

# LABORATORY SPECIFIC STANDARD OPERATING PROCEDURE INSTRUCTIONS

## ENVIRONMENTAL HEALTH & SAFETY SAN DIEGO STATE UNIVERSITY

Standard Operating Procedures (SOP) are written health and safety guidelines for laboratory work with **particularly hazardous substances** and are required as a part of a laboratory-specific Chemical Hygiene Plan. The OSHA Laboratory Standard defines particularly hazardous substances as a carcinogen, reproductive toxin, and substance with a high acute toxicity. EH&S recommends that Standard Operating Procedures be written for each particularly hazardous substance, other newly synthetic chemicals, and others not covered in the Chemical Hygiene Plan.

### STANDARD OPERATING PROCEDURES

- **Definition:** a standard operating procedure (SOP) is a set of written procedures explaining how to safely work with hazardous chemicals or hazardous processes.
- **Why SOP's are required:** SOP's should be incorporated into each laboratory Chemical Hygiene Plan detailing specific protocols and procedures for safe work in the laboratory.

### GUIDELINES FOR COMPLETING LABORATORY SPECIFIC SOP

Sections of the SOP:

- **Section 1: Type of SOP**  
Indicate the type of material covered by this SOP
  - Particularly Hazardous Substances
  - Newly Synthetic Chemicals
- **Section 2: Description of Particularly Hazardous Chemical or Newly Synthetic Chemical Properties**
  - Particularly Hazardous Chemical – Name the hazardous chemical for which the SOP is being developed and describe the physical properties. Include CAS (Chemical Abstract Service) Registry Number, common name, and any abbreviation(s) used for the chemical.
  - Newly Synthetic Chemicals – Describe the known or expected hazard for the newly synthetic chemicals. Describe the known or expected physical properties.
- **Section 3: Description of Hazards**
  - A. Potential Hazards of Chemicals (check all applicable boxes)
    - Indicate the particularly hazardous chemical and check the boxes for the potential hazards. “Other Comments” section is available if there is a potential hazard for the chemical that does not fit the categories. Note: Work with particularly hazardous chemicals requires designated laboratory location, work will be conducted in a containment device, written procedures for safe removal of contaminated waste, written decontamination procedures, and training for all personnel.
    - Indicate the newly synthetic chemical and check the boxes for the potential hazards. Work with newly synthetic chemical substances requires chemical characterization to determine hazard class. If determined to be hazardous, lab members must receive

appropriate training on the chemical. Note: Newly synthetic chemicals or byproducts whose composition is unknown require the lab members to handle the chemical as hazardous until hazard class can be determined.

- If a chemical substance is produced for commercial purposes by another user outside of the laboratory, the PI/Lab Manager must also comply with the Hazard Communication Standard (§5194) including the requirements for preparation of material safety data sheets (MSDS) and labeling.

B. Potential Hazard of Process, Procedure or Operation

- Describe the potential hazards, precautions and prohibited activities for the process, procedure or operation.

● **Section 4: Personal Protective Equipment**

- Identify the required level of personal protective equipment and hygiene practices needed. Check the box for all personal protective equipment (PPE) above the standard PPE (i.e. lab coat, close-toed shoes, long pants).

● **Section 5: Engineering Controls**

- Indicate the engineering control that will be used to prevent or reduce employee exposure to particularly hazardous chemicals or newly synthetic chemicals and the location of the engineering control. This includes ventilation devices such as fume hoods, glove boxes, etc.

● **Section 6: Special Handling and Storage Requirements**

A. Labeling/Identification of Chemical and Hazard

- Indicate labeling requirements for the particularly hazardous chemicals or newly synthetic chemicals involved in the SOP. Indicate special procedures such as dating peroxide forming chemicals upon receipt.

B. Handling Procedure

- Indicate handling procedures for the particularly hazardous chemicals or newly synthetic chemicals including designated work areas. Indicate special handling procedures i.e. handle only in fume hood or handle only in glove box with

C. Storage

- List storage requirements for the particularly hazardous chemicals or newly synthetic chemicals involved in the SOP, including specific storage areas, storage according to compatibility and policies regarding access to chemicals. Indicate special procedures such as dating peroxide forming chemicals upon receipt, and opening and testing for peroxide formation after the appropriate date.

● **Section 7: Spill and Accident Procedures**

- Indicate how spills or accidental releases will be handled and by whom. List the location of appropriate emergency equipment (spill kits, showers, eye washes, and fire equipment). Any special requirements for personnel exposure should also be identified in this section. Identify the location of emergency response phone numbers.
- Identify the location in the laboratory or building for chemical spill kit, fire extinguisher, eyewash, and shower.

● **Section 8: Decontamination Procedures**

- If items such as glove boxes, hoods, lab benches and controlled areas have been contaminated by hazardous chemicals, remove chemical contaminants with appropriate solvents or cleaning solutions. Indicate what solvents or cleaning solutions and list the appropriate contact time for solvents and cleaning solutions.
- **Section 9: Waste Disposal Procedures**
  - Indicate which materials or substances will require disposal as hazardous waste. Each container of hazardous waste must have a completed Hazardous Waste label attached.
- **Section 10: Material Safety Data Sheet Location**
  - Indicate the location where MSDS are stored in laboratory.
  - They should be obtained through the vendor or on the vendor website. MSDS's are also available from EH&S (619) 594-6778.
  - Indicate the location of other pertinent safety information, i.e. equipment manuals, chemical references, emergency procedures, etc.
  - For emergency situations, MSDS's can be obtained through 3E (a 24 hr emergency MSDS company). 3E is a fax on demand service that will fax any MSDS 24 hours a day for San Diego State University. When calling give 3E the chemical, company name and fax number. 1 (800) 451-8346 or (760) 602-8703
- **Section 11: Special Precautions**
  - Check the box if work with particularly hazardous chemical or newly synthetic chemical requires permits, prior approval from SDSU, SDSU Research Foundation or other governing bodies, medical surveillance for employees or other special precautions.
- **Section 12: Special Emergency Procedure**
  - Indicate special emergency procedures for a fire/evacuation of the laboratory or building.
  - Indicate special emergency procedure during a medical emergency involving the particularly hazardous chemical or newly synthetic chemical.
- **Section 13: SOP Training Record**
  - Training must be administered by PI or Lab Manager to all personnel in lab prior to start of work with particularly hazardous substance or newly synthetic chemical listed in the SOP. Refresher training will need to be provided when there is a change to the work procedure, an accident occurs, or repeat non-compliance.
  - Indicate the date of training and have all attendees sign-in to document attendee read and understood the SOP.