



CHEMISTRY

GUSTAVUS ADOLPHUS COLLEGE

SAFETY

&

**STUDENT WORKER
HANDBOOK**

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DEPARTMENT-WIDE SAFETY GUIDELINES AND INFORMATION

As an employee of the Chemistry Department, you are required to attend at least one official safety training workshop per academic year (the only exception to this is if you are only a tutor). Trainings are offered at the beginning of each semester. Upon completing that workshop, you are expected to uphold the guidelines yourself, as well as enforce them when “on the job.”

YOUR RIGHT TO A SAFE WORK ENVIRONMENT

Most student work positions in the chemistry department will require you to work with chemicals. Most of the chemicals are safe when handled correctly, but some may have hazards. You have the right to know the proper techniques for dealing with these chemicals and what the potential hazards are. If you feel uncomfortable or unsafe working in a particular environment or with a particular substance, you should inform your direct supervisor.

BASIC PRECAUTIONS

1. Remember that prevention is the key to a safe work environment. Before you begin working, look around the area and correct any potentially dangerous situations (*i.e.*, don't let Bunsen burner hoses dangle off the bench edge, double check all switches to be sure they are off, don't use a loose electrical plug, etc.).
2. Never work in Nobel Hall alone after hours; if you are found working in a lab or in the stockroom without a “buddy” you will be directed to leave. This is for your own safety—in the event that there is an accident and *you* are unable to call for help, having another person with you could save your life.
3. Make sure you know what you are doing. Know the hazards for the chemicals you will be using (reference the Material Safety Data Sheets section below) and the techniques for performing the task. Never perform unauthorized experiments.
4. Always wash your hands before you begin working and when you are finished. This is meant to avoid any contamination of the chemicals or equipment you will be working with, and to remove any chemicals or contaminants you may have encountered during your work. Even if you use gloves, you should still wash your hands as some chemicals can penetrate them.

5. Always wear gloves when doing dishes (to protect from any broken glass or possible contaminants) and when mixing solutions. Latex gloves are provided for general use. If you have a latex allergy, please ask your direct supervisor for non-latex gloves.
6. Never go barefoot or wear open-toed shoes while working in Nobel Hall. Glass gets broken all the time and slivers of glass may be found anywhere. Closed-toe shoes also provide protection against chemicals if they are spilled or splash. Tennis shoes or other rubber soled shoes are recommended since they also provide good traction and protect against slipping. Leather soled shoes provide the best protection against chemical spills since they will not dissolve like some synthetic materials do.
7. Safety glasses and goggles are available and should be used at all times when working. Many chemicals pose eye irritation hazards. Broken glass and chemicals can get in your eyes even while washing dishes. Contacts may be worn ONLY if safety glasses are also worn.
8. Long hair should be tied back so that it does not interfere with your work, especially if there is an open flame in the area. Loose clothing and accessories should not be worn as they can get caught on equipment and cause spills. Exposed skin should be minimized to reduce exposure to chemicals. Mid-drift shirts and short shorts are strongly discouraged. Lab coats and aprons are available if needed.
9. Headphones and ear buds should never be used when working in a lab. They don't allow you to hear what is going on around you. This is especially important in an emergency situation impairing your ability to hear warnings. They also make you unavailable to others who may require your assistance. Check with your direct supervisor regarding their preference on the use of radios during your shift.
10. No food or drink is allowed at any time in any of the laboratories or the stockroom. This is to prevent accidental ingestion of hazardous chemicals.
11. Do not sniff the chemicals. Even though many substances have interesting smells, never directly inhale the vapors. Instead, gently waft some of the vapor toward you with your hand.
12. Inspect your glassware before you begin working. If there is a crack, even a small one, do not use the glassware. Let your direct supervisor know about the crack and use another one. Broken glassware should be placed in the broken glass receptacle if it is not contaminated. If you have a ground glass

joint that has become “frozen” or stuck, notify your direct supervisor. Do not try to force it, as this may cause the glass to break and you may injure yourself.

ACCIDENTS

An accident is any event which violates an acceptable standard. The key to preventing future accidents is understanding the root cause to anticipate and eliminate recurrences. Accidents do not necessarily result in injury or property damage; “near misses” are simply accidents with lucky outcomes. All accidents (including near misses) should be reported so that they can be assessed to determine the cause and help prevent recurrence.

WHAT TO DO IN CASE OF AN ACCIDENT OR EMERGENCY

LIFE THREATENING INJURIES

Have someone dial 911 or 507-931-1550 (St. Peter Police) and give specific and accurate details of the situation. Request an ambulance. As long as the situation is safe, stay with the victim until help arrives. Be sure to report the incident using the proper procedure outlined in the “Reporting an Accident” section below.

NON-LIFE THREATENING INJURIES

Have someone dial x8888 (Campus Safety and Security) and give specific and accurate details of the situation. If necessary, request assistance escorting the victim to the College Health Service or Community Hospital. Be sure to report the incident using the proper procedure outlined in the “Reporting an Accident” section below.

FIRE

In the event of a fire, notify your direct supervisor immediately and evacuate the building. Pull the building’s fire alarm on your way out. If your clothing catches fire, remain calm and find and use the safety shower, or wrap yourself in a fire blanket. Running will only fan the flames and intensify them. Be sure to report the incident using the proper procedure outlined in the “Reporting an Accident” section below.

WHAT TO DO IN CASE OF A CHEMICAL SPILL

Treat any immediate personal needs first (*i.e.*, using a safety shower and/or eyewash station). Evacuate the room and close the door to allow for proper ventilation. Notify your direct supervisor immediately so that proper clean-up and can begin. If you have to leave the spill, place a warning sign at the site so that others are aware of the situation. Immediately report any action you had to take (using the proper procedure outlined in the “Reporting an Accident” section below) so that necessary follow-up can happen.

PPE (PERSONAL PROTECTIVE EQUIPMENT)

Aprons, goggles, safety glasses, masks, and gloves are available for your protection.

FIRST AID KITS

First Aid Kits are located in each of the laboratories and in the stockroom.

SAFETY SHOWER AND EYEWASH STATION

Safety shower and eyewash stations are located in each of the laboratories and in the stockroom. If something has gotten in your eye and there is no eyewash station where you are working, go to the nearest sink and rinse your eyes with cool water for a minimum of 15 minutes.

SHARPS AND INFECTIOUS WASTE

Red containers for sharps (needles, razors) and biological waste are available. There is a container in one hood in each of the laboratories and in the stockroom. Ask for a new container if one is full or if you are unsure whether the waste you intend to add can mix safely with other contents.

BROKEN GLASS

Any broken, uncontaminated glass should go in the Glass Disposal Boxes located in each of the laboratories and in the stockroom.

REPORTING AN ACCIDENT

All employees are responsible for reporting accidents as soon as possible, using the provided forms available in the

stockroom. Every accident, regardless of the outcome, should be reported in accordance with the following guidelines.

NEAR MISSES

Reporting near misses allows us to identify and correct potentially harmful hazards in an experiment or protocol. These may be reported by filling out the “Safety Incident Report Form;” completed forms should be placed in the “Hazard Report Box.” This form can be filled out anonymously.

ACCIDENTS REQUIRING FIRST AID

For minor injuries that can be treated on-the-spot (small cuts, light burns, etc.), fill out a “Minor Injury Report Form;” completed forms should be turned in directly to the Department Safety Officer. We need to track all minor cuts and scrapes in case they turn into more serious cases later.

ACCIDENTS REQUIRING MEDICAL ATTENTION OR THAT CAUSE PROPERTY DAMAGE

Medical treatment of any injured persons should be the primary concern after an accident occurs. If you are involved in or are near an accident which causes injury or property damage, notify your direct supervisor immediately. After proper emergency procedures have been conducted, the supervisor or another eye witness should fill out the “Accident Report Form;” completed forms should be turned in directly to the Department Safety Officer.

MATERIAL SAFETY DATA SHEETS

Links to Material Safety Data Sheets (MSDS) for all chemicals can be found in the chemical inventory software program, CisPro; as needed, hard copies of MSDS are available in the stockroom for the chemicals being used in current teaching labs. They provide known pertinent information about each chemical. The MSDS contain the following information:

1. Section 1: Name, CAS No. (Chemical Abstracts number), Molecular Weight, Formula Weight, Other product codes.
2. Section 2: Composition

3. Section 3: Hazard Information—includes health hazards, flammability, reactivity, etc.
4. Section 4: First Aid
5. Section 5: Fire Fighting Measures
6. Section 6: Accidental Release—how to deal with accidental spills
7. Section 7: Handling and Storage
8. Section 8: Exposure Controls/Personal Protection—important exposure cautions and what equipment you should use when working with the compound. Some terms used are:
 - a. Threshold Limit Value (TLV): the maximum substance in air that a person should be exposed to on a regular basis (assuming exposure for 40 hours per week on a long-term basis). Developed by the American Conference of Government Industrial Hygienists (ACGIH).
 - b. Permissible Exposure Limit (PEL): same as TLV but developed by the Occupational Safety and Health Administration (OSHA).
9. Section 9: Physical and Chemical Properties
10. Section 10: Stability and Reactivity
11. Section 11: Toxicological Information—gives you an idea on how toxic a substance is. Some definitions are:
 - a. Lethal Dose: 50% mortality (LD50): the dose of a substance (usually in mg/kg) that will kill 50% of the animals to which it has been administered in a single dose. This may be done in the following ways: oral (by mouth), intraperitoneal (injected into the lining of the abdominal cavity), subcutaneous (injected under the skin), and surface application.
 - b. Lethal Concentration: 50% mortality (LC50): the concentration (usually in ppm) that kills 50% of the animals to which it was administered.
13. Section 12: Other Information—this contains the National Fire Protection Association (NFPA) rating for the compound. A HEALTH, FLAMMABILITY, and REACTIVITY rating describes the hazards of the compound when a fire is present. The numbers are on a scale from 0-4, with 0 being no hazard and 4 being highly hazardous. Often this is designated graphically by four diamonds that are color coded: blue for

health, red for flammability, yellow for reactivity, and white for unusual reactivity or special precautions to be taken.

New compounds will have no MSDS as testing has not been completed on them. If there is no MSDS available, treat the compound as if it is toxic and avoid exposure. If you feel uncomfortable or unsafe working in a particular environment or with a particular substance, you should inform your direct supervisor.

GENERAL INFORMATION FOR DEPARTMENT STUDENT WORKERS

You play a very important role in creating a positive learning environment for the students doing coursework here. We take our responsibility as your supervisor seriously and will make every effort to create a positive working and learning environment for you.

While your first priority in college is your course work, you are now also an employee of the Chemistry Department. When working, you are expected to give precedence to assigned duties and tasks. The underlying assumption of all supervisors is that each employee is a mature, responsible adult who will do the best job possible.

Remember, as an employee you represent this department. While working, you will often be visible to college visitors and other personnel; it is important that you leave a positive impression.

APPLICATION AND SCHEDULING PROCESS

You must apply for a position in the Chemistry Department. Applications are available mid-November for spring semester positions, and mid-May for fall semester positions. Once the application deadline has passed, the Department Student Worker Supervisor will begin filling positions and generating a work schedule.

PAYROLL

You will be responsible for filling out your own timecard, an electronic version of which is found on WebAdvisor through accessing your student account:

1. Login to WebAdvisor.
2. Under the “Student Employment” header, select *Payroll Time Entry*.
3. Select the appropriate pay period (month) and department (chemistry).

4. Scroll to find the line representing the day you worked and enter the time frame.
 - a. Be accurate and honest in recording your starting and ending times, along with AM or PM.
 - b. If you worked multiple shifts on a specific day, check the box that requests a second line, and click the continue button at the bottom.
 - c. Be sure you record time for all work-related tasks; if you are unsure whether or not to record something, check with your direct supervisor.
 - i. Meetings—weekly TA meetings, training meetings
 - ii. Time spent while on shift
 - iii. Time spent while grading
5. Make sure to save your entries; it is a good idea to review your entries to make sure they were recorded properly.
6. At the end of a pay period, you must “sign” and “submit” your timecard. Timecards are due by midnight on the 3rd of the next pay period month. “Sign” the timecard by clicking the signature box at the bottom. This will indicate to the Department Student Worker Supervisor that you have completed entering all of your work hours for the month. Timecards that are not signed and submitted could be held until the following pay period.
 - a. Payroll is reviewed by the Department Student Worker Supervisor on the 4th.
 - b. Approved payroll is processed on the 5th.
 - c. Payroll checks are issued on the 15th.

FINANCIAL AWARD

You have been awarded a specific amount of student employment hours for the academic year. You may not exceed this amount; your Department Student Worker Supervisor schedules your hours so that will likely not happen. A record of your hours worked is kept, and you will be notified if you are close to going over the specified amount. Any hours logged OVER the allowed amount will be considered volunteer work.

EXPECTATIONS

In addition to abiding by the Department-Wide Safety Guidelines presented above, there are a few other general expectations to make note of. Please ask questions if you do not understand your assignment or if you need better directions or clarification. It is easy for direct supervisors to assume that all workers have been adequately trained, or that they know where everything is and all the procedures. This is an unfair assumption that we continually work to change.

1. You are required to attend all of your assigned shifts. If you will be late or will be unable to make it to your shift, you need to let your direct supervisor know ahead of time. For most department jobs, you will be responsible for finding a replacement. Some acceptable reasons for lateness or absence include, but are not limited to, personal illness or injury, family emergency, participation in a scheduled class meeting or college sanctioned extra-curricular activity. Too many unexcused absences will result in disciplinary action.
2. There may be times during your shift when there are no jobs to do, or you may have to wait for further assignments. Upon approval from your direct supervisor, you may use this time to study. Remember that you are still “on the job” and that you should still make yourself available should an assignment or need arise, at which time it becomes priority.
3. Cell phone use is not tolerated during your shift. It poses a distraction that could lead to an accident, and makes you unavailable to students and your direct supervisor.
4. Headphones and ear buds should never be used during your shift. They don’t allow you to hear what is going on around you. This is especially important in an emergency situation impairing your ability to hear warnings. They also make you unavailable to students and supervisors who may require your assistance. Check with your direct supervisor regarding their preference on the use of radios during your shift.
5. Please discourage your friends from visiting you while you are working. It poses a distraction from your assigned duties.
6. Do not assume any new task without first getting approval. If you see an easier or more innovative way to do something however, please suggest it. Your input and creativity are valued.

EVALUATIONS

You will be evaluated at the end of the year by your direct supervisor(s). You will be evaluated on your dependability, quality and quantity of

work performed, attitude, initiative, cooperation and judgment. Evaluations will be kept and put in your file.

You will also have an opportunity to evaluate your job situation with regards to your opinion of the quality and quantity of training received, your overall job satisfaction, accessibility to your supervisor, and positive/negative aspects of your job. This information is used to help make this the best possible environment in which to work.

During the year, if you feel you are being mistreated as an employee you are encouraged to speak with your direct supervisor. If you are not comfortable doing this, talk with the Department Student Worker Supervisor, the Department Chair, or the Director of Financial Aid.

DISCIPLINARY ACTION

Sometimes employees require disciplinary action because of unexcused absences, tardiness, failing to follow directions, or unethical behavior (recording time not worked, revealing confidential matters, etc.). When there is a problem, the direct supervisor will first discuss it with the employee to define the problem and the expected changes; at that time, a warning will also be issued. If the problem persists, the Department Student Worker Supervisor will submit a written report outlining the situation to the Student Employment Office. If corrective action does not occur, further disciplinary action will be taken, including possible termination. If you are terminated from one work area you will NOT be reassigned in future semesters.

SPECIFIC JOB DESCRIPTIONS

These descriptions are designed to give you an overview of the various positions available in the Chemistry Department.

TEACHING ASSISTANTS

Teaching Assistants (TAs) are present during each of the teaching labs to assist students. An important function of the TA during lab is to actively engage students and provide a line of communication between the student and the instructor. At the end of each lab period, the TA is responsible for making sure that equipment is turned off and that the students leave the lab space clean. It is important to show up on time for your assigned shift every week. If you will be late or will miss one of your assigned shifts, it is your responsibility to find a replacement and to inform your direct supervisor of the situation. You must also attend an official safety training workshop at least once per academic year.

CHEMISTRY IN CONTEXT TA

- Attend lab weekly. During lab, instructor and TA will recap the current week's lab, review the lab for the next week, and exchange grading keys.
- Grade lab reports in a TIMELY manner, to return to the students within 1 week of submission.
- Record grades on Moodle in a TIMELY manner.
- Record attendance of students each week.
- Occasionally help prep for upcoming labs.

PRINCIPLES OF CHEMISTRY TA

- Attend mandatory weekly meetings to recap the current week's lab, to review the lab for the next week, and to obtain grading keys.
- Grade lab notebooks in a TIMELY manner, to return to the students within 1 week of submission.
- Record grades on Moodle in a TIMELY manner.
- Record attendance of students each week.

ORGANIC CHEMISTRY TA

- Attend mandatory weekly meetings to recap the current week's lab, to review the lab for the next week, and to obtain grading keys.
- Grade lab notebooks and reports in a TIMELY manner, to return to the students within 1 week of submission.
- Record grades on Moodle in a TIMELY manner.
- Record attendance of students each week.

INORGANIC CHEMISTRY TA

- Attend mandatory weekly meetings to recap the current week's lab, to review the lab for the next week, and to obtain grading keys.
- Grade lab notebooks and reports in a TIMELY manner, to return to the students within 1 week of submission.
- Record grades on Moodle in a TIMELY manner.
- Record attendance of students each week.

PHYSICAL CHEMISTRY TA

- Grade pre-lab assignments and check notebooks weekly.
- Occasional independent supervision of a subset of lab students.

BIOCHEMISTRY/PROTEINS TA

- Attend mandatory weekly meetings to review the lab for the next week.
- Assist with laboratory sample preparation.
- Grade laboratory notebooks and data analysis questions in a **TIMELY** manner and submit grades to laboratory instructor.

TUTOR

As a tutor in the Chemistry Department, you will encounter both individual students, as well as groups of students who come in asking for help with homework or needing clarification of lecture or lab concepts. Students will mainly be enrolled in Principles of Chemistry or Organic Chemistry courses (depending on the semester). As a tutor, it is especially important that all students receive the help they need; you should not study or do homework unless the room is completely **empty**.

STOCKROOM WORKER

Students working in the stockroom do a variety of tasks that assist in the functioning of the department, especially the introductory sequence of labs. As a Stockroom Worker, your primary responsibility will be to “clerk” the stockroom window. Students will be regularly checking out items such as glassware, hardware, and sometimes unknowns. You may also be asked to help out with lab preparation (preparing solutions, keeping labs clean and stocked with necessary materials), maintaining chemical inventories, running errands, keeping the stockroom organized, and washing glassware. There will be a “to do” list posted of things that are priorities for your shift.

You should never leave the stockroom unattended, especially with the window open. If you must leave, shut the window and lock it. When you are able to leave, be sure to take the key fob with you so that you do not get locked out, and make sure you return it to the hook.

Once your shift is over, if your replacement has not arrived and you need to leave, please let your direct supervisor know. As a last resort,

shut the window and leave. If you are working the last hour of a lab period, do not leave until the last student has left or has returned all checked-out items. Tell the lab instructor that you are closing and locking the stockroom. Be sure that the window is closed and latched.

CHECKING ITEMS IN AND OUT OF THE STOCKROOM

There is a sign-out system for everything that passes in and out of the stockroom. Glassware and supplies must be checked out of the stockroom using the blue check-out slips. Students must fill in their drawer number so that you can put the slips in their slots behind the stockroom window desk. Chemicals for research are checked out using the designated form on the clipboard located next to the door. *Students must have an instructor's signature to receive chemicals from the stockroom.* Your direct supervisor will be available if there are questions and to help with chemical dispensing.

During the first week of class when students are checking in supplies to their drawers, some required items may be missing or broken. At this time, they are allowed replacement of whatever items they need to complete their drawers without filling out a blue check-out slip.

DISTRIBUTING UNKNOWNNS

If a lab is using an unknown, it must be checked out from the stockroom. Students must record their name and unknown number on the sheet provided at the stockroom window.

LAB PREPARATION

You may be tasked with preparing reagents or solutions for a lab. Be sure that you completely understand the assignment and protocol before beginning. Aprons, goggles, safety glasses, masks, and gloves are available for your protection. You must use these and the fume hoods whenever told or directed by the chemical in use (reference the MSDS), or whenever you feel such a precaution is necessary. Any solutions you mix should be clearly labeled and dated. Include concentrations, if appropriate, and your initials. Never return unused reagent to the stock container—it may have gotten contaminated.

Between labs, you should enter the teaching labs and refill DI/RO water jugs, acetone bottles, and reagent bottles, as well as refill bench supplies such as weigh boats, filter paper, pipets, and paper towels.

During labs, TAs or lab instructors may bring you empty reagent bottles to refill. There will be a cart with all the solutions and chemicals needed for the current labs located near the stockroom window.

RUNNING ERRANDS

You may be asked to pick up packages from the Mailroom or elsewhere in Nobel Hall. Please use caution when handling these packages and do not do more than told with them. If asked to run an errand, make sure there is someone in the stockroom (likely your direct supervisor) or shut and lock the stockroom window.

MAINTAINING STOCKROOM ORGANIZATION

Learn the layout of the stockroom so you can be of maximum assistance to others, and so you can return supplies, equipment, and chemicals to their proper storage location.

WASHING GLASSWARE

Wear gloves and safety glasses when washing dishes as you never know what was in the dirty glassware. If items on the drying rack are dry, begin putting them away. It is your responsibility to become familiar with where things are and where they go.

DEPARTMENT OFFICE WORKER

As a Department Office Assistant, you may be asked to help out with word processing, data entry, copying, scanning, picking up and distributing mail and packages, posting department flyers, updating bulletin boards, and completing other miscellaneous tasks. You must show up on time for your assigned shift every week. If you must miss your shift, it is your responsibility to inform your direct supervisor of the situation ahead of time.

SOLUTIONS PREPARER, BIOCHEMISTRY

As the Biochemistry solutions preparer, you will make the solutions associated with the CHE-255 laboratory. At the beginning of the semester, the 255 lab coordinator will train you in solutions preparation and provide you with a solutions list for the semester, including the composition and quantity of the solution required for each laboratory. You will prepare the necessary solutions for each week of CHE-255 laboratory at a convenient time, at least four hours in advance of the first 255 laboratory of the week. Solutions

preparation will be required for most weeks during the first 2/3 of the semester.

BIOCHEMISTRY/PROTEINS DISHWASHER

As the dishwasher, you will wash the dishes associated with the CHE-255 and/or CHE-360 laboratories. At the beginning of the semester, the 255 lab coordinator will train you in the washing of glassware and other items associated with the laboratories. You will wash dishes, put away the dry, clean dishes, and fill the water carboys during your shift. Dishwashing will be required for most weeks during the semester, but the number and type of dishes will vary from week to week.

STUDENT SUMMER WORKER

The summer student worker is expected to be reliable, self-motivated, detail-oriented, and have a solid chemistry background. This student works with various department staff and faculty in a number of ways including, but not limited to: lab research (for curriculum development and maintenance), stockroom assistance (inventory of chemicals and equipment, stockroom maintenance, mailroom pick-up/delivery of chemicals and supplies, assisting with summer order of lab supplies, etc.), and department office assistance (mailroom pick-up/delivery, copying, scanning, data entry, etc.).