THE EFFECTS OF ROAD SALTS ON OUR RIVERS AND LAKES

Watersheds
CANADA

ROAD SALT POLLUTION

Road salt pollution is an escalating concern in Canada. Each winter, **millions of tonnes of salt are spread** on roads to combat ice and snow, ensuring driver safety. However, this temporary solution **poses long-term environmental threats.**

As temperatures rise, the melted snow carries the salt into waterways, **affecting aquatic life and freshwater resources**. Elevated sodium and chloride levels can harm plants, deteriorate infrastructure, and threaten drinking water supplies.

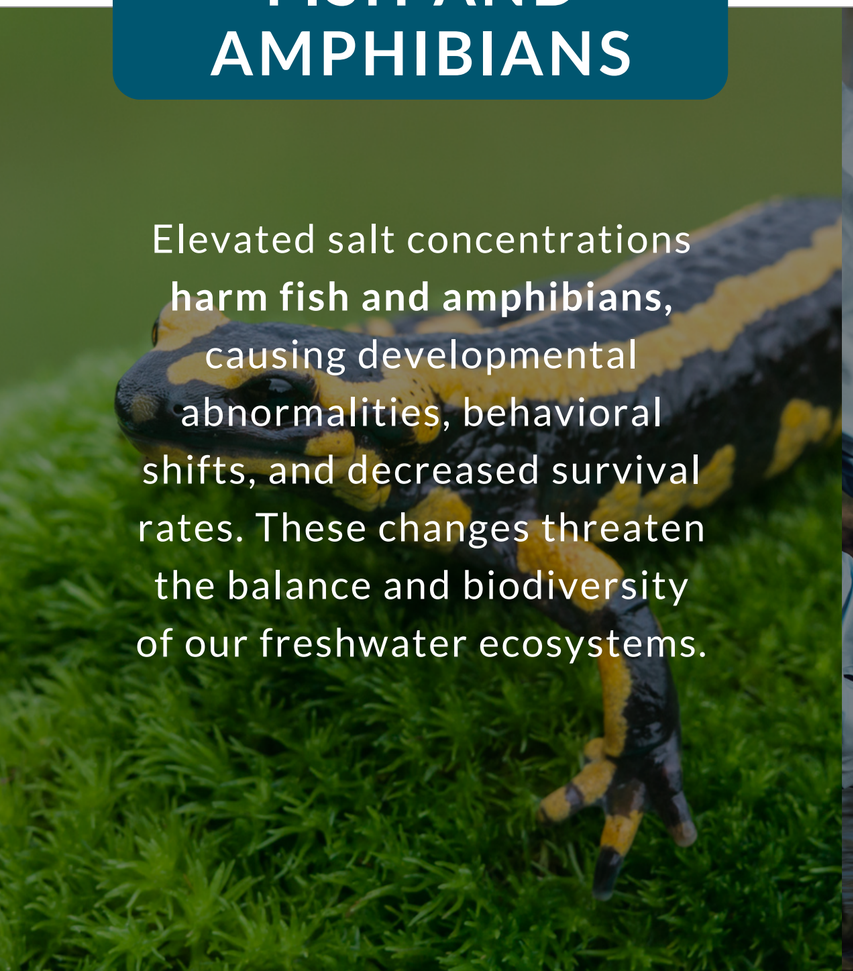
ROAD SALT USAGE IN CANADA

Canada annually applies over **5 million tonnes of road salt,** with Ontario and Quebec leading in usage. Over the past decade, there's been **a steady increase, reflecting our growing urban areas and transportation networks**.

With Canada's vast landscape of lakes and rivers, the potential impact of such pollution is significant. Addressing this issue requires a balance between public safety and environmental preservation.

ENVIRONMENTAL IMPACT: AQUATIC LIFE

FISH AND AMPHIBIANS



Elevated salt concentrations **harm fish and amphibians,** causing developmental abnormalities, behavioral shifts, and decreased survival rates. These changes threaten the balance and biodiversity of our freshwater ecosystems.

OXYGEN DEPLETION

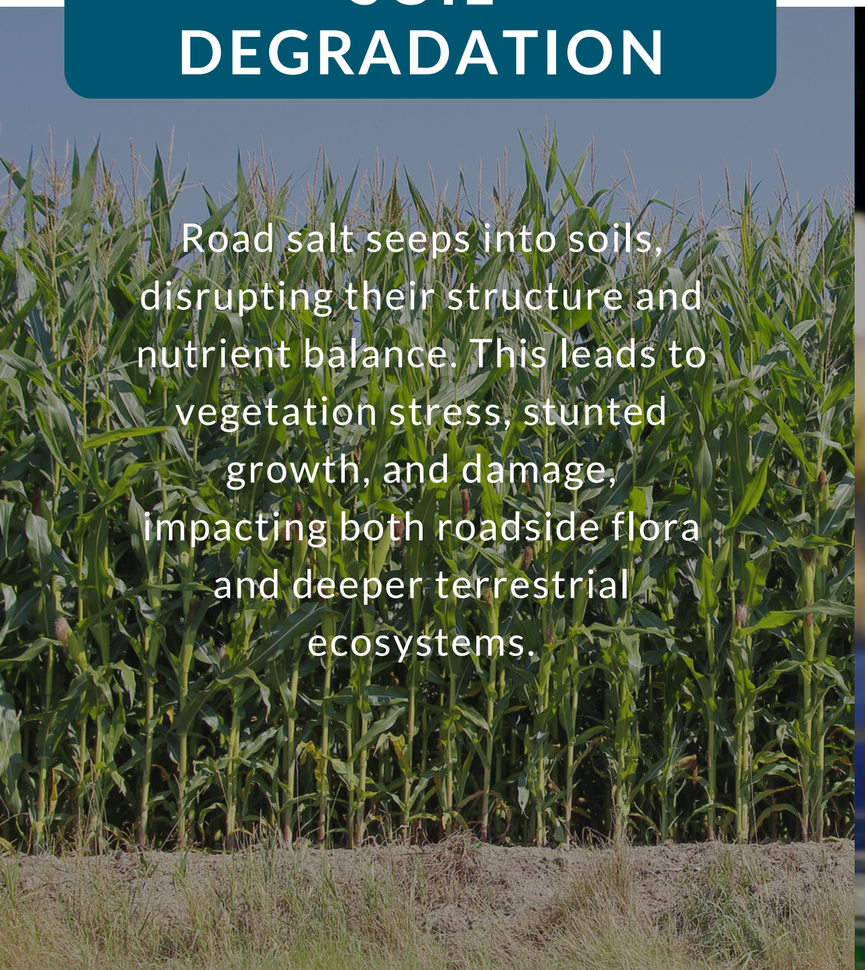
Road salt runoff increases water salinity, leading to stratification. This prevents natural water mixing, **causing oxygen depletion in deeper layers.** Such low-oxygen zones threaten aquatic life, disrupting ecosystems and potentially leading to loss of biodiversity.

ALTERED FOOD WEB

Salt-tolerant species may thrive, overshadowing sensitive ones. This imbalance can ripple through the ecosystem, affecting species interactions, predation rates, and overall biodiversity.

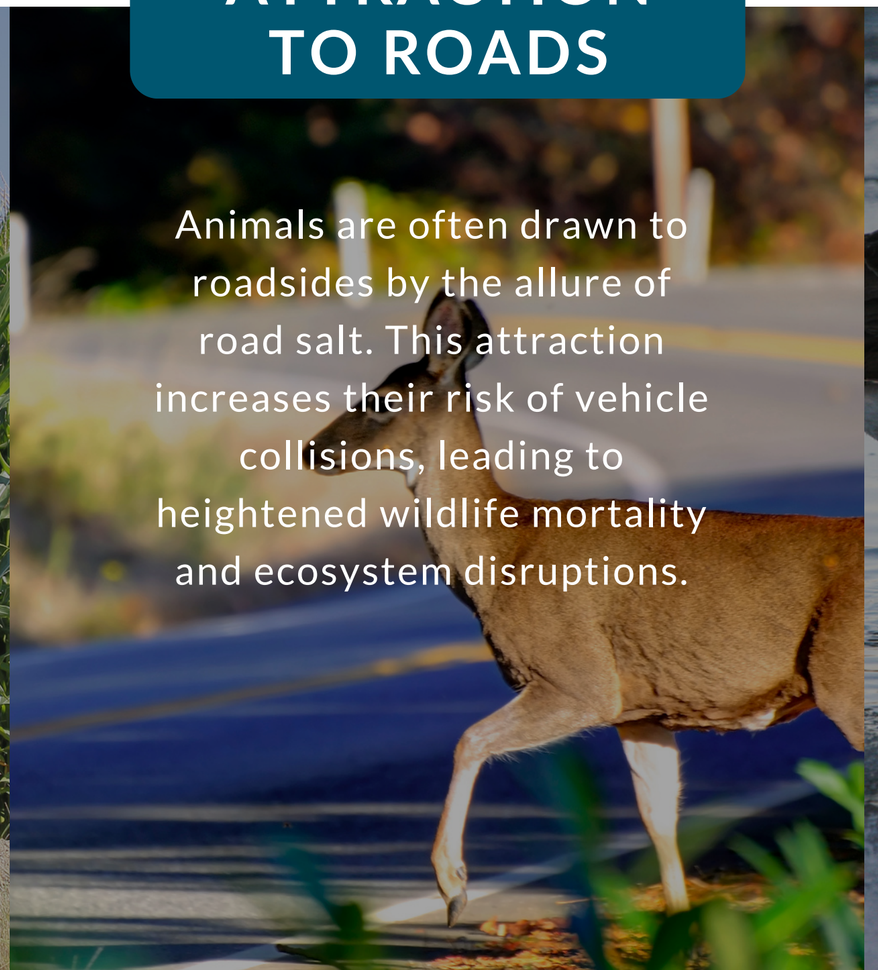
ENVIRONMENTAL IMPACT: TERRESTRIAL LIFE

SOIL DEGRADATION



Road salt seeps into soils, disrupting their structure and nutrient balance. This leads to vegetation stress, stunted growth, and damage, impacting both roadside flora and deeper terrestrial ecosystems.

ATTRACTION TO ROADS



Animals are often drawn to roadsides by the allure of road salt. This attraction increases their risk of vehicle collisions, leading to heightened wildlife mortality and ecosystem disruptions.

BIRDS AND MAMMALS

Birds and mammals ingesting road salt can experience physiological stress and dehydration. Overconsumption may lead to health complications, altering feeding patterns and reducing overall survival rates.

BEYOND THE NATURAL WORLD

Our infrastructure, particularly bridges and roads, faces accelerated degradation due to salt exposure.

This not only shortens the lifespan of these structures but also leads to increased maintenance costs.

EFFECTS ON HUMANS

Over time, the use of road salts can lead to elevated **levels of sodium and chloride in freshwater sources.** This can pose **human health risks.** High sodium levels are a concern for individuals on sodium-restricted diets due to hypertension or other cardiovascular conditions.

Additionally, the increased chloride concentrations in drinking water can lead to a more corrosive environment within water distribution systems. This corrosiveness can leach heavy metals, such as lead and copper, from aging pipes and plumbing fixtures, introducing them into the water supply.

THE CASE OF LAKE SIMCOE

Lake Simcoe, a vital freshwater resource in Ontario, exemplifies the challenges of road salt pollution. With rising chloride concentrations, the lake's delicate ecosystem faces disruption. If current practices do not change, it is projected to reach critical levels by 2050,

Fish populations, aquatic plants, and overall water quality are at risk. Lake Simcoe's experience underscores the broader implications for Canada's freshwater bodies and the urgent need for sustainable road salt management.

ROAD SALT MANAGEMENT IN CANADA

Canada's approach to road salt pollution is guided by the “Code of Practice for the Environmental Management of Road Salts.” While it emphasizes best practices and reporting, its compliance is only voluntary, and it has failed to have the appropriate results.

The challenge lies in balancing road safety with environmental protection, prompting a call for more robust regulations and consistent adherence.

REMEDIATING ROAD SALT POLLUTION

Road salts easily infiltrate groundwater systems, which are typically slow-moving. Contaminants like road salt can persist for long periods, leaching slowly into rivers and lakes. This makes remediation challenging.

To date, the only viable solution is using less. This will demand a combination of adoption of best practices, effective policy, and public awareness:

- Improved plowing techniques.
- Advanced forecasting & targeted application.
- Application of road salts with other de-icing agents.
- Public awareness campaigns to educate individual users and to demand better policies.
- Research and development to innovate new de-icing materials, and further understand impacts.
- Support Landscape Ontario's liability system reform plan by balancing risk to all involved in site management.

CHARTING A SUSTAINABLE FUTURE

The extensive use of road salt presents both challenges and opportunities. As we recognize its environmental and infrastructural impacts, the path forward demands innovation, collaboration, and public awareness.

By embracing sustainable alternatives and refining best practices, Canada can ensure winter road safety while preserving the health of its ecosystems, infrastructure, and communities for generations to come.

WHO WE ARE

Watersheds Canada is a national charity focused on protecting our nation's lakes, rivers, and shorelands. In partnering with community groups, families, shoreline property owners, municipalities, and organizations, we are delivering critical habitat restoration and education outreach programs to protect our freshwater areas for generations to come.

Learn more about this campaign: watersheds.ca/salt

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