

SAFETY AND LOCATIONS

LABORATORY SAFETY AGREEMENT

Safety is a primary concern at Augustana, and ensuring your safety is a cooperative effort. People are “creatures of habit,” so begin developing safe habits and continue to use those habits as you move through other courses and into your chosen workplace. This handout provides a list of the safety habits we have adopted in Chemistry.

Safety must also be intentional so we will ask each of you to signify your willingness to join your instructor, assistants, and fellow students in following these rules and developing safe habits in the lab. Sign the statement here on this handout and on the form your instructor will distribute. This separate form allows us to collect and file your commitment.

My instructor has handed out and discussed the document labeled “SAFETY AND LOCATIONS” with me. I understand this document. I agree to abide by these procedures and rules, and I agree to work cooperatively with my instructor, lab assistants, and fellow students to ensure this lab is a safe place to work and learn.

Printed name _____

Class and section – Chem 222

Signature _____

Date _____

LABORATORY SAFETY AND PRECAUTIONS

1. Review these pages and Helpful Hints every day.
2. **SAFETY GOGGLES ARE TO BE WORN AT ALL TIMES IN THE LAB!**
 - a. In general avoid wearing contacts in the lab. However, if you must wear contacts and should get something in your eyes, remove the contacts **before** rinsing. Otherwise substances can get trapped behind the contacts and not rinse out. Tell those assisting you that you have contacts.
3. **NO FOOD OR DRINKS ARE PERMITTED IN THE LAB.**
 - a. If you need munchies, take a break and step into the hall.
4. **LEAVE COATS AND BACKPACKS IN THE CUBBY HOLES PROVIDED.**
 - a. This also ensures you have not forgotten to remove the ubiquitous water bottle or snacks (see #3).
 - b. Storing them at your lab bench does not protect them from spills.
5. **WEAR APPROPRIATE CLOTHING; USE COMMON SENSE WITH AN EYE TOWARD SKIN PROTECTION.**
 - a. NO bare feet, sandals, open-toed shoes, heelless shoes, thin fabric shoes (poor barrier and barely cover the feet), high heels/platform shoes (balance challenge). Boots must be covered by the pant leg (otherwise they are a giant funnel to the feet).
 - b. NO shorts, cutoffs, short skirts or skin-tight leggings/slacks (poor barrier). Shirts and blouses must cover the torso and shoulders.
6. No earbuds/head phones allowed. Cell phone/calculator in backpack or in plastic bag. Protect surfaces that will exit the lab so nothing is carried **out** of the lab.
7. **CONTROL LONG HAIR, LONG SLEEVES, ETC. TO PREVENT THEM FROM FLYING OVER A BURNER FLAME. HAIR SPRAY LINGERS FOR SEVERAL HOURS AND IS VERY FLAMMABLE.**

8. **MANY SAMPLES AND REAGENTS ARE HAZARDOUS.**
 - a. **HANDLE THEM WITH CARE – WEAR GLOVES.**
 - b. **CLEAN UP SPILLS PROMPTLY. For spills larger than about 5 mL, get the instructor (unless it's H₂O).**
9. **WASH YOUR HANDS AFTER LAB!**
10. **DISPOSAL OF SPENT REAGENTS:**
 - a. Collect all known and unknown residues in appropriate receptacles under the hood. **DO NOT DUMP** these down the drain.
 - b. **USE AND DISPOSE OF KCN SOLUTIONS ONLY IN THE DESIGNATED HOOD. DO NOT ACIDIFY KCN SOLUTIONS!!!**
11. BALANCE THE CENTRIFUGE by placing test tubes in opposite slots in the rotor.
12. POINT TEST TUBES AWAY FROM YOURSELF AND OTHERS, especially when heating them.
13. Test odors **only** by cautiously wafting them toward your nose.
14. Never work in the lab alone and do not perform unauthorized experiments.
15. Note the location of the fire extinguishers, eyewash fountain, safety shower and first aid supplies.
16. Notify the instructor when any type of personal injury occurs in the laboratory. If acids, bases, or other corrosive materials come in contact with the skin or clothing, wash them off immediately with water. For chemicals in the eyes, rinse at the eyewash fountain using large quantities of water with a blinking action for 15 minutes.
17. If you have asthma, allergies, are pregnant, or have other special circumstances, please inform your lab instructor so we can plan appropriate accommodations for your safety.

BUILDING EMERGENCIES

Building Fire Evacuation: When the fire alarm sounds, turn off any Bunsen burners and hot plates, and calmly exit the lab. Don't waste time gathering belongings, take what is convenient, and leave the rest - the priority is to get out of the building to safety. **Take the nearest stairs:**

- *Go down greenhouse (south) stairs and exit west onto the green and gather near Bergsaker.*
- An assistant or instructor will take roll to make sure everyone has exited safely. Remain in this area until officials have given the "all clear" or your instructor allows you to disperse.

Tornado: When the tornado siren sounds, turn off any Bunsen burners and hot plates, gather your belongings and calmly exit the lab. Take the nearest stairs:

- *Go down the greenhouse (south) stairs to the 1st floor (basement) and gather in the main corridor. Avoid blocking the stairs so others can get to the basement.*
- An assistant or instructor will take roll to make sure everyone has exited safely. Remain in this area until officials have given the "all clear" or your instructor allows you to disperse.

Emergency Equipment and Information Locations

Fire Alarms: On the third floor of FSC there are three pull alarms, one each by the northeast, southwest and southeast stairwells. The northwest stairs (Pendulum area) has a fire alarm down the stairs on the 2nd floor, right by the building entrance doors.

Fire Extinguishers: Locate the closest fire extinguisher to you. In the labs, the fire extinguishers are for general fires. The yellow one on the cart kept in the stockroom is for metal fires (like Na or K).

Emergency Phone Number: In case of emergency, your lab instructor or the lab assistant will call Augustana Campus Safety at (605)274-4014 or, in extreme cases, 911. If no instructor or lab assistant is around, call Campus Safety. You should program Campus Safety's number into your phone if you have not already done so.

Lab Incidents

All Lab Incidents: Notify the instructor or an assistant. This insures that you will receive proper advice for handling any injury and that any spills are cleaned up appropriately. **Fill out an accident report card.** These reports are reviewed to identify how we might change procedures to improve safety.

Chemical Spill on Bench Top or Floor: Keep others out of the area. Get an assistant or the instructor to clean it up. They have been trained to assess the hazard level and in the proper methods for clean up.

Broken Thermometer: Keep others out of the area. Get an assistant or the instructor to clean it up. They have been trained to assess the hazard level and in the proper methods for clean-up. Mercury thermometers require prompt attention. (There should be no mercury thermometers in General Chemistry drawers – if you have one in your drawer, please ask the instructor to replace it.)

Burn or cut: Rinse with cold water in the nearest sink. Notify the instructor to help you determine if additional treatment is necessary.

Splash in the Eyes: This won't happen if you always wear goggles. Move quickly to the eyewash fountain, calling for help. Remove any contacts and rinse well with a blinking action. Notify the instructor to help you rinse effectively and to determine if additional treatment is necessary.

Chemical Spill on You: Rinse it off immediately, if possible in the nearest sink, otherwise use the shower (see Shower Safety Protocol below). Notify the instructor who will advise you in how best to treat any injury. For most of the chemicals encountered in this course, rinsing will be sufficient. Remove any contaminated clothing to prevent further interaction.

Safety Shower Protocol: Move quickly to the shower, calling for help. Pull the chain to start water flow and remove affected clothing. Modesty is not an issue here, but the instructor or assistants will usher others out of the lab. The instructor or an assistant will remain to assist you; every effort will be made to match genders.

PRUDENT AND CONSIDERATE PRACTICES

- Keep your workspace NEAT and your equipment CLEAN.
- Return common equipment and reagents to their proper location promptly.
- LABEL ALL TEST TUBES to keep track of contents and to ensure appropriate disposal.
- READ LABELS **TWICE** to make sure you are taking the right reagent and concentration.
- Put broken glass **only** in the cardboard container specifically designated for broken glass. It is located near the computer.

REAGENT AND EQUIPMENT LOCATIONS

LAB DRAWERS:

- You will be assigned a drawer with standard Gen Chem equipment and a plastic bag containing equipment specific for this course. Keep all of this in your drawer when not in use.
- At the end of Interim you will return appropriate equipment to the plastic bag and verify the contents of the drawer are ready for the next lab.

AT EACH QUAD:

- One set of reagents solutions.
- One set of solid reagents and Anion Knowns.
- Hot Plates.
 - Share the hot plates (1 or 2 per Quad) for your hot water baths.
 - A dial setting about midway between off and max on the hot plate should be sufficient to keep a water bath hot.

AT THE "EMPTY" QUAD:

- Refill Station for empty dropping bottles on a tray. The instructors and assistants will refill these as they have time.
- One set of Individual Cation Solutions.
 - Use these to compare colors and reactions to help interpret observations.
- Group Known Solutions.
- A supply of Cork Stoppers that fit your test tubes.
- Cobalt (blue) glass filters for flame tests in a box. Return them when you are finished; we don't have enough for everyone to claim their own.

SPECIAL STATIONS:

- 3 centrifuges between the hoods.
- Disposal Hood by the entrance to the Oven Room.
- One KCN Station under hood by the Shower/Eyewash
 - **USE AND DISPOSE OF KCN SOLUTIONS ONLY IN THE HOOD.**
 - **DO NOT ACIDIFY KCN SOLUTIONS!!!**
- Deionized Water tap at the sink with the Shower/Eyewash.