

Winter Salt Management Challenges & Solutions

***Protecting Water Quality...
What Everyone Can Do!***



Winter Salt Management Challenges



ROAD SALT

The Problem, The Solution, and How to Get There

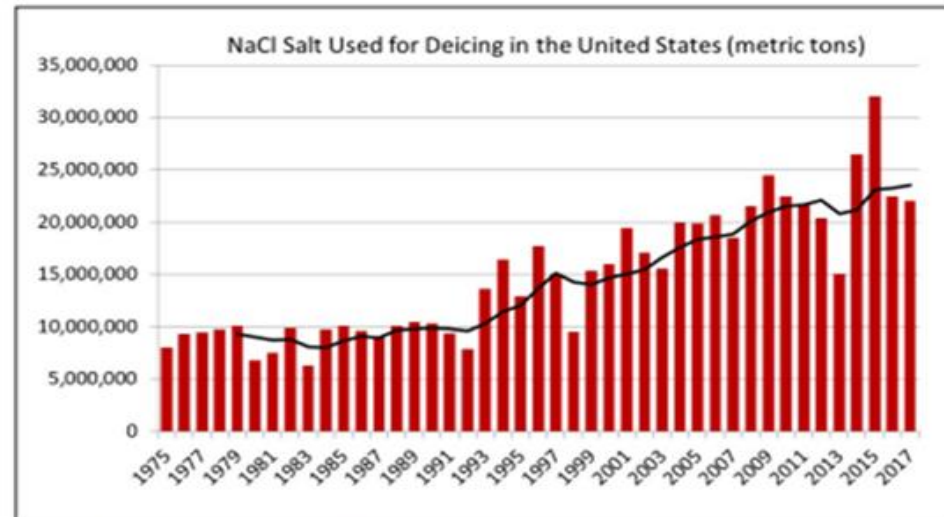


www.caryinstitute.org

The Problem

A steady rise in road salt use

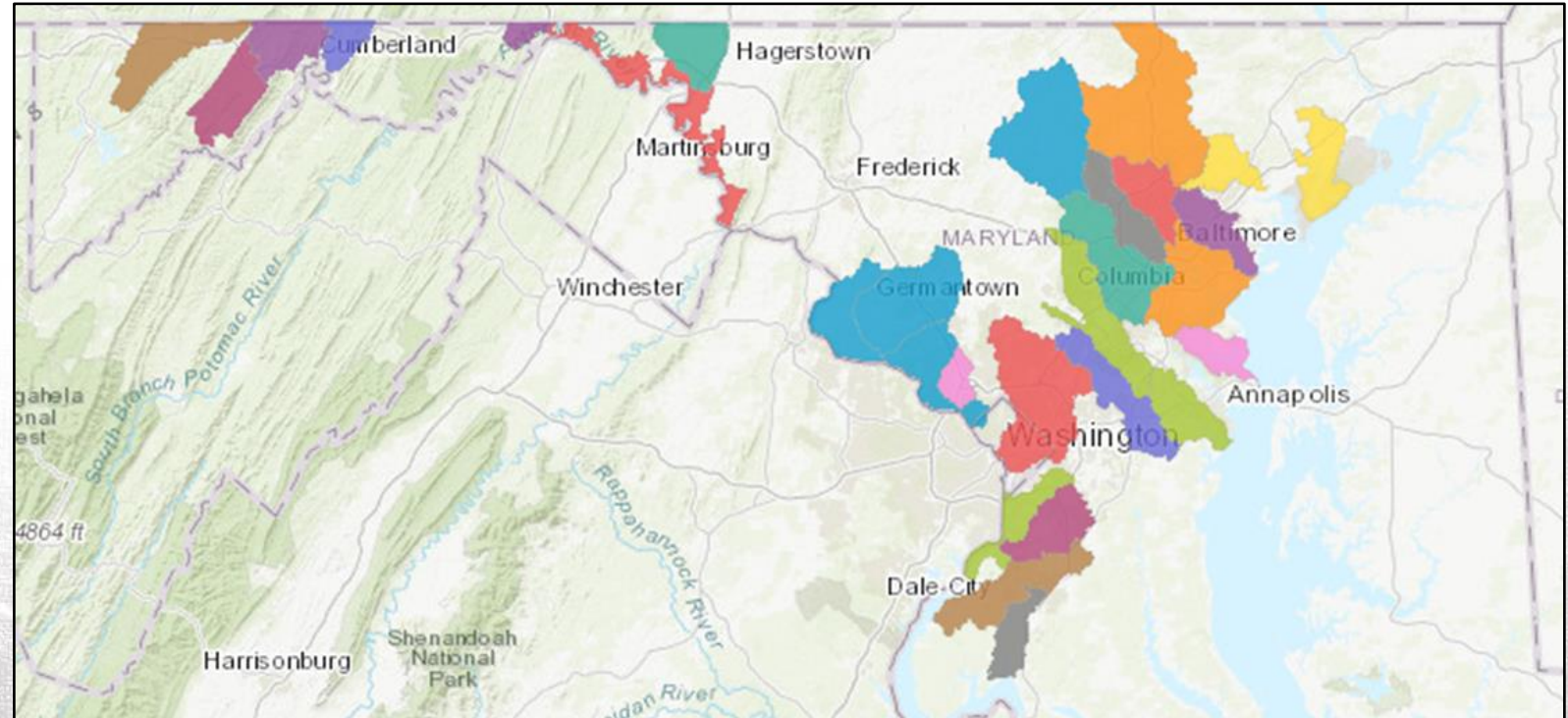
Since 1975, road salt use in the US has doubled. This rise parallels an increase in roads and other pavement requiring winter maintenance. In addition to being used on paved roads, road salt is applied to parking lots, sidewalks, driveways, and service roads. There is a growing scientific understanding of where this salt ends up and how it is harmful to ecosystems.



(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/>)

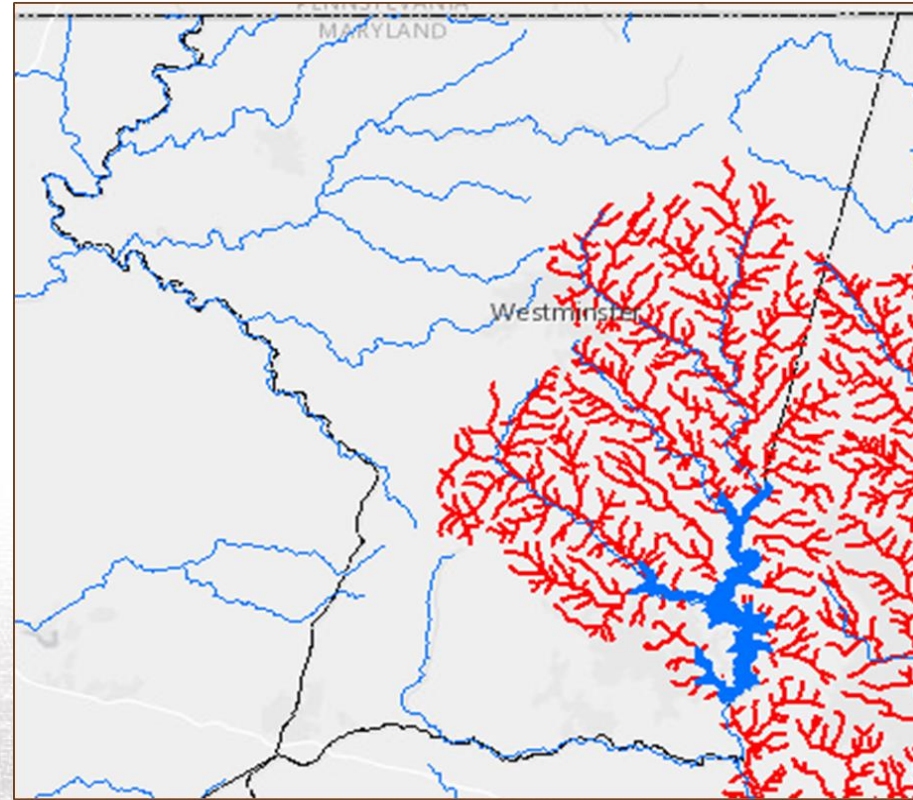
For additional copies, contact Cary Institute of Ecosystem Studies visit www.caryinstitute.org/road-salt-report

Winter Salt Management Challenges



Maryland Department of the Environment, 2022, Water Quality Maps, Chloride Impairments

Winter Salt Management Challenges



Chloride Impaired Waters/Liberty Watershed

Winter Salt Management Solutions

What Are State and Local Jurisdictions Doing?



Taking steps to reduce salt in rivers, streams and groundwater to protect aquatic life and drinking water sources while roads are made safe for winter travel.

- **Monitoring streams and reservoirs (Federal Clean Water Act).**
- **The best solution is a widespread, decreased use of road salt.**
- **Developing best management practices**

Winter Salt Management Solutions

What Are State and Local Jurisdictions Doing?



- Increasing salt reduction requirements in NPDES Municipal Separate Storm Sewer System Permits (MS4)
- Increasing Public Education and Outreach MDE – “Winter Salts” webpage [MDE Winter Salts Information Page](#)



[MDE Winter Salts Story Map](#)

Winter Salt Management Solutions

What Are State and Local Jurisdictions Doing?



- Proactive strategies to reduce road salt use
- Pre-treat roads prevent initial bond of snow or ice.
Salt Brine Liquid Solution 23.3 % Salt / 76.7% water
- Using brine to reduce overall salt usage
- Increased training for employees and contracted operators
- Improved weather forecasting



Winter Salt Management Solutions

What Are State and Local Jurisdictions Doing?



In the fall and winter, you can track plows in your neighborhood using SHA's [S.T.O.R.M. application](#).

- Equipment calibration - using right salt amount
- Targeting roads in most need of treatment
- Investment in new technology equipment and storage
- **Written Salt Management Plan**
- **Efforts over past 5 years resulted in 50% reduction of salt**

NPDES & MS4 Permit Overview

National Pollution Discharge Elimination System (NPDES)

Impaired/Polluted Waters of U.S.
Clean Water Act (1972)



NPDES Permit Program

Designed to Protect Waters of U.S.

Authorizes Discharges

Address Water Quality Impairments

Controls/BMPs/Restoration/Reporting/Enforcement



Winter Salt Management Solutions

What Are State and Local Jurisdictions Doing?



Carroll County Department of Land and Resource Management Coordination



Education/Training/Outreach

- NPDES MS4 Permit Training
- 8 Municipalities
- 8 County Agencies
- Water Resource Coordination Council
- CC DPW Bureau of Roads Operations
- CC DLRM Bureau of Resource Mgmt
- **Environmental Advisory Council**
 - Homeowner and Business Good Housekeeping and Best Management Practice Workshops

NPDES & MS4 Permit Overview

Next Gen MS4 Permit Key Changes in Property Management & Maintenance

Required Pollution Reduction through Maintenance Activities

Use of Winter Weather Deicing and Anti-icing Materials without compromising public safety

Carroll County Department of Public Works

Bureau of Roads Operations

Salt Management Plan



February 2020

- **Develop and Submit Salt Management Plan to MDE 3rd Year MS4 Annual Report**
- **Based on MDOT/SHA's current Salt Management Plan**
- **Implement Salt Management Plan (thereafter/in 4th Year)**
 - Evaluate new equipment, methods and strategies for program improvement
 - Training (Personnel and Contractors)
 - Create "Salt Academy" or participate in another MS4 permittee or agency training.

NPDES & MS4 Permit Overview

Next Gen MS4 Permit Key Changes in Property Management & Maintenance

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Carroll County Department of Public Works

Bureau of Roads Operations

Salt Management Plan



February 2020

- **Developing and Distribute BMP Outreach Information to Educate Residents**
- **Tracking and Reporting “IMPORTANT”**
 - 4th year MS4 Annual Report
 - track/record amount of materials used and snowfall in inches per event
 - Report deicing and anti-icing application by event or date, monthly and annual pounds used per lane mile per inch.

Winter Salt Management Solutions

What Are State and Local Jurisdictions Doing?

Carroll County Department of Public Works Bureau of Roads Operations

Salt Management Plan



February 2020

The objective and goal of this Carroll County Government Salt Management Plan is to provide a framework for local agencies to deliver safe, efficient roadway systems during winter storms in a cost effective and environmentally sound manner.

Annual Winter Weather Coordination Meeting
Salt Management Plan – February 2019 (3 Phase)

Winter Salt Management Solutions

What Are State and Local Jurisdictions Doing?

Carroll County Department of Public Works - Bureau of Roads Operations

Carroll County Department of Public Works

Bureau of Roads Operations

Salt Management Plan



February 2020

- **Employee and Contractor Training**
- **Anti-Icing Salt Brine Implementation / Equipment Upgrade**
- **Pre-Storm Planning Weather Pavement Condition Forecast**
- **Pre-Wetting Solid Salts**
- **Equipment Upgrades**
- **Application Rate Targets**
- **Post-Storm Cleanup, Review, Tracking, Analysis**
- **Salt Dome & Salt Barn Storage ***
- **Public Education and Outreach**

Winter Salt Management Solutions

What About the Private Sector?



The screenshot shows the top of a website with a dark header. On the left is a small globe icon and the text "Winter Salts". On the right are navigation links: "Home", "Salt in Maryland", and "Public". Below the header is a large aerial photograph of a parking lot with several cars. A semi-transparent dark box is overlaid on the left side of the image, containing white text. The text reads: "Stopping Overapplication", "A major source of winter salt overapplication is commercial parking lots.", "Both corporate and retail parking lots are often over salted because of fear of being liable for injuries. In reality, applying just enough salt to melt snow/ice will prevent slipping and sliding.", and "You can use [this](#) website to learn how to salt large surface areas."

Winter Salts

Home Salt in Maryland Public

Solutions

Stopping Overapplication

A major source of winter salt overapplication is commercial parking lots.

Both corporate and retail parking lots are often over salted because of fear of being liable for injuries. In reality, applying just enough salt to melt snow/ice will prevent slipping and sliding.

You can use [this](#) website to learn how to salt large surface areas.

Private Sector Salt Application Training & Resources

- **Commercial Applicators:** for individuals that maintain walkways, parking lots or service roads
- **Road Crews:** for individuals that operate snowplows
- **Property Managers:** for individuals who pledge to reduce salt usage on their properties and hire trained salt applicators (*MDE Winter Salts Story Map*)

Winter Salt Management Solutions

MDE Tips for Residents?

ATTACK THE SNOW LIKE A PRO! 

SHOVEL EARLY, SHOVEL WELL
Removing snow before ice has the chance to form is the best way to stay on top of winter maintenance. 

A LITTLE GOES A LONG WAY
In order for salt to be effective as a deicer, it's important to measure out the right amount (no more, no less) for the surface you need to cover.

12 oz mug = **10 sidewalk squares**
 

SPREAD EVENLY
Avoid clumps of salt. Use a handheld spreader or shaker in order to achieve an even spread where the salt granules are at least 1-2 inches away from each other. 

- Clear Walkways and other areas before the snow turns to ice to avoid the need for chemical deicers.
- Track the weather and only apply deicers when a storm is imminent. If a winter storm does not occur, sweep any unused materials and store it for later use.
- Only use deicers in areas where they are critically need and apply the least amount necessary to get the job done.
- Store deicing materials in a dry, covered area to prevent runoff.
- Reduce salt use by adding sand for traction, take care to avoid clogging storm drains. Natural clay cat litter also works well.
- If your source of drinking water is your own private well, avoid applying salt near the well head.
- Don't use Urea based fertilizers as melting agents. Runoff can increase nutrient pollution

Winter Salt Management Solutions

Montgomery County Winter Salt Management

DEPARTMENT OF ENVIRONMENTAL PROTECTION
MONTGOMERY COUNTY • MARYLAND

Contact DEP | County Home


Watershed Restoration Home | Learn | Take Action | Restoration Projects | Contact DEP

Winter Salt Management


Road salt (sodium chloride) can be a very useful tool for keeping our roads and walkways safe in winter. However, using salt to melt ice corrodes cars, rips and destroys, poses dangers for pets and wildlife, damages surrounding plants and lawns, and harms our local streams and rivers. It can even contaminate our water supply. As Montgomery County grows, salt levels have been steadily increasing in our waterways. Once in our waterways, salt is extremely difficult and expensive to remove.

By using the right amount of salt, or using salt alternatives, we can all get the job done, ensure safety, and reduce damage to our environment. This website provides tips and best practices to follow when winter weather strikes. For additional information about winter weather in Montgomery County, such as school closures and plowing schedules, please visit MCDOT's Winter Weather Information Portal.

Don't Be Salty... Be Salt-Wise!




Tips & Best Practices for Residents, Businesses & Property Managers




Tips & Best Practices for Snow Removal Professionals


It's as easy as 1,2,3...



Shovel Right Away



Melts 10 Sidewalk Squares



Sweep and Reuse

Winter Salt

- Winter Salt Home
- Residents, Businesses & Property Managers
- For Snow Removal Professionals
- Hiring Winter Maintenance Professionals
- State and Local Agencies

Water Home

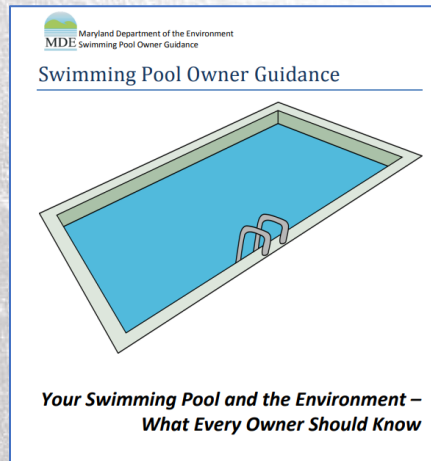
- Streams & Watersheds
- Stormwater Management
- RainScapes
- Recreation
- Water Quality Protection Charge
- Education & Volunteer Programs

Explore DEP


- DEP Home
- Trash & Recycling
- Sustainability
- Watershed Restoration
- Water Supply & Wastewater

Other Info!

Water Treatment Systems Regeneration: On Demand or Clock/Timer System?
Swimming Pools, Hot Tub/Spas Discharges: Covered by MD GP 12SI Permit




[MDE Homeowner Swimming Pool Guidance](#)



**Stormwater Pollution Prevention
Best Management Practice (BMP/General Guidance)**

Material Storage: SALT PILES

DESCRIPTION AND PURPOSE
De-icing chemicals are used each winter on roads, parking lots and sidewalks in Maryland. Sodium chloride (salt) is the main chemical used. Proper use and storage of salt will reduce the chance of high chloride concentrations in runoff that may damage the environment.



Winter Salt Management Challenges & Solutions

Questions?

Winter Salt Management Challenges & Solutions

Sources

Kelly, V.R., Findley, S.E.G., Weathers, K.C. 2019. Road Salt, The Problem, The Solution and How to Get There”, Cary Institute of Ecosystem Studies

Maryland Department of the Environment, 2022, January 14, Press Release “Maryland Increase Alternatives to Road Salts to Advance Environmental and Transportation Goals, Maryland.gov

Maryland Department of the Environment, 2022, Water Quality Maps, Chloride Impairments

Salt Truck – Maryland Department of Transportation

MDE Winter Salts webpage, MDE Winter Salts Story Map

Carroll County Department of Public Works, Bureau of Roads Operations, 2019 Carroll County Salt Management Plan