



Updates on Chloride Management and Guidance for Implementation Strategies

Brooke Asleson | Chloride Coordinator

Why is Salt a problem?

Permanent
Pollutant

Toxic to
aquatic life

78%
retained
in TCMA

230 mg/L
860 mg/L

Contaminates
Groundwater

Disrupts
Lake
Mixing

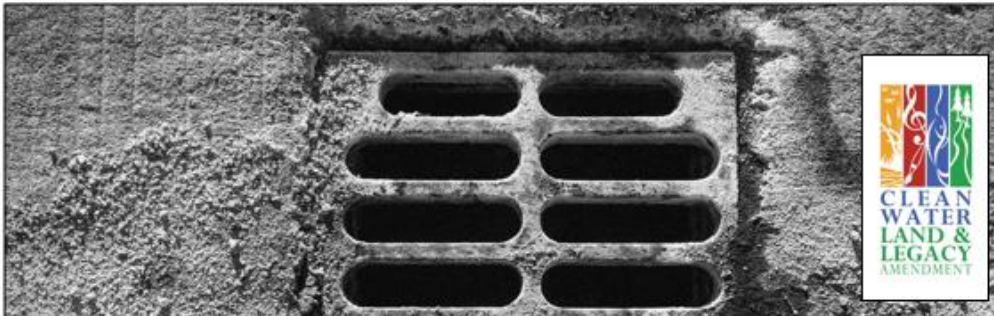
1 tsp. of salt pollutes
5 gallons of water



Statewide Chloride Management Plan

m1 MINNESOTA POLLUTION CONTROL AGENCY

DRAFT MAY 2018



wq-iw11-06ff

Purpose

- Highlight chloride impacts on water quality
- Inform and guide best practices
- Demonstrate success and cost savings of improved practices

Scope

- Surface and groundwater trends
- Chloride sources identified
- Goals for protecting MN waters

Audience

- State and local government entities
- Winter maintenance workers
- Elected officials and general public



Smart Salting Training & Tool

MPCA Smart Salting Level 1 & Level 2 trainings

- Developed by MPCA, Fortin Consulting, Minnesota Local Technical Assistance Program (U of M), MnDOT, and many local watershed partners
- Voluntary “pilot” training program established in 2005
- Classes include:
 - Level 1 Roads
 - Level 1 Parking Lots & Sidewalks
 - Level 2 Organizational certification
 - Property Managers
- Certification given to participants who pass test
- Teach Best Practices to reduce chloride impacts



NEW Smart Salting for Property Managers

We're smart salters

- ✓ Plow, shovel and scrape first
- ✓ Use the right amount for conditions
- ✓ Balance safety and the environment in our work.

A certain amount of salt use is necessary for safe roads, drives and sidewalks. However, when it begins to melt, salt (chloride) runs off in to our local lakes and rivers and causes problems for those ecosystems. In fact, salt levels have been rising in many of these waters around Minnesota, affecting fish and plant life.

To do our part, our maintenance staff have been trained and certified in how to manage snow and ice to protect both people and water.

Safety tips for walking

- Do the penguin shuffle
- Wear proper footwear
- Walk on marked paths
- Avoid using cell phones while walking

It only takes **1 teaspoon** of salt to pollute 5 gallons of water.

All the salt adds up!

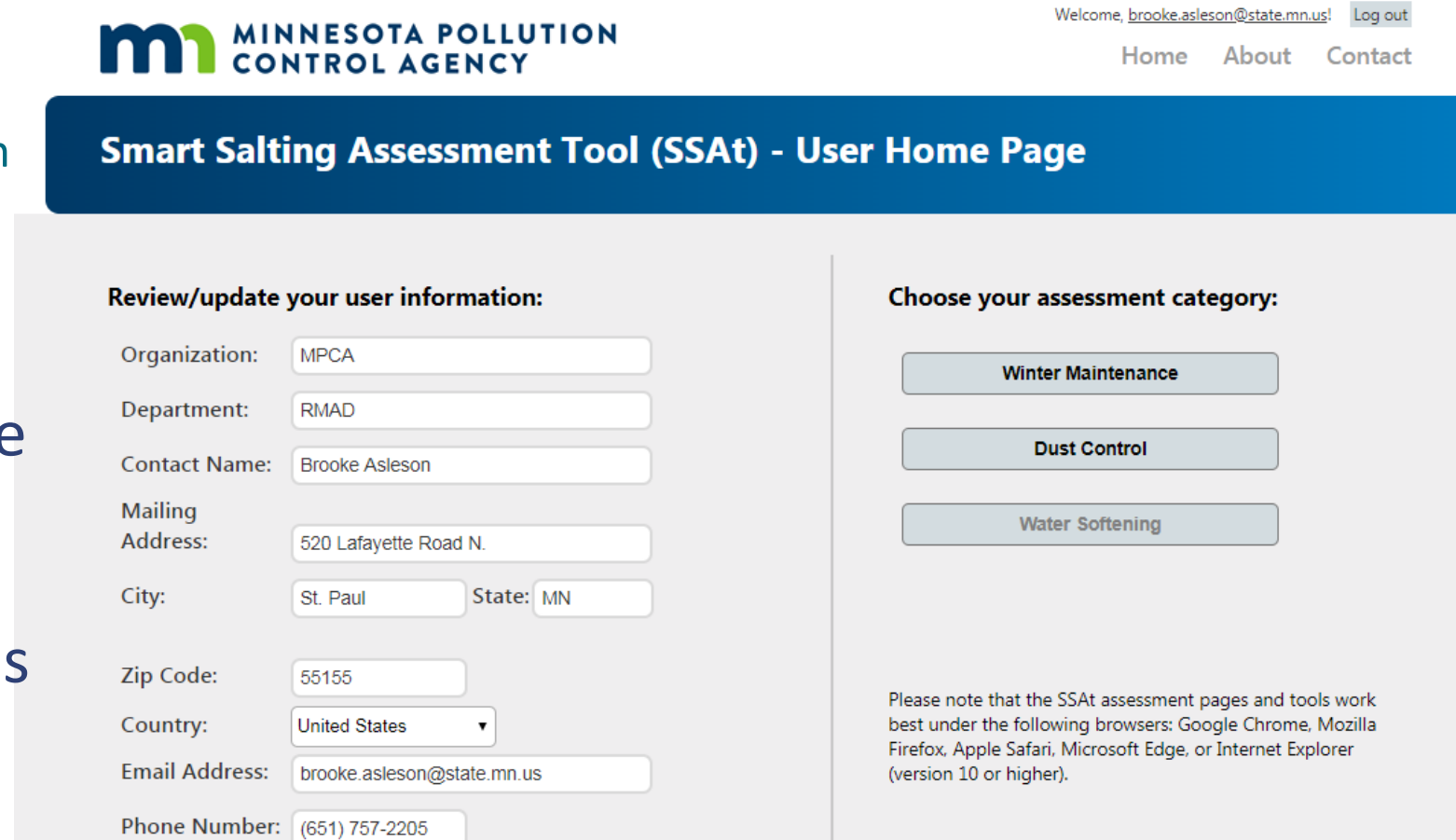


- Developed in May 2019 with TAC of local experts and professionals
- Goal: Help property managers save money & protect water resources by using less salt to de-ice parking lots, sidewalks and other surfaces
- Have hosted 5 to date with high turnout
- Mention Water Softening
- Feedback on the training has been very positive

Entity	Time Period	Main Actions Implemented	Salt Reduction	Cost Savings
University of Minnesota, Twin Cities	Start 2006	Began making salt brine and anti-icing and adopted several other salt reduction BMPs.	48%	New equipment cost \$10,000 \$55,000 cost savings first year
City of Waconia	Start 2010	Switch from 1:1 sand:salt to straight salt & liquid anti-icing; calibration; equipment changes; use of air and pavement temperatures.	70%	\$8,600 yearly cost savings (\$1.80 per lane-mile)
City of Prior Lake	2003-2010	Upgrade to precision controllers & sanders; anti-icing & pre-wetting; use of ground temperatures, best available weather data; on-site pre-mix liquid & bulk-ingredient storage, mixing & transfer equipment; staff education.	42%	\$2,000 per event estimated cost savings; 20 – 40 mg/L decrease in receiving-water chloride (liquid app-only watershed)
City of Richfield	Start 2010	All-staff Training*; yearly sander calibration; use of low-pavement-temp de-icers; road crown-only application; minor-arterial-road policy adjustments.	> 50%	\$30,000: 2010-2011 \$70,000: 2011-2012
Rice Creek Watershed District Cities	2012-2013	Staff training; purchased shared anti-icing equipment	32%	\$26,400 in one winter
City of Cottage Grove	2011-2012	Staff training	Not available	\$40,000 in one winter
City of Shoreview	Start 2006	Stopped using a salt/sand mixture and moved on with straight salt; set up all its large plow trucks with state of the art salt spreading controls, pre-wetting tanks and controls and pavement sensors; use of calcium chloride in the pre-wetting tanks reduced the amount of rock salt as well; all applicators and supervisors annually attend *Training; crews attend an annual snowplow meeting to review procedures and talk about salt use and conservation methods; trucks set up for anti-icing main roads with calcium chloride.	44% since 2006	\$24,468 in 2014
City of Eagan	Start 2005	Moved from a 50/50 salt/sand mix to straight salt; eliminated purchase of safety grit; EPOKE winter chemical application technology; use AVL; pre-wet at spinner	Unknown	\$70,000 annual savings
Joe's Lawn & Snow	Start 2013-2014	Owner & staff Training*; purchase of new spreader, temperature sensors; equipment calibration; use of temperature data; on-going experimentation.	50%	\$770 estimated cost savings in 2014 Expected to use 20 tons, only use 9 tons

Statewide MPCA Smart Salting Assessment tool

- Updating and enhancing the **Smart Salting Assessment tool** (Now through 2020)
 - Level of Service
 - Gravel Road Maintenance
 - Sand/Salt Mixes
 - Additional BMP questions
 - Future Water Softening option



MINNESOTA POLLUTION CONTROL AGENCY

Welcome, [brooke.asleson@state.mn.us!](#) [Log out](#)

[Home](#) [About](#) [Contact](#)

Smart Salting Assessment Tool (SSAt) - User Home Page

Review/update your user information:

Organization:

Department:

Contact Name:

Mailing Address:

City: State:

Zip Code:

Country:

Email Address:

Phone Number:

Choose your assessment category:

Please note that the SSAt assessment pages and tools work best under the following browsers: Google Chrome, Mozilla Firefox, Apple Safari, Microsoft Edge, or Internet Explorer (version 10 or higher).



New & Future MPCA Chloride Work

GUIDE TO DEVELOPING A LOCAL WATER SOFTENER REBATE PROGRAM



3. Steps for Developing a Water Softener Rebate Program

A water softener rebate program should ideally be tailored to the specific goals and characteristics of a municipality. The following steps are general recommendations for consideration and are not intended to serve as a definitive how-to guide. Ultimately, each municipality or watershed should craft a process that aligns with the goals, vision, and approach best suited for that specific jurisdiction. The process, and the resulting program, should be flexible and allow for continuous improvement over time.

The general steps presented in this section are as follows:

- Step 1. Identify Program Drivers
- Step 2. Gather Baseline Information on Water Softener Use
- Step 3. Identify Program Goals and Scope
- Step 4. Identify and Engage Potential Program Partners
- Step 5. Estimate and Obtain Funding
- Step 6. Determine Type of Rebate and Program Procedures
- Step 7. Conduct Outreach
- Step 8. Implement, Evaluate, and Adapt Program

Lake Geneva, WI: Water Softener Rebate Program

The Lake Geneva Utility Commission offers a \$100.00 rebate check paid directly to residents for either upgrading current unit to an on demand system, or installing a new unit that is metered on demand. In addition to the rebate check, Culligan offers a \$100.00 discount off their complete line of metered on demand water softeners to utility customers exclusively.

Program Contact: Josh Gajewski, Utility Director, (262) 248-2311 Xt. 6115 or kgajewski@lgutilities.org

Website: <https://www.lgutilitycommission.com/wastewaterutility>

Application Form: <https://drive.google.com/file/d/0B-877Fe5oHxIX3dyZUtHS2FSY2c/view>

MPCA Loan Programs

Clean Water Partnership loans

The Clean Water Partnership (CWP) program offers zero-interest loans to local units of government for implementing nonpoint-source best management practices and other activities that target the restoration and protection of a water resource such as a lake, stream, or groundwater aquifer.

- [Clean Water Partnership Loans](#)

Apply now for a CWP loan. The MPCA is accepting applications for water resource projects to be funded through the CWP Loan Program.

- Funds available: Over \$15 million for fiscal years 2018 and 2019
- The maximum loan award for a project: \$2 million
- Applications will be accepted on a rolling basis; funding will be approved based on available loan funds.

Request for proposals

Application forms and full details of this loan opportunity are found in the request for proposals: who may apply, funding priorities, activities eligible for funding, and other information that will help you plan your project and submit a complete application.

<https://www.pca.state.mn.us/cwp-loans>

Small Business Environmental Improvement Loans

0% Interest

Borrow up to \$75,000

Flexibility
in collateral

Awarded throughout the year!

Eligibility and conditions:

- Less than 100 full-time employees
- An after-tax profit of less than \$500,000
- A demonstrated ability to repay the loan

Loan terms and conditions:

- Loan amount between \$1,000 and \$75,000
- Repayment term up to 7 years
- Flexibility in the types of collateral accepted
- 0% interest

**APPLY
NOW**

- Water softening
- Brine equipment
- Plow blade and broom technology
- Pavement temp sensors
- Ground speed spreaders

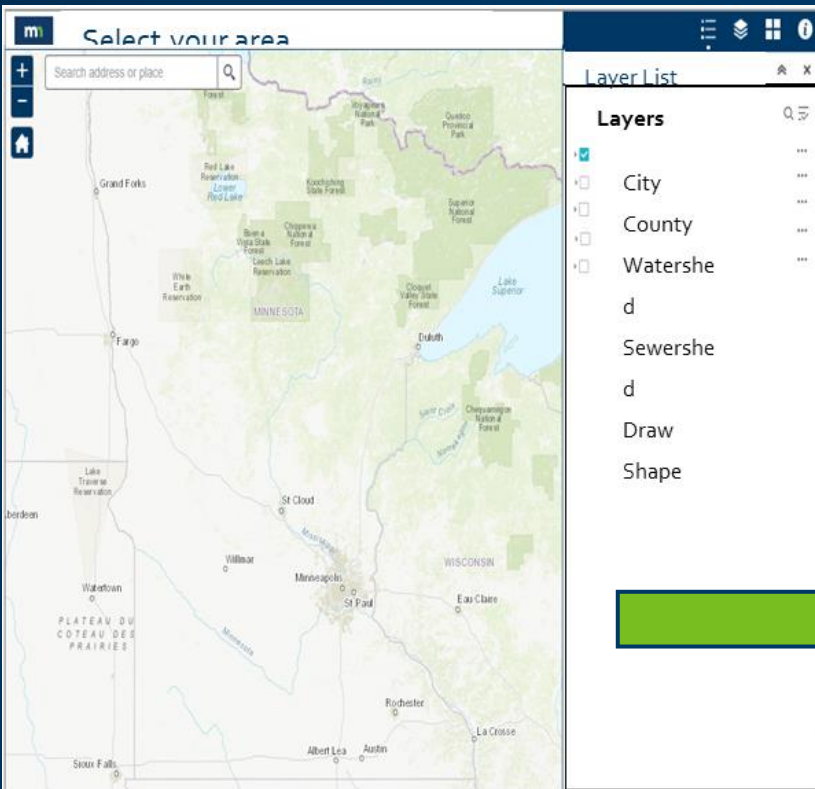
More info at: www.pca.state.mn.us/smallbizloans

www.pca.state.mn.us/smallbizloans

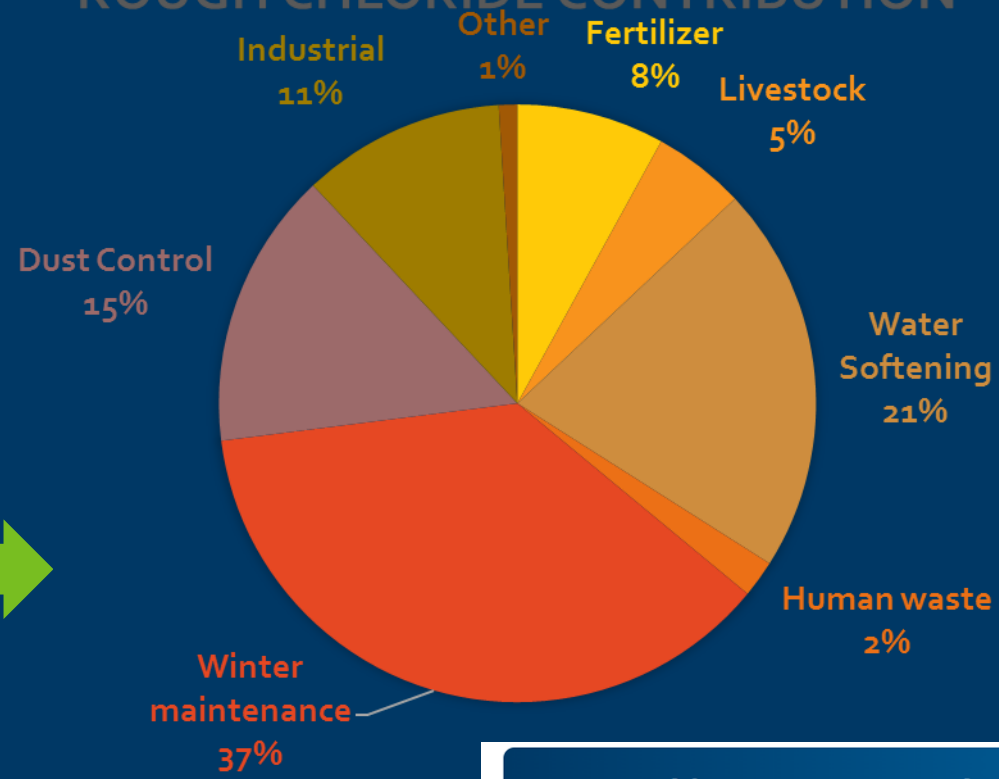
Chloride Reduction Model Ordinances

Model ordinance language focuses on four areas:

- **Occupational Licensure for Winter Maintenance Professionals.** If over- or improper application of salt and other deicing materials is an identified issue, a municipality may wish to utilize model ordinance language requiring winter maintenance professionals (internal or contracted) and/or private winter maintenance professionals to become certified in MPCA's Smart Salting program in order to operate within their jurisdiction.
- **Deicer Bulk Storage Facility Regulations.** If improper storage, transfer, and placement of bulk amounts of salt or other deicers is an identified issue, a municipality may wish to include bulk storage regulations in their municipal code.
- **Land Disturbance Activities.** A municipality may wish to address chloride management as part of their post-construction stormwater requirements. Model language is provided that would require a land disturbance permit applicant to provide chloride use information and Smart Salting Certification when conducting new or redevelopment activities.
- **Parking Lot, Sidewalk and Private Road Sweeping Requirements.** If salt and other deicing materials remain on surfaces after the winter season, a municipality may wish to include sweeping requirements in their zoning regulations.



ROUGH CHLORIDE CONTRIBUTION



Future of the Smart Salting tool

Smart Salting Assessment Tool (SSAt) - User Home Page

Review/update your user information:

Organization:

Department:

Contact Name:

Mailing Address:

City: State:

Zip Code:

Country:

Email Address:

Phone Number:

Choose your assessment category:

-
-
-
-
-



Existing Resources

[Water](#) / [How's the water?](#) / [Water pollutants and stressors](#)

Chloride (salts)



Chloride 101

The basics of chloride and why it matters



Salt applicators

Training and BMPs for professionals



Water permit holders

Chloride in stormwater and wastewater



Reduce salt use at home

Your diet isn't the only place to cut down on salt



Statewide resources

For partners, local governments, and stakeholders

- **Hire a certified applicator** trained to minimize salt use
- **Attend the Annual Road Salt Symposium** for the latest research on chloride pollution

Statewide chloride resources

Tools and materials for partners and stakeholders interested in minimizing the impact of chloride on Minnesota lakes, rivers, and groundwater.

Reports and guidance

MPCA technical reports

- [TCMA Chloride TMDL \(wq-iw11-06e\)](#)
- [EPA approval letter \(wq-iw11-06g\)](#)
- [TCMA Chloride Management Plan](#)
- [Fact sheet on Twin Cities Metropolitan Area Chloride](#)
- [Shingle Creek Chloride TMDL](#)
- [Nine Mile Creek Chloride TMDL](#)
- [Phase 1 Chloride Feasibility Study](#)
- See the [Groundwater data page](#) for average groundwater chloride concentration above the water quality standard.
- [Economic Analysis of Salt Use Reduction](#)

Other technical reports

- [Regional assessment of river water quality in the upper Midwest](#)
- [Increasing chloride in U.S. rivers](#) (U.S. Geological Survey)
- [The reduction of influent chloride to Lake Monona by salt softeners](#) (Madison WI Metropolitan Sewerage Department)

Educational resources

Resources for organizations engaged in education and outreach on chloride pollution.

Videos

- [Chloride and our water: Monitoring the mix](#) — Shows MPCA staff monitoring for chloride and discussing the issues with chloride contamination
- [Improved winter maintenance: Good choices for clean water](#) (Mississippi Watershed Management Organization) — Comprehensive overview of the issues with chloride pollution and how to avoid it
- [The changing Earth: Chlorides in water](#) (University of Minnesota, Water Resources Center) — A look at the U of MN research into chloride in Minnesota water, with specific information about the role of water softening.
- [Watershed by The Hypoxic Punks](#) (Mississippi Watershed Management Organization) — A music video designed to educate viewers on chloride pollution
- [Safe sidewalks for pets](#) (Wisconsin Salt Wise) — About the dangers that sidewalk salt poses to pets

Posters, postcards, and other printables

- [Salt pollutes postcard](#)
- Brochure: [Fight snow and ice, pollution free](#) (Mississippi Watershed Management Organization)
- Brochure: [How to hire a contractor that uses less salt](#) (9 Mile Creek Watershed District)
- Brochure: [Choosing a deicer](#) (9 Mile Creek Watershed District)
- Brochure: [Don't pass the salt](#) (City of Farmington)
- Brochure: [Be salt wise](#) (WI Salt Wise)
- Poster: [Pledge to be salt smart](#) (Clean Water MN)
- Tip card: [Use salt wisely](#) (Clean Water MN)

News stories and press releases

- [Use de-icing salt sparingly to protect Minnesota waters](#)
- [We're pouring millions of tons of salt on roads each winter. Here's why that's a problem.](#) (Enzia magazine)
- [Road salt is polluting our water. Here's how we can fix it](#) (MPR)
- [Road and sidewalk salt worries](#) (TPT Almanac) — MPCA staffer Brooke Asleson highlights problems with salt getting in Minnesota waterways.
- [Rising salt levels threaten Twin Cities lakes by 2050](#) (Star Tribune)

Model snow and ice policies

The model snow and ice policy is designed to help county and city governments adopt winter maintenance policies that include protecting the environment among their goals.

- [Minnesota Model Snow and Ice Management Policy \(p-tr1-51a\)](#)
- [Minnesota Model Snow and Ice Management Policy Guidance Document \(p-tr1-51b\)](#)
- [Minnesota Model Exhibit for Private Snow and Ice Service Contract \(p-tr1-51c\)](#)

Sample policies

- [Goodhue County snow and ice control policy](#)
- [City of Rochester snow and ice control](#)
- [City of Eagan snow and ice control policy](#)
- [Eureka Township snow and ice control policy](#)
- [City of Le Sueur snow removal policy](#)
- [University of Wisconsin Madison Outdoor Salt Use Policy](#)

Model winter maintenance contract

The city of Edina developed a model contract for snow and ice management that embraces best practices to minimize environmental impacts from salt and other chemicals. Property owners can adapt the model contract to suit their needs and to ensure their contractors are protecting Minnesota waters from chloride pollution.

- [Minnesota Model Contract for Snow and Ice Management \(p-tr1-52a\)](#)
- [Cover Letter - Model Contract for Snow and Ice Management \(p-tr1-52b\)](#)
- [Explanatory Memo - Model Contract for Snow and Ice Management \(p-tr1-52c\)](#)

Example regulatory rules, policies, and ordinances

Several organizations have implemented various rules, policies and ordinances to reduce salt pollution in their community.

- [Nine Mile Creek Watershed District Rules](#)
- [Riley Purgatory Bluff Creek Watershed District Rules](#)
- [Chloride Source Reduction Ordinance, Waukesha, WI](#)
- [Ordinance and Water Softener Rebate Program, Pinckney, MI](#)



Minnesota GreenCorps Program

- Minnesota GreenCorps is an environmentally focused AmeriCorps program coordinated by the MPCA
- The Minnesota GreenCorps program has incorporated **chloride reduction** components to their program for the upcoming program year.
- The MPCA plans to place up to 42 full-time members with various host sites for each program year. Members serve approximately 40 hours a week for 11 months from September through August.
- Eligible organizations include public entities (local, regional, state, tribal), school districts, not for profit institutions of higher education, and 501 (c)(3) nonprofit organizations.

www.pca.state.mn/mngreencorps

Model Contract for Snow & Ice Management Services

- City of Edina convened a diverse Advisory Committee of service providers, property managers, environmental specialists
- Model contract embraces Smart Salting practices while maintaining safety and reducing liability risk

The framework has the following components:

- Owner and contractor express mutual intent to utilize best practices.
- Best practices are defined.
- Owner and contractor state their intent that the use of best practices not reduce effectiveness or safety.
- The contract recites the basis for owner and operator to conclude that best practices will not reduce effectiveness or safety.
- Contractor is required to be trained and certified in use of best practices, to document that to owner, and to use that training so that best practices are properly applied under site-specific circumstances.
- Owner is responsible for certain matters within its control that are relevant to achieving a safe site.
- Contractor documents its use of best practices.
- Contractor is responsible for site outcomes, except where owner has not fulfilled its duties.



Model Snow & Ice Management Policy

- A tool for cities and counties to prepare clear and complete snow and ice management policies
- Developed specifically to allow for cities and counties to incorporate environmental considerations into their policies and operations and thereby better manage liability risk

Reduced Salt Diet

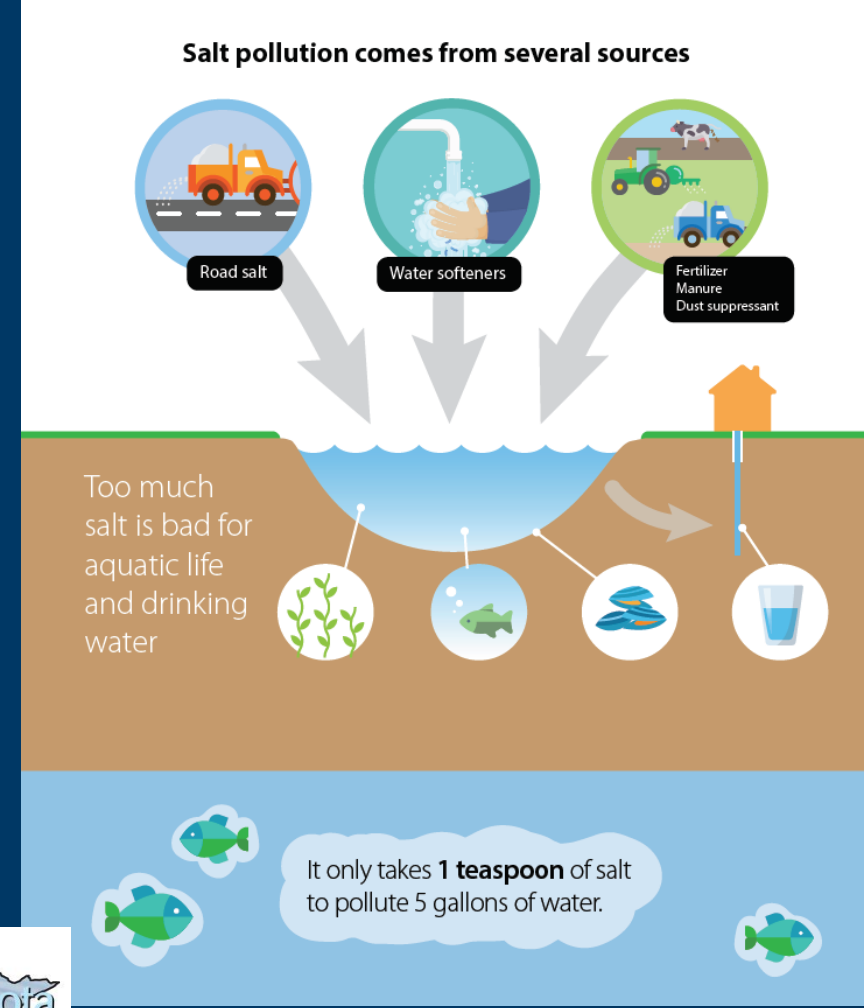
Smith Partners presented a [model snow and ice management policy, guidance document](#), and [model contract exhibit](#) to the [Freshwater Society's 16th Annual Road Salt Symposium](#).



Surface water pollution from chlorides is permanent. The Freshwater Society and Fortin Consulting asked Smith Partners to develop the model policy to manage the liability risk of cities and counties that want to take environmental, cost, and social considerations into their road salt application decision making.

Photo courtesy of MPCA

NEW Water Softener Display at the Eco Experience






Minnesota Pollution Control Agency
 Minnesota Department of Health




CITY OF ROCHESTER
 WATER RECLAMATION PLANT





Water Resources Center
 UNIVERSITY OF MINNESOTA
 Driven to Discover™

EDEN PRAIRIE
 YOUR RIGHT CHOICE

FORTIN CONSULTING, INC.
 serving the environment

Salt Dilemma Display





Kids Chloride Science Kit & Lesson Plan

September 2018

Brooke Aselson, Britt Gangeness, MN Pollution Control Agency

Minnesota's Salty Water Problem

Overview

Salt concentrations are increasing in lakes, streams and groundwater. Measure salt concentrations using a conductivity meter, graph your results, and discuss the impacts of salt on Minnesota's water resources and its plants and animals.

Objectives

1. Understand the impacts of chloride pollution
2. Know where salt pollution comes from
3. Share one idea for preventing salt pollution

Audience

4-8 grade students

Time

30-60 minutes, depending on which activities are selected



Thank you!

BROOKE ASLESON

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