

Soil-Sement[®]

DUST CONTROL, EROSION CONTROL, STABILIZATION



*Leader
in
Environmental
Stewardship*



Outstanding Features and Benefits of Soil-Sement®:

- Nearly eliminates particulate matter (PM10 and PM2.5).
- Does not contain any detectable polycyclic organic matter (POM) which includes polynuclear aromatic hydrocarbons (PAH).
- Is environmentally safe, non-toxic, non-corrosive, non-flammable and does not pollute ground water.
- Has a cumulative effect and creates a stabilized surface which will resist shifting, breaking up or sink failures.
- Offers maximum weatherability to wind, rain, ultraviolet light and other weather conditions.
- Increases load-bearing strength of all types of soils and surfaces.
- Prevents water from seeping into and destabilizing the surface.
- Dries clear, providing an aesthetically pleasing appearance.
- Meets air, water, groundwater and stormwater compliance.



What is Soil-Sement®

Dust and Erosion Control Agent

Soil-Sement® is an environmentally safe, advanced powerful polymer emulsion that produces highly effective dust control, erosion control and soil stabilization. Soil-Sement® provides excellent bonding, cohesion, versatility, cost-effectiveness, environmental compliance and superior overall performance.

Soil-Sement®'s effectiveness results from the length and strength of its unique polymer molecule formulation and those polymer molecules' ability to bond with the surface materials. Its chemical structure is made of molecules attached in relatively straight-linked chains and then cross-linked among other chains or grids that may be 1,000,000 molecules long. It is a true giant compared to the much smaller molecular structure of oil, calcium, petroleum resin and asphalt emulsion products, which range from 100 to 10,000 molecules. As a result, Soil-Sement® can be as strong as steel or as resilient as rubber.

Soil-Sement® is the cumulation of 24 years of focused research and development, and unparalleled concentration on PM10, PM2.5, erosion control and stabilization solutions. It yields proprietary one-of-a-kind polymer chemistry manufactured to rigid quality standards utilized in combination with field experience in all industrial, commercial and municipal environments. The result is a performance and value combination that is unequalled by other chemical and polymer products. As a result Soil-Sement® has been the standard of comparison for all chemical types, including polymer products, since its introduction in 1978. Especially today Soil-Sement® exemplifies the fact that **all polymers are not made equal.**

A Soil-Sement® treated surface will provide you with optimum performance 365 days a year!





Since 1975, Midwest Industrial Supply, Inc. has built a reputation of leadership through products and services that continually redefine dust control, erosion control and stabilization technology.

Our customers expect products that deliver real benefits, with performance far superior to other types of products being used today.

Our advantages include a full on-site laboratory with the latest state-of-the-art equipment.

We also have a group of dedicated, experienced professionals who are always ready to assist you with all of your dust control, erosion control and stabilization needs.



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Manufacturing Capabilities

We operate over 160,000 square feet of manufacturing and warehouse facilities in our Canton, Ohio location, with satellite operations located across the United States, Canada and Europe. We provide a complete research and development lab giving us total control over the formulation, manufacturing, quality and distribution of all of our products. Midwest's quality manufacturing process is designed to meet the criteria of ISO-9001.

Complete Customized Selling

We work with each customer to develop a customized dust or erosion control program that addresses your specific needs and requirements. Complete location surveys, soil evaluations, review of state and local air quality regulations, and other critical data are all combined as part of our detailed proposals and control plans. This determines the products, services, equipment, personnel, application schedules and budgets needed to do the job right.

Turn-key Applications

We offer complete turn-key application services. We serve our customers with a full-time fleet of properly equipped spray trucks and operators who are highly trained and professionally qualified. We provide field application services 24 hours a day, 7 days a week. Our central dispatch center maintains constant communications with the field operators for prompt routine service and immediate response to any emergency situation.

Recordkeeping and Reporting

We collect site, product, and application specific data in the field and create required daily reports which form the basis for the comprehensive, self-monitoring program needed for air quality compliance. Our administrative staff compiles required records of your dust and erosion control program and issues detailed quarterly and annual reports. These reports are prepared for presentation to state regulatory agencies for compliance with Title V certification provisions of the Clean Air Act and each state's air quality regulations.

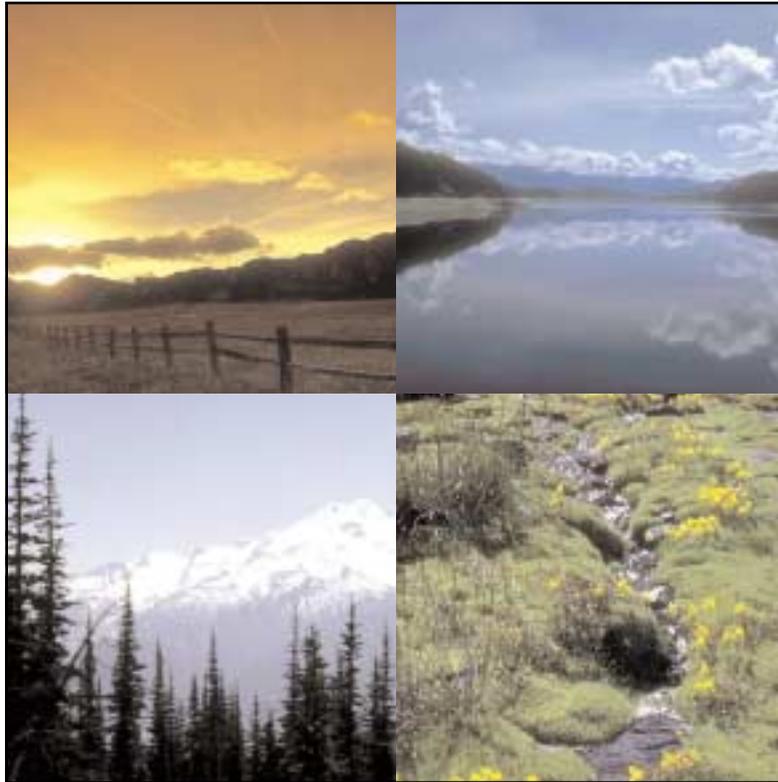
“Soil-Sement® as a dust suppressant, in accordance with the manufacturer's instructions, will result in a significant reduction of PM₁₀...”

Now and In the Future... Leader in Environmental Stewardship Midwest Industrial Supply, Inc.

Midwest Industrial Supply, Inc. has over 28 years of experience of dust suppressant formulation, manufacturing and application experience. Our extensive research and development has resulted in products that are on the cutting edge of performance and environmental technology.

Midwest has always taken a leadership role in establishing regulatory requirements for chemical dust suppressants and stabilizers. We pride ourselves on the fact that our product line is engineered to reduce exposure to substances that cause cancer and other serious health effects...PM₁₀, PM_{2.5}, naturally-occurring

asbestos-laden soil, radiation, PAHs, POMs, lead, ozone depletion and global warming. In other instances our products can be utilized to reduce the health hazards of heavy metals in mining and tailing operations, pesticide containment in soils and volatile organic compound (VOC) containment in soils.



Through the years Midwest Industrial Supply, Inc. has voluntarily sought **and** received third party verification of its stewardship...CalCert, California Air Resources Board (CARB), USEPA ETV, Canadian ETV and numerous testing and research projects — just a few of which are mentioned in the pages of this brochure.

*MIDWEST...MAKING THE FUTURE
SAFER AND HEALTHIER FOR EVERYONE!*

Independent Tests & Certifications Confirm Soil-Sement®'s Superior Performance & Reliability!



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**Arizona Department of
Emergency & Military
Affairs (ADEMA)**



The world's leading advocates of new environmental technologies, and internationally recognized scientific and engineering evaluators of environmental performance have verified that Soil-Sement® is highly effective for controlling dust and the damaging effects of erosion and sediment pollution, while protecting the environmental ecosystem.

The staff of the internationally renowned California Air Resources Board (CARB) conducted an independent verification of the air quality benefits of Soil-Sement®. In particular, the staff of CARB determined that the use of Soil-Sement® as a



dust suppressant, in accordance with the manufacturer's instructions, will result in a significant reduction of PM₁₀ emissions from unpaved roads without contributing to existing levels of volatile organic compounds. Upon completing its evaluation, the staff of CARB

notified all air pollution control districts in California that Soil-Sement®'s air quality claims had been verified. As a

result of CARB's notification, air pollution control agencies have become familiar with Soil-Sement® and its proven air quality benefits.

CalCert and California Air Resources Board Certification



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The California Environmental Technology Certification Program (CalCert), an internationally recognized independent, scientific and engineering evaluator of environmental performance, and the California Air Resources Board (CARB), one of the world's leading advocates of new environmental technologies, have certified Soil-Sement®



performance. These certifications offer users and clients performance assurances when dependability is important and the cost of failure unacceptable.

"When topically applied as a dust suppressant in accordance with manufacturer's instructions, including a total target concentration of 0.28 gallons of concentrate per square yard of treated surface applied in multiple passes in a single day, Soil-Sement® reduced PM₁₀ emissions by approximately 84 percent after 339 days and 6,780 vehicles (predominantly light-duty) passes on an unpaved roadway consisting of a silty, sandy loam.

Soil-Sement® does not contain detectable levels of polynuclear organic matter which includes polynuclear aromatic hydrocarbons as defined by the Federal Clean Air Act section 112 (b); nor does Soil-Sement® contain detectable levels of fluorinated or brominated compounds that could be expected to contribute to ozone depletion or global warming."



For complete Soil-Sement® certification information from CalCert, visit calepa.ca.gov/CalCert/CertifiedTech/Midwest.htm, or from the California ARB, visit www.arb.ca.gov/eqpr/mainlist.htm, or www.soilsement.com.

"Evaluation of the Air Quality Performance Claims for the Midwest Industrial Supply, Inc. Soil-Sement® Dust Suppressant," California Air Resources Board, Executive Order G-096-029-035.

Midwest Industrial Supply, Inc. Receives Canadian Verification Certificate.

The Honorable Christine S. Stewart, Canadian Minister of the Environment, awarded a verification certificate to Midwest Industrial Supply, Inc. under the Environmental Technology Verification (ETV) Program.

The ETV Program promotes the marketability of companies engaged in the environmental industry by providing assessment and validation of suppliers' technology performance. At the same time, it provides buyers with the assurance that the technology in question does indeed perform as claimed.



Environmental Technology Verification Program
— enhancing the credibility of environmental technologies

Soil-Sement®
Midwest Industrial Supply Inc.'s Soil-Sement®, when applied in accordance with the manufacturer's instructions, will:

1. on unpaved roadways in California's San Joaquin Valley
 - a. achieve at least 95% suppressant efficiency on fugitive dust (PM_{10}) for three months after application and at least 80% after 11 months, and
 - b. increase the R-value in the range of 30-40% when measured by ASTM Test Protocols D1883 and D2844, and calculated in accordance with the AASHTO Guide for Design of Pavement Structures, 1986; and
2. in acute toxicity tests, yield LC_{50} 's for rainbow trout (96-hr) and *Daphnia magna* (48-hr) of at least 7,000 ppm and 21,000ppm, respectively.

License Number: ETV 99005
Issued to: Midwest Industrial Supply Inc.

Verified* Performance
March 25, 1999


John McMullen
President & CEO



Canada ETV
* Refer to Technology Fact Sheet for additional information on the verification of this performance claim.

The Honorable Christine S. Stewart, Canadian Minister of the Environment presenting Canada Environmental Technology Verification certificate to Robert Vitale, President of Midwest Industrial Supply, Inc.



Why Environmental Technology Verification is Valuable for You and Why Midwest Supports ETV



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SOIL-SEMENT® TECHNOLOGY CERTIFICATION REQUIRES THAT:

- Significant reduction of PM10 emissions is verified.
- Environmental claims are verified.
- Complete evaluation and review of all test methods and protocols used to assure scientific, statistical accuracy of conclusions.
- Midwest is to continuously meet requirements for product certification to remain valid.
- Midwest can demonstrate having control over the manufacturing of the product to ensure we can consistently and reliably produce product that performs at least as well as the product used in the certification testing. Midwest's quality system is designed to meet the criteria of ISO-9001.
- Midwest quality management practices and standards are reviewed and certified.
- Midwest user manuals and application documents are reviewed and verified.
- Midwest's policy and procedure manual for personnel training of application is reviewed and verified.



*Soil-Sement®'s
Government
Verifications
are a Great Deal More
than Meets the Eye!*

Stabilization with Soil-Sement®

US ARMY ENGINEER RESEARCH AND DEVELOPMENT CENTER

Determines Potential Engineering Benefits of Soil-Sement®

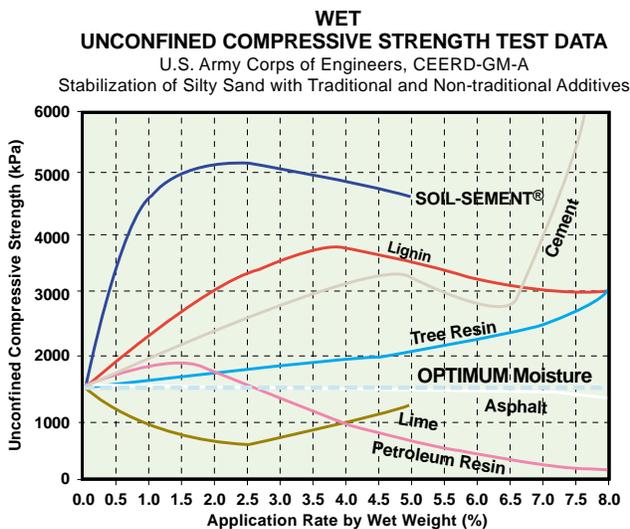
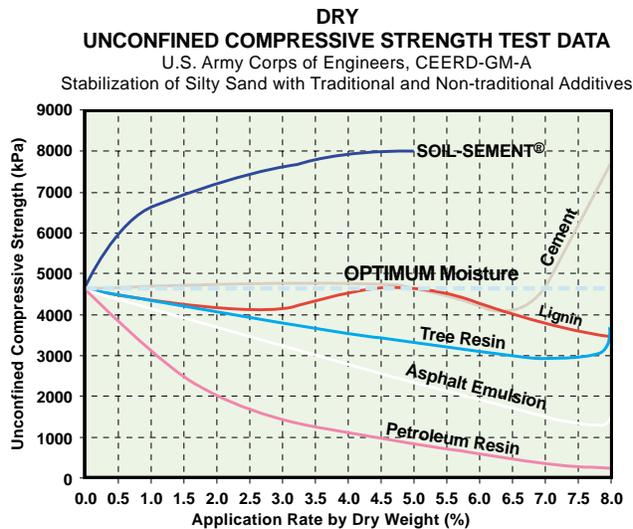
In a comprehensive study just released by the U.S. Army Research and Development Center of 12 non-traditional stabilizers and three traditional types, **SOIL-SEMENT®** (one of the non-traditional types) showed its potential to increase the unconfined compressive (UC) strength of silty sand (SM) material under both “wet” and dry conditions.

The results verified that **SOIL-SEMENT®** polymer emulsion SIGNIFICANTLY improved the UC strength of the SM material (**58 percent in dry test conditions and 208 percent in wet conditions**). Except for cement and polymers, other traditional and non-traditional stabilizers provided no significant potential.

SOIL-SEMENT® SIGNIFICANTLY improved the unconfined compressive strength of the SM material...

58%
in dry test conditions,
and

208%
in wet conditions!



Graphs by Midwest Industrial Supply, Inc. using data from the U.S. Army Engineer Research and Development Center's study of Nontraditional Stabilization of Silty-Sand.

"Nontraditional Stabilization of Silty-Sand,"
Engineering Research and Development Center.

Dust Control Implementation Project

By **URS Corporation (formerly Dames & Moore)**
for the
**Arizona Department of Emergency & Military Affairs,
Arizona Army National Guard, Florence Military Reservation**

▪ *6 Month* ▪ *12 Month* ▪ *Post Implementation*

6 MONTH CONCLUSIONS

- The opacity of the dust plumes generated by the convoys on the Soil-Sement® treated areas were lower than 20% as required at the property line.

12 MONTH CONCLUSIONS

- The opacity of the dust plumes generated by the convoys on the Soil-Sement® treated areas were lower than 20% as required at the property line.

POST-IMPLEMENTATION EVALUATION

- The opacity of the dust plumes generated by the convoys on the Soil-Sement® treated areas were lower than 20% as required at the property line.

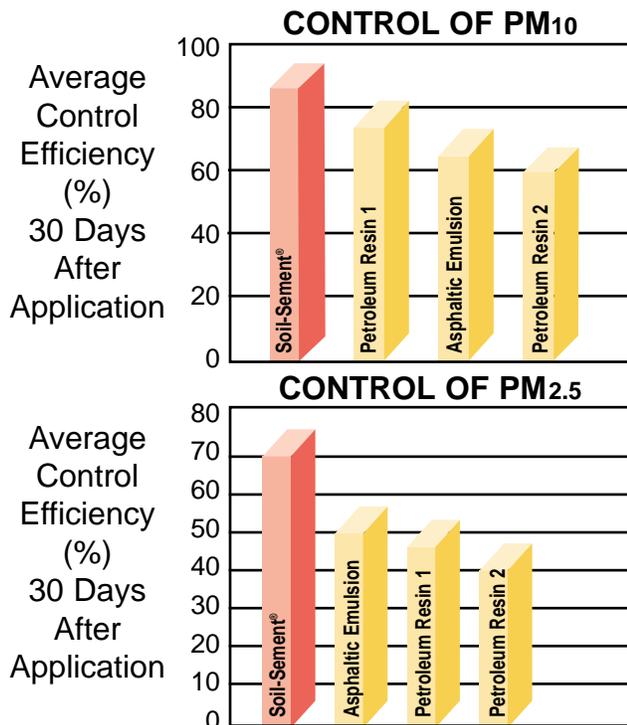
- The Soil-Sement® palliative appeared to exhibit a tolerance to the type of vehicular traffic of the Main Supply Route (generally heavy vehicles with both rubber tires and tracks). At the time of the evaluation (after 1 year), the Soil-Sement® appeared to show some signs of wear but maintained its general integrity at the surface after receiving some heavy, abrasive traffic, particularly from tracked vehicles. The spalling observed appears to be predominantly from the aggregate being crushed or “popped” out of the surface, with only minor flaking of the Soil-Sement®-treated crossing.



“Implement Fugitive Dust Control Measures,” URS (formerly Dames and Moore), URS Job No.: 29679006.

USEPA PM₁₀ and PM_{2.5} Control Efficiency Testing

In the most comprehensive study in the iron and steel industry performed for the United States Environmental Protection Agency, Soil-Sement[®] was compared to petroleum resins and asphaltic emulsions in controlled PM₁₀ and PM_{2.5} testing involving unpaved roadways in the iron and steel industry. While all of the products performed at a high level of effectiveness immediately following each application, the true test came when the results were once again compared 30 days later. Soil-Sement[®] maintained an effectiveness rating within 10% of the initial application, while the effectiveness of asphaltic emulsions and petroleum resins dropped significantly.



SOIL-SEMENT® DEMONSTRATION Kern County Road Shoulders



This report provided the initial results of a demonstration using Soil-Sement® as an alternative to paving for fugitive dust control associated with unpaved road shoulders.

The USEPA mandated that the San Joaquin Valley Air Pollution Control District commit to the rapid adoption and implementation of Best Available Control Measures (BACMs) in order to control particulate matter. One such BACM is the paving of unpaved road shoulders. Kern County is but one of eight counties in the Air District and the total miles of road potentially subject to the shoulder-paving requirement could exceed several thousand miles at a cost in excess of \$100,000,000!

Midwest Industrial Supply, Inc. proposed a demonstration to the Air Pollution Control District to evaluate the cost and feasibility of using Soil-Sement® as an interim and low cost solution to the road shoulder paving requirement. During the demonstration, Midwest Industrial Supply, Inc. stressed that the Soil-Sement® treated shoulders are expected to remain dust-free for 2 years!

Six weeks after application of Soil-Sement®, Kern County Roads Staff returned to the demonstration site and found the following results:

- The Soil-Sement® topical application provided a hard stabilized surface and effectively eliminated dust on the road shoulders.
- Soil-Sement® provides a durable surface.

One of the conclusions from this study is that shoulder maintenance with Soil-Sement® would keep shoulders in better condition, reducing the cost of shoulder paving.

Road Shoulder Paving Costs Estimate Valley Wide

Year	Miles Paved	Cost/mi	Cost
1	200	\$70,000	\$14,000,000
2	200	\$70,000	\$14,000,000
3	200	\$70,000	\$14,000,000
4	200	\$70,000	\$14,000,000
5	200	\$70,000	\$14,000,000
6	200	\$70,000	\$14,000,000
7	200	\$70,000	\$14,000,000
8	200	\$70,000	\$14,000,000
9	200	\$70,000	\$14,000,000
10	200	\$70,000	\$14,000,000
TOTAL	2,000		\$140,000,000

Soil-Sement® Treatment Costs on Unpaved Shoulders Valley Wide

Year	Miles Paved	Cost/mi	Cost
1	1,800	\$4,224	\$7,603,200
2	300	\$2,281	\$684,288
3	1,400	\$4,224	\$5,913,600
4	233	\$2,281	\$532,224
5	1,000	\$4,224	\$4,224,000
6	167	\$2,281	\$380,160
7	600	\$4,224	\$2,534,400
8	100	\$2,281	\$228,096
9	200	\$4,224	\$844,800
10	33	\$2,281	\$76,032
TOTAL	5,833		\$23,020,800

For approximately \$116,000,000 LESS you can treat almost 3 times as many miles by using Soil-Sement® as opposed to paving!

SOIL-SEMENT® DEMONSTRATION Fresno County Road Shoulder Stabilization

The San Joaquin Valley has one of the worst air quality problems in the nation and is one of a few areas of the country classified by the USEPA as a serious non-attainment area for the federal particulate matter air quality standard (PM₁₀). In response to the severity and longevity of the Valley's PM₁₀ air quality problem, the USEPA found the Valley's PM₁₀ non-attainment area plan deficient and required the San Joaquin Valley Air Pollution Control District to revise its plan and commit to the rapid development and implementation of Best Available Control Measures (BACMs).

For this demonstration the Fresno County Department of Public Works wanted to compare Soil-Sement® to slow cure asphalt, SC-250. Prominent differences between the two products include:

- Soil-Sement® has no detectable emissions of VOC whereas SC-250 emits 400 lbs/mile of treated shoulder.
- Soil-Sement® is non-toxic whereas SC-250 has potential toxic and water quality implications.
- Soil-Sement® costs less than SC-250.

At slightly over 2 months after application, department personnel reported a number of complaints about SC-250 track-out, and had to return to the site and apply a layer of sand to portions of the SC-250 treated shoulders.

“Midwest Industrial Supply, Inc. is the industry-leading manufacturer of fugitive dust palliatives that has gone through the effort and expense of having air regulatory agencies verify the effectiveness of its products. Soil-Sement® was evaluated by the California Air Resources Board and a host of other agencies and found to be a highly effective and durable dust palliative for unpaved road surfaces.”



Soil-Sement® being applied.



Soil-Sement® 2 months after application.

Two months after application, the Department Road Staff found the Soil-Sement® application has provided a durable and stabilized road surface and has effectively eliminated fugitive dust!

efficiency exceeds
80%
over one year!

Experiments conducted by the
Desert Research Institute
determine the efficiencies of dust suppressant materials
on unpaved public roads and unpaved shoulders along
paved roads.

Experiments were conducted from July to August in order to determine the PM₁₀ control efficiencies of different dust suppressant materials on unpaved public roads and unpaved shoulders along paved roads.

In an initial survey, more than 60 specific suppressant products were identified. These fell into categories of:

- 1) salts
- 2) asphalt or petroleum emulsions
- 3) emulsions of other materials
- 4) polymers
- 5) surfactants
- 6) bitumens
- 7) adhesives
- 8) solid materials, fibers and mulches
- 9) hydroseed vegetation
- 10) miscellaneous products

Conclusions were drawn with respect to:

- 1) efficiency and durability of each suppressant
- 2) fugitive dust emission rates
- 3) zones of influence of fugitive dust emissions

For the unpaved roads, PM₁₀ was measured upwind and downwind of each test section. For the unpaved shoulder study, in addition to upwind and downwind measurements, instantaneous measurements from light scattering and turbulence sensors were made. The efficiencies of Soil-Sement® **exceeded 80%** on average, during the final measurement period, 12 months after application. Of all of the other commercial products tested, the maximum efficiencies after a 12-month period amounted to no more than 49%.

PM₁₀ Suppression Efficiencies for each Test During Three Intensive Monitoring Periods

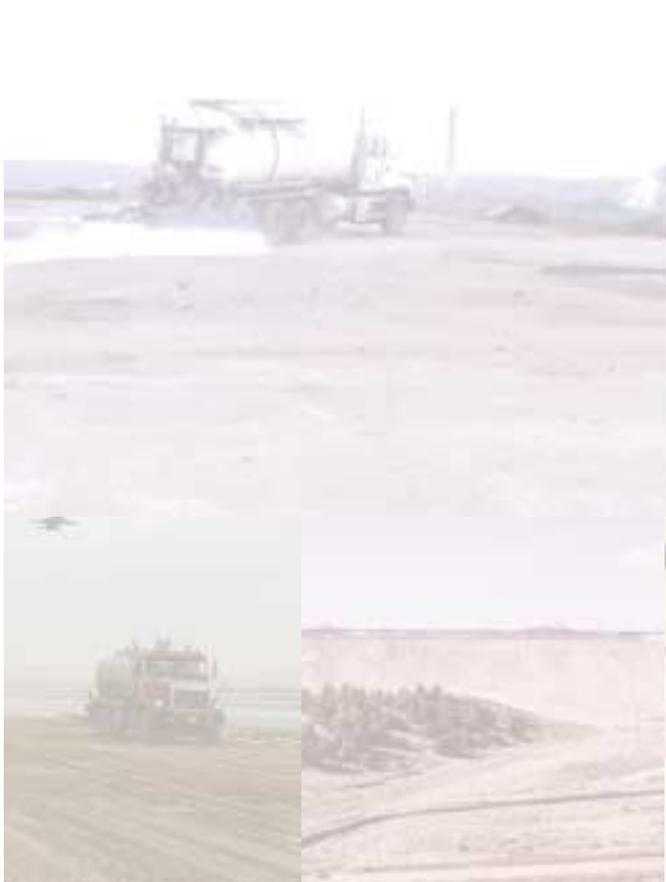
DATE	VEHICLE SPEED (km/hr)	SUPPRESSION EFFICIENCY (%)			
		BS ^a	PEP ^b	Soil-Sement®	NHCO ^c
7-22-95	40	56	100	100	N/A
7-24-95	40	20	100	83	
7-26-95	40	37	99	93	
(Average)		38	100	92	
(Std. Dev.)		18	1	8	
7-23-95	55	50	100	94	
7-25-95	55	47	99	100	
7-27-95 ^d	55	-13	94	97	
(Average)		28	98	97	
(Std. Dev.)		36	3	3	
10-17-95	40	3	73	97	N/A
10-20-95	40	-8	67	91	
10-22-95	40	-46	61	94	
(Average)		-17	67	94	
(Std. Dev.)		26	6	3	
10-18-95	55	-10	73	100	
10-21-95	55	37	84	100	
(Average)		13	79	100	
(Std. Dev.)		34	8	0	
6-13-96	40	18	65	90	83
6-14-96	40	-32	55	87	98
6-15-96	40	-20	42	86	89
(Average)		-11	54	88	90
(Std. Dev.)		26	11	2	7
6-19-96	55	-81	43	89	91
6-17-96	55	-75	37	77	97
6-18-96	55	-35	51	84	96
(Average)		-64	44	83	95
(Std. Dev.)		25	7	6	3

^aBiocatalyst stabilizer (EMC², Soil Stabilization Products).

^bPetroleum emulsion with polymer (CoherexPM, WITCO).

^cNon-hazardous crude oil mixture (WSPA).

^dNegative values denote emissions greater than the untreated section.



Why Midwest...

User and environmental safety is our top priority

Largest National Sales & Service Dust Control Team

Largest fleet of application vehicles and equipment for 24/7 service

Industry's best product satisfaction guarantee

Leading-edge technology with our state-of-the-art laboratory

Environmental claims independently verified by environmental agencies (USEPA, California Air Resources Board, Canadian Ministry of the Environment)

Professional, on-site training

Dynamic, interactive and informative website

Personal assistance with legislative and environmental regulations

Total sales support package - application guides, technical data, catalogs and MSDS sheets readily available

Midwest will lower your total operating costs with our exclusive turn-key service

Why Not Demand the Best!

TEAM MIDWEST™

THE MANY USES OF SOIL-SEMENT®



Residual Waste Landfills



Construction

Airports FOD



Pond Slopes



Naturally Occurring Asbestos



Intermodal

Hydroseeding



Unpaved Shoulders



Subgrade Stabilization

Coal Piles



Quarries



Public Works

Military Installations



Slopes



Steel Mills



Wineries



Power Plants

COMPLETE REPORTS AND TECHNICAL DATA AVAILABLE UPON REQUEST



For more information or to receive a complete list of other Midwest products, contact:

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VISA, Mastercard and American Express accepted