Maryland Reduces Use of Road Salts to Protect the Environment and Public Health

Residents urged to stay safe in winter weather but cut back on salt when possible

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**BALTIMORE, MD (January 18, 2019)** – As winter weather impacts the state, Maryland is working to reduce the use of road salts that can threaten public health and the environment – including the water that we drink – while keeping traffic moving safely.

The Maryland Department of the Environment (MDE) is 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. MDE has been working for several years with state agencies and local jurisdictions on best practices for salt application, including use of improved weather forecasting, using the right amount of salt, targeting roads in most need of treatment, using brine to reduce overall salt usage and increasing training for employees and contracted equipment operators. The Maryland Department of Transportation State Highway Administration (MDOT SHA) employs a range of strategies to reduce its use of salt while continuing to keep roads safe – and over the past five years has reduced its overall salt usage by half.

“The Maryland Department of the Environment congratulates and thanks the State Highway Administration for leading by example when it comes to reducing the use of road salts that can threaten public health and our environment,” said Maryland Environment Secretary Ben Grumbles. “This winter, we urge all Marylanders to make smart decisions on the use of de-icing chemicals to help protect aquatic life and drinking water quality without ever compromising public safety.”

“MDOT SHA leverages innovation, modernized tools and continual training for the responsible use of salt on the network,” said MDOT SHA Administrator Greg Slater. “The health of the Chesapeake Bay watershed and Maryland’s environment is something we all value, and we prioritize that philosophy as we balance treatment of the roads for safety and an overall reduction in salt usage.”

Clearing roads and highways of ice and snow helps to ensure safe travel and the timely transportation of goods and services to keep Maryland’s economy moving. Sodium chloride – or salt – is effective, relatively inexpensive, readily available and easily stored. But salt can destroy a soil’s structure and cause erosion, can damage and kill vegetation and can contribute to the corrosion of metal bridges and motor vehicles. It

can also seep into groundwater and run off into surface waters, contaminating wildlife habitat and potentially affecting drinking water.

Some Maryland streams are identified as being polluted by chlorides, which affects freshwater aquatic life. MDE has increased monitoring for chlorides to gain information that can be used in developing restoration plans.

Salt in drinking water can be a health threat to people on sodium restricted diets due to concerns about high blood pressure. Chloride can add a salty taste to water and corrode pipes. Road de-icing can cause increases in sodium and chloride concentrations in drinking water reservoirs, rivers that are sources of drinking water and private and public water system wells.

MDOT SHA has moved to using proactive strategies to reduce road salt use. The agency uses salt brine – a liquid solution that is 22 percent salt and 78 percent water – before, during and after winter weather events. Pre-treating roads with brine prevents the initial bonding of snow or ice, giving road crews time to mobilize. The agency now has three “tow plows” – separate plows towed behind a salt/plow truck to clear an additional travel lane – which enhances snow clearing operations. More plowing means less salting.

MDOT SHA has also designated routes where only salt brine is used for the duration of a storm, using less salt overall when compared to routes where rock salt is used. The agency pre-wets rock salt to reduce the “bounce and scatter” effect of salt solids ricocheting off the highway. MDOT SHA also works with weather forecasters to develop a treatment plan and employs nearly 100 infrared sensors at key locations, along with mobile sensors, to determine conditions and target its storm deployment – greatly contributing to salt reduction efforts.

MDE, in addition to its work to monitor streams to help improve water quality, has issued municipal stormwater permits to the largest local jurisdictions that include requirements for programs to reduce winter de-icing materials used. The next round of municipal stormwater permits will build on the lessons learned to require improved road salt management strategies and additional water monitoring plans to measure environmental progress.
Many Maryland residents use salt to reduce ice accumulation on steps, walkways and driveways. In addition to the effects on water quality and vegetation, de-icers can also be dangerous for children and pets. Tips for reducing or eliminating the use of excessive de-icers at home include:

- 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 material and store it for later use.

- Only use de-icers in areas where they are critically needed and apply the least amount necessary to get the job done.

- Store de-icing materials in a dry, covered area to prevent runoff.

- Reduce salt use by adding sand for traction, but 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.

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**About Author**

by Jesse McKinney

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Road crews cut back on salt in Maryland

By Michelle Basch | @MBaschWTOP
December 15, 2016 4:56 am
WASHINGTON — In an effort to be more environmentally friendly, the Maryland State Highway Administration has reduced its use of road salt by 40 percent over the past three winters.

And the agency is working to cut back on salt even more in the future, said the MSHA's David Coyne.
“It’s about what’s the least amount of salt we need to use, while still ensuring the public safety during winter events,” Coyne said.

Road salt that’s used in winter can add up to high concentrations that can harm plants and waterways. MSHA’s effort to cut back is part of Maryland’s Statewide Salt Management Plan (http://roads.maryland.gov/oom/statewide_salt_management_plan.pdf).

In place of rock salt, the administration is expanding the use of brine, the mix of salt and water that’s used to treat roads before a storm. Such a solution also appears to be effective when squirted on snow during a storm.

“There’s been a lot of study nationally as far as looking at winter application routes where there’s actually spray trucks going out and spraying the routes with liquid only, not putting the rock salt down. And that’s also shown early promise to reduce salt usage while still maintaining effectiveness for public safety,” Coyne said.

That’s why MSHA will be experimenting more with brine this winter.

“This is the first winter where … each county will have one [secondary] route that they designate as liquid-only,” Coyne said. “There’ve been several winters that we’ve tried it in certain areas. Down in our La Plata shop, down in Charles County, they’ve been using it for several years.”

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Maryland Roads on a Reduced-Salt Diet

The state has a new, more environmentally friendly way to fight snow and ice

By Bob Melamud

Now that winter has come to Maryland, the State Highway Administration is hard at work keeping our roads free of snow and ice. Snowplows are a familiar sight after a heavy snowfall. But just as much work goes on before the cold stuff even starts to fall. As soon as snow, sleet or freezing rain is forecast, fleets of trucks lay a preemptive layer of de-icers.

Salt is the tried-and-true ingredient for fighting snow and ice on roadways. It’s effective, but it has its costs. The environment suffers from the increased salinity and from the byproducts of a fleet of diesel trucks spreading hundreds of tons of salt. There are also costs to our wallets, as our tax dollars buy the salt and equipment, the maintenance and labor to spread it.

Targeting a 30 percent reduction in salt usage without compromising motorist safety, the Maryland State Highway Administration, along with most county and city departments, are developing new techniques to treat roads.

The Recipe

You wouldn’t expect water to be the key ingredient to lessen salt. But use the right ratio of water to salt, and you save salt and the costs of depositing it. The perfect brine is 27 percent salt and 73 percent water.

Historically, roads were treated with salt after snow started to fall. By then, snow and ice have bonded to the pavement. It takes more salt to break this bond than to prevent it.

Now when snow is forecast, special tanker-trucks with pumps and spray nozzles filled with salt brine move out to coat the roads. The snow and ice never bond to the road, so less total salt is required. The technique is called pre-wetting, with trucks spraying brine in a pattern of stripes, eight to 10 per lane at about a foot apart.

Salt is still applied, but it, too, is pre-wet. Previously, dump trucks lost nearly 30 percent of salt off the road. No more. Now, traditional salt spreader trucks are being equipped with saddle tanks and nozzles. Water is sprayed on the salt as it exits the truck. Pre-wetting both hurries melting action and reduces salt “bounce and scatter.”
Spreading the Good News

Five years ago nobody had heard of brine spraying. But after proving its effectiveness the last few winters, the State Highway Administration is now pre-treating all state highways. The Glen Burnie facility has four brine-spraying rigs; statewide there are 14. This winter 550 battle plows — 50 more than last year — are equipped with saddle tanks for pre-wetting salt. To support the fleet, the state has built 15 brine-mixing facilities, with 77 storage sites spread locally. Almost 1.4 million gallons — about 30 percent more than last year — of brine have been mixed and stockpiled. A mobile brine-making machine is being test-piloted in Garrett County.

County and local departments are following suit. “The Maryland State Highway Administration is committed to sensible salting and an overall salt usage reduction throughout the state,” says spokesman Charlie Gischlar.

Innovation continues. A new technique, called liquid-only, has graduated from a pilot program to mainstream. The former protocol pre-treats roads with brine before the storm and then spreads granular salt during or after the storm. In the liquid-only method, pre-treatment will be followed with more brine, no solid salt.

This year, each of the State Highway Administration’s seven districts has at least one liquid-only snow route. In Anne Arundel County, the routes include Rt. 10 between Rt. 2 (Richie Highway) and the Baltimore beltway, and parts of Rt. 176 (Dorsey Road). In Calvert County most of Route 2/4 will receive this treatment. To support this new technique, an additional 200,000 gallons of brine have been deployed across the state.

Salt Per Mile Per Inch

Measuring the effectiveness of these new techniques is difficult because every winter and every storm is different. Year-to-year changes in salt usage are mostly due to weather. The Highway Administration is seeking a better evaluation by tracking pounds of salt used per mile of road per inch of snow fallen.

Last winter was a pussycat. State expenditures on snow removal were half of the prior three years. Salt usage was barely 20 percent of that used for winter 2013-’14. My snow blower sat lonely and untouched in my garage all winter.

This winter is already a different story. Preliminary numbers are looking good. The 30 percent salt reduction goal is being met, costs are dropping and the environment is suffering less salt — with no loss in road safety. That’s good news — if only they could treat my driveway.
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12:00pm
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