



S.6 Chassis Study Group Information Report: 2002-1

Road Chemical Induced Corrosion

Developed by the Technology & Maintenance Council's (TMC)
Ice-Clearing Chemical Induced Corrosion Task Force
Under the Auspices of the S.6 Chassis Study Group

ABSTRACT

Aggressive corrosion, caused by new formulations of road ice clearing chemicals, has recently become a serious maintenance problem for many equipment users. Use of magnesium chloride- and calcium chloride-based products by certain states is especially associated with increased incidence of corrosion on vehicles, causing damage in as little as a single winter season. In order to reduce this problem, the Technology & Maintenance Council (TMC) of the American Trucking Associations (ATA) is calling on suppliers of road ice clearing chemicals to change the formulation of their products to make them less prone to cause corrosion in commercial vehicles, road and bridge surfaces and underlying structures. If this is not possible, then TMC is asking that manufacturers of vehicles make design and/or material changes to their product to resist road ice clearing chemical induced corrosion.

INTRODUCTION

A new form of aggressive corrosion on commercial vehicles has recently come to the attention of fleet managers in certain areas of North America, specifically in areas of the United States and Canada where new technology chemicals are used to clear roadways of ice and snow. These new formulations of

road ice clearing chemicals, which have replaced sodium chloride (road salt) and sand strategies, do an excellent job of minimizing ice on highways. The problem for fleets, however, is that its use has recently become a serious maintenance problem for many equipment users. Use of magnesium chloride- and calcium chloride-based products by certain

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states has been associated with increased incidence of corrosion on vehicles. And the chemicals reportedly can cause significant damage in as little as a single winter season.

Corrosion on vehicles operating in these areas has been reported on chrome, aluminum—even stainless steel. According to some fleet managers, the corrosion is found most frequently on:

- trailer longitudinal rails.
- electrical connectors.
- exposed aluminum components.
- exposed chrome components.
- brake tables.
- fifth wheel and landing gear.

Other areas affected include ECM and headlight connectors, various sections of trailer frames and bodies, spring hangers, fuel tank straps, wheels and wheel fasteners, and fins on aluminum radiators. The areas affected generally are splash-prone areas on the front, underside, and lower portions of tractors and trailers, and on foot pedal linkages in cabs.

This problem has been reported at recent meetings of the Technology & Maintenance Council (TMC) of the American Trucking Associations (ATA). Examples of failed parts attributed to this phenomenon were displayed at a special Failure Analysis session of TMC's Shop Talk, and during a technical session on the same topic. The pictures that appear at the end of this paper, and in the special appendix, illustrate the problem well. In some cases, fleets have reported success in dealing with the problem through more aggressive vehicle washing. However, no washing can solve the problem as it pertains to electrical connectors, brake components, and many other affected systems, just because the components are not readily accessible.

Based on member concern, TMC has launched a Task Force to study the problem and develop recommendations to help solve it. In its study on the matter, TMC has identified other groups who also share concern with these new formulations—specifically electrical utilities, whose infrastructure is compromised by the same chemicals through aggressive corrosion, state trucking associations such as the Colorado Motor Carriers Association, and the Pacific Northwest Snowfighters Association.

TMC is, therefore, recommending the following action to solve this serious durability and safety problem.

1. TMC is calling on suppliers of road ice clearing chemicals to change the formulation of their products to make them less prone to cause corrosion in commercial vehicles. TMC is aware that some suppliers of both trucks and components are doing laboratory work on the effects of certain deicers on their products. With a little extra work and coordination with deicer suppliers, the opportunity exists to develop different chemical formulations as part of the ongoing projects.
2. If this is not possible, then TMC is asking that states stop using these chemicals to clear road ice.
3. If states will not agree to do this because of the advantages of these new formulations, then TMC is asking that manufacturers of vehicles make design and/or material changes to their product to resist road ice clearing chemical induced corrosion.

APPENDIX

The following photos are examples of corrosion caused by new road ice clearing chemicals as described in this information report. What also follows are reprints from TMC's *Maintenance Manager Magazine* and *The Trailblazer*, also describing the problem.

