



Environmental Analysis Program

Pomona College
Biogeochemistry Laboratory

SOP-L002

General Laboratory Safety Plan

Standard Operating Procedure

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1. Purpose

The objective of this SOP is to create a safe operating environment for all researchers in the EA Program laboratories. It establishes general safety rules, emergency procedures, training requirements, and record-keeping procedures.

This Laboratory Safety Plan is a living document and requires ongoing updating, editing, and expansion as incidents occur and lessons are learned.

2. Scope

- **Applies to:** All staff, students, and researchers working in EA Program laboratories and field sites
- **Does not apply to:** Visitors on supervised tours who do not handle materials or equipment
- **Location:** SGM 133 and all associated EA Program spaces

3. Acknowledgements

3.1. Student Contributions

EA030, Fall 2015: Benjamin Schmidt, Kay Garlick-Ott, Marc Los Huertos, Grace Hruska, Juan Jaramillo, Thomas Kelleher, RaSia Khepra, Alexander Landau, Peter Mellinger, Emelia von Saltza, Alexandra Tchaoucheva, Ki'Amber Thompson, Malone Mischke.

4. Responsibilities

Role	Responsibility
Principal Investigator	Ensure all researchers are trained; approve training records
Lab Manager	Conduct training, verify competency, sign off on forms
Chemical Safety Officer	Maintain SOPs, promote safety culture, conduct periodic reviews
All Researchers	Complete required training, follow all SOPs, report hazards

5. Definitions

Laboratory Manager: A student, staff, or faculty member who has been trained and identified as the laboratory manager. The laboratory manager oversees all training and monitors all activities in the laboratory. The current laboratory manager is Assoc. Professor Marc Los Huertos.

Chemical Safety Officer: Assigned annually; responsible for maintaining SOPs, training researchers, and ensuring safe laboratory conditions (see [SOP-L003](#)).

PPE (Personal Protective Equipment): Protective clothing, goggles, gloves, or other garments designed to protect the wearer from injury or infection.

SDS (Safety Data Sheet): A document describing the hazards, safe handling, storage, disposal, and first aid for each chemical used in the lab. The SDS binder is located on the counter next to the east entrance to SGM 133. - **Carcinogen:** A substance capable of causing cancer in living tissue; classified by IARC (Group 1, 2A, 2B) or NTP; requires special handling, documentation, and medical surveillance in many jurisdictions. - **Emergency eyewash station:** A plumbed fixture that delivers a continuous low-pressure flow of water to both eyes simultaneously; located within 10 seconds of any area where corrosive chemicals are used; activate immediately after any eye contact with a hazardous substance and flush for a minimum of 15 minutes. - **Fume hood:** A ventilated enclosure that captures and exhausts chemical vapors, dusts, and fumes away from the work area; the sash must be kept at or below the safe working height marked on the hood. - **Personal protective equipment (PPE):** Wearable protection including safety glasses, splash goggles, face shields, lab coats, nitrile or other chemically appropriate gloves, and closed-toe shoes; selected based on the specific hazards of each procedure. - **Safety Data Sheet (SDS):** A standardized 16-section document (GHS format) describing a chemical's identity, physical and health hazards, safe handling, storage, disposal, and emergency response; must be accessible for every hazardous chemical in the lab. - **Secondary containment:** A tray, cabinet, or outer container that holds spilled liquid if the primary container fails; required under all liquid chemicals stored above bench height and all corrosives.

6. Health and Safety

6.1. General Safety Rules

- Developing a safe and productive environment is key to sustaining a strong scientific ethic; reflect on how you and your colleagues can promote safe conditions
- All personnel must always employ a buddy system, whether working within or outside traditional work hours (8 AM – 5 PM), and on weekends
- You must obtain written permission to work in the lab outside traditional hours
- No work is allowed in the laboratory without expressed permission from the Laboratory Manager
- No food, drink, or cosmetics in the laboratory
- No headphones or earbuds that block auditory hazard warnings
- Long hair must be tied back; loose clothing and dangling jewelry must be secured
- Wash hands thoroughly before leaving the laboratory
- Report all accidents, injuries, and near-misses to the lab manager immediately

6.2. Personal Protective Equipment (PPE)

When entering the lab:

- ☐ Your legs should be covered
- ☐ Wear closed-toed shoes (no sandals)
- ☐ Put on a lab coat as you enter
- ☐ Safety glasses or goggles (when working with chemicals)
- ☐ Nitrile gloves (when handling chemicals or biological materials)
- ☐ Wear a mask when working in the lab with another person (to protect against infectious diseases)

Additional PPE may be required depending on the procedure. Consult the specific SOP and the SDS for each chemical.

6.3. Emergency Equipment Locations

Know the location of the following before beginning any work:

- ☐ Fire extinguisher (near the front entrance)
- ☐ Safety shower (right and left sides of the lab)
- ☐ Eyewash station (right and left sides of the lab)
- ☐ First aid kit
- ☐ Spill kit (mounted on the wall near the PPE shelves, entrance to SGM 133)
- ☐ SDS binder (counter next to the east entrance)
- ☐ Emergency exits
- ☐ Lab contact list (posted in SGM 133; notify the lab manager if it seems out of date)

7. Emergency Procedures

! Emergency Numbers

- **Campus Safety:** (909) 607-2000 (from a campus phone, dial x72000) – open 24/7
- **Emergency:** 911
- **Poison Control:** 1-800-222-1222
- **CUC Student Health Services:** 909-621-8222
- **CUC Environmental Health and Safety:** 909-621-8538

When calling Campus Safety, be ready to provide your name, the location of the emergency, and your contact phone number. Campus Safety will assess the situation and call any necessary services (ambulance, fire department, etc.).

Pomona College On-Call Deans and the Monsour On-Call Counselor are reachable via Campus Safety's emergency number.

7.1. Earthquakes

Earthquakes are common in southern California. Developing an effective strategy before an earthquake strikes is key to laboratory safety.

Indoor response:

1. Move away from windows, filing cabinets, shelves, chemicals, and other heavy objects that may fall
2. “Duck, Cover, and Hold” until shaking stops
3. If not near a table or sturdy desk, crouch against an interior wall and cover your neck and head
4. Once shaking stops, take any necessary items (phone, wallet, medication) and leave the building
5. Go to the nearest Pomona College evacuation site and wait for further instructions
6. Put on shoes as there could be broken debris
7. DO NOT USE ELEVATORS

Outdoor response:

1. Move away from buildings, trees, signs, electrical poles, and wires
2. Protect your head and neck
3. After shaking stops, go to the nearest evacuation site

Aftershocks may occur. Be prepared and follow appropriate evacuation plans if they do.

7.2. Fires and Evacuation

In the case of a small fire, you may attempt to use a fire extinguisher. Remember:

1. Remove people from the area
2. Activate the closest fire alarm
3. Call Campus Safety
4. Extinguish the fire only if safe to do so:
 - Place yourself between the fire and the exit
 - **P**ull the pin
 - **A**im the nozzle toward the base of the fire
 - **S**queeze the handle to release the extinguishing agent
 - **S**weep the base of the fire from side to side
5. Use only one fire extinguisher; if the fire is not controlled after one, leave the room, close the door, and evacuate

If trapped in a building:

1. Call Campus Safety
2. Close all windows and doors
3. Wet and place cloth material around and under the door to prevent smoke from entering

7.3. Medical Emergencies

1. Call Campus Safety; let them know the victim's condition
2. Provide necessary first aid until Campus Safety and/or emergency services arrive (only if trained)
3. Do not move the injured person unless necessary
4. See the campus evacuation map for AED locations

7.4. Chemical Spills

If there is a hazardous chemical spill in the laboratory, do not attempt to clean it up unless trained and equipped to do so. Refer to [SOP-L003 Hazardous Materials Handling](#) for spill response procedures.

- If chemicals get in your eye, flush for 15 minutes at the eyewash station
- If toxic materials are spilled on your body, remove all clothing and stand beneath the lab shower for 15 minutes
- In the event of inhalation, move to fresh air
- If someone is at risk, protect yourself first; only provide assistance if you can do so safely

7.5. Crime on Campus

Active shooter: Exit the building if safe to do so. If not, close and lock the laboratory door, turn off lights, pull down window shades, keep quiet, silence phones, and call Campus Safety.

Bomb threat and utilities failure: Review the Emergency Brochure posted near laboratory exits for detailed procedures.

8. Training Requirements

8.1. Required Training for All Researchers

A researcher is not permitted to use lab equipment until he or she has been appropriately trained. Training is complete only after the Training Documentation Form (Appendix A) has been signed by both the researcher and the lab manager.

Every researcher must complete the following before beginning independent work:

Order	Training Item	SOP Reference
1	General Laboratory Safety (this SOP)	L01
2	Hazardous Materials Handling	L003
3	Foreign Soil Handling (all users, even if not using foreign soils)	L015
4	Field Safety (if conducting field work)	F001

Order	Training Item	SOP Reference
5	Pomona College Lab Safety Course	Annual requirement
6	Pomona College Handbook on Sexual Harassment	Required reading
7	Project-specific SOPs	As assigned by PI

8.2. Training Procedure

1. Read the assigned SOP thoroughly
2. Discuss the SOP with the lab manager, including hazards, mitigation strategies, and emergency procedures
3. Demonstrate competency for any hands-on procedures (if applicable)
4. Sign and date the SOP Training Documentation Form (Appendix A)
5. Obtain the lab manager's signature verifying your training
6. Place the completed form in the SOP Training Binder in the lab

8.3. Annual Requirements

- All researchers must attend the Pomona College Lab Safety Course each year they are working in the lab
- Training sign-offs must be renewed when SOPs are revised to a new version
- The lab manager documents the completion date of the annual safety course

8.4. Estimated Time

Initial safety training (this SOP plus discussion) generally requires approximately 45 minutes.

9. Housekeeping

- When you arrive, look around to identify any safety concerns and report them immediately to the Lab Manager
- Keep work areas clean and organized
- Return all chemicals and equipment to their designated storage locations after use
- Clean up spills immediately using appropriate procedures
- Dispose of waste in the correct containers (chemical waste, sharps, biohazard, general trash)
- Do not block emergency exits, safety showers, or eyewash stations
- Report broken or malfunctioning equipment to the lab manager

10. Ethical Efforts and Contributions

Working in the lab requires thinking carefully about what you are contributing and how others using the lab will find it. Each researcher is expected to leave the lab in better condition than they found it and to contribute to the ongoing improvement of safety documentation.

11. References

12. References

13. Appendix A: SOP Training Documentation Form

Print this form for each researcher. Once completed and signed, place it in the SOP Training Binder in the lab.

13.1. SOP Training Documentation

Researcher Name: _____

Email Address: _____

Expected Graduation Year (NA for non-students): _____

13.1.1. Agreement

By signing each row below, I confirm that I have read and understood the SOP, including all safety hazards, operating procedures, and emergency protocols. I understand that any injuries or equipment damage that occur while I am using laboratory equipment after being trained will be my responsibility. I agree to follow the procedures as written and to report any deviations, incidents, or unsafe conditions to the lab manager.

Initials: _____

13.1.2. SOP Sign-Off Record

SOP No.	SOP Title	Version	Researcher Signature	Date	Lab Manager Signature	Date
L01	General Laboratory Safety					
L02	Hazardous Materials Handling					

SOP No.	SOP Title	Version	Researcher Signature	Date	Lab Manager Signature	Date
F01	Field Safety					
F41	Foreign Soil Handling					

13.1.3. Pomona College Lab Safety Course (Annual Requirement)

Academic Year	Date Completed	Lab Manager Signature
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13.1.4. Sexual Harassment Policy Acknowledgment

Date Read	Researcher Signature
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13.1.5. Additional Notes