

**In this issue of the Environmental Health and Safety (EHS) Listserv,
November 8, 2018**

1. Walking and Working in Cold, Snow & Ice
 2. Reduce Your Lab's Energy Footprint
 3. Hidden Stormwater Control
 4. Near Misses Matter!
 5. Near Misses to Ponder
-

1. Walking and Working in Cold, Snow & Ice

Walking and working in snowy/icy/cold conditions 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.

Winter Walking. 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/awkwardly-shaped objects that can obstruct your view or affect your balance or center of gravity. Consider a backpack instead.
- Use special care in **parking lots**. Try to park in areas free of ice. When entering/exiting your vehicle, use your vehicle for support.
- Think about the **walking surface** whenever you move about campus, especially on days that are sunny. Some areas 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 or text, search for items in your purse/briefcase, get distracted by greetings/conversation, thinking ahead to events of the upcoming day, etc.

- 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 onto icy areas such as from curbs.
- Keep your hands out of your pockets. Use your arms for balance. Imagine you are going to “walk like a penguin.”

Resources Specific to Winter Walking:

- Snow & Ice Management Association “Safe Winter Walking”
<http://www.sima.org/discover-sima/public-safety/safety-tips/safe-winter-walking>
- UNL Emergency Preparedness “Really Obvious: On Ice”
<https://www.youtube.com/watch?v=5Gv6QNZytF8>
- Walk Like a Penguin (AHSCchannel, duration 1:37)
<https://www.youtube.com/watch?v=LHaWGibGwyk>

The following helpful posters are available in PDF format from the Iowa State University Environmental Health and Safety department’s article “*Helpful Hints When Walking on Snow or Ice,*”
<https://www.ehs.iastate.edu/weather/winter/walking> . Print out these posters as a visual reminder of safe wintertime walking and share in your facility/department/area.



At Iowa State University...
45% of slip and fall injuries on ice occur while walking to work.

Walking during the winter requires special attention to avoid slipping and falling. The National Safety Council estimates that falls cause more than 1,500 deaths and 300,000 injuries per year.



EHS Everyone's Safety
 www.ehs.iastate.edu

IOWA STATE UNIVERSITY
 Environmental Health and Safety



At Iowa State University...
20% of slips and fall injuries occurred in parking lots.

Walking during the winter requires special attention to avoid slipping and falling. The National Safety Council estimates that falls cause more than 1,500 deaths and 300,000 injuries per year.



EHS Everyone's Safety
 www.ehs.iastate.edu

IOWA STATE UNIVERSITY
 Environmental Health and Safety



Winter Working. 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 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 of any medications you are taking might 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.

A National Weather Service Wind Chill Chart will help you evaluate temperature/wind combinations to work more safely outdoors when the weather is cold.

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 the 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:

- EHS Safe Operating Procedure **Cold Stress**
https://ehs.unl.edu/sop/s-cold_stress.pdf
- National Weather Service (NWS) Wind Chill Chart & Calculator
http://www.nws.noaa.gov/om/cold/wind_chill.shtml
- OSHA. “Cold Stress Quick Card: Protecting Workers from Cold Stress”
<https://www.osha.gov/Publications/OSHA3156.pdf>
- OSHA “Winter Weather: Plan. Equip. Train.”
https://www.osha.gov/dts/weather/winter_weather/hazards_precautions.html
- Centers for Disease Control & Prevention (CDC). “Cold Stress.”
<http://www.cdc.gov/niosh/topics/coldstress/>
- CDC “Frequently Asked Questions: Carbon Monoxide”
<http://www.cdc.gov/co/faqs.htm>
- Iowa State University Environmental Health and Safety “Winter Driving”
<https://www-ehs.sws.iastate.edu/publications/handouts/WinterDriving.pdf>

2. Reduce Your Lab’s Energy Footprint

Reducing a laboratory’s energy footprint by applying sustainable strategies is a concept gaining in popularity. The American Chemical Society (ACS) has provided some methods scientists have adopted.

Freezers - Those using an ultra-low temperature freezer (-80°C) can decrease daily energy consumption and prolong the life of the unit by reducing the operating temperature. Consider reducing the temperature to -70°C which studies show results in usage of up to 40% less energy.

Water - To Emory University graduate students Jacob Burman and Caitlin Farr, it seemed inefficient to use aspirators hooked up to water faucets to pull vacuum for filtrations. The vacuum arises from the aspirator’s narrow tube as water gushes into the drain. Water—lots of it—gets wasted. The Emory University Sustainability office helped them come up with the idea of a shared pump that travels between labs by cart and features a solvent trap for harmful chemicals so those chemicals can be disposed of in the proper waste streams. Vacuum pumps use electricity, but a challenging filtration can take up to 20 minutes of flushing water while the same process under a minute with the vacuum pump.

Reagents - A chemical inventory system can track every reagent from the day it’s ordered to the day it runs out, reducing duplicate orders which reduces waste and saves money.

Fume hoods - Fume hoods can be among the worst offenders in terms of energy consumption because they constantly remove cooled or heated air. This wastes energy. Laboratory ventilation, including fume hoods as well as room controls at UNL was covered in a recent UNL Laboratory Safety Colloquium that is available online for review.

Electronic equipment - Putting laboratory equipment such as ice makers, drying ovens, and water baths on timers can save energy by shutting them off at night and turning equipment back on early enough to be ready when the first scientists arrive in the morning.

Greening a laboratory, applying sustainable strategies to reduce a lab's impact on the environment, isn't a new concept but is a topic of increasing interest as sustainability becomes a more commonly discussed topic.

Resources

- Drahl, C. (2018, September 04). To find hacks for greening your lab, start with the freezer. Retrieved from <https://cen.acs.org/environment/sustainability/find-hacks-greening-lab-start/96/i35> Volume 96, Issue 35
- Laboratory Safety Colloquium Series (Laboratory Ventilation March 2018) <https://ehs.unl.edu/training/Colloquium>
- EHS Safe Operating **Procedure Laboratory Hood/Cabinet Identification and Use** https://ehs.unl.edu/sop/s-lab_hood_use.pdf

3. Hidden Stormwater Control

The University Health Center/UNMC College of Nursing building site incorporated a unique feature to reduce pollutants in stormwater. This structural stormwater control consists of an underground detention system located below the parking lot on the north side of the building and is sized to capture and clean 3,100 cubic feet of stormwater. The system consists of a series of storage pipes nested on top of an aggregate base. Stormwater from the parking lot and building roof is directed into the system where it is temporarily stored in the pipes. This allows sediment and other pollutants to settle out and clean water to percolate through the aggregate base or slowly discharge into Antelope Creek. The sediment captured by the chamber is removed during periodic maintenance and disposed at the landfill. To view a time lapse video of the system's installation and learn more about stormwater controls, review the stormwater management resources on EHS's website at <https://ehs.unl.edu/stormwater-management> (scroll down to view the video).

EHS encourages everyone on campus to become involved in the University's efforts to minimize stormwater pollution. UNL's Stormwater Management Plan

can be viewed at <https://ehs.unl.edu/stormwater-management>. Comments can be submitted from this webpage. EHS also maintains a "Stormwater Pollution Reporter" tool, displayed prominently on the right hand side of the EHS homepage. We encourage anyone with concerns about potential stormwater pollution discharges to submit their concern using this tool. If you would like more information about other stormwater controls on UNL's campus, contact us by email at stormwater@unl.edu or by phone at (402) 472-4927.

Resources

- StormTech chamber system video
<http://www.stormtech.com/usvideo.html>
- IANR NebGuide "Stormwater Management: What Stormwater Management Is and Why It Is Important"
<http://extensionpublications.unl.edu/assets/pdf/g2238.pdf>
- "Stormwater Pollution Reporting Form" <https://ehs.unl.edu/stormwater-pollution-reporting-form>

4. Near Misses Matter!

A campus-wide initiative, led by the Chancellor's University Safety Committee (CUSC) is underway to encourage all UNL employees to report unsafe practices and near misses. A near miss is an incident where no property was damaged and no personal injury sustained, but where, given a slight shift in time or position, damage and/or injury or illness easily could have occurred. This type of situation is often thought of as a "close call." The purpose of such reporting is to identify and abate contributing factors before they result in personal injury/illness or property damage.

By reporting these circumstances, you are contributing to a safer and healthier campus environment. Information reported is shared throughout the University for educational/awareness purposes. Specific identifying information (e.g., names, departments, etc.) is removed before reporting on an incident. We appreciate your participation and assure you that there is no risk of repercussions for reporting a situation or hazard.

To support this effort, the EHS "*Near Miss/Close Call Incident Reporting Form*," revised to include unsafe practices as well as near misses, is online through the EHS website. EHS also has available business-card size handouts containing the URL to report. Please consider requesting a number of these Near Miss/Close Call reporting informational cards to share with those in your area. To request any quantity of these business-card size handouts contact EHS at 402-472-4925 or ehs@unl.edu.

Resources

- *Near Miss/Close Call Incident Reporting Form*
<https://ehs.unl.edu/near-missclose-call-incident-reporting-form>

5. Near Misses to Ponder

Following are a few “near misses” reported through the EHS “*Near Miss/Close Call Incident Reporter!*” along with suggestions so you can avoid this type of incident.

Tipping Dewar

Incident: A large dewar filled with liquid nitrogen was being rolled out of a cargo elevator and a wheel on the bottom was caught in the gap between the door of the elevator and the floor. The dewar tipped over and the liquid nitrogen spilled out onto the floor in front of the elevator.

Mitigation: When moving a dewar or cart with small wheels maintain awareness of surfaces along which the item is being moved. When there are relatively large, more than one person should be involved in the transfer to help as some maneuvering might be necessary to bridge the gap. In addition, this incident could have easily resulted in an oxygen-deficient atmosphere had the liquid nitrogen spilled in a closed elevator. Liquid nitrogen should be transported on a freight elevator and people should not ride on the elevator with the liquid nitrogen. Two people can work as a team, one loading the elevator and sending it to the appropriate floor, while the second team member waits on the receiving floor.

Glassware Break

Incident: A person was washing laboratory glassware that slipped and cut their palm. This could have happened in any non-laboratory area where glassware is handled when wet.

Mitigation: When washing glassware the use of rubber gloves helps provide grippability to prevent slippage. In addition, should there be unanticipated breakage, the thicker rubber gloves provide some protection to the worker’s hands.

Inattention = Burn

Incident: A worker was not paying attention to those working in proximity and the potential hazards of their co-worker’s tasks resulting in a burn.

Mitigation: When there are multiple people working in an area all should be sure they are aware of hazards associated with the work of others, not just their own tasks. Maintain situational awareness, that is, where is the hazard located in relation to their own working space, and is the presence of the hazard static or changing as the task proceeds.

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>

~To SUBSCRIBE and get your own copy if you received this from someone else or UNSUBSCRIBE, send an e-mail to LISTSERV@LISTSERV.UNL.EDU . In the Message (not Subject) field enter SUBSCRIBE EHSINFO or UNSUBSCRIBE EHSINFO