

The Effect of Salt on Vegetation

- ◆ "Burnt" patches of lawn
- ◆ Root damage causing plants to wilt
- ◆ Abnormal blue-green leaf/needle color
- ◆ Dieback on shrub branches and tree limbs
- ◆ Stunted plant growth
- ◆ Leaf browning
- ◆ Bud death and twig dieback that causes a growth cluster known as "witches broom"

Lake Friendly Practices

The friendliest practice is to use no ice-melt products at all. However, this option may not be feasible or safe. If you choose to use an ice melt product, avoid or minimize the use of sodium chloride as it is most damaging to the environment and is very corrosive to metals and other materials. Avoid ice melt products that do not list the type and amount of materials used in the mix or contain mystery materials. The following practices will help reduce your impact to the environment by minimizing your use of ice melting and/or traction materials while still providing safe walkways and driveways:

- ◆ "Daylight" walkways and driveways by cutting overhanging branches allowing the sun to melt snow and ice more quickly.
- ◆ Use ice melt materials sparingly as an aid to loosen ice for later mechanical removal.
- ◆ Avoid broadcasting materials - apply only when and where needed, i.e. slippery areas on main walkway and wheel tracks on driveway.
- ◆ Remove snow from roof areas that overhang walkways and driveways areas to reduce ice buildup from snowmelt on ground surfaces.
- ◆ Consider investing in snow tires which provide excellent traction and breaking on snow and ice possible reducing the amount of materials needed for your driveway.
- ◆ Consider using ice grippers that attach to your shoes/boots for extra traction when walkways/driveways are very icy.
- ◆ Sweep/shovel up excessive sand and ashes on walkways/driveways at the end of the season to reduce negative impacts on downstream waterways.



Surface Heating	Pros	Cons
Subsurface Electrically Heated Cable or Hydronic Radiant Heating System	No salt or sand needed; provides a snow/ice free surface; hidden system; frees up time needed to salt/sand walkway and driveway surfaces; geothermal system can provide heat for a hydronic system	Not designed for use under dirt/crushed stone surfaces; expensive to install; difficult to repair; increases electricity or oil/gas use
Above Surface Heating Mats	Easy to install and repair; provides a snow/ice free surface; no salt or sand needed; less expensive than subsurface; can be used on stairs; frees up time needed to salt/sand walkway surfaces	Subject to wear and tear; not snowplow or snow blower friendly; not suitable for driveway use; increases electricity usage

Resource List

Environmental Fact Sheet WD-WMB-4, 2011. Road Salt and Water Quality. NH Dept. of Environmental Services. www.des.nh.gov

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NH Water Resource Research Center, 2010. *Salinization of Suburbanizing New Hampshire Streams and Groundwater*. UNH. www.wrrc.unh.edu

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Ice Management Choices for Homeowners

Minimizing Your Impact



LSPA
Devoted to the Environmental Quality of the Lake Sunapee Watershed

Today, there is an array of choices on the market for ice melt materials for walkways and driveways. Many of the products contain a mix of ingredients that manufacturers claim provide ice melting and traction. There are also a number of surface heating systems designed to melt ice from walkways and driveways. Unfortunately there is no magic solution; however there are ways to reduce your impact to the environment. To help you choose, this pamphlet compares ice melting and traction materials, surface heating systems, and includes lake friendly practices. The tables in this pamphlet provide pros and cons of common and materials and systems being used today.

What Happens to Salt in the Environment?

According to the New Hampshire Department of Environmental Services chloride can be toxic to aquatic life at levels above 230 mg/l. There is no natural process by which chlorides are broken down, metabolized or taken up by vegetation.

Sodium (Na⁺) can alter the soil chemistry by replacing and releasing nutrients such as calcium, magnesium and potassium into the groundwater and surface water. This can lead to increased nutrient concentrations and affect the ability of the water to buffer acid deposition impacting the aquatic environment. Sodium contamination in

drinking water is a concern for individuals restricted to low-sodium diets due to hypertension or high blood pressure.

Road Salt additives like ferrocyanide, which is used as an anti-caking compound, can have impacts on the environment and human health due to cyanide ions being released by certain types of bacteria as well as from exposure to sunlight. The USEPA in 2003 added this compound to its list of toxic pollutants under section 307(a) of the Clean Water Act.

Traction Materials	Pros	Cons
Sand, Finely Crushed Stone	Inexpensive, provides excellent traction on ice	Moisture in sand stored outside can freeze making it difficult to apply; leftover sand can be transported into streams and water bodies adversely affecting water quality and aquatic species
Wood Ashes	Free from your wood stove/fireplace; can be beneficial to vegetation if used in moderation; provides good traction	Limited supply from your wood stove; can be messy; can have same adverse impacts to streams and water bodies as sand
Sawdust and Wood Chips	Free from you workshop	Not a very effective traction material; can be messy
Cat Litter (non-clumping)	No significant pros found	Not a very effective traction material; relatively expensive; messy; can have same adverse impacts to streams and water bodies as sand

Ice Melt Materials	Melting Limit ¹	Pros	Cons	
Naturally Occurring Salts	Sodium Chloride (NaCl) (Common Road Salt)	15 ⁰ F	Least expensive melting material	Adversely affects surface & groundwater quality, aquatic species, and vegetation; corrosive to metals, concrete and other materials
	Calcium Chloride (CaCl ₂)	-20 ⁰ F	Low melting limit; smaller amount needed to melt same amount of ice in comparison to other materials; considered less toxic to soils/vegetation and less corrosive to metals/concrete than sodium chloride	Needs to be stored in moisture proof containers/bags as it readily absorbs moisture from the air; can cause slippery surface conditions if over-applied; shares same cons with sodium chloride
Manufactured Chemicals	Magnesium Chloride (MgCl ₂)	5 ⁰ F	Melts ice very quickly; considered less toxic to soils/vegetation and less corrosive to metals/concrete than sodium chloride	Share same cons with sodium and calcium chloride
	Calcium Magnesium Acetate (CMA)	20 ⁰ F	Lower toxicity to environment and milder corrosiveness to metal and concrete may justify expense over long term in comparison to chloride products	Can adversely affect water quality and vegetation; mildly corrosive to metals and concrete; very expensive; not readily available
	Potassium Acetate (KAC) (Used by many Airports to de-ice planes)	-15 ⁰ F	Considered biodegradable and non-corrosive	Can lower oxygen levels in water bodies; can cause slippery surface conditions if over-applied; new studies show this chemical may be harmful to aquatic species; not readily available
Chemical Fertilizer Amendments	Urea (Generally used in combination with other de-icers)	25 ⁰ F	Lower toxicity to soils than salts	Can cause nutrient loading in waterways; corrosive to metals and concrete, can damage vegetation if over-applied
	Muriate of Potash - also known as Potassium Chloride (KCl)	20 ⁰ F	Considered less toxic to soils/vegetation and less corrosive to metals/concrete than sodium chloride	Shares same cons as sodium chloride; melts ice very slowly

¹ Lowest melting temperature material will effectively melt ice.