Many highway departments are changing their methods of snow removal. The most common new method is pretreatment rather than post-treatment with chemicals. Some New Hampshire municipalities are also limiting sand use.

**Pretreatment**

More and more departments apply salt just before and during early snowfall. They then plow accumulated snow leaving about an inch on the surface. The resulting brine creates a film over much of the road surface. This film prevents compacted snow from bonding to the surface, enabling easy removal on the final pass. When the storm ends, they tilt plows to their upright position, and remove the snow to bare pavement.

This pretreatment method of winter operations is sometimes called “anti-icing” because it prevents formation of ice or ice-like snowpack. In nearly all cases, “deicing” is unnecessary. Pretreatment requires less salt, and time to spread it, than conventional deicing. In addition to saving money, agencies provide safe roads sooner after the storm. Pretreatment also reduces environmental affects.

The NHDOT has pretreated roads for many years. Its official policy, published in 1992, recommends 300 lbs. of salt per lane mile for sleet and freezing rain, and 250 lbs. for snow. Because specific patrol sections have peculiar physical conditions, the policy allows supervisors to increase application rates during some storms. It emphasizes, however, that “these areas should be judged and treated separately and not used as a barometer to evaluate and subsequently direct complete applications over the entire section.”

During severe storms, crews might have to apply more salt as they plow, usually at a rate less than the initial application. They occasionally apply salt lightly after a storm to remove residual snow and ice. Even with these supplemental applications, the overall result of pretreatment is use of far less material than required for post treatment operations. In addition, in contrast to deicing, NHDOT maintained roads are safer sooner.

Many departments in northern states have adopted similar policies and procedures. Some use as little as 100 lbs./per lane mile of salt in light snows, with periodic reapplication during light snow storms of long duration. During short periods of moderate or heavy snowfall, they shorted the periods of reapplication and/or increase the application rate.

Timing of the pretreatment is so important that managers need dependable weather forecasts. The NHDOT, and some municipalities, engage commercial forecasters who provide forecasts of expected snowfall intensities during specific periods. Local judgement is often necessary where elevations differ within a city or town.

Liquid chemical applications are of two types. One is “prewetting” rock salt with a liquid to lower its effective temperature. The chemical, stored in “saddle-tanks,” is sprayed on the salt as it leaves the spreader. It should be noted that prewetted material is applied at same rate as dry salt. The most common prewetting agent is calcium chloride in the eastern U.S., and magnesium chloride in western states.

A second liquid application is spraying chemical directly on the roadway. Nationally, the most common chemicals are salt brine and magnesium chloride in solution. In general, liquid application should occur earlier than for solid chemicals. According to FHWA, “late applications onto pavements with more than a light covering of slush or snow can result in excessive dilution of the chemical.” Therefore, accurate forecasts of storm arrival time are critical.

Liquid chemicals are most often used for special purposes. Several New Hampshire municipalities apply liquid magnesium chloride on steep hills, a few in the form of the commercial continued on page 11
Milestones:

Gene Cuomo has been promoted to Road Agent in Fitzwilliam.

Lee Ford is the new Road Agent in Wilmot.

Walter Kiblin has been promoted to Road Agent in Lyndeborough.

Carl Knapp has been promoted to Road Agent in Weare.

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- The software should allow for future growth and for queries, modeling, networking, and additional layers.
- Data must be consistent and accurate. "Garbage in equals garbage out."
- Other departments should be involved in planning, data entry, and implementation.
- Provide for annual updates, with municipal employees a consultant, to incorporate additions and changes to road and drainage systems.
- Use a GIS consultant for the initial setup of the GIS, and ask them questions as you proceed.

Computers are becoming as common as telephones, and digitized information is used increasingly. Prices continue to tumble, making hardware and software attainable and useful to small towns. Thanks to advances in user-friendly software, the average person can access, store, and use information with a GIS. By keeping information accurate, current, and accessible, municipal managers can efficiently operate a system that meets current and future needs. With the arrival of the Information Age, coupled with increasing demands of services from the public, a GIS might soon be a necessity rather than a luxury.

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product “Ice Ban Magic.” In some states, city and state departments apply magnesium chloride to surfaces of long bridges. In some western states, departments treat roads several hours before snowfall to improve road friction during early stages of the storm. Subsequent treatment is necessary to control chemical dilution.

Abrasives

Sand and other abrasives DO NOT melt ice, nor do they significantly increase friction. Salt/abrasive mixes must be spread at higher application rates than straight chemical for effective pre- or post-treatment. Whether applied alone or in a mix, clean up costs and environmental affects can be significant. The most common reasons given for spreading abrasives are to please the public or local police.

The publications page of this newsletter lists several publications available from the UNH T² Center. Members of PW.NET can exchange information about what’s working and what isn’t. Readers can also call the UNH T² Center with specific questions.

Sources

(See publications page)

PW.NET

Want to know what is happening in other towns? Need a place to ask questions of other Public Works Officials? Then, subscribe to PW.NET! It’s free. Send an email message to: kathy.desroches@unh.edu

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