

# LABORATORY SPECIFIC STANDARD OPERATING PROCEDURE INSTRUCTIONS

## ENVIRONMENTAL HEALTH & SAFETY SAN DIEGO STATE UNIVERSITY

### 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

Three methods that can be used to write SOP's:

1. By **Process:** distillation, synthesis, chromatography, etc.
2. By **Individual Hazardous Chemical:** arsenic, benzene, hydrochloric acid, etc.
3. By **Hazardous Chemical Class:** flammable, corrosive, oxidizer, etc.

Sections of the SOP:

- **Section 1: Process, Hazardous Chemical, or Hazard Class (check one)**
  - Process: distillation, synthesis, chromatography, etc.
  - Individual Hazardous Chemical: arsenic, benzene, hydrochloric acid, etc.
  - Hazardous Chemical Class: flammable, corrosive, oxidizer, etc.
- **Section 2: Process, Hazardous Chemical, or Class Description**
  - Process – Describe the process which involves hazardous chemicals. List all chemicals used in the process. If applicable, describe any hazardous processes that may be involved in the experiment.
  - Hazardous Chemical – Name the hazardous chemical for which the SOP is being developed. Include CAS (Chemical Abstract Service) Registry Number, common name, and any abbreviation(s) used for the chemical.
  - Hazard Class – Describe the hazard associated with a particular group of similar chemicals and list the chemicals used in the laboratory.
- **Section 3: Potential Hazards**
  - Describe the potential hazards for each process, hazardous chemical, or hazard class. Include physical and health hazards such as fire, explosion, and burn to the skin, toxic fume generation, absorption through the skin, or cancer suspect.
- **Section 4: Personal Protective Equipment**
  - Identify the required level of personal protective equipment and hygiene practices needed for each process, hazardous chemical, or hazard class.
  - Personal protective equipment includes (but is not limited to): gloves, lab coats, safety glasses, chemical splash goggles and face-shields.
- **Section 5: Engineering Controls**

- Describe engineering control that will be used to prevent or reduce employee exposure to hazardous chemicals for the process, hazardous chemical, or hazard class. This includes ventilation devices such as fume hoods, glove boxes, etc.
- **Section 6: Special Handling and Storage Requirements**
  - List storage requirements for the hazardous chemicals involved in the SOP, including specific storage areas, storage according to compatibility and policies regarding access to chemicals. 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.
- **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**
  - 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: Protocol(s)**
  - Describe or attach a copy of your specific research methods involving work with this particular process, hazardous chemical or hazard class.