

THE COLLEGE OF
WOOSTER

**Department of Biology
Safety and Research Protocols**

One of the most important responsibilities of every member of the Biology community is to conduct research responsibly and safely. Safety should be an underlying principle on which research protocols and researcher behaviors are premised. Each person – student or staff member -- is responsible for anticipating how his/her research can be conducted in a way that protects his/her own health and the safety of others. The safety training we provide at the start of each academic year is intended to educate and to reinforce our commitment to thoughtful, safe research conduct.

Following completion of the two training sessions at the beginning of the fall semester you must sign the sheet that accompanies this handout and return it to the Biology Department Chair. Your signature will indicate that you have attended both Safety Training sessions, that you have received and read these Safety Guidelines, and that you understand all the material contained in these documents and presentations. Furthermore, in signing, you agree to abide by these guidelines as well as any additional safety instructions adopted by the Department of Biology. Students also agree to follow additional safety instructions from I.S. advisors, supervisors, and lab instructors.

What is in this document:

- Building hours
- When you need a safety buddy
- Safety for those doing field work
- Obtaining and storing chemicals
- Chemical safety and good laboratory practices

Building hours:

Mateer Hall is open for laboratory and classroom work during the following hours:

Monday - Thursday	7:00 a.m. – 11:00 p.m.
Friday	7:00 a.m. – 5:00 p.m.
Saturday	1:00 p.m. – 6:00 p.m.
Sunday	1:00 p.m. – 11:00 p.m.

Senior Biology majors working on I.S. and Biology department employees have 24-hour access to the Biology building by card swipe. *Other students need special permission* to be in Mateer Hall outside the normal building hours. They may not be admitted to Mateer Hall unless they have special swipe access. A swipe record is required of everyone who works in Mateer after normal building hours. Be sure to swipe in, so we know who is in the building at these times.

During evening and weekend periods when Mateer is open, the building is under the care of the student building monitor. If you are in Mateer Hall, you are required to comply with requests that are made of you by this person, whether to moderate your behavior or to comply with safety protocols. Excessive noise, horseplay, misuse of furniture, and running in the halls or on the stairs are prohibited. The building monitor will be at the desk in the lobby, except when they are doing rounds of the laboratories.

The Building Monitor will clear Mateer Hall of all students at 11:00 pm or at the appropriate closing time for that day. *All students must leave Mateer at the request of the monitor.* Failure to comply will require that a Security Officer be summoned to escort you from the building, and will result in a loss of your building use privileges. Students who have swipe access may re-enter the building with their swipe cards after they leave. This is to ensure that we know who is in the building at any time.

Safety Buddies:

- 1) Check with your supervisor to determine whether you need to have a *Safety Buddy* with you when you are doing laboratory work during the day (M-F, 8 a.m. to 5 p.m.). Different buddy requirements apply, depending on what kind of work you are doing.
- 2) During evenings and on weekends a *Safety Buddy* is required at all times when anyone is *doing laboratory work involving chemicals* in Mateer. For low-risk activities, the building monitor can be your buddy if you are working during open building hours. However, if you are working in the laboratory in Mateer at times when there is no building monitor, *you must have a buddy in the building with you as long as you are doing any kind of lab work* (including low risk; see below). This is the policy of OSHA, the College, and the Department, and applies to all faculty, staff, and students. If you are not working in a laboratory setting which involves chemicals, glassware, and bench-top procedures, you do not need to have a safety buddy.

Consult your advisor to determine the risk level of your planned laboratory work. If you are unsure, the task should be considered high-risk.

Activities in the building which present NO ADDITIONAL RISK above that which might be incurred if you did those activities in your dorm room *do not require the presence of a safety buddy*. This includes working on the computers, feeding or caring for animals (when the animals are not being handled), watering the greenhouse, copying notes, or using Mateer for study purposes. A buddy is not required for these activities, even after normal building hours; however, we strongly recommend that you always have a friend in the building with you, and that you carry your cell phone.

If you are engaged in a *LOW RISK* activity, such as running a gel, running lab experiments that do not require dangerous chemicals, or using a microscope, then periodic checks by another trained person (such as a Building Monitor) at half-hour intervals will serve as an alternative to having a safety buddy. After building hours, you must have a safety buddy who is in the building with you while you are working, but your buddy can be doing work in another lab or on another floor of Mateer.

If you are engaged in a *HIGH-RISK* procedure or assay, you must have a *safety buddy* in the same room with you, *who is familiar with the procedures* which you are doing, and can assist you if problems arise. This includes animal surgeries or other invasive animal procedures (after you have been trained appropriately), some lab procedures involving dangerous chemicals, and other protocols so designated by a member of the faculty or the staff.

If you are engaged in *VERY HIGH-RISK PROCEDURES* such as working with radioactivity or conducting invasive animal procedures for the first time, your *supervisor or IS advisor must be present* as your safety buddy, and must monitor your work.

Doing field work:

- 1) Field work may put you in a potentially hazardous situation. Any field work is safer if you work with a buddy. This is especially important if you are working in aquatic environments. We strongly recommend that every student doing field work does so with a buddy. Before you and your buddy leave campus for your field site, you should notify another friend on campus and tell him/her where you are going, what you are doing, and when you expect to be back. You should carry a working (i.e., charged) cell phone, with your advisor's number programmed into it. Be sure to take water, maps, and appropriate clothing with you. Be prepared for changes in the weather. Take cover during thunder and lightening storms. Use common sense.
- 2) If you are collecting field data or specimens, avoid parking along busy roadways. Find a turnoff or a side road where you can park safely. If you are approached by anyone who seems suspicious, you should leave at once and report the incident to appropriate authorities.
- 3) If you are working on private property, you must have the permission of the landowner before you can enter. Be sure to secure appropriate permissions to conduct your research, and comply with State and Federal laws, particularly in the handling of animals. Your advisor will provide you with more information on these topics.
- 4) If you are making authorized collections of animals or plants, you should make sure that they ultimately come to reside in some place where they will be of long-term use. Specimens must be labeled with the date, the collection site, and the collector's name. Without locality data, a collected specimen is worthless. If you freeze specimens for later analysis, the package must be labeled with collector, date, and locality information. Do not leave unlabeled materials in labs or in incubators, freezers, or storage cabinets.
- 5) If you are working in the field, you should carry a first aid kit with you at all times, and you should know how to use it. Field trip first aid kits are available from Karen Rodda. They should be returned promptly when you are done with them. Report any items which you used from the kit, so they can be replaced.
- 6) Conduct yourself in a responsible manner at all times. If you would not behave in a certain way when faculty members are present, then don't do it when they are not around.

Obtaining, storing, and disposing of chemicals

- 1) The chemical stockroom is located in Mateer 213. Chemicals can be obtained from the department stockroom during normal weekday hours (Fall semester: 9:00 a.m.-3:00 p.m. Monday-Thursday; Spring semester 9:00 a.m.-4:00 pm Monday-Thurs and 9:00a.m.-2p.m. Friday). Please contact the Lab Technician or for access during these times. Beyond these times, you must request chemicals from the stockroom through your instructor or IS advisor. You must have permission from your instructor to remove chemicals from the stockroom. No other faculty member will provide you with access to the stockroom. If you move a chemical stock bottle from the stockroom, or if you move a chemical from one room to another, you must sign the chemical out from the room where it is housed, indicating to what room it has been taken. Sign-out sheets will be posted near the chemicals. When you are finished with the chemical, return it to its original location and sign the chemical back in. Access to the stockroom after posted hours or on weekends can only be obtained from your advisor or instructor.

- 2) The Material Safety Data Sheets (MSDS) for every chemical in the building are on file in the main lobby of Mateer Hall. These are your first source of information for understanding the proper use of a chemical and any hazards which it might present. In addition, any laboratory which uses chemicals should have a file with MSDS sheets for all the chemicals which is stored *in that room*. Be sure you know where that file is in the room where you are working. You should **read the MSDS sheets** for each chemical you use, to be sure that you are clear on how to handle and dispose of that chemical. You should also make an additional copy of the MSDS for materials you are using, and keep those extra copies in your IS folder
- 3) **Any time you put a substance into a vial, bottle, or beaker, the new vial, bottle, or beaker MUST BE LABELED.** Label all chemicals and solutions with the name of the material, the nature and degree of hazard, appropriate precautions, the name of the person responsible for the container, and the date. *All beakers, flasks, bottles, and tubes of chemicals or solutions must be labeled at all times.* No anonymous solutions are to be left in labs, on shelves, or in refrigerators. Failure to appropriately label such materials puts others at potential risk, and could result in the department undertaking expensive disposal protocols that are, in fact, unnecessary.
- 4) Ask your supervisor to explain **how to properly dispose of each of the chemical materials** you are using, or how to dispose of any mixtures or solutions that are used in your work. Information on proper waste disposal can also be found on the MSDS. Label all waste containers with a chemical name/description of the material, the amount you added to the waste bin, and the date you added it. Waste containers should be securely capped. Record every addition you make to any waste container on the appropriate log sheet. Be sure to separate wastes if appropriate. When full, inform your supervisor. These waste containers should be brought to the stockroom and stored under the hood for final disposal.
- 5) If you need only a small amount of a chemical, do not remove the stock bottle from the stock room. Instead, use a *secondary container* to store or transport a smaller amount of a chemical to your lab bench, and use the elevator to avoid tripping on the stairs. If you are transporting items that form gases, such as “dry ice,” liquid nitrogen, or gas cylinders, place temporary signs on elevator doors, let the gas-formers ride up in the elevator alone while you take the stairs. (Then remove the signs.)

General laboratory procedures and precautions

- 1) **Be prepared** before you start any procedure. Read procedures, MSDS sheets, and chemical labels, and prepare for any hazards prior to starting your experiment. Always consider these questions before beginning an experiment:
 - i. What are the hazards which I could face in this procedure?
 - ii. What are the worst possible things that could go wrong?
 - iii. How will I deal with things when they go wrong?
 - iv. What are the best practices, protective facilities, devices, and/or equipment necessary to minimize exposure to hazards?
- 2) Never smell or taste chemicals. Never pipette by mouth. Be sure to use gloves, and the appropriate type of gloves, when handling chemicals. See the following web site to help

you determine the gloves you need: <http://www.bestglove.com/site/> Remove your gloves before opening doors, using a computer keyboard, or writing in your lab book.

- 3) If you enter or leave the building during evening or weekend open hours, even if you swiped in the back door, please **sign in** with the building monitor at the front desk. This is so the building monitor is aware of who is in the building during the times they are on duty, and can check on you during rounds. Please sign OUT again when you leave, so the monitor knows that you are no longer in the building.
- 4) The appropriate *personal protective equipment* should be worn at all times. The attire you wear must correspond to the risks and settings you will encounter in the lab where you are working. Comply with the signs by the door to each room, which describe the appropriate attire for persons working in that laboratory or classroom space. For spaces where there is chemical use, this should include but is not limited to safety glasses and lab coat or apron. In chemical laboratories, no open-toed shoes, sandals, high-heeled or platform shoes or excessively loose or baggy clothing should be worn. Shorts, short skirts/dresses, or bare midriffs are not permitted. Long hair must be tied back and bulky finger jewelry removed. Spills put both you and others at risk. Persons failing to comply may be required to leave the laboratory until they have modified their dress to enhance their personal safety.
- 5) Read, understand, and obey all placards and caution labels on chemicals and equipment.
- 6) Do not eat, drink, smoke, use smokeless tobacco, chew gum, or apply cosmetics in the laboratory. Do not store food, drink, or personal items in the laboratory refrigerators, cabinets, etc.
- 7) Know the locations and operating procedures of all safety equipment, including first aid kits, spill kits, eyewash stations, safety showers, and fire extinguishers. There are safety showers at the north ends of the first- and third-floor hallways. If you are exposed to a chemical spill, USE THE SHOWERS. That is what they are there for.
- 8) In case of a power outage, emergency lighting should come on in the hallways. In addition, there is a flashlight on the shelf by the first aid kit in each laboratory. You should be prepared to be able to find that, even in the dark.
- 9) Keep the aisles and floor space in labs and classrooms clear of obstacles. You should be able to move safely toward an exit even in the dark.
- 10) Know the location of the fire alarms and exits. *In the event of a building evacuation, all persons working in Mateer Hall should go to the front of Morgan Hall, and remain there until released by the proper authority. Do not go back to your room. We need to be sure that you are accounted for.*
- 11) Know the location of emergency telephones and posted contact numbers. In Mateer, there is a local phone on the ground floor (basement) directly across from the elevator. Call 911 for emergencies involving fire or where someone is seriously injured. Then call the College Security services.
- 12) If something happens while working in a laboratory in Mateer, you are required to submit an "Accident Report" form. This is not just for situations where someone is injured, but for all laboratory accidents. We must document all spills, accidents, injuries, fires, or any unsafe conditions. Accident report forms can be found in the information kiosk in the

lobby of Mateer Hall. Inform your supervisor of the accident, and give the completed accident report to Beth Snyder, the Mateer Building Coordinator. Also notify your advisor or instructor if there was an accident as you carried out your work.

- 13) All work with toxic, volatile, and hazardous chemicals should be done in a fume hood, and should be performed only with the appropriate protective gear. Be sure you have a safety buddy with you for this work. Use respiratory masks when appropriate. Never place your head into a fume hood. Keep the hood sash closed when not in use.
- 14) Properly dispose of all non-chemical waste. Place broken glass and sharps waste into their appropriate containers. Biological waste, i.e. live cell cultures and any disposable items that come into contact with biological waste, must be disposed of in the red/orange biohazard bags. Biological waste in glass containers must be disinfected/autoclaved. Dispose of chemical waste according to the MSDS or your instructor or advisor's instructions. All other waste goes in the trash.
- 15) Never leave a hot plate unattended. Never leave an open flame unattended. Be cautious if heating fluids in a microwave.
- 16) Be considerate of and attentive to others who are working in the lab with you. Make sure that your behaviors and lab procedures do not put other people at risk. Tell your co-workers if you are carrying something hot, or if you are about to perform a procedure that could carry a risk for others.
- 17) Return glassware or other stockroom items to Karen Rodda when you are finished.
- 18) If you use the last of any chemical, return the empty bottle to Karen Rodda so the chemical can be re-ordered, and so the empty bottle can be removed from the departmental inventory.
- 19) Keep all workspaces neat, clean, and orderly. *Clean up after yourself.* Make sure that the counter or bench top is completely free of chemical residues or spills, so that the next person to use the workspace may work confidently and safely.