



WISCONSIN
UNIVERSITY OF WISCONSIN-MADISON

SNOW & ICE REMOVAL SAFETY



The following list of precautions should be considered for snow and ice removal safety discussions and inclusion in operating procedures. More detailed information follows this two page list.

SNOW SHOVELING

- ❖ To limit the need for snow removal rope off areas that don't need to be used or accessed
- ❖ Use footwear which provides good traction, also use non-slip detachable footwear devices if possible
- ❖ Use ergonomically designed equipment and the correct tool for the job
- ❖ Push or sweep as much of the snow as possible, wet snow is heavy govern the rate of shoveling accordingly
- ❖ If the snow has an ice crust or is heavy, shovel the snow in layers
- ❖ Use ice scrapers or ice-melting materials to make the job of ice removal as easy as possible (see salt use policy)
- ❖ Always dress warmly in layers, cold itself can pose a strain on the body's circulation
- ❖ Assure snow and ice is removed from all exits around a building and doors are openable, including remote exits
- ❖ Assure all fire hydrants which need to be cleared of snow are identified and shoveled
- ❖ Be heart smart! Don't eat or smoke before shoveling snow. Avoid caffeinated beverages. These are stimulants and may increase heart rate and cause blood vessels to constrict.
- ❖ If you experience pain of any kind, stop immediately and seek assistance
- ❖ Pace yourself during shoveling activities. Take frequent breaks and drink plenty of water. Snow shoveling is strenuous work and it is important to re-hydrate your body often.
- ❖ When grasping the shovel, keep your hands about 12 inches apart to provide greater stability and minimize the chances of injuring your low back. Use gloves which provide a good grip.

WHILE SHOVELING:

- ❖ Always face towards the object you intend to lift
- ❖ Bend at the hips, not the low back, and push the chest out, pointing forward. Then, bend your knees and lift with your leg muscles, keeping your back straight
- ❖ Keep your loads light and do not lift an object that is too heavy for you
- ❖ If you must lift a shovel full, grip the shovel with one hand as close to the blade as comfortably possible and the other hand on the handle (handle and arm length will vary the technique)
- ❖ Avoid twisting the back to move your object to its new location – always pivot your whole body to face the new direction
- ❖ Keep the heaviest part of the object close to your body at your center of gravity
- ❖ Walk to the new location to deposit the item rather than reaching or tossing



SNOW THROWERS

- ❖ Supervisors should have all operators read the owner's manual and safety precautions should be discussed with field staff
- ❖ Only personnel who have received adequate instruction should operate snow removal machines
- ❖ Assure clutches are disengaged and machine is in neutral before attempting to start machine
- ❖ Keep hands, feet and clothing away from power-driven parts
- ❖ Keep hands out of the discharge chute and away from its outside edge
- ❖ Assure operators know the controls, how to stop the engine and how to shift out of gear quickly
- ❖ Disengage power and stop the motor if leaving the operating position or making any adjustments
- ❖ Adjust height to clear gravel or areas with crushed rock
- ❖ Do not operate machines on slopes or areas where there is a risk of slipping or falling – other more appropriate equipment or shoveling by hand may be needed
- ❖ Always direct the discharge away from bystanders so no one can be hit by a hard object (stone) that could be picked up and thrown, and assure no one near the front of the machine
- ❖ Operators should assure the machine is proper working order before use and safety devices are in place
- ❖ Self closing, pressure venting, approved gas containers with spark arresting screens need to be used for fueling – after fueling equipment move gas containers away from machines before restarting
- ❖ Fuel supplies and gas powered equipment needs to be properly stored
- ❖ It is critical to allow gas powered equipment to cool before refueling, also be certain to wipe off any fuel spilled on the machine before starting the engine
- ❖ When filling gas cans at the pump it is critical to take them off the pickup bed and place them on the ground while filling to prevent fume buildup in the truck bed and static charges which could spark a fire
- ❖ If gas powered equipment has problems starting have it repaired, do not attempt to prime the carburetor with gasoline, the engine can backfire and cause a fire

WALKING AND WORKING ON SNOW AND ICE

TO HELP AVOID A FALL WHILE WALKING:

- ❖ Adjust how you walk on snow and ice, take small shuffle steps like a penguin to maintain balance and walk flat footed as possible
- ❖ Go slow, being in a hurry increases your chances of a fall, if you rush and fall you may be delayed much longer
- ❖ Look where you are walking and avoid walking on sheer ice if possible – Stay on cleared paths and snow routes don't cut corners
- ❖ Keep your arms free if possible and use them to help balance yourself
- ❖ If sand is readily available for use near a problem site you may want to apply it before walking across an icy area
- ❖ If you're having difficulty getting along ask for someone's arm who may have better traction/stability
- ❖ If you are aware of ice or snow related problem areas you need to walk over, report them to the responsible party for attention
- ❖ In winter additional walk-off mats may be needed to extend the area of protection inside buildings
- ❖ If you are aware of an icy or snow covered area that did not get cleared report it to the Building Manager, Physical Plant (CARS 263-3333), or the Environment, Health and Safety (265-5000).
- ❖ Snow drifts and Ice on building roofs can present a hazard if it can fall on to people below
- ❖ Use alternate routes to closed sidewalks and stairs posted "Closed for winter." Always use available handrails.



MORE INFORMATION

TECHNIQUES TO PREVENT LOW BACK INJURIES

Pick the right snow shovel

An ergonomic snow shovel can help take some of the effort out of your snow removal chores. A shovel with a curved handle or an adjustable handle length will minimize bending, requiring you to bend your knees only slightly and arch your back very slightly while keeping the shovel blade on the ground. In addition, a small, lightweight, plastic blade helps reduce the amount of weight that you are moving. If ice needs to be removed a heavy blade ice scraper or ice melting product may do the work faster and with far less physical effort.

Warm up thoroughly

Cold, tight muscles are more prone to injury than warmed up, flexible muscles. Do your back a favor by warming up for five to ten minutes before shoveling or any strenuous activity. Get your blood moving with a brisk walk, marching in place, or another full-body activity. Then, stretch your low back and hamstrings (the large muscles in the back of the thigh) with some gentle stretching exercises. Limber up your arms and shoulders with a body hug.

Pace Yourself During Snow Removal

Removing small amounts of snow frequently is less strenuous than removing a large pile at once. If possible, removing snow over a period of days will lessen the strain on the back and arms. In deep snow, remove a few inches at a time, rather than attempting to shovel the full depth at once. When shoveling, take a break for a minute or two every 10-15 minutes or if you feel overworked at any point. Use this opportunity to stretch your arms, shoulders, and back to keep them warm and flexible.

Dress for Success!

Consider the weather when choosing outerwear. Dress in layers. Wear clothing that is easy to move in. Wear a hat - a great deal of body heat is lost through the head. If icy cold, consider breathing through a scarf but don't let it obstruct your view. Proper boots are essential for keeping feet warm and dry while appropriate soles provide traction. Good boots can help you maintain your balance! Choose gloves that will keep your hands warm, dry and blister free - consider thicker gloves allowing for a good grip on the shovel's handle.

Footwear

Folks who also need to push or pull carts or machinery over snow and ice (snow throwers and shoveling) face additional challenges to maintaining traction. Boots with deep non-slip tread can help. Today we also have a variety of non-slip detachable ice grip devices which can be used for even better traction. These slip on devices have metal spikes, studs, or coils which dig into the ice and snow for added traction. They are a great idea for everyone who needs to walk outside in the winter months and very helpful for folks whose work requires them to be outside and carry, push, or pull loads. Here is just one example of a non-slip removable device which provides added traction in snow or ice conditions:

http://www.youtube.com/watch?feature=player_embedded&v=EQdAQ7cS3uM

Best Practices for Most Salt Users

- ❖ Prevent ice by keeping runoff from pooling; keep gutters and storm sewer drains open and clear of leaves, snow and ice. Should pooling occur, contact Environmental Services. They will then assess the situation and take corrective action.
- ❖ Don't use salt if you expect below zero temperatures for a prolonged period; use sand instead. Salt works poorly below zero, and doesn't work at all below -6 °F.
- ❖ When possible, use fine grain salt instead of rock salt. Large pieces of salt melt ice very inefficiently. You can do the same job with a smaller amount of fine grain salt.
- ❖ Salt only walks, streets and parking lots. Don't salt grass or planting beds. Consider salt alternatives.
- ❖ Unless you are sure that ice is about to form, don't salt in anticipation of ice. Avoid salting dry pavement that is free of ice.
- ❖ Remove snow first; avoid salting snow.
- ❖ Use salt as necessary to clear accessible routes and other paths of travel used by people with disabilities. These routes should be given priority.
- ❖ Use salt as necessary if ice formation is likely, due to forecasted weather conditions, shade, or run-on that is likely to freeze.
- ❖ Minimize or eliminate salt use if there is a warming trend that will melt ice quickly.
- ❖ Minimize or eliminate salt use if sun exposure is likely to melt the ice quickly.
- ❖ Use less salt when the surface is level or partially clear, or when packed snow provides safe traction.
- ❖ Sweep up any excess or spilled salt. Reuse it or dispose of it in the normal trash; avoid sweeping the excess salt into the street.

Best Practices for Walkways

Early and frequent snow removal is the best practice to minimize salt use. Shoveling prevents ice formation that results from snow packing and the thaw/freeze cycle.

- ❖ Please do not use salt as an alternative to timely snow removal and shoveling.
- ❖ If time and weather allow, always try to shovel first—before salting alternative chemicals.
- ❖ Ramps on an accessible route or those providing access must be totally cleared of snow, handrail to handrail; there cannot be any snow left under the handrail.

However, use salt as necessary:

- ❖ When ice is expected because of the weather forecast. For example, salt wet walkways (caused by sun or daytime temperatures) when freezing overnight temperatures are forecasted.
- ❖ To prevent ice as an interim measure between snow removals.
- ❖ When it snows and no one will be available to clear it.
- ❖ To loosen thick ice for future removal. Prompt, complete snow removal is the best way to prevent packed ice. Although packed snow provides good traction for a while, it can soon turn to thick ice, which is very difficult to remove.

Patios and Extra-Wide Walkways and Stairs

Not every inch of paved surface on campus needs to be salted or cleared of snow and ice. It is better to do a good job of clearing a narrow path than not having the time to adequately clear a large area. If you wish to close a walk or area during the winter, consider:

- ❖ Building exits must be clear and allow emergency egress.
- ❖ Check with the Building Manager.
- ❖ Post the closed area or walk with "Please Stay On Designated Path," "Closed For Winter," or "Do Not Enter: No Shovel/No Salt Area." You also may wish to cordon off the area. If you cordon off the area, the materials used to block off the area must be cane-detectable.

- ❖ Cleared paths should be at least four feet wide or, the width of the building entrance, whichever is wider. You may want to clear a wider path for areas with heavy traffic, if it will facilitate snow removal in the future, or if it will prevent ice formation from re-freezing snow melt and run-on.
- ❖ Emergency exits need to remain cleared.

Environmental Services staff should consider the following practices to minimize their salt use:

- ❖ As with walkways (see above) prompt and complete mechanical clearing of snow minimizes ice formation and the need for salt.
- ❖ Prevent ice formation by removing as much snow as possible. Environmental Services staff are encouraged to plow snow up to the curb. Curb cuts, designated paratransit drop off sites, and DIS parking stalls at the curb need to have snow removed entirely. Ridges of snow cannot be left by a plowing operation.
- ❖ When loading salt and sand into the spreaders, minimize your use of pure salt whenever possible. Use the sand mixture with 5% salt preferentially.
- ❖ Use the salt/sand mixture as necessary for safe intersections and hills; the application rate may be reduced for level and less-used routes.
- ❖ At snow depths of less than one inch, remove snow from DIS parking spaces, the adjacent access aisles and along a path of travel out of a parking lot.

The full salt use policy can be view at: <http://www.ehs.wisc.edu/engr/SaltUsePolicy.pdf>

FIRE AND LIFE SAFETY

Gasoline - Approved safety cans like the one pictured here are needed for gasoline transport and use. Many different designs are available with different actuation devices, spouts, and funnels. Important features are self-closing activation, a pressure relief mechanism, and flame arresting screen.

Roped Off Areas - There needs to be an adequate path available to the “public way.” This means people outside the roped off area must have some route available to reach the sidewalk and/or street, not just access to get out of the building to a concrete pad for example.

Exit Discharge - Need to be kept clear of snow and ice and a path is needed (at least the wide of the exit doors) to the public way. This would include the non-roped off stairs as well.

Fire Hydrants - Need to be cleared of snow 5 foot around the entire hydrant so Fire Department personnel have an adequate work area to spin a large wrench around which controls the hydrant valve. On the campus the Physical Plant Grounds Department clears this snow, off campus locations should consider how this gets done.

Gasoline storage – There are limits on how much gasoline can be stored outside an approved flammable liquid storage cabinet and storage in closets is not acceptable. Gas powered equipment is not allowed to be stored within a building unless a number of steps are taken, this includes snow throwers. Details on this can be viewed on the UW Madison EHS website at this address: <http://www.ehs.wisc.edu/combustiblestorage.htm>



