

Appendix K - Standard Operating Procedure for the Use of Particularly Hazardous Substances

Particularly hazardous substances, by MIOSHA definition, are select carcinogens, reproductive toxins and chemicals with a high degree of acute and chronic toxicity. MIOSHA Part 431. Hazardous Work in Laboratories mandates the establishment of specific provisions to protect employees who work with particularly hazardous substances. Complete the form for each of the Particularly Hazardous Substances in your chemical inventory and review the document with all lab workers who use the substance. In some cases, you may have several substances that are nearly identical in their composition, function, and hazards. An example of this are Rustoleum spray paints. Requiring an SOP for every available color or variant of spray paint would require hours of repetitive paperwork and result in dozens of SOPs that could be effectively summarized in one document. Check with OLFS to see if the chemicals you wish to include in one SOP can be combined. If they can, ensure that all possible hazards are noted and controlled for, even if not all of the chemicals possess all hazards. For example, some spray paints are carcinogens while others are reproductive toxins and some pose no serious health hazards. Your SOP for spray paints should then include the risk of carcinogens and teratogens and how you will employ the paints to prevent unnecessary exposure to the chemical. Keep the completed form in your laboratory for reference.

[Chemical Name]

Date:

Room & Building:

Principal Investigator:

Phone Number:

Section 1: Purpose of the chemical

Briefly state the purpose of the chemical. Do not provide a sequential description of the procedure. Indicate the duration and frequency of chemical usage.

Section 2: List the chemicals or class of chemicals

List all components of solutions or mixtures. This information should be available in section 3 of the Safety Data Sheet. If two or more similar chemicals are listed on the same SOP, list all chemicals.

Section 3: List all potential hazards

List all hazards noted in section 2.1 of the SDS. Include any hazardous chemical interactions, reaction products, and intermediates. Recommended reference sources for chemical hazards, exposure limits, stability, reactivity, and incompatibilities include the chemical SDS, [NIOSH Pocket Guide to Chemical Hazards](#), and [CAMEO Chemicals Database of Hazardous Materials](#).

Section 4: Personal protective equipment required and any limitations of the equipment.

Specify all PPE and attire required beyond normal lab attire. Be specific. Do not simply state, "Wear compatible gloves" or "Wear appropriate protective equipment". State exactly what type of gloves and other PPE will be used with the material. It may be necessary to consult glove compatibility charts. In addition, do not prescribe PPE (e.g. respirators, coveralls) that will not be used in your procedure, just because it is described in the SDS. Ensure the prescribed equipment is available in your laboratory.

Section 5: Engineering Controls

Designate the fume hood, local exhaust, glove box, containment device, or other engineering control to be used.

Section 6: Designated Use Area(s)

Where in the lab(s) will the chemical be used? Describe the designated area where the chemical(s) will be used along with the measures that will be taken to mark this area. Attach a drawing if necessary.

If use is restricted to a specific fume hood or glove box, specify which one. If the substance can be used on the open bench, designate a certain bench or area for the use. Use signs or tape to indicate where these designated use areas are in the lab. For multiple chemicals used in a designated area, use wording like "Carcinogen use area" or "Particularly Hazardous Substance Use/Storage Area".

Section 7: Describe storage requirements and any special handling requirements.

Describe where and how the chemical will be stored in the lab. Chemical storage must comply with the CMU Chemical Hygiene Plan. Account for chemical compatibility with other chemicals in the vicinity. Consider expiration dates of chemicals and long-term stability, especially peroxidizable substances. Use appropriate storage cabinets and containers, including refrigerators, freezers, flammable/corrosive cabinets, and desiccators when necessary. Use secondary containment for liquids, if not already provided by the storage cabinet.

Section 8: Transportation

If applicable, provide the transportation strategy of the chemical. Are chemicals transported in secondary containers? What classes of chemicals can the chemical not be stored with? Is PPE different when using the chemical versus transporting the chemical? Ensure chemical name and hazard are placed on the secondary container.

Section 9: Spill and accident procedures.

How should workers in the lab respond to a spill, personal exposure, fire, or other release of the substance in the lab? Consider the capabilities, knowledge, and experience of all employees in the lab when completing this section. Some workers might have the ability to safely respond to spills and handle the cleanup. Others might need to evacuate or call for assistance. Consider the quantities used in the lab and if the response should be different for small vs. large spills. Be sure to apply information from SDSs in a way that is applicable to your lab; often this information applies to large industrial situations.

Describe in detail the appropriate response for various routes of personal exposure. Whenever necessary, ensure eyewash, shower, etc. are available and workers are trained on their use.

Section 10: Decontamination procedures.

Describe in this section procedures for decontaminating the workspace and equipment after use of the substance. Oftentimes, a wiping with soapy water or common solvents is sufficient. Consider if special precautions are necessary to make the work area safe for maintenance or service employees.

Section 11: Waste collection and disposal procedures.

Describe how the chemical waste will be collected, labeled, and sent for disposal in your lab. Consider any incompatibilities, container limitations, and special handling or storage for waste. Take into account contaminated solids like gloves, bench coat, or paper towels that may need to be considered hazardous, depending on the chemical. Store all hazardous waste in secondary containment and in accordance with regulations.

Do not list procedures from the SDS that are the responsibility of the Hazardous Waste Manager or the waste processing plant. Section 13 of the SDS will describe disposal considerations, but is often directed to the treatment facility or waste manager, not a lab worker.

Section 12: Safety Data Sheet Location(s)

CMU Environmental Health and Safety maintains an online SDS database for all of CMU. The database can be accessed here: <https://www.cmich.edu/fas/fsr/rm/EHS/SDS/Pages/default.aspx>. If the chemical SDS is found in the database, you can designate this as the SDS location. If your chemical cannot be found in the database, send a copy of the SDS to environmental@cmich.edu

*If paper copies or local electronic storage is preferred, state the physical or electronic location.***Recommended Reference Materials and Useful Links**

- [CMU Chemical Hygiene Plan](#)
- [CMU Hazardous Waste Disposal](#)
- [MSDS Online Safety Data Sheet Database](#)
- [NIOSH Pocket Guide to Chemical Hazards](#)
- [CAMEO Chemicals Database of Hazardous Materials](#)
- [Ansell Chemical Resistance Guide for Gloves](#)

