

Parking Lot and Sidewalk Winter Maintenance Training

October 30, 2007

Fortin Consulting, Inc, of Minnesota, gave a 4-hour training session on the environmental impacts of winter road salt application, proper application rates, and insight into innovative anti-icing techniques.

Approximately 30 people involved in the snow removal industry attended the training session, including public employees and private companies. The training was well received as evidenced by the many attendees who stopped to thank us for holding the training, saying that they learned a lot and that we should continue to educate other applicators as well as the public.

The consultants reviewed a lot of material over the course of 4 hours. A brief summary follows.

- 1) Road Salt application negatively impacts surface and groundwater
- 2) Having a winter maintenance policy in place is highly recommended
 - a) Sets priority of maintenance issues
 - b) Addresses customer expectations
 - c) Reduces liability when policy steps are well-documented by staff
- 3) Storage of de-icers can be as important as application
 - a) Piles need to be covered and not located directly upstream of a storm drain or detention pond
- 4) Identify pavement temperature (vehicle equipment, hand held temp sensors, or DOT website for select areas)
 - a) Knowing temp of pavement and if it is rising or falling determines best application rate and materials
- 5) Application equipment needs to be calibrated
- 6) Review of how salt works and melt times at various temps
 - a) If pavement temp is 30, one pound of salt melts 46.3 lbs of ice in 5 min
 - b) If pavement temp is 15, one pound of salt melts 6.3 lbs of ice in 1 hour
 - c) Below 15, salt should not be applied (use abrasives)
- 7) Review of other de-icers and their lowest practical melting temps
 - a) NaCl: 15°F
 - b) MgCl₂: -10°F
 - c) CaCl₂: -20°F
 - d) Cost and other environmental impacts need to be considered as well
- 8) Anti-Icing
 - a) Only a small layer just above the pavement/sidewalk surface needs to be kept ice-free to make mechanical removal very effective, reducing or eliminating the need for de-icers (salt)
 - b) Applying anti-icing chemicals just prior to snow fall can work very well, but over-application may result in slipperiness
- 9) Pre-wetting material
 - a) Salt needs the presence of water to melt ice
 - b) Adding liquid to salt as it comes off the truck speeds up melting process
 - c) Salt brine and acetates may also be used
- 10) Abrasives (sand)
 - a) Useful in very cold temps
 - b) Not cheap
 - c) Needs 5-10% salt to keep from clumping
 - d) A 50% sand/salt mix is never the correct material – leads to over application of both materials
- 11) After the storm
 - a) Document what worked, what didn't and have a meeting with other employees
 - b) Sweeping can be done any time of year – clean up sand and spills
- 12) Application rates of different materials at various pavement temps were discussed in great detail