

# RESIDENTIAL DE-ICING

## Removing Snow and Ice Without Hurting the Environment

### The Environmental Impact of Pavement Salt.....

**Economic impacts:** When humans are forced to use water of higher salinity in their homes, water pipes and hot water systems rust more easily. Salt on roads penetrate concrete to corrode the reinforcing rods causing damage to bridges, roads and cracked pavement. Furthermore it corrodes metals on automobiles.

**Contamination of groundwater:** Chloride is water soluble and since it is not readily removed by any natural chemical process, once in water it's always in the water. Therefore it increases the cost of treating water for drinking, reduces the suitability / availability of water for irrigation and other industrial applications, and contributes to the loss of productive land.

**Harmful to human health:** Excess dietary sodium is associated with hypertension and up to 30% of the US population could have borderline hypertension. But, the major objection to concentrations of sodium in public water supplies arises from the taste preference of consumers.

**Influence on plants:** Elevated sodium and chloride levels in soils inhibit water absorption and reduce root growth. Salt also disrupts the uptake of plant nutrients and inhibits long-term growth.

**Influence on wildlife:** Damage to vegetation degrades wildlife habitat by destroying food resources, habitat corridors, shelter, and breeding or nesting sites. In-creased salinity levels in freshwater rivers, creeks or wetlands may kill native plants or animals or make them sick. This can cause species loss in sensitive river and wetland reserves.

**Some animals** eat road salt causing "salt toxicosis" where they lose their fear of vehicles and humans, causing many fatal encounters. Also, salt acts like a desiccant and will dry out and crack animal paw pads - house pets are particularly susceptible.

**Birds:** Seed-eating birds may not be able to distinguish between road-salt crystals and the mineral grit their diets require. This means behavioral abnormalities can occur in small bird species with ingestion of a single salt particle and death can occur with ingestion of two particles.

Salts applied to roadways, driveways and sidewalks can enter air, soil, groundwater, and surface water from snowmelt runoff, release from surface soils, and/or wind-borne spray. These salts remain in solution in surface waters and are not subject to any significant natural removal mechanisms. Their accumulation and persistence in watersheds pose risks to aquatic ecosystems and to water quality. Approximately 55% of salt chlorides are transported in surface runoff with the remaining 45% infiltrating through soils and into groundwater aquifers.

### Alternatives to Salt

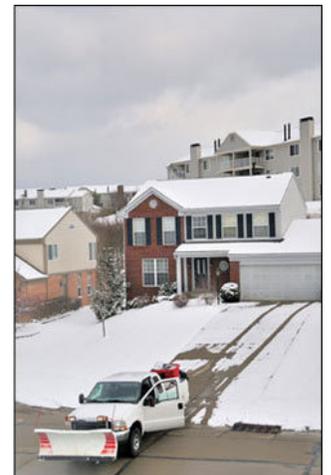
Not every driveway, sidewalk, parking lot and road has to be snow-free! There are alternatives to reduce the sliding-factor of pavements.

#### Calcium Magnesium Acetate (CMA) and Potassium acetate (KA):

Both are biodegradable materials that have less of an environmental impact than rock salt. Unfortunately these two products are more expensive, but use of these may lead to longer lasting bridges and cars and less environmental damage.

**Another option being researched is the use of beet juice mixed with brine.** Once sugar has been extracted from sugar beets, a waste product remains that producers noticed never froze. This mix has been in use in several states.

**To keep your car's windshield free of ice,** fill your windshield wiper tank with a mix of one part water and two parts vinegar and use the mix prior to leaving your vehicle for the night - this should help prevent ice build-up.



## Eco-Friendly Ways to De-Ice Your Driveway

1. **Snow shovel:** Minimize snow and ice by shoveling, and the sooner after snow stops falling, the better. If shoveling is too challenging for you, pay a neighborhood kid a few dollars to help.
2. **Get a grip:** Scatter sand or even birdseed for traction. The grains won't melt snow or ice, but they will give you more grip on icy surfaces.
3. **Scrimp on the de-icer:** Remember the job of a de-icer is to loosen ice from below to make it easier to shovel or plow. Don't pile on the de-icer thinking you'll remove the ice completely. You won't. The recommended application rate for rock salt is around a handful per square yard you treat. Calcium chloride will treat about 3 square yards per handful.
4. **Pick your salt carefully:** If you do use salt, choose wisely. Sodium chloride (NaCl) may contain cyanide. Calcium chloride (CaCl) is slightly better since less goes farther, but it is still not ideal, since its run-off still increases algae growth, which clogs waterways. Potassium chloride is another salt to avoid. Whatever you use, keep it away from landscape plants, especially those that are particularly salt-sensitive, like tulip poplars, maples, balsam firs, white pines, hemlock, Norway spruce, dogwood, redbud, rose bushes and spirea bushes.
5. **Skip the kitty litter or wood ashes:** Neither melts snow and ice, and they have a tendency to get messy when it warms up.
6. **Avoid products that contain nitrogen-based urea:** They're more expensive and are not effective once the temperature drops below 20°F. Plus, the application rate for urea during a single deicing is ten times greater than that needed to fertilize the same area of your yard.
7. **Get the boot;** Wear boots that have a solid toe and bottom treads to help increase your grip on icy surfaces.



### Water Contamination and De-Icing...

**The most commonly used de-icing salt is sodium chloride (NaCl), which is readily available and inexpensive. When applied, it melts snow and ice on roads and sidewalks and helps to prevent new ice from forming. What most people don't know, salt is most effective at temperatures above 20° F. If below 10° F it cannot dissolve and cannot break the ice-pavement bond.**

***But*, what are the impacts of road salt applications to drinking water supplies and watershed ecosystems?**

**Up to 90% of the salt used for deicing can enter air soil, groundwater, and surface water from .... Snowmelt runoff, release from surface soils, and/or wind...**

**Their accumulation and persistence in watersheds pose risks to aquatic ecosystems and to water quality. Approximately 55% of road-salt chlorides are transported in surface runoff. The remaining 45% are infiltrating through soils and into groundwater aquifers.**

### For More Information:

The Salt Institute:  
<http://www.saltinstitute.org/>

### Why Care About Clean Water?

Storm water pollution is one of the greatest threats to Rockford's creeks and rivers. Clean water means safe drinking water, places for recreation, commercial opportunities, healthy wildlife habitats, and adds beauty to the landscape. Rain washes pollution from streets, parking lots and lawns into storm sewers and drainage ditches then directly to our streams, rivers and ultimately, the ocean.

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For More Information about the City of Rockford's Storm Water Programs go to: <http://www.rockfordil.gov/public-works/engineering-cip/stormwater.aspx>