
Photo: Robin Eriksson

Alternatives to Road Salt: Exploring Perspectives and Empowering Action

Salt Pollution Problem

Road salt (sodium chloride) is a de-icer that is widely used in Ontario on roads and other surfaces such as parking lots, driveways, and sidewalks. Excessive road salt use is causing freshwater salinization, resulting in stress on many lakes and tributaries. For example, increased salinity harms aquatic organisms, disrupts food webs, promotes invasive species, and has the potential to disrupt thermal mixing of lakes. Also, the use of road salt contributes to infrastructure corrosion, creating long-term environmental and economic consequences.

Road Salt Alternatives

Chemical

Examples: De-icers such as magnesium chloride, calcium chloride, beet juice, and brine

- Sometimes falsely marketed as environmentally friendly options
- No chemical substitute currently eliminates ecological risk at scale

Physical

Examples: Increase traction by using things such as gravel, sand, or woodchips

- Improve traction without melting ice
- Not temperature dependent
- Can disrupt aquatic habitat, crack windshields, and clog storm drains

Practical

Examples: Change behaviour, wear traction, shovel immediately or plow after snowfall

- Remove snow/ice without additional chemical loading
- Reduce total salt application
- Labour and infrastructure intensive

Policy

Examples: Liability reduction, mandatory winter tires, reduced winter speed limits, certification and reporting requirements

- Align safety expectations with winter conditions
- Reduce reliance on chemical controls

*Not all alternatives are more environmentally-friendly and locally-specific research should be done before implementing them

CHEMICAL

Definition	Examples	Benefits	Drawbacks
Chemical Substance	Calcium magnesium acetate	Lower temp effectiveness	Dissolves; Hard to Remediate
Added to the environment	Beet juice	Can be circular	Expensive
Melts ice & snow	Calcium chloride	Less corrosive	Not Enviro-friendly

PHYSICAL

Definition	Examples	Benefits	Drawbacks
Physical Substance	Sand / Gravel	Not temperature dependent	Can disrupt aquatic habitat
Added to the environment	Wood Chips	Available locally; Circular options	Often extracted from environment
Creates Traction	Kitty Litter	Recoverable	Causes windshield damage on roads

PRACTICAL

Definition	Examples	Benefits	Drawbacks
Practice or Innovation	More Shoveling & Plowing	Not temperature dependent	More time intensive
Removes snow & ice	Specialized Equipment	Non-Additive	Can have costs associated
Without additives	UV-absorbing concrete	Scalable; Creates Employment	

POLICY

Definition	Examples	Benefits	Drawbacks
Practice or Innovation	Lower winter speed limits	Not temperature dependent	Require oversight / compliance
Enshrine in policy / law	Requiring snow tires	Universally-applicable	Can have costs associated
Enhances safety	Limited Liability for Contractors	Add safety; reduce additives	

When assessing alternatives, we can use the following evaluation criteria:
H- Is it harmful to water quality or aquatic species?
A- Is something added to the environment?
R- Can it be recovered?
R- Can it be remediated?

Key Takeaways

- Freshwater salinization is a growing, cumulative, and largely irreversible stressor without reduced road salt application.
- Protecting freshwater and protecting people can't be competing goals. The solutions have to do both.
- No single chemical replacement solves the ecological problem. Solutions require an individual approach based on local factors.
- Current chloride guidelines may not protect sensitive taxa, especially in soft-water systems.
- Most alternatives are more expensive, with performance trade-offs (temperature range, required application, effectiveness).
- Some organic and blended alternatives are equally or more toxic than sodium chloride.
- Practical alternatives are the most promising.
- We need to adjust cultural expectations around "winter control" that drive excessive salt use.

Calls to Action

- Reduce salt use around your home: use less, and adopt better practices.
- Push for municipal change: ask your city/town to adopt smarter salt practices.
- Monitor water quality with Water Rangers' Winter Testkit to fill data gaps.
- Support salt coalition efforts, research, and action: fund, volunteer, share.
- Learn more & spread the word: stay informed, tell others.

Friends of the Muskoka Watershed Green Cup Movement


Water Rangers winter chloride monitoring

ADDITIONAL RESOURCES

- Watch the recording of the first salt pollution webinar.
- Visit Water Rangers' website to learn how salts used to de-ice our roads, sidewalks, and parking lots impact our freshwater, and see how you can to take action.
- Discover Watersheds Canada's Salt Pollution toolkit and the Salt Pollution Database.
- Learn more about the Ontario Salt Pollution Coalition.
- Read journals and reports from our reading list to learn more about road salt pollution.
- Learn about the SALTYMuskoka Community Action Project.
- Join the Green Cup Movement. Contact Alesha from Friends of the Muskoka Watershed to inquire about receiving a green cup. Or, measure your salt use by using your own 10oz cup (1 tablespoon for 1 sidewalk square).
- Submit your comments to the International Joint Commission (IJC) on the Canada and US governments' latest Progress Report under the Great Lakes Water Quality Agreement.
- Learn about the Bruce Peninsula Biosphere Association and their alternative salt use practices.
- Become a Lake Erie Ranger.
- Learn more about the International Association for Great Lakes Research (IAGLR).

Join the free Freshwater Stewardship Community!
watersheds.ca/freshwater-stewardship

Handout created by:
Watersheds Canada
Water Watchers
Water Rangers

Funding support:
Hodgson Family Foundation
Canada Water Agency
Freshwater Future