Zurich HelpPoint

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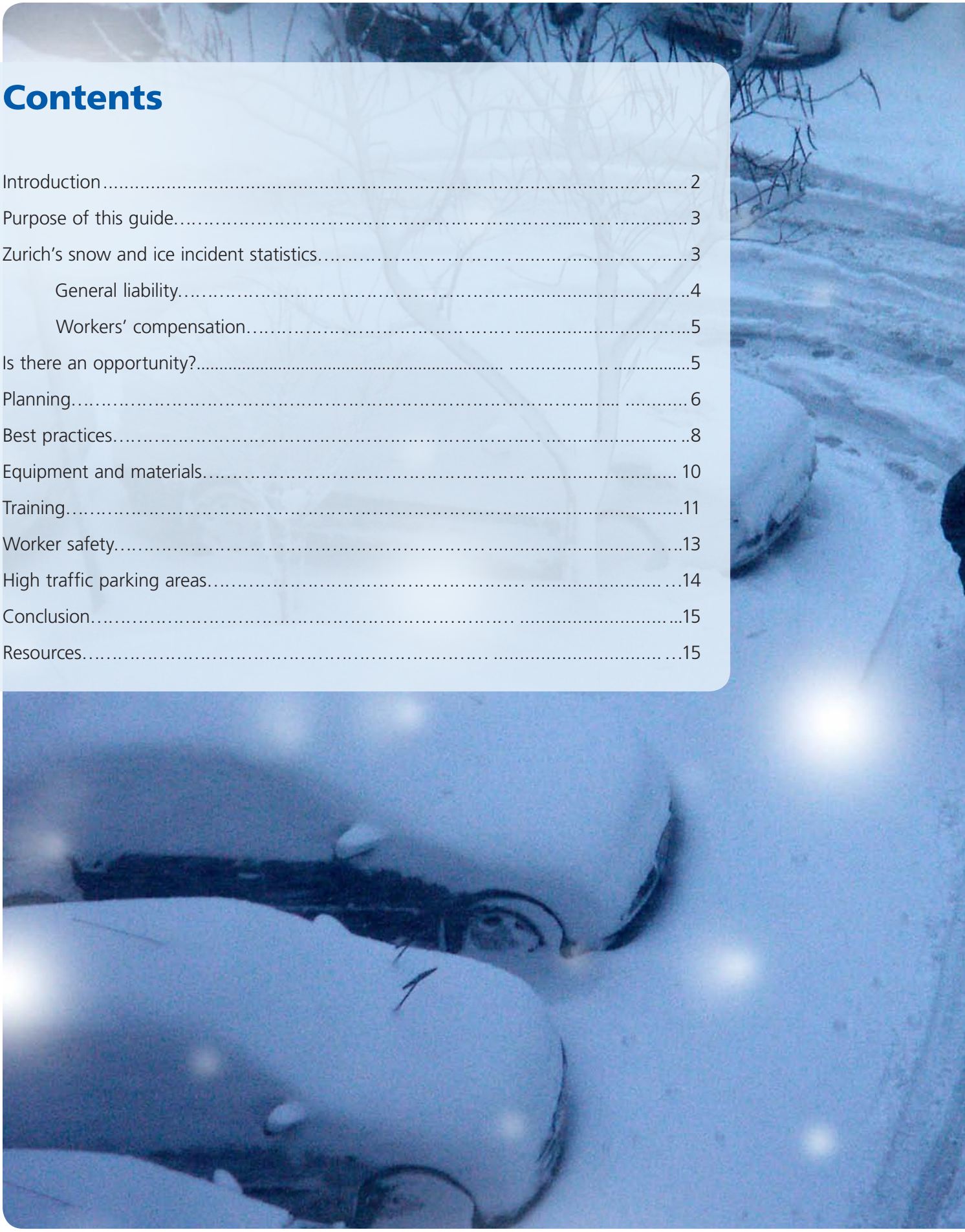
Managing slip, trip, and fall risks in snow and ice prone regions

Risk management handbook for businesses in snow and ice prone regions

Contents



Introduction

Does your company or organization understand the risks associated with snow and ice? Do you have a plan in place to prevent and mitigate cold weather slip, trip, and fall losses?

All too often business owners and property managers hire out snow removal and believe that they are adequately protected. Using outside contractors can be a great first step, but snow removal plans should include means of continuous follow-up to ensure walking surfaces are safe by monitoring them for refreezing or additional snow accumulations that may occur throughout the day. Check to make sure your snow removal plan isn't just a "one and done" contractor provided service. Pictured below is an example of a service that missed the parking and walking area. A sound snow removal plan looks to remove snow and ice from all potential walking surfaces and continually incorporates monitoring and removal before your business opens, at shift change, or when melting and refreezing occurs.

If you choose to use a contractor it is wise to review where your organization is placed on the service list. Is your company or organization first on the list or tenth? Will a light dusting of snow or a bout of freezing rain create a more dangerous walking surface than a foot of snow, or not even fall within your contract parameters for a response?

Where do you think the majority of losses are occurring on properties located in snow and ice prone regions?

Purpose of this guide

The purpose of this guide is to provide management with risk insights related to snow and ice control that may prevent slip, trip and fall incidents. Despite technology and advances in snow removal equipment, slip, trip and fall incidents continue to be significant. Expenses associated with an aging workforce, customers and visitors continue to escalate significantly. Examine expenses associated with litigated cases and there is cause for concern.

Business owners and property managers need to work as diligently as possible to prevent snow and ice incidents. The forecast for workers, customers and visitors 60 years and older to double over the next 20 years, a bad economy and certain increased litigation are sound reasons to place more emphasis on proper snow and ice control in order to protect your organization's bottom line.

A sound snow removal plan looks to remove snow and ice from all potential walking surfaces

Zurich's snow and ice incident statistics

Each year Zurich in North America ("Zurich") reserves approximately $1 billion to pay slip, trip, and fall claims for workers and public invitees. Approximately 25% of those reserves initially are set aside to handle incidents involving slips, trips, and falls due to snow and ice.

It should be noted that not all pubic invitee or general liability claims are reported to Zurich or other insurance companies due to self-insured reserve programs utilized by many large corporations.

At Zurich, the average public invitee or general liability claim reported, due to snow and ice, is valued at approximately $15,132. The average employee claim is valued at $35,132.

Let's first get an understanding of where slip, trip, and fall losses are occurring by reviewing Zurich loss data related to snow and ice incidents. The data is reflective of all industries we insure, our entire enterprise, for the previous five years.

Knowledge of this information or data may give business owners an edge when it comes to preparing for and executing a snow and ice control plan.

General liability

Most slip, trip, and fall incidents involving public invitees, contractor or vendor employees occur in the parking lot or parking garage area. This location makes up 35% of the incidents and 26% of the incurred expenses. The average slip and fall in a parking lot or parking garage, as a result of winter weather conditions, is valued at $12,808. The term "black ice" was noted as the proximate cause 85 times.

The **parking lot/parking garage area** is followed by outside areas. This area accounts for 25% of the frequency and 27% of the severity. In this case, areas outside of the building or buildings include stairs, ramps, driveways, alleys, courtyards and the dock area.

The **dock area**, typically forgotten in the snow and ice control process, has the lowest number of incidents but the average claim for truck drivers, couriers and vendors falling on our insured's property is valued at $18,451. These claims are typically subrogated and appear as general liability claims on our books.

Sidewalk areas are next. These incidents make up 21% of the total and over 24% of the severity. The average incident is valued at $19,776.

Lobby/entrance areas ranked next with 6% of the claims and 5% of the severity. The average slip and fall at lobbies or entrances is valued at $14,798.

Job sites make up the next highest number of incidents but the severity is considerable. The average general liability claim on a job site associated with slips, trips and falls on snow and ice is valued at $85,072. The majority of these claims indicate a subcontractor's employee slipped and fell on snow or ice on our insured's job site. With the high cost of claims, it is critical for insurance companies to subrogate any and all claims possible.

General Liability

Location	Number	%	Severity	%	$ Average
Parking Lot/Garage	1,453	35%	$18,610,134	26%	$12,808
Outside Building/Stairs/Ramps/Dock	1,055	25%	$19,438,852	27%	$18,425
Sidewalk	869	21%	$17,185,479	24%	$19,776
Lobby/Entrance	245	6%	$ 3,625,567	5%	$14,798
Job site	62	2%	$ 5,274,509	7%	$85,072

Workers' compensation incidents

Workers' compensation slip, trip, and fall incidents related to snow and ice are also high in parking lots and parking garages. This makes up approximately 31% of the incidents and 25% of the severity. The average claim is valued at $29,056.

Worker job sites have the highest severity with 31% of the expense. The average claim is valued at $55,578.

Falls outside of buildings, to include steps, stairs, ramps and docks make up 19% of the frequency and 19% of the severity. The average claim is valued at $33,677.

Slips, trips and falls on sidewalk areas make up 6% of the worker incidents and 5% of the severity. The average incident related to snowy or icy sidewalks is valued at $27,832.

The last notable category is **slips and falls from vehicles**. In most cases these falls are from delivery trucks, large rigs and some passenger vehicles. The average incident is valued at $33,703.

Workers' compensation

Location	Number	%	Severity	%	$Average
Parking lot/garage	1,335	31%	$38,802,997	25%	$29,056
Job site	861	20%	$47,853,134	31%	$55,578
Outside buildings/stairs/ramps/docks	974	19%	$32,801,972	19%	$33,677
Sidewalk	275	6%	$7,653,990	5%	$27,832
Vehicle	80	2%	$2,696,267	2%	$33,703

Is there an opportunity to improve accountability for snow and ice control?

When looking to prevent injuries associated with snow and ice, attention to detail (condition of walking and working surfaces) is paramount. Accountability for safety must be promoted by senior management. The property owner with many businesses may be responsible for snow removal. When timely or inadequate snow and ice control is noted, local management must react to ensure proper snow and ice control measures are undertaken.

Those businesses responsible for contracting their own services may also find themselves in need of improved snow removal services, due to contractors taking on too many jobs. In many cases a plan B might need to be implemented with a back up vendor or vendors.

Management in any event must be diligent in monitoring walking surfaces to ensure they are as safe as possible for invitees and employees. Even though a lessor is not technically responsible for exterior walking surfaces in most cases, they find themselves involved in lawsuits when invitees slip and fall on snow or ice in front of their business. Workers' compensation claims can be subrogated, but subrogation can take many years to recover money expensed on the claim.

The obvious reasons for most slip and fall incidents on snow and ice is a lack of traction. Restoring that traction on exterior surfaces may involve removal of the accumulation, to a wet surface condition, and applying rock salt or other ice melt products in most regions, as pictured.

Planning

Plans for snow and ice control should be in writing and activated as weather conditions warrant. Procedures should be prioritized based upon foot traffic, known exposure areas (near down spouts or areas of accumulation), and/or historical loss exposures.

When utilized, snow and ice control contractors should be properly insured and produce Certificates of Insurance naming the organization being serviced as an additional insured. Limits of liability should be reviewed with your broker and insurance carrier. Limits are typically in the $2 - $5 million range, but may need to be higher based on the property values and exposures present.

Contracts should be in writing and have hold harmless clauses indicating the contractor will indemnify the organization for losses caused as a result of their negligence. An important factor with contracts is to ensure there is a clause that prohibits the contractor from delegating work to a subcontractor who may not be properly insured or possess the knowledge and experience needed to complete the job safely.

Contracts may include means, materials and methods for snow and ice control, as well as diagrams of areas to be serviced. Diagrams may include locations of fire hydrants, wheel stops, speed bumps, transformers, telephone equipment, locations to be plowed, where snow deposits should be placed and walkways or paths to be shoveled in order to reduce worker and invitee slip, trip and fall exposures.

Exterior parking lots, parking garages, sidewalks, steps and ramps, and other walking surfaces exposed to snow and ice should be repaired and free of defects, prior to the winter season.

When possible, low areas or other interruptions in drainage flow, typically noted by ponding on walkways, as pictured, should be corrected to prevent ice from forming in critical walking areas.

Repairs to the walking surface should be completed in a professional and consistent manner that preserves the slip resistant properties of the walking surface. Walking surfaces that are painted should have abrasives properly incorporated in the paint to avoid making “slippery when wet” surfaces during inclement weather. Improperly painted walking surfaces are a significant cause of slip and fall losses at Zurich.

Lighting conditions should be reviewed and corrected as necessary. Well illuminated areas permit greater visibility to avoid many exposures.

Skylights and other unsafe areas on roofs should be identified and covered with appropriate gridding or railing as required.

When possible, roof downspouts should be directed into underground drains versus being directed onto walkways, driveways or other walking surfaces that could freeze.

Fire hydrants, wheel stops, speed bumps or other items that could be encountered by snow and ice control contractors or pedestrians negotiating snow and ice covered surfaces, should be marked appropriately with reflective posts, stakes or other distinctive markings.

When possible, low areas or other interruptions in drainage flow, typically noted by ponding on walkways, as pictured, should be corrected to prevent ice from forming in critical walking areas

Fire hydrant marked appropriately

Curbing/entrance not marked and damaged by snow plow

Research should be completed as necessary to determine the type or types of anti-icing or de-icing materials needed for proper snow and ice control.

Anti-icing is a proactive strategy in which liquid snow and ice control materials are applied before a snow and ice event. This strategy prevents precipitation from bonding, i.e., freezing with the pavement surface, or, at the very least, weakens bonds that may be formed, for easier removal than with just de-icing materials. (1)

Anti-icing or de-icing chemicals should be selected based upon the melting temperatures and/or slip resistance desired. Common anti-icing or de-icing chemicals include: Sodium Chloride, rock salt or brine, Calcium Magnesium Acetate, Magnesium Chloride, Calcium Chloride, Potassium Acetate, carbohydrate beet and corn solutions and sand or other slip resistance enhancers.

Anti-icing is a proactive strategy in which liquid snow and ice control materials are applied before a snow and ice event.

Review vendor guidance regarding anti-icing and de-icing product effectiveness, temperature use, advantages, disadvantages, environmental impact and cost per unit before purchase. (2)

Wetting of de-icing materials in solid form causes the chemicals to begin the melting process more readily and may reduce waste or scattering of materials when applied. (3) Anti-icing materials applied prior to a storm may enhance the snow removal process considerably by melting the freezing rain and light accumulations considerably. Some state highway administration studies indicate they use significantly less de-icing product once they are converted to an anti-icing technique. They also indicate less harm to the local environment as a result of fewer chemicals being utilized. (4)

Preventing slips from vehicles may take advanced planning to ensure an awareness plan is in place. Management and drivers need to monitor weather forecasts and be prepared for snow and ice conditions by wearing slip resistant footwear and removing snow and ice accumulations on truck step treads, grab bars, lift gates, etc. The knowledge that diamond plate on lift gates is not slip resistant may also aid in appropriate footwear being utilized or lift gates purchased that have the proper slip resistance via serrated edges, similar to step treads or other slip resistant/self-cleaning areas on the front of the vehicle.

Best practices

Reasonable effort should be exerted to achieve exterior walking surface safety for pedestrian traffic. A combination of preparatory and ongoing snow and ice control methods should be followed.

Where possible, parking lots should be barricaded and completely plowed and treated with de-icing materials before permitting vehicles to park. This will prevent patches of ice between vehicles from accumulating, which will prevent an ongoing slip and fall exposure to employees and invitees.

Snow and ice deposits created by the removal process should be placed so that driver views are not obstructed or that melting ice and snow do not cross walking paths.

Snow deposits should not be placed in a manner that blocks drains or downspouts or otherwise prevents proper drainage of walkways. Improper drainage could lead to large patches of ice forming on walking surfaces. When this occurs, the use of safety cones should be considered to give notice to pedestrians.

When possible, steps, ramps and fixed ladder steps or rungs, handrails or side rails should be cleared of snow and ice before permitting their use.

Walking surfaces should be monitored for "black ice" or refreezing and de-icing and/or traction enhancing materials applied as needed, proactively and/or reactively.

De-icing or traction materials such as cinders, sand, etc. should be used where ice and snow accumulations require additional melting or additional traction is needed for pedestrian or vehicle safety.

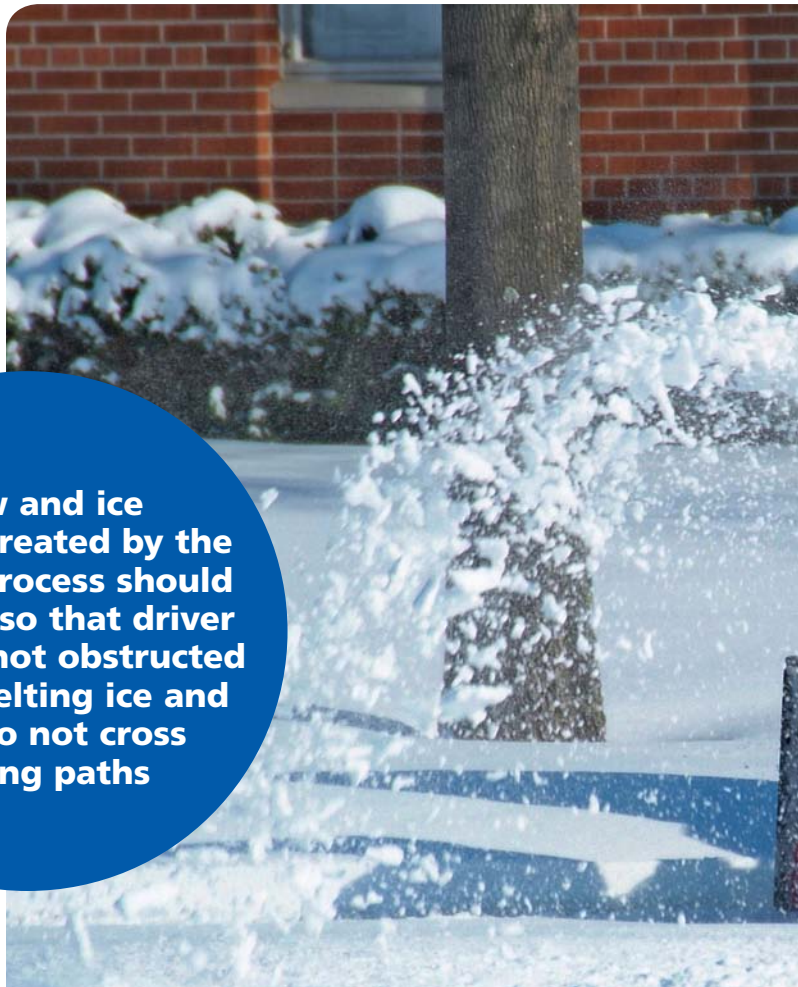
When possible, snow and ice should be removed from walking surfaces in a manner that does not create a slip hazard once melting/refreezing occurs. For example, pushing snow accumulations to lower areas of the property or onto grassy areas may prevent water runoff from snow and ice deposits.

Snow and ice should not be deposited in a manner that creates a safety hazard for pedestrians, such as placing the accumulation in front of an ATM, fire exit door or bus stop walkway used by invitees or workers. Pedestrians attempting to climb over mounds of snow due to bus stop paths being plowed shut are a significant cause of loss for Zurich. This is a situation in which no one is accountable technically but everyone pays for that lack of accountability.

Special attention should be given to walking surfaces during early morning hours, at shift change or prior to employee, vendor, visitor and customer arrival onto the property.

Main entrances and lobbies need to be made as safe as possible. Entrance vestibules should have recessed gridding or permanent carpet tiles that perform scraping on shoe bottoms

Snow and ice deposits created by the removal process should be placed so that driver views are not obstructed or that melting ice and snow do not cross walking paths



Snow deposits should not be placed in a manner that blocks drains or downspouts or otherwise prevents proper drainage of walkways

to remove water and slush from shoes. Quality matting, inlaid carpet tiles or permanent carpet tiles with beveled edges should be provided at the interior door threshold and extend 15 to 20 feet into the building to provide additional wiping of shoe bottoms.

Entrances and lobbies can be a significant location for slips and falls due to smooth hard surfaces, that are esthetically pleasing, being installed versus materials that provide slip resistance. Locations that do not provide adequate scraping and wiping matting systems must always be on alert when inclement weather occurs.

The use of caution or wet floor signs is highly recommended to give employees and invitees notice that the floor is slippery when wet. The lack of notice is mentioned often with employee and invitee claims and may cause claim reserves to be increased significantly.

Job site, dock or receiving area driveways, steps and ramps where delivery drivers may exit their vehicles at any time should be monitored, cleaned or treated frequently to prevent slip, trip and fall incidents.

Anti-icing and de-icing products should be used only in amounts necessary to ensure safe operation and movement of vehicles, equipment, workers and invitees. For example, for a 20,000 square foot parking lot surface, 25 pounds of de-icing materials, (1 pound per 800 square feet), such as pre-wetted Calcium Chloride, could lightly coat the walking surface sufficiently to prevent refreezing after snow and ice is removed. Additional de-icing materials may be needed depending upon the adequacy of the snow and ice removal effort, temperature, additional precipitation and pedestrian foot traffic.

Excess discharge of de-icing materials should be monitored and corrected when noted to prevent tripping incidents.

Equipment and materials – Organizations responsible for snow and ice control

Snow and ice control equipment should be serviced and ready for use. Spare parts, back up equipment, adequate fuel supplies, anti-icing materials, de-icing materials, manpower and contractor services needed should be established well in advance of winter weather.

In those areas where arctic weather is the norm, an ongoing program should be in place to ensure manpower, contractor services, functional equipment, spare parts, and adequate levels of anti-icing/de-icing materials are available at all times.

Motorized equipment such as plows and snow blowers should be utilized versus manual control of snow and ice, when possible.

Snow and ice control equipment should be in good condition and equipment utilized should not damage walking surfaces being cleared. For example, snow plow blades should be free of damage and not create divots or remove pavement from the surface when in operation. Ice picks should not be utilized where damage to fuel tanks or other equipment is a possibility. Employees using plows, snow blowers, and hand shovels should be trained to properly use such equipment and to follow manufacturer safeguards associated with fueling, exhaust, driving, and keep hands and feet away from moving parts. More information will follow on this subject in the training section below.

Snow and ice cleats, reflective vests, safety glasses, gloves, hearing protection and other personal protective equipment should be identified for use and provided to snow and ice control workers as needed. Ergonomically designed shovels and other equipment should be utilized, when possible, and where appropriate.

Anti-icing or de-icing equipment should be in good condition and free of holes or leaks. Establishments using anti-icing solutions should be trained on anti-icing techniques provided by the vendor. Special training should be received on how much product to apply and any concerns in regards to applied product, warming temperatures and increased humidity that may create slippery conditions. Typical rock salt products need a temperature of -3.88 degrees Celsius or 25 degrees Fahrenheit to ensure effectiveness. Some chemical solutions according to vendors may work up to -76 degrees Fahrenheit.(5)

Motorized equipment such as plows and snow blowers should be utilized versus manual control of snow and ice, when possible

Training

Snow and ice control training should be provided commensurate with the winter conditions historically presented in each region. Workers who are required to use commercial vehicles should possess a commercial driver's license and be trained by a competent person experienced with both the use of the commercial vehicle and snow and ice control protocols, to include loading or refilling of de-icing or anti-icing materials. Drivers should be trained on proper installation and storage of snow chains and what to do in the event of equipment malfunctions.

Workers using non-commercial vehicles should be trained on proper plowing techniques, installation and storage of snow chains, plow attachment and detachment, plow angles and what to do in the event of equipment malfunctions.

Both commercial and non-commercial drivers should be trained to yield to pedestrians and vehicles encountered during the snow and ice control process and what to do in the event of a motor vehicle accident or damage to the plow, snow blower or vehicle.

Workers using snow blowers attached to commercial vehicles should be trained on the hazardous exposures presented by the equipment and the safe manner in which the equipment should be attached, removed, repaired, serviced or unjammed.

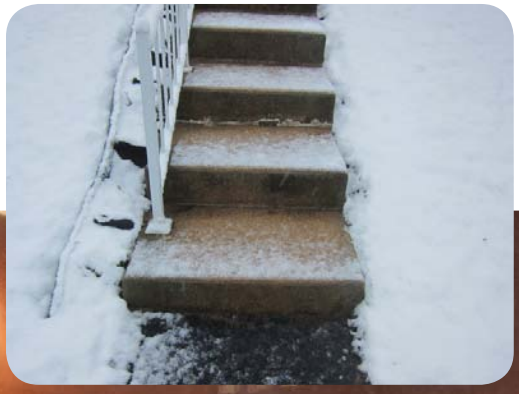
Workers using walk behind snow blowers or snow blowers attached to non-commercial equipment or vehicles should be trained on safe repair or unclogging of equipment to avoid serious injury.

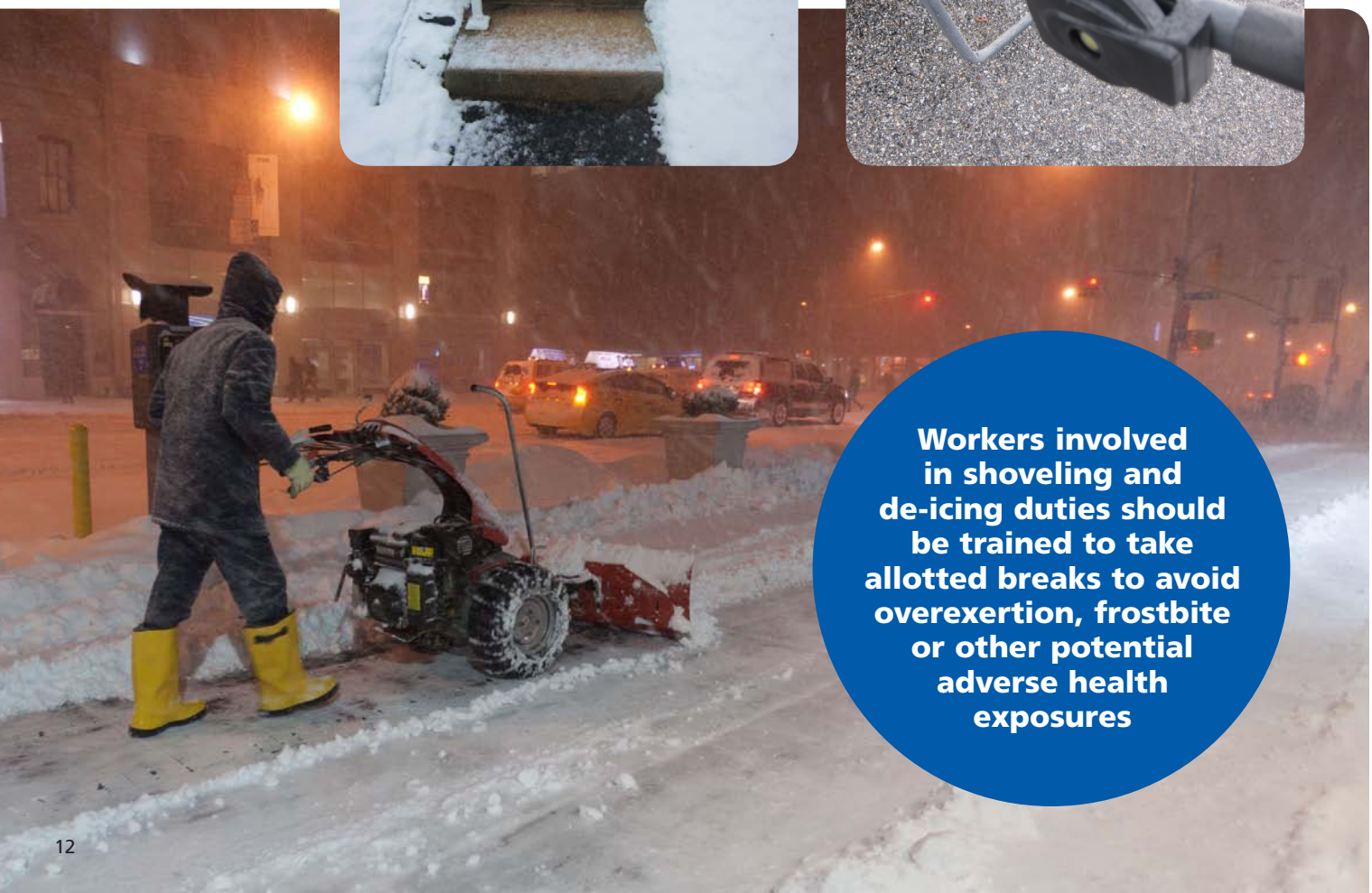
Workers involved in shoveling and de-icing duties should be trained to take allotted breaks to avoid overexertion, frost-bite or other potential adverse health exposures.

Workers should be trained to remove snow and ice from steps, stairs and ramps thoroughly to permit use of handrails and on the proper amount of de-icing materials to be used based on the setting of the salt or de-icing material spreader.

New hire employees should be trained on proper use of all equipment they will be utilizing. Additional concerns related to proper ventilation should be addressed. New hires as well as seasoned workers should always ensure they start and run gasoline or diesel powered engines in a properly ventilated garage or work area.

All employees should be trained to report black ice/re-freezing or other unsafe conditions to management as soon as possible in order for the exposure to be corrected and prevent a slip, trip and fall incident.





Workers involved in shoveling and de-icing duties should be trained to take allotted breaks to avoid overexertion, frostbite or other potential adverse health exposures

Worker safety

Management should use sound judgment and not expose workers to unduly severe weather conditions such as extreme winds, freezing rain, unduly severe temperatures or blinding snow that places workers at risk of injury.

Persons responsible for snow and ice control on roof tops should be trained on fall protection. Fall protection should be utilized with workers as appropriate that are performing snow and ice control on leading edge areas, decks, platforms, exterior fixed ladders, towers, etc.

Workers should be trained on the location of skylights and other potential fall exposures and the fact that workers should not sit or stand on skylights, even if covered with protective grids.

The picture on the left shows properly gridded skylights to prevent workers from falling through multiple skylights. The picture on the right shows an unprotected skylight that resulted in a tragic and fatal incident.

Physical examinations by a health care provider should be completed as appropriate for workers who perform the demanding aspects of snow and ice control.

In severe weather conditions, snow or ice cleats or spikes may be required to permit safe negotiation of walking surfaces. Research should be completed to determine the most appropriate cleats or spikes needed for the working environment.

Other personal protective equipment such as waterproof/ insulated gloves, reflective vests or coveralls, masks, goggles, safety glasses, head gear, etc., should be identified and required to be worn as conditions warrant.

Persons responsible for snow and ice control on roof tops should be trained on fall protection.

Snow and ice control for high traffic parking areas

Snow and ice accumulations between parked vehicles should be removed in a timely manner, when possible. Once freezing occurs, patches of ice between vehicles will create an ongoing exposure for workers and invitees.

A plan for snow and ice control between parked vehicles should be considered in order to reduce this common exposure. Additional expense for follow up services, contract addendums, barricading select rows, parking in alternate lots or areas and shuttling of workers should be considered to perform snow and ice control in active parking lots, which will increase pedestrian safety.

Once freezing occurs, patches of ice between vehicles will create an ongoing exposure for workers and invitees.

Some of the largest losses on our books are related to invitees and workers tripping on wheel stops or the raised rebar used to anchor those wheel stops. In many cases, wheel stops are moved or damaged during snow and ice control activity.

ASTM F1637.10-Standard Practice for Safe Walking Surfaces recommends designing facilities without using wheel stops, if not required by local building codes. If there is a need to prevent vehicles from rolling into buildings or down hills, the use of highly visible steel bollards, at least 3 feet six inches high, are recommended. (6)

Conclusion

Billions of dollars are lost each year due to slips, trips and falls on snow and ice.

In order to reduce those losses, proper planning, training, equipment, safety awareness and accountability for providing safe walking surfaces is needed. In order to prevent most incidents, reasonable care must be taken to provide the appropriate level of traction. Last, management resources including involvement and monitoring are key components of creating a safe environment for workers and visitors during snow and ice weather conditions.

Resources:

(1) National Cooperative Highway Research Program, Report 577, Guidelines for the Selection of Snow and Ice Control Materials to Mitigate Environmental Impacts, Transportation Research Board of the National Academies, Business Office, 500 Fifth Street, NW, Washington, DC 20001, Chapter 2, Page 11.

(2) National Cooperative Highway Research Program, Report 577, Guidelines for the Selection of Snow and Ice Control Materials to Mitigate Environmental Impacts, Transportation Research Board of the National Academies, Business Office, 500 Fifth Street, NW, Washington, DC 20001, Chapter 2, Page 19.

(3) National Cooperative Highway Research Program, Report 577, Guidelines for the Selection of Snow and Ice Control Materials to Mitigate Environmental Impacts, Transportation Research Board of the National Academies, Business Office, 500 Fifth Street, NW, Washington, DC 20001, Chapter 2, Page 18.

(4) National Cooperative Highway Research Program, Report 577, Guidelines for the Selection of Snow and Ice Control Materials to Mitigate Environmental Impacts, Transportation Research Board of the National Academies, Business Office, 500 Fifth Street, NW, Washington, DC 20001, Chapter 2, Page 18.

(5) National Cooperative Highway Research Program, Report 577, Guidelines for the Selection of Snow and Ice Control Materials to Mitigate Environmental Impacts, Transportation Research Board of the National Academies, Business Office, 500 Fifth Street, NW, Washington, DC 20001, Chapter 2, Page 19.

(6) For referenced standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@ASTM.org, For Annual Book of ASTM standards volume information, refer to the standards Document Summary page on the ASTM website.

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