
BYU

BRIGHAM YOUNG
UNIVERSITY

Provo, Utah

CHEMICAL HYGIENE PLAN

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1.0 OVERVIEW

This Chemical Hygiene Plan outlines the procedures required for laboratories that store, handle or use hazardous chemicals. This plan also provides laboratory safety requirements, checklists and templates to assist Principle Investigators with their responsibility to ensure a safe laboratory environment and to establish a laboratory safety program for the laboratories they manage. The Chemical Hygiene Plan is based upon the OSHA "Occupational exposure to hazardous chemicals in laboratories" standard 29 CFR 1910.1450 and best practices as found in the latest revision of the National Research Council "Prudent Practices in the Laboratory" and other such publications.

2.0 POLICY

Prior to commissioning a laboratory, (placing a laboratory in service) Departments must ensure all applicable provisions found on the Laboratory Commissioning Checklist (Appendix C) have been completed.

All Principle Investigators/Professors who have responsibility for laboratory space at Brigham Young University shall ensure implementation of the most current version of the Brigham Young University Chemical Hygiene Plan (CHP), its appendices, and its requirements - including development of written safety & health procedures as described in the CHP.

When laboratories are vacated (in whole or in part) chemicals, biological materials, radioactive materials, sharps, and waste must be removed from the laboratory. This must be accomplished by completing the provisions outlined on the Decommissioning of Laboratories standard operating procedure (Appendix I)

Each laboratory must maintain copies of the Material Safety Data Sheets (MSDS) for those chemicals currently stored or used within the laboratory.

Principle Investigators must obtain written approval from Risk Management & Safety prior to allowing use of known human carcinogens including:

2-Acetylaminofluorene*	Methyl Chloromethyl Ether*
4-Aminodiphenyl*	alpha-Naphthylamine*
Arsenic and inorganic arsenic compounds	beta-Naphthylamine*
Benzene	4-Nitrobiphenyl*
Benzidine*	N-Nitrosodimethylamine*
Beryllium and compounds, as Be	Nickel (insoluble inorganic compounds)
bis(Chloromethyl) ether*	Nickel Subsulfide, as Ni
Chromium VI Compounds, insoluble	beta-Propiolactone*
3,3'-Dichlorobenzidine (and its salts)*	Uranium and compounds containing uranium
4-Dimethylaminoazo-benzene*	Vinyl chloride
Ethyleneimine*	Zinc Chromates, as Cr

* indicates the 13 carcinogens addressed by OSHA standards 29 CFR 1910.1003 through 1016

Approval must also be obtained from the Department of Risk Management & Safety (422-2789) prior to ordering any compressed toxic gas. The checklist found in Appendix J must be completed and submitted to Risk Management & Safety as part of the approval process.

3.0 REQUIREMENTS

- ▷ 29 CFR 1910.1450
- ▷ Prudent Practices in the Laboratory by the National Research Council, 1995
- ▷ 29 CFR 1910.132
- ▷ FEMA 74-Reducing the Risks of Nonstructural Earthquake Damage: A Practical Guide. Third Edition.

4.0 PURPOSE

The purpose of the Brigham Young University Chemical Hygiene Plan is to establish procedures and requirements laboratories must use to protect individuals and property from safety and health hazards related to storage, handling, and use of chemicals.

5.0 SCOPE

The procedures and requirements found in this Chemical Hygiene Plan (CHP) apply to all individuals who enter, work or perform activities within a laboratory where chemicals are stored, handled, or used.

6.0 PROCEDURES

The following procedures are designed for Principle Investigators/Professors who manage laboratory space at Brigham Young University:

Step 1 – Review the Online General Laboratory Safety Presentation

The online General Laboratory Safety Presentation can be accessed online at

Step 2 – Create and maintain an inventory of the chemicals used or stored in the laboratory

Coordinate creation and maintenance of the inventory with Chemicals Management (422-6156).

Step 3 – Create a “Laboratory Hazard Sign”

All laboratories must have a current “Laboratory Sign” posted at the entrance to the laboratory. Laboratory signs are generated by accessing http://safety.byu.edu/lab_sign/.
Note: completion of a laboratory sign only requires roughly 5 to 10 minutes.

Step 4 – Assess Each Process to Determine Chemical & Process Hazards

Prior to using chemicals in a lab, the Principle Investigator must perform a hazard evaluation of the chemicals that will be used and the work that will be performed. Hazard evaluations are performed to identify hazards presented by the chemicals that will

be used and to determine the (best available) controls and safe work practices that will be used to minimize exposures and protect individuals from chemical and process hazards. When selecting exposure controls please consider the following controls, which are listed in order of preference:

1. Engineering controls (e.g. laboratory hood).
2. Safe work practices (e.g. appropriate temperatures and pressures).
3. Personal protective equipment (PPE), which is selected when engineering controls and safe work practices do not adequately protect individuals

Step 5 – Create & Use Written Safety & Health Procedures

Once chemical and process hazards are identified, written safety and health procedures must be developed. The written procedures must satisfy the criteria established in Appendix D of this Chemical Hygiene Plan. The written safety and health procedures are to be maintained with a current copy of the Brigham Young University Chemical Hygiene Plan (CHP).

Step 6 – Perform Training

Prior to entering a laboratory all individuals who will work with chemicals in the laboratory must receive training in accordance with the requirements established in this Chemical Hygiene Plan (see Section 8 for more details). All other individuals entering the laboratory must receive training that allows them to perform their functions in the laboratory in a safe manner, while exposures to airborne contaminants are limited to concentrations below exposure limits.

Retraining must be performed in accordance with section 8 of this Chemical Hygiene Plan (CHP).

Maintain training records in accordance with this Chemical Hygiene Plan.

Step 7 – Provide Unused Chemicals to Chemicals Management

Unused chemicals are not to be stored in the laboratory. Only order what you need – avoid excess.

7.0 RESPONSIBILITIES

7.1 Risk Management & Safety, Chemical Hygiene Officer

- Develop, review, and update the University Chemical Hygiene Plan as necessary;
- Assess laboratories across campus to monitor compliance with the current Brigham Young University Chemical Hygiene Plan;
- Document laboratory assessment findings and provide feedback to the respective departments;

- Upon request, help design laboratory and engineering controls for minimization of chemical exposure & code compliance;
- Offer General Laboratory Safety training;
- As instructed by RM&S management, review accidents and near misses that involve the use of hazardous chemicals in laboratories at BYU; and
- Perform annual tests to determine the average face velocity of laboratory hoods. Hoods having an adequate face velocity will be certified and a sticker placed on the face of the hood indicating the flow rate at the time of the test.

7.2 Office of Chemicals Management

- Maintain an up-to-date academic hazardous material inventory;
- Dispose of regulated laboratory wastes;
- Monitor the procurement, handling, and disposal of chemicals; and
- Upon request, provide assistance to individuals decommissioning a laboratory.

7.3 Departments and/or Colleges

- Prior to commissioning a laboratory, ensure that the provisions found in Appendix C are completed and satisfied for the laboratory;
- Provide laboratories with exposure controls and other necessary safety equipment;
- Help coordinate laboratory assessments with Risk Management & Safety;
- Determine whether or not any highly toxic, explosive, unstable, reactive or otherwise dangerous chemical will not be allowed for use in the Department; and
- Implement a progressive discipline program to address failure to create a safe laboratory work environment, and/or for non-compliance.

7.4 Principle Investigators

- Implement the provisions and requirements of the current version of Brigham Young Universities Chemical Hygiene Plan (CHP). This includes, but is not limited to, following the CHP procedures, reviewing and incorporating pertinent information from the CHP appendices, and training individuals who perform work in the laboratory;
- Investigate near misses and/or accidents that occur in the laboratory, and revise written safety and health procedures as necessary to prevent future accidents;
- Ensure individuals are trained to know the each and every specific hazard of the chemicals they use;
- Notify your Department Management if you encounter a need for safety equipment that you cannot address; and
- Ensure individuals working in the laboratory utilize all needed hazard controls.

7.5 Laboratory Employees & Students

- Receive general and specific training as outlined in this plan prior to handling chemicals in a laboratory at Brigham Young University;

- Do not order any chemical without first obtaining permission from the Principle Investigator;
- Follow written Standard Operating Procedures, written safety & health procedures, and perform work in accordance with your training;
- Use all necessary hazard controls;
- Avoid practical jokes or other behavior that might confuse, startle or distract others; and
- Help maintain a clean laboratory by cleaning glassware and equipment, and by cleaning up materials after performing laboratory work.

8.0 TRAINING REQUIREMENTS

Prior to performing work in a laboratory that stores, handles, and/or uses chemicals individuals must review the online “General Laboratory Safety Training” provided by Risk Management & Safety. This training presentation is available online at http://safety.byu.edu/onlineTraining/generalLaboratorySafety_files/v3_document.htm And, all applicable Chemical Hygiene Plan Standard Operating Procedures must be reviewed as part of General Laboratory Safety training.

Specific laboratory safety training must also be obtained prior to working with chemicals in a laboratory. This training is provided by the Principle Investigator/Professor who manages the laboratory. Specific laboratory safety training must consist of:

- A review of each pertinent written safety and health procedure;
- The identity and hazards of each chemical being used;
- All hazards being created by the process being performed;
- Hazard controls used and when to use them to control the chemical & process hazards;
- If used, how to properly inspect, use, store, clean, dispose of, and otherwise maintain personal protective equipment; and
- Waste disposal procedures

After receiving specific laboratory safety training, those trained must be able to identify the procedures they will perform, hazards of the processes performed and chemicals they will use, and the measures they will take to protect themselves from the hazards presented by the chemicals used and processes being performed.

Individuals must be retrained must be performed when changes occur to the chemicals being used, there are process changes, and/or any individual is found working in an unsafe manner.

Principle Investigators must maintain current training records for individuals working in their laboratories. Training records must include the name and BYU I.D. number of the attendant; the name of the training course, the name of the instructor and the date on which the course was administered. Training content must be maintained for review.

9.0 MONITORING

Risk Management & Safety will perform laboratory assessments to determine compliance with this Chemical Hygiene Plan, which has been developed to help protect individuals working in a laboratory and to satisfy 29 CFR 1910.1450 requirements.

As noted in the Responsibilities section above, Principle Investigators/Professors are to use the checklist found in Appendix A of this plan at least annually to determine if improvement is needed. Risk Management & Safety will ask for completed checklists when performing laboratory assessments.

Completed checklists must be maintained for at least five years and provided to Risk Management & Safety upon request.

Risk Management & Safety will also ask laboratories for training records and written safety & health procedures.

10.0 APPENDICES