



## **10 million gallons of mag chloride Concerns about de-icer won't go away - 1/17/03**

[Bob Berwyn](#)

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Salt may be fine on your fries, but it's not exactly good for rivers and streams, according to a comprehensive five-year study of chemical highway de-icers conducted by Environment Canada.

Acknowledged as the most in-depth research to date, the Canadian study found that road salts like sodium chloride (table salt), calcium chloride, potassium chloride and magnesium chlorides are toxic to the environment, especially in large concentrations. Researchers did not find any discernable impacts to human health, but determined that road salt may extract arsenic and other heavy metals from sediment at the bottom of lakes and rivers and re-introduce it to the water column.

That means even if the salts aren't directly having a detrimental impact, the secondary effects could occur without being directly attributed to the use of de-icers.

The Canadian scientists also declared that road salts at concentrations of 1,000 milligrams per liter for one week is lethal to rainbow trout. About 10 percent of all aquatic species are affected by prolonged exposure to concentrations greater than 220 milligrams per liter.

It may be rare to ever find road salts in those concentrations in local streams and rivers, but it's impossible to know for sure, since the Colorado Department of Transportation (CDOT) does not currently have any ongoing monitoring efforts in place. Other water quality monitoring programs would certainly detect unduly high levels of salt, but there is no program aimed specifically at measuring the impacts of magnesium chloride to water quality.

Most needed is spot-monitoring during times when there may be peak concentrations of salts being washed into local waterways, said Steve Glazer, a Sierra Club water expert in Crested Butte. Without a good monitoring program,

it's impossible to know whether such episodic events are having an impact on water quality.

CDOT expects to use about 10 million gallons of the liquid this winter, up from 9.4 million gallons last year. Applying the chemical to roads before it snows helps prevent the formation of ice. CDOT officials say they've been able to measurably reduce traffic accidents along Interstate 70 by using magnesium chloride. In the Glenwood Canyon segment, the number of accidents has declined by 70 percent in the past few years, said CDOT spokesperson Stacy Stegman, acknowledging that relatively mild winters likely played a role in those statistics.

"There is more of a push toward using liquid de-icers," Stegman said, explaining that all CDOT's studies show that using the chemical is the best, most environmentally sound option. "It's not perfect, but it's the best out there," Stegman said.

While CDOT is not monitoring for impacts to water quality, the agency this week will announce a new study that seeks to gage the effects of magnesium chloride on roadside vegetation - among the repeated complaints about the **sticky brown stuff is that it kills trees**. Several Colorado communities have asked the state to refrain from using mag chloride within their jurisdiction.

Stegman said the study - set to begin in March - will assess the damage to roadside vegetation and seek to identify mitigation strategies. That's one of the topics that will also be on the agenda at a Feb. 7 conference on road salt in Minnesota, organized by the Freshwater Society ([www.freshwatersociety.org](http://www.freshwatersociety.org)).

"We'll be looking at several reports, including information on what kind of vegetation to plant along roads that could create a natural buffer," said Jeanne Prok, the conference organizer. Prok said there will also be plenty of information on what alternatives there might be to road salts, and to pinpoint best management practices pertaining to storage and application of the chemical. That includes locating snow dumps away from rivers and groundwater recharge areas, more efficient application of road salts, better storage practices, and collecting and treating road runoff.

***Prok said it's not only the salt that's of environmental concern. Some of the materials mixed into the goo to prevent caking are cyanide derivatives, she explained.***

One Canadian study showed that, when salt-laden water enters a pond or lake it sinks to the bottom and prevents the normal water-mixing process, thereby depriving bottom-dwelling organisms of a fresh supply of oxygen. Those bugs that live in the riverbed or lake-bottom form the base of the aquatic food chain.

The water within the sediments can also attain high concentrations of salt, which, in turn, increases the concentration of heavy metals, already a concern in some local streams tainted by runoff from abandoned mines.

According to the Environment Canada Web site, the agency is working with other jurisdictions to establish high-tech road weather information systems - automatic weather stations that use specialized sensors embedded in the road to measure surface temperature, wetness and residual chemicals. Meteorologists use the information to produce pavement temperature forecasts, which, in turn, enable road crews to better plan their winter maintenance operations. These techniques have been shown to increase the safety and efficiency of the road network, while at the same time reducing the use of de-icing chemicals.

Colorado truckers are also concerned about the use of magnesium chloride, claiming the chemical eats away at vital components, including brakes. According to a Web site maintained by the trucking industry, fleets that have been exposed to mag chloride report that their wiring systems are deteriorating at an alarming rate. Maintenance people believe the chemical works into connection points and eats away at copper wiring.

Some truckers say corrosion in structural elements that could lead to catastrophic failure at highway speed. One maintenance vice president at a national LTL fleet described pushing his pen clean through a structural element on a trailer suspension that he believes had been rotted by mag chloride.

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