

### **MPCA Chloride Update**



Brooke Asleson | Chloride Coordinator

Road Salt Symposium

February 7, 2019

### Goals

- Impact & sources of Chloride
- MN Water Quality Conditions
- MPCA Chloride Work & Projects
- Available Resources





# Why is Salt a problem?

Permanent Pollutant

Toxic to aquatic life

> 230 mg/L 860 mg/L

in TCMA

78%

retained

Contaminates Groundwater

Disrupts Lake Mixing

### What are the sources of chloride?



**De-icing Salt** 

#### Water Softening Salt

Dust Suppressants, Fertilizer, Manure



### Minnesota's Water Quality Conditions





Base map from Esri, DeLorme, OpenStreetMa

# Surface Water Chloride conditions

### **State-wide surface waters**

- 50 chloride impairments
  - 3 new listings added 2018
- 120 High Risk waters
  - Values  $\geq$  207 mg/L or at least one exceedance
- 80% of surface water chloride data is in the TCMA
- Increase in chloride in Mississippi, Minnesota and St. **Croix Rivers** (Metropolitan Council 2014)

Lake	Period	Percent change/year	Trend Description
Beaver	1984-2016	+2.42%	Increasing
Brownie	1978-2016	+2.8%	Increasing
Calhoun	1991-2014	+1.74%	Increasing
Cedar Island (Main Bay)	1978-2009	+2.1%	Increasing
Clearwater	1988-1997	+11.6%	Increasing
Gervais	1983-2014	+3.72%	Increasing
Hiawatha	1994-2014		No trend
Johanna	1988-2014	+3.37%	Increasing
Keller (Main Bay)	1983-2014	+3.85%	Increasing
Kholman	1983-2014	+3.62%	Increasing
Lake of the Isles	1991-2014		No trend
Loring	1995-2014		No trend
McCarron	1985-2014	+2.41%	Increasing
Osakis	1985-2009	+1.9%	Increasing
Shaokotan	1985-2017	+1.6%	Increasing
Silver	1979-2014	+2.92%	Increasing
South Long Lake	1984-2014	+3.66%	Increasing
Spring	1995-2014	+4.34%	Increasing
Tanners	2004-2014	+3.63%	Increasing
Valentine	1990-2014	+5.56%	Increasing
Wabasso	1984-2014	+1.92%	Increasing
Wirth	1994-2014	+2.49%	Increasing

Long-term Chloride Trends in Lakes Figure 104: Flow-Adjusted Chloride Concentration Trends in the Mississippi, Minnesota, and St. Croix Rivers, 1985-2015



<sup>\*</sup>Different scaling is applied to the lines of each site to visually emphasize the trend shapes.

### Large River Chloride Trends Metropolitan Council Environmental Services

Regional Assessment of River Water Quality in the Twin Cities Metropolitan Area 1976-2015 Minnesota, Mississippi, St. Croix Rivers

- Figure 104 displays overall trends in flowadjusted Cl concentrations in the metro area Mississippi, Minnesota, and St. Croix rivers.
- Trend results show Cl concentrations have significantly increased during the past 31 years.

https://metrocouncil.org/Wastewater-Water/Publications-And-Resources/WATER-QUALITY-MONITOR-ASSESS/Regional-Assessment-of-River-Quality.aspx



### Chloride in Groundwater

30% of shallow monitoring wells in the TCMA above standard

About 1/3 of shallow wells across the state are increasing in chloride

Land Use	Chloride (mg/L)
Residential	45
Commercial/ Industrial	60
Undeveloped	15





# Statewide Chloride Management Plan

#### Statewide Chloride Management Plan MINNESOTA POLLUTION CONTROL AGENCY DRAFT MAY 2018



# • Highlight chloride impacts on water quality

- Inform and guide best practices
- Demonstrate success and cost savings of improved practices

### Scope

Purpose

- 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

### MN Statewide Chloride Management Plan

- Expansion of TCMA CMP to Statewide Plan
  - Statewide water quality conditions and data analysis
  - Regional challenges and opportunities
  - Gravel Road Maintenance
  - Expanded Water Softening
  - Additional sources & latest research
- Draft Statewide CMP stakeholder review goal: Feb. March 2019







### **Smart Salting Training & Tool**

# MPCA Smart Salting Level 1 training

- MPCA, Fortin Consulting, Minnesota Local Technical Assistance Program (U of M) MnDOT, many local watershed partners
- Voluntary "pilot" training program established in 2005
- Certification given to participants who pass test
- Teach Best Practices to reduce chloride impacts
- Targeted to private applicators & local gov.



### MPCA Smart Salting Level 2 Training

- Explore the tool with guided instruction
- Demonstrate how the tool can assist with planning and prioritizing BMPs
- Demonstrate how the tool can help show progress
- Discuss how the tool can be used to gain support to implement BMPs
- First pilot Nov. 2015 hosted by Minnesota Street Superintendents Association

Audience: Winter Maintenance Supervisors and Leadership



# Statewide MPCA Smart Salting Assessment tool

- Updating and enhancing the **Smart Salting** Assessment tool
  - Level of Service
  - **Gravel Road Maintenance**  $\bigcirc$
  - Sand/Salt Mixes
  - **Additional BMP questions**  $\bigcirc$
  - Future Water Softening  $\bigcirc$

#### MINNESOTA POLLUTION CONTROL AGENCY

Welcome, brooke.asleson@state.mn.us! Log out Home About Contact

ages and tools work

ale Chrome. Mozilla

Internet Explorer

#### Smart Salting Assessment Tool (SSAt) - User Home Page

#### Review/update your user information:

Choose your assessment	cat	teg	ory	:
------------------------	-----	-----	-----	---

Organization	MDCA			
Organization:	MPCA		)	Winter Maintenance
Department:	RMAD		)	
Contact Name:	Brooke Asleson			Dust Control
Mailing				Water Softening
Address:	520 Lafayette Road N		)	Hater Soltening
City:	St. Paul	state: MN	)	
Zip Code:	55155			
Country:	United States	•		best under the following browsers: Go
Email Address:	brooke.asleson@state	e.mn.us	)	(version 10 or higher).
Phone Number:	(651) 757-2205			

### **Utilizing SSAt Reports**

### **Planning Tool**

- Evaluate current practices
- Identify areas for improvement
- Develop interim and long term BMP goals
- Educational opportunity for operators

### **Tracking Tool**

- Track implementation (BMP) progress over time
- Track progress in achieving reductions
- Assist with MS4 permit TMDL reporting requirements
- Increase knowledge of reductions achieved through S2

Report generated On 06/19/2018 10:55 by brent.kaley@edinaschools.org

#### **BMP Summary Charts**

Assessment Name: Edina Schools (2017-18) Location : Edina Schools Winter Period: 2017-18 Surface Type(s): Sidewalks







### **MPCA Chloride Resources**

Air 🗸	Water 🗸	Waste 🗸	Regulations 👻	Living Green 👻	Quick links 🗸	Data 👻	About the MPCA 🗸	
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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



Search...

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) Educational resources
- TCMA Chloride Management Plan (Resources for organizations engaged in education and outreach on chloride pollution.
- 🛃 Fact sheet on Twin Cities Metropol
- Shingle Creek Chloride TMDL
- Nine Mile Creek Chloride TMDL
- 🗟 Phase 1 Chloride Feasibility Study
- See the Groundwater data page for ar concentration above the water quality
- 🛃 Economic Analysis of Salt Use Rep

#### Other technical reports

- Regional assessment of river water qu
- Increasing chloride in U.S. rivers (U.S.
- The reduction of influent chloride to softeners (Madison WI Metropolitan Se

- 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. (Ensia 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

#### 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.

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# Minnesota GreenCorps Program

# 10 current GreenCorps Members working on chloride:

- Anoka Conservation District
- Cedar Creek Ecosystem Science Reserve
- City of Morris
- City of Rogers

- City of Rosemount
- City of Winona
- Fond du Lac Band of Lake Superior Chippewa
- Freshwater Society
- Metro Blooms
- Mille Lacs County



- Minnesota GreenCorps is an environmentally focused AmeriCorps program coordinated by the MPCA
- The Minnesota GreenCorps program has incorporated new **chloride reduction** components to their program for the upcoming 2018-19 program year.
- The MPCA plans to place up to 42 full-time members with various host sites for the 2018-2019 program year. Members serve approximately 40 hours a week for 11 months from September 2018 through August 2019.
- 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

## **NEW Water Softener Display at the Eco**

#### Experience Road salt Nater softeners Manure Dust suppressa Why are softeners leavy rain! Flash causing salt pollution? Have a water softener? Learn how to prevent and drinking salt pollution 'ou can save a lot of salt by using a newer, high-efficiency water Off redsi brick after underhange brier anny afterer underhans und 10% OFF It only takes **1 teaspoon** of salt to pollute 5 gallons of water. 6 6 0 SOLAR NATURALS 50 SOLAR NATURALS 50. linnesota MINNESOTA Water SOLAR NATURALS 50. Minnesota Pollution Control Agency Duality SOLAR NATURALS 50 Minnesota Department of Health ASSOCIATION SOLAR NATURALS 50. nerican Water Works Association WRP **Minnesota**Section



Water Resources Center

UNIVERSITY OF MINNESOTA

Driven to Discover<sup>34</sup>



F-O-RTIN

CONSULTING, INC.

serving the environment

Salt pollution comes from several sources



# 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





### **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

# Apply for a small business loan

Eligibility: Businesses with less than 50 employees.

Loan amount: \$1,000 - \$50,000 at 4% interest. Good for most equipment costs. Projects that reduce regulatory obligations highly encouraged.

Loans awarded year-round

Get a low-interest loan for equipment upgrades that reduce salt use and help the environment.

- Brine equipment
- Plow blade and broom
- Vehicle rotary brooms
- Pavement temp sensors
- ► Ground speed spreaders

For more: www.pca.state.mn.us/smallbizloan Eric David at 651-757-2218 eric.david@state.mn.us

Attractive

with flexible

**Minnesota Pollution Control Agency** 

https://www.pca.state.mn.us/aboutmpca/small-business-environmental-loan-

Now

easier to

apply!

program

### Salt Dilemma Display





# Thank you!

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