Pre-Treatment

For snowstorms, the initial liquid chemical applications should be made as a "pre-treatment" in advance of a storm or soon after the storm has begun.

A pre-treatment can be very effective as long as the storm doesn't start out with above freezing temperatures where rain may wash the chemical off of the road.

Ideally, the application of salt brine onto dry pavement can significantly slow the bonding process. But, liquid chemicals can be effectively applied to wet, slightly slushy, or lightly snow covered roadways too.

Late liquid treatments, when there is more than a light covering of snow, can result in excessive dilution of the chemical, risking failure.

Pre-treatment should always be coordinated with plowing when conditions warrant.

Benefits from liquid pre-treatments include: Better traction and improved pavement conditions, early in a storm. However, these benefits are usually short-lived. Therefore, subsequent chemical applications should be made. In essence, pre-treatment applications can be thought of in terms of "buying time" at the early stages of a storm.

Salt brine for pre-treatment and for pre-wetting is to be made using rock salt. Pre-treatment at the rate of 44 gallons of brine, per lane mile can delay the need for additional pre-wetted solids by 30 to 45 minutes at the beginning of a storm, depending on the temperature and/or the ferocity of the storm.

Pre-wetting Solid Chemicals

Pre-wetted salt is the most effective and cost efficient way to combat ice and snow, making liquid applications an integral part of MoDOT's snow/ice removal operations.

Applying dry material to dry pavement, may result in losing up to 80 percent of the material. Therefore, moisture prevents loss of material and can turn solids into a solution form. MoDOT's new ground speed spreaders will help reduce these problems allowing solids and liquids to be applied simultaneously.

✳ Pre-wetted Solid Application

The pre-wetting of a solid, such as salt, will enhance its performance by 30 to 50 percent. Pre-wetting a solid increases its ability to adhere to the road surface and is less likely to balance and scatter when spread, begins the brine process more quickly than waiting for another source of moisture, and saves money by lowering application rates. Studies show that 100 pounds of salt per lane mile, pre-wetted with 20 to 25 gallons per ton of salt brine or calcium chloride is more than adequate for most conditions. A minimum application rate of ten gallons per ton based on storm intensity, road conditions, and temperature and should be increased as needed.

Pre-wetting can be accomplished by three methods.

1. Pre-wetting chemicals can be injected into a stockpile at a specified dosage.
2. Liquid chemicals can be shot directly onto the loaded spreader,
3. Onboard spray system, mounted on the spreader or dump body, can add a liquid to the dry solid at the time of spreading.

Pre-wetting, by way of an onboard spraying system, is the most commonly used and efficient method. This pre-wetting equipment is integral part of MoDOT's anti-icing and de-icing operations.

Generally, the onboard spray tanks are made of molded polyurethane and are provided with a replaceable catch screen and shut-off valves.

Note: *The pre-wetting equipment used by MoDOT is not trouble free. Frequent electric pump failures have been reported along with spray nozzles clogging. It's important to monitor the effectiveness of the equipment, during operations.*

Applications During a Snowfall

As with the initial application, treatment during a snowfall should be consistent with the goal of preventing the bond of snow and ice from occurring.

For some snowfalls, an initial anti-icing treatment may be all that is necessary to cope with a light or moderate duration event. Your supervisor will instruct you on the activities you will perform, based on the weather forecast and pavement conditions.