

Appendix C

Chemical Hygiene Plan Template

The Chemical Hygiene Plan defines systems to protect employees from the hazards of chemicals in laboratories. State and federal regulations require a written plan. Departments (or other administrative units) may choose to create a departmental Chemical Hygiene Plan and appoint a departmental Chemical Hygiene Officer. If the department does not have a departmental Chemical Hygiene Plan, each laboratory work unit (or perhaps a combination of work units) needs to have a Chemical Hygiene Plan and a Chemical Hygiene Officer.

In either case, the Principal Investigator or other senior manager is primarily responsible to implement the Chemical Hygiene Plan in their laboratory, although the operational duties may be assigned to a laboratory manager. Each supervisor in a laboratory is responsible to implement the Chemical Hygiene Plan in work that they supervise.

This appendix is a template with University-wide information and procedures. The template may be used at the departmental or laboratory level to sketch out the Chemical Hygiene Plan. References to individual laboratories should be understood to refer to “all laboratories in the department” for a departmental plan. To obtain more information or assistance, please contact the Environment, Health and Safety Department at (26)5-5518 or via email. Email addresses are at <http://www2.fpm.wisc.edu/chemsafety/chemstaf.htm>. Answers to some frequently asked questions can be found at Annex 1 to Appendix C.

To develop a chemical hygiene plan:

- ✓ Add information to this template as needed. Add pages if needed.
- ✓ Appoint a person who has the technical knowledge to help develop and implement the Plan to be the Chemical Hygiene Officer.
- ✓ Review the Plan with everyone to whom it applies.
- ✓ Make the Plan available for reference at all times.
- ✓ Make the Plan part of your training for new laboratory workers (see Appendix G for a training outline).

Basic requirements

- ✓ Keep all chemical exposures below permissible limits (see Chapters 2, 4, 5 and 6 and Appendix D).
- ✓ Keep labels intact on chemicals supplied to you. Label all containers you use to hold or store chemicals.
- ✓ File and make available Material Safety Data Sheets for all your supplied chemicals and any products you may supply to others.
- ✓ Review the Chemical Hygiene Plan at least annually.

This Chemical Hygiene Plan covers:

Department

Laboratory

Building and Room Number(s)	
Department	
Principal Investigator, Laboratory Manager or other Person in Charge Name	Phone
Chemical Hygiene Officer Name	Phone
Date of Most Recent Review (at least annually)	

I. Standard Operating Procedures to Protect Safety and Health

This laboratory follows the procedures in Chapter 4, “Chemical Safety Procedures” of the *Chemical Safety and Disposal Guide* when working with hazardous chemicals.

While the Chemical Safety and Disposal Guide is probably sufficient for most activities on campus, note any modified or additional procedures required in your laboratory. The procedures need only pertain to chemical health hazards in laboratories. Procedures for other hazards (e.g. radioactivity, biological, etc.) should be identified as supplemental or by reference to appropriate protocol numbers. For more information:

- ♦ ACS Task Force on Laboratory Waste Management, *Laboratory Waste Management, A Guidebook*, American Chemical Society, 1994.
- ♦ National Research Council, *Prudent Practices in the Laboratory: Handling and Disposal of Chemicals*, National Academy Press, 1995.

Additional Special Operating Procedures _____

II. Criteria to Implement Exposure Control Measures

Routine precautions to minimize exposure to hazardous chemicals include:

- ✓ Never mouth pipette.
- ✓ Wash hands after using chemicals before eating, using the toilet or using tobacco.
- ✓ Keep food and beverages out of the laboratory.

Particularly hazardous Substances (see Section 4.6 and Appendix D) are capable of causing serious and / or permanent injury

- ◆ By short-term exposure including accidents (acute).
- ◆ By long-term exposure if used under normal laboratory conditions (chronic).

Additional safety precautions are used with particularly hazardous substances. The precautions should be appropriate to the hazards. Precautions to consider include:

- ✓ Working in a fume hood (e.g., volatile liquids, fine powders).
- ✓ Using extra eye protection (e.g., caustic liquids).
- ✓ Using specially selected gloves and/or double gloving to prevent skin absorption (see Chemical Resistance Glove Chart in Chapter 4).
- ✓ Chilling volatile liquids.

Appendix D discusses particularly hazardous substances in more detail and presents a process to insure persons working with such substances are aware of both the hazards and the specific precautions for the intended usage.

Additional Criteria and Precautions for Exposure Control

Use of any hazardous chemical	[Special Precautions] <input type="checkbox"/>
Particularly hazardous chemical [List names or categories]	[Special Precautions] <input type="checkbox"/>

III. Fume Hoods and Protective Equipment

As discussed in Chapter 4, the Environment, Health and Safety Department inspects laboratory fume hoods annually and places a sticker (see Section 4.5) on the hood that identifies maximum safe sash height and any other performance restrictions. If the date on your fume hood sticker is over one year old, call the Environment, Health and Safety Department to have the hood reevaluated. Additional measures that help assure proper fume hood performance include (see also Annex 4-2):

- ✓ Close the sash as much as possible, even when working in the hood. Use a horizontal sliding sash or blast shield when working with equipment that is likely to shatter or splash.
- ✓ Use a tissue to verify that air is flowing into the hood.
- ✓ Maintain air flow pathways front to back. Elevate large items so that air can flow under them. Align items from front to back instead of across the back of the hood.
- ✓ Keep all work more than 15 cm (6 inches) behind the sash opening.
- ✓ Keep heaters more than 30 cm (12 inches) behind the sash opening.

- ✓ Have spill control materials available (i.e., secondary containment [trays], absorbents, spill kits) and plans posted.
- ✓ Keep hood clutter free, do not use it as a storage area. Store chemicals and other material in storage cabinets so they will not become involved in a hood accident.
- ✓ Keep adjustable baffles at the center position. Do not attempt to use another baffle position unless you have verified that it is better.
- ✓ Use personal protective gear (i.e., goggles, apron, shield, gloves) as appropriate for the type of chemical work.
- ✓ Use good personal hygiene. A fume hood cannot protect against skin absorption or accidental ingestion of chemicals.
- ✓ Understand and obey labels and placards.

If you use protective equipment not described in Chapter 4 or take additional steps to ensure the proper performance of fume hoods or protective equipment, list them on the cover pages.

Additional Protective Equipment and Fume Hood Information

a. Protective Equipment _____

b. Measures to Ensure Proper Performance of Fume Hoods _____

IV. Information and Training

This Chemical Hygiene Plan must be readily available to all employees during all working hours. Each laboratory worker must be familiar with the contents of the Plan and know:

- ✓ Where the plan is available.
- ✓ The location of Material Safety Data Sheets (MSDS) and other hazard information in the laboratory. The Environment, Health and Safety Department will send any MSDS that you need to complete your reference set. Alternatively, links to MSDS sites are available at the Environment, Health and Safety Department's web site, <http://www2.fpm.wisc.edu/chemsafety/links.htm>
- ✓ How to detect the presence or accidental release of a hazardous chemical
- ✓ The hazards of chemicals in the work area and how to protect against them
- ✓ How to manage and dispose of waste or unwanted chemicals

Additional training resources:

- ◆ Weekly *Working Safely with Chemicals* training class conducted by the Environment, Health and Safety Department.
- ◆ Videos are available for loan from the Environment, Health and Safety Department.
- ◆ Training tools are available from the Howard Hughes Medical Institute. Their web page, <http://www.practicingsafescience.org> allows for on-line ordering of videos and provides Laboratory Chemical Safety Summaries (see Section 2.4) and emergency response guidelines.

The Environment, Health and Safety Department will provide information and present special training programs on request. A convenient form to document training is at the end of this section.

Additional Training Notes _____

V. Operations, Procedures or Activities that Require Prior Approval

As noted under item II, above, work with particularly hazardous substances and other materials (e.g., radiation, biological, etc.) may require additional approval. List any such procedures and the approval required.

VI. Medical Consultation and Examination

A laboratory worker must have an opportunity to receive a medical examination or consultation without loss of pay and at no cost to the worker when:

- ✓ The individual develops signs or symptoms associated with a hazardous chemical to which they may have been exposed in the laboratory.
- ✓ Measurements show that an OSHA/Wis. Dept. of Commerce action level or Permissible Exposure Limit is routinely exceeded.
- ✓ There has been a spill, leak, explosion or other occurrence in the work area resulting in the likelihood of a hazardous exposure.

University employees may receive medical care through their State Group Health Insurance health care plan. Students may receive medical care from the University Health Service. For the physician to provide professional care, provide the following information:

- ◆ The identity of the hazardous chemical(s) to which the employee may have been exposed.
- ◆ A description of the conditions under which the exposure occurred including quantitative exposure data, if available.
- ◆ A description of the signs and symptoms of exposure that the employee is experiencing, if any.

Before the PI or the University can act on an examination, they will need a written opinion from the examining physician that includes the following:

- ◆ Any recommendation for further medical follow-up.
- ◆ The results of the medical examination and any associated tests.
- ◆ Any medical condition revealed in the course of the examination, which may increase the employee's risk if a chemical exposure occurs in the workplace.
- ◆ A statement that the physician has informed the employee of the results of the consultation or examination and any medical condition that may require further medical attention.

- ♦ The written opinion shall not reveal other specific findings of diagnoses that are unrelated to occupational exposure.

For more information or guidance, contact the Environment, Health and Safety Department Occupational Health Manager (26)3-2177.

Special Information on Medical Consultation/Examinations _____

VII. Minimizing Waste and Preventing Pollution

Follow the recommendations of Chapter 6 of the *Chemical Safety and Disposal Guide* to the extent feasible while minimizing interference with primary laboratory operations.

Special Pollution Prevention / Waste Minimization Information _____

VIII. Chemical Waste Management

Follow the procedures of Chapter 7 and Appendix A of the *Chemical Safety and Disposal Guide* to manage chemical waste. For questions or more information about specific waste streams, call the Environment, Health and Safety Department at 265-5518.

The Environment, Health and Safety Department will recycle, neutralize or dispose of chemicals by methods that have been approved by Federal and State agencies, that are safe for human health and the environment and that comply with local, state and federal regulations.

Special Chemical Waste Disposal Information _____

Annex C-1. Frequently Asked Questions (FAQs)

Q: Why do I need a Chemical Hygiene Plan?

A: The Chemical Hygiene Plan provides a basis to inform new laboratory workers about hazardous chemicals at your location. Chemical Hygiene Plan relieves laboratories from difficult duties required under other state and federal regulations. This template is also designed to simplify compliance with federal environmental protection laws and regulations.

Q: I have laboratories in several locations. How many Chemical Hygiene Plans do I need?

A: If the labs do similar work and are in the same building, a single Chemical Hygiene Plan is usually best. If a lot of information is specific to each lab or if the labs are in different buildings, consider whether the collected information would be confusing to the reader. If so, use more than one Plan.

Q: I have laboratories in several locations. How many Chemical Hygiene Officers do I need?

A: The Chemical Hygiene Officer should have the training or experience to provide technical guidance in development and implementation of the Chemical Hygiene Plan. One Chemical Hygiene Officer may cover several Chemical Hygiene Plans and a single Plan may have more than one Chemical Hygiene Officer if their duties are clearly delineated.

Q: Does the Chemical Hygiene Officer need to be a manager or supervisor?

A: No. The Chemical Hygiene Officer may come from anywhere on the organization chart. He or she may be anyone who is qualified by training or experience to provide technical guidance on the development and implementation of the Chemical Hygiene Plan.

Q: Will the MSDS library at the Environment, Health and Safety Department fulfill my needs?

A: No. As with the Chemical Hygiene Plan, employees must have access to MSDS in their workplace at any time. The Environment, Health and Safety Department will provide copies of any MSDS that you need to complete your collection.

Q: Do I need to create MSDS for any chemicals I produce in my laboratory?

A: No. You only need MSDS for chemicals that are supplied to you from commercial sources. You should identify the hazardous characteristics of chemicals that you produce and provide the information to laboratory workers. **However**, if you sell chemicals produced in your laboratory, the law requires you to provide an MSDS to the buyer and to label the material according to 29 CFR 1910.1200. Your laboratory will also be subject to additional regulations. Shipping regulations may apply to the chemicals. Contact the Environment, Health and Safety Department for more information (26)5-5518.

Q: Can we use respirators in the laboratory?

A: Protect against airborne contaminants by using a fume hood, glove box or other containment wherever possible. Selection and use of chemical respirators is complicated, requires professional assistance and often requires a medical clearance for the user. If you believe you need respirators for any reason, contact the Environment, Health and Safety Department for assistance. Improper respirator use can be dangerous!

Q: Why do I need to document training?

A: Requiring people to acknowledge their training emphasizes its importance and helps motivate them to remember the information. State and federal inspectors usually judge training success by asking workers questions based on their training. Documented training is not a defense if workers cannot answer questions.