Soil-Sement®

Dust and Erosion Control Agent

Soil-Sement® is the ONLY polymer emulsion certified and verified by independent agencies such as Cal-Cert, US EPA/ETV, CARB and Canada ETV!

In test after test conducted by state and federal regulatory agencies Soil-Sement® has been proven to be the NUMBER ONE soil stabilizer used to control PM10 and PM2.5 fugitive dust emissions...

You can breathe easier knowing that when you choose Soil-Sement® polymer emulsion, you will meet or exceed ALL regulatory compliance requirements!

Why take chances with your compliance requirements? Demand the only polymer emulsion with **authentic** environmental and aquatic toxicity data.

Industry publications and trade journals confirm Soil-Sement®'s superior performance and reliability!

Soil-Sement® is the culmination of decades of focused research and development, with unparalleled concentration on PM10, PM2.5, erosion control and stabilization solutions. The result is a performance and value combination that is unequaled by other chemical and polymer products...proving that all polymers are NOT created equal!

Soil-Sement® polymer emulsion is utilized by more industries than any other dust suppressant on the market today!

Soil-Sement® is chosen by companies, organizations and industries that embody only the highest standards of efficiency and effectiveness.

Soil-Sement® is proudly distributed in Africa and in Brazil by

International Commerce Group, Inc.

105 Stillwater Drive · Warwick, RI 02889 [USA] · Office 1.401.738.2830 · Facsimile 1.401.739.1381 · http://www.icgroupusa.com

Soil-Sement®

DUST CONTROL, EROSION CONTROL, STABILIZATION

MIDWEST INDUSTRIAL SUPPLY, INC.

Leader in Environmental Stewardship

ALL THE TIME CERTIFIED EVERY TIME

Outstanding Features and Benefits of Soil-Sement®:

- Nearly eliminates particulate matter (PM_{10} and $PM_{2.5}$).
- 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 groundwater.
- 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.

MIDWEST INDUSTRIAL SUPPLY, INC.

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 PM_{10}, $PM_{2.5}$, 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 unequaled 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 it's 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!

MIDWEST INDUSTRIAL SUPPLY, INC.

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.

Pre-certified by the California Air Resources Board

CALIFORNIA ENVIRONMENTAL TECHNOLOGY CERTIFICATION

CalCert
Innovation Assured

CANADA VERIFIED VERIFIÉ

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 PM_{10}..."

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...PM_{10}, $PM_{2.5}$, 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!

Pre-certified by the California Air Resources Board

CALIFORNIA ENVIRONMENTAL TECHNOLOGY CERTIFICATION

CANADA VERIFIED VÉRIFIÉ

ERDC Engineer Research and Development Center

CALCERT
INNOVATION ASSURED

desert research institute

Arizona Department of Emergency & Military Affairs (ADEMA)

MRI
Midwest Research Institute

SDSU
San Diego State University

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.

Soil-Sement®
Dust and Erosion Control Agent

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 PM_{10} 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

CALCERT
INNOVATION ASSURED

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.

Pre-certified by the California Air Resources Board

"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 PM_{10} 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."

California Environmental Technology Certification

Midwest Industrial Supply, Inc.'s
Soil-Sement®

CERTIFIED TECHNOLOGY

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

* 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

SOIL-SEMENT® TECHNOLOGY CERTIFICATION REQUIRES THAT:

- Significant reduction of PM_{10} 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®

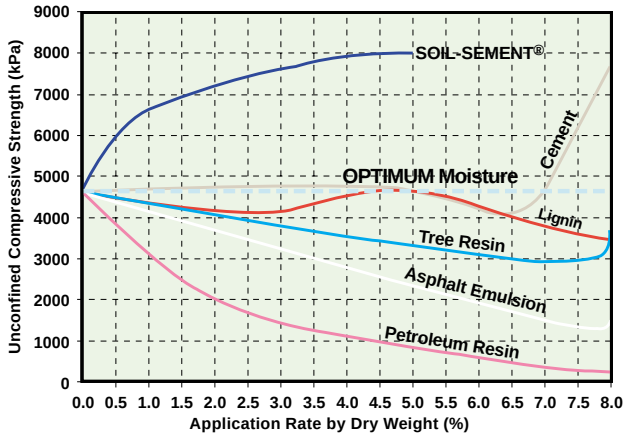
US ARMY ENGINEER RESEARCH AND DEVELOPMENT CENTER

Determines Potential Engineering Benefits of Soil-Sement®

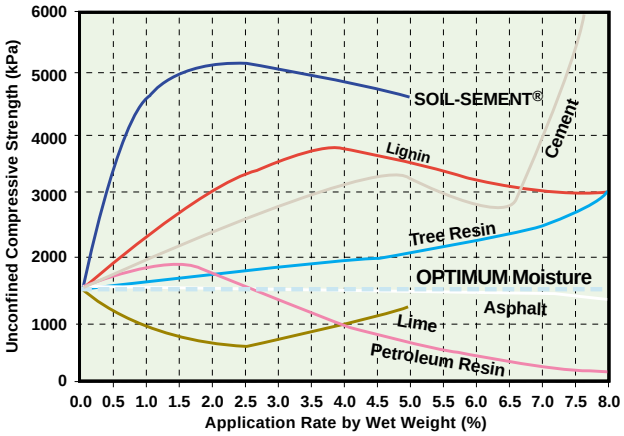
In a comprehensive study just released by the U.S. Army Research and Development Center of 12 non-traditional stabilizers and three traditional types, **SOIL-SEMENT®** (one of the non-traditional types) showed its potential to increase the unconfined compressive (UC) strength of silty sand (SM) material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

DRY
UNCONFINED COMPRESSIVE STRENGTH TEST DATA
U.S. Army Corps of Engineers, CEERD-GM-A
Stabilization of Silty Sand with Traditional and Non-traditional Additives



WET
UNCONFINED COMPRESSIVE STRENGTH TEST DATA
U.S. Army Corps of Engineers, CEERD-GM-A
Stabilization of Silty Sand with Traditional and Non-traditional Additives



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.

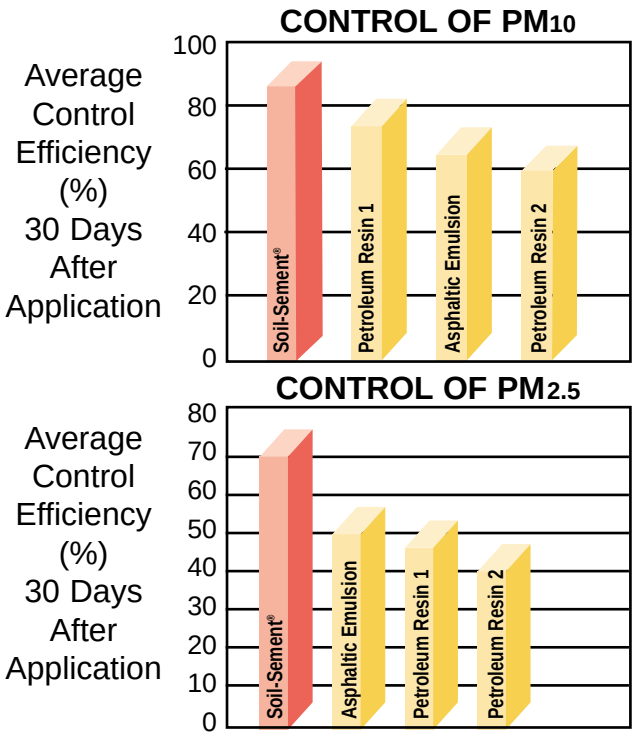
POST-IMPLEMENTATION EVALUATION

- 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 PM_{10} 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 PM_{10} 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.



"Evaluation of the Effectiveness of Chemical Dust Suppressants on Unpaved Roads," *Midwest Research Institute,* MRI Document No: PB88-139936.

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.

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!

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.

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 (PM_{10}). In response to the severity and longevity of the Valley's PM_{10} air quality problem, the USEPA found the Valley's PM_{10} 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.

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!

"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.

Soil-Sement®

Dust and Erosion Control Agent

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 PM_{10} 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, PM_{10} 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%.

PM_{10} 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

[a]Biocatalyst stabilizer (EMC², Soil Stabilization Products).
[b]Petroleum emulsion with polymer (CoherexPM, WITCO).
[c]Non-hazardous crude oil mixture (WSPA).
[d]Negative values denote emissions greater than the untreated section.

"Effectiveness Demonstration of Fugitive Dust Control Methods for Public Unpaved Roads and Unpaved Shoulders on Paved Roads," *Desert Research Institute,* DRI Document No.: 685-5200.1F1.

Soil-Sement® and NPDES monitoring.

Beginning in 1975, Midwest Industrial Supply, Inc. has been proactively solving environmental problems. When used per the manufacturer's guidelines, Soil-Sement® will help you meet your NPDES permitting requirements. Call us today!

CONTRIBUTIONS TO PHASE I COMPLIANCE BY SOIL-SEMENT®:

- Soil-Sement® will not affect pH levels. As applied, Soil-Sement® is neutral pH.
- Soil-Sement® does not contain oil or grease.
- Soil-Sement® does not contain volatile organic compounds or semi-volatile organic compounds above the regulatory levels.
- Soil-Sement®, when applied correctly and cured, will not increase BOD or COD.
- Soil-Sement® will not increase TSS (Total Suspended Solids) if applied properly. In fact, once dried and cured, Soil-Sement® will decrease the TSS.

CONTRIBUTIONS TO PHASE II COMPLIANCE BY SOIL-SEMENT®:

Technical data is available showing:

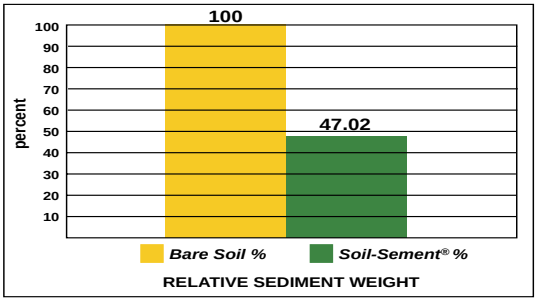
- The effectiveness of Soil-Sement® in binding naturally occurring pollutants such as metals and arsenic to the soil, making them unable to enter into stormwater runoff.
- That Soil-Sement® will prevent dust from becoming airborne and settling as sediment in stormwater runoff.

DEPARTMENTS OF TRANSPORTATION NOW RECOMMEND:

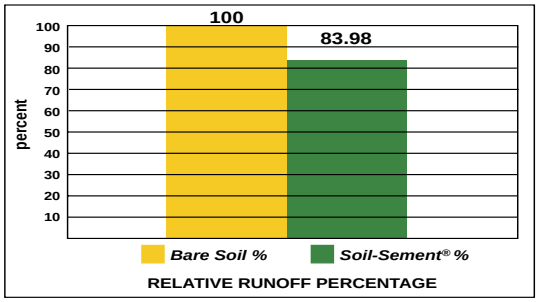
- That methods of erosion and sediment control should be considered "pay items" in the bids and specifications.
- That new road construction is usually funded approximately 80% by the federal government, and on-going maintenance is 100% funded by each state, therefore it is more economical to plan the erosion and sediment control into the initial budget.
- Part 91, Soil Erosion and Sedimentation Control, of the Natural Resources and Environmental Protection Act requires that soil and sedimentation control be considered throughout the development and delivery phases of a project, including planning, design, construction and maintenance.

Runoff Characteristics & Sediment Retention Under Simulated Rainfall Conditions

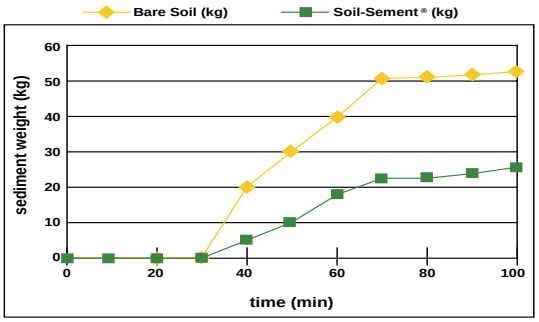
Relative Sediment Weights Comparison for a 10-year Storm Event on a Soil-Sement® Application vs. Bare Soil



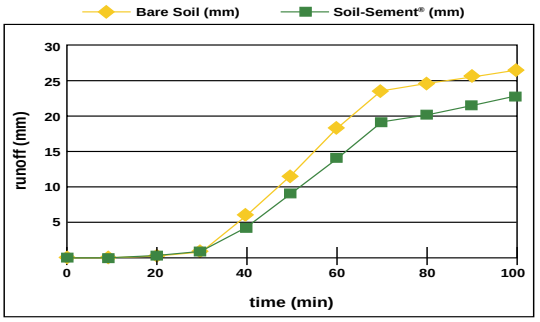
Relative Runoff Percentage Comparison for a 10-year Storm Event on a Soil-Sement® Application vs. Bare Soil



Cumulative Sediment Delivery for Soil-Sement® vs. Bare Soil Over Time

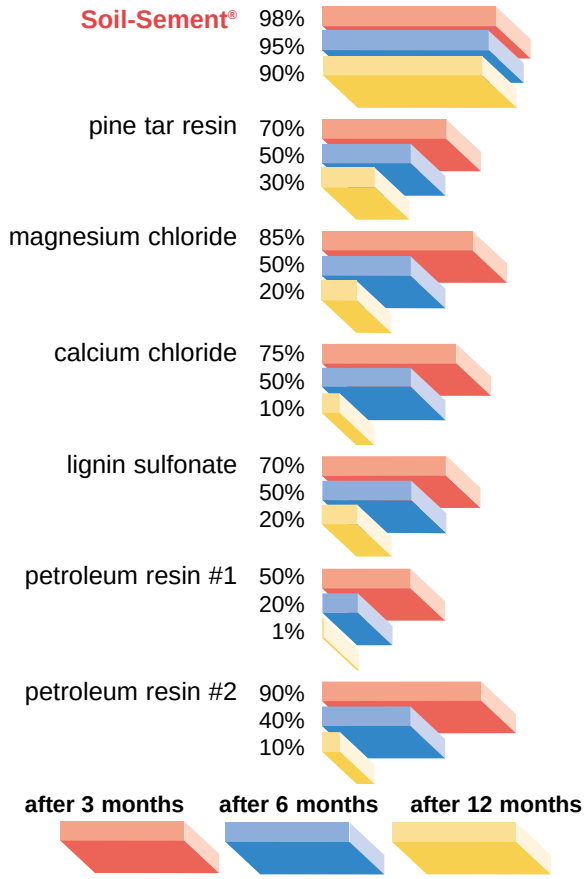


Cumulative Runoff for Soil-Sement® vs. Bare Soil Over Time



"Runoff Characteristics and Sediment Retention Under Simulated Rainfall Conditions," *San Diego State University*, SDASU/SERL PROJECT REFERENCE NO.: 2001-01-MIS.

A county located in the high Mojave Desert region in California initiated a PM_{10} Dust Control Project to evaluate the effectiveness of various dust suppressants for unpaved roadways. The evaluation was conducted under the direction of the Kern County Air Pollution Control District and coordinated through the County Waste Management Engineering Department. The products tested included a pine tar resin, magnesium chloride, calcium chloride, lignin sulfonate, petroleum resins and Soil-Sement®. Test sites were examined at 3 months, 6 months, and 12 months following application. The study found Soil-Sement® to be the product which continued to perform at the highest level of effectiveness as both a dust and erosion control agent.



- Of the products tested, **only Soil-Sement®** was successful in preventing roadbed deterioration (potholes, washboarding, rutting, and areas breaking up).
- Of the products tested, **only the road segment using Soil-Sement®** did not require regrading after 6 months and prior to the maintenance application.
- **Only Soil-Sement®** prevented washing and excessive deterioration of the road surface following bad weather.
- **Only Soil-Sement** retained any practical ability for controlling dust after the 12-month period.

"PROJECT DUST (Dusty Unpaved Surfaces Treatment),"
Kern County Air Pollution Control District.

Why Soil-Sement® Beats the Alternatives for Fugitive Dust Suppression:

As you know, there are many alternative methods of fugitive dust control. Below are just a few...

WATER

Water works well, but requires constant attention. (For example, Per Rule 403.1 of the South Coast AQMD - water must be applied at least **THREE** times a day when there is evidence of wind-driven fugitive dust.) In addition, water is most commonly applied by diesel-powered water trucks which themselves emit direct and toxic PM and NOX.

WASHED GRAVEL

A uniform layer of washed gravel, while controlling fugitive dust temporarily, presents numerous other problems. Traction is inadequate and tire damage can occur. Over time, dust emissions increase rather than decrease due to steady traffic breaking down the gravel. Also, gravel is fairly expensive and subject to water erosion.

PAVING

Paving, while the best long-term solution to fugitive dust control, is extremely expensive. In many applications, paving is impractical...the need may be temporary or the cost too extravagant.

Soil-Sement® is the only feasible, safe alternative to the above-mentioned methods that has been verified by numerous environmental agencies, including CalCert, California Air Resources Board and Environment Canada.

Why settle for more expensive, time-consuming methods when one application of environmentally safe Soil-Sement® lasts up to six months! Midwest Industrial Supply, Inc. has the tested, certified choice to help you comply with your water and air quality regulations...the only choice...

Soil-Sement®
Dust and Erosion Control Agent

Soil-Sement®'s Uncompromising Reliability and Repeatability Make it the Only Choice for Your Fugitive Dust Suppression Compliance Requirements!

Best Management Practices (BMPs)

Mandatory storm water permits and management plans are being incorporated into the framework of urbanized areas, making it imperative to address water quality in all aspects of development. Professionals, contractors and end users are struggling to develop a systematic and logical method for selecting the appropriate Best Management Practice (BMP) to be integrated into the various construction phases for their projects.

Best Management Practice is a technique, measure or structural control that is used for a given set of conditions to manage the quantity and improve the quality of storm water runoff in the most cost-effective manner. BMPs are designed to protect and prevent new pollution.

With Midwest Industrial Supply, Inc.'s understanding of the types of structural BMPs and how they interact with one another, we can provide guidance in obtaining the right mix for a specific site. To ensure the maximum benefit is achieved, we evaluate your site so the most effective BMP for the preconstruction, active construction and post-construction phases is utilized.

The Preconstruction phase requires a careful assessment of the specific site and a development of a clear understanding of what stormwater controls will be required by relevant stormwater regulations, local ordinances and site plan approval processes. The Active Construction Phase deals with sediment containment systems and vegetative techniques. Their roles are to create conditions for sedimentation, allowing soil particles that are held in suspension to settle. Post-construction BMPs are techniques that can be used to address flow quantity control of, and treatment for, water quality through pollution removal in wet-weather runoff.

SOIL-SEMENT® IS THE ONLY CHOICE USED FOR ALL THREE PHASES OF CONSTRUCTION:

PRECONSTRUCTION:	ACTIVE CONSTRUCTION:	POST-CONSTRUCTION:
• Soil-Sement®	• Soil-Sement®	• Soil-Sement®
• Silt Fences	• Silt Fences	
• Continuous Berms	• Continuous Berms	
• Wattles	• Wattles	

Soil-Sement® will keep your operation running smoothly and in compliance with stormwater regulations during all phases of construction!

Best Available Control Technologies (BACTs)

Best Available Control Technology is an emission limitation that will attain the lowest achievable emission rate for the source to which it is applied.

Best Available Control Methods (BACM) and Reasonably Available Control Methods (RACM) are also important techniques and procedures to limit emission and/or airborne transport of fugitive dust from a site with satisfactory results accomplished for temporary and/or extended suppression of PM_{10} emissions.

Soil-Sement® can be used to achieve Best Available Control Technology. Soil-Sement® is also considered to be both Best Available Control Method (BACM) **and** Reasonably Available Control Method (RACM).

Fugitive Dust Emissions Control Plan

Regulatory agencies require operations to submit Fugitive Dust Emissions Control Plans so that the amount of particulate matter carried in the surrounding air as a result of man-made fugitive dust sources meets opacity, wind conditions and control efficiency requirements.

Midwest has Fugitive Dust Emissions Control Plans that are detailed to demonstrate the applicable Best Available Control Measures or Reasonably Available Control Measures that will be utilized and/or installed during all periods of active operations.

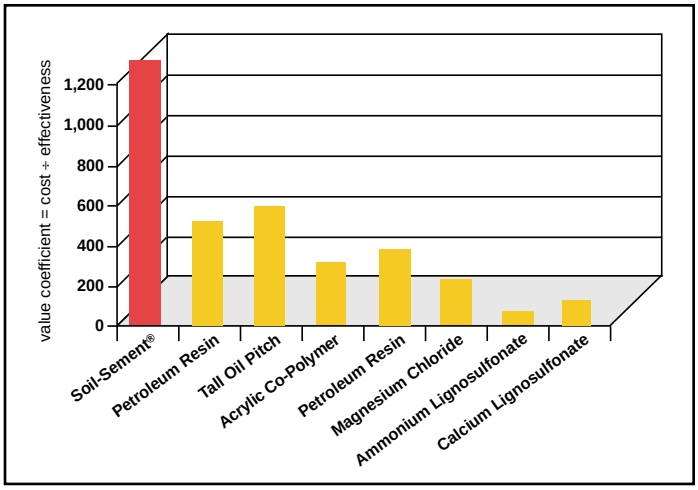
Our plans meet these three conditions:

- All sources of fugitive dust emissions are identified.
- For each source identified, at least one of the required control measures is implemented, or an acceptable justification statement is satisfied.
- If visible dust emissions are crossing the property line(s), then high wind measures are specified for immediate implementation.

We provide the following services so that your organization will avoid violations:

- Maintain records to document the dates of active operations, all applicable fugitive dust source types and the action taken.
- Retain such records for a period of at least 6 months.
- Provide trained on-site Dust Supervisors, as required by the South Coast Air Quality Management District
- Make such records available to the Executive Officer upon request.

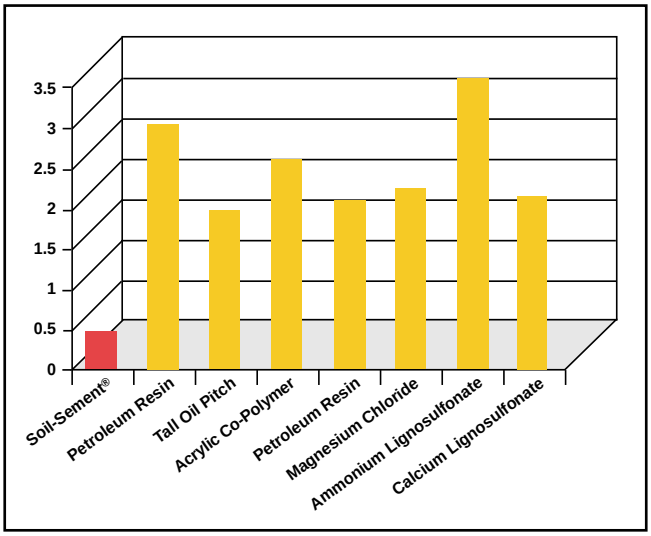
SOIL-SEMENT® VALUE COMPARISON vs. other suppressant types based on performance



= GREATEST VALUE

VALUE:

Value coefficient arrived at by dividing weight of dust collected into product cost.



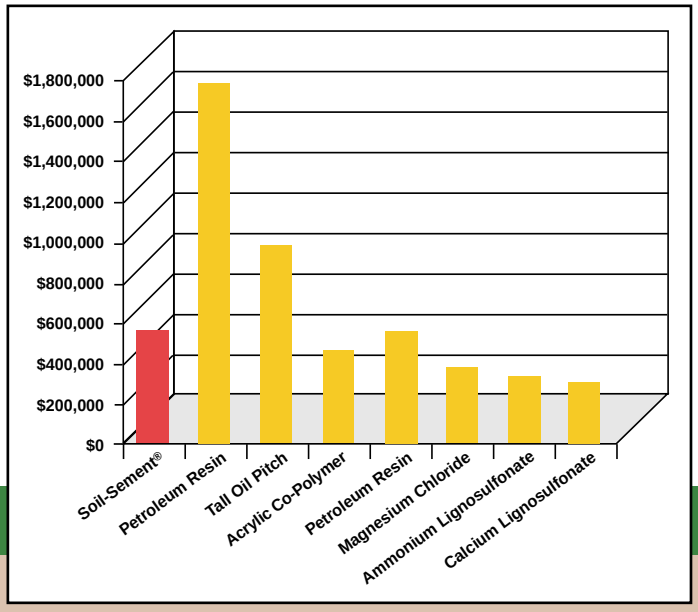
= LEAST DUST

PRODUCT PERFORMANCE:

Weight of the dust collected at the site over a 27-week period

PROJECTED ANNUAL PRODUCT COST:

Based on Manufacturer's Recommendation

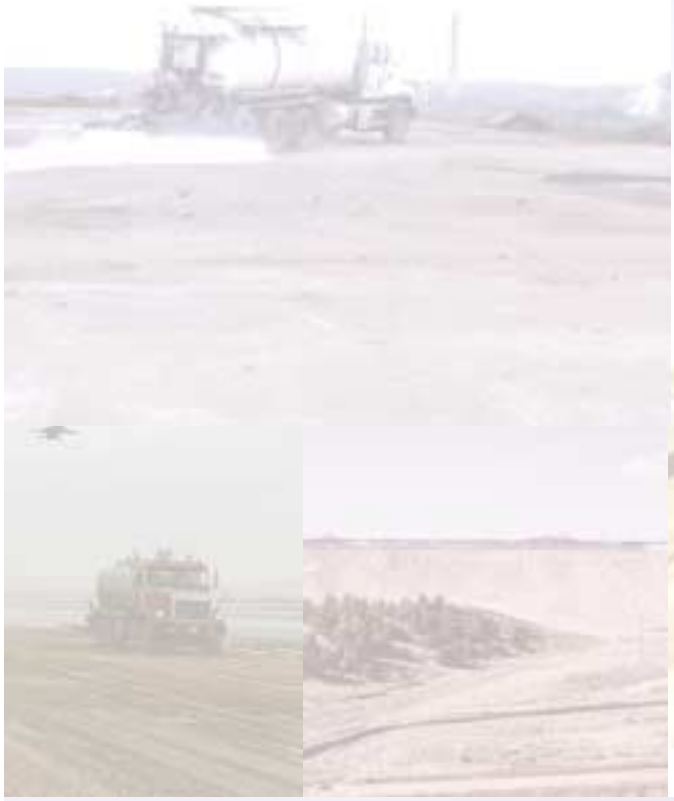


Whether four times more expensive or one-fourth less expensive, no other chemical dust suppressant in this test was close to the product performance of Soil-Sement®...

...and Soil-Sement® provided from

200% to 1,200%

greater value than other products in the test!



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 environmnetal 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

Intermodal

Hydroseeding

Naturally Occurring Asbestos

Unpaved Shoulders

Subgrade Stabilization

Coal Piles

Quarries

Public Works

Military Installations

Steel Mills

Slopes

Power Plants

Wineries

COMPLETE REPORTS AND TECHNICAL DATA AVAILABLE UPON REQUEST

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

MIDWEST INDUSTRIAL SUPPLY, INC.

P.O. BOX 8431 • CANTON, OH 44711 • USA • 330-456-3121 • FAX: 330-456-3247

TOLL-FREE: 1-800-321-0699

E-MAIL: custserv@midwestind.com • www.midwestind.com • www.soilsement.com

VISA, Mastercard and American Express accepted

Midwest Industrial Supply, Inc.
P.O. Box 8431
Canton, OH 44711

Emergency Phone Number: 330-456-3121

SOIL SEMENT®

Dust and Erosion Control Agent

MATERIAL SAFETY DATA SHEET

SECTION I -- IDENTIFICATION OF SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING

TRADE NAME:	SOIL-SEMENT®
CHEMICAL NAME:	POLYMER EMULSION
SYNONYMS:	DUST RETARDANT
CHEMICAL FAMILY:	N/A
MOLECULAR WEIGHT:	N/A
FORMULA:	AQUEOUS ACRYLIC VINYL ACETATE POLYMER EMULSION
CAS REGISTRY NO.:	PRODUCT A BLEND - NO NUMBER ASSIGNED

SECTION II -- COMPOSITION/INFORMATION ON INGREDIENTS

NAME	**CAS REG NO.**	**WT. %**
Acrylic & Vinyl Acetate Polymer	Non-hazardous	5-50
Water	7732-18-5	95-50

SECTION III -- HAZARDS IDENTIFICATION

Acrylic & Polyvinyl Acetate Polymer	Non-hazardous
Water	Non-hazardous

SECTION IV -- FIRST AID MEASURES

EYES:	Flush eyes with flowing water at least 15 minutes, get medical attention.
INHALATION:	Move subject to fresh air.
SKIN:	Flush with large amount of water or wash with soap and water.
INGESTION:	Give water to drink. Call a physician

NEVER GIVE FLUIDS OR INDUCE VOMITING. IF PATIENT IS UNCONSCIOUS OR HAVING CONVULSIONS.

SECTION V -- FIRE FIGHTING MEASURES

FLASH POINT (TEST METHOD):	Non-Combustible
AUTOIGNITION TEMPERATURE:	N/A
EXTINGUISHING MEDIUM:	N/A
SPECIAL FIREFIGHTING PROCEDURES:	N/A
UNUSUAL FIRE AND EXPLOSION HAZARDS:	Material can splatter above 2l2°F. Dried polymer film can burn but will not support combustion.

SECTION VI - ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK PROCEDURES:

Dike and control spill. Transfer liquid to containers for recovery or disposal. Keep spills out of sewers and open bodies of water.

SECTION VII -- HANDLING AND STORAGE

STORAGE: Keep in a cool, dry, ventilated storage area and in closed containers. Minimize contact with the air to prevent microorganism contamination and reduce the formation of skins on the surface.

KEEP FROM FREEZING

HANDLING: Handle in a well-ventilated workspace.

SECTION VIII -- EXPOSURE CONTROL/PERSONAL PROTECTION

RESPIRATORY PROTECTION:	None required if good ventilation is maintained.
VENTILATION:	Mechanical exhaust at point of contaminant.
EYE PROTECTION:	Chemical splash goggles recommended.
PROTECTIVE CLOTHING:	Impervious gloves recommended.
OTHER:	Under normal handling conditions, the risk of exposure to residual monomer is negligible.

SECTION IX -- PHYSICAL AND CHEMICAL PROPERTIES

BOILING/MELTING POINT @ 760 mm Hg:	212°F
VAPOR PRESSURE mm Hg @ 20°C:	17
SPECIFIC GRAVITY OR BULK DENSITY:	1.01 to 1.15
SOLUBILITY IN WATER:	Dilutable
APPEARANCE:	Milky White Liquid
ODOR:	Characteristic Acrylic odor
pH:	4.0 to 9.5

SECTION X -- STABILITY AND REACTIVITY

STABILITY:	Stable
CHEMICAL INCOMPATIBILITY:	No hazardous reactions are expected to occur under normal industrial conditions.
HAZARDOUS DECOMPOSITION PRODUCTS:	Thermal decomposition in the presence of air may yield carbon monoxide and/or carbon dioxide and water.
HAZARDOUS POLYMERIZATION:	Does not occur
CONDITIONS TO AVOID:	N/A
CORROSIVE TO METAL:	No
OXIDIZER:	No

SECTION XI -- TOX ICOLOGICAL INFORMATION

EFFECTS OF OVEREXPOSURE

INHALATION:	Vapor from stored, undiluted product can cause headache and nausea.
SKIN:	Stored, undiluted product is slightly irritating to skin.
EYES:	Slightly irritating to eyes.
INGESTION:	May be irritating to digestive tract.

SECTION XII -- ECOLOGICAL INFORMATION

Toxicological evaluation of Soil Sement® utilized EPA methods for both acute and chronic toxicity determination for aquatic organisms. LC_{50} values were determined for each of the species. The table below contains a synopsis of the results.

Soil Sement Aquatic Toxicity Test Results

*Methods for Measuring the Acute Toxicity of Effluents and Receiving Water to Freshwater and Marine Organisms, EPA/600/4-90/027F.

*Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms, EPA/600/4-91/002.

*Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Marine and Estuarine Organisms , EPA/600/4-91/003.

	Ceriodaphnia dubia	Fathead minnow	Americamysis bahia	Rainbow trout
ACUTE/SURVIVAL (mg/L)				
LC50	>1000	>1000	>1000	320
NOEC	1000	1000	1000	
LOEC	>1000	>1000	>1000	
CHRONIC/SURVIVAL (mg/L)				
LC50	>1000	>1000	>1000	510
NOEC	1000	1000	1000	340
LOEC	>1000	>1000	>1000	700
CHRONIC/GROWTH/ REPRODUCTION (mg/L)				
LC50	>1000	>1000	>1000	540
NOEC	1000	1000	1000	340
LOEC	>1000	>1000	>1000	700

See attached test results:

1. ABC Laboratories, Inc. Americamysis bahia, Fathead minnow, Ceriodaphnia dubia.
2. BAR Invironmental, Inc. Rainbow trout
3. EnviroScience Inc. Rainbow Trout, Chronic (New Data)

LC50 - Lethal Concentration, 50%
NOEC - No Observable Effects Concentration
LOEC - Lowest Observable Effects Concentration

Comparison of the EPA guidelines to the LC_{50} levels of all species show that Soil Sement® is practically non-toxic to all species.

SECTION XIII -- DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD:

Coagulate the emulsion by the stepwise addition of ferric chloride and lime or the addition of sand or other absorbent material. Remove the clear supernatant liquid and flush to a chemical sewer or landfill. Incinerate solids and the contaminated diking material according to local, state and federal regulations.

CONTAINER DISPOSAL:

Do not re-use containers. Do not weld on metal containers.

SECTION XIV -- TRANSPORTATION INFORMATION

D.O.T. PROPER SHIPPING NAME (49CFR172.101):	None
HAZARDOUS SUBSTANCE (40CFR116):	N/A
REPORTABLE QUANTITY (RQ):	N/A
D.O.T. HAZARD CLASSIFICATION (49CFR172.101):	Non-regulated
D.O.T. PLACARDS REQUIRED:	None
POISON CONSTITUENT (49CFR173.343):	N/A
BILL OF LADING DESCRIPTION:	Liquid plastic, NOS
C NO.:	N/A
UN/NA CODE:	N/A

SECTION XV-- REGULATORY INFORMATION

SOIL-SEMENT® is not a restricted article according to the Department of Transportation and International Air Transport Association regulations.

EPA SARA Title III hazard class:	None
OSHA HCS hazard class:	Non-OSHA hazardous (29CFR1910.1200)
Toxic Chemicals present in quantities greater than the "de minimus" level are:	None
TSCA:	All ingredients are on the TSCA (Toxic Substance Control Act) inventory or are not required to be listed on the TSCA inventory.
California Proposition 65:	This product contains no trace amount of chemical(s) know to the state of California to cause cancer of birth defects.
Canadian DSL:	All ingredients are in the Canadian DSL (Domestic Substance List) or are not required to be on the list.
Canadian WHMIS:	This product is not a "controlled product" under the Canadian Workplace Hazardous Material Information System (WHMIS)

SECTION XVI -- OTHER INFORMATION

ABBREVIATIONS AND SYMBOLS:

N.D. - Not Determined	N.A. - Not Applicable	N.T. - Not Tested
< - LESS THAN	> - MORE THAN	