pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

# Environmentally Sound Snow Management and Disposal

**What is the best way to manage snow accumulation on streets, highways, and parking lots and protect the environment?**

The most environmentally sound manner to deal with accumulated snow is to allow it to slowly melt where it falls. This approach provides replenishment of groundwater and a slow, steady flow or snow melt to streams and other surface waters.

**What's an environmentally acceptable way to deal with snow and satisfy our transportation needs?**

The standard approach to providing reasonably clear and safe roads during and after snowfalls or other frozen precipitation events is to apply road deicing chemicals, followed by plowing.

**Environmentally responsible snow management includes the following:**

- Controlling the amount of deicing chemicals applied to recommended levels
- Avoiding application of deicers close to streams and other surface waters and ground water drinking water sources
- Plowing or removing and transporting the snow to areas where it can be allowed to melt with minimal impact on resources.

**Doesn't all the snow end up in the water anyway?**

Depending on atmospheric conditions, some snow melts and some sublimates into the air. However, a slow melt serves several purposes preferable to dumping into a waterway. First, dumping the snow carries with it the shock loading of deicing chemicals and anti-skid agents. The chemicals and the solid debris plowed along with the snow may cause toxic and other adverse impacts in the water.

Allowing a natural melt provides a slow release of the water, dilutes the chemicals, and provides filtration of the solids through the soil.

**Are deicing chemicals and anti-skid agents toxic?**

Overwhelmingly, the most-used deicing chemical is sodium chloride (salt). Sodium is associated with the risk of hypertension in people; and chloride is responsible for the salty taste. In streams, elevated concentrations of chloride are toxic to fish and aquatic life. Chloride may also damage plants.

Calcium chloride is used to a lesser degree as a prewetting agent and at low temperatures (<20º F). Because of its higher cost, calcium magnesium acetate is used very little. The limited use of these chemicals makes them of little concern.

Anti-caking agents such as sodium and ferric ferrocyanide are added in small quantities to road salts. They are likely to degrade in sunlight. The released cyanide ion is toxic, but it volatilizes and biodegrades rapidly and is unlikely to persist in water.

Documented cases of contamination of resources from deicing compounds are usually related to improper storage, where large quantities of the chemicals are in contact with the earth or water.

**What about snow on bridges, can't we plow that into the water?**

For all of the previously mentioned reasons, pushing the snow to a land area removed from surface water by at least 100 feet is recommended. It can melt and evaporate with less environmental impact.

**If a large amount of snow is piled on land and allowed to melt, won't the chemicals harm the groundwater?**

Chloride is very mobile through soils and will be carried through to the groundwater. However, because the ground will probably be frozen as the snow melts, a significant proportion of it will either flow overland or evaporate. Some of the chemicals will be carried off the site with the flowing water diluting them, and some will be left at the site. Following thaws and rain events, the concentration of chemicals washed into the ground will be diluted and the impact to groundwater will be lessened.

**Won't the soil be adversely impacted by the chemicals?**

Sodium can clog the soils. Therefore, it is advisable to store salt piles on impermeable surfaces. However, deicing chemicals are significantly diluted in snow piles and the impacts during melting are much less than the potential impacts of improper storage of salt.

**What's the bottom line?**

The Department of Environmental Protection recognizes that there is some contradiction between environmental concerns and the necessity for quickly disposing of large quantities of snow plowed from our roads and highways to keep them clear and safe. The following recommendations are intended to minimize environmental harm and to recognize the need for safe driving conditions:

- Be environmentally conscious (and economical) by applying deicing chemicals at recommended rates.
- Avoid application of deicing chemicals near all surface waters, groundwater drinking water sources, and other environmentally sensitive areas.
- Plow or transport snow to land areas isolated from environmentally sensitive areas, and at least 100 feet from surface waters or groundwater drinking water sources.

For more information, visit www.depweb.state.pa.us, keyword: Snow Removal.