



## SNOW AND ICE CLEARING

Removing snow and inhibiting the formation of ice is essential to maintaining safe walkways at any place of business.

As a general matter, a person has no legal duty to clear property that he does not own or that is not under his control. However, some municipalities use law or ordinance to place the duty to clear snow and ice from sidewalk on adjacent landowners, even if they do not own the sidewalk and it is public property. It is important for property managers to know if that duty exists.

When snow is removed, it should be placed in an area that will not cause heavy water runoff when it melts, as this can spread water throughout a pedestrian area that is then susceptible to refreeze. If it can be removed from the premises entirely, the likelihood of melt runoff and subsequent refreeze is reduced.

## Contact Information

Todd Buechler | Director, Risk Engineering  
m: 309.838.3231  
Todd.Buechler@cfins.com  
www.cfins.com

Claims | 24-hour toll free number  
1.800.392.1970

## Snow and Ice Clearing Risk Management

### C&F RISK ENGINEERS UNDERSTAND YOUR BUSINESS

Since 1822, Crum & Forster has successfully anticipated what's next. Our insurance policy is our promise to help you - the policyholder - in the event of a loss. It gives you a future benefit that you can count on. But C&F offers something more. Our Risk Engineers can help your operation right now.

Before you ever encounter a claim, our Risk Engineers can meet you and identify actual and potential loss sources. We'll conduct a thorough study of your company that includes exposures, hazards and accident trends. Together we'll review your current loss prevention efforts, physical location, loss information and other business records to pinpoint fundamental loss causes. Then we'll create an action plan with practical recommendations to strengthen existing safety programs. We can maintain an ongoing review of it to evaluate progress and effectiveness. We can even conduct a legal exposure review of your company's agreements. Everything we do is aimed at putting into place an effective loss control strategy that works consistently over time to lower your operation's risk of loss.

Our highly specialized Risk Engineers are strategically located throughout the country and have the experience, training and professionalism to provide risk management solutions to meet your business needs and contribute to your success. They have on average more than 20 years industry experience, many with roles dedicated to safety and training. And we invest not only in our insureds, but in the industry. We are members of and participate in many state associations and regularly present at industry conventions and events. These connections and experience are invaluable, and are key in assisting you in developing and deploying a modern, up-to-date safety and training program.

Our solutions are both innovative and established. Whether it's Accident Event Recorders (AERs) to help identify vehicle accident causes and tailor safety training, digital tracking systems, or online video training to assure OSHA compliance, we bring you the latest technology. Matched with the experience of our Risk Engineers, your operation benefits from the engineering awareness built over a lifetime and cutting edge safety science.

### De-icing basics

De-icing is the reactive application of ice-control products to melt existing snow and ice on driving or walking surfaces. De-icing after snow removal operations can melt most remaining snow and ice. Most de-icing compounds are composed of salt, or halite (sodium chloride), but a number of different formulations are commercially available. Others, like potassium and magnesium chlorides - which melt ice through chlorine release - harm vegetation and pavement less than sodium chloride. Sodium chloride is caustic and can cause skin discomfort if it is handled with bare skin and hands are not washed soon afterward.

In very cold conditions, typically below 23 degrees Fahrenheit, sodium chloride begins to lose its effectiveness and often is not used or is overused in trying to make up for reduced performance. Potassium chloride melts ice only when the air temperature is above 17 degrees Fahrenheit, but magnesium chloride can melt ice below that temperature.

No matter what de-icing compound you use, three steps to follow in keeping an area free of ice are: **(1) application, (2) ice removal and (3) reapplication.**

First, apply your chosen de-icing compound to the icy areas of the walkway. The ice should begin to melt away quickly, with the thinnest areas of ice gone and showing pavement in a few minutes. Areas of thick ice might require a combination of de-icing compound, time, and visits with a shovel or sidewalk ice scraper. If the de-icing compound is left atop thick ice for a long enough period of time, ice should either lift away from the pavement or easily break.

To make the walkway safe, a broom should be used to sweep away any remaining small bits of ice. Remember, people can slip on an ice cube left on a wood floor, and a chunk of ice left on a sidewalk, parking lot or walkway poses no less a risk of a risk.

Reapplication of the de-icing compound is essential, especially if you've taken the time to sweep away any remaining ice. Sweeping away remaining ice usually means sweeping away any de-icing compound that remains on the ground, so it must be replaced. This can help to prevent new ice from forming.



# Snow and Ice Clearing

## Risk Management

---

### *Alternatives*

There are alternatives to application of salt and similar compounds during and after snow and ice. Consider the techniques of pre-wetting and anti-icing. Understanding the difference between pre-wetting and anti-icing can give managers insight into the different approaches that can help them deal with snow and ice efficiently.

Pre-wetting is the process of spraying de-icing salt with a solution of liquid chemical before spreading the salt on road and walkway surfaces. When temperatures drop below freezing, there is no moisture on pavement and salt alone is ineffective. Pre-wetting the surface, however, ensures that there will be enough moisture to facilitate the melting process. Pre-wetting helps salt work more effectively because it clings to the road instead of bouncing off. The result is that less salt is spread, saving money and minimizing the threat to the environment. As salt requires moisture to dissolve, it releases heat and thereby melts the ice and snow, as well as breaking the ice-pavement bond.

Anti-icing refers to the proactive application of ice- and snow-melting products to driving or walking surfaces before a storm. This tactic helps prevent snow and ice from bonding to the pavement, and workers can clear them away more easily. Anti-icing is commonly used on pavements where the policy is to provide a high level of service or a bare pavement. Specialized equipment is needed to apply small amounts of liquid chemicals. Detailed weather predictions are also helpful. Used effectively, anti-icing can create some of the safest conditions in winter and can be a cost-effective alternative to de-icing. Products used in ice and snow removal and improvement of traction include:

### *Sand*

Although sand can provide some traction, sand in no way melts snow or ice. A common misperception is that sand is the best alternative for snow and ice control, due to its low cost and common use. However, property managers need to consider the potential environmental impact of sand. If used to treat pavement and walkways, it can build up, damage roadside vegetation, and travel to nearby waterways causing environmental damage. Its use requires regular sweeping to reduce negative environmental impact.

### *Sand-Salt Mix*

Another common practice is to mix sand and salt for de-icing. This method is effective in maintaining some traction, due to the sand, but it reduces the amount of salt workers can apply to an area. As a result, less de-icing occurs, while the environmental concerns and cleanup costs associated with sand rise.

Abrasives like sand have been used for many decades to provide a temporary friction layer on snowy or icy pavement. The environmental impacts of abrasives are generally more detrimental than chemicals. Compared to chemicals, a substantially greater amount of abrasives is needed to maintain a reasonable level of service. Choosing sand or a sand-salt mix may require that staff periodically sweep up debris to limit the chance of it entering storm drains or damaging nearby plantings.

# Snow and Ice Clearing

## Risk Management

---

### *Alternatives (continued)*

#### **Calcium Chloride and Magnesium Chloride**

The environmental impacts of these chloride salts have been a subject of research. Chloride salts are a commonly used chemical that serves as a freezing-point depressant for winter surface maintenance applications. While salt (sodium chloride) is the most widely used chemical due to its abundance and low cost, magnesium chloride ( $MgCl_2$ ) brines perform better at lower temperatures. Calcium chloride and magnesium chloride are more costly and can be more difficult to handle than sodium chloride. The use of calcium chloride or magnesium chloride for anti-icing or de-icing may cause damage to concrete.

#### **Acetates and Formates**

In the last two decades, potassium acetate, sodium acetate, potassium formate, and sodium formate have gradually replaced urea as the freezing-point depressant in airport pavement de-icing products. Acetate-based de-icers have also been used on some winter roadways, as alternatives to chloride salts. They are generally more expensive than chloride-based de-icers, but are less corrosive and more sustainable. The high cost of acetates has hindered their wider application.

#### **Agro-based**

In recent years, anti-icing compounds developed from agricultural byproducts (ABP) have been introduced. Manufacturers claim that ABPs perform better, are environmentally friendly, and are less corrosive than conventional anti-icing and de-icing materials. These products have shown promise, primarily for anti-icing operations, and improved performance of de-icing chemicals used in conjunction with ABPs has also been documented.

Beet juice, a byproduct of sugar beet processing, and corn molasses are ABPs. They are often dark in color and can be very sticky. These chemicals tend to seep through the small spaces around the lids or seams of a container. If the property has shaded areas or many trees, small-scale testing should be considered. The products have been tested in sunlit areas with good results. The product is often blended with other chemicals for best results. The organic material has an ability to enhance the melting of a chloride as its carbohydrates help keep the ice from forming a bond to a surface.

A number of proprietary blended products are available in the marketplace. Property managers should talk to suppliers about the options and about some of the concerns of these products. For example, depending upon temperature and humidity, the agro-based de-icers can become sticky, while other products can become slippery. The cost of the products also may be a consideration. Testing the products in various areas as well as in various conditions will provide additional information on effectiveness.

## Snow and Ice Clearing

### Risk Management

---

Any users of these training materials signify their understanding of and assent to the following: These materials are not intended to reduce a user's burden in training personnel. Each user engaging in such training activities bears full responsibility for his, her or its own training, education and accompanying materials to ensure both the accuracy of the training and materials and compliance with all applicable local, state, and national laws and regulations. These materials are not intended to replace any training or education that users may wish or need to provide to their personnel. The companies of Crum & Forster, their directors, officers, employees, technical personnel, advisors, consultants, agents and staff (collectively, "Representatives"), shall not be held liable for any improper or incorrect use of these training materials and assume no responsibility for any use of them. In no event shall Crum & Forster or their Representatives be liable for any damages however caused and under any theory of liability arising in any way out of the use of these training materials, even if advised of the possibility of such damage. This disclaimer of liability applies to any damages or injury. Information in the training materials may include technical inaccuracies or typographical errors. The companies of Crum & Forster or their Representatives may make improvements and/or changes in the products, services and/or job aids described in these materials at any time without notice. These training materials are provided 'as is' without warranty of any kind, either expressed or implied, including, but not limited to, the implied warranties of merchantability, fitness for a particular purpose, or non-infringement. Some jurisdictions do not allow the exclusion of implied warranties, so the above exclusion may not apply in such jurisdictions. Neither the companies of Crum & Forster nor their Representatives warrant or make any representations regarding the use or the results of the use of the materials, or the accuracy, adequacy, completeness, legality, reliability, or usefulness of the training materials.



This material is provided for information purposes only and is not intended to be a representation of coverage that may exist in any particular situation under a policy issued by one of the companies within Crum & Forster. All conditions of coverage, terms, and limitations are defined and provided for in the policy.

The C&F logo, C&F and Crum & Forster are registered trademarks of United States Fire Insurance Company.

Version 2.0 2016.05.18