



ROAD DUST SUPPRESSANTS

&

YOUR BOTTOM LINE

An evaluation of today's most commonly used dust suppressants

A summary of Colorado State University Research
T.G. Sanders, J. O. Addo, A. Ariniello and W.E. Heiden.
"Relative Effectiveness of Road Dust Suppressants." 1993 - 1994



DUST SUPPRESSION PRODUCTS HAVE BEEN USED FOR DECADES

to help public works departments reduce fugitive dust and stabilize unpaved roads.

COLORADO STATE UNIVERSITY RESEARCHERS CONDUCTED A STUDY

in Larimer County, Colorado to evaluate the effectiveness of
the most commonly used sources.

Magnesium Chloride



Calcium Chloride



Lignosulfonate

Lignin

THE TEST ROAD WAS BROKEN INTO FOUR SECTIONS

Three treated - and one untreated control.

Magnesium Chloride



Calcium Chloride



Lignosulfonate

Lignin

Untreated

Control

A wide-angle photograph of a gravel road stretching into the distance. The road is flanked by lush green fields, likely corn. In the far distance, a line of trees and a few small buildings are visible on the horizon. The sky is a vibrant blue, filled with large, fluffy white clouds. The overall scene is bright and clear, suggesting a sunny day.

Over the course of two summers

**TRAFFIC LEVELS, DUST EMISSIONS &
AGGREGATE LOSS WERE TRACKED**

The background of the entire image is a close-up, high-resolution photograph of a gravel surface. The gravel consists of numerous small, irregularly shaped stones in various shades of grey, brown, and tan, interspersed with a lighter-colored, sandy or silty matrix. The texture is rough and granular.

THE RESULTS

50-70%

OVERALL DUST REDUCTION

All three dust suppressants

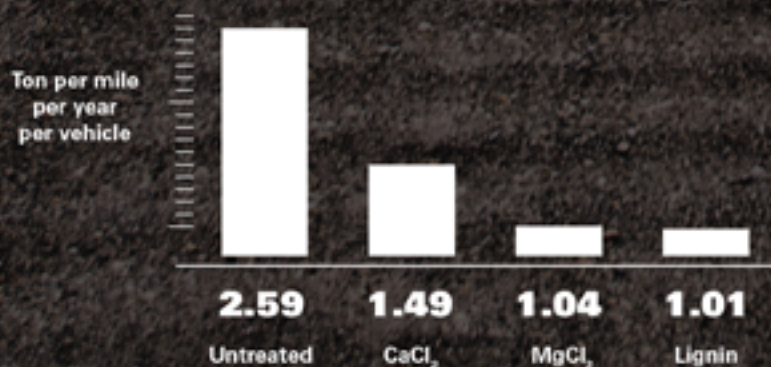
SIGNIFICANTLY REDUCED FUGITIVE DUST

emissions compared to the untreated section.

42-61%

REDUCED AGGREGATE LOSS

TOTAL AGGREGATE LOSS



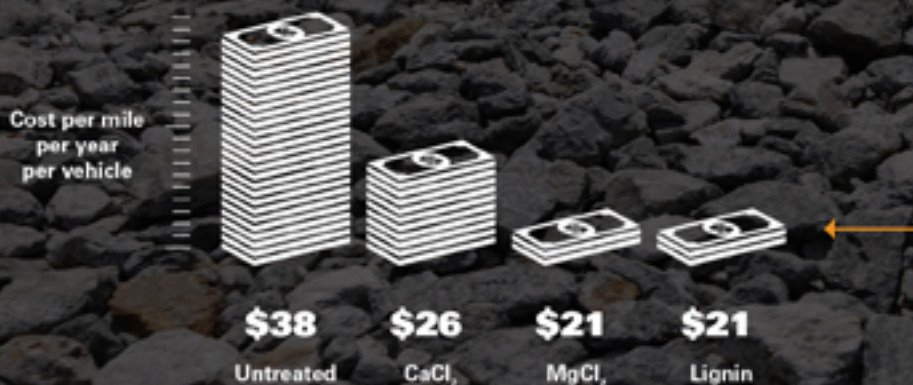
The treated sections of road had a significant reduction in aggregate loss compared to the untreated section of road.

← **MAGNESIUM CHLORIDE AND LIGNIN PERFORMED BEST.**

30-46%

LOWER MAINTENANCE COSTS

ESTIMATED ANNUAL MAINTENANCE COSTS



The estimated annual maintenance costs on the treated sections were significantly less than the untreated road.

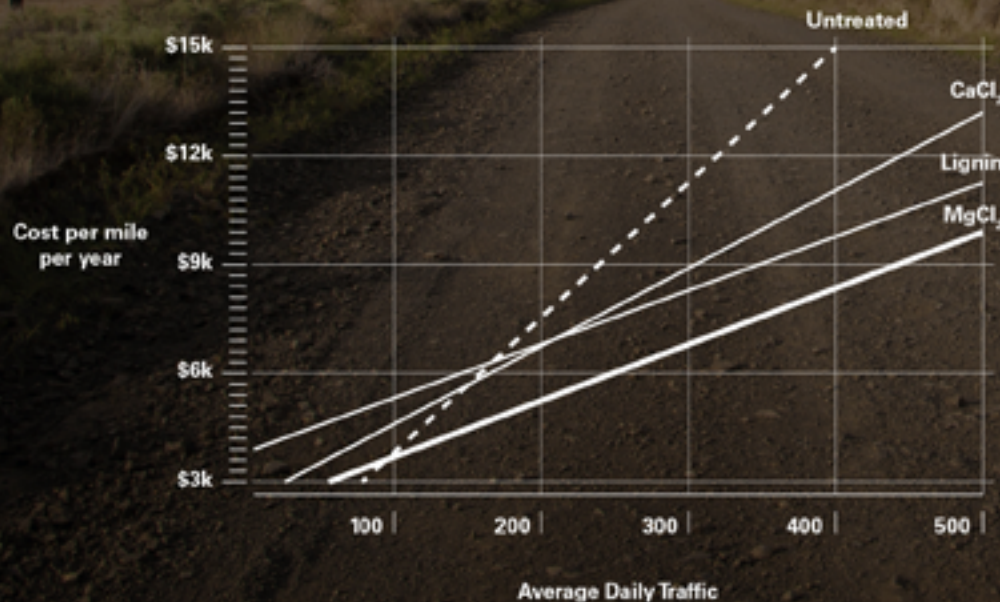
MAGNESIUM CHLORIDE AND LIGNIN PERFORMED BEST.

Researchers also established

TRAFFIC LEVELS AT WHICH DUST SUPPRESSION WOULD BE COST EFFECTIVE

COST OF TREATMENT vs. AVERAGE DAILY TRAFFIC (ADT)

@ AGGREGATE COST OF \$11.57 / TON IN PLACE



Calcium chloride and lignin treatments became cost effective at 130 ADT, while

MAGNESIUM CHLORIDE TREATMENTS BECAME COST EFFECTIVE AT 100 ADT.

(assumes aggregate cost of \$11.57/ton in place)



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