

Deicing Best Management Practices

GETTING READY FOR WINTER

Winter is here and with it the potential for winter storms. Snow and ice on drive-ways, sidewalks, roads, and parking lots can create an unsafe environment for people and their property. As a result, we take steps to remove snow and ice in order to mitigate the impact on our everyday lives. To do this as fast and effectively as possible, we rely heavily on the use of deicers.

HOW DO DEICERS WORK?

Deicers are chemical products that prevent the formation of or melt ice by **lowering its freezing point**. As the deicer dissolves in water, it becomes a solution known as a **brine** (in chloride-based products).



When brine comes in contact with ice, it melts it by either releasing or absorbing heat. By doing this, it prevents ice from bonding with other hard surfaces and thus makes it easier to remove.

Nevertheless, relying heavily on deicers can have environmental and economic impacts; such as “salting” soils and waterways, as well as causing infrastructure damage due to corrosion.

While rock salt is the most commonly used deicer, there are less-harmful alternatives that work just as well!

EFFECTS OF SALT

Low-cost deicers may accomplish the task of snow and ice removal, but not without potential environmental repercussions. Sodium Chloride - NaCl (road salt) is the most readily available and inexpensive, but it can:

- Deplete the oxygen supply needed by aquatic animals and plants.
- Harm or kill neighboring vegetation by changing the soil composition.
- Contaminate surface and groundwater by increasing the NaCl concentration.
- Be harmful to pets and wildlife.
- Deteriorate paved surfaces, buildings, personal property, and infrastructure.

BE PART OF A GREENER WINTER

The most effective way to reduce the negative impacts of deicing chemicals is to reduce the amount of chemicals needed overall.



In this article you will be able to learn some strategies to reduce the total amount of deicer used, as well as mitigating its impacts on the environment.

BMPs for a Greener Winter: Overview

VARIETY AND QUALITY

There are many different types of deicers available on the market, with varying attributes and prices, which can make it challenging to choose between them. **Environmentally preferable deicers** (other than rock salt) have been used successfully by state departments of transportation for many years. Now you can too!

The table below summarizes the most commonly used deicers (chloride-based and acetate-based), and important information on each.

Note: Carbohydrate-based products tend to have high levels of phosphates, nitrates, or total organic content **which are major water contaminants**.

At LaRC, we strive to protect our waterways; if buying deicers for use at LaRC, remember to not purchase any with those compounds. Deicing agents containing **urea** or other forms of **nitrogen** or **phosphorous** are **NOT ALLOWED** for any reason. These are major contaminants of aquatic ecosystems and prohibited by LaRC's Stormwater Permit.

BEST MANAGEMENT PRACTICES

1. Remove snow before it melts:

- ❖ Monitor the weather to know when to expect snow and remove it by shoveling or plowing, as much as possible, before applying deicer.

2. Adopt a green deicing application plan:

- ❖ Apply non-chloride coatings (anti-icing) before a snow event; it helps reduce the amount of chemicals needed overall.
- ❖ Follow manufacturer's protocol and use only the amount needed. Adding more won't melt ice any faster and the excess will contaminate soils and waterways.
- ❖ Pre-wetting solid deicers melt ice faster and save product (less is needed).

3. Snow and ice disposal:

- ❖ Do not dispose of snow directly on top of storm drains or in wetlands, creeks, harbors, or any other waterways.

	Chlorides			Acetates	
Description	Sodium Chloride (Rock Salt)	Magnesium Chloride	Calcium Chloride	Calcium Magnesium Acetate (CMA)	Potassium Acetate
Works down to	15 °F	-10 °F	-20 °F	20 °F	-15 °F
Positive attributes	- Lowest cost - Melting capacity	- Melting range (temperature) - Low cost	- Melting range (temperature) - Less product needed	- Non-corrosive	- Non-corrosive - Melting range (temperature)
Environmental impacts	- Corrosive - Harmful to vegetation - Water contamination	- Corrosive - Harmful to vegetation - Water contamination	- Corrosive - May mobilize heavy metals from soils into waterways	- Can lower oxygen levels in water	- Can lower oxygen levels in water

BMPs for a Greener Winter: At Home



Homeowners, you can follow these easy tips to choose the best deicing product for your home and the environment!



Be prepared, buy early:

Make sure to buy your deicing product before the storm hits. This way you will be able to find more environmentally friendly choices at the store.

Check the label:

Check the package closely to see what you are buying. Look for the EPA's '*Safer Choice*' label for products with chemicals that are less harmful for you and the environment!



Know your salt-risk zone:

If you have salt-sensitive plants close to the driveway or sidewalk, avoid products that contain chlorides or use very small doses. You can also opt to use the safer alternatives (acetates).

Reduce total deicer amount:

Follow the product's recommended application rate. Remove as much snow as possible by shoveling, then apply deicer (works best when there is only a thin layer of snow or ice that must be melted).

