Standard Operating Procedures (S.O.P.) for Laboratory Safety
(Jorgensen Hall 337, "Ducharme Group")
Last Revised, June 2017

Safety Information and Training:

Consult the *Laboratory Supervisor* (Prof. Stephen Ducharme, sducharme1@unl.edu, 482-8590 or 416-8693) with any and all questions concerning laboratory safety. A good source of safety information and training is the UNL Office of Environmental Health and Safety (EHS, http://ehs.unl.edu, 472-4925). Take advantage of the many useful training and reference materials, documents, and S.O.Ps. that pertain to laboratory safety on the EHS web site. Report any safety concerns to the *Laboratory Supervisor*.

Authorized Persons:

Only authorized persons are allowed to enter or work in the laboratory unless escorted by an authorized person. The list of authorized persons shall be posted inside the entrance doors. Refer all requests for laboratory access to the *Laboratory Supervisor*, who has the sole authority to grant access to the laboratory. Maintenance and custodial personnel carrying out their duties are exempt from this prohibition.

To obtain authorization to work in JH 337, you must complete all of the following steps.

1) Complete the following safety training modules and receive a certificate of completion. Please use the following link to access training modules: http://ehs.unl.edu/training/online. Scroll down the page and choose the training modules listed below. You will need to log in with the your UNL ID number. On completion, email all of the certificates in one message to sducharme1@unl.edu.

   Core - Injury and Illness Prevention Plan (IIPP)
   Core - Emergency Preparedness Plan (IIPP)
   Chemical Hazard Assessment & Risk Minimization
   Chemical Safety, Units 1, 2, 3, 4

2) Obtain and read the latest version of the Safety S.O.P. for JH 337 at the following web page.

   http://unlcms.unl.edu/cas/physics/ducharme/laboratory-procedures

3) Obtain final approval by meeting with the *Laboratory Supervisor* and signing the S.O.P. acknowledgement.

The safety training of each authorized individual must be renewed annually by October 1, or as directed by the *Laboratory Supervisor.* Complete the following steps

To obtain authorization to work in JH 337, you must complete all of the following steps.

1) Attend and sign in at the Departmental Annual Safety Colloquium.

2) Obtain and read the latest version of the Safety S.O.P. for JH 337 (this document).

Work Environment and General Safety:

Make sure the laboratory is safe and free of hazards. The work areas – and especially the floors should be neat and free of clutter. Do not assume other people will recognize the hazards that you are well aware of. Cover or isolate hot surfaces, laser beams, sharp objects, or exposed voltages as much as possible, posting warning signs where and when appropriate. Handle sharp objects and glassware carefully. Take care when lifting and moving objects and when positioning them, so that they do not fall or otherwise present a hazard. Anything at or over the edge of a table, or balance precariously has the potential to become an airborne hazard. Be aware that latex may be present in the laboratory. Do not bring food or drink into the laboratory.

Keep the laboratory neat and clean: wipe up spills immediately, put away tools and instruments when not in use; keep isles clear of tripping hazards; do not put heavy objects on high shelves; use the step stools or ladder, not chairs or benches; clean and store or dispose of unused glassware, containers, etc.

Clothing and Personal Safety Equipment:

Always wear shoes that fully cover the foot – no sandals, even with socks. Wear comfortable clothing that covers the torso and legs, but avoid loose items like scarfs, dangling sleeves, or loose accessories.

Always wear a lab coat, chemical safety goggles/glasses, and appropriate gloves when working with chemicals. Wear a face shield and special protective gloves when handling certain chemicals, especially corrosives. Wear a proper respirator when appropriate.

Chemicals:

Know the hazards and safe handling procedures for all chemicals. This information is in the Chemical Safety Data Sheets. *All containers must be properly labeled*, even those containing water. Use solvent-proof markers and tape (not ordinary ink pens or "sharpies", not masking tape). Date, initial, and print DUCHARME, on all incoming reagents. Date and initial all vials and solutions that you make up, making sure to label them correctly and to record exactly how they were prepared in you laboratory notebook. Do not leave uncovered containers unattended. Keep acids, bases, and flammable solvents away from each other. Return used chemicals to EHS using appropriate procedures. Store chemicals *only* in the designated cabinets, *not in the fume hood.* Don't stockpile used chemicals. Report excess chemical stockpiles to the *Laboratory Supervisor*. Don't prop open or leave open the chemical cabinets. Use the hood if at all possible when cleaning parts, or using chemicals to prepare or make samples. Don't put your head in the hood when using it and try and have the sash (glass doors) to the hood closed as far as is possible. Do not leave open chemical containers in the LB room. Use only small (µl) quantities of chemicals and solutions for LB operation, and even with these use a respirator when certain solvents (e.g., chloroform, benzene, etc.) are used, as appropriate, such as when cleaning the trough with a volatile solvent like chloroform. Store only purified water in the 1-gallon plastic jugs. Consult with the *Laboratory Supervisor* before handling *Hydrofluoric Acid*.

Store the big gas cylinders against the wall in the appropriate places. Make sure all gas cylinders in use are upright and strapped to the wall or equipment. Store lecture bottles in a cabinet away from solvents and corrosives. Know where the eyewash and emergency shower stations, and fire extinguishers are and how to use them. Do not drink or taste chemicals.

Glass Disposal:

Do not put ANY glass, slides, bottles, beakers, etc., in the trash. All glass, broken or not must be *entirely* contained in a glass disposal box as explained in the pertinent S.O.Ps. Excerpts that should help clarify this.

> "Glass should be packaged in a sturdy container, that is labeled as "Glass" (or equivalent wording), and which is securely sealed prior to being transported to a dumpster. Packaged glass shall be placed directly in the dumpster by the person(s) responsible for generating the glass; UNL custodial staff do not handle and dispose of glass." http://ehs.unl.edu/sop/s-glass_disposal.pdf
>
> "Empty glass containers cannot be placed in regular trash cans. If broken, the glass could severely cut someone. Glass should be packaged in a sturdy container, that is labeled as "Glass" (or equivalent wording), and which is securely sealed prior to being transported to a dumpster. Packaged glass shall be placed directly in the dumpster by the person(s) responsible for generating the glass; UNL custodial staff do not handle and dispose of glass. http://ehs.unl.edu/sop/s-empty_container_disposal.pdf

Radiological:

There presently are no materials or equipment in the Laboratory that emit hazardous radiation. You may not bring such items into the laboratory without first consulting with the *Laboratory Supervisor*.

Lasers:

Do not allow a laser beam near or at anybody's eyes or skin. Always know where your laser beams will end up. Have beam stops in place and don't take risks. Use proper eye protection when warranted. For additional information consult the EHS website http://ehs.unl.edu and the PHYS 343 Laser Safety Laboratory Manual. (See especially, the *Rules of Thumb* contained therein.)

Electrical:

Treat all electrical connections and instruments with care, as most have potentially lethal voltages either in the instrument or at its terminals, or both. Be sure of your circuits and connections. Double check them and us an appropriate meter to be sure that the ac and dc voltages that they carry are within your expectations and well within the safety limits of the instruments and connections. Extension cords are only for *temporary* use. Remove after 1 month. Do connect outlet strips or UPS units directly to an appropriate electrical receptacle. Do not "daisy-chain" by connecting power strips and UPS units in series.

Sharps:

Store and use sharp objects, like razor blades, with appropriate caution. Store razor blades in styrofoam or other protective covering. Protect other cutting tools with a covering or sheath, when not in use. Sharp objects include tools, knives, razor blades, needles, broken glass, or any object that can easily cut or puncture skin. Dispose of broken glass and other sharps in the appropriate containers. When glass and sharps containers are full, see that they are properly disposed of, and replaced.

Water:

Check the water lines frequently. If there is a water leak, will it spray water on electronics? Let us make sure that even the most unexpected water leak will not spray water on electronics. Make sure all cooling lines use reinforced water tubing (if plastic) are securely attached and sealed.

Injuries or sudden illness:

If you are injured or become ill in the laboratory, not matter how small, attend to it right away. Take first-aid measures as appropriate, and seek medical attention as soon as possible. If your injury is severe or you can't get immediate help, *call 911* for professional assistance. Do not walk alone, ride your bicycle, or drive yourself. If at all possible get, someone to take you to an appropriate medical facility, such as the Student Health Center, an urgent care facility, or a hospital. Don't worry about the paperwork; your doctor bills will be paid, so get treatment first. The paperwork should be sorted out later. Report injuries as soon as reasonably possible to the *Laboratory Supervisor* (Prof. Ducharme, sducharme1@unl.edu, 482-8590 or 416-8693) and the UNL Office of Environmental Health and Safety (EHS, http://ehs.unl.edu, 472-4925).

Other Safety and Security Information:

If at all possible, do not work in the laboratory alone. If you do work in the laboratory alone, make sure that the door is unlocked. The biggest risks you face are electrical shocks and chemical splash. If injured, I want you to be able to call out for help and have people rush in to help you. A locked door only hinders getting you aid. Don't work in an empty building please. Undergraduate workers may not work alone in the laboratory after hours without at least a graduate student around. After one year of work in the lab, the *Laboratory Supervisor* may waive this requirement for undergraduate workers who have been with the group for one year or more.

If working late at night, lock your office door, not just when you leave, but also while you are there. The building is often unlocked in the evenings and on Saturdays for classes and special events. Be especially alert outside regular business hours, when there are fewer people around and the outer doors should be locked. If you see someone who does not seem to belong in the building, call 911 or campus police, 2-2222. Don't let someone you don't know into the building, no matter how plausible their excuse. If they say they have permission from someone in the building, ask that they contact that person for entry. Guests are not allowed in the laboratory without prior permission of the *Laboratory Supervisor*.

We don't want stuff stolen or damaged. Make sure the laboratory doors and offices are *closed and locked* if you are the last to leave the lab. You may leave them unlocked if people are coming and going, but if in doubt, *lock the doors*.

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The undersigned acknowledge receiving and reading a copy of the Jorgensen Hall room 337 Safety S.O.P. and have completed the steps required for authorization to work in the laboratory.

Name (printed) Signature NUID DATE

Email address Telephone Number Name of Faculty Supervisor

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