

Winter road safety

From the webpage of the Salt Institute, <http://www.saltinstitute.org/>

Winter storms endanger roadway users and paralyze economic activity. Sensible Salting keeps roads open and safe.



Highways are the arteries linking our economy and our society. But only if they are open and safe. Driving in a snowstorm increases a driver's risk of a crash far more than driving impaired by alcohol or drugs. We need to operate our roads so that would-be highway users can be assured that they and their cargos can arrive safely within a predictable window of time. Snow and ice contribute to congestion and traffic crashes. Winter weather congestion affects 70% of U.S. roadways.

Effective snowfighting provides assured access and safe driving conditions during and after winter storm emergencies. The cost of failure is steep, both economically and in human life. Allowing impassable roads costs jobs, sales, tax revenues ... and lives. Snowfighting costs for an entire season are less than economic losses from a single day of icy paralysis. Effective snowfighting cuts injury accidents by 88%. Salt is the deicer of choice for its quick action, economical cost and ease of use. Dozens of other deicer products are available, but none has matched salt's cost-effectiveness.

To maintain traffic safety and mobility during snow and ice emergencies, highway operations agencies use rock salt, solar salt and to some degree, evaporated salt, mostly in Europe. That's been true since the 1940s in snowbelt regions worldwide. Development of the new technique of preventive anti-icing has brought new focus on using salt to combat winter ice storms on roads in what has been considered the sunbelt.

Sodium chloride melts ice at temperatures down to its eutectic point of -6°F (-21°C). The important variable is not the air temperature in this case, but the pavement temperature. Depending on whether the storm occurs early in the season or at the end of a particularly cold period, the pavement may be warmer or colder than the air, but even in the dead of winter,

pavements are more often warmer than the air. Most snowstorms occur when the air temperature is between 20° F (-7° C) and 32° F (0° C), the temperature range where salt is very effective.

Salt is used on highways in two primary strategies: (1) traditional deicing strategy accomplished by applying dry salt or prewet salt to remove snow and ice bonded to the roadway surface, considered a reactive strategy, and (2) anti-icing, the application of salt prior to the formation of a bond between ice and the roadway, usually by spraying nearly-saturated brine on the dry pavement or applying a prewet solid, considered a pro-active strategy. When sprayed on as a liquid for anti-icing, the brine dries leaving sodium chloride on the pavement and its presence slows or prevents the development of a bond between the snow or ice and the pavement “buying time” until further storm response can arrive. More than 40% of dry salt produced in the United States is used for highway deicing.

Road salt saves lives

Every winter, more than **116,000** Americans are injured and over **1,300** are killed on snowy, slushy or icy pavement. It is no wonder, then, that the sight of salt trucks reassures citizens. Road salt saves lives and protects commerce.

A Marquette University [study](#) examined highway accidents in snow. Road salt reduced:

- Crashes by 88%.
- Injuries by 85%.
- Accident costs by 85%.

Battling snow and ice comes with a price tag, of course, but the study’s cost-benefit analysis shows it is well worth the investment. Deicing pays for itself a mere 25 minutes after salt is spread.

Road salt protects commerce

When broader economic costs are factored in, deicing makes even more sense. That’s because road salt protects local and state economies by preventing costly winter shutdowns of the roadways of commerce.

A [study](#) of 16 U.S. states and two Canadian provinces conducted by IHS Global Insight for the American Highway Users Alliance found that:

- Snowstorms cost states as much as \$700 million *per day* in both direct and indirect costs if roads are impassable.
- Snow-related shutdowns harm hourly workers the most.
- The negative economic impact of road closures far exceeds the cost of snow and ice removal.

Sources:

The Marquette University study, commissioned by the Salt Institute, examined two-lane and four-lane highways in New York, Illinois, Minnesota and Wisconsin.

The IHS Global Insight study, commissioned by the American Highway Users Alliance, examined the economic impact of snowstorms in Illinois, Indiana, Iowa, Kentucky, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Jersey, New York, Ohio, Utah, Virginia, Wisconsin, Ontario and Quebec.