FAQ: ODOT’s use of salt

☐ What does this mean to my car as I travel through areas where salt is used?

It means you need to wash your car more often during winter months. This has long been ODOT’s advice. Even rust-inhibited liquid magnesium chloride that ODOT uses can still cause corrosion to your vehicle because it’s a form of salt.

☞ Wash your car more often to remove any product or sanding material.

☞ Carry chains in your vehicle when you travel through Oregon snow zones.

☞ Keep a safe distance behind snowplows and sanding/salting/deicing trucks.

☐ Will you use salt every time it snows?

No. The use of salt is not intended to replace the use of any of our other tools. We will use salt when appropriate.

☐ Where will you use salt?

Our plan is divided into phases. Phase 1, which started with the original pilot in the winter of 2012-13, will continue using salt on about 121 miles of U.S. 95, from the Idaho border to the Nevada border, and on I-5 from the California border north to MP 11. Phase 2, beginning in the winter of 2017-18, will use salt on about 100 miles of I-5 from the California border to near Canyonville; on about 200 miles of I-84 from the Idaho border to near Boardman; and on I-82 and secondary highways around Hermiston.

ODOT has also established an exception process to allow the use of salt in certain other areas in extremely limited circumstances, including the remainder of Interstate 5 and Interstate 84, and on Portland Freeways. ODOT does not have the resources or infrastructure to use salt outside of the phase 2 areas, except in almost one-off, extremely limited circumstances.

We have three goals:

- Provide more consistent roadway conditions between Oregon and its neighboring states
- Make traveling through these areas safer
- Reduce holds and delays for the freight industry and travelers
In certain storms, the use of salt should reduce or eliminate the amount of time packed snow is on the road. However, there are still times when the use of deicer is not cost effective and other management tools may be necessary such as chain restrictions and road closures.

The need to reduce the amount of time freight trucks and travelers are delayed continues to be one of our priorities. The use of salt will result in a reduction in the number of times ODOT is forced to implement chain restrictions. This, in combination with a reduction in crashes, should result in an overall increase in freight mobility. And a reduction in temporary holds and chain restrictions benefits all travelers.

☐ What were the results of the first phase study?

The first four years of the pilot have demonstrated solid salt is an effective tool for winter highway maintenance. While it will not replace applying sanding material or liquid deicer, its application provides ODOT with the capability to respond to conditions (freezing rain, heavy snowfall, or thin layers of packed snow or ice) that current winter highway management tools cannot address.

ODOT maintenance crews say the pilot project results so far show that appropriate use of solid salt returns highways to safer conditions faster than using liquid deicer alone. Their first-hand evidence comes from monitoring these highways daily.

Quantifiable data, such as the number of crashes, supports the qualitative opinion of frontline maintenance workers. Since winters vary greatly in their severity, we computed annual averages of crashes to compare each of the two pilot roadways in the five years before the pilot started to the first three years of the pilot. In each case, the average number of total crashes declined substantially.

☐ Why would you NOT use salt during a storm?

Our liquid deicer, rust-inhibited magnesium chloride, produces good, cost effective results in most conditions with fewer environmental and infrastructure side effects. Salt is just one tool in the toolbox, with specific application parameters.

☐ How will you protect the surrounding environment?

There are several potential environmental impacts to consider when implementing a salt program. These include ground and surface water contamination, impacts to aquatic species and vegetation impacts.

Each pilot project has committed to following the ODOT directive “Operational Notice MAI 170-1: Road Salt Pilot Project Best Management Practices” learned from other states using salt. This document spells out protocols and expectations for the purchase, application, storage, handling and disposal of salt and the equipment that carries and distributes it and sets expectations for staff training.
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How will you protect the environment from possible runoff from salt storage sites?

ODOT’s salt storage practices are based on best practices from around the country and includes two necessary kinds of locations for each pilot project: salt storage sites (a waterproof building with impervious floor large enough to handle all loading/unloading activities under cover) and equipment wash sites with appropriate handling of wash water runoff.

How will you protect highway infrastructure?

We will monitor pavement and, when appropriate, proactively protect bridges. For bridges, ODOT has identified five areas of concern.

<table>
<thead>
<tr>
<th>Bridge Concern</th>
<th>Mitigation</th>
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</thead>
<tbody>
<tr>
<td>Increased chloride ion penetration into decks</td>
<td>▪ Cover with deck seals</td>
</tr>
<tr>
<td></td>
<td>▪ Replace/overlay permeable asphalt pavement with a sealed surface (premix polymer concrete)</td>
</tr>
<tr>
<td>Corrosion of deck joints</td>
<td>Replace/renew existing joints</td>
</tr>
<tr>
<td>Deterioration of deck drainage systems</td>
<td>Retrofit steel drains with plastic piping</td>
</tr>
<tr>
<td>Deterioration of structural elements below deck</td>
<td>Retrofit decks with plastic angle gutters anchored and sealed to deck</td>
</tr>
<tr>
<td>Need to monitor decks and bridge elements</td>
<td>Annual monitoring</td>
</tr>
</tbody>
</table>

For pavement, our concerns revolve around deterioration of the rebar within the reinforced concrete pavement. Unlike bridges, no feasible preventative maintenance application is available.

▪ Baseline data will be collected to obtain a detailed understanding of the existing pavement condition prior to program implementation.

▪ Chloride analyses will be conducted so a baseline chloride database can be established.

▪ Additional analyses will be conducted on an annual basis to determine the impact on pavement condition and chloride intrusion.

The pavement on U.S. 95 in the pilot project area is asphalt concrete; there is no rebar. We anticipate no damage from salt.

What new equipment will you need?

ODOT evaluated new application equipment in the phase 1 pilot. It is uncertain if this type of equipment is a good fit for other locations. ODOT is evaluating existing equipment to determine what modifications can be made to allow low, accurate and effective salt application rates.
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- **What kind of salt do you plan to use?**
  
  Solid rock salt (non-rust inhibited). This is on the Pacific Northwest Snowfighters (PNS) qualified product list. The PNS is an association of transportation agencies dedicated to ensuring safety of winter maintenance products through structured testing and evaluation for effectiveness and environmental and health standards.

- **How much salt would you use?**
  
  Application rates and overall application protocol will vary depending on the type, severity and duration of any given storm. But we have generally accepted “rules of thumb” spelled out in our best practices directive:
  
  - Salt is most effective between 20°F and 32°F. At temperatures below 15°F salt (and most chloride-based deicing products) is not cost effective. So we wouldn’t use salt then.
  
  - Based on ODOT’s phase 1 experience and from other states’ experience, salt application rates in the Pacific Northwest range from 100-300 lbs. per lane mile. We expect to apply salt in this same range, depending on road and weather conditions.
  
  - In general, salt would not be used to “burn” packed snow deeper than 2 inches. Our goal is to not let the roadway reach this packed condition.

- **Does ODOT have appropriate permits from regulatory agencies to use salt in Oregon?**
  
  ODOT’s routine road maintenance activities are ‘covered’ for ‘take’ under the Endangered Species Act, 4(d) exemption, and approved under a statewide stormwater discharge permit from the Department of Environmental Quality. ODOT follows Best Management Practices (BMPs) to avoid, reduce or offset impacts to the environment.

- **Are ODOT winter practices safe for the environment?**
  
  ODOT has worked with environmental regulatory agencies to ensure its winter maintenance program is not only cost effective, but also as protective of the environment as we can make it. Efforts to protect the environment include:
  
  - Applying the least amount of deicing products and sanding material necessary to meet management objectives.
  
  - Using liquid deicer when appropriate and cost effective can reduce the use of salt and sanding material. Reducing the use of sanding materials reduces air pollution.
  
  - Maintaining standards for liquid and solid deicing products and sanding material to ensure products are clean and free of pollutants.
  
  - Updating winter maintenance practices and policies as new equipment and new technologies become available.
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How do deicing products work?
The plow is the workhorse of winter maintenance. Deicing products are applied to the road in order to lower the freezing temperature of water, prevent ice and snow from forming a bond to the roadway surface, and maximize the effectiveness of plowing. These products are used for:

- Anti-icing: Liquid product is applied to the road before a storm to prevent the ice or snow from forming a bond to the roadway surface.
- Deicing: Solid product is applied during the storm or to a thin layer of ice or snow on the road. This helps melt the ice or snow and break the bond so that it can be plowed off the road.
- Pre-wetting: Liquid deicer is mixed into salt or sanding material before application, making them stick to ice or snow. This helps to prevent traffic from blowing them off the road and helping to activate solid salt.

Why doesn’t ODOT just use sand?
Sanding material doesn’t do anything to prevent the buildup of packed snow and ice. Sanding material is used when management objectives call for managing packed snow and ice as a good driving surface, or when conditions are not appropriate for the use of deicing product.

Sanding material is used for improving traction on packed snow and in heavy snowfall conditions, but it requires a lot of handling. It requires repeated applications because it is blown off the road by traffic. In some areas, sanding material has to be swept up and hauled away for disposal, all of which add substantial costs. Even though ODOT has standards limiting the size of individual particles, sanding material can chip windshields, headlights and paint.

Please remember: It is always your responsibility to drive at speeds appropriate for road and weather conditions.

Why make this change?
ODOT’s goal hasn’t changed: We want to provide the safest possible roadway system within our means for the prepared traveler using Oregon highways.

ODOT has a number of tools in its winter maintenance toolbox, including snowplows, graders, sanders, sanding material and deicing products such as rust-inhibited magnesium chloride and now solid salt in certain locations. Each tool has a specific use depending on conditions: the intensity of the storm, ambient and roadway temperature, traffic volume, altitude and the kind of storm (light snow, heavy snow, rain, freezing rain, fog, etc.).

Solid salt may be our newest tool, but we’re treating it as just another tool in our toolbox. All winter maintenance materials are used in the right place, at the right time, and in the right amount—to the extent practical. Materials are managed in a responsible manner to protect the environment, highway infrastructure and your vehicle.
**Explain the exception process.**

The area where salt may be used via an exception process includes Interstate 5, Interstate 84 and Portland Freeways. Exceptions will be considered in limited areas based on extreme winter conditions such as we experienced in Portland in the 2016-2017 winter. ODOT does not have the resources or infrastructure to use salt outside of the phase 2 pilot areas, except in almost one-off, extremely limited circumstances.

These areas are ones that receive snow much more infrequently, but where liquid deicers aren't always adequate and the limited and targeted use of salt in a specific location could benefit safety and mobility.

We will refine the spot locations, types of storms and the benefit we see to the rest of the system in order to determine when and where to use salt.

It is important to know that ODOT does not foresee widespread use of salt in these ‘exception’ areas, or even using salt in every storm.

We still need drivers to be prepared for winter conditions and take precautionary measures when snow or freezing rain is in the forecast.