

Brooke Asleson - Minnesota Pollution Control Agency

Nearly 10 years ago, Brooke Asleson began investigating how chloride impacts our water. Ultimately, her research led into developing the Twin Cities Metro Area Chloride Plan, which lays the foundation for how to achieve clean water and safe winter driving conditions. She applied tremendous teamwork and innovation throughout this project by using creative, innovative, unique approaches to engage over one hundred stakeholders throughout the seven years it took to complete this project. Brooke's leadership generated immense support from local stakeholders by forging strong partnerships, actively listening to their ideas, and incorporating their ideas into the final plan. She went above and beyond to work with stakeholders on the challenging concerns surrounding the project and the difficult issue of balancing environment protection and public safety.

Brooke was instrumental in collaborating with Fortin Consulting and winter maintenance experts in developing the first-of-its-kind Winter Maintenance Assessment tool. She has continued to support the tool and explore ways to expand it statewide and collaborate with neighboring states, EPA, and Environment Canada.

To increase awareness of the chloride problem Brooke speaks at events — including the Water Resources Conference, Mississippi River Forum, Road Salt Symposium, Minnesota Street Superintendent's Association, and many other local meetings and conferences — and with various media outlets, including TPT's Almanac and Minnesota Public Radio.

She has been instrumental in identifying ways the MPCA can increase its assistance and resources to local partners in reducing salt use. This has recently resulted in a new Chloride Coordinator position at the Agency that she has transitioned into, where she will continue to collaborate with partners on reducing salt across the state.

Brooke is dedicated to serving the public and passionate about improving and protecting Minnesota lakes and streams and should be commended for her efforts.

City of Plymouth, Minnesota

Craig Bechthold | Patrick Dehmer | John DesMarais | Steven Forness | Ryan Gallagher | Robert Hebzynski | Jeremy Jensen
Janine Kingsbury | Kraig Nowell | Brian Oswald | Dustin Palm | Mark Sauter | Michael Uecker | Torrey Keith | Derek Ashe
Michael Thompson | Ben Scharenbroich

In the City of Plymouth, four creeks and one lake are listed by the MPCA for chloride impairment. The current Shingle Creek Chloride TMDL and the Twin Cities Metropolitan Area Chloride Management Plan mandate the city to improve its winter operations and reduce the amount of chloride entering its water resources.

Over the past several years, city maintenance staff has implemented BMPs for chloride reduction such as equipping plow trucks with pre-wetting systems, calibrating truck spreaders and anti-ice units twice annually, using anti-icing units to treat all roads with speeds over 35mph, using temperature sensors on all plow trucks, practicing good housekeeping such as promptly sweeping up spills, having equipment operators attend chloride trainings, using a variety of materials (such as brine, rock salt and calcium chloride), and tracking salt application rates with the Precise GPS system.

While each winter storm and season is different, city staff has been implementing these BMPs since 2010 and significantly decreased its salt usage. Application rates dropped from 188 tons/snow event during the 2009-2010 season to 81.25 tons/snow event in 2016-2017.

Four years of monitoring data show that these practices are having a positive impact on the water quality leading into at least two city water bodies.

City of River Falls, Wisconsin

Mike Stifter | Crystal Raleigh | Terry Kusilek | Pat Yunker | Irv Peskar | Nate Croes | Charles Larson | Troy Connolly
Joe Killian | Scott Jensen | Jon Kusilek | Ray Curtis | Bob Schwalen | David Holodnack | Tom Schwalen | Ken Thill
Tom Dalton | Zach Regnier | Reid Wronski

River Falls, which is bisected by a Class 1 Trout stream, has worked aggressively to reduce its dependence on road salt and protect its waters. What started as a salt-sand combination evolved to a straight salt operation about 10 years ago and the city tries every year to improve upon it. They have found application rates and timing are critical in the effort to reduce salt use.

Trucks are dispatched at the start of the snowfall to minimize compaction. Otherwise snow removal operations start at midnight if timing of the storm allows, to minimize compaction and hence salt usage. A detailed map of all plow routes is created annually based on priorities of traffic volume, emergency service needs, schools, and unique terrain. City-owned sidewalks in the downtown business district are hand shoveled to prevent bonding of snow from foot traffic.

All trucks are calibrated and rechecked at mid-season and they are recalibrated additionally if problems are noted. All plow trucks are equipped with liquid applicators, road temp monitors, side wings, and underbody scrapers. The newest truck is serving as a beta test for a slurry application. In addition, they use rubber-coated carbide blades for better snow removal and routinely test new styles of blades for effectiveness. Also, anti-icing occurs prior to winter events whenever weather

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allows. Ten years ago the city estimates it applied approximately 500 lbs/road mile. Calibration and training have reduced that to approximately 200 lbs/lane mile with the potential to further reduce it to 100 lbs/lane mile using slurry application.

As of November, all operators and supervisors were certified on Winter Road maintenance and chemical application through APWA and their Winter Maintenance Supervisor Certificate program. All have also attended Winter Maintenance certification through Fortin Consulting in the past. They also assist with educating county, township, university, school, and contractor staff and conduct two annual meetings that include winter maintenance operations.

The city purchased its own brine maker this season that produces enough for their own needs and to share with neighboring communities, townships, agencies, and contractors at a competitive rate. They are also experimenting this year with different non-chloride products to further decrease chloride usage.

Mike Gresch – Steve Brown Apartments

Mike has been hard at work finding ways to reduce salt for both water softening and winter maintenance. His ingenuity has helped Steve Brown Apartments save salt, improve winter maintenance, and protect the environment. With help and encouragement from the Madison Metro Sewerage District, Steve Brown Apartments drastically improved their water softening system to reduce salt use. Their work didn't stop there; that effort kicked off other efforts to reduce salt use.

Mike saves about one ton of salt per year by using recycled bitter softener brine for winter sidewalk maintenance. If he did not reclaim the spent softener brine, it would go directly down the drain and pollute the river where it is discharged. Before reusing the water softener brine they used 2,000-2,500 lbs of salt per year; today they only need 500 lbs — added to reclaimed brine — to achieve the right concentration. By using liquids instead of granular products they can spread the salt more uniformly on the downtown Madison area sidewalks they maintain.

Mike has grown his system by adding two additional IBC tanks, so he can capture 90 percent of the brine of just one regeneration. He has done this on his home softener as well and captured about 10 gallons. His intention is to figure out a way to evaporate the water to concentrate the brine. He would also like to semi-automate the capture process with a motorized ball valve and a conductivity sensor so other businesses can do this and sell excess brine.

Mike's goal for 2018 is to concentrate the brine to 23.3% without adding any additional salt. By using a box fan or dehumidifier, he hopes to remove excess water and reclaim enough brine to cover another season.

For water softening, Mike has added a condensate water recycling system on the apartment roof. He estimates a savings of 200,000 gallons of water and 3,000 lbs of salt since condensate water has zero hardness and does not require softening. The project cost less than \$200. Mike's goal is to refine this system for his buildings and others.

He is a great example of how to look at our own salt use situation and make new and creative changes to lower it.

Lloyd Law – Minnesota Department of Transportation

Lloyd Law has been involved in the commercial application of snow and ice removal for over 20 years. While working in the private sector in the mid 90s he was part of a team that explored the practical use of liquid anti-icing to local commercial accounts, salt stock pile containment, and efficient use of mechanical and chemical snow and ice removal equipment and techniques.

After leaving the private sector Lloyd continued working in the public works sector for a major metropolitan city. He currently works with the MnDOT metro district as an active plow truck driver, is a team member of the Clear Roadways division, and continues to promote responsible and efficient snow and ice control techniques.

He continues to explore alternative chemicals and techniques, operates and repairs the district's four liquid blending stations and 18 liquid transfer stations, assists with calibrations, and is a member of the statewide plow truck committee for MnDOT. Lloyd has updated the blending systems to make them more efficient and reliable. He has re-designed the transfer pumps and tankers to promote the reclaiming of liquid deicing products from trucks back to storage tanks. This promotes the transfer of unused products back into storage and reduces the amount of product lost during transfer, which saves money and salt. This technology has spread to the Hastings, Camden, and Forest Lake truck stations. Down the road as the pumps go bad, the stations will be upgraded with Lloyds new system. Lloyd is an innovative and valuable employee for the State of Minnesota.

Lloyd believes that while improving technology is a plus in supporting snow fighters with the most reliable equipment and information possible, it still comes down to the individual. Each person needs to use the right products and make good decisions, whether working in the public, commercial, or private sector. Most importantly, Lloyd believes that the best snow and ice technique is having reasonable expectations for the conditions.

To see a list of previous award winners, visit freshwater.org/road-salt-leadership-awards.