University of Minnesota **|** Duluth

1. **Standard Operating Procedures (SOPs)**

**Laboratory Safety Plan/Compliance Manual**

**SOPs must be developed and reviewed by all applicable faculty/staff/students when using any** [**particularly hazardous substances**](https://ehso.d.umn.edu/safety/forms-templates/standard-operating-procedure-sop-library)**, biological hazards, radiation, or when using dangerous or hazardous equipment.**

## 3.1 SOP Guidance

An SOP is a documented set of instructions, used to standardize a method and communicate hazards for a specific procedure, process, chemical class, chemical or piece of equipment. SOPs should include exposure controls and safety precautions to address both routine and accidental chemical, physical or biological hazards associated with the procedure. SOPs must be accessible to researchers by either keeping hard copies in the lab or having them on a computer in the laboratory. Below are specific examples of where SOPs may be required.

Some [template SOPs for specific chemicals can be found here](https://ehso.d.umn.edu/safety/forms-templates/standard-operating-procedure-sop-library). To request additional template SOPs, contact the EHSO. Attach or link your lab-specific SOPs in this section of your LSP.

* **Chemical Classes:**
  + Commonly used chemical hazard classes are often treated in a similar manner, and a Hazard Class SOP is sufficient to document the safe use and handling of the entire class. *Examples: flammables, oxidizers, reactives, corrosives, compressed gases, toxics*
* **Individual Chemicals:**
  + Certain high-hazard chemicals may require their own SOP, especially if special working procedures are required or if the hazard posed by the chemical requires special emergency treatment upon exposure. *Examples: hydrofluoric acid, osmium tetroxide*
* **Equipment:**
  + Some laboratory equipment may require the use of an SOP for safe and proper use. Consider SOPs for equipment that involve high hazard operations (i.e. high/low temperature, high/low pressure, etc.) *Examples: UV lights, rotary evaporators, glove boxes, anaerobic chambers, lasers*
* **Chemical Process or Procedures:**
  + Common lab chemical processes or procedures may require an SOP depending on the hazard level and the desire for reproducibility. For hazardous lab processes, an SOP should document the finding of a hazard assessment of the process. *Examples: acid digestion, acid or base cleaning baths, hydrogenation reactions*

## 3.2 General SOP Template

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| **Procedure name:** |  | **Room #:** |  |
| **PI:** |  | **Date:** |  |
| **Building:** |  | **Chemical Types:** |  |
| **Department:** |  |  |  |

1. **Experimental Procedure/ Setup:**

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| *Describe the experiment / research protocol. Include diagrams and references to equipment manuals or other SOPs as necessary* |

1. **Potential Hazards:**

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| *Describe potential hazards by evaluating each step of the protocol.  Include physical and health hazards.* |

1. **Engineering Controls:**

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| *List all engineering controls that are in place (fume hood, local ventilation, etc.)* |

1. **Administrative/Work Practice Controls:**

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| *List all administrative safety controls.  E.g., designated work area, monitoring, special syringes, periodic check-in process for workers, etc.* |

1. **Personal protective equipment (PPE):**

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| *List all required personal protective equipment (lab coats, gloves, safety goggles, etc.)* |

1. **Handling, Transportation, and Storage:**

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| *List Special Handling and Storage Requirements for all hazardous materials involved in the experiment, including restricted areas, access to the chemicals, any special procedures for bringing chemicals into and out of storage areas or to experimental set ups.* |

1. **Decontamination Procedures and Waste Disposal:**

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| *Specify decontamination procedures to be used for equipment and glassware, including equipment such as glove boxes, hoods, lab benches, and controlled areas within the lab.*  *In addition, explain how waste will be disposed and type of waste will be generated, including contaminated lab-ware, if applicable.* |

1. **Exposures/Unintended contact:**

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| --- |
| *Review Safety Data Sheets and insert first aid procedures for chemical or physical exposures that could result from this procedure.*  *Contact the Environmental Health and Safety Office at 218-726-7139 or visit the website* [*http://ehso.d.umn.edu*](http://ehso.d.umn.edu) *to report an incident.* |

1. **Spill Procedure:**

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| *Insert procedures for spills.* |

1. **Training of personnel:**

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| *All personnel are required to complete the online General Lab Safety session.  This session includes an introduction to general chemical safety.  Add additional information here.* |

**“I have read and understand this SOP. I agree to fully adhere to its requirements.”**

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| **Last** | **First** | **ID** | **Signature** | **Date** |
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