Best Management Practices

Snow & Ice Removal: Use mechanical means before applying salt/sand, whenever possible.

Salt Application: Follow manufacturer's instructions and use only enough to break the ice/pavement bond. Do not apply on vegetation or near waterways. Use less harmful deicers such as Calcium Magnesium Acetate or Sodium / Potassium Acetate.

Sand Application: Use only enough to provide traction on slippery areas. Sweep up excess sand after snowmelt.

Snow & Ice Disposal: Do not dispose of snow & ice in wetlands, creeks, harbors, or other waterways or directly on top of storm drains.

More Stormwater Information

This brochure is one of a series of brochures describing storm water pollution prevention measures.

For more information about ways to prevent stormwater pollution, please visit our website:
http://www.oldfieldny.org/stormwater.html

This pamphlet was developed as part of the Village of Old Field's Stormwater Management Program.

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Incorporated Village of Old Field
PO Box 2724
Setauket, NY 11733

Stormwater Best Management Practices (BMPs)

Winter Maintenance and De-Icing

Safe Environmental Habits and Methods for:

Property Owners

Overview

Snow and ice on roads, parking lots, driveways, and sidewalks can create hazardous conditions for people and property. Snow and ice removal is best done non-chemically with plows and shovels but, admittedly, the results are not always adequate to ensure safety. Chemical ice melters (typically chloride salts) and/or sanding is often part of a comprehensive strategy to make winter's passage a safe one.

Impacts of Salt and Sand

Salt and sand have traditionally been perceived as the cheapest and most effective materials for de-icing driving and walking surfaces. However, many people do not realize that they have hidden impacts that can detract from their overall effectiveness.

Even in small quantities, salt can:

- Deplete the oxygen supply needed by aquatic animals and plants;
- Leach into the ground and change soil composition, making it hard for plants to survive;
- Contaminate groundwater and surface waters; and,
- Deteriorate paved surfaces, buildings, infrastructures, and the environment.

Similarly, sand can:

- Bury the aquatic floor life, fill in habitats, and cloud the water;
- Cause premature deterioration of floor surfaces as it is tracked into buildings;
- Lose its effectiveness after becoming embedded in snow and ice;
- Enter catch basins, storm drains, and surface waters if it is not swept up each spring; and,
- Contribute to clogged storm drains, which can cause flooding.

Common Ice Melters

The most commonly available ice melters include one of the following compounds:

- Sodium Chloride (rock salt)
- Calcium Chloride
- Magnesium Chloride
- Potassium Chloride
- Sodium or Potassium Acetate
- Calcium Magnesium Acetate

How Ice Melters Work

Generally, all chemical ice melters work in the same way. They depress the freezing point of snow and ice and turn the mixture into a liquid or semi-liquid slush. Solid chemical salts bore through ice or snow and form a strong brine solution. This brine spreads under the ice or hard-packed snow and undercuts, breaking the bond to the surface. Once loose, the ice or snow is easily removed by mechanical means.

Choosing the Right Ice Melter

Determining which product to use depends upon the situation. It is a balancing act of performance and cost against adverse consequences. A low-cost deicer might do a great job of keeping a walkway open, but it also might kill all of the adjacent vegetation, help corrode metal, be tracked in the building and ruin the floors, and be harmful to pets.

Comparing Temperature Ranges

The first measure of an ice melter's effectiveness is the range of temperatures in which it can provide deicing action within 15-20 minutes of application. The materials rank as follows:

- Calcium Chloride (-25 ^{o}F)
- Magnesium Chloride (5 ^{o}F)
- Sodium or Potassium Acetate (5 ^{o}F)
- Calcium Magnesium Acetate (5 ^{o}F)
- Potassium Chloride (12 ^{o}F)
- Sodium Chloride (20-22 ^{o}F)

Properties of Ice Meters

Sodium Chloride: Also known as rock salt, it provides adequate economical performance at temperatures at or just below 32 ^{o}F; though it loses most of its effectiveness when temperatures fall below 22 ^{o}F. It can be corrosive to structural steel in bridges and cars, is harmful to roadside vegetation, and can contaminate surface water and drinking water supplies.

Calcium Chloride: Though it costs about three times more than rock salt, is less corrosive to metals and is less harmful to roadside vegetation. It is the most effective compound at low temperatures; but it also leaves a white residue on surfaces when it dries.

Magnesium Chloride: Though it costs about two times more than rock salt, it is effective at lower temperatures, is less corrosive to metals, and is less harmful to roadside vegetation. It also leaves a white residue on surfaces when it dries.

Potassium Chloride: Though it costs about ten times more than rock salt, it is effective at lower temperatures, is less corrosive to metals, and is considered to be more environmentally-friendly than other salts because of its lower chloride content.

Sodium or Potassium Acetate: Though they cost about 8 times more than rock salt, they are effective at lower temperatures, are not corrosive to metals since they contain no chlorides, and are safer for the environment.

Calcium Magnesium Acetate: Though it cost about 5 times more than rock salt, it is effective at lower temperatures, it is not corrosive to metals, and is one of the most environmentally-friendly ice melting compounds.