

Guidance for Creating a Laboratory-Specific Standard Operating Procedure (SOP)

If there is a written experimental protocol that incorporates relevant safety information from the below sections, it can be used in lieu of completing the SOP Template as long as it is added to your Lab-Specific CHP.

This document serves as guidance for completing the Standard Operating Procedure (SOP) Template for a chemical or process. Include relevant information for all sections. Initial sources of chemical-specific information are Safety Data Sheets (SDS) from the manufacturer, [PubChem](#), and the [NIOSH Pocket Guide to Chemical Hazards](#).

Laboratory and SOP descriptive information:

- Chemical name with CAS# or process
- Principal Investigator
- Principal Investigator Signature-**when SOP is finalized/updated**
- Date-**when SOP is finalized/updated**
- Building
- Room(s)
- If the SOP is for a PHS or High-Risk chemical or process, please check applicable boxes.
- If working with the chemical or process described by the SOP requires Prior Approval, please indicate by checking the box.
- Describe the designated work area if work involves a PHS and/or High-Risk Chemical

1. Hazard Identification

- Preparation and Use:** Describe the circumstances of use for the hazardous chemical, including how any stock solutions and/or working solutions are prepared. If this SOP is for a process, describe each hazardous chemical that is used in the process. Describe the following for each chemical:
 - Concentration-** Describe the preparatory steps for the needed concentration and/or how the chemical is obtained (e.g. product # 5726, purchased from Sigma-Aldrich) in needed concentration.
 - Quantity-** Amount needed for individual experiments.
 - Frequency-** Detail frequency of use for each chemical.
 - Location-** Indicate use on benchtop, in chemical fume hood, a dedicated location in the lab, etc.
- Potential Hazards and Risk:** What are the inherent hazards and associated risk with using the chemical? Are there physical and/or health hazards as purchased and in-use (ie. irritant and a reproductive toxin)? Describe the route of a potential exposure (e.g. inhalation, dermal, etc.). When/how would an exposure occur (e.g. inhalation of gases/vapors, while weighing and mixing, etc.)?

Note: Are there suitable chemical substitutions for the described chemical(s) that are less hazardous?

2. Hazard Control

- Selection and Purchasing:** Describe the total quantity purchased, the state, and where it is typically purchased from. If possible, purchase small quantities or dilute solutions to reduce the risk of exposure and to minimize waste. Consider safer container options (e.g. shatterproof glass, septum-top containers, etc.). Can the chemical(s) be bought in suspension and/or liquid form?
- Engineering Controls:** Engineering controls are defined as equipment that reduce or remove a hazard from the laboratory. Are engineering controls necessary for the chemical(s)? Will be the chemical(s) be handled in chemical fume hood, glove box, biological safety cabinet, other?

Note: Engineering controls are preferred over Personal Protective Equipment (PPE). Some type of containment (chemical fume hood or glove box) is required for use of [Particularly Hazardous Substances](#) that are aerosols, powders, concentrated or volatile liquids, or gases.

- c. **Personal Protective Equipment:** Describe PPE requirements for each task involving the chemical. How often will PPE be changed? Are there specialized or very-specific PPE requirements (e.g. cut-proof gloves, flame resistant lab coat, respirators etc.) for safe use?

Note: Respirator use requires employee participation in the [Respiratory Protection Program](#), which involves medical clearance, annual fit testing, and training. Respirators are masks designed to protect the wearer from specific airborne hazards and are different from dust masks or surgical masks. Please be clear about use of dust or surgical masks versus respirators.

- d. **Administrative and Work Practice Controls:** Explain safe work practices. Consider:
- Describing special handling requirements.
 - Describing special equipment requirements. For example, are fire extinguishers necessary for safe use?
 - Describing chemical-specific antidotes or first aid treatments (ie – Calgonate for working with HF).
 - Chemical segregation strategies (also address in sub-section 2e: Storage and Transportation).
 - Describing additional safe work practices, such as keeping containers closed, working away from open flames, etc.

Notes: At minimum, all chemical containers must be labeled with a chemical name and hazard warnings.

- e. **Storage and Transportation:** Describe how the chemical is stored. Describe how the chemical is transported both inside and outside of the laboratory setting. Consider:
- Chemical segregation strategies (e.g. incompatibles).
 - Storing flammables in a flammable cabinet.
 - Use of secondary containers.
 - Traveling through low-traffic hallways.
 - Use of maintenance elevators.

3. **Emergencies, Spill Procedures, and Exposures/Unintended Contact**

Describe how employees should handle a chemical-specific emergency or chemical spill. Use Page 40 of the Campus CHP as a guide. Note: Waste from cleaning up hazardous material spills (including contaminated PPE) must be treated as hazardous waste.

Describe how employees should handle accidental exposure to the chemical(s). Consider:

- Stopping work and leaving the immediate area for inhalation hazard concerns.
- Removal of contaminated clothing and/or PPE.
- Flushing with emergency eyewashes and/or drench hoses for eye/skin contact.
- Changing contaminated gloves.
- Contacting EHSRM to report chemical exposures and filling out a [Supervisor's Report of Incident, Injury, or Illness form](#).

4. Waste/Decontamination Procedures

Describe how chemical waste is stored and disposed. If the chemical is considered regulated waste, any unused or unwanted portion (and its container, unless the container is empty) must be disposed of as a hazardous waste in accordance with the [Texas State Hazardous Waste Management Program](#) and related policies. If you have specific questions about disposal, please contact EHSRM at 512-245-3616.

Consider the following:

- i. How will the work surface and other items be decontaminated after use? (required for chemicals that are listed as PHS health hazards)
- ii. Where is chemical waste stored in your laboratory? Indicate how to [request a waste pick up](#) for your lab.
- iii. If you have multiple waste containers, describe how wastes are segregated (ie. organic waste not placed in oxidizer waste container, etc).

5. Details of Process

If this SOP is for a process, describe the overall process in as much detail as possible. If this SOP is for a specific chemical, refer to methods and/or procedures that the chemical is used for in your laboratory.