



Department Laboratory Safety Plan (DLSP)

**A SAFETY MANUAL DESIGNED TO SUPPLEMENT THE COLBY COLLEGE LABORATORY
SAFETY PLAN (LSP)**

STUDENTS
IN THE CASE OF AN EMERGENCY:

- If you are in immediate danger such as a fire, or large chemical spill, pull the fire alarm, evacuate the area and building, and call Security at Extension 5911, or from a mobile phone at 859-5911, from a safe location. Locate the members of your lab personnel outside at a prearranged meeting space.
- Notify your instructor or supervisor if not in immediate danger. Phone numbers for people responsible for the room are listed on the door labels outside of each lab. **DO NOT LEAVE THE AREA UNTIL HELP ARRIVES.**
- Never attempt to handle an emergency or a spill by yourself. Always find a partner and notify Security at extension 5911 or 859-5911 from a mobile phone.
- **DO NOT** attempt to handle any emergency situations that make you feel uncomfortable. Please evacuate the area and call for immediate assistance (use information on door signs).
- **THE COLBY EMERGENCY CAMPUS SIREN:** If you hear the alarm siren atop the Mudd building sound, listen for and follow any verbal instructions given at the end of the tone. If you cannot clearly understand the instructions, go to the Colby College homepage (www.colby.edu) and follow the instructions given there.
- When the Health Center (HC) is open, all students with minor/moderate injuries should go to the HC for evaluations. The HC is open 8-8 Monday-Friday and 12-8 Saturday-Sunday.
- Off hours or for more serious injuries should go to the ER for evaluation either transported by Security or if need be City ambulance.

TABLE OF CONTENTS:

PG 2: COLBY COLLEGE EMERGENCY PROTOCOL FOR STUDENTS

- 1.0 PURPOSE
- 2.0 SCOPE
- 3.0 REFERENCE DOCUMENTS
- 4.0 LAB SAFETY REQUIREMENTS
 - 4.1. Geochemistry Laboratory Safety Requirements
 - 4.2. Fieldwork Specific Safety Requirements
 - 4.3. Requirements for Personal Protective Equipment
 - 4.4. Requirements for Personal Hygiene
 - 4.5. Equipment Specific Lab Safety Requirements
- 5.0 WASTE MANAGEMENT
 - 5.1. Types of waste
 - 5.2. Hazardous Waste
 - 5.3. Solid Waste
- 6.0 HAZARD COMMUNICATION
 - 6.1. Door Signs
 - 6.2. MSDS/SDS
- 7.0 EMERGENCIES
 - 7.1. Chemical Injury Response
- 8.0 RECORDS
- 9.0 TRAINING
- 10.0 ACKNOWLEDGEMENT

APPENDICES:

- Appendix A: Emergency Door Signage
- Appendix B: Laboratory Safety Training Acknowledgment Form

1.0 PURPOSE

This Departmental Laboratory Safety Plan (DLSP) provides the specific safety requirements to work in a Geology Department laboratory containing hazardous materials or hazardous equipment at Colby College. This plan supplements the existing campus-wide Laboratory Safety Plan (LSP). The LSP/DLSP complies with the requirements of OSHA's Laboratory Safety Standard, 29 CFR 1910.1450.

2.0 SCOPE

The requirements of this DLSP apply to all faculty, staff, students, and student employees that work, whether for academic credit or for employment, in Geology Department laboratory facilities containing hazardous materials and/or hazardous equipment at Colby College. Facilities with hazardous chemicals are Mudd 102B and Arey 407. Facilities with hazardous equipment are Mudd 102, 102A, and 109.

3.0 REFERENCE DOCUMENTS

Prudent Practices in the Laboratory; The National Academies Press: Washington, DC, 2011
OSHA, Occupational Exposure to Hazardous Chemicals in Laboratories, 29 CFR 1910.1450
Colby College Laboratory Safety Plan (LSP), rev. May, 2016

4.0 LAB SAFETY REQUIREMENTS

4.1. Geochemistry Laboratory Safety Requirements:

Any students working unsupervised in Arey 407 and Mudd 102B must complete Departmental safety training and utilize the buddy system. It is the responsibility of the PI/supervisor to determine if these criteria apply to their students. Faculty and staff may require and provide additional training specific to their laboratories.

4.2. Fieldwork Specific Safety Requirements:

All students conducting fieldwork without direct faculty supervision must provide a faculty member with a written or electronic record of where they plan to work each time they leave for the field.

Some sampling equipment requires specific PPE:

- Closed-toed shoes and shatter-resistant eye protection are required while using hammers.
- Closed-toed shoes are required while using piston-coring equipment.
- Close-toed shoes, hearing protection, and shatter-resistant eye protection are required while using the gasoline-powered rock drill.

4.3. Requirements for Personal Protective Equipment in laboratories containing hazardous chemicals and/or equipment:

- 4.3.1. Arey 407 and Mudd 102B require appropriate eye protection to be worn at all times. Specific types of goggles not supplied by the department, but required for extra precautions, can be supplied by the PI or research supervisor.
- 4.3.2. Gloves are provided by the Geology Department. No single glove material provides effective protection for all uses. Review the MSDS/SDS to determine if the gloves are compatible with the procedures you are using. Inspect all gloves for rips and tears before use. Do not use expired gloves.
- 4.3.3. The use of lab coats or aprons is not required in the Geology Department. The use of lab coat or apron will, however, provide an additional protective layer against a spill or burn and is highly recommended when working with hazardous chemicals.

4.4. Requirements for Personal Hygiene:

- 4.4.1. Arey 407 and Mudd 102B are supplied with safety-compliant cabinets for proper storage of flammable, acidic, basic, or toxic chemicals. Improper storage of chemicals in working hoods, on bench tops, or on the floor is prohibited.

4.5. Equipment Specific Lab Safety Requirements:

- 4.5.1. Laboratory Chemical Hoods (Arey 407 and Mudd 102B): Laboratory chemical hoods are one of the most important components used to protect personnel from exposure to hazardous chemicals and other harmful agents.
- 4.5.2. Sample preparation equipment (Mudd 102, 102A, and 109)
 - All persons present are required to wear hearing protection and shatter-resistant eye protection while any rock saw is in use.
 - Gloves must be worn while using the slab saw, trim saw, and thin-section cutoff saw that use lapidary oil.
 - All persons present are required to wear hearing protection and shatter-resistant eye protection when the rock crusher is in use.
 - All persons present are required to wear shatter-resistant eye protection when the rock splitter is in use.
 - All persons present are required to wear hearing protection and shatter-resistant eye protection when the mechanical sieves are in use.
 - All persons present are required to wear eye protection when the thin-section lapping and polishing equipment is in use.
 - Thermal gloves and eye protection are required for the sample ovens.

5.0 WASTE MANAGEMENT

5.1. Types of Laboratory Waste:

Lab waste may fall into a number of different categories and management requirements. It is the responsibility of faculty members who oversee laboratories to properly characterize

and manage waste generated in their labs. In most cases, laboratory waste can be categorized as hazardous waste, or solid waste.

5.2. Hazardous Waste:

Per Federal and States laws, the properties of hazardous waste are defined as any substance that exhibits one or more of the following hazardous characteristics:

- IGNITABILITY (flash point less than 140F),
- CORROSIVE (pH less than 2 or greater than 12.5),
- REACTIVITY reactive to water, shock, heat, pressure, or gives off toxic gases, or unstable and reacts rapidly or explosively,
- TOXICITY (that which will leach more than a specified amount of heavy metals, pesticides, and carcinogens/mutagens).

Hazardous wastes are rarely generated in the Geology Department. When hazardous wastes are generated it is the responsibility of the PI/supervisor to notify the CHO and arrange for the removal of the wastes to the Hazardous Waste Storage Area located in Keyes 004.

6.0 HAZARD COMMUNICATION

6.1. Door Signs:

6.1.1. Every Geology Department laboratory containing hazardous materials or equipment will display a current list of the contact personnel for that workspace and GHS pictograms showing the hazards located in that room. This information is essential in the case of emergency (APPENDIX 1).

6.2 MSDS/SDS:

- 6.2.2 Colby College maintains a subscription to MSDSonline an online database with all of the College's hazardous materials.
- 6.2.3 All students, staff, and Faculty have access to MSDSonline through the College's EHS Website.
- 6.2.4 The College's Hazardous Communication Program (Reference Document 3.7) details how to access the database and add new materials.

7.0 LABORATORY EMERGENCIES

7.1. Chemical Injury Response:

Emergency eyewash and shower stations are present in Arey 409 and Mudd 102B.

7.1.2 Treatment of Hydrofluoric Acid Contamination: HF can cause severe systemic toxicity from even relatively small dermal exposures. Exposure to this compound should be treated with extreme caution. Treatment involves a calcium or magnesium gluconate antidote that works by combining with HF to form insoluble calcium fluoride, thus preventing the extraction of calcium from

tissues and bones. If exposed, seek immediate medical help, successful treatment requires prompt medical treatment.

- 7.1.2.1 Know the location of the HF Treatment Kit and always check the expiration date of the calcium gluconate antidote before conducting procedures using HF.
- 7.1.2.2 HF skin contact response procedures:
 - Call for help immediately and notify Security at Extension 5911.
 - Remove contaminated clothing immediately
 - Decontaminate by irrigation with copious amounts of water. Flush the affected areas using the safety shower a minimum of 5 minutes.
 - Apply Calcium gluconate gel liberally to the affected area.
 - If the contamination is limited to the fingers then immerse the fingers in a liquid antacid (Equate or Mylanta) after applying the Calcium gluconate.
 - Place ice packs on the affected area. This will retard the diffusion of the fluoride ion further into the skin.
 - Stay with the victim until help arrives.
- 7.1.2.3 HF eye contact procedures:
 - Call for help immediately and notify Security at Extension 5911.
 - Hold the eyelid open and flush the affected eye (or both eyes) for a minimum of 15 minutes.
 - Place ice packs on the affected eye. This will retard the diffusion of the fluoride ion into the eye. Do not use oily drops, ointment or HF skin burn treatments.
 - Stay with the victim until help arrives.
- 7.1.2.4 HF inhalation response procedures:
 - If the area is safe for you to enter, immediately move to fresh air and call for emergency help.
- 7.1.2.5 HF ingestion response procedures:
 - Ingestion of HF is life threatening. Seek immediate medical attention.
 - Drink large amounts of water or milk to dilute the acid. Antacids should be administered if medical help is delayed.
 - Do not induce vomiting.

All personnel who work in a laboratory in which hazardous materials are used must be familiar with the location and use of the spill kit. Basic spill kits are located in a marked cabinet (typically under a sink).

8.0 RECORDS

Copies of the Geology DLSP are located in the Geology office in Mudd.

9.0 TRAINING

- 9.1 Students working unsupervised in Arey 407 or Mudd 102B must complete safety training which includes at a minimum they review, understand and follow all applicable safety rules and regulations that apply to the workplace and sign a

safety agreement (Appendix B) that assures that they understand and agree to follow the LSP/DLSP.

- 9.2 The student training will include the requirements and use of the LSP/DLSP, MSDS/SDS, PPE, general safety rules, where emergency equipment is located (safety eye wash, showers, spill kits, first aid etc), chemical management, and emergency procedures for accidents and spills.
- An online Moodle will cover the general lab safety requirements of the LSP
 - Students using equipment in Mudd 102, 102A, or 109 must be properly trained by a faculty member.

10.0 ACKNOWLEDGEMENT

By signing the DLSP the following Colby Personnel are certifying that they have reviewed these procedures and safety requirements, find the contents acceptable, and agree to ensure implementation within the Geology Department.

Date

Date

Date

Date

Date

APPENDIX D: Door Signage



Mudd 102B

Geochemistry lab

AUTHORIZED PERSONNEL ONLY

Prof. Bob Gastaldo: Ext. 580?, Home no. ???-???-????

Prof. Bruce Rueger: Ext.580?, Home no. ???-???-????

IN AN EMERGENCY CALL COLBY

SECURITY AT 859-5911

PPE must be worn when using chemicals or hazardous procedures:



Safety Glasses



Gloves

Laboratory Chemical Hazards:



Flammable Liquids



Oxidizing Liquids



Acute
Toxicity



Skin Corrosion



Skin Irritation



CMR¹, STOT²,
Aspiration Hazard

These need to be updated for Mudd 102B. I assume flammable, toxic, corrosion, skin irritant, and aspiration?



Arey 407

Geochemistry lab

AUTHORIZED PERSONNEL ONLY

Prof. Bob Nelson: Ext. 580?, Home no. ???-???-????

IN AN EMERGENCY CALL COLBY

SECURITY AT 859-5911

PPE must be worn when using chemicals or hazardous procedures:



Safety Glasses



Gloves

Laboratory Chemical Hazards:



Flammable Liquids



Oxidizing Liquids



Acute Toxicity



Skin Corrosion



Skin Irritation



CMR¹, STOT²,
Aspiration Hazard

These need to be updated for Arey 407. I assume flammable, toxic, corrosion, skin irritant, and aspiration?



Mudd 205

SEM and XRD Lab

AUTHORIZED PERSONNEL ONLY

Prof. Walter (Bill) Sullivan: Ext. 5803, Mobile no. 307-760-5109

Chuck Jones: Ext. 5875, Mobile no. 207-649-4338

Randall Downer: Ext. 4223

IN AN EMERGENCY CALL COLBY
SECURITY AT 859-5911

Laboratory Chemical Hazards:



Compressed Gases



Mudd 203

XRF Lab

AUTHORIZED PERSONNEL ONLY

Prof. Tasha Dunn: Ext. 580?, Mobile no. ???-???-????

Chuck Jones: Ext. 5875, Mobile no. 207-649-4338

IN AN EMERGENCY CALL COLBY

SECURITY AT 859-5911



Mudd 109

Rock Cutting Lab

AUTHORIZED PERSONNEL ONLY

Prof. Walter (Bill) Sullivan: Ext. 5803, Mobile no. 307-760-5109

Chuck Jones: Ext. 5875, Mobile no. 207-649-4338

IN AN EMERGENCY CALL COLBY

SECURITY AT 859-5911

Physical Hazards:

Noise, Flying Objects



Mudd 102A

Thin Section Lab

AUTHORIZED PERSONNEL ONLY

Prof. Walter (Bill) Sullivan: Ext. 5803, Mobile no. 307-760-5109

Chuck Jones: Ext. 5875, Mobile no. 207-649-4338

IN AN EMERGENCY CALL COLBY

SECURITY AT 859-5911

Physical Hazards:

Noise, Flying Objects



Mudd 102

Sample Preparation Lab

AUTHORIZED PERSONNEL ONLY

Prof. Walter (Bill) Sullivan: Ext. 5803, Mobile no. 307-760-5109

Chuck Jones: Ext. 5875, Mobile no. 207-649-4338

IN AN EMERGENCY CALL COLBY

SECURITY AT 859-5911

PPE must be worn when using chemicals or hazardous procedures:



Safety Glasses



Gloves

Physical Hazards:

Noise, Flying Objects

Laboratory Chemical Hazards:



APPENDIX B: Laboratory Safety Training Acknowledgment



LABORATORY SAFETY TRAINING ACKNOWLEDGEMENT

By signing this Safety Training Acknowledgement, I, _____ (Printed Name) confirm that:

- I have reviewed and understand the Geology Department's Laboratory Safety Plan (DLSP) and Colby College Laboratory Safety Plan (LSP).
- I will follow all safety rules found in the applicable Plans, including, but not limited to, proper protective equipment, chemical handling, emergency response, proper attire, hazardous waste handling, and no food or drink in labs.
- I will report any safety hazard to my instructor or the CHO.
- I will report any chemical spill to my instructor immediately.
- I understand that failure to follow the practices contained in the plans could result in a downward grade adjustment and/or disciplinary action up to and including dismissal from Colby.
- I understand that failure to follow the practices contained in the LSP and DLSP could result in serious injury, or even death to a classmate or myself.

Signature: _____

Date: _____

