



The Impacts of Road Salt on Vermont Infrastructure and Water Quality

An Overview of H.86 and S.29,
An act relating to establishing the
Chloride Contamination Reduction
Program at the Agency of Natural
Resources

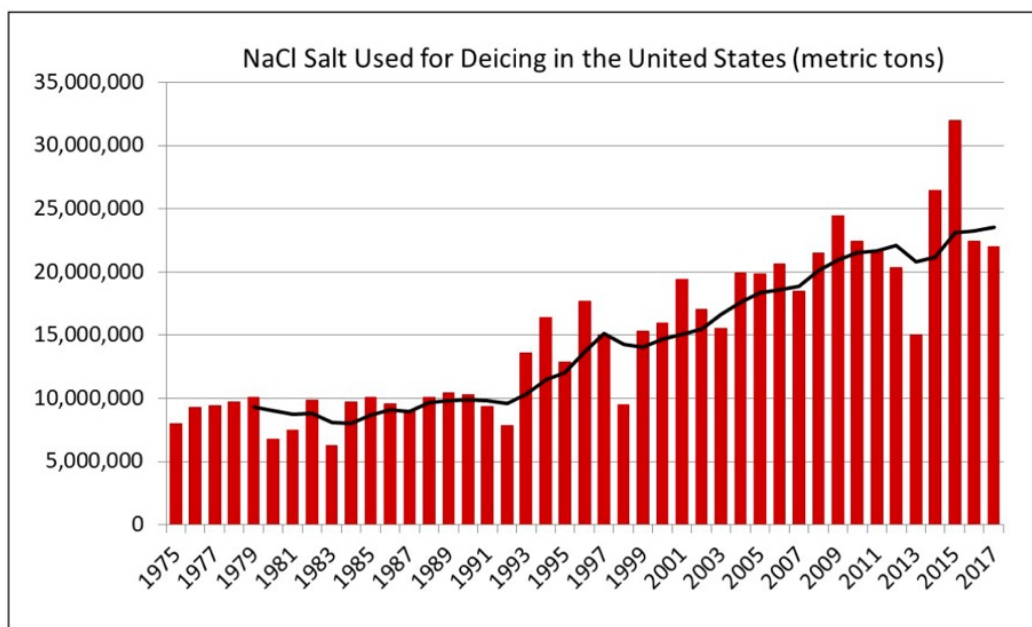
Jared Carpenter
Lake Champlain Committee
*Before the House
Committee on Environment
March 25, 2025*



School Street Bridge over North Branch of the Winooski River, Photo by Jared Carpenter



Salt Use for Deicing has Increased Nationwide



Kelly, V.R., Findlay, S.E.G.,
Weathers, K.C. 2019. *Road
Salt: The Problem, The
Solution, and How to Get
There*, Cary Institute for
Ecosystem Studies (pg. 3)

(US Geological Survey, 2017, Salt statistics, in Kelly, T.D., and Matos, G.R., comps., *Historical statistics for mineral and material commodities in the United States: US Geological Survey Data Series 140*, available online at <http://pubs.usgs.gov/ds/2005/140/>)

For more information, visit the testimony of: [Matthew Vaughn: Water Quality Impacts of De-Icing in Lake Champlain and its Tributaries](#)



Excessive use of road salt has negative impacts on infrastructure, public health and water quality

Including:

- Corrosion of public and private drinking water systems, resulting in increases in trace metals such as copper, iron, and lead.
- Acceleration of the corrosion of bridges, roads and vehicles, reducing their lifespans and usability.
- Increased salinity of rivers and lakes, harming aquatic biota.



Photo by Eileen Fitzgerald © Lak

For more information, visit [the U.S. Environmental Protection Agency](#)

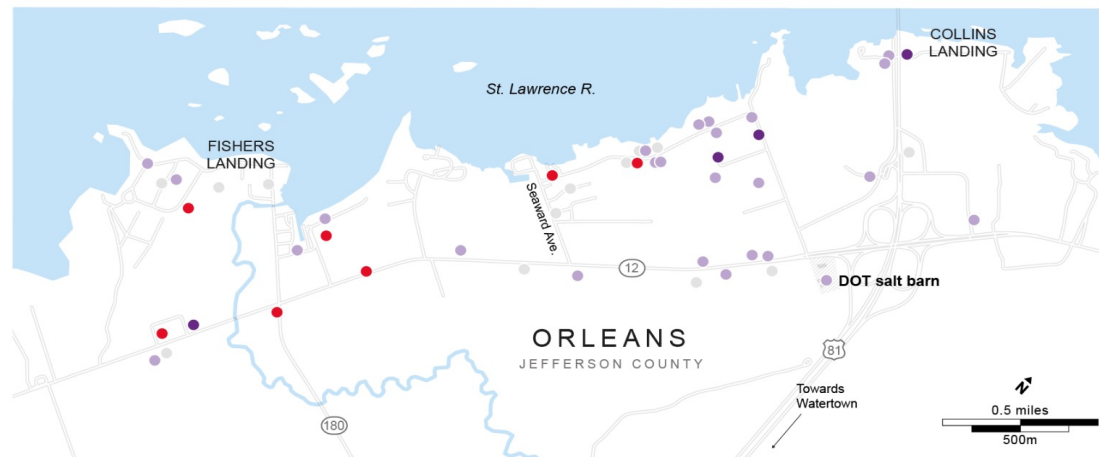
Around the country, road salt is infiltrating surface and ground waters, impacting water supplies.



Tainted Ground

Seven of 49 properties along the St. Lawrence River that use well water exceeded the EPA's lead threshold for public water systems, according to testing by the town of Orleans and an engineering firm. One family fears salt pollution from a nearby New York State Department of Transportation salt barn made their water so corrosive it leached lead from plumbing components.

LEAD IN WATER (mg/liter) ● Less than 0.0005 ● 0.0005 – 0.009 ● 0.010* – 0.014 ● 0.015 or higher (EPA threshold**)



* The World Health Organization sets a maximum lead level of 0.010 mg/L (10 parts per billion) in drinking water.
** The EPA Lead and Copper Rule, published in 1991, states that if 10 percent of water samples taken by a water utility have a lead level of 15 parts per billion or higher, the utility has to take steps to improve corrosion control, inform the public of the lead risk and may have to replace lead water lines.

Source: Fourth Coast Inc

From Reuters article, Lead in the water: A corrosive danger lurks in U.S. water wells, (Oct 3, 2024).

This infiltration is also being seen in private wells, leaching heavy metals, including lead, into single residential drinking water supplies.

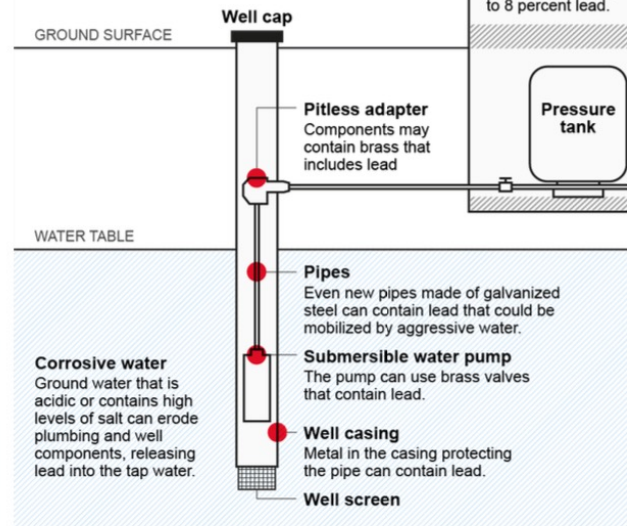
From Reuters article, Lead in the water: A corrosive danger lurks in U.S. water wells, (Oct 3, 2024).



Ground to tap: sources of lead

Lead in tap water from houses that use private wells almost always derives from components of the well or residential plumbing, according to Bryan Swistock, a researcher with Penn State Extension. As in Flint, corrosive water from wells leaches lead from plumbing parts it comes in contact with, from the well screen to the faucet.

Plumbing
Pipes and fixtures can contain lead and joints can include lead solder; until January 2014, plumbing fixtures designated as lead-free can contain up to 8 percent lead.



Source: Reuters

Diagram not to scale.

The chloride ions from road salt also corrode vehicles and infrastructure by accelerating the oxidation of steel, impacting bridges, culverts and water pipes.

From:
<https://waldmaneng.com/2024/09/09/the-impact-of-chloride-ions-on-building-structures/>



Photo by Laura Pratt © Lake Champlain Committee



Excessive road salt use is starting to impact Vermont water quality as salinity levels rise, harming aquatic biota

Vaughan, M.C.H. (2019). Concentration, load, and trend estimates for nutrients, chloride, and total suspended solids in Lake Champlain tributaries, 1990 – 2017 (Technical Report No. 86). Grand Isle, VT: Lake Champlain Basin Program. https://lcbp-089519.s3.us-east-2.amazonaws.com/techreportPDF/86_LC_Tributary>Loading_Report.pdf

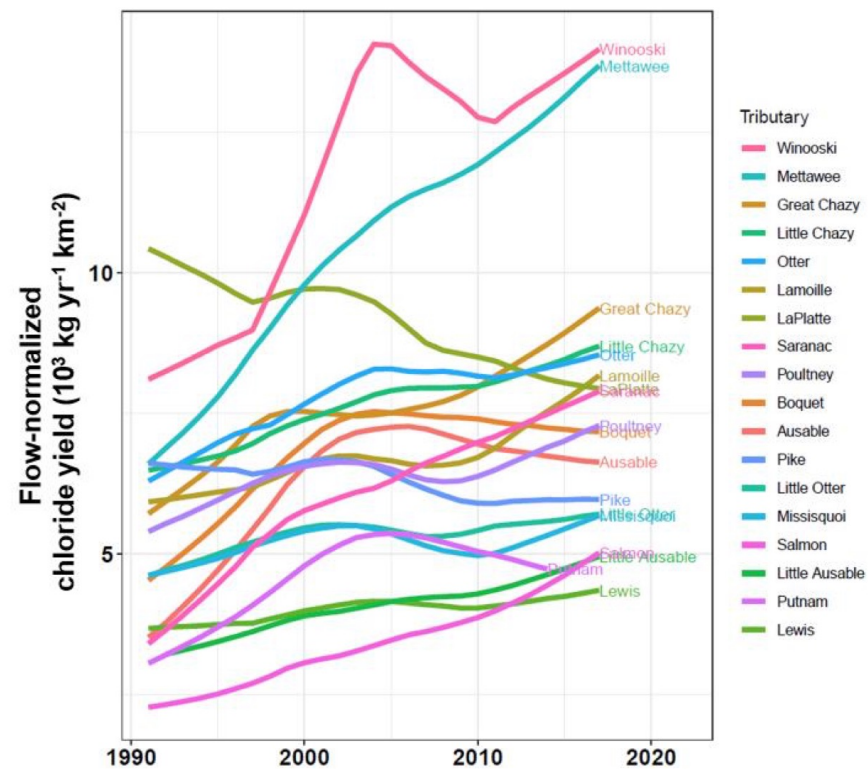


Figure 17. Plot of annual flow-normalized chloride yield estimates for eighteen Lake Champlain tributaries. The flow-normalized yield is an estimate of load per watershed area, with the influence of annual water flux variability reduced. Note that the legend is in descending order by the latest value for each tributary.



H.86 and S.29 ‘an act relating to establishing the Chloride Contamination Reduction Program at the Agency of Natural Resources’

The bill addresses the impacts of sodium chloride on infrastructure and water quality in Vermont through reduced salt application on roads and other impervious surface without compromising public safety.

BILL AS INTRODUCED
2025

H.86
Page 1 of 11

1 H.86
2 Introduced by Representatives Sheldon of Middlebury, Austin of Colchester,
3 Bartholomew of Hartland, Chapin of East Montpelier, Logan of
4 Burlington, Morris of Springfield, and Satcowitz of Randolph
5 Referred to Committee on
6 Date:
7 Subject: Conservation and development; transportation; water quality; salt
8 application
9 Statement of purpose of bill as introduced: This bill proposes to require the
10 Secretary of Natural Resources to establish the Chloride Contamination
11 Reduction Program to train commercial salt applicators and municipal salt
12 applicators in best management practices to most efficiently apply salt or salt



This will be achieved through:

- The development of best management practices for municipal and commercial / private salt applicators,
- Certification for liability protection,
- Requirements for salt storage facilities to avoid water contamination,
- Expanded monitoring of water salinity levels, and
- Tracking the import of salt into the state.



Keys to the certification program:

This is a voluntary program, so success relies on carrots, including:

Liability protection

Savings through purchase of less salt

For municipalities, compliance with Water Quality Standards could mean less future costs for cleanup of specific waters.





The Vermont Agency of Transportation currently has a Best Management Practices plan, the goal is to apply something similar to municipal and commercial applicators.

For more information, visit testimony of:
[Ernie Patnoe: VTrans Snow and Ice Control Program](#)
[Todd Eaton: Vermont Local Roads](#)

VERMONT AGENCY OF TRANSPORTATION



SNOW AND ICE CONTROL PLAN FOR STATE AND INTERSTATE HIGHWAYS

Chloride Reduction BMP	Definition	Potential % Chloride Reduction
Pre-Wetting	Application of liquids or proprietary chemical to dry salt as it is being applied to the roadway.	20% - 30%
Pre-Treating	Application of liquids or proprietary chemical to dry salt either before, during, or after it has been loaded into the truck.	10% - 30%
Anti-Icing	Application of liquids or proprietary chemical in advance of onset of winter storm in problem areas such as steep grades and curves.	10% - 30%
Equipment Calibration	Ensures equipment application of Chlorides is accurate.	5% - 20%
In-Cab Air/Ground Temperature Sensor	Installation and monitoring of pavement and air temperature sensors with in-cab readout.	1% - 10%
Training, Storage and Handling	Annual training of staff about various BMPs, improving storage and handling practices for loading and unloading salt.	10% - 25%

New Hampshire's Green SnowPro certification program could be a model for Vermont



[Advisories](#) | [Events](#) | [OneStop](#) | [About](#) | [Contact](#) | [Feedback](#)



Commercial Green SnowPro Certification

Certifying winter maintenance professionals in salt reduction practices that improve water quality while protecting public safety.

Voluntary Commercial Salt Applicators certified by NHDES Green SnowPro under [RSA 489-C](#), and property owners or managers who hire them, are granted limited liability protection against damages arising from snow and ice conditions under [RSA 508:22](#).

For municipalities seeking certification, see the voluntary [Municipal Green SnowPro Certification webpage](#).

For more information: visit testimony of [Aubrey Voelker: NH Green SnowPro Program](#)



In a voluntary program, there needs to be a strong limited liability provision to incentivize participation in order to reduce chloride contamination and limit road salt impacts on water quality, infrastructure and drinking water systems.

Note the limitation is only for hazards that are “caused solely by snow or ice” **AND** only when the failure / delay in mitigating the hazard “is the result” of the applicator’s adherence to the BMPs.

(a)(1) Except as provided in subdivision (2) of this subsection, a certified commercial salt applicator; a certified municipal salt applicator; or an owner, occupant, or lessee of real property maintained by a certified commercial salt applicator or certified municipal salt applicator **shall not be liable for damages arising from hazards on real property** owned, occupied, maintained, or operated by that person **when**:

(A) the **hazards are caused solely by snow or ice; and**

(B) **any failure or delay in removing or mitigating the hazards is the result of the certified commercial salt applicator or certified municipal salt applicator’s implementation of the best management practices** established under section 1352 of this title for application of salt or salt alternatives.

(2) The protection from liability provided under subdivision (1) of this subsection **shall not apply when the damages are due to gross negligence or reckless disregard of the hazard.**



Finally, the bill requires best management practices for salt storage sheds including being under cover by 2035, as well as expanded monitoring of contaminated waters at discharge points.

Photo by Holly Pelczynski/Bennington Banner, story by Ed Damon, Bennington Banner (Jan. 10, 2018)



Thank You

