**SAFETY RULES AND PROCEDURES FOR STUDENTS IN CHEMISTRY LABORATORY COURSES**

Students, faculty, staff, and administrators are all responsible for safety in laboratory courses. As a student, it is your particular responsibility to know and obey all safety rules and procedures and to encourage your fellow students to do so as well. You must take, and pass a quiz on the safety rules outlined below before you will be allowed to perform any experimental work in the lab.

A. **Dressing for Lab**

1. You must wear SPLASH-PROOF safety goggles that protect the top, bottom, front, and sides of the eyes at all times from the start of the experiment until the last group has cleaned up. You will be expelled from the lab if you do not comply with this rule. All students are required to bring their own goggles – instructors may not lend goggles to students as per department policy.
2. Closed-toe shoes that cover the entire top of the foot are required for lab. Leather is preferable to cloth or canvas. Sandals, shoes with high heels, flip-flops, ballet flats or other shoes that do not completely cover the top of the foot are not permitted.
3. Wear old cotton clothing that fits snugly and covers arms and legs extensively – more coverage is safer. At a minimum you must cover your torso and legs to the knees. You will be asked to leave lab if you are not dressed appropriately.
4. Avoid wearing clothes made of synthetic fabrics because they melt onto the skin if they catch fire.
5. You are strongly encouraged to wear a lab apron or lab coat when working at the lab bench.
6. Nitrile gloves must be worn when working with hazardous or corrosive chemicals that can damage the skin or readily penetrate it.
7. Tie back long hair and loose clothing. Remove dangling jewelry.

B. **Behavioral Rules**

8. No fooling around.
9. Never work alone in the laboratory and do not enter a lab unless an instructor is present.
10. Never perform an unauthorized experiment.
11. No chewing gum, food or drink, including water, is ever permitted in the laboratory.

C. **General Rules**

12. If you have a known allergic response to a chemical, inform your instructor. The instructor will take reasonable precautions to prevent your exposure to that chemical.
13. Female students who are pregnant are advised to consult with their obstetrician about continuing in the course because the College cannot guarantee the absence of teratogenic chemicals in the lab. A list of all chemicals used in each lab class with SDS links can be found on the department website.
14. Never taste a chemical.
15. Smell a chemical, when necessary, by keeping the container at a distance from your face and wafting fumes toward your nose.
16. Know the location of waste disposal bottles and what chemical wastes should be transferred to them. For each lab, the manual or your instructor will tell you how, and where, to dispose of chemical waste.
17. Look behind you before moving away from a workbench.
18. Store books and book bags in the cubbyholes at the ends of workbenches (AA485) or in the storage cabinet (AA489) and not in the aisles or under or on top of the workbenches.
19. Store stools under workbenches and not in the aisles when not in use.
20. Report any unusual odors, any conditions which appear to be unsafe or any students that are not complying with safety rules to the instructor.
21. If you have an existing injury (e.g., bandaged cut) when you enter lab, report the injury to your instructor. You will not be allowed to work in the laboratory if any chemical in that period's experiment would possibly cause further injury to you.

22. Clean up chemical spills on workbenches immediately, but wash your hands first if you have spilled chemicals on them. Check with your instructor about the how to clean the spill.
23. If you break any glassware, use the dustpan and broom to sweep up the broken glass, and dispose of the broken glass in the broken glass disposal box.
24. Dispose of waste paper in the large or small wastebaskets. DO NOT put broken glass or chemicals in the wastebaskets.
25. If you spill large amounts of liquid chemicals on the floor, alert nearby students to keep away from the spill and inform the instructor of the accident. The instructor will clean the spill.
26. Clean your laboratory work area completely before leaving the laboratory. Wash glassware and return items to designated places in the lab. DO NOT leave glassware at or in the sink.
27. Removing, or attempting to remove chemicals from the laboratory for personal use is strictly forbidden.

D. **Procedural Rules**

28. Hot glass looks the same as cold glass; if you are unsure if an object is hot, slowly move the back of your hand towards the object, stop if you feel warmth. Use hot mitts or beaker tongs to move hot glassware.
29. When heating a test tube, never point it at yourself or a neighbor. It is safer to heat test tubes in water baths rather than directly over a Bunsen burner.
30. Never heat liquid in a closed container – it could it explode.
31. All flammable solvents must be handled in the hood. Keep flammable liquids and solids away from ignition sources such as flames, frayed or damaged electrical wiring. Stock bottles of flammable substances must be removed from the hood BEFORE heating commences.
32. Before lighting a Bunsen burner, first check the hose for cracks. If cracks are found, replace the hose.
33. Turn off gas at the source if a Bunsen burner flame goes out or flickers.
34. Carefully read the label of each reagent before using.
35. When removing chemicals from bottles with a cap, place the cap top-side down on the workbench if necessary. The cap must be immediately replaced when you are through removing the chemicals.

E. **Rules for Emergencies**

36. Know the location of, and how to operate, fire exits, telephones, and alarms in use during regular school hours as well as after-hours. KNOW THESE EMERGENCY TELEPHONE NUMBERS: Campus Police 1-1111 or 9-703-764-5000 from a campus phone or 703-764-5000 from a cell phone or direct line; public emergency operator: 911 from a campus phone, cell phone, or direct line.
37. If you spill small amounts of chemicals on your hands, immediately flush the affected area with water for at least 15 minutes or longer if irritation continues. Notify your instructor right away of the injury. If the injury is serious and requires further treatment, your instructor will call Campus Police or 911 to request outside assistance.
38. If you spill large amounts of chemical solutions on your skin or clothing, you should: (1) immediately call out for assistance; (2) begin removing clothing as you head for the safety shower; (3) remain under the safety shower for at least 15 minutes or longer if irritation continues. If warranted, your instructor will call Campus Police or 911 to summon outside assistance.
39. If you splatter a chemical into your eyes or face, you should: (1) immediately call out for assistance; (2) move quickly to a temporary eyewash at any large sink to give eyes (and face) an initial rinse; (3) move to the eyewash fountain, remove any contact lenses, and rinse eyes (and face) for at least 15 minutes, or longer if irritation continues. The instructor should force the student's eyelids open, if necessary, and should call Campus Police or 911, to request emergency outside assistance.
40. Know the emergency evacuation route for your lab. A map highlighting the emergency evacuation route is posted on the wall.
41. Extinguish small fires in beakers by smothering with a watch glass. If a fire breaks out in a hood, immediately close the hood and notify the instructor.
42. You should know the location of the fire extinguishers in the lab, however, only trained personnel should use the extinguishers.

43. Move an individual on fire to the safety shower if the shower is very close. Otherwise, get the person to stop, drop, and roll, and try to extinguish any small, still-burning flames by patting them out. Beat out the flames around the head and shoulders, and work downward to the feet. Place clean, wet, cold cloths on burned areas. Remove clothing contaminated with chemicals, using scissors to remove pullover shirts or sweaters. Wrap the victim in a fire blanket or clean lab coat to avoid shock and exposure. Call Campus Police or 911 to summon outside assistance.
44. Fight a fire only if you are able to escape. If the fire starts to move between you and the exit, LEAVE IMMEDIATELY.
45. Know what action to take in the following emergencies:

    EARTHQUAKE: (1) remain in the room but get under a desk or lab bench; (2) exit the building as soon as the earthquake stops

    FIRE: (1) turn off gas, water, and electricity at workbench; (2) walk single-file, without talking, to the nearest safe exit (feel the door first to see if it is hot); (3) gather at pre-designated place outside of building. If there is no safe exit, (1) remain in the room; (2) place wet towels at the base(s) of the door(s); (3) get on floor and call Campus Police or 911 for help.

    TORNADO OR SEVERE WEATHER: (1) Prepare to shelter in place if ordered. Remain calm and alert. (2) Relocate to designated shelter areas; remain clear of glass windows or doors. (3) If you cannot reach the designated area, use an interior hallway on the lowest floor possible. (4) If you are outside and unable to get to a building for protection, move away from the tornado's path at a right angle. If there is no time to escape, lie flat in the nearest depression (i.e., ditch or ravine).

    VIOLENT INCIDENT: Determine the most reasonable way to protect your own life and call 911, when it is safe to do so. (1) Run: Evacuate if you can (this is your best chance of survival). Have an escape route in mind, leave valuables behind, and keep hands visible. (2) Hide: In an area out of the shooter's view. Block entry to your hiding place and lock doors, turn off all lights and silence electronic devices. (3) Fight: As a last resort and only when your life is in imminent danger. Attempt to incapacitate the shooter and act with physical aggression
    BOMB THREAT: (1) Call Campus Police and 911; (2) do not use cell phones or two-way radios; (3) do not activate the fire alarm system; (4) evacuate the building as directed; (5) do not return to the building until cleared by authorized personnel.

    * Source: http://www.nvcc.edu/about-nova/emergency/campus/index.html

F. **<u>SDS and Labeling</u>**

46. Read the Safety Data Sheet (SDS) for chemicals used before coming to each lab class (found on the department webpage). The SDS contains information on physical properties, safety hazards and proper disposal for each chemical.
47. Become familiar with the two main ways of labeling chemical hazards on bottles:


<u>NFPA 704 diamonds</u> Color indicates type of hazard (blue – health, red – fire, yellow – stability, white – special notice). Numbers indicate level of risk (0 – no risk through 4 – high risk). Special symbols (W – reacts with water, OX – oxidizer, SA – asphixiant gas)

<u>GHS Pictograms (used on SDS)</u>