

In this issue of the Environmental Health and Safety (EHS) Listserv – November 6, 2019

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1. The Power of Permeable Pavers

The parking lots that are being installed near the entrance to the Devaney Gymnastics Training Facility contain five sections of permeable pavers that capture and treat parking lot pollutants conveyed by stormwater. The five sections of permeable pavers have a total treated volume of 3,200 cubic feet of stormwater.

The permeable pavers are specifically designed to allow stormwater to percolate through the pavers and settle in an aggregate layer that is located beneath. Once the water level in the aggregate layer reaches the designed height it will then seep into the drainage tile system and leave the site through the stormwater conveyance system. This process is effective at removing different types of pollutants such as sediments/solids, nutrients, and total metals that would otherwise be discharged to receiving bodies of water downstream.

The permeable pavers are just one of many different ways that we can reduce UNL's stormwater impact to our lakes and streams here in Nebraska. To find out more about how UNL reduces its stormwater impact visit the UNL Stormwater Management website. There you will find information regarding some of the Best Management Practices (BMPs) UNL uses around campus as well as the permit that allows us to discharge stormwater to Waters of the State. You will also find a link to the Stormwater Pollution Reporter tool that you can use if you suspect a stormwater quality issue on campus.

Resources

- UNL Stormwater Management Plan <https://ehs.unl.edu/stormwater-management>
- UNL Stormwater Pollution Reporter <https://ehs.unl.edu/stormwater-pollution-reporting-form>

2. Walking and Working in Cold, Snow & Ice (Including Carbon Monoxide Dangers)

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 surfaces** whenever you move about campus, especially following sunny days. 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”
<https://www.sima.org/about/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 (AHSChannel, duration 1:37)
<https://www.youtube.com/watch?v=LHaWGibGwyk>

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.

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 <https://www.weather.gov/safety/cold-wind-chill-chart>
- 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/>
- Iowa State University Environmental Health and Safety “Winter Driving” <https://www-ehs.sws.iastate.edu/publications/handouts/WinterDriving.pdf>

Carbon Monoxide = Danger! Carbon monoxide (CO) is an odorless, colorless gas that can cause sudden illness or death. It is found in fumes produced by burning fuel in cars, trucks, gas grills, furnaces...and other engines. Most common symptoms of CO exposure are headache, dizziness, weakness, upset stomach, vomiting, chest pain and confusion. These symptoms are like the flu. Too much CO can make you pass out or kill you.

Some tips to prevent CO poisoning:

- Do not operate fuel-burning tools/equipment/machines (e.g., camp stoves, heaters, forklifts, power washers, generators, etc.) indoors. Use battery or electric powered alternatives.
- 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 or gasoline-powered equipment in garages or near buildings where the air-intake may allow exhaust to enter the building.
- Install a CO detector and regularly test the unit/change batteries.
- Have your gas-powered home heating system serviced by a qualified technician yearly.
- Make sure gas-powered appliances are vented properly.
- Never use a gas range/oven for heating.
- Never burn charcoal indoors.
- Never leave a vehicle idling in a garage, even if the garage door is open.

NOTE: Seek prompt medical attention if you suspect CO poisoning and are feeling dizzy, light-headed, or nauseous.

Resources Specific to Carbon Monoxide

- CDC “Frequently Asked Questions: Carbon Monoxide” <http://www.cdc.gov/co/faqs.htm>
- OSHA (Carbon Monoxide) Fact Sheet https://www.osha.gov/OshDoc/data_General_Facts/carbonmonoxide-factsheet.pdf
- Cedars Sinai “Carbon Monoxide Poisoning” <https://www.cedars-sinai.org/health-library/diseases-and-conditions/c/carbon-monoxide-poisoning.html>

3. Safety Posters – Winter Navigation

EHS has developed a number of safety posters of relevance to the campus community. The three posters highlighted this month serve as handy reminders

about different aspects of winter surface navigation: going into and out of buildings, getting into and out of vehicles, walking around campus including navigation of steps. It is recommended that you post all three.



Walking during the winter requires special attention to avoid slipping and falling.



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Environmental Health & Safety (402) 472-4925



Walking during the winter requires special attention to avoid slipping and falling.



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Environmental Health & Safety (402) 472-4925



Order your FREE posters today. Contact ehs@unl.edu or 402-472-4925 with your name, campus mailing address, and quantity desired.

Resources

- Safety Posters <http://ehs.unl.edu/safety-posters>

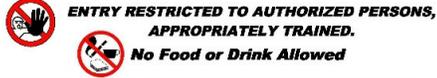
4. REVISED Biohazard Door Postings SOP

The **Biohazard Door Postings** SOP has been revised to reflect recent changes in the format of these postings:

- For BSL-2 research, clinical and teaching labs, the biohazard information will now be combined with the standard EHS door placard to provide one posting rather than two separate postings. EHS will replace the old postings with this new version as we conduct safety surveys over the next 6-12 months.

Principal Investigator: Jones, Michael Department: Nebraska Center for Virology
 ROOM CONTACTS: Office/Lab Phone: Emergency Phone:
 Jones, Michael (402)555-1234
 Winter, Sylvia (402)555-4321 (402)555-0123

For Emergency Contact Information Please Contact UNL PD Dispatcher at (402)472-2222.



HAZARDS PRESENT IN ROOM(s): For more information about the symbols displayed below, scan this QR code.

Human Biohazards Present BSL-2

Exit Procedures: Remove all PPE and wash hands prior to exiting lab.

Refer to Lab-Specific Procedures for required Personal Protective Equipment (PPE) for handling these hazards. See Room Contacts listed above for more information or room access.

Typical minimum PPE for working with chemical, biological and/or radiological hazards consists of:
LAB COAT; HAND PROTECTION; EYE PROTECTION; CLOSED-TOE SHOES

In case of FIRE or MEDICAL EMERGENCY, dial 911.

Principal Investigator: Jones, Michael Department: Nebraska Center for Virology
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For Emergency Contact Information Please Contact UNL PD Dispatcher at (402)472-2222.



HAZARDS PRESENT IN ROOM(s): For more information about the symbols displayed below, scan this QR code.

Human Biohazards Present BSL-2

Agent: Human Immunodeficiency Virus (HIV)

Exit Procedures: Remove all PPE and wash hands prior to exiting lab.

Refer to Lab-Specific Procedures for required Personal Protective Equipment (PPE) for handling these hazards. See Room Contacts listed above for more information or room access.

Typical minimum PPE for working with chemical, biological and/or radiological hazards consists of:
LAB COAT; HAND PROTECTION; EYE PROTECTION; CLOSED-TOE SHOES

In case of FIRE or MEDICAL EMERGENCY, dial 911.

Sample: Human Biohazards

Sample: HIV Research

- The formatting for door postings for animal spaces with biohazards have also been slightly revised.

HUMAN/ANIMAL BIOHAZARD

ANIMAL BIOSAFETY LEVEL 2

Biohazardous Agent(s)	Zika & Dengue Virus		
Animal Species	Mice		
Occupational Health Requirements	None Beyond Standard IACAP Requirements		
Entrance Procedures for ANIMAL HANDLING	Required PPE: Lab coat/gown, Boots, Surgical Mask, Gloves Additional PPE as required by Facility Procedures		
Entrance procedures for OBSERVATION ONLY	Scrubs or facility coveralls, facility shoes or booties		
Required Exit Procedures	Remove all PPE prior to exiting animal room. Wash hands and remove facility clothing and footwear prior to exiting facility.		
PI:	Date Posted: 2/22/2017		
Building:	Room:	Work #:	Emergency #:
Contact Person:			
Alt. Contact:			

For questions or concerns contact the UNL Biosafety Officer at 472-9554

Sample: Human & Animal Biohazards

ANIMAL BIOHAZARD

Restricted Area
Authorized Personnel Only

ANIMAL BIOSAFETY LEVEL	2		
Biohazardous Agent(s)	Porcine Circovirus		
Animal Species	Sus scrofa domesticus		
Occupational Health Requirements	None Beyond Standard IACAP Requirements		
Entrance Procedures for ANIMAL HANDLING	Required PPE: Lab coat/gown, Boots, Surgical Mask, Gloves Additional PPE as required by Facility Procedures		
Entrance procedures for OBSERVATION ONLY	Same as for Animal Handling		
Required Exit Procedures	Remove all PPE prior to exiting animal room. Wash hands and room facility clothing and footwear prior to exiting facility.		
PI:	Date Posted: 5/13/2018		
Building:	Room:	Work #:	Emergency #:
Contact Person:			
Alt. Contact:			

For questions or concerns contact the UNL Biosafety Officer at 472-9554

Sample: Animal Only Biohazard

- Finally, the formatting and content of door postings for greenhouse spaces with plant pests as well as laboratories that require signage due to USDA-APHIS permit conditions have been updated to align with regulatory requirements.

**AUTHORIZED PERSONNEL ONLY
WHEN EXPERIMENTS IN PROGRESS**



PLANT BIOCONTAINMENT LEVEL		2
Research Plants <input checked="" type="checkbox"/>	Plant Pests <input type="checkbox"/>	Plant Pathogens <input checked="" type="checkbox"/>
Plants in Use: Zea Mays		
Special Considerations: <small>(e.g. PPE, entrance/exit procedures, etc.)</small>		Lab coat, gloves and eye protection should be worn as necessary for experiments involving plant pathogens.
<small>All genetically modified and/or contaminated plant material and soil must be rendered biologically inactive prior to disposal.</small>		
PI: John Doe	Date Posted: 10/29/19	
Building: Agronomy and Horticulture Greenhouse 4		
Room: D3	Work #	Emergency #
Primary Contact: John Doe	(402) 558-5855	(402) 123-4567
Secondary Contact:		

For questions about this posting or to update information, please contact the UNL Biosafety Officer at 472-9554.



Sample: Plant Pathogen/Pest Signage

If updates are needed to these postings for your lab, animal or greenhouse space you can contact EHS at ehs@unl.edu to get new postings generated.

Resources

- **Biohazard Door Postings** https://ehs.unl.edu/sop/s-bio-door_postings.pdf

5. Please Help Us Help You

Environmental Health and Safety is committed to excellent customer service and offers a *Customer Satisfaction Survey* as an easy method for the campus community to provide feedback on our services and staff. By taking a few moments to complete the survey (<http://ehs.unl.edu/survey>), you will be helping us to identify areas where we might need to focus our attention to better serve you.

In order to effectively evaluate potential areas for improvement, please provide specific information or examples and your name and contact information. The Director, Brenda Osthus, follows up on all submissions. We greatly appreciate your participation.

Please feel free to contact Brenda Osthus, EHS Director, at 402-472-4927 or bosthus1@unl.edu if you would rather communicate outside the parameters of this survey.

6. Revised Safe Operating Procedures

- **Storm Water Pollution Prevention** SOPs <https://ehs.unl.edu/sop/storm-water-pollution-prevention>
SOPs in this section were changed to reflect the new name for the State Agency (Nebraska Department of Environment and Energy, formerly Nebraska Department of Environmental Quality). Other changes made to improve readability, clarity etc.
- **Toxicology and Exposure** SOP
https://ehs.unl.edu/sop/tox_exposure_guidelines.pdf
Updated toxicity categories to be consistent with the Globally Harmonized System of classification (GHS). Reworded SOP to remove redundancies and improve readability.

Remember...SAFETY IS AN ATTITUDE!

Environmental Health and Safety

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