

Snow Removal Process Improvements with Liquid Brine and Salt Reduction

By Jim Holm, Manager of Grounds & Site Services for Park Nicollet

Park Nicollet is passionate about innovation, partnership and making things better for patients, employees and properties. That is why we are working proactively to make improvements in snow removal at our sites. Our real estate consists of some 25 clinics,



scattered sites and a hospital with millions of square feet of multi-level parking ramps, sidewalks, drives and surface lots. Snow removal for our large organization is a huge cost. We are utilizing industry leading standards, principles and techniques to maintain safety and reduce costs.

As an organization, our goal is to reduce our overall salt usage by 10% this snow season, while keeping our sites entries and sidewalks safe. By improving our processes, we achieved a 45% reduction in salt usage last year. The improvement ideas have been generated thru Snow and Ice Management Association (SIMA) best practices and through partnership with our snow consultant **Charles Glossop** who has 30 years of experience. Our snow removal contractor is a key partner and eager to make things better.

We started using liquid brine in the winter of 2013-14, to enhance our snow services for our facilities. Pre-treating with liquid brine helps break the bond between snow and ice and the pavement making it much easier to plow clean. We have fine-tuned our program in the past two years by



understanding pavement temperatures, calibrating equipment, staff training and proactive pre-treatment prior to a snow event. We have determined that pre-wetting with liquid brine enabled us to use less post application salt. This is substantially reducing the damage to our landscape. Due to our salt reduction improvements, we are greener and more sustainable. The success of our program is stirring interest with our sustainability teams.

We have found that pre-treatments with liquids on sidewalks have produced great results. For a 3.5" snow event on Dec. 1, 2015, we successfully power broomed snow off of walks and then used no granular salt at our main hospital campus sidewalks. The use of power brooms on our sidewalks has helped keep them clean and safe, requiring less treatment.

Our liquid brine program allows us to set high standards for snow removal at all of our properties. We have mandated our contractor to upgrade equipment for not only pre-treatments for walks and drive lanes, but also 100% of surface areas on ramps. Our contractor has installed pre-wet systems for all post applications, achieving salting rates of approximately 150 lbs./acre. Charles Glossop trained our

contractor in calibration of equipment, pavement temps, record keeping, and provides on-going site visits. We are measuring our salt and brine applications per event and overall.

We have switched to using liquid brine at all of our non-heated entries. At all of our building entrances, we are providing hand sprayers with liquid brine for emergency salting to reduce the previous over salting done with granular salt. This reduces tracking of salt into the buildings.



Our Liquid Brine and Salt Reduction training is on-going with the following teams: vendor, security, valet, engineers, clinic managers, supervisors and maintenance. The training consists of discussing benefits, calibration and a field demonstration.

Pre-treatments with liquid brine allows us to be out front 2-3 days prior to a snow event. The benefits include: done at night in a down time, product works as soon as snow event starts,

proactive, not reactive, greater efficiency in plowing, reduction of post application salt.



The use of liquids not only reduces our overall costs, but reduces granular salt. Our snow removal and de-icing process improvements and partnership are making things better for patients, employees and properties and reducing the salt impact on the environment.

Definitions

Anti-icing/Pre-treatment - a liquid application prior to a snow/ice event.

Liquid brine - 23.3% salt solution. Pre-wetting - liquid brine applied to a granular salt at time of application at the spreader.

We customize each application and blend to each event and the event conditions. Pre-treating with liquid brine is essential. This includes: sidewalks, entries, roadways, drives, parking lots, ramps, bridges and parking decks.

Pre-treating Parameters with Liquid

Pavement Temps	Brine Mix
15F-32F	23.3% brine
5F-14F	23.3% brine and 20% calcium
4F to -20F	23.3% brine and 30% calcium

