CORROSION
PUBLIC ENEMY NUMBER ONE TO TRUCK CABS

There is no way to avoid the heavily damaging chemicals used to clear roadways in wintery weather. Understand the nature of these compounds and learn some preemtive measures to take to keep your trucks lasting longer.

CORROSION IN THE CAB

Minimizer™ floor mats wrap around your cab floor and contours each angle keeping chemicals and filth off the floor.

During a Task Force Meeting on cab and control corrosion, at TMC's 2016 Annual Meeting & Transportation Technology Exhibition, Tim Brune, task force chairman and technical director of Automotive International, said, "We are seeing a lot of corrosion happening in cabs." In fact, cabs get hit twice by the corrosive chemicals on the roads today. The first is by the spray that comes up off the road and hits the underside of the cab. However, the corrosive chemicals are also introduced into the interior of the cab on the shoes of drivers. Drivers get in and out of their trucks a number of times a day and as a result track whatever is on the ground into the cab. It's bad enough having snow and ice combined with the deicing chemicals. But the problem is made worse because of the hygroscopic nature of these chemicals. Hygroscopic material continues to draw moisture from the air even in seemingly dry environments, according to Identification and Laboratory Assessment of Best Practice to Protect DOT Equipment from the Corrosive Effect of Chemical Deicers. In addition as the driver's shoes dry out the remnants of the deicing chemicals get sucked into the cab's HVAC system and then get recirculated throughout the cab where, because of their hygroscopic nature, they continue to attract moisture.

Several attendees of the Task Force session said when they rolled up cab rugs on two to three year old trucks the floor had almost been eaten away by corrosion. However, the floor itself is not the only item that gets damaged by corrosive deicing chemicals in the cab. Seat belt mounts and retractors can also be damaged. But perhaps even more important than that is the damage to electrical wiring and connectors that run under the carpet. During the TMC Task Force meeting, one attendee said that within six months corrosion had destroyed a $4,000 sensor. The Task Force's advice was to inspect all sealed connectors in the cab because once moisture gets in the cab it gets in the wires. As one meeting attendee put it, "We want to protect as many items as we can because deicing chemicals are not going away."

FIFTEEN MILLION TONS

That is the amount of chemicals applied to U.S. roads each year, according to a reserch paper titled *Identification and Laboratory Assessment of Best Practices to Protect DOT Equipment from the Corrosive Effect of Chemical Deicers.*

Most highway departments have switched to chloride deicers such as calcium chloride and magnesium chloride to keep roads passable in winter weather. And while these compounds do a good job of keeping the roads clear, they also pose a significant corrosion risk to commercial vehicles.

Metal, including in that truck cabs, is very vulnerable to these more aggressive deicers. Before we look at what these deicers do to cab floors and what can be done to protect them, it's necessary to understand the nature of these deicing chemicals. In an article in Transport Topics, Peter Johnson, professor in the Occupational and Environmental Exposure Sciences program in the School of Public Health at the University of Seattle, is quoted as saying, "A number of scientific studies have shown an association between exposure to vehicle-related whole body vibration and the development of health problems."

HOW MODERN DAY DEICING CHEMICALS WORK

Over the past decade state highway departments have switched from using sodium chloride on roads to calcium chloride and magnesium chloride which are said to be more effective because they provide lower freeze points, cost less and are less harmful to the environment as well as less corrosive to concrete.

In addition to switching chemical formulation, they have taken to spraying road surfaces before storms hit and mixing the deicers with things like sugar beet juice or vegetable oil to improve adhesion to road surfaces. The first thing you need to know about calcium chloride and magnesium chloride deicers is that they are hygroscopic which means they are good at attracting moisture so much so that it converts to a liquid brine. In addition, when the deicers are dissolved in water they release heat.

In his blog, Dave Budd, vice president of product development and marketing at Great Lake Chloride, said, "Ice melter speed of action is determined by how easily it dissolves when exposed to snow or ice to form a brine solution. This brine lowers the freezing point of water to melt additional snow and ice on contact." It's easy to see why highway departments now prefer calcium chloride or magnesium chloride because they have all these characteristics.

WHAT IT MEANS FOR THE TRUCK

The trucking industry is well aware of the damaging effects of these deicers. In fact, The Technology & Maintenance Council has a publication called Corrosion: Complaint, Cause, Correction that address the issue. The publication looks at corrosion in a number of areas of the vehicle including the cab, electrical system, engine, wheels, hubs drums, brakes,chassis and trailer.Much of the focus in the trucking industry has been on corrosion of the braking system more specifically rust jacking. There has been a great deal of emphasis on corrosion of theelectrical system as well. But the truth is no area of the truck is immune from the effects of these highly corrosive compounds.