

## “Just-in-Time” Anti-icing

### Perspective

Anti-icing, or the early application of a liquid temperature suppressant chemical to a road surface, has established benefits for winter maintenance staff. Anti-icing is considered a pro-active or preventive approach to maintaining a safe driving surface in the winter. The timing of the chemical application is considered “anti-icing” as long as the application is in place before a snow floor builds on the surface.

Anti-icing requires smaller quantities of liquid chemical to prevent snow-pack than to remove snow-pack once it has occurred. Once a snow floor has been established on a highway the condition becomes re-active. Re-active conditions require the application of abrasives for temporary traction or increased quantities of solid chemicals to burn through the snow floor in an attempt to regain the traction of a bare pavement.

The use of liquid chemicals (magnesium chloride specifically) has caused a great concern to the public. Some of their concerns are real and others are from partial truths and perceptions. They are primarily about vehicle corrosion, human health, environmental damage and so forth. MDT has to consider our customer’s concerns, real or otherwise, when using winter chemicals. We need to be sensitive to individual concerns and yet not sacrifice our commitment to all Montanans to provide a safe roadway in winter conditions. It is MDT concern and commitment to human health, safety, sensitivity to the environment and quality that has generated our use and dependency on winter chemicals.

### Weather forecasts

A major component in the winter maintenance program, and anti-icing specifically, is weather forecasting. The mountainous nature of a good portion of Montana makes detailed accurate weather forecasting difficult for the whole state. Winter maintenance employees depend on accurate forecasts for application of anti-icing chemicals. However, numerous times we have applied a liquid anti-icing treatment to a roadway in advance of a forecasted storm only to have the storm not materialize.

The results of this can be,

- Distrust of MDT by the traveling public. They simply wonder what we are doing and why. Assumptions are made such as, “they have to use it up so they can get more” or simply considering us as inconsiderate and ignorant. The minimum result of this practice is confusion to an uninformed public.
- Loss of product applied due to tracking of product by vehicles. We see the tracking of product from vehicles turning on to side streets making bare wheel

tracks on otherwise snow-packed surfaces. If 10% of the total product applied statewide were lost to events that did not show up, that would be 300,000 gallons or \$120,000.

- Inconvenience and increased corrosion to vehicles. It's one thing to get magnesium chloride on your vehicle during a snowstorm and an entirely different situation when it happened with no storm at all. To reduce magnesium chlorides corrosive affects, it must be washed off. Sometimes washing is impossible, inconvenient or costly depending on the size of the vehicle.

In an attempt to reduce the unnecessary washing, loss of tracked product and confusion, we won't apply chemical unless a storm is actually taking place.

MDT forces will continue to apply chemicals in an anti-icing capacity but only "just-in-time". A forecast of an eminent storm will cause maintenance forces to;

- Ensure staff is notified and ready to come to work. In some cases this means actually being called to work.
- Ensure equipment is in operating condition and available to apply product.
- Ensure materials are on hand to do the job.

Once a storm actually begins, we will begin applying product. If it takes too long to treat an area, considerations should be given to increasing the capability of the vehicle(s) or adding more vehicles or alternate storage sites to reduce turn around times.

There are two exceptions to "just-in-time" and those are; 1) a light prevent application of chemical to bridge decks to prevent frost and 2) a pre-treatment to cold areas that receive little if no sunlight are prone to freeze ups unlike the rest of the route.