



Chelan County Snow Removal Operations

When it comes to keeping winter roads safe and drivable, the Chelan County Public Works snow removal operation utilizes three products:

Magnesium chloride is a salt-based liquid used in two ways on county roads. Using a flusher truck, it can be applied directly onto a roadway. When applied directly, motorists may see multiple stripes on the roadway. After traffic runs over the application, the liquid spreads across the width of the roadway. The liquid de-icer works to create a layer to prevent ice from forming and bonding to the pavement and prevents compact snow and ice from forming, making removal easier to perform.

Magnesium chloride also can be used as a pre-wet application to our solid product (salt). Pre-wetting salt is beneficial in two ways. Wetting salt starts the activation and melting process sooner. This makes the salt more efficient, as it is activated before it lands on the roadway. The second benefit is that pre-wet salt particles don't bounce or cast off the roadway.

Salt is also utilized directly in its solid form. It is used for compact snow and ice conditions, and is typically pre-wet with magnesium chloride, applied with a dump truck during plowing operations.

Sand is not used as often as magnesium chloride or salt because it is not a de-icer. It is used to provide traction on roadways.

Potential impacts from road salt use

The main impact of using salt during snow and ice events is the potential corrosive impacts on vehicles. Like many agencies that also utilize salt in either chemical or solid form, we recommend residents regularly wash their vehicles in the winter months.

When washing your vehicle, don't forget to wash its underside, which is most susceptible to corrosion and rust. Consider applying a coat of wax to your vehicle just before winter weather hits. Or consider having your vehicle's body oiled annually with a rust-proofing spray.

And don't forget about the inside of your vehicle. Winter boots and shoes can carry salt into a car. Use all-weather, rubber mats with high sides to protect the inside of your vehicle.

Doesn't salt harm trees?

Salt can harm vegetation and trees; however, the damage is highly dependent on the amount directly placed on or around the vegetation.

Much like our program, the local district of the Washington State Department of Transportation (WSDOT) utilizes salt both as its melting agent and as a liquid anti-icing agent. However, unlike our program, WSDOT strives to have bare and wet pavement 24 hours a day, seven days a week. This means WSDOT applies more salt per lane mile of roadway than Chelan County – on average more than three times as much.

WSDOT has been studying the effects of salt applications along its highways for 10 years at over 50 locations statewide. Monitoring in-

cludes taking soil samples at various distances from the fog line. The studies have reported no readings that have come close to levels that would impact vegetation or trees. Given that Chelan County averages a third less of tons applied per lane mile, and at most half the tons per lane mile, our salt levels would be even less.

There is a phenomenon that WSDOT has also studied called needle browning, caused by the action of plow curl or spray mist. Plow curl occurs at a higher rate of speed, when the snow is projected off the plow onto trees. The browning of the needles is caused by either the abrasiveness of the snow hitting the needles or the remnant salt deposited on the needles. Spray mist is also caused when vehicles running on wet pavement, and over residual water, during the winter create a mist from tires that then carries over to the trees and can deposit salt on the needles. Again this typically occurs in the higher speed areas. These two actions can result in the browning of the needles that will show in the spring but will not impact the life of the entire tree, given the low percentage of overall impact to the needles.

Chelan County's roadways are different than those of the state in both topography and the lower speeds on county roadways that would limit the potential for these incidents to occur.

It is important to point out that many studies on the Internet about winter de-icing products were performed in the Midwest or East Coast, where salt usage is substantially more prevalent, given their location and typically more severe winter weather.

Why aren't you using beet juice?

WSDOT has evaluated the use of beet juice as a corrosion inhibitor in its salt brine applications. (Salt brine is a mixture of water, salt and a small amount of additives such as beet juice.) The application requires a brine maker to initially mix the solution and then be applied by winter operations trucks.

Beet juice is not used to melt snow or ice. The application still requires the same amount of salt – just applied in a different form. Chelan County does not use salt brine, for reasons that include the cost for start-up, the additional vehicles that would be utilized only during the winter, and the transport of the brine throughout the county. For Chelan County, salt brine is cost prohibitive.

What is killing the trees in Chelan County?

In discussions with WSDOT and an arborist consultant recently hired by Chelan County Public Works to identify dead and dying trees, we have learned that trees dying along some of our roadways are suffering from drought, disease, and beetle infestation.

Drought and disease are more prevalent along our roadways. During the summer months, black pavement can hold and reflect heat, causing even more of an impact to adjacent trees during a drought. Trees located further into the forest, where the temperature is reduced and the forest canopy and ground cover can hold in what little moisture there is, will be impacted less. When a tree is weakened by the drought conditions, it is more susceptible to disease.