ESSENTIAL MINERALS ASSOCIATION

PROFESSIONAL SNOWFIGHTERS ASSOCIATION PSA

SAFE & SUSTAINABLE ROAD SALT

BEST PRACTICES TO PROTECT PEOPLE, COMMERCE, AND THE ENVIRONMENT

When winter weather strikes, the public demands that state and local governments keep vehicle traffic moving. Local roads, highways, parking lots, and walkways need to be treated to ensure safe and continuous use for commerce, travel, and emergency first responders.

WHY USE ROAD SALT?

Salt can be used proactively as a brine before winter weather to prevent ice from bonding to the road surface and reactively as dry or pre-wet salt to remove snow and ice from the roadway. In the vast majority of applications, salt is the most cost-effective option. Magnesium chloride, calcium chloride, calcium magnesium acetate, hydrochloric acid, and potassium chloride are an important part of winter maintenance, but they typically come at a higher cost. Other applications, such as sand, do not have the same melting properties that salt does. Safety and economic impacts are the two priorities when treating winter roads.

SALT: A COST-EFFECTIVE SOLUTION TO REDUCE COLLISIONS AND INJURIES

87% decrease in accident rate for two-lane roads

decrease in accident rate for freeways **78%**

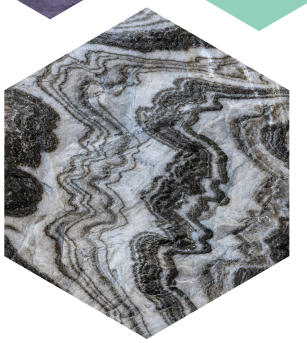
Deicing pays for itself within the first 25 minutes after salt is spread. During the first four hours following salt application, the direct benefits to road users are $6.50 for every $1.00 spent on the operation.

Safety

Road surface condition is the single biggest safety factor during a winter event, and poor weather is the third most common cause of crashes. A 10 percent improvement in surface friction on the roadway results in a 20 percent reduction in crashes. The U.S. Federal Highway Administration estimated that 21 percent of crashes are weather related, resulting in more than 5,000 fatalities and more than 400,000 injuries from crashes on snowy, slushy, or icy pavement annually.

Economy

According to the U.S. Federal Highway Administration, 544 million vehicle hours of delay are due to wintry road conditions each year. A 2010 study by IHS Global Insight for the American Highway Users Alliance found that snowstorms costs states as much as $700 million a day in both direct and indirect costs if roads are impassable.



SUSTAINABLE SALTING: BEST PRACTICES TO MITIGATE ENVIRONMENTAL IMPACTS

Responsible and sustainable salting and appropriate storage practices can reduce the risk of unintended salt runoff into lakes, streams, rivers, and groundwater tables. A joint comprehensive study by environmental researchers at the University of Waterloo and Environment Canada examined groundwater monitoring data and found that chloride levels were reduced by half when best practices were employed.

3Ps OF SUSTAINABLE SALTING

PREPARATION

- Salt brine: using a salt brine before ice bonds to the surface can lead up to 75 percent savings in salt usage vs only using salt.
- Pre-wetting: using treated road salt reduces bouncing and scatter, allowing salt to stick to the roads better. Treated salt also melts at lower temperatures, making it more effective at temperatures below zero.

PRECISION

- Variable rate application: using automated spreaders allows for precise salt distribution depending on need using salt calculators that consider the complex interaction between surface and air temperatures, accumulation of snow or ice and the salt melt rate.
- Road temperature sensors: determines whether precipitation will stick and how much salt is needed.
- Spreader calibration: allows you to measure the exact amount of salt being applied.

PROTECTION

- Storage: well-maintained salt storage leads to less salt in the surrounding environment.

Using sustainable salting practices during winter maintenance offers a responsible and environmentally-friendly way to substantially reduce injuries and fatalities from accidents.