

Road salt and the environment

By Martina Rowley

This year's winter is predicted to be long and very snowy, if the long-range forecast and early snowfall are anything to go by. Wherever there is snow, humans and traffic, there is road salt. And that can be a problem.

We need it to enable traffic flow and prevent accidents and injuries. The American Highway Users Alliance found that road salt reduces collisions by as much as 85 percent. Sadly, it wreaks havoc on our infrastructure, the animal and plant environment, as well as our drinking water.

Road salt 'burns' trees and gets absorbed into roadside plants and then licked or eaten by wildlife or accumulates in aquatic ecosystems, where it is toxic to freshwater fish.

Phil Bird, watershed monitoring specialist with Credit Valley Conservation authority (CVC) says, 'Chloride is toxic to freshwater mussels and fish.' Canadian guidelines recommend a maximum 120 mg chloride per litre of water in our streams but local real-time monitoring from CVC's 11 stations shows much higher readings. Summers show around 240-340 mg/L and winter readings between 350-400+ mg/L, with local urban streams having concentrations similar to seawater, and steadily increasing every year since the 1960s.

Salt runoff also contaminates the soil and gets into our groundwater and wells, turning drinking water saltier and potentially exacerbating health issues like diabetes or heart disease. Municipal data shows average chloride concentrations in our water wells has increased over 125 per cent in the last 15 years. Fully 50 percent of salt runoff comes from parking lots, and another 25 to 30 percent from roads. 'People don't realise when they're salting that it ends up in our drinking water', Mr. Bird says. Salt from household water softener installations also contribute to these levels.

The damage is also expensive. Infra-structure like roads and bridges deteriorate faster, as do the under-carriages of cars and trucks, all requiring more frequent and costly repairs. The salt itself also costs a fair chunk: in 2018 the Town budgeted \$250,000 for salt (3,500 tonnes), according to the General Manager of Infrastructure Services. It comes from Windsor or Goderich and is mixed with equal amounts of sand. By comparison, Toronto spends \$10-12 million each year on around 125,000 tonnes salt.

Once snow piles reach a certain height and become a visual or physical obstruction to road safety they get removed and dumped at a location on Lackey Drive. Interestingly, local water testing of Mill Creek has shown no localized increase in salt levels as a result.

What can be done? Before you spread salt on your path, driveway or parking lot clear the snow as much as you can. Use salt sparingly - a little goes a long way - and don't spread it near your plants. The Town already uses a 50:50 salt/sand mix. Reduce ice build-up by ensuring any meltwater drains from your walkways and driveways. Landowners of large lots should note that spreading more salt doesn't increase its efficacy - in fact the opposite is true. Research shows it creates a slimy, slippery surface. When storing large piles of salt, keep them covered and away from drains, catchbasins and creeks.

Use the right salt for the right temperature. A pollution prevention factsheet by CVC lists the most suitable temperature range. The most common salt - sodium chloride or rock salt - is only effective down to -9.4° Celsius and contains cyanide and chlorine. Calcium Chloride works to -31.7°C and requires lower doses, contains no cyanide but also contains chlorine. Calcium Magnesium Acetate is the least toxic but only effective between -4 and -6°C. See the Town of Orangeville's 'salt pamphlet' for more information.

Non-saline alternatives cost more but cause less damage. For commercial applications, spraying salt brine before a storm requires significantly less product. Sweep up considerable amounts of remaining salt after a melt and re-use it, and consider low or non-chloride-based options, such as Calcium Magnesium Acetate (CMA) and Potassium Acetate (KAc). For home use, consider

using sand or kitty litter. Local municipalities have even been looking at creative alternatives, testing food-based options like pickle brine, potato juice, beet juice and even cheese brine; it is certainly a tastier and more harmless alternative ? as long as it works!