

In this issue of the Environmental Health and Safety (EHS) Listserv, November 21, 2013:

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1. Navigating Winter – Walking & Working

Two components of “Navigating Winter”, walking in snowy/icy conditions and working in the cold, are the focus of this article. Let’s begin by reviewing suggestions for “walking.” Walking around campus or from your vehicle/bus to your workplace during the winter can be hazardous. Every winter slip/trip/fall injuries at UNL attributed to snow and ice account for approximately 3% of the overall number of injuries in a given year. That may not sound like much...until YOU are one of the injured.

Just like winter driving, winter walking requires anticipation. Think "defensive walking." Follow these guidelines to help avoid injury:

- Use **appropriate footwear** for the surface/conditions. Avoid slick-soled shoes. Wear boots/shoes/overshoes with grip soles such as rubber or neoprene composite.
- Plan ahead to give yourself **sufficient time** to reach your destination.
- Plan your route and **watch where you walk**. Avoid routes that have not been cleared or appear glazed over.
- **Avoid carrying** large/heavy/awkward objects that can obstruct your view or affect your balance or center of gravity.
- Use special care in **parking lots**. Try to park in areas free of ice. When entering/exiting your vehicle, use your vehicle for support. Never jump from a vehicle/piece of equipment.
- Think about the **walking surface** whenever you move about campus, especially on days that are sunny. Some area previously cleared may have partially thawed and refrozen, especially near the edges, leaving a glaze of ice.
- Use caution when **entering a building** as any snow left on your footwear will thaw with the building heat. Notice if the floor is wet from previous entrants. Avoid such indoor wet areas and if they cannot be avoided, traverse them the same as you would walk on ice. Contact Custodial Services to inquire about equipping areas prone to track-in with walk-off mats.

- **Pay complete attention** to your walking. Don't talk on the phone, dig in your purse/briefcase, get distracted by greetings/conversation, think ahead to events of the upcoming day, etc.
- **Follow general guidelines** within the Safe Operating Procedure (SOP), "*Slips, Trips, Falls – Reducing Risk and Avoiding Injury.*"
- Always use "**defensive walking**" techniques. Watch for hazards like black ice.

If you must walk on slippery surfaces:

- Take short steps or shuffle your feet. Walk more slowly so you can react quickly to a change in traction.
- Bend slightly as you walk to keep your center of gravity over your feet. Curl your toes under and walk as "flat-footed" as possible.
- Test potentially slick areas by tapping your foot on them before proceeding.
- Avoid uneven areas and stepping up/down on icy areas such as curbs.
- Keep your hands out of your pockets. Use your arms for balance.

Resources Specific to Winter Walking:

- ***Slips, Trips, Falls – Reducing Risk and Avoiding Injury*** SOP
http://ehs.unl.edu/sop/s-slips_trips_falls.pdf
- Be Safe On Ice <http://bss.fnal.gov/fire/walking-safely-on-ice.pdf>
- Safe Winter Walking <http://www.ehs.iastate.edu/prep/weather/winter/safe-winter-walking>

Next let's look at "working outdoors." There are a number of hazards associated with working outside in cold weather. Be aware of potential hazards, their warning signs, and how to avoid the hazard so you can safely navigate this winter season.

- **Hypothermia.** In cold weather your body may lose heat faster than it is produced. Prolonged exposure will eventually use up all your body's stored energy, resulting in an abnormally low body temperature. If low body temperature affects your brain, you may not be able to think clearly or realize you are in trouble. Warning signs include: shivering, fatigue, and loss of coordination.
- **Frostbite.** Frostbite is an injury caused by freezing, characterized by reduced blood flow, leading to lack of feeling and color in the affected body parts. Most often the body parts affected are nose, fingers, toes, ears, cheeks or chin. Warning signs include: numbness, aching, tingling or stinging, bluish or pale skin, and skin that feels unusually firm or waxy.
- **Chilblains.** Repeatedly exposing skin to cold temperatures can cause permanent damage to groups of small blood vessels in the skin, characterized by redness and itching that return with subsequent exposures. Body parts most often affected are cheeks, ears, fingers and toes. Warning signs include: redness, itching, blistering/ulcers, and inflammation.

Prevention is always the best policy to avoid cold stress. Here are some precautions workers should take if they must work in extreme cold:

- Wear appropriate clothing. Layered clothing, loose and not too tight, provides better insulation yet allows good blood circulation. Wear footwear designed for cold, wet conditions.
- Cover your head to reduce body heat loss. Protect ears, face, hands and feet.
- Try to schedule work for the warmest/driest/least windy part of the day. Take regular breaks in a warm, dry, and protected area. Limit the total amount of time outside during extremely cold weather.
- Do not touch cold metal surfaces with bare skin.
- Stay hydrated by drinking plenty of fluids, especially warm fluids. Avoid drinks with sugar and/or caffeine.
- Avoid exhaustion or fatigue, because energy is necessary to keep muscles warm.
- Be aware if you are taking medications that make you more susceptible to cold stress. Certain medical conditions also increase your risk: diabetes, high blood pressure, or cardiovascular disease.
- Monitor your physical condition and that of your co-workers. You may not be aware of warning signs that a co-worker would be able to observe.

The “**Cold Stress Equation**” chart available from the Occupational Safety and Health Administration (OSHA) will help you evaluate temperature/wind combinations to work outdoors more safely.

Other wintertime hazards, often related to snow cleanup, but also applicable in other outdoor work situations are:

- Lacerations or amputations from improperly attempting to clear jams in snow removal equipment. Make certain all powered equipment is properly guarded, isolated from power sources, and all parts have stopped moving before performing maintenance or attempting to clear a jam.
- Strains and sprains from prolonged or improper use of shovels or other snow removal equipment. Keep in mind body movement and positioning. Avoid overexertion.
- Carbon monoxide poisoning can result from idling vehicles or use of gasoline or kerosene-powered heaters or generators in an inadequately ventilated area. Avoid idling vehicles in garages or near buildings where the air-intake may allow exhaust to enter the building. Do not use gasoline/kerosene burning devices indoors without proper ventilation of exhaust fumes. NOTE: Carbon monoxide (CO) is a colorless, odorless, tasteless gas that can cause sudden illness or death. Seek prompt medical attention if you suspect CO poisoning and are feeling dizzy, light-headed, or nauseous.

Resources Specific to Working Outdoors:

- Working Safely In The Cold
<http://www.nj.gov/health/surv/documents/coldfact.pdf>
- Occupational Safety & Health Administration (OSHA). “*Tips to Protect Workers in Cold Environments.*” http://www.osha.gov/as/opa/cold_weather_prep.html
- OSHA. “*Cold Stress Card-The Cold Stress Equation.*”
<http://www.osha.gov/Publications/osh3156.pdf>
- Centers for Disease Control (CDC) & Prevention. “*Cold Stress.*”
<http://www.cdc.gov/niosh/topics/coldstress/>
- CDC “*Extreme Cold: A Prevention Guide to Promote Your Personal Health And Safety*” http://www.bt.cdc.gov/disasters/winter/pdf/cold_guide.pdf
- Centers for Disease Control – Carbon Monoxide
<http://www.cdc.gov/co/faqs.htm>

2. Having Trouble Subscribing to UNL Alert?

During the recent Supplier Showcase, several UNL employees reported to those staffing the Chancellor’s University Safety Committee booth that they could not sign up for UNL Alert despite repeated attempts. All had been subscribed to the original UNL Alert but were unable to subscribe when the new UNL Alert system was implemented.

There is a known issue which can be resolved with assistance. If you are having trouble subscribing to UNL Alert, contact Mark Robertson, Emergency Preparedness Coordinator with the UNL Police Department, 402-472-7632 or mrobertson5@unl.edu.

3. NIH Guideline and YOU - Investigator Responsibilities

The National Institutes of Health (NIH) Office of Biotechnology Activities recently published an updated version of the brochure, “***Investigator Responsibilities under the NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules.***” This brochure is available online for convenient access/review. Publication of this update provides an opportunity to remind all UNL researchers of your obligations under the “***NIH Guidelines***” and the “***UNL Biosafety Guidelines.***”

The UNL Institutional Biosafety Committee IBC) has been charged by the Vice Chancellor of Research to review work with biohazardous materials including recombinant and synthetic nucleic acid molecules to be in compliance with NIH requirements. All work with recombinant or synthetic nucleic acid molecules must be reviewed and approved by the IBC. In addition, work with pathogens (human, animal, or plant) must be reviewed and approved by this committee prior to initiation of work activities. A list of other work that requires review by the IBC can be found on the IBC website.

Researchers are expected to refrain from any work that is subject to IBC review without first submitting a registration document (New Protocol Form) to the IBC through NUgrant, regardless of funding source. Failure to do so when work involves materials covered by the NIH Guidelines constitutes non-compliance with the NIH Guidelines and can have severe repercussions for UNL. Penalties can include revocation of all NIH grants to the University and/or mandatory NIH review of all research involving materials covered by the NIH Guidelines.

For the benefit of all researchers at UNL, register your work with the UNL Institutional Biosafety Committee. Guidance on protocol development and submission is available online, along with other helpful materials.

Resources:

- **Investigator Responsibilities under the NIH Guidelines for Research Involving Recombinant or Synthetic Nucleic Acid Molecules**
<http://oba.od.nih.gov/oba/ibc/InvestigatorEducationalBrochureRecombinant%20DNA.pdf>
- **NIH Guidelines** http://oba.od.nih.gov/rdna/nih_guidelines_oba.html
- **UNL Biosafety Guidelines**
http://ehs.unl.edu/documents/Biosafety_Guidelines.pdf
- UNL Institutional Biosafety Committee (IBC) <http://ehs.unl.edu/committees/ibc>
- EHS **Biosafety** SOPs <http://ehs.unl.edu/sop/biosafety>

3. Elements of Creating Safety Cultures in Academic Institutions #13: Establish Safety Committees from the Highest Level On Down

As you may recall from previous issues of the EHS listserv, there has been a great deal of national attention given to the topic of laboratory safety in higher education following investigations of serious incidents at UCLA and Texas Tech. As a result, the American Chemical Society (ACS) recently issued a report, ***Creating Safety Cultures in Academic Institutions***. While this report focuses on laboratory safety, its content is applicable to all campus settings.

This report contained seventeen specific recommendations for creating vibrant, strong safety cultures in academic institutions. Each of these recommendations will be highlighted individually and presented as a series in the EHS listserv. The thirteenth recommendation in the ACS report is:

Establish a series of safety councils and safety committees, from the highest level of management to the departmental level or lower.

At UNL there is a university-wide safety committee, the Chancellor's University Safety Committee (CUSC), which meets every two months. The charge of the CUSC is to advise UNL administration on methods and means of minimizing safety and health hazards at UNL to the extent feasible. While this committee is important to the overall effectiveness of UNL's pursuit of

safety, it cannot operate at the local level. Therefore, departments are strongly encouraged to establish a vibrant safety committee that focuses on the department's unique hazards and circumstances.

Department committees are most effective when they have diverse representation including faculty, staff, administration, undergraduate and graduate students, and postdoctoral scholars. Department committees are an important avenue for creating and sustaining a culture of safety throughout the department. Examples of activities that a department safety committee might undertake include, but are not limited to, the following:

- Review injuries occurring within the department with the goal of taking action to reduce associated risks.
- Review EHS audit findings with the goal of taking action to correct deficiencies and underlying causes of deficiencies.
- Conduct peer-to-peer safety audits.
- Facilitate frequent safety communications throughout the department.
- Receive and act upon safety concerns expressed by staff, faculty, students, and visitors.
- Assist in planning emergency procedures.
- Facilitate and track completion of relevant safety and compliance training by department personnel.
- Participate in broader campus safety initiatives by attending CUSC meetings.

If your department does not currently have an active safety committee, start discussions with your peers and administrators. Be a proponent for raising safety awareness within your local UNL community! Even consider having a “committee” within your own group of colleagues or staff. EHS stands ready and willing to assist your department in forming a committee.

Always “think safety” and help foster the proper attitude toward safety as reflected in the “Safety Ethic,” espoused by the Safety Culture Task Force of the ACS Committee on Chemical Safety:

- **Value safety:** Safety is an integral part of what one does, its automatic, and it does not change its priorities. It is never questioned and never compromised.
- **Work safely:** One continues to learn about safety, learns to recognize hazards, assesses the risks of hazards, manages the risk of hazards, and prepares to handle emergencies.
- **Prevent at-risk behavior:** One does not cut corners or bypass safety measures in the laboratory (or other work environment) and shares this information with others, as needed.
- **Promote safety:** One encourages and acknowledges others in working safely.
- **Accept responsibility for safety:** One takes steps to work safely, setting a positive example for others, and being accountable for safety.

Resources:

- Creating Safety Cultures in Academic Institutions
http://portal.acs.org/portal/PublicWebSite/about/governance/committees/chemicalsafety/CNBP_029720
- UNL Injury and Illness Prevention Program
<http://ehs.unl.edu/programdocuments/iipp.pdf>
- EHS **Core - Injury and Illness Prevention Plan** web-based training
<https://scsapps.unl.edu/EHSNearMissReporter/>
- Chancellor's University Safety Committee (CUSC)
<http://ehs.unl.edu/chancellors-university-safety-committee-cusc#cusc>

4. A Maintenance Shop Mishap

A “Near Miss” in a Maintenance Shop was recently reported through the EHS **Near-Miss/Close Call Reporter!** The operator of a piece of equipment backed over a large shield lying behind the wheel of the equipment. The concern is that the operator did not ensure that the area around the machine was clear of obstacles prior to operating the equipment. Death could have resulted if the object had been a person since the equipment operator had not ensured that the area was clear before beginning equipment operation. A contributing factor was that the equipment operator was inexperienced.

Supervisors in this area now recognize the importance of identifying/documenting “Close Calls” and using such instances as a learning opportunity. Additionally, procedures were reviewed to ensure that newer operators of equipment have appropriate training prior to operating any equipment/machinery.

Resources:

- EHS **Near-Miss/Close Call Reporter!**
<https://scsapps.unl.edu/EHSNearMissReporter/>
- **Training Needs Assessment for EHS-Related Topics**
http://ehs.unl.edu/Training_Needs_Assessment.pdf

5. Overview: UNL Injury Incidents and Safety Surveys

EHS will periodically provide information on a few of UNL’s recent occupational injuries and highlights of campus-wide safety survey findings. By sharing this information, we hope to create an opportunity to learn from the experiences of others. When reviewing audit findings, consider whether similar conditions may exist in your work area, and if so, take action to remedy the situation.

A few of the recent occupational injuries are highlighted below:

- Several employees sustained cuts to fingers and arms when working with tools and equipment. Generally, this was because the employee was not

- wearing protective gloves while in close proximity to sharp edges, or the employee was not using a proper tool or not using the tool properly.
- Several employees sustained injuries while walking over rough/uneven surfaces. Generally, these injuries could have been avoided by picking a different route (even if slightly longer), and being aware of surroundings and hazards.
- There were also several sprain/strain injuries due to overexertion. In one case, an employee opted to clean on their hands and knees rather than using a cleaning tool with a handle. In some cases, a cart or other device could have been used to move heavy items rather than hand-carrying. In other cases, the employees should have sought the help of others rather than attempting the laborious task alone.

A few highlights of EHS audit findings, by type of space, follow:

- In one area, office-type workers who periodically use an aerial lift had not taken EHS **Mobile Aerial Lift** training. This is not a task that is ordinarily associated with an office worker, which underscores the need to carefully review the **Training Needs Assessment for EHS-Related Topics** to determine specific training that applies to any employee, based on their assigned work tasks.
- Entrances to several areas where hazardous chemicals are used/stored were missing the necessary placarding. Care should be taken to display all EHS-provided door postings upon receipt, whether for laboratories, shops or kitchens. This information is important to emergency responders and for communicating potential hazards to all affected personnel.
- Unsafe chemical storage was noted in several areas, particularly laboratories. Often this is related to storage of flammable chemicals in regular refrigerators, failure to segregate incompatible chemicals, storage of flammables outside of rated cabinets, and excessive storage of compressed gas cylinders. In one area, an aerosol can of flammable cooking spray was sitting on a warm oven. This situation is a fire/explosion hazard both due to the flammable nature of the can contents, and due to the fact that contents are under pressure and will explode if heated. Safety Data Sheets provide information on incompatibilities and storage requirements of hazardous chemicals. Information on safe storage is also provided in a number of EHS “Chemical Safety” SOPs.
- There was a particular concern that arose regarding emergency preparedness. During one safety survey the fire alarm went off. Workers exited the building, but no one knew the location of the designated gathering area and congregated right next to the building, an unsafe location in the event of a fire. There was no procedure of accounting for workers or determining when/whether it was safe to re-enter the building.

The UNL Emergency Planning & Preparedness web site provides the campus community with a **Building Emergency Action Plan** template to assist in developing the components of an emergency plan specific to your area. That

template and the EHS ***Emergency Preparedness*** web-based training both emphasize the need for departments to “be prepared” and have a plan of action to employ when an emergency situation arises.

We encourage you to share this overview of injury incident findings and audit deficiencies with others in your area as applicable and continue to report student injuries and near-misses.

Resources:

- EHS ***Near-Miss/Close Call Reporter!*** <https://scsapps.unl.edu/EHSNearMissReporter/>
- EHS ***Student Injury/Illness Reporter!*** <https://scsapps.unl.edu/studentinjuryillnessReporter/>
- ***First Report of Alleged Occupational Injury or Illness*** and related forms http://hr.unl.edu/forms/pdf/firstreport_incidentreport_choiceofdoctor.pdf
- ***On-The-Job and Student Injuries SOP*** <http://ehs.unl.edu/sop/s-injury.pdf>
- ***General Material Handling/Safe Lifting*** http://ehs.unl.edu/sop/s-gen_safe_lifting.pdf
- ***Aerial Lift Safety SOP*** http://ehs.unl.edu/sop/s-aerial_lift_safety.pdf
- EHS ***Mobile Aerial Lift*** web-based training <http://ehs.unl.edu/training/online>
- ***Training Needs Assessment For EHS-Related Topics*** http://ehs.unl.edu/Training_Needs_Assessment.pdf
- ***Safety Audit Guidelines*** SOPs <http://ehs.unl.edu/sop/safety-audit-guidelines>
- EHS ***Chemical Safety*** SOPs <http://ehs.unl.edu/sop/chemical-safety>
- UNL Emergency Planning & Preparedness web site
- ***Building Emergency Action Plan*** <http://emergency.unl.edu/Building%20Emergency%20Action%20Plan%20Template.pdf>
- EHS ***Emergency Preparedness*** web-based training <http://ehs.unl.edu/onlinetraining>

6. Revised Safe Operating Procedures

- ***Biosafety Training*** <http://ehs.unl.edu/sop/s-bio-training.pdf>
Revised to clarify policies on required biosafety training, training topics, and lab-specific refresher training, that is required for all persons working with biohazardous materials under an approved IBC protocol, including recombinant or synthetic nucleic acids.
- ***NUgrant IBC Protocol Form Instructions For Field Collection & Wild Animal Sampling Procedures*** http://ehs.unl.edu/sop/s-bio-nugrant_field-animal_form_instr.pdf
Revised to be consistent with the new IBC protocol form and also to change contact information to: ibc@unl.edu

- ***Preparing a Laboratory Biosafety Manual*** http://ehs.unl.edu/sop/s-bio-preparing_biosafety_manual.pdf
Updated with revisions to the instructions for completing and submitting the *Appendix A* form, “Biosafety Manual Contents.” A fillable PDF version of this form is available for download from the IBC web site: <http://ehs.unl.edu/protocol-development-and-submission>
- ***NEW NAME: Recombinant or Synthetic Nucleic Acid Molecules – IBC & Other Review Requirements*** http://ehs.unl.edu/sop/s-bio-rDNA_IBC_Other_Rev_Req.pdf
Previously named ***rDNA – IBC & Other Review Requirements***, document naming revised to be consistent with NIH Guidelines. Also includes information from March 2013 revisions to the NIH Guidelines.

Remember...SAFETY IS AN ATTITUDE!

Environmental Health and Safety

University of Nebraska-Lincoln
3630 East Campus Loop
Lincoln, NE 68583-0824
(402) 472-4925
<http://ehs.unl.edu>