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### Road Salt – The Unlikely Danger to Wildlife

In Canada, a country that is known for its snow and harsh weather, there has been a multitude of solutions designed to avoid the issues consequent to the frigid winters we suffer through every year. One of the most common is road salt: a seemingly harmless tool to make sure driveways do not have black ice and the snow is easy to shovel. What most Canadians do not know, however, is how harmful this product can be - not only to our shoes but also to our wildlife and rivers. As climate change continues to affect our weather and environment, leading to massive snowstorms, fewer and fewer Canadians are being made aware of the harmful effects of road salt and the solutions to this issue.

Collectively, the rivers in Canada make up 25 main watersheds, spread throughout the country; Ontario houses the most significant - the Great Lakes watershed. Humans have inhabited this historic area for over 10,000 years. The Great Lakes hold over 18% of the world's freshwater and is one of the largest freshwater ecosystems in the world with over 250 species of fish and countless wildlife. All of these are freshwater species that cannot survive in waters with a high salt concentration and because of the intricate roadways lining the Great Lakes road salt has made its way into this ecosystem.

Road salt, the most commonly used being sodium chloride, is toxic to wildlife. According to WWF-Canada (World Wildlife Fund Canada), chloride contamination from excessive road salt use is a big threat to wildlife and the health of our creeks, rivers and lakes. This has caused many fish to turn up dead. More shocking is the fact, that because of this higher salt concentration saltwater species are able to survive in the waters of the Great Lakes. At high concentrations, salt can be fatal to some aquatic animals;

it can also change the way the water mixes leading to the formation of salty pockets near the bottom of lakes - creating biological dead zones.

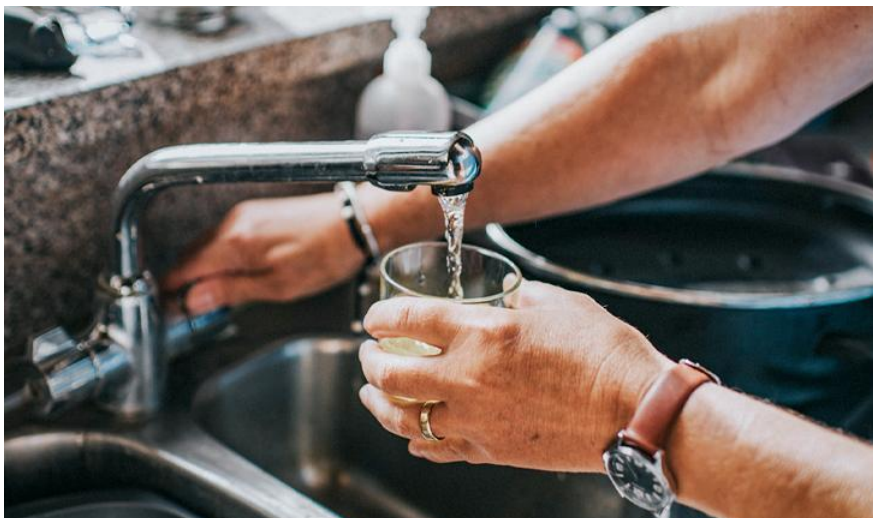


In Canada, approximately five million tonnes of road salt are annually introduced into the environment. Although most end up in water bodies across the country, a significant amount seeps into the soil; this diluted salt harms the vegetation. This is most apparent in the spring. In fact, the MWC (Muskoka Watershed Council) often fields questions in the spring about why trees along roadways have brown leaves or needles and prevention strategies regarding this. Road salt can damage plants in a number of ways. Salt accumulates in the soil where it breaks down into its two components, sodium and chlorine, both of which impact the plants differently. In exceptionally serious cases, chlorine ions in the soil are absorbed by the tree, travel along with the sap, and concentrate in shoots - preventing bud openings. As this occurs, the chlorine is transported to actively growing leaf margins where it causes leaf scorch, curling and death. Sodium ions in the soil follow the same route as the tree's nutrients, blocking the transportation of magnesium and potassium, both of which are necessary for the production of chlorophyll. The resulting potassium deficiency will inhibit the tree's resistance to drought and disease.



Although the death of trees is not as alarming as fish, the situation is just as impactful to the health of the environment. The trees in Canada have long been supplying people in Canada with food and heat, controlling soil erosion, improving water quality, providing habitat for many species, and supporting biodiversity.

While many people feel sympathy for the wildlife, many are more concerned with the impact on their own lives. Often overlook the fact that this salt does not only end up in water that the fish are affected by; it is also in Ontario's drinking water. Future predictions indicate that by 2050, salt concentrations in the United States freshwater lakes will exceed the limit for healthy aquatic life, as well as good tasting drinking water. As its geographical neighbour, Canada will follow the trend and experience the same problems. This issue can already be observed by comparing the taste of water from the countryside wells to bottled drinking water. Keeping our freshwater lakes clean is critical for protecting ecosystem services that the freshwater lakes provide, such as drinking water, fisheries, recreation, and aquatic habitat.



With such a large environmental and societal impact, there are a few strategies we can employ to help tackle this issue. Following guidelines in salt use, it is surprising how many people overuse road salt. Minimize the amount used and shovel the snow where possible instead of employing road salt and similar products. It is vital to know when road salt can be used and when it cannot: road salt is less effective below 10 degrees celsius and becomes completely ineffective below 20 degrees celsius (City of Toronto 1998 - 2022).

Some communities in Canada are looking for more environmentally friendly solutions; things such as beet wastewater, cheese brine, pickle juice, and potato juice are some of the natural de-icers being tested. One caveat of these products is that they might introduce sugar into the freshwater lakes leading to bacteria growth. Other solutions include solar panels in roads to melt snow, replacing the need for road salt; this is already being used in heated driveways.

Presently, we need to be mindful of the road salt we use to protect our freshwater lakes, A Canadian environmental gem and keep our wild aquatic life safe. Every little step is a contribution to a much bigger future.

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