



# Question: Could ice-control products used on county roads destroy trees growing along the roadway?

This is a question that has come up over time, especially recently with the hazardous tree removal project on parts of Chumstick Highway near Leavenworth. About 130 trees growing in the county right-of-way were identified for removal because they were dead, dying or structurally damaged. The trees posed a potential threat to drivers.

In the Chumstick project, a licensed arborist determined that damages to the trees were caused by drought, disease and a beetle infestation.

When it comes to ice and snow removal, Chelan County Public Works follows much of the same policies as WSDOT, a nationally recognized leader in the study of the environmental impacts of salt and anti-icers, chloride corrosion to vehicles and infrastructure, and the comparative benefits of various anti-icing products.

WSDOT began reviewing the impacts of roadway salts because many existing studies are from the middle and eastern parts of the United States, where agencies use considerably more salt in their operations. The studies were not applicable to Washington or the country's western region.

So for 10 years, WSDOT has been studying the effects of roadway salts on vegetation growing adjacent to roads at 50 sites throughout the state. Sites are sampled twice a year to measure chloride concentrations. Studies include soil and water samples as well as tissue samples taken from trees.

Like the Chelan County Public Works roads program, WSDOT utilizes salt as its melting agent and as a liquid anti-icing agent. Both agencies also utilize a pre-wet system on the salt as

it is spread. The pre-wet system not only minimizes the amount of salt that bounces off the road but it also more quickly activates the melting process.

WSDOT reports that its study results have not found high enough amounts of salt that would be detrimental to evergreen or deciduous trees from root uptake, the process plants and trees use to take water from the soil.

Even if a tree was located in standing water in a depression along a roadway, it is unlikely that it would die when subjected to road salt because salts have a tendency to move rapidly through the soil structure and continued water would dilute it more, according to a WSDOT arborist.

The WSDOT research shows that trees may exhibit a browning of the needles, as can be seen on the various mountain passes in Central Washington; however, the browning is not caused by salt uptake from the roots.

This phenomenon is likely caused by two things. In high-speed areas, the curl of the snow from plows travels a farther distance and can transport the existing salts onto the needles. In addition, salt can be transported in the brine condition by spray or misting from the tires of passing vehicles; the spray or misting transports the salts to the needles.

This browning is typically temporary; however, small trees may die if a majority of their needles become brown.

When comparing how much road salt WSDOT uses in its North Central Region to how much Chelan County Public Works uses on its county roads, Chelan County uses substantially less salt per lane mile than WSDOT. The ratio varies throughout the district, but in the Leavenworth District, for

example, the ratio of salt applied per lane mile is 2.5 tons. That's compared to 12.7 tons per lane mile by WSDOT. (A lane mile is the length of each lane. For example, a two-lane highway has two lane miles per centerline mile.)

Chelan County also uses less liquid salt – 82 gallons per lane mile in the Leavenworth District versus 191 gallons per lane mile in WSDOT's North Central Region.

In addition, in Chelan County product is applied on an as-needed basis during normal, 12-hour plowing operations. WSDOT follows a bare-and-wet policy that requires crews to apply, or be ready to apply, 24 hours a day, seven days a week, and multiple times a day if needed.

So while WSDOT is not seeing high enough road salt levels in the soils and water that would impact adjacent vegetation, Chelan County would expect to see even less of an impact.

In terms of the needle browning caused by the aerial transport of salts by plow curl and mist, county roadways are again different in character, speed and traffic when compared to state highways. Speed, and the ability to drive at that speed, has a great impact on the distance and height of the snow being thrown from the road and the misting produced by passing vehicles. WSDOT plows more often and has greater, faster traffic on its highways.

In conclusion, while it is feasible for some browning of needles to occur on trees adjacent to county roads, the browning would unlikely destroy those trees. It's also highly unlikely that road salt applied by county crews could destroy evergreen or deciduous trees growing along the county roads.

## More info:

[www.clearroads.org](http://www.clearroads.org)

**WSDOT Chemical Snow & Ice Control:**

[http://www.wsdot.wa.gov/NR/rdonlyres/02BBF79A-5D23-4AA3-BA45-AD69FE08B3CF/0/Folio\\_Snow\\_Ice.pdf](http://www.wsdot.wa.gov/NR/rdonlyres/02BBF79A-5D23-4AA3-BA45-AD69FE08B3CF/0/Folio_Snow_Ice.pdf)

**Strategies to Mitigate the Impacts of Chloride Roadway De-icers on the Natural Environment:**

<http://www.trb.org/Main/Blurbs/169520.aspx>