



C. Eugene Bennett Department of Chemistry

Eberly College of Arts and Sciences

Safety Rules and Regulations for Laboratory Staff

November 2012

I certify that I have read and I understand the *Safety Rules and Regulations for Laboratory Staff*. I will abide by these rules and regulations. At all times I will use safe laboratory procedures.

Printed Name

Signature

Date

Email Address

Telephone Number

Emergency Contact Name

**Emergency Contact
Telephone Number**

Return signed form to Barbara L. Foster, Safety Director

**C. Eugene Bennett Department of Chemistry
West Virginia University
Eberly College of Arts and Sciences**

Safety Rules and Regulations for Laboratory Staff

These safety rules must be followed by all laboratory staff at all times. Everyone is responsible for safe laboratory practices and is expected to exercise all due caution and prudence when working in the Prep Room, Stockroom, chemical storage areas, and the laboratories.

Health Hazards

Health hazards in the laboratory include toxic, flammable, corrosive, and carcinogenic chemical substances. The effect of an exposure to a hazardous material can be acute or chronic, depending upon the hazardous material and the length of time that one was exposed to the hazardous material. According to OSHA, a hazardous chemical is a chemical for which there is statistically significant evidence, based on at least one study conducted in accordance with established scientific principles, that acute or chronic health effects may occur in exposed persons. Acute exposure is defined as short durations of exposure to high concentrations of hazardous materials in the work place. Chronic exposure is defined as continuous exposure over a long period of time to low concentrations of hazardous materials in the work place.

Engineering controls (i.e., chemical fume hoods and glove boxes), administrative controls (i.e., safety rules, Chemical Hygiene Plans, and Standard Operating Procedures), and personal protective equipment (PPE) (i.e., gloves, lab coats, and chemical splash goggles) are designed to protect laboratory workers from exposure to hazardous materials. Routes of exposure to hazardous materials include contact with skin and eyes, inhalation, ingestion, and injection.

A chemical allergy is an adverse reaction (i.e., rash or hives) to a chemical or compound. Some persons have developed chemical sensitivities to certain chemicals or types of chemicals, including ammonia, iodine, bromine, and sulfur. Such reactions are usually the result of a previous sensitization to that particular chemical, or one that is similar in nature. The protein in soft, flexible latex rubber gloves can cause mild or severe, life-threatening latex allergic reactions in some persons.

Physical Hazards

Examples of physical hazards in the laboratory include gas cylinders, cryogenic liquids, electrical equipment, lasers, magnetic fields, and reactions that involve high pressure or vacuum lines. Another type of physical hazard is the presence of spilled liquids or broken glassware on the floor or in the work space. Good housekeeping practices serve to eliminate these physical hazards. Laboratory workers must follow all departmental safety rules and policies to avoid injuries associated with physical hazards.

I. Guidelines for Personal Apparel and Personal Protective Equipment

- A. All employees must wear approved chemical splash goggles (over regular eyeglasses) and approved laboratory aprons or cotton lab coats (not lab jackets) at all times in the Prep Room, laboratories, and chemical storage areas.



Chemical splash goggles protect the face and the eyes in the event of a chemical splash or exposure and must be worn by all laboratory staff in the Prep Room, laboratories, and chemical storage areas.



Safety glasses do not protect the face and the eyes in the event of a chemical splash or exposure and are not approved for use by laboratory staff in the Prep Room, laboratories, and chemical storage areas.

- B. The use of contact lenses while working in the Prep Room is strongly discouraged. In the event of a chemical splash or vapor release, contact lenses can increase the degree of injury to the eye and may prevent prompt first-aid and eye-flushing procedures. All laboratory staff who plan to wear contact lenses while working must sign a statement (included in this document) that states that they will accept responsibility for any injury caused by their wearing of contact lenses in the laboratory.
- C. Employees should wear cotton clothing that provides protection from chemical spills. Clothing which completely covers the legs must be worn at all times in the laboratory. Shorts and skirts that do not completely cover the leg are inappropriate apparel in the laboratory and are not permitted. To avoid exposure to hazardous materials, open-backed shirts, bare midriff shirts, or shirts which expose areas of the torso are not permitted. You must wear the equivalent of a t-shirt when working in the Prep Room.
- D. Wear shoes which completely cover the feet. Sandals, perforated shoes, open-toed shoes, open-backed shoes, or high-heeled shoes are not permitted in the Prep Room.
- E. For your safety, hair longer than shoulder length and loose sleeves must be confined when working in the Prep Room.
- F. Wear the disposable gloves that are provided when working in the Prep Room. Inspect the gloves for defects before wearing. Always remove gloves before exiting the laboratory. Upon removal, discard the disposable gloves in the wastebasket.
- G. You are advised to avoid wearing synthetic fingernails when working in the Prep Room. Synthetic fingernails can be damaged by solvents and are made of extremely flammable polymers which can burn to completion and are not easily extinguished.
- H. For your protection, jewelry should not be worn while working in the Prep Room. Dangling jewelry can become entangled in equipment and can conduct electricity. Chemicals can seep under the jewelry and cause injuries to the skin. Chemicals can ruin jewelry and change its composition.

II. Procedures to Avoid Exposure to Hazardous Materials

Employees should always READ and HEED the label and the Material Safety Data Sheet (MSDS) before using a chemical for the first time. MSDS can be found at <http://hazard.com/msds/index.php>

- A. Minimize all chemical exposure. Avoid ingestion, injection, inhalation, eye contact, and skin contact with all chemicals and solutions in the Prep Room.
- B. Notify the Safety Director about any sensitivities that you may have to particular chemicals or compounds.
- C. No chemical should ever be tasted. Do not pipet by mouth; use a pipet aid.
- D. When you attempt to smell a chemical, you should gently waft the vapors toward your nose using your gloved hand or a folded sheet of paper. Do not place the container directly under your nose and inhale the vapors.
- E. Experiments involving odorous, lachrymatory, vesicant, toxic, corrosive, or particulates must be carried out in a hood under draft and not on the bench top. When using a chemical fume hood, the sash opening should be kept at a minimum to protect the user and to ensure the efficiency of the operation. Keep your head and body outside of the hood face. All chemicals and equipment should be placed at least six inches from the hood face to ensure proper airflow.
- F. Eating, drinking, smoking, chewing gum, applying cosmetics, and using smokeless tobacco products are prohibited in the Prep Room. Beverage containers, cups, bottled water, and food containers are not permitted in the Prep Room. Never use laboratory glassware for eating or drinking purposes. Do not store food and/or drink in the Prep Room refrigerator.
- F. Always remove gloves and thoroughly wash your hands with soap and water before exiting the laboratory. Dispose of gloves in the designated wastebasket. Do not reuse gloves.
- G. Clean up chemical spills (including water) immediately. Do not leave spilled chemicals on the bench top or floor. If a chemical spills onto the skin, immediately flush the affected area with water and notify the laboratory staff. Complete an Accident Report Form (included in this document) and submit it to the Safety Director.

III. General Guidelines for Laboratory Procedures

- A. The work day is from 8:15 A.M. until 4:45 P.M. Employees are not permitted to deviate from the set work schedule without prior consideration and approval from the Safety Director. Unauthorized experimentation and work in the Prep Room is forbidden. Laboratory staff members are not permitted to dispense chemicals, solutions, solvents, glassware, or apparatus to any external person or group at any time without the authorization and consent of the Safety Director.
- B. Any personal injury or accident that may occur during your work day must be reported to the Safety Director within 24 hours via an Accident Report Form, included in this document.

- C. When the fire alarm sounds you must evacuate the building immediately. Extinguish all flames and turn off all equipment, as appropriate, before exiting.
- D. Unauthorized personnel, children, and pets are not permitted in the Prep Room.
- E. Excessive noise and boisterous conduct are forbidden. Radios must not be audible from outside the immediate laboratory or office and use must be discontinued if potentially hazardous situations exist or if the sound level disturbs coworkers.
- F. The use of personal audio/visual equipment and cell phones is not permitted in the Prep Room.
- G. Vocal warning should be given to those working nearby in case of fire, explosion, spillage of dangerous chemicals, release of toxic fumes, etc. The information should be reported immediately to the Safety Director. Written notification of the use of a fire extinguisher should be made to the Safety Director within 24 hours.
- H. Each employee must know the location and proper use of fire extinguishers, safety showers, eyewash stations, and fire blankets that are available in that section of the building in which he or she is working.
- I. All water, gas, air, electrical, and other service connections must be made in a safe and secure manner. All worn, frayed, or damaged cords and plugs on all electrical equipment must be replaced by satisfactory cords and plugs. Electrical components and power cords should be kept off of the floor in case of flooding. All tubing for water must be securely fastened.
- J. Solid materials (paper, matches, towels, broken glass, stoppers, rubber tubing, etc.) must be kept out of the sinks at all times to minimize the danger of plugging drains.
- K. Good housekeeping is essential. Aisles and emergency exits must be unobstructed. Hoods must be clean and available for work. Benchtops must be kept as free from unnecessary apparatus as possible. Clean up chemical spills (including water) immediately. Do not leave spilled chemicals on the benchtop or floor. Keep glassware clean. Chemicals, including those in a refrigerator, must be in labeled containers. Coats, bags, and other personal items should be stored in the proper areas in the laboratory room; not on the benchtops or in the aisles. Sinks should not be filled with dirty glassware.
- L. Clear visibility from corridors into laboratories must be maintained. Only authorized warning signs and directories are permitted on the glass of the Prep Room doors.
- M. In the event of a mercury spill, contact the Safety Director and EH&S.
- N. As a reminder of University policy, smoking is prohibited in all Chemistry facilities.
- O. All hazardous chemicals not packaged for shipping must be transported within the buildings in suitable “safety carriers” (such as a rubber pail with a handle or a chemical cart).
- P. When heating or carrying out a reaction in a test tube or flask, never point the apparatus toward your co-workers or yourself.
- Q. When diluting concentrated acids always pour the acid slowly into the water with stirring; **NEVER ADD WATER TO CONCENTRATED ACIDS** because of the danger of splattering.
- R. To avoid accidents, drawers and cabinets must be kept closed.

IV. Laboratory Glassware

- A. Maintain clean glassware in the Prep Rooms. Do not pile up dirty glassware in the sinks. Wear appropriate gloves to clean glassware. Wash glassware carefully. Dirty water can mask glassware fragments. Handle and store laboratory glassware with care. Promptly discard cracked or chipped glassware. Wash your equipment with tap water and use distilled water only for rinsing. Do not use more distilled water than is necessary.
- B. Tubing ends must be fire-polished or ground smooth. Towels or gloves must be used to protect the hands when inserting glass tubing into corks or stoppers. Lubricants such as soapy water, mineral oil, or glycerol may be useful.
- C. Do not attempt to dry glassware by inserting a towel wrapped around a glass rod.
- D. Glass tubes must extend well through rubber stoppers so that closure of the tubes does

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- E. not occur if the rubber stoppers swell.
- F. Heavy pieces of apparatus must be supported with clamps suitably protected with pads and also with bottom support such as tripods or rings.
- F. Broken glass should be disposed of in containers that are specifically designed for that purpose, not in the normal trash containers.

V. Waste Chemical Disposal

Do not dispose of waste chemicals in the sink drains or in the wastebasket. It is the policy of the Eberly College of Arts and Sciences that no chemicals or solutions are poured down the drains or placed in the general wastebaskets in the laboratory. Waste chemicals must be collected in appropriate containers and must be stored in the assigned location within the laboratory. Properly label all waste containers. Each waste container must have a "Hazardous Waste" sticker and a label that includes the complete contents of the container. (Obtain the stickers from the laboratory staff in Room 304 Clark Hall.)

- Chemical waste containers must be capped at all times except when adding material.
- The West Virginia Department of Environmental Protection (WV DEP) considers chemical containers that are dusty to be waste-like in manner since it would appear that they are no longer being used. They have stated that dusty containers should be considered waste and should be disposed.
- Included in the departmental Chemical Hygiene Plan (Appendix D) you will find a list of chemicals that the U.S. Environmental Protection Agency has designated as "Acutely Hazardous" and they have placed special restrictions on their accumulation and disposal. These "P-Listed" wastes *and their empty containers* must be disposed of as hazardous waste through the WVU EH&S Hazardous Waste Program. You must label even empty containers of P-Listed wastes as "Hazardous Waste" and submit an EH&S waste disposal form. Do not rinse these empty containers because the residue that is created is a "P-listed waste" and is then treated as a hazardous waste.

EHS Hazardous Waste Guide for Satellite Accumulation Areas (research labs)

1. EHS will pick up unwanted chemicals and chemical wastes.
2. Chemicals must be compatible with the container.
3. Containers must be labeled with the words "Waste <chemical name(s)>". Obtain a waste sticker (example, below) for each liquid or solid waste container in your lab from Albert Taylor, Room 302 Clark Hall. Use the common or IUPAC name of each chemical (no abbreviations or formulas).
4. Containers must always be kept closed unless **actively** adding waste.
5. Containers should be no more than 95% full to allow for expansion.
6. Containers must have a screw cap closure or equivalent.
7. Date container when it is **FULL**.
8. Submit the online Hazardous Waste Disposal Form to EHS - available at <http://fisehs.wvu.edu/haswastdisp.cfm>

HAZARDOUS WASTE

Contains:

Date when full: ____ / ____ / ____

For Disposal: ehs.wvu.edu



C. Eugene Bennett Department of Chemistry

USE OF CONTACT LENSES IN THE PREP ROOM

Chemical splash goggles with shielded vents must be worn at all times when working in the Prep Room. Safety goggles prevent liquids or solid particles from being splashed or sprayed into the eyes and they reduce contact with laboratory vapors. Gases and vapors can concentrate under contact lenses and cause permanent eye damage. It has been shown that soft contact lenses can pose an even greater risk of vapor absorption and possible eye damage than hard contact lenses. In addition to the possible vapor and gas hazards, contact lenses may trap foreign matter in the eye and produce abrasion of the cornea. Contact lens wearers are advised to remove their contact lenses and replace them with conventional eyeglasses before coming to work when possible to avoid the possibility of the aforementioned hazards as well as any unforeseen problems which might occur as a result of wearing contact lenses. The exceptions to this general rule include persons who cannot wear corrective glasses for medical reasons or persons for whom contact lenses are medically required for therapeutic reasons.

RELEASE IN FULL OF ALL CLAIMS

I have read and understand the information set out above pertaining to the potential risks of wearing contact lenses in the Prep Room.

I agree to wear chemical splash goggles at **ALL** times in the laboratory.

I fully understand that I assume **FULL RESPONSIBILITY** for any injury which might occur as a result of or connected in any way to the fact that I wear contact lenses.

Printed Name _____

Signature: _____ Date: _____

Witness Signature: _____ Date: _____

Return signed form to Barbara L. Foster, Safety Director