Road Salt Management in the Sturgeon River Watershed

SALT AND WATERBODIES

Salt is naturally present in the environment, and waterbodies need some salt for aquatic life. However, too much dissolved salt (i.e. salinity) in a waterbody can be toxic to fish and plants and can affect the overall health of aquatic ecosystems.

What forms does salt take?

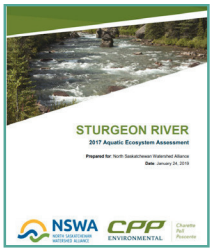
Na SODIUM

Cl- CHLORIDE

K POTASSIUM

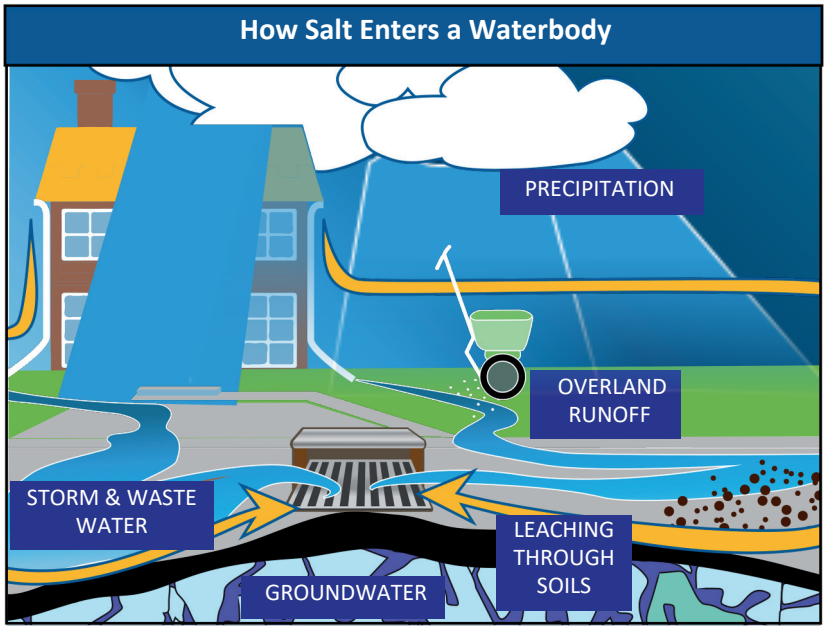
Chloride is of particular concern because:

- It is toxic to aquatic life even at low concentrations
- It is highly soluble
- It doesn't break down



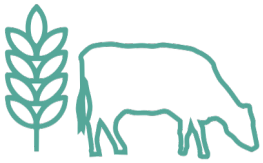
***Sturgeon River Aquatic Health Assessment* (2019) noted:**

Salinity (esp. chloride) sometimes exceeds Alberta's guidelines for the Protection of Aquatic Life



Chloride concentrations can be a result of Land Use activities, including:

De-icers and road salts during winter



Agriculture (urine and fertilizer)

Industrial & wastewater treatment effluent

CURRENT ROAD SALT AND SNOW MANAGEMENT PRACTICES IN ALBERTA

WINTER ROAD DE-ICING:

- Many communities use sand and salts such as Calcium Chloride and Sodium Chloride for sidewalks, city streets and trails, country roads and highways for public safety.
- Sand-salt mixtures (sand, salt, rock chips, brine) are varied according to temperature and weather conditions.
  - E.g. Plow trucks sand and/or salt roads to a temperature of -10°C
    - Below -10° – sand may be used - Extreme cold – sand and *calcium mixture may be used *Calcium mixture prevents sand from freezing & helps traction

STORAGE:

- Sand and salt are usually purchased and stockpiled before the winter season.
- Storage yards are often used to store snow, salt, and material collected from roadways until Spring melt.
- Storage yards must be monitored to prevent run-off of salt and other contaminants into local water bodies.

RECOMMENDATIONS FOR BEST MANAGEMENT PRACTICES (BMPs)

SALT STORAGE & SNOW DISPOSAL:

GOAL: Prevent the release of salt from existing and new sites

Issues to consider:

- o Coverage of salt piles and blended salt-sand piles
- o Handling practices to avoid uncontrolled releases of salt
- o Wash water collection and treatment for salts
- o Location and construction of the snow sites that take into account operational and environmental factors
- o Drainage management
- o Training of personnel & monitoring of the effectiveness of the facility

SALT APPLICATION:

GOAL: Reduce the negative impacts of road salts by delivering the right amount of road salts in the right place at the right time

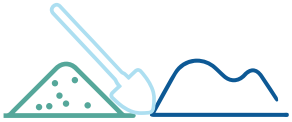
Steps to consider:

- o Develop or update your municipal salt management plans
- o Note environmentally sensitive areas and adjust techniques accordingly
- o Explore recent advancements in applying winter maintenance anti-icing and de-icing materials, such as beet brine, acetates, and formates
- o Use up-to-date and effective winter maintenance equipment
- o Road conditions and other decision support systems are critical
- o Train personnel in proper monitoring and application techniques

NEXT STEPS & ACTION ITEMS

Adopt a salt management plan & policies that support a healthy environment

Need some guidance? Check out the NSWA's templates for salt management policies and plans



Learn about appropriate quantities of sand & salts for roads

Store sand & salt properly

AT HOME: Shovel early, use eco & pet-friendly de-icers, apply traction material

For details about use of salts in vulnerable or environmentally sensitive areas, see this document by Conservation Ontario.

See the Transportation Association of Canada's Salt Management Plan for an overview of BMPs and making a plan.

To read the results of road salt management in communities across Canada, see this Environment Canada document.

Sturgeon River Watershed Alliance

For more info go to: *www.nswa.ab.ca*

or visit →