and experimental setups. Safety shower/eyewash must be within 10 seconds of travel time.
		2. (*this section may be deleted if not applicable, highlighted instructions may be deleted*) Plate based assays:
			1. Each plate must be treated with the same caution and threshold limitations as the stock and working solution tubes. Most plates contain up to 20 mL of liquids.
			2. Use plate seals to prevent accidental splashes and spills. Only open one plate at a time. Carefully stabilize the plate anytime you must peel off the seal -- practice this with a nonhazardous liquid in a plate before attempting this technique with hazardous materials. Do not hold a plate in your hand while trying to remove the seal with another hand-- place the plate on the bench to stabilize when unsealing.
		3. Prepare proper working and waste containers with complete labels before initiating protocol. Make sure waste containers are compatible with corrosive materials.
		4. Corrosives will only be used at elevated temperatures using facility-specific engineering/ventilation controls as described in this SOP. Do not improvise elevated temperature experiments without an approved SOP.
		5. Add acid to water to prevent splashing from sudden boiling. **Never add water to acid.**
11. IF APPLICABLE: Here or in the detailed protocol at the end of this document, describe any additional administrative controls. Examples include restrictions on working alone, specific procedures, equipment instructions, or locations. Include any chemical-specific administrative controls. You may attach documents and pictures to this SOP. You may provide links to relevant training videos but unfortunately can't directly attach videos or slideshows to the SOP *(highlighted instructions may be deleted).*

# PERSONAL PROTECTIVE EQUIPMENT

1. **Eye Protection:** At a minimum ANSI Z87.1-compliant safety glasses are necessary when handling the hazardous materials described in this SOP. Additionally, safety glasses are necessary for anyone within 15 ft (5 m) of processes involving the hazardous materials described in this SOP. If multiple operations with hazardous materials are present in a room, everyone in the room must wear safety glasses upon entering.

Between uses, eye protection and face shields can be gently cleaned with soapy water or a compatible cleaning solution (like 70% v/v ethanol in water).

* 1. Splash goggles are required for all processes that could potentially generate splashes or aerosols.
	2. Depending on the hazard assessment, a face shield may be required in place of safety eyewear.
	3. Ordinary prescription glasses are NOT acceptable eye protection.
1. **Body Protection:** At a minimum, long pants (covered legs), closed toe/closed heel shoes (covered feet), and a chemically-compatible lab/shop coat that fully extends to the wrist are necessary. Long hair, jewelry, and head coverings must be restrained to prevent accidental contact with hazards. Where splashes or skin contact is foreseeable, additional protective clothing is required such as a face shield, chemically-resistant apron, or disposable sleeves. *(following sentence may be deleted if not applicable, highlighted instructions may be deleted)* A chemically compatible lab coat may be substituted for other types of body protection such as an apron or disposable sleeves, so long as the substituted protection provides similar or better protection to personnel.
	1. *(highlighted instructions may be deleted)* Define your lab/shop schedule for lab/shop coat laundering OR replacement of disposable lab coats, sleeves, or aprons. In general, coats should be laundered/replaced after about 40 hours of active work with hazards-- check manufacturer recommendations and consider the hazards of the actual workflow before following this general guidance. Contact the Chemical Hygiene Officer for assistance with risk assessments, product selection, or development of a laundering/replacement schedule. Contact your college/dept leadership if you have questions about costs for PPE.
2. **Hand Protection:** *(highlighted instructions may be deleted)* Define the type of glove to be used based on: all chemical(s) used; anticipated chemical contact (e.g. incidental or immersion); manufacturer permeation/compatibility data; and whether a combination of different gloves is needed. Disposable gloves cannot be reused. Reusable gloves can be cleaned between uses according to manufacturer instructions.

IF APPLICABLE: Here or in the detailed protocol at the end of this document, insert lab-specific descriptions of personal protective equipment and hygiene practices, including any specialized personal protective equipment needed for a procedural step or specific task. *(highlighted instructions may be deleted)*

# SPILL AND EMERGENCY PROCEDURES

Emergency contact information for this SOP is included on the first page. DO NOT attempt to clean up a chemical spill unless you have been trained, have the appropriate spill response materials, and feel comfortable doing so. After completing immediate spill containment or injury responses, report the incident to the lab/shop supervisor. IF APPLICABLE: Add additional lab-specific chain of command information for reporting and responding to spills or emergencies. *(highlighted instructions may be deleted)*

**Small chemical spills:** If you need help, contact the College Safety Team or Environmental Health & Safety. **Trained** personnel may clean up **spills inside a chemical fume hood and small spills [liquids < 1 gal (4 L) or solids < 4 lb (5 kg)] outside of chemical fume hood or paint booth**. When cleaning up spills, personnel must wear a lab coat or smock, safety goggles, two pairs of disposable nitrile gloves or one pair of thicker nitrile or butyl gloves (minimum 10 mil thickness), and shoe covers as needed. If it can be done safely, put down universal absorbent pads and plug sink/floor drains to slow the spread of an ongoing spill. ***Remove all ignition sources from the vicinity of the spill.***

 ***ACID - Liquids*:** Follow package direction to apply **Spill X-A**, Sodium Bicarbonate, other acid neutralizing agents found in your spill kit. Wipe up the neutralized spill with absorbent pads and dispose of spill cleanup materials as hazardous waste. Proceed to final steps for all small spills below. Some spills may require the use of absorbent pads along the outside edge of the spill to prevent further spread followed by the administration of absorbent material. If this solid absorbent material is used, you must NOT dry sweep which can generate dust and should instead follow instructions for acid solid spills below.

 ***ACID - Solids:*** Gently cover solid spills with wetted paper towels or absorbent pads to avoid raising dust. Follow package direction to apply **Spill X-A**, Sodium Bicarbonate, other acid neutralizing agents found in your spill kit. Wipe up neutralized spill cleanup materials and dispose of hazardous waste. If broken glass or sharps are present, carefully collect using thick pieces of paper, tongs, tweezers, or another tool to prevent injury. Place broken glass or sharps inside puncture-proof hazardous waste container - DO NOT include sharps in the hazardous waste debris bag. Wipe up spill cleanup materials and dispose of hazardous waste. Proceed to final steps for all small spills below.

 ***BASE - Liquids*:** Follow package direction to apply **Spill X-C**, Fumaric Acid, Citric Acid, or other base neutralizing agents found in your spill kit. Wipe up neutralized spill with absorbent pads and dispose of properly. Proceed to final steps for all small spills below. Some spills may require the use of absorbent pads along the outside edge of the spill to prevent further spread followed by the administration of absorbent material. If solid absorbent material is used, you must NOT dry sweep which can generate dust and should instead follow instructions for base solid spills below.

 ***BASE - Solids:*** Gently cover solid spills with wetted paper towels or absorbent pads to avoid raising dust. Follow package direction to apply **Spill X-C**, Fumaric Acid, Citric Acid, or other base neutralizing agents found in your spill kit. Wipe up neutralized spill cleanup materials and dispose of hazardous waste. If broken glass or sharps are present, carefully collect using thick pieces of paper, tongs, tweezers, or another tool to prevent injury. Place broken glass or sharps inside puncture-proof hazardous waste container - DO NOT include sharps in the hazardous waste debris bag. Wipe up spill cleanup materials and dispose of hazardous waste. Proceed to final steps for all small spills below.

 ***FINAL STEPS FOR ALL SMALL SPILLS:*** After cleaning up visible chemical contamination, clean the spill area thoroughly with detergent solution followed by clean water. If the spill is extensive, clean all worksurfaces, secondary containers, and interior surfaces after completion of the initial spill cleanup. Double bag all waste in plastic bags with a hazardous waste label that reads "*INSERT CHEMICAL NAME* spill debris” and securely close the bag. If contaminated sharps or broken glass were collected, apply a similar hazardous waste label to the separate puncture-proof container.

**Large chemical spill:** confine the spill within the containment device (chemical fume hood or paint booth), confine the spill in the room, evacuate everyone from the room, and call 911 (use blue light phone or call 408-924-2222 from a non-campus phone). If it can be done safely, put down universal absorbent pads and plug sink/floor drains to slow the spread of an ongoing spill. Help remove any exposed people from the spill area to fresh air, but do not endanger yourself by entering a potentially toxic atmosphere or failing to wear appropriate personal protective equipment. Before exiting the room or area, inspect your clothing and shoes for signs of contamination, such as saturation or powder. Remove contaminated clothing, place in plastic bags, and label the bag if safe to do. Leave the clothing or bag of clothing near the spill area or inside the room where the spill occurred.

**First Aid for Chemical Skin or Eye Exposure:**  **1)** seek emergency medical attention by calling 911 (use blue light phone or call 408-924-2222 from a non-campus phone), **2)** remove potential sources of prolonged contact like contaminated personal protective equipment or clothes-- **immediately remove contact lenses** with a clean glove on if an eye exposure occurs, **3)** move away from any hazardous fumes or aerosols, and **4)** wash area of chemical contact for at least 15 minutes with water using eye wash, sink, or safety shower. Anyone assisting with first aid in case of exposure should wear personal protective equipment to prevent transfer from the exposed person to themselves. Always ask for a person’s consent before assisting them in an emergency. If the exposed person is unconscious or unable to provide consent due to the circumstances at hand, first aid under [implied consent](https://www.redcross.org/take-a-class/resources/learn-first-aid/unresponsive-and-breathing-person) should only proceed by trained responders to address immediate hazards that are likely to further harm the unconscious person. If you are unsure of the cause of unconsciousness, be aware that moving a person with a head or spinal injury can be dangerous and it is best to wait for first responders to move the unconscious individual if possible.

**First Aid for Chemical Inhalation or Ingestion:** Seek emergency medical attention immediately by calling 911 (use blue light phone or call 408-924-2222 from a non-campus phone). Anyone assisting with first aid in case of exposure should wear personal protective equipment to prevent transfer from the exposed person to themselves. Always ask for a person’s consent before assisting them in an emergency. Help remove any exposed people from the spill/leak area to fresh air but do not endanger yourself by entering a potentially toxic atmosphere or failing to wear appropriate personal protective equipment. **If the exposed person is conscious**, strongly discourage them from leaving alone, operating heavy equipment, or operating vehicles before receiving medical attention. The exposed person should sit up or lay on their side. The exposed person should not stand on their own since lightheadedness and related falls could cause head injuries. The exposed person should not lie facing up since this position can make breathing more difficult and can cause choking if vomiting occurs. Do not give them anything to eat or drink before receiving medical attention. **If the exposed person is unconscious**, closely monitor breathing and whether they gag or vomit. If the exposed person is unconscious or unable to provide consent due to the circumstances at hand, first aid under [implied consent](https://www.redcross.org/take-a-class/resources/learn-first-aid/unresponsive-and-breathing-person) should only proceed by trained responders to address immediate hazards that are likely to further harm the unconscious person. If you are unsure of the cause of unconsciousness, be aware that moving a person with a head or spinal injury can be dangerous and it is best to wait for first responders to move the unconscious individual if possible. Do not give them anything to eat or drink before receiving medical attention. **If an unconscious exposed person vomits**, roll them onto their side with a cushion behind their back and their upper leg pulled slightly forward (similar to the maneuver used in cases of alcohol poisoning or drug overdose). Wipe any vomit away from their mouth and keep their face pointing down to allow any vomit to escape without blocking airways. **If an unconscious exposed person is not breathing or their heart beat stops**, responders should administer cardiopulmonary resuscitation (CPR) or use an Automated External Defibrillator (AED) if they are trained and feel comfortable doing so. If you suspect that the unconscious person has inhaled or ingested a toxic chemical, do not perform mouth-to-mouth techniques associated with CPR and only use artificial respiration techniques.

IF APPLICABLE: Carefully review the Safety Data Sheets for the products you are using to update this emergency and spill information. Consult with college or SJSU safety staff if you need assistance updating this section. You may add first aid information here or in the detailed protocol at the end of this document. *(highlighted instructions may be deleted)*

# WASTE MANAGEMENT + DECONTAMINATION

Hazardous chemical waste must be managed as outlined in [SJSU Chemical Hygiene Plan.](https://www.sjsu.edu/fdo/services/ehs/laboratory-safety/chemical-hygiene.php) All waste accumulation [containers must be chemically compatible with the waste and properly labeled with the SJSU Hazardous Waste label. Hazardous chemical waste must be stored in a designated location within closed containers. Hazardous](https://www.sjsu.edu/fdo/services/ehs/hazmat/hazardous-waste-management.php) chemical waste containers must be within a secondary container that can hold 1.5 fold more volume than the waste container itself. In general, hazardous waste must be removed from your lab/shop within 9 months of the accumulation start date to ensure proper disposal within 1 year by Environmental Health & Safety. Unrinsed empty containers must be capped and disposed of as hazardous waste.

*(highlighted text may be deleted if not applicable)* **Extreme care must be used when managing oxidizing acid waste streams.** Adding organic material—e.g. solvents, reagents, or a dirty waste container—to oxidizing acids will produce large volumes of gas and cause catastrophic container rupture. Never cap waste containers if the contents are actively reacting.

*(this plate assay section may be deleted if not applicable, highlighted instructions may be deleted)* Dispose of the plate assay contents as hazardous waste at the end of the experiment. Most plates contain up to 20mL total volume of liquid. To collect the liquid waste into a pre-labeled hazardous waste container:

1. Move the hazardous chemical waste container, an appropriate solvent squirt bottle, and the plate into the chemical fume hood.
2. Lower the sash as low as you can to provide additional splash protection to your face.
3. Open the hazardous liquid waste container and insert a large funnel into the top.
4. Tilt the plate so that the whole plate is inside of the funnel and tap the bottom of the plate to encourage the liquid to pour out into the hazardous chemical waste container.
5. Use the squirt bottle to wash out the plate 3 times and use the funnel to collect the washes into the hazardous waste container. After the triple wash, the plate can be disposed by putting it into a regular trash can.
6. Use the squirt bottle to wash out the funnel 3 times and collect the washes into the hazardous waste container.

Clean contaminated work areas and equipment with an appropriate cleaning agent and dispose of cleaning materials properly to prevent accumulation of hazardous chemical residue. Extinguish and secure all ignition sources before beginning to clean up using flammable liquids. Decontaminate equipment before removing it from the designated work area.

Upon interruption or completion of work and/or decontamination of equipment, remove personal protective equipment to wash hands and arms with soap and water. Personal protective equipment should not be worn outside the lab/shop. Grossly contaminated equipment or clothing must be disposed of as hazardous waste. When in doubt, consider it grossly contaminated.

IF APPLICABLE - Insert description(s) of decontamination procedures for equipment, glassware, and/or controlled areas (e.g. gloveboxes, restricted access hoods, or designated portions of the lab/shop). *(highlighted instructions may be deleted)*

# DESIGNATED AREA

Designated area(s) for the use and storage of hazardous materials shall be established where limited access, [special procedures, knowledge, and work skills are required. Signage indicating the corresponding Globally Harmonized System pictogram(s) should be visible at the entrance of the designated area (e.g. postings on th](https://www.osha.gov/Publications/HazComm_QuickCard_Pictogram.html)e exterior of the lab/shop door).

REQUIRED: Insert description(s) of the designated area(s) for hazardous materials described in this SOP within your lab/shop. The entire lab/shop, a portion of the lab/shop, a fume hood, etc. can be designated. If you need to transport your hazardous materials to a field site or any other location outside of your SJSU lab/shop/classroom you MUST contact EHS or your safety staff for help with developing off-site emergency safety planning and complying with the Department of Transportation and other regulatory authorities. *highlighted instructions may be deleted*

# DETAILED PROTOCOL

Any deviation from this protocol requires approval by the lab/shop supervisor.

REQUIRED: Insert or attach the lab-specific protocol for the process, hazardous chemical(s), or hazard class described in this SOP. You may attach documents and pictures to this SOP. You may provide links to relevant training videos but unfortunately can't directly attach videos or slide shows to the SOP. Include any relevant resources like journal articles, patents, etc. as desired. Please find Chemical Overview Table Template and Templates for Detailed Protocols attached. Delete the templates if they do not apply to your lab/shop. If your lab/shop does not conduct specialized work and the scope of work is already addressed in the main SOP document, explain the situation to safety staff that review your SOPs in order to request to skip this Detailed Protocol section. Contact the Chemical Hygiene Officer or visit the [EHS SOP website](https://www.google.com/url?q=https://www.sjsu.edu/fdo/services/ehs/laboratory-safety/chemical-sop.php&sa=D&source=calendar&ust=1721090993640083&usg=AOvVaw3SMsanamhh4ctyeqVO6W_d)  if you would like templates to get a head start. *highlighted instructions may be deleted*

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| TEMPLATE Version | Date Implemented | Author | Revision Notes: |
| 1.0 | 6/22/2021 | Alexi Ball-Jones | New template |
| TEMPLATE Version 2.0 | Date Implemented 9/14/2022 | Author Skye Kelty | Revision Notes: Updated and simplified |
| 3.0 | 4/8/2024 | Skye Kelty | Updated content for RSS Platform |
| 3.1 | 6/5/2024 | Skye Kelty | Updates for RSS Launch |
| LAB-SPECIFIC Version | Date Approved |  Author Revision Notes |

# Documentation of Required Standard Operating Procedure Training

SOP is only valid if: 1) the first signature on the SOP is the lab/shop supervisor and 2) the second signature is completed by safety staff to indicate that they have reviewed the SOP and are prepared to provide required support for the hazards described.

* Prior to using Corrosive Liquids and Solids, lab/shop personnel must complete hands-on training or demonstration led by a designated trainer on the hazards, how to protect themselves from these hazards, and emergency procedures.
* SOP and a Safety Data Sheet for each hazardous material described in the SOP must be readily available.
* The lab/shop supervisor must ensure that their lab/shop personnel have attended appropriate safety awareness training or refresher training within the last three years of the current date.
* Training must be repeated following procedural revisions to this SOP. Training must be documented before initiating work with the hazards described in the SOP. Training must be refreshed annually and documentation must be updated.

The designated trainer(s) that the lab/shop supervisor approved for this protocol are: **REQUIRED list designated trainers for this SOP.**