

GW - 72

**GENERAL  
CORRESPONDENCE**

**YEAR(S):**

---

1994-1990

DISTRICT I

PO Box 1000

Hobbs, NM 88241-1000

DISTRICT II

PO Box 100

Artesia, NM 88211-0100

STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION

DISTRICT III

1000 Rio Brazos Rd.

Artesia, NM 87410

DISTRICT IV

PO Box 3888

Santa Fe, NM 87504-2088

REQUEST FOR APPROVAL TO ACCEPT SOLID WASTE		XXXXXXXXXXXXXXXXXXXXXXXXXXXX
1. RCRA Exempt: <input type="checkbox"/> Non-Exempt: <input checked="" type="checkbox"/> Verbal Approval Received: Yes <input type="checkbox"/> No <input type="checkbox"/>	4. Generator Western Company	
2. Destination Controlled Recovery, Inc.	5. Name of Originating Site Hobbs Facility	
3. Address of Facility Operator P.O. Box 369, Hobbs, NM 88241	6. Name of Transporter Sonny's	
7. Location of Material (Street Address or ULSTR) 2708 West County Road, Hobbs, NM	8. State New Mexico	
9. <u>Circle One</u> A All requests for approval to accept oilfield exempt wastes will be accompanied by a certification of waste from the Generator; one certificate per job. B All requests for approval to accept non-oilfield exempt wastes will be accompanied by a certification of waste status from the Generator and the New Mexico Environment Department or other appropriate government agency; two certificates per job. <input checked="" type="radio"/> C All requests for approval to accept non-exempt wastes must be accompanied by necessary chemical analyses to prove the material is non-hazardous and the Generator's certification of origin. No waste classified as hazardous by listing or testing will be approved. All transporters must certify the wastes delivered are only those consigned for transport.		

BRIEF DESCRIPTION OF THE MATERIAL:

The Western Company facility has a discharge plan for its Hobbs facility. They were granted permission to bring a load from the facility's sand trap in April. They once again would like to dispose of the material at CRI. Attached is a copy of the analysis and a statement from the generator, stating that the analysis is still representative of the material.

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JUL 27 1994

OFFICE

Estimated Volume 100 bbls. cy Known Volume (to be entered by the operator at the end of the haul): \_\_\_\_\_  
 I hereby certify that the information above is true and complete to the best of my knowledge and belief.  
 SIGNATURE Annette Curiel TITLE Office Manager DATE 7-26-94  
 TYPE OR PRINT NAME Annette Curiel TELEPHONE NO. 800-658-6914

(This space for State Use)

APPROVED BY [Signature] TITLE ENGR ENGR. DATE 7/27/94  
 APPROVED BY [Signature] TITLE Geologist DATE 8-12-94

CONDITIONS OF APPROVAL, IF ANY:



PHONE (915) 673-7001 • 2111 BEECHWOOD • ABILENE, TEXAS 79603  
 PHONE (505) 393-2326 • 101 E. MARLAND • HOBBS, NEW MEXICO 88240

## TCLP ANALYSIS REPORT

Company: Western Company of North America Date: 4/21/94  
 Address: 2708 W. County Rd. Lab # H1600-1  
 City, State: Hobbs, NM 88240

Project Name: not supplied  
 Project Location: n/s  
 Sampled by: JF  
 Type of Sample: Soil/Sludge

Date: 4/5/94  
 Sample Condition: GST

Sample ID: Sand Trap

## TCLP ORGANICS

PARAMETER	RESULT	UNITS
Benzene	<0.025 ✓	mg/L
Carbon Tetrachloride	<0.025 ✓	mg/L
Chlorobenzene	<0.025 ✓	mg/L
Chloroform	<0.025 ✓	mg/L
1,4-Dichlorobenzene	<0.025 ✓	mg/L
1,2-Dichloroethane	<0.025 ✓	mg/L
1,1-Dichloroethane	<0.025 ✓	mg/L
2,4-Dinitrotoluene	<0.020 ✓	mg/L
Hexachlorobenzene	<0.020 ✓	mg/L
Hexachlorobutadiene	<0.020 ✓	mg/L
Hexachloroethane	<0.020 ✓	mg/L
Nitrobenzene	<0.020 ✓	mg/L
Pentachlorophenol	<0.100 ✓	mg/L
Tetrachloroethylene	<0.025 ✓	mg/L
Trichloroethylene	<0.025 ✓	mg/L
2,4,5-Trichlorophenol	<0.020 ✓	mg/L
2,4,6-Trichlorophenol	<0.020 ✓	mg/L
Vinyl Chloride	<0.050 ✓	mg/L
Cresol (O,M,P)	<0.020 ✓	mg/L
Methy Ethyl Ketone	<0.050 ✓	mg/L
Pyridine	<0.020 ✓	mg/L

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JUL 27 1994

UCC HOBBS  
 OFFICE



## TCLP ANALYSIS REPORT

Company: Western Company of North America Date: 4/21/94  
Address: 2708 W. County Rd. Lab#: H1600-1  
City, State: Hobbs, NM 88240

Project Name: not supplied  
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Sampled by: JF  
Type of Sample: Soil/Sludge

Date: 4/5/94  
Sample Condition: GST

Sample ID: Sand Trap

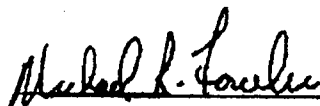
## TCLP INORGANICS (Leachate)

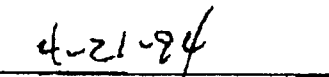
<u>PARAMETER</u>	<u>RESULT</u>	<u>UNITS</u>
Arsenic	0.013	mg/L
Barium	0.45	mg/L
Cadmium	<0.005	mg/L
Chromium	<0.05	mg/L
Lead	<0.1	mg/L
Mercury	<0.0005	mg/L
Selenium	<0.002	mg/L
Silver	0.059	mg/L

## HAZARDOUS WASTE CHARACTERIZATION

<u>PARAMETER</u>	<u>RESULT</u>	<u>UNITS</u>
Ignitability (Pensky-Martens Closed Cup)	>140 Degrees	F
Corrosivity, (pH)	6.47	
Reactivity-S	No Reaction (<0.01)	mg/kg
Reactivity-CN	No Reaction (<0.01)	mg/kg

METHODS: TCLP ORGANICS - EPA 8240/8270  
METHODS: TCLP INORGANICS (Leachate) - EPA 1311/3005/7000  
METHODS: HWC - EPA SW 846

  
Michael R. Fowler

  
Date

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JUL 27 1994

USENCO  
OFFICE



THE WESTERN COMPANY  
2708 WEST COUNTY ROAD  
HOBBS, NM 88240  
(505) 392-5556

STATEMENT OF CONDITION FOR ACCEPTANCE

We are requesting permission to dispose of waste material from our Hobbs yard at the Controlled Recovery, Inc. facility. The waste is generated from the sand trap at our yard which is under a discharge plan. As a condition of acceptance for disposal, I hereby certify that the analytical results dated April 21, 1994 still reflect the characteristics of this waste. In addition, I certify that no "hazardous waste" has been added or mixed with the sand trap material.

BY: James E. Taylor  
Name  
FACILITIES SUPERVISOR  
Title  
7-26-94  
Date  
Hobbs yard - 2708 West County Road  
Project Location

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JUL 27 1994

U.S. DEPT. OF  
OFFICE

DISTRICT I  
100 New 1900  
Alameda, NM 87211-1900

DISTRICT II  
100 New 1900  
Alameda, NM 87211-1900

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APR 26 1994

STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION

RECEIVED  
94 APR 28 AM 8 50

DISTRICT III  
100 New 1900 Rd.  
Alameda, NM 87410

DISTRICT IV  
100 New 1900  
Santa Fe, NM 87504-2000

REQUEST FOR APPROVAL TO ACCEPT SOLID WASTE		XXXXXXXXXXXXXXXXXXXXXXX
1. RCRA Exempt: <input type="checkbox"/> Non-Exempt: <input checked="" type="checkbox"/> Verbal Approval Received: Yes <input type="checkbox"/> No <input type="checkbox"/>	4. Generator 396-5556 The Western Company	
2. Destination Controlled Recovery, Inc.	5. Name of Originating Site Hobbs Facility	
3. Address of Facility Operator P.O. Box 369, Hobbs, NM 88241	6. Name of Transporter Sonny's	
7. Location of Material (Street Address or ULSTR) 2708 West County Road, Hobbs, NM	8. State New Mexico	
9. Circle One		
<p>A All requests for approval to accept oilfield exempt wastes will be accompanied by a certification of waste from the Generator; one certificate per job.</p> <p>B All requests for approval to accept non-oilfield exempt wastes will be accompanied by a certification of waste status from the Generator and the New Mexico Environment Department or other appropriate government agency; two certificates per job.</p> <p>C All requests for approval to accept non-exempt wastes must be accompanied by necessary chemical analyses to prove the material is non-hazardous and the Generator's certification of origin. No waste classified as hazardous by listing or testing will be approved.</p>		
All transporters must certify the wastes delivered are only those consigned for transport.		

BRIEF DESCRIPTION OF THE MATERIAL:

The Western Company facility has a discharge plan for its Hobbs facility. The attached is an updated analysis in order to keep in compliance with the discharge plan. The material is from the yard's sand trap.

GW-072 4/26/94 INSPECTED OIL/WATER/SAND TRAP SEPARATOR TANK (UNDERGROUND). WESTERN PERSONNEL DEMONSTRATED HOW SAMPLE WAS TAKEN. GRAB SAMPLE OF BOTTOM SLUDGE. THIN USE COLUWASA FOR COMPLETE TOP-TO-BOTTOM COMPOSITE NEXT TIME!

RECEIVED

JUL 27 1994

RECEIVED

MAY 02 1994

OCB HOBBS  
OFFICE

Estimated Volume 100 bbls. cy Known Volume (to be entered by the generator at the end of the haul):

I hereby certify that the information above is true and complete to the best of my knowledge.

SIGNATURE Annette Curiel TITLE Office Manager DATE 4-22-94

TYPE OR PRINT NAME Annette Curiel TELEPHONE NO. (505) 885-9765

APPROVED BY [Signature] TITLE ENVIRONMENTAL DATE 4/26/94

APPROVED BY [Signature] TITLE Ena Dorian DATE 4/28/94



STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION



August 11, 1994

BRUCE KING  
GOVERNOR

**CERTIFIED MAIL**

ANITA GONZALEZ  
CABINET SECRETARY

**RETURN RECEIPT NO. P-176-012-232**

POST OFFICE BOX 2088  
STATE LAND OFFICE BUILDING  
SANTA FE, NEW MEXICO 87504  
(505) 827-5800

Mr. Phillip Box  
Manager Real Estate and EPA Compliance  
The Western Company of North America  
515 Post Oak Blvd., Suite 915  
Houston, Tx 77027

**Re: Remedial Action Plan For Soil and Groundwater  
The Western Company of North America Hobbs Facility  
Lea County, New Mexico**

Dear Mr. Box:

The Oil Conservation Division (OCD) has completed a review of the April 27, 1994 "REMEDIAL ACTION PLAN FOR SOIL AND GROUNDWATER, THE WESTERN COMPANY OF NORTH AMERICA (Western), HOBBS NEW MEXICO FACILITY" submitted by Brown and Caldwell Consultants on behalf of Western. The report addresses the cleanup of hydrocarbon affected soil and groundwater at the facility, details of the remediation system, the remediation goals and a preliminary project schedule.

The remediation proposal contained in the above referenced document is approved under the conditions contained in the enclosed attachment.

Please be advised that OCD approval does not relieve Western of liability should this remedial action plan fail to adequately remediate contamination related to Western's activities. In addition, OCD approval does not relieve Western of responsibility for compliance with any other federal, state or local laws and/or regulations.

If you have any questions, call me at (505) 827-5824.

Sincerely,

Chris Eustice  
Geologist

xc: Jerry Sexton, OCD Hobbs Office  
Wayne Price, OCD Hobbs Office

CONDITIONS OF APPROVAL  
FOR A REMEDIAL ACTION PLAN  
WESTERN COMPANY OF NORTH AMERICA'S  
HOBBS FACILITY  
(AUGUST 11, 1994)

1. The soil remediation goal will be 100 parts per million Total Petroleum Hydrocarbons based upon the proximity of the contaminants relative to ground water.
2. The ground water from all monitor wells will be sampled and analyzed according to the following schedule:

<u>Initially</u>	<u>Quarterly</u>	<u>Annually</u>
BTEX PAH's Cations/Anions WQCC Metals	BTEX	BTEX PAH's Cations/Anions WQCC Metals

3. Quarterly Reports will be submitted to the OCD on January 1, April 1, July 1 and October 1 of each respective year. Quarterly reports will contain:
  - a. A summary of the laboratory analytical results of water quality sampling of the monitor wells and treatment system for the previous quarter.
  - b. A water table elevation map.
  - c. Any other pertinent information pertaining to operation and monitoring of the remediation system.
4. The OCD defers comment on the post closure monitoring until the remediation goals have been reached.
5. The OCD Santa Fe Office will be notified one week in advance of any sampling event or any major activity associated with the implementation of and operation of the remediation system so as to allow the OCD opportunity to witness the events and/or split sampling.

**BROWN AND  
CALDWELL**

Suite 2500  
1415 Louisiana  
Houston, Texas 77002  
(713) 759-0999 • FAX (713) 759-0952

Unless otherwise indicated or obvious from the nature of the transmittal, the information contained in this facsimile message is confidential information intended for the use of the individual or entity named below. If the reader of this message is not the intended recipient, or the employee or agent responsible to deliver it to the intended recipient, you are hereby notified that any dissemination, distribution or copying of this communication is strictly prohibited. If you have received this communication in error, please notify us at the telephone number listed. Thank you.

**FAX TRANSMITTAL COVER SHEET****PLEASE DELIVER THE FOLLOWING PAGES TO:**

Name: MARK Ashley Company: OCD - New Mexico  
City: \_\_\_\_\_ FAX No: 505-827-8177

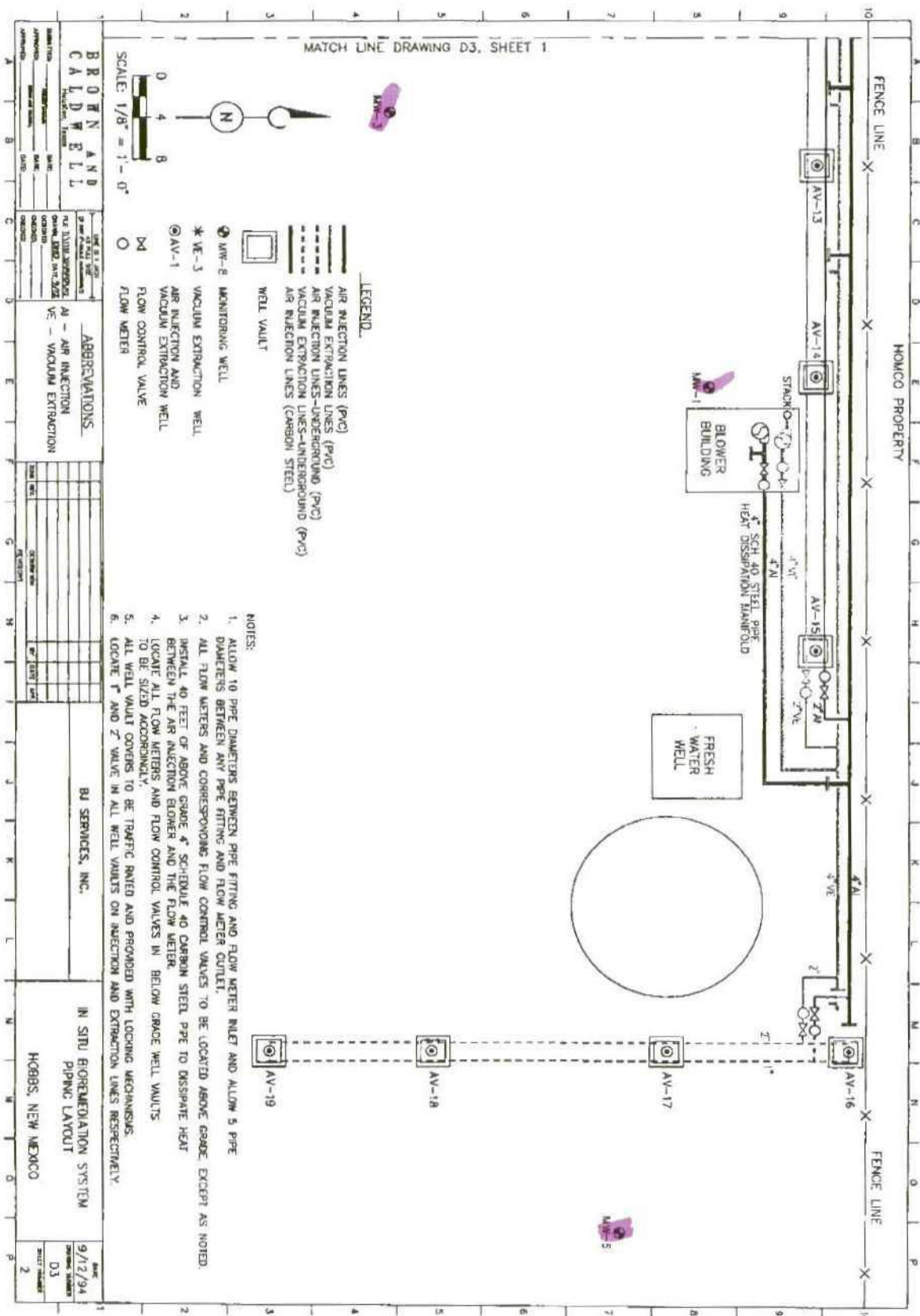
**THIS TRANSMITTAL IS BEING SENT FROM:**

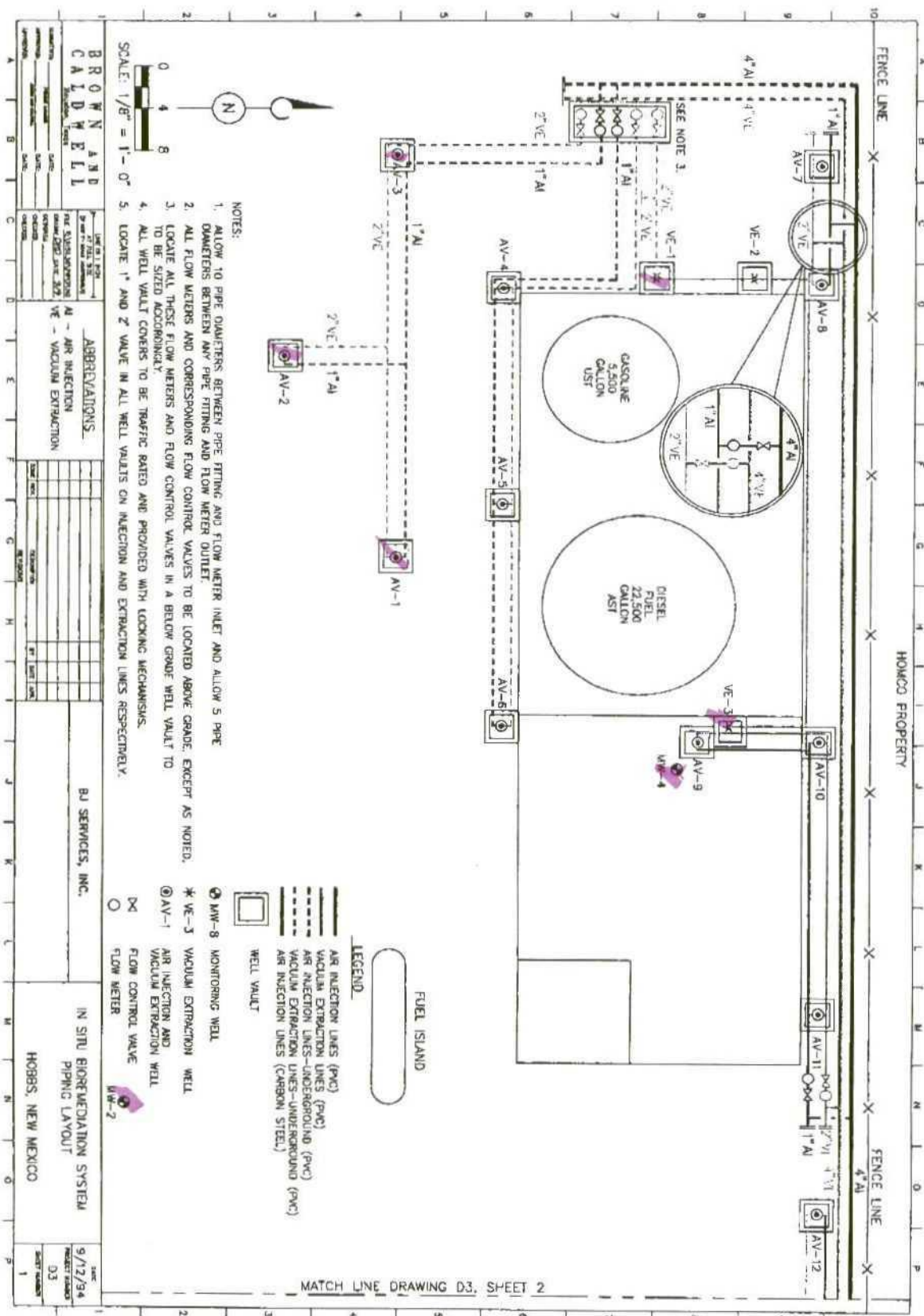
Name/User ID: RICK Miller Date: 7-27-95  
Job #: 2832 Return originals: Yes \_\_\_ No \_\_\_  
Stamp: Yes \_\_\_ No \_\_\_

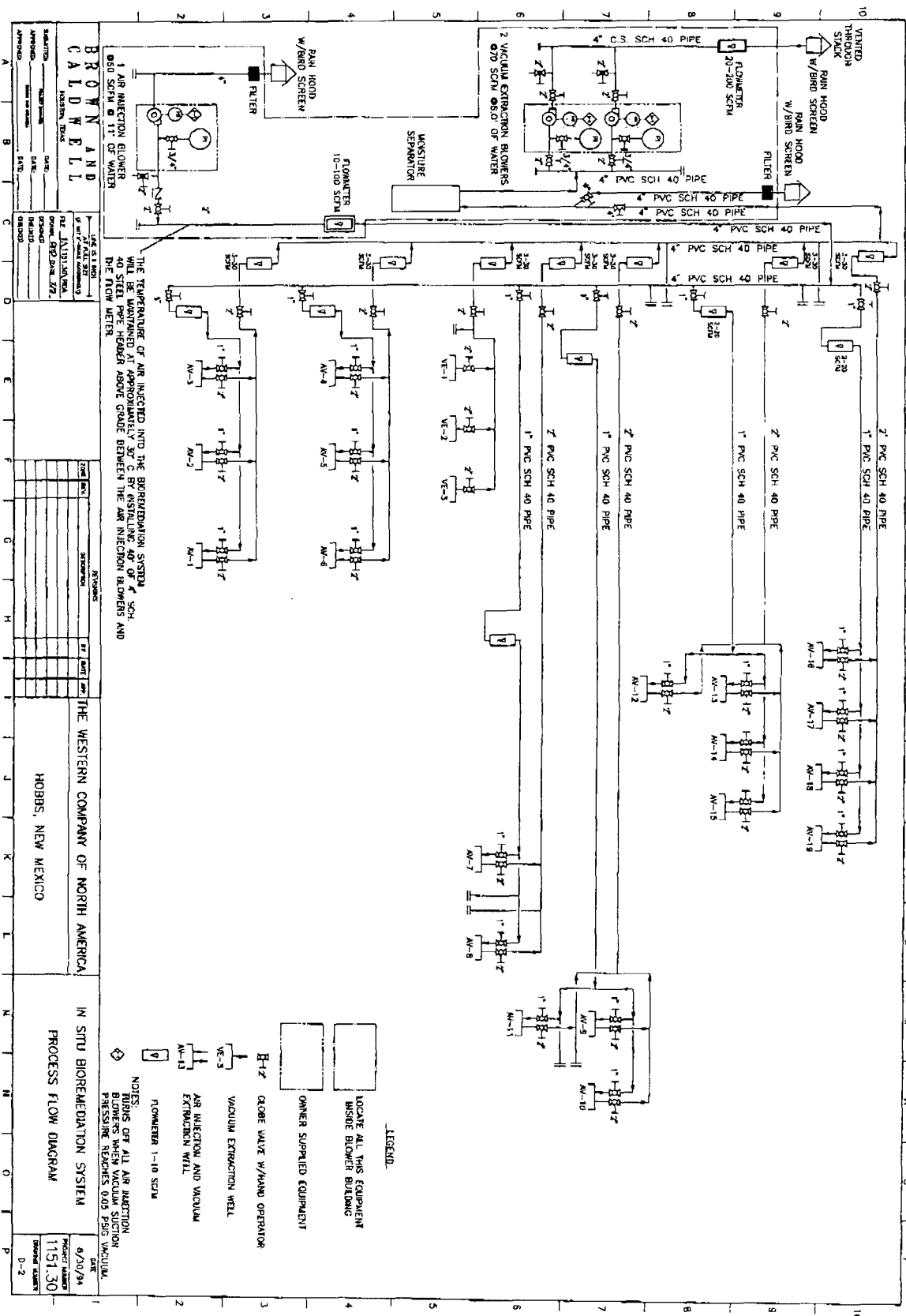
**SPECIAL INSTRUCTIONS/REMARKS:**

*Here ARE the "current" plans for well LOCATIONS  
& piping LAYOUT.*

NUMBER OF PAGES BEING TRANSMITTED, INCLUDING COVER SHEET: 4







**BROWN AND CALDWELL**

PROJECT NO. 1151.30

DATE: 9/20/94

PROJECT NAME: IN SITU BIOREMEDIATION SYSTEM

PROJECT NUMBER: 1151.30

PROJECT TITLE: D-2

NO.	DESCRIPTION	DATE	BY	CHK
1	DESIGN			
2	CONSTRUCTION			
3	OPERATION			
4	MAINTENANCE			
5	REPAIR			
6	REPLACEMENT			
7	RECONSTRUCTION			
8	RENOVATION			
9	REPAIR			
10	REPLACEMENT			

THE WESTERN COMPANY OF NORTH AMERICA

HOBBS, NEW MEXICO

IN SITU BIOREMEDIATION SYSTEM

PROCESS FLOW DIAGRAM



BROWN AND  
CALDWELL

OIL CONSERVATION DIVISION  
RECEIVED

'94 MAR 16 AM 8 50

May 11, 1994

Ms. Kathy Brown  
State of New Mexico  
Energy, Minerals, and Natural Resources Dept.  
Oil Conservation Division  
Post Office Box 2088  
State Land Office Building  
Santa Fe, New Mexico 87504

19-1151

Subject: Remedial Action Plan for Soil and Groundwater  
The Western Company of North America  
Hobbs, New Mexico Facility


Dear Ms. Brown:

On behalf of The Western Company of North America (Western), Brown and Caldwell is submitting the enclosed Remedial Action Plan (RAP) for Soil and Groundwater at the Hobbs facility. The RAP addresses the cleanup of hydrocarbon affected soil and groundwater at the facility. Included in the RAP are details of the proposed remediation system, the remediation goals, a preliminary cost estimate and a preliminary project schedule.

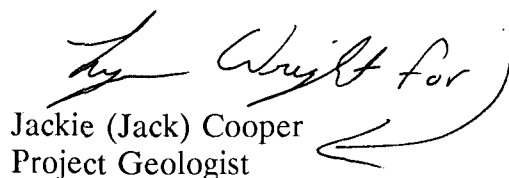
If you have any questions or require additional information, please contact me at (713) 759-0999.

Very truly yours,

BROWN AND CALDWELL



Robert N. Jennings, P.E.  
Manager, Gulf Coast Region



Jackie (Jack) Cooper  
Project Geologist

LMW:tjw

cc: Phillip Box, Western, Houston, Texas  
Teddy Gandy, Western, Hobbs, New Mexico  
OCD Hobbs District Office

**Mark Ashley**

---

**From:** Wayne Price  
**To:** Mark Ashley  
**Cc:** Bill Olson; Wayne Price; Jerry Sexton  
**Subject:** BJ-Western Yard Progress report  
**Date:** Monday, August 21, 1995 8:16AM  
**Priority:** High

Dear Mark,

Brad Brooks has notified our office that they have started construction on two concrete pads, one for empty drums to be located in the far NE part of property and the other one will be located adjacent and east of the main service shops.

Please call when you get ready to discuss the DP.



GARY E. JOHNSON  
GOVERNOR

State of New Mexico  
**ENVIRONMENT DEPARTMENT**  
Hazardous & Radioactive Materials Bureau  
525 Camino De Los Marquez  
P.O. Box 26110  
Santa Fe, New Mexico 87502  
(505) 827-4358  
Fax (505) 827-4389

MARK E. WEIDLER  
SECRETARY  
EDGAR T. THORNTON, III  
DEPUTY SECRETARY

May 23, 1995

Walter Biggins, Grants Section Chief  
RCRA Programs Branch (6H-HS)  
U.S. Environmental Protection Agency  
1445 Ross Ave., Suite 1200  
Dallas, Texas 75202-2733

Dear Mr. Biggins:

This letter is in response to your verbal request during our meeting in Santa Fe on May 17, 1995 concerning the grant workplan mid-year review. Specifically, you requested a list of the facilities in New Mexico recently inspected by the Region VI Hazardous Waste Division. Enclosed is a list of the facilities that Region VI and contractor staff inspected or had planned to inspect. We have not received any copies of inspection reports or letters from Region VI as a result of the inspections.

Members of my staff accompanied Region VI staff on some of the inspections and are available to answer any questions you may have concerning them. Mr. Roger Anderson of the New Mexico Oil Conservation Division brought some matters of concern to Benito Garcia concerning the Region VI inspection team. Should you have any questions you wish to direct to Mr. Anderson directly, he can be reached at (505) 827-7152. Please feel free to contact me concerning this or any other matter at (505) 827-4308.

Sincerely,

Coby Muckelroy  
RCRA Inspection/Enforcement Program Manager  
Hazardous and Radioactive Materials Bureau

Enclosure

xc: Benito Garcia, Chief, HRMB  
John Tymkowych, RCRA Inspection Group Supervisor, HRMB  
✓ Roger Anderson, Oil Conservation Division

xc: BJ Western File (Hobbs)

170- R0002	FACILITY LOCATION	EPA SITE ID NO.	INSPECTION DATE	PAC CEI INSPECTION TEAM	SAMPLES COLLECTED	REPORT AUTHOR	REPORT DUE DATE	DATE DELIVERED
01	Multi-site							
Farmington, NM								
02	Erectek (no report due)	-	4/3	Ayers, Butler, Vega, Heas	-	-	None	-
03	Unichem International	NMAD102780128	4/3	Ayers, Butler, Vega, Heas	No	Czechowski	5/3	
04	Western-Hall Inc.	NMAD097971626	4/3	Ayers, Butler, Vega, Heas	No	Czechowski	5/3	
05	CDI Chemical Distributors	-	4/4, 4/5	Ayers, Butler, Vega, Heas	Yes		6/2	
06	Coastal Chemical Co., Inc.	NMAD130100135	4/5	Butler, Heas	No	Sentayl	5/5	
Artes, NM								
16	Triple S, Touch Rental, Artes Drilling	-	4/6	Butler, Heas, Ayers, Vega	Yes		6/5	
Albuquerque, NM								
07	National Research Laboratories	NMAD130100135	4/17	Ayers, Butler, Vega, Heas	Yes		6/16	
08	Van Western & Rogers, Inc.	NMAD076467364	4/11	Butler, Collins, Ayers, Vega	No		5/11	
09	Layton Drum Co.	NMAD090868608	4/10	Butler, Heas, Ayers, Vega	Yes		6/9	
10	Fleming Chemical Company	-	4/11	Butler	No		5/11	
11	Organic Plus	-	4/13	Butler	No		5/12	
17	Solv-Ex	NMAD096683597	4/12, 4/13	Butler, Collins, Ayers, Vega	Yes		6/12	
Artesia, NM								
12	SES - <i>NMED</i>	-	4/18	Ayers, Butler, Vega, Heas	Yes		6/16	
Carlsbad, NM								
18	DMC Fertilizer	NMAD035718634	4/19	Butler, Heas, Ayers, Vega	No		5/19	
Hobbs, NM								
13	Enviro-Chem	-	4/25	Ayers, Butler, Vega, Collins	Yes		6/23	
14	B J Western	NMAD052377637	4/24, 4/25	Butler, Ayers, Collins, Vega	Yes		6/23	
15	Cobra Oil Industries Co.	-	4/26	Ayers, Butler, Collins, Vega	Yes		6/5	

\* Possible RCRA problems per Greg Tashin w/ EPA Region 518. (7/6/95)

# BROWN AND CALDWELL

November 1, 1994

Mr. Chris E. Eustice  
Environmental Geologist  
Oil Conservation Division  
2040 South Pacheco  
Santa Fe, New Mexico 87501

19-1151.30

Subject: Revised Schedule  
Remedial Action Plan  
Hobbs, New Mexico Facility

Dear Mr. Eustice:

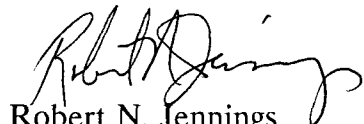
The Western Company of North America received a letter from the New Mexico Oil Conservation Division (OCD), dated August 11, 1994, indicating OCD's approval of the Remedial Action Plan for the Hobbs Facility. The purpose of this correspondence is to update the implementation schedule indicated in the Remedial Action Plan.

Activity	Date
Finalize Design	Complete
Specify Equipment	Complete
Order Equipment	November, 1994
Begin Installation	January, 1995
Start-Up System	February, 1995

If you have any questions, please contact Bob Jennings at (713) 759-0999.

Very truly yours,

BROWN AND CALDWELL



Robert N. Jennings  
Manager, Gulf Coast Region

*Environmental Engineering And Consulting • Analytical Services*

1415 LOUISIANA, SUITE 2500, HOUSTON, TX 77002  
(713) 759-0999 FAX (713) 759-0952



STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION



BRUCE KING  
GOVERNOR

ANITA LOCKWOOD  
CABINET SECRETARY

POST OFFICE BOX 2088  
STATE LAND OFFICE BUILDING  
SANTA FE, NEW MEXICO 87504  
(505) 827-5800

July 1, 1993

**CERTIFIED MAIL**  
**RETURN RECEIPT NO. P-667-241-996**

Mr. Phillip Box  
Manager Real Estate and EPA Compliance  
The Western Company of North America  
515 Post Oak Blvd., Suite 915  
Houston, Texas 77027

**RE: ADDITIONAL SOILS AND GROUND WATER INVESTIGATION  
THE WESTERN COMPANY OF NORTH AMERICA HOBBS FACILITY  
LEA COUNTY, NEW MEXICO**

Dear Mr. Box:

The New Mexico Oil Conservation Division (OCD) has completed a review of the April 27, 1993 "ADDITIONAL SOIL AND GROUNDWATER INVESTIGATION, THE WESTERN COMPANY OF NORTH AMERICA (Western), HOBBS, NEW MEXICO FACILITY" submitted by Brown and Caldwell Consultants on behalf of Western. The report contains the results of additional soil and ground water investigations pertaining to the hydrocarbon contamination of both the soils and ground water related to the fueling area spills and leaks at the north end of the facility. A remediation and long-term monitoring plan for the facility is included in the report.

The OCD has also reviewed Brown and Caldwell Consultants June 9, 1993, correspondence submitted to the OCD on behalf of Western. The document describes the off-site soils and groundwater investigation on the HOMCO property just north of the subject facility.

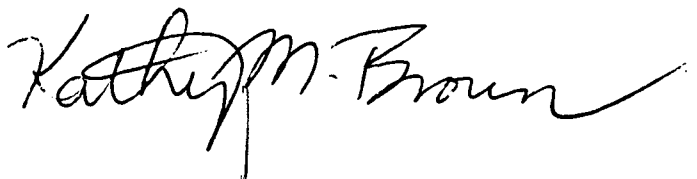
The following comments and requests for additional information are based on review of the above referenced materials. In order for the review process to continue the OCD requires the following information:

Mr. Phillip Box  
July 1, 1993  
Page 2

1. Downgradient Well: The work done to date has not completely defined the full down gradient extent of ground water contamination related to Western's activities. Please submit a plan and schedule for determining the downgradient extent of the plume.
2. Fresh Water Well: Western has proposed to pump the on-site fresh water well to produce an effective capture zone and extract the hydrocarbon contaminated groundwater. At what rate and frequency do you plan to pump the fresh water well? Do you have any test data to demonstrate that your proposed pumping schedule will create a large enough cone of depression to sufficiently capture all of the contaminated groundwater?
3. Treated Excess Groundwater: Western has proposed to treat the excess groundwater which cannot be utilized as acid make-up water by means of an aeration tank, sparge tank or an air stripping tower. Which method do you plan to utilize? Western has also proposed to utilize the excess treated ground water, not used in truck washing operations, to control groundwater flow by reintroduction to the water table via injection wells or an infiltration gallery. The OCD requires a detailed description and diagram of the location, size, depth and all other detailed engineering and analytical data pertaining to these treatment and disposal methods.
4. Soil Remediation: Western has proposed to remediate the contaminated soils by in situ soil vapor extraction. Submit a diagram identifying the proposed vapor extraction points including any detailed engineering and construction information pertaining to this technique.

Addressing the above items will allow review of your proposed remediation plan to continue. If you have any questions, please do not hesitate to contact me at (505) 827-5884.

Sincerely,



Kathy M. Brown  
Geologist

xc: Jerry Sexton, OCD Hobbs Office  
Ed Horst, NMED Hazardous & Radioactive Material Bureau  
Lynn M. Wright, Brown and Caldwell



STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION



BRUCE KING  
GOVERNOR

ANITA LOCKWOOD  
CABINET SECRETARY

POST OFFICE BOX 2088  
STATE LAND OFFICE BUILDING  
SANTA FE, NEW MEXICO 87504  
(505) 827-5800

December 2, 1992

**CERTIFIED MAIL**  
**RETURN RECEIPT NO. P-667-241-922**

Mr. Phillip Box  
Manager Real Estate and EPA Compliance  
The Western Company of North America  
515 Post Oak Blvd., Suite 915  
Houston, Texas 77027

**RE: SOILS AND GROUND WATER INVESTIGATION  
THE WESTERN COMPANY OF NORTH AMERICA HOBBS FACILITY  
LEA COUNTY, NEW MEXICO**

Dear Mr. Box:

The New Mexico Oil Conservation Division (OCD) has completed a review of Brown and Caldwell's October 12, 1992 "Soil and Groundwater Investigation, The Western Company of North America, Hobbs, New Mexico Facility" submitted to the OCD on October 13, 1992. The report contains the results of a soil and ground water investigation pertaining to the hydrocarbon contamination of both the soils and ground water around the fueling area at the north end of the facility.

Based upon review of the above referenced report, the OCD has the following requests for additional work:

1. Monitor Well Drilling: The investigation does not appear to have adequately defined the extent of the soil and ground water contamination. The OCD requests that the Western Company of North America (WCNA) install four (4) additional monitor wells in accordance with the following descriptions and attached facility diagram. Alternative locations due to obstructions must receive prior OCD approval.



- a) One monitor well will be located between the fresh water well and the acid dock.
  - b) One monitor well will be located between the truck sump and the fresh water well.
  - c) One monitor well will be located to the southeast of the fresh water well.
  - d) One monitor well will be located adjacent to and north of the fueling area.
2. Monitor Well Construction: All monitor wells will be constructed as previously installed monitor wells.
  3. Soil Sampling: The OCD requires that soil monitoring be conducted during drilling of the above monitor wells. Soil vapor measurements will be taken with an organic vapor meter (OVM) every 2 feet on all soil borings. For each soil boring, laboratory samples will be taken at the highest OVM reading. Analyses will be done using the EPA Toxic Characteristic Leaching Procedure (TCLP) and the appropriate EPA analytical methods for all TC constituents listed except herbicides and pesticides. In addition, the samples will be analyzed for totals using EPA method 8020 for volatile aromatic organics (BTEX), and for total petroleum hydrocarbons (TPH) using modified EPA method 8015. The OCD requires both types of analyses for correlation with the soil samples analyzed during the previous investigation.
  4. Ground Water Sampling: Ground water samples from both the new monitor wells and the 5 existing monitor wells will be analyzed for volatile organics using EPA methods 601/602 and for heavy metals detected using the ICAP scan. In addition, field measurements will be taken for pH and specific conductivity. Sampling events for all of the monitor wells will be conducted within a 48-hour time period.
  5. Initiation of the Investigation: Investigation of the ground water and soil contamination will be initiated by February 15, 1993. Please contact the OCD at least 7 days prior to all soil borings, monitor well installations, and sampling events so that the OCD has the opportunity to have a witness present and to split samples.

Mr. Phillip Box  
December 2, 1992  
Page 3

6. Ground Water Remediation: The OCD requires that WCNA initiate interim ground water remediation by converting monitor wells number 1 and 4 to recovery wells. Fluid recovery from these wells will begin after the one time ground water sampling event, but prior to March 1, 1993. Treatment and/or disposal of the recovered fluids must be approved prior to operation.
7. Soil Remediation: The OCD action levels for removal/remediation of petroleum contaminated soils are 100 ppm TPH, 50 ppm BTEX, and 10 ppm benzene. All soils above these levels must either be removed and taken to an approved OCD disposal facility or remediated. Prior OCD approval is required for all removal/remedial actions.

(Note: Wastes generated at oil field service companies are not exempt from federal RCRA hazardous waste regulations. Prior to disposal of facility wastes, WCNA will have to demonstrate that the wastes do not exhibit hazardous waste characteristics by testing (TCLP) representative samples of each waste type generated.)

8. Investigation Report: WCNA will submit an investigation report to the OCD for approval by April 1, 1993. The investigation report will include a comprehensive plan for long term ground water remediation and monitoring.

Please be advised that additional investigation may be required should the above requirements fail to fully delineate the extent of contamination related to WCNA's activities. In addition, the above requirements do not relieve you of liability which may be actionable under any other laws and/or regulations.

If you have any questions, I

Sincerely,

*Kathy M. B.*

Kathy M. Brown  
Geologist

xc: Jerry Sexton - OCD  
Ed Horst - EDHW

Is your RETURN ADDRESS completed on the reverse side?	<b>SENDER:</b> <ul style="list-style-type: none"><li>• Complete items 1 and/or 2 for additional services.</li><li>• Complete items 3, and 4a &amp; b.</li><li>• Print your name and address on the reverse of this form so that we can return this card to you.</li><li>• Attach this form to the front of the mailpiece, or on the back if space does not permit.</li><li>• Write "Return Receipt Requested" on the mailpiece below the article number.</li><li>• The Return Receipt will show to whom the article was delivered and the date delivered.</li></ul>		I also wish to receive the following services (for an extra fee): 1. <input type="checkbox"/> Addressee's Address 2. <input type="checkbox"/> Restricted Delivery Consult postmaster for fee.	
	3. Article Addressed to: Mr. Phillip Box The Western Co. of N. America 515 Post Oak Blvd. Suite 915 Houston, Texas 77027		4a. Article Number P-687-241-922	
			4b. Service Type <input type="checkbox"/> Registered <input type="checkbox"/> Insured <input checked="" type="checkbox"/> Certified <input type="checkbox"/> COD <input type="checkbox"/> Express Mail <input type="checkbox"/> Return Receipt for Merchandise	
	5. Signature (Addressee) <i>[Signature]</i>		7. Date of Delivery 1208 92	
	6. Signature (Agent) <i>[Signature]</i>		8. Addressee's Address (Only if requested and fee is paid)	

PS Form 3811, December 1991 U.S.G.P.O. : 1992-307-530 DOMESTIC RETURN RECEIPT

Thank you for using Return Receipt Service



STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION



BRUCE KING  
GOVERNOR

ANITA LOCKWOOD  
CABINET SECRETARY

POST OFFICE BOX 2088  
STATE LAND OFFICE BUILDING  
SANTA FE, NEW MEXICO 87504  
(505) 827-5800

July 1, 1993

**CERTIFIED MAIL**  
**RETURN RECEIPT NO. P-667-241-996**

Mr. Phillip Box  
Manager Real Estate and EPA Compliance  
The Western Company of North America  
515 Post Oak Blvd., Suite 915  
Houston, Texas 77027

**RE: ADDITIONAL SOILS AND GROUND WATER INVESTIGATION  
THE WESTERN COMPANY OF NORTH AMERICA HOBBS FACILITY  
LEA COUNTY, NEW MEXICO**

Dear Mr. Box:

The New Mexico Oil Conservation Division (OCD) has completed a review of the April 27, 1993 "ADDITIONAL SOIL AND GROUNDWATER INVESTIGATION, THE WESTERN COMPANY OF NORTH AMERICA (Western), HOBBS, NEW MEXICO FACILITY" submitted by Brown and Caldwell Consultants on behalf of Western. The report contains the results of additional soil and ground water investigations pertaining to the hydrocarbon contamination of both the soils and ground water related to the fueling area spills and leaks at the north end of the facility. A remediation and long-term monitoring plan for the facility is included in the report.

The OCD has also reviewed Brown and Caldwell Consultants June 9, 1993, correspondence submitted to the OCD on behalf of Western. The document describes the off-site soils and groundwater investigation on the HOMCO property just north of the subject facility.

The following comments and requests for additional information are based on review of the above referenced materials. In order for the review process to continue the OCD requires the following information:

Mr. Phillip Box  
July 1, 1993  
Page 2

1. Downgradient Well: The work done to date has not completely defined the full down gradient extent of ground water contamination related to Western's activities. Please submit a plan and schedule for determining the downgradient extent of the plume.
2. Fresh Water Well: Western has proposed to pump the on-site fresh water well to produce an effective capture zone and extract the hydrocarbon contaminated groundwater. At what rate and frequency do you plan to pump the fresh water well? Do you have any test data to demonstrate that your proposed pumping schedule will create a large enough cone of depression to sufficiently capture all of the contaminated groundwater?
3. Treated Excess Groundwater: Western has proposed to treat the excess groundwater which cannot be utilized as acid make-up water by means of an aeration tank, sparge tank or an air stripping tower. Which method do you plan to utilize? Western has also proposed to utilize the excess treated ground water, not used in truck washing operations, to control groundwater flow by reintroduction to the water table via injection wells or an infiltration gallery. The OCD requires a detailed description and diagram of the location, size, depth and all other detailed engineering and analytical data pertaining to these treatment and disposal methods.
4. Soil Remediation: Western has proposed to remediate the contaminated soils by in situ soil vapor extraction. Submit a diagram identifying the proposed vapor extraction points including any detailed engineering and construction information pertaining to this technique.

Addressing the above items will allow review of your proposed remediation plan to continue. If you have any questions, please do not hesitate to contact me at (505) 827-5884.

Sincerely,



Kathy M. Brown  
Geologist

xc: Jerry Sexton, OCD Hobbs Office  
Ed Horst, NMED Hazardous & Radioactive Material Bureau  
Lynn M. Wright, Brown and Caldwell



Brown and Caldwell  
Consultants

2710 Stemmons Freeway  
1100 Tower North  
Dallas  
Texas 75207  
(214) 630-0001  
FAX (214) 630-9866

OIL CONSERVATION DIVISION  
RECEIVED

'93 JUN 14 AM 9 19

June 9, 1993

Ms. Kathy Brown  
New Mexico Energy, Minerals, and  
Natural Resources Department  
Oil Conservation Division  
P.O. Box 2088  
Santa Fe, New Mexico 87504

19-7445-03

Subject: Off-Site Monitoring Well Installation  
The Western Company of North America  
Hobbs, New Mexico Facility

In accordance with the letter from the New Mexico Oil Conservation Division (OCD) dated December 2, 1992, Brown and Caldwell Consultants (BCC) conducted soil and groundwater investigations on the HOMCO property which lies just north of the subject facility. BCC received authorization from HOMCO to conduct these investigations on April 6, 1993. On April 15 and 16, 1993, BCC drilled one soil boring (SB-13) to approximately 54.0 feet below ground surface. The soil boring was then advanced to 62.5 feet and a 2-inch-diameter monitoring well was installed (MW-9). On April 22, 1993, BCC personnel developed, purged, and sampled the monitoring well.

The drilling and sampling of SB-13 and the installation, development, purging, and sampling of MW-9 was conducted using the same methods as described in BCC report, "Additional Soil and Groundwater Investigations," dated April 27, 1993. All drill cuttings and water removed from the monitoring well were staged or disposed of in the same manner as described in the referenced report. In addition, groundwater measurements were taken for each monitoring well and the fresh water well located at the site. Included in this letter as Enclosure 1 is the boring log and well construction diagram for SB-13/MW-9. The soil and groundwater analyses results and a current groundwater gradient map for the Hobbs facility are also included as Enclosures 2 and 3.

Ms. Kathy Brown

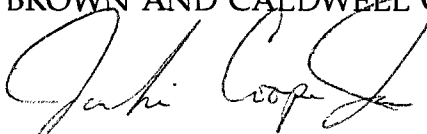
June 9, 1993

Page 2

If you have any questions or require additional information, please call me at (214) 630-0001.

Very truly yours,

BROWN AND CALDWELL CONSULTANTS

A handwritten signature in cursive script, appearing to read "Jackie Cooper, Jr.", written over the printed name.

Jackie (Jack) Cooper, Jr.  
Geologist

JC:me

Enclosures

cc: Mr. Phillip Box, Western, Houston, Texas  
Mr. Teddy Gandy, Western, Hobbs, New Mexico  
OCD District Office, Hobbs, New Mexico

**ENCLOSURE 1**

**BORING LOG AND  
WELL CONSTRUCTION DIAGRAM**



Project Name: WESTERN--Hobbs, NM Project Number: 7445

Soil Boring ☒ Monitoring Well ☒ Boring/Well Number: SB-13/MW-9 Sheet 1 of 3

Boring Location		HOMCO Property		Elevation and Datum:	
Drilling Contractor		Harrison Drilling		Date Started:	4-15-93
Drilling Equipment		hollow-stem auger		Date Finished:	4-16-93
Sampling Method:		California Modified <input checked="" type="checkbox"/> Shelby Tube <input type="checkbox"/> Split Spoon <input type="checkbox"/>		Completed Depth (feet):	62.5
				Water Depth (feet):	~50.0
Drilling Fluid:		None		WELL CONSTRUCTION	
Backfill Material:		None		Type and Diameter of Well Casing:	2-inch Schedule 40 PVC
Logged By:		J. Cooper		Slot Size:	0.010 in.
Checked By:				Filter Material:	20-40 silica sand
				Development Method:	manual bailer

Depth (feet)	USC Soil Type	Description	Blow Counts Sample No.	Graphic Log			PID/FID Readings	Remarks
				Lithology	Annulus	Casing		
0		Clay -- abundant gravel; brown			Concrete			no sample; moist; no odor
5		Caliche -- extremely weathered with some sand; white - tan	1		2" Sch. 40 PVC Casing  Grout	0.2		slightly moist; no odor
			2			0.1		no odor
10			3			0.5		slightly moist; no odor
			4			0.2		moist; no odor
15			5			0.1		moist; no odor
			6					no recovery
			7			0.0		moist; no odor
20			8			0.1		moist; no odor
			9			0.0		moist; no odor
			10			0.0		moist; no odor
25			11			0.0		moist; no odor
			12			0.0		moist; no odor
30			13		0.0		very moist; no odor	





Project Name: WESTERN--Hobbs, NM Project Number: 7445

Soil Boring ☒ Monitoring Well ☒ Boring/Well Number: SB-13/MW-9 Sheet 2 of 3

Boring Location <u>HOMCO Property</u>		Elevation and Datum:	
Drilling Contractor <u>Harrison Drilling</u>		Date Started: <u>4-15-93</u>	Date Finished: <u>4-16-93</u>
Drilling Equipment <u>hollow-stem auger</u>		Completed Depth (feet): <u>62.5</u>	Water Depth (feet): <u>~50.0</u>
Sampling Method: <input checked="" type="checkbox"/> California Modified <input type="checkbox"/> Shelby Tube <input type="checkbox"/> Split Spoon <input type="checkbox"/>		WELL CONSTRUCTION	
Drilling Fluid: <u>None</u>		Type and Diameter of Well Casing: <u>2-inch Schedule 40 PVC</u>	
Backfill Material: <u>None</u>		Slot Size: <u>0.010 in.</u>	Filter Material: <u>20-40 silica sand</u>
Logged By: <u>J. Cooper</u>	Checked By:	Development Method: <u>manual bailer</u>	

Depth (feet)	USC Soil Type	Description	Blow Counts Sample No.	Graphic Log			PID/FID Readings	Remarks
				Lithology	Annulus	Casing		
		<u>Silty sand</u> -- calcite stringers; tan to brown	13				0.0	very moist; no odor
		<u>Sandstone</u> -- fine grained; consolidated; pink and tan to brown				2" Sch. 40 PVC Casing		no recovery
35					Grout			
		<u>Sand</u> -- fine grained; abundant gravel; tan						no recovery
40					Bentrite Seal			
		- less gravel	14		20-40 Silica Sand		60.0	moist; slight odor
45			15			2" Sch. 40 0.01 inch slotted PVC screen	100	very moist; odor
		- no gravel	16				223	very moist; strong gasoline odor
50			17				264	wet; strong gasoline odor
			18				193	wet; gasoline odor
55								no sample
60						2" Sch. 40 PVC Casing		

Project Name: WESTERN--Hobbs, NM Project Number: 7445  
 Soil Boring ☒ Monitoring Well ☒ Boring/Well Number: SB-13/MW-9 Sheet 3 of 3

Boring Location <u>HOMCO Property</u>		Elevation and Datum:	
Drilling Contractor <u>Harrison Drilling</u>		Date Started: <u>4-15-93</u>	Date Finished: <u>4-16-93</u>
Drilling Equipment <u>hollow-stem auger</u>		Completed Depth(feet): <u>62.5</u>	Water Depth (feet): <u>~50.0</u>
Sampling Method: California Modified <input type="checkbox"/> Shelby Tube <input type="checkbox"/> Split Spoon <input checked="" type="checkbox"/>		WELL CONSTRUCTION	
Drilling Fluid: <u>None</u>		Type and Diameter of Well Casing: <u>2-inch Schedule 40 PVC</u>	
Backfill Material: <u>None</u>		Slot Size: <u>0.010 in.</u>	Filter Material: <u>20-40 silica sand</u>
Logged By: <u>J. Cooper</u> Checked By:		Development Method: <u>manual bailer</u>	

Depth(feet)	USC Soil Type	Description	Blow Counts Sample No.	Graphic Log			PID/FID Readings	Remarks
				Lithology	Annulus	Casing		
		<u>Sand -- fine grained; tan</u>			<u>20-40 Silica Sand</u>	<u>2" Sch. 40 PVC Casing</u>		<u>no sample</u>
		<u>T.D. at 62.5 ft.</u>						
5								
10								
15								
20								
25								
30								
35								
40								
45								
50								
55								
60								
65								
70								
75								
80								
85								
90								

**ENCLOSURE 2**

**SOIL AND GROUNDWATER ANALYSES RESULTS**



# NDRC LABORATORIES, INC.

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BEAUMONT

DALLAS

HOUSTON

DATE RECEIVED : 23-APR-1993

REPORT NUMBER : D93-4773-1

REPORT DATE : 5-MAY-1993

SAMPLE SUBMITTED BY : Brown and Caldwell  
ADDRESS : 2710 Stemmons Tower North #1100  
: Dallas, TX 75207  
ATTENTION : Mr. Jack Cooper

SAMPLE MATRIX : Soil  
ID MARKS : SB-13-17  
PROJECT : 7445  
DATE SAMPLED : 16-APR-1993  
ANALYSIS METHOD : EPA 8020  
ANALYZED BY : PSS  
ANALYZED ON : 3-MAY-1993  
DILUTION FACTOR : 5

RECEIVED

MAY 10 1993

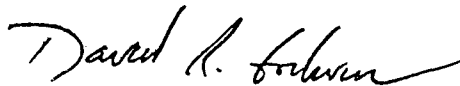
BROWN AND CALDWELL-DFW

BTEX ANALYSIS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Benzene	10.0 µg/Kg	78.0 µg/Kg
Toluene	10.0 µg/Kg	20.0 µg/Kg
Ethyl benzene	10.0 µg/Kg	12.0 µg/Kg
Xylenes	10.0 µg/Kg	110 µg/Kg
BTEX (total)		220 µg/Kg #

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene(SS)	50.0 µg/Kg	116 %

# Based upon Good Laboratory Practice, the result is rounded to the appropriate number of significant figures.

NDRC Laboratories, Inc.

  
David R. Godwin, Ph.D.  
Chief Executive Officer



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REPORT DATE : 5-MAY-1993

SAMPLE SUBMITTED BY : Brown and Caldwell  
ADDRESS : 2710 Stemmons Tower North #1100  
: Dallas, TX 75207  
ATTENTION : Mr. Jack Cooper

SAMPLE MATRIX : Soil  
ID MARKS : SB-13-17  
PROJECT : 7445  
DATE SAMPLED : 16-APR-1993  
PREPARATION METHOD : EPA 1311/3520  
PREPARED BY : TLR  
PREPARED ON : 25-APR-1993  
ANALYSIS METHOD : EPA 1311/8270  
ANALYZED BY : MCS  
ANALYZED ON : 28-APR-1993  
DILUTION FACTOR : 1

TCLP EXTRACTABLE ORGANICS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
o-Cresol	0.2 mg/L	< 0.2 mg/L
m-Cresol	0.2 mg/L	< 0.2 mg/L
p-Cresol	0.2 mg/L	< 0.2 mg/L
2,4-Dinitrotoluene	0.1 mg/L	< 0.1 mg/L
Hexachlorobenzene	0.1 mg/L	< 0.1 mg/L
Hexachlorobutadiene	0.1 mg/L	< 0.1 mg/L
Hexachloroethane	0.1 mg/L	< 0.1 mg/L
Nitrobenzene	0.1 mg/L	< 0.1 mg/L
Pentachlorophenol	0.5 mg/L	< 0.5 mg/L
Pyridine	0.1 mg/L	< 0.1 mg/L
2,4,5-Trichlorophenol	0.1 mg/L	< 0.1 mg/L
2,4,6-Trichlorophenol	0.1 mg/L	< 0.1 mg/L



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HOUSTON

REPORT NUMBER : D93-4773-1  
ANALYSIS METHOD : EPA 1311/8270

PAGE 2

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Nitrobenzene-d5 (SS)	50.0 µg/L	88.6 %
2-Fluorobiphenyl (SS)	50.0 µg/L	70.7 %
Terphenyl-d14 (SS)	50.0 µg/L	78.1 %
Phenol-d5 (SS)	100 µg/L	92.3 %
2-Fluorophenol (SS)	100 µg/L	88.7 %
2,4,6-Tribromophenol (SS)	100 µg/L	87.8 %

NDRC Laboratories, Inc.

David R. Godwin, Ph.D.  
Chief Executive Officer



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DALLAS

HOUSTON

DATE RECEIVED : 23-APR-1993

REPORT NUMBER : D93-4773-1

REPORT DATE : 5-MAY-1993

SAMPLE SUBMITTED BY : Brown and Caldwell  
ADDRESS : 2710 Stemmons Tower North #1100  
: Dallas, TX 75207  
ATTENTION : Mr. Jack Cooper

SAMPLE MATRIX : Soil  
ID MARKS : SB-13-17  
PROJECT : 7445  
DATE SAMPLED : 16-APR-1993  
PREPARATION METHOD : EPA 1311  
PREPARED BY : TLR  
PREPARED ON : 25-APR-1993  
ANALYSIS METHOD : EPA 1311/8240  
ANALYZED BY : NTT  
ANALYZED ON : 26-APR-1993  
DILUTION FACTOR : 1

TCLP VOLATILE ORGANICS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Benzene	0.01 mg/L	< 0.01 mg/L
Carbon tetrachloride	0.01 mg/L	< 0.01 mg/L
Chlorobenzene	0.01 mg/L	< 0.01 mg/L
Chloroform	0.01 mg/L	< 0.01 mg/L
1,4-Dichlorobenzene	0.01 mg/L	< 0.01 mg/L
1,2-Dichloroethane	0.01 mg/L	< 0.01 mg/L
1,1-Dichloroethene	0.01 mg/L	< 0.01 mg/L
Methyl ethyl ketone	1.00 mg/L	< 1.00 mg/L
Tetrachloroethene	0.01 mg/L	< 0.01 mg/L
Trichloroethene	0.01 mg/L	< 0.01 mg/L
Vinyl chloride	0.02 mg/L	< 0.02 mg/L



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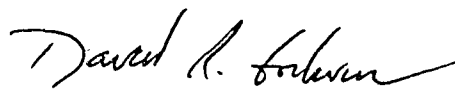
HOUSTON

REPORT NUMBER : D93-4773-1  
ANALYSIS METHOD : EPA 1311/8240

PAGE 2

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
1,2-Dichloroethane-d4(SS)	50.0 µg/L	108 %
Toluene-d8(SS)	50.0 µg/L	102 %
Bromofluorobenzene(SS)	50.0 µg/L	95.7 %

NDRC Laboratories, Inc.

  
David R. Godwin, Ph.D.  
Chief Executive Officer





# NDRC LABORATORIES, INC.

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ATTENTION : Mr. Jack Cooper

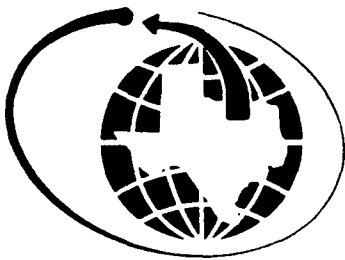
SAMPLE MATRIX : Soil  
ID MARKS : SB-13-17  
PROJECT : 7445  
DATE SAMPLED : 16-APR-1993  
PREPARATION METHOD : EPA 3550  
PREPARED BY : TLR  
PREPARED ON : 27-APR-1993  
ANALYSIS METHOD : EPA 8015  
ANALYZED BY : MGD  
ANALYZED ON : 3-MAY-1993  
DILUTION FACTOR : 1

EXTRACTABLE TPH BY GAS CHROMATOGRAPHY		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Total Petroleum Hydrocarbon	10 mg/Kg	98 mg/Kg

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
o-Terphenyl (SS)	100 mg/Kg	97.4 %

NDRC Laboratories, Inc.

*David R. Godwin*  
David R. Godwin, Ph.D.  
Chief Executive Officer



# NDRC LABORATORIES, INC.

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BEAUMONT

DALLAS

HOUSTON

DATE RECEIVED : 23-APR-1993

REPORT NUMBER : D93-4773-1

REPORT DATE : 5-MAY-1993

SAMPLE SUBMITTED BY : Brown and Caldwell  
ADDRESS : 2710 Stemmons Tower North #1100  
: Dallas, TX 75207  
ATTENTION : Mr. Jack Cooper

SAMPLE MATRIX : Soil  
ID MARKS : SB-13-17  
PROJECT : 7445  
DATE SAMPLED : 16-APR-1993

TCLP METALS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Silver	0.01 mg/L	< 0.01 mg/L
Dilution Factor : 1 Prepared using EPA 1311/3015 on 25-APR-1993 by CCM Analyzed using EPA 6010 on 27-APR-1993 by KJS		
Arsenic	0.05 mg/L	< 0.05 mg/L
Dilution Factor : 1 Prepared using EPA 1311/3015 on 25-APR-1993 by CCM Analyzed using EPA 6010 on 27-APR-1993 by KJS		
Barium	0.1 mg/L	0.6 mg/L
Dilution Factor : 1 Prepared using EPA 1311/3015 on 25-APR-1993 by CCM Analyzed using EPA 6010 on 27-APR-1993 by KJS		
Cadmium	0.01 mg/L	< 0.01 mg/L
Dilution Factor : 1 Prepared using EPA 1311/3015 on 25-APR-1993 by CCM Analyzed using EPA 6010 on 27-APR-1993 by KJS		
Chromium	0.05 mg/L	< 0.05 mg/L
Dilution Factor : 1 Prepared using EPA 1311/3015 on 25-APR-1993 by CCM Analyzed using EPA 6010 on 27-APR-1993 by KJS		
Mercury	0.001 mg/L	< 0.001 mg/L
Dilution Factor : 1 Prepared using EPA 1311/7470 on 25-APR-1993 by CCM Analyzed using EPA 7470 on 27-APR-1993 by AH		



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BEAUMONT

DALLAS

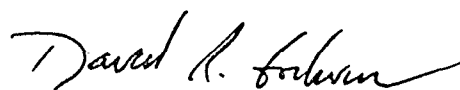
HOUSTON

REPORT NUMBER : D93-4773-1

PAGE 2

TCLP METALS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Lead	0.02 mg/L	< 0.02 mg/L
Dilution Factor : 1 Prepared using EPA 1311/3015 on 25-APR-1993 by CCM Analyzed using EPA 6010 on 27-APR-1993 by KJS		
Selenium	0.05 mg/L	< 0.05 mg/L
Dilution Factor : 1 Prepared using EPA 1311/3015 on 25-APR-1993 by CCM Analyzed using EPA 6010 on 27-APR-1993 by KJS		

NDRC Laboratories, Inc.

  
David R. Godwin, Ph.D.  
Chief Executive Officer



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DALLAS

HOUSTON

DATE RECEIVED : 23-APR-1993

REPORT NUMBER : D93-4773-1

REPORT DATE : 5-MAY-1993

SAMPLE SUBMITTED BY : Brown and Caldwell  
ADDRESS : 2710 Stemmons Tower North #1100  
: Dallas, TX 75207  
ATTENTION : Mr. Jack Cooper

SAMPLE MATRIX : Soil  
ID MARKS : SB-13-17  
PROJECT : 7445  
DATE SAMPLED : 16-APR-1993

MISCELLANEOUS ANALYSES		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Total Solids	0.01 %	81.3 %
Analyzed using EPA 160.3 on 26-APR-1993 by KOB		

NDRC Laboratories, Inc.

*David R. Godwin*  
David R. Godwin, Ph.D.  
Chief Executive Officer



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DALLAS

HOUSTON

DATE RECEIVED : 23-APR-1993

REPORT NUMBER : D93-4773-2

REPORT DATE : 5-MAY-1993

SAMPLE SUBMITTED BY : Brown and Caldwell  
ADDRESS : 2710 Stemmons Tower North #1100  
: Dallas, TX 75207  
ATTENTION : Mr. Jack Cooper

SAMPLE MATRIX : Water  
ID MARKS : MW-9  
PROJECT : 7445  
DATE SAMPLED : 22-APR-1993  
ANALYSIS METHOD : EPA 601  
ANALYZED BY : CRA  
ANALYZED ON : 4-MAY-1993  
DILUTION FACTOR : 10

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
Bromodichloromethane	1	µg/L	<	1	µg/L
Bromoform	2	µg/L	<	2	µg/L
Bromomethane	12	µg/L	<	12	µg/L
Carbon tetrachloride	2	µg/L	<	2	µg/L
Chlorobenzene	3	µg/L	<	3	µg/L
Chloroethane	6	µg/L	<	6	µg/L
2-Chloroethylvinyl ether	3	µg/L	<	3	µg/L
Chloroform	1	µg/L	<	1	µg/L
Chloromethane	5	µg/L	<	5	µg/L
Dibromochloromethane	1	µg/L	<	1	µg/L
1,2-Dichlorobenzene	2	µg/L	<	2	µg/L
1,3-Dichlorobenzene	4	µg/L	<	4	µg/L
1,4-Dichlorobenzene	3	µg/L	<	3	µg/L
Dichlorodifluoromethane	20	µg/L	<	20	µg/L
1,1-Dichloroethene	2	µg/L	<	2	µg/L
1,2-Dichloroethane	3	µg/L		9	µg/L
1,1-Dichloroethane	1	µg/L	<	1	µg/L



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DALLAS

HOUSTON

REPORT NUMBER : D93-4773-2  
ANALYSIS METHOD : EPA 601

PAGE 2

VOLATILE HALOCARBONS					
TEST REQUESTED	DETECTION LIMIT		RESULTS		
trans-1,2-Dichloroethene	1	µg/L	<	1	µg/L
1,2-Dichloropropane	1	µg/L	<	1	µg/L
cis-1,3-Dichloropropene	2	µg/L	<	2	µg/L
trans-1,3-Dichloropropene	2	µg/L	<	2	µg/L
Methylene chloride	5	µg/L	<	5	µg/L
1,1,2,2-Tetrachloroethane	1	µg/L	<	1	µg/L
Tetrachloroethene	1	µg/L	<	1	µg/L
1,1,1-Trichloroethane	1	µg/L	<	1	µg/L
1,1,2-Trichloroethane	1	µg/L	<	1	µg/L
Trichloroethene	1	µg/L	<	1	µg/L
Trichlorofluoromethane	5	µg/L	<	5	µg/L
Vinyl chloride	5	µg/L	<	5	µg/L

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene (SS)	50.0 µg/L	94.0 %

NDRC Laboratories, Inc.

*David R. Godwin*  
David R. Godwin, Ph.D.  
Chief Executive Officer



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DALLAS

HOUSTON

DATE RECEIVED : 23-APR-1993

REPORT NUMBER : D93-4773-2

REPORT DATE : 5-MAY-1993

SAMPLE SUBMITTED BY : Brown and Caldwell  
ADDRESS : 2710 Stemmons Tower North #1100  
: Dallas, TX 75207  
ATTENTION : Mr. Jack Cooper

SAMPLE MATRIX : Water  
ID MARKS : MW-9  
PROJECT : 7445  
DATE SAMPLED : 22-APR-1993  
ANALYSIS METHOD : EPA 602  
ANALYZED BY : CRA  
ANALYZED ON : 4-MAY-1993  
DILUTION FACTOR : 250

VOLATILE AROMATICS				
TEST REQUESTED	DETECTION LIMIT		RESULTS	
Benzene	50	µg/L	570	µg/L
Chlorobenzene	50	µg/L	< 50	µg/L
1,2-Dichlorobenzene	100	µg/L	< 100	µg/L
1,3-Dichlorobenzene	100	µg/L	< 100	µg/L
1,4-Dichlorobenzene	80	µg/L	< 80	µg/L
Ethyl benzene	50	µg/L	< 50	µg/L
Toluene	50	µg/L	380	µg/L
Xylenes	50	µg/L	870	µg/L

QUALITY CONTROL DATA				
SURROGATE COMPOUND	SPIKE LEVEL		SPIKE RECOVERED	
4-Bromofluorobenzene	50.0	µg/L	72.0	% **

\*\* Surrogate recovery affected by dilution factor of 250

NDRC Laboratories, Inc.

*David R. Godwin*  
David R. Godwin, Ph.D.  
Chief Executive Officer



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DALLAS

HOUSTON

DATE RECEIVED : 23-APR-1993

REPORT NUMBER : D93-4773-2

REPORT DATE : 5-MAY-1993

SAMPLE SUBMITTED BY : Brown and Caldwell  
ADDRESS : 2710 Stemmons Tower North #1100  
: Dallas, TX 75207  
ATTENTION : Mr. Jack Cooper

SAMPLE MATRIX : Water  
ID MARKS : MW-9  
PROJECT : 7445  
DATE SAMPLED : 22-APR-1993

TOTAL METALS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Silver	0.01 mg/L	< 0.01 mg/L
Dilution Factor : 1 Prepared using NPDES MW on 26-APR-1993 by CCM Analyzed using EPA 200.7 on 28-APR-1993 by KJS		
Arsenic	0.01 mg/L	< 0.01 mg/L
Dilution Factor : 1 Prepared using NPDES MW on 26-APR-1993 by CCM Analyzed using EPA 206.3 on 28-APR-1993 by AH		
Beryllium	0.0003 mg/L	< 0.0003 mg/L
Dilution Factor : 1 Prepared using NPDES MW on 26-APR-1993 by CCM Analyzed using EPA 200.7 on 28-APR-1993 by KJS		
Cadmium	0.005 mg/L	< 0.005 mg/L
Dilution Factor : 1 Prepared using NPDES MW on 26-APR-1993 by CCM Analyzed using EPA 200.7 on 28-APR-1993 by KJS		
Chromium	0.05 mg/L	< 0.05 mg/L
Dilution Factor : 1 Prepared using NPDES MW on 26-APR-1993 by CCM Analyzed using EPA 200.7 on 28-APR-1993 by KJS		
Copper	0.01 mg/L	0.02 mg/L
Dilution Factor : 1 Prepared using NPDES MW on 26-APR-1993 by CCM Analyzed using EPA 200.7 on 28-APR-1993 by KJS		





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DALLAS

HOUSTON

REPORT NUMBER : D93-4773-2

PAGE 2

TOTAL METALS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Mercury	0.001 mg/L	< 0.001 mg/L
Dilution Factor : 1 Prepared using EPA 245.1 on 26-APR-1993 by CCM Analyzed using EPA 245.1 on 27-APR-1993 by AH		
Nickel	0.05 mg/L	< 0.05 mg/L
Dilution Factor : 1 Prepared using NPDES MW on 26-APR-1993 by CCM Analyzed using EPA 200.7 on 28-APR-1993 by KJS		
Lead	0.02 mg/L	< 0.02 mg/L
Dilution Factor : 1 Prepared using NPDES MW on 26-APR-1993 by CCM Analyzed using EPA 200.7 on 28-APR-1993 by KJS		
Antimony	0.005 mg/L	< 0.005 mg/L
Dilution Factor : 1 Prepared using NPDES MW on 26-APR-1993 by CCM Analyzed using EPA 200.7 on 28-APR-1993 by KJS		
Selenium	0.01 mg/L	< 0.01 mg/L
Dilution Factor : 1 Prepared using EPA 4.1.3 on 26-APR-1993 by CCM Analyzed using EPA 270.3 on 4-MAY-1993 by AH		
Thallium	0.01 mg/L	< 0.01 mg/L
Dilution Factor : 1 Prepared using NPDES MW on 26-APR-1993 by CCM Analyzed using EPA 200.7 on 28-APR-1993 by KJS		
Zinc	0.01 mg/L	0.06 mg/L
Dilution Factor : 1 Prepared using NPDES MW on 26-APR-1993 by CCM Analyzed using EPA 200.7 on 28-APR-1993 by KJS		

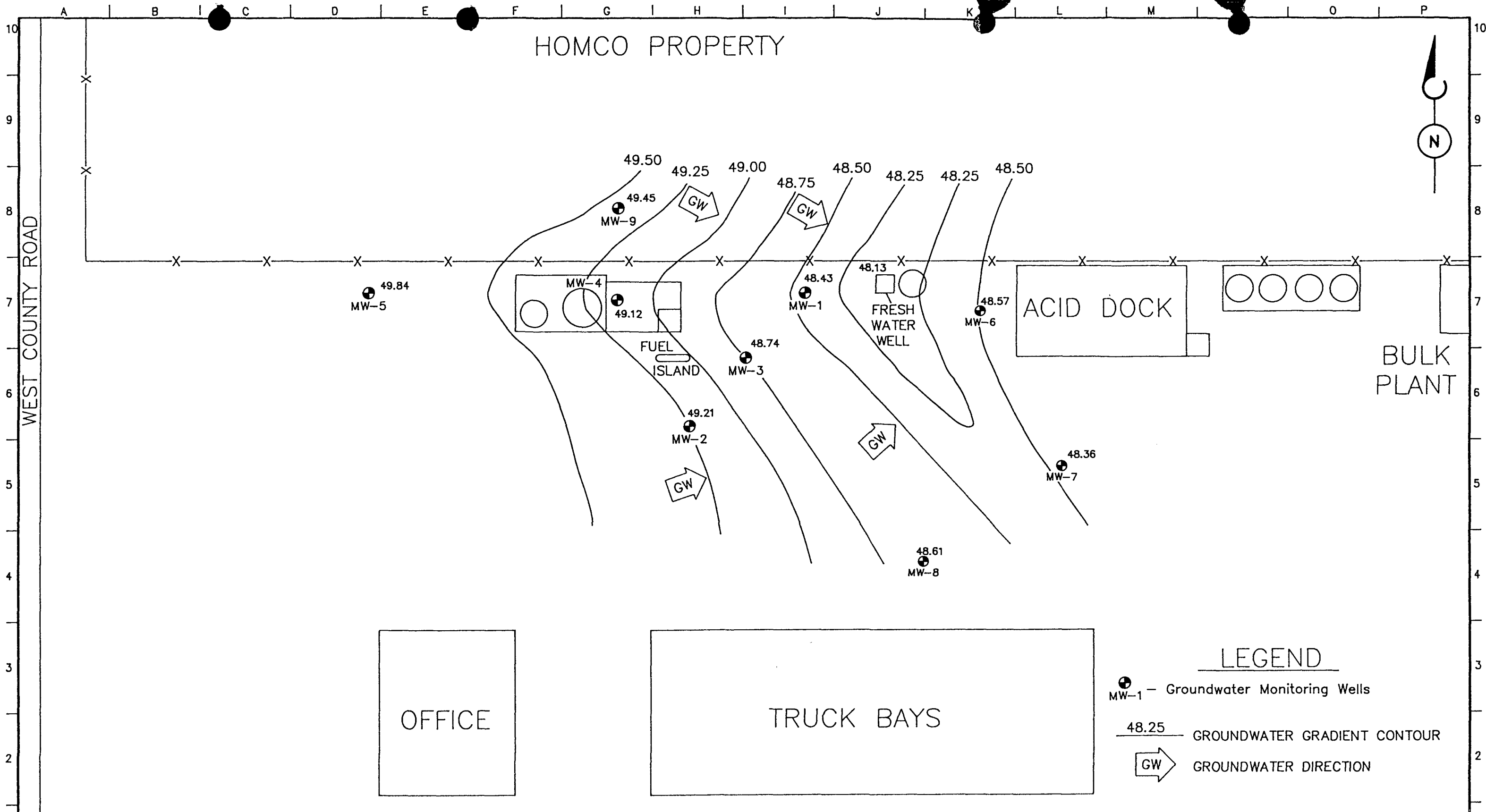
NDRC Laboratories, Inc.

David R. Godwin, Ph.D.  
Chief Executive Officer

NDRC cannot accept Please Fax

**ENCLOSURE 3**  
**GROUNDWATER GRADIENT MAP**

E:\7445\7445-03A



# LEGEND

- MW-1 - Groundwater Monitoring Wells
- 48.25 - GROUNDWATER GRADIENT CONTOUR
- GW - GROUNDWATER DIRECTION

**BC Brown and Caldwell Consultants**  
DALLAS-HOUSTON, TEXAS

APPROVED: \_\_\_\_\_ DATE \_\_\_\_\_  
PROJECT MANAGER

APPROVED: \_\_\_\_\_ DATE \_\_\_\_\_  
BROWN AND CALDWELL

REV.	DESCRIPTION	BY	DATE

0 20 40  
SCALE: 1" = 40'

DRAWN BY: JDN DATE 3/9  
CHK'D BY: JLC DATE 3/9  
APPROVED: LMW DATE 3/9

TITLE	GROUNDWATER GRADIENT MAP, APRIL 22, 1993	DATE	06/09/93
CLIENT	WESTERN COMPANY OF NORTH AMERICA	PROJECT NUMBER	7445-03
SITE LOCATION	HOBBS, NEW MEXICO	FIGURE NUMBER	A



Brown and Caldwell  
Consultants

2710 Stemmons Freeway  
1100 Tower North  
Dallas  
Texas 75207  
(214) 630-0001  
FAX (214) 630-9866

OIL CONSERVATION DIVISION  
RECEIVED

'93 MAR 31 AM 9 39

April 27, 1993

Ms. Kathy Brown  
State of New Mexico  
Energy, Minerals, and Natural Resources Dept.  
Oil Conservation Division  
Post Office Box 2088  
State Land Office Building  
Santa Fe, New Mexico 87504

7445-03

Subject: Report of Additional Soil and Groundwater Investigations  
The Western Company of North America  
Hobbs, New Mexico Facility


Dear Ms. Brown:

On behalf of The Western Company of North America (Western), Brown and Caldwell Consultants is submitting the enclosed report for additional soil and groundwater investigations performed at the Hobbs facility. The report documents the field activities and analytical results for soil and groundwater samples collected at the site.

If you have any questions or require additional information, please contact me at (214) 630-0001.

Very truly yours,

BROWN AND CALDWELL CONSULTANTS

  
Lynn M. Wright  
Project Manager

LMW:mae

cc: Mr. Phillip Box, Western, Houston, Texas  
Mr. Teddy Gandy, Western, Hobbs, New Mexico  
OCD Hobbs District Office



STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION



BRUCE KING  
GOVERNOR

ANITA LOCKWOOD  
CABINET SECRETARY

POST OFFICE BOX 2088  
STATE LAND OFFICE BUILDING  
SANTA FE, NEW MEXICO 87504  
(505) 827-5800

December 2, 1992

**CERTIFIED MAIL**  
**RETURN RECEIPT NO. P-667-241-922**

Mr. Phillip Box  
Manager Real Estate and EPA Compliance  
The Western Company of North America  
515 Post Oak Blvd., Suite 915  
Houston, Texas 77027

**RE: SOILS AND GROUND WATER INVESTIGATION  
THE WESTERN COMPANY OF NORTH AMERICA HOBBS FACILITY  
LEA COUNTY, NEW MEXICO**

Dear Mr. Box:

The New Mexico Oil Conservation Division (OCD) has completed a review of Brown and Caldwell's October 12, 1992 "Soil and Groundwater Investigation, The Western Company of North America, Hobbs, New Mexico Facility" submitted to the OCD on October 13, 1992. The report contains the results of a soil and ground water investigation pertaining to the hydrocarbon contamination of both the soils and ground water around the fueling area at the north end of the facility.

Based upon review of the above referenced report, the OCD has the following requests for additional work:

1. Monitor Well Drilling: The investigation does not appear to have adequately defined the extent of the soil and ground water contamination. The OCD requests that the Western Company of North America (WCNA) install four (4) additional monitor wells in accordance with the following descriptions and attached facility diagram. Alternative locations due to obstructions must receive prior OCD approval.

- a) One monitor well will be located between the fresh water well and the acid dock.
  - b) One monitor well will be located between the truck sump and the fresh water well.
  - c) One monitor well will be located to the southeast of the fresh water well.
  - d) One monitor well will be located adjacent to and north of the fueling area.
2. Monitor Well Construction: All monitor wells will be constructed as previously installed monitor wells.
3. Soil Sampling: The OCD requires that soil monitoring be conducted during drilling of the above monitor wells. Soil vapor measurements will be taken with an organic vapor meter (OVM) every 2 feet on all soil borings. For each soil boring, laboratory samples will be taken at the highest OVM reading. Analyses will be done using the EPA Toxic Characteristic Leaching Procedure (TCLP) and the appropriate EPA analytical methods for all TC constituents listed except herbicides and pesticides. In addition, the samples will be analyzed for totals using EPA method 8020 for volatile aromatic organics (BTEX), and for total petroleum hydrocarbons (TPH) using modified EPA method 8015. The OCD requires both types of analyses for correlation with the soil samples analyzed during the previous investigation.
4. Ground Water Sampling: Ground water samples from both the new monitor wells and the 5 existing monitor wells will be analyzed for volatile organics using EPA methods 601/602 and for heavy metals detected using the ICAP scan. In addition, field measurements will be taken for pH and specific conductivity. Sampling events for all of the monitor wells will be conducted within a 48-hour time period.
5. Initiation of the Investigation: Investigation of the ground water and soil contamination will be initiated by February 15, 1993. Please contact the OCD at least 7 days prior to all soil borings, monitor well installations, and sampling events so that the OCD has the opportunity to have a witness present and to split samples.

Mr. Phillip Box  
December 2, 1992  
Page 3

6. Ground Water Remediation: The OCD requires that WCNA initiate interim ground water remediation by converting monitor wells number 1 and 4 to recovery wells. Fluid recovery from these wells will begin after the one time ground water sampling event, but prior to March 1, 1993. Treatment and/or disposal of the recovered fluids must be approved prior to operation.
  
7. Soil Remediation: The OCD action levels for removal/remediation of petroleum contaminated soils are 100 ppm TPH, 50 ppm BTEX, and 10 ppm benzene. All soils above these levels must either be removed and taken to an approved OCD disposal facility or remediated. Prior OCD approval is required for all removal/remedial actions.  
  
(Note: Wastes generated at oil field service companies are not exempt from federal RCRA hazardous waste regulations. Prior to disposal of facility wastes, WCNA will have to demonstrate that the wastes do not exhibit hazardous waste characteristics by testing (TCLP) representative samples of each waste type generated.)
  
8. Investigation Report: WCNA will submit an investigation report to the OCD for approval by April 1, 1993. The investigation report will include a comprehensive plan for long term ground water remediation and monitoring.

Please be advised that additional investigation may be required should the above requirements fail to fully delineate the extent of contamination related to WCNA's activities. In addition, the above requirements do not relieve you of liability which may be actionable under any other laws and/or regulations.

If you have any questions, please contact me at (505) 827-5884.

Sincerely,



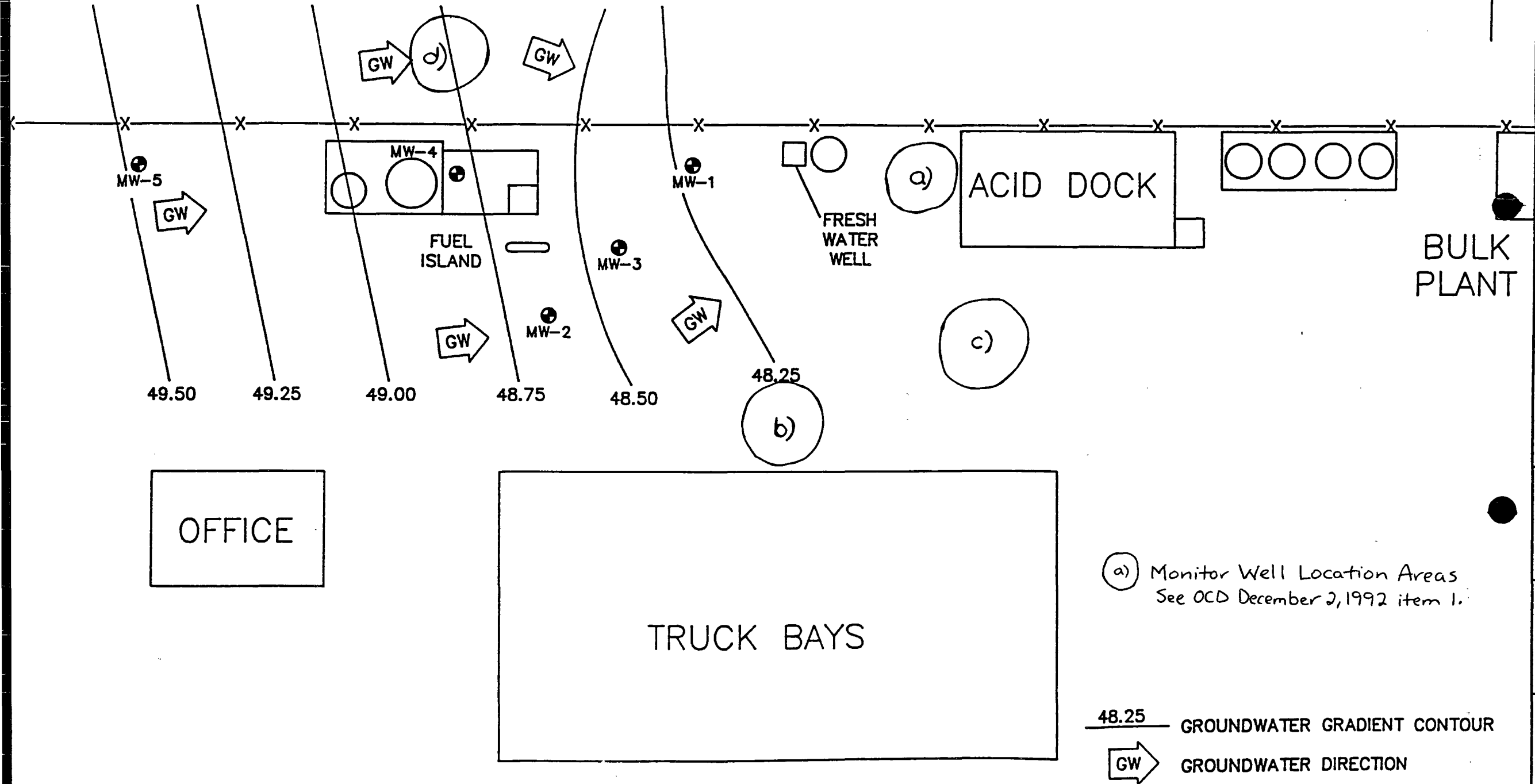
Kathy M. Brown  
Geologist

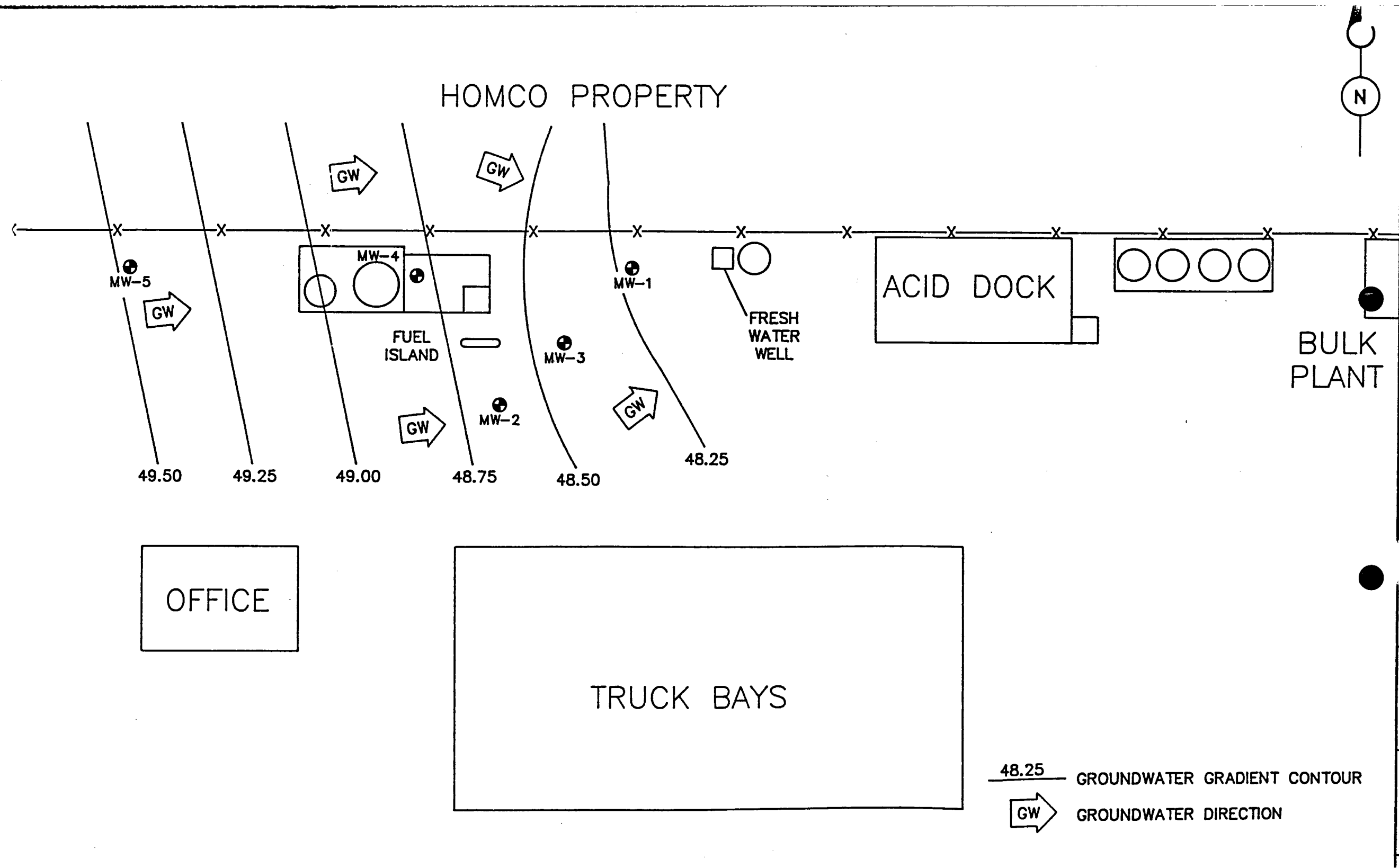
xc: Jerry Sexton - OCD Hobbs Office  
Ed Horst - EDHW





# HOMCO PROPERTY







Brown and Caldwell  
Consultants

2710 Stemmons Freeway  
1100 Tower North  
Dallas  
Texas 75207  
(214) 630-0001  
FAX (214) 630-9866

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JUL 23 1992

OIL CONSERVATION DIV.  
SANTA FE

July 15, 1992

Ms. Kathy M. Brown  
Geologist  
New Mexico Energy, Minerals, and Natural Resources Dept.  
Oil Conservation Division  
310 Old Santa Fe Trail, Room 206  
Santa Fe, New Mexico 87501

19-92-53/01

Subject: Soil and Groundwater Investigation  
The Western Company of North America, Hobbs, New Mexico Facility

Dear Ms. Brown:

As discussed in our telephone conversation on July 9, 1992, Brown and Caldwell Consultants, on behalf of The Western Company of North America (WCNA), will implement the Technical Work Plan for Soil and Groundwater Investigation at the Hobbs facility. BCC plans to begin the field investigation at the site on July 27 or 28, 1992. The project is anticipated to take 3 to 5 days to complete.

BCC will notify Chris Eustice of the Oil Conservation Division District Office in Hobbs, New Mexico prior to initiating the field activities.

If you have any questions please contact me at (214) 630-0001.

Very truly yours,

BROWN AND CALDWELL CONSULTANTS

Lynn M. Wright  
Project Manager

214 630 0001  
JACK COOPER

LMW:el

cc: Mr. Phillip Box, Western Company of North America, Houston, Texas  
Mr. Chris Eustice, OCD District Office, Hobbs, New Mexico  
Mr. Sherman Walters, Western Company of North America, Hobbs, New Mexico



## MEMORANDUM OF MEETING OR CONVERSATION

☒ Telephone☐ Personal

Time

8:00 Am.

Date

7/9/92

Originating Party

K. Brown OCD

1-800-969-4855

Other Parties

Lyn Wright - Brown &amp;

Candwell Consultants

Subject

The Western Co. Hobbs Service Facility

Camping out the Proposed Technical Work Plan

addressing the contamination shown by the water well analysis

Discussion

Brown Candwell will be camping out the technical work plan done by Roberts/Schornick & Ass. Had few questions on how to carry it out. Told him depending on the <sup>extent</sup> degree of soil contamination, we would then decide on how to address the water contamination. Told him to contact Chris Justice <sup>who will be</sup> ~~to be~~ available to witness operations & help make decisions. Also, told him work plan could be altered for practical purposes but need to receive prior OCD approval. He asked if they could do the headspace analyses in baggies instead of glass jars. Told him I'd get back to him on that.

Conclusions or AgreementsDistribution

Signed

Kathy Brown

**IMPORTANT MESSAGE**

FOR KB  
DATE July 7, 1992 TIME 3:00 <sup>A.M.</sup><sub>P.M.</sub>  
M. Lyn Wright  
OF Brown & Caldwell Ass.  
PHONE 1-800-969-4855

TELEPHONED	<input checked="" type="checkbox"/>	PLEASE CALL	<input checked="" type="checkbox"/>
CAME TO SEE YOU	<input type="checkbox"/>	WILL CALL AGAIN	<input type="checkbox"/>
WANTS TO SEE YOU	<input type="checkbox"/>	RUSH	<input type="checkbox"/>
RETURNED YOUR CALL	<input type="checkbox"/>	SPECIAL ATTENTION	<input checked="" type="checkbox"/>

MESSAGE We'll be carrying out  
The Western Co. Hobbs Senior  
Facility Work Plan  
Want info on our requirements  
& policies, ect..

SIGNED \_\_\_\_\_

LITHO IN U.S.A.

TOPS  FORM 3002S



environmental  
consultants

3700 West Robinson  
Suite 200  
Norman, OK 73072  
405 321 3895  
FAX 405 364 1708

A Benham Company

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MAY 08 1992

OIL CONSERVATION DIV.  
SANTA FE

May 7, 1992

Ms. Kathy M. Brown, Geologist  
State of New Mexico, Energy, Minerals and Natural Resources Dept.  
Oil Conservation Division  
310 Old Santa Fe Trail, Room 206  
Santa Fe, New Mexico 87501

Re: Results of On-Site Water Well Sampling and Analysis, The  
Western Company of North America, Hobbs, New Mexico

Dear Ms. Brown:

On behalf of The Western Company of North America (Western), please find attached laboratory analyses of groundwater from samples collected from the on-site water well at the Western Hobbs, New Mexico Facility. The samples were collected on two (2) occasions; by personnel of Roberts/Schornick and Associates, Inc. (RSA) on December 16, 1991, and by personnel of Western on February 21, 1992. The groundwater samples were submitted to NDRC Laboratories, Inc., Houston, Texas. The groundwater samples were collected as part of the initial field activity defined in the "Technical Work Plan, Soil and Groundwater Investigation" (Work Plan) approved by the State of New Mexico, Oil Conservation Division (OCD), on November 15, 1991. The groundwater samples were collected and analyzed to confirm the results of analysis performed by Ana-Lab Corp, Kilgore, Texas, on a sample collected by the OCD on February 7, 1991.

In accordance with the approved work plan by the OCD, the groundwater samples were analyzed for volatile organic parameters including benzene, toluene, ethylbenzene, and xylenes (collectively referred to as BTEX), polynuclear aromatic hydrocarbons (PAH), major cations and anions, total petroleum hydrocarbons (TPH), total dissolved solids (TDS), chloride, pH, and specific conductance.

Ms. Kathy M. Brown  
May 7, 1992

Page 2

The laboratory analyses for BTEX, TPH, TDS, chloride, pH, and specific conductance from samples collected on December 16, 1991 by RSA are summarized on Table 1. The sample collected on February 21, 1992 by Western for analyses of PAH and major cations and anions is presented on Table 2 and Table 3, respectively. The laboratory analytical data reports for the RSA, Western, and OCD groundwater samples are presented in Attachments A, B, and C, respectively.

Referring to Table 1, the laboratory analytical data communicated by NDRC Laboratories, Inc. for the sample collected by RSA on December 16, 1991 reported concentrations of BTEX constituents at 22 micrograms per liter ( $\mu\text{g/l}$ ) (benzene), 12  $\mu\text{g/l}$  (toluene), and less than 1.0  $\mu\text{g/l}$  (ethylbenzene and xylenes). The results of groundwater analyses reported by Ana-Lab Corporation for the sample collected by the OCD on February 7, 1991 reported concentrations of BTEX constituents utilizing EPA test method 8020 at 130  $\mu\text{g/l}$  (benzene), 160  $\mu\text{g/l}$  (toluene), 5  $\mu\text{g/l}$  (ethylbenzene), and 40  $\mu\text{g/l}$  (xylenes). The results of BTEX analyses by Ana-Lab Corporation utilizing EPA test method 8240 reported these constituents at 230  $\mu\text{g/l}$  (benzene), 220  $\mu\text{g/l}$  (toluene), less than 7.2  $\mu\text{g/l}$  (ethylbenzene), and 520  $\mu\text{g/l}$  (xylenes). The concentrations of BTEX constituents reported by NDRC Laboratories, Inc. utilizing EPA test method 8020 are significantly lower than the concentrations reported by Ana-Lab Corporation utilizing EPA test methods 8020 and 8040. The State of New Mexico Water Quality Control Commission water quality standards for BTEX in groundwaters having TDS levels below 10,000 milligrams per liter ( $\text{mg/l}$ ) (Title 74, Article 6, Part 3, Section 103, August 17, 1991) are 0.01  $\text{mg/l}$  or 10  $\mu\text{g/l}$  (benzene), 0.75  $\text{mg/l}$  or 750  $\mu\text{g/l}$  (toluene and ethylbenzene), and 0.62  $\text{mg/l}$  or 620  $\mu\text{g/l}$  (xylenes). Based on the data communicated by NDRC Laboratories, Inc., the concentration of benzene in groundwater beneath the Facility slightly exceeds the maximum allowable concentration in groundwater.

The results of PAH analyses of groundwater from the sample collected by Western on February 21, 1992 did not detect the presence of these constituents in groundwater from the on-site water well.



Ms. Kathy M. Brown  
May 7, 1992

Page 3

The analytical data from NDRC Laboratories, Inc. for the sample collected by RSA on December 16, 1991 reported a TPH level of 460  $\mu\text{g/l}$ . No analysis for TPH was reported by Ana-Lab Corporation for comparison, and no water quality standard for TPH in groundwaters in the State of New Mexico is available.

The results of chloride analysis reported by NDRC Laboratories, Inc. detected this constituent at 784 mg/l and 645 mg/l in groundwater samples collected on December 16, 1991 by RSA, and February 21, 1992 by Western, respectively. The analyses presented by Ana-Lab Corporation reported chloride in groundwater at 890 mg/l. The results of chloride analyses reported by these laboratories compare favorably. The levels of TDS reported by NDRC Laboratories, Inc. and Ana-Lab Corporation were 2,130 mg/l and 2,286 mg/l, respectively. These analyses also compare favorably. The maximum allowable concentration of chloride and TDS in groundwater in the State of New Mexico is 250 mg/l and 1,000 mg/l, respectively.

The results of major cation analyses (calcium, magnesium, sodium, and potassium) from the sample collected by Western on February 21, 1992 was 382 mg/l (calcium), 58 mg/l (magnesium), 65 mg/l (sodium), and 4.1 mg/l (potassium). These levels were generally lower than the levels reported by Ana-Lab Corporation, with the exception of potassium. The levels of the major cations reported by Ana-Lab Corporation were 500 mg/l (calcium), 86 mg/l (magnesium), 120 mg/l (sodium), and 1.3 mg/l (potassium). The concentrations of major anions (bicarbonate and sulfate) reported by NDRC Laboratories, Inc. and Ana-Lab Corporation were 209 mg/l and 210 mg/l (NDRC Laboratories, Inc.), and 250 mg/l and 330 mg/l (Ana-Lab Corporation), respectively.

Summary:

In summary, the level of benzene detected in the groundwater sample collected by RSA from the on-site water well on December 16, 1991, was considerably lower in concentration than the results reported by Ana-Lab Corporation from the groundwater sample collected by the OCD on February 7, 1991. The analysis of benzene (22  $\mu\text{g/l}$ ) reported from





Ms. Kathy M. Brown  
May 7, 1992

Page 4

the sample collected by RSA slightly exceeds the State of New Mexico Water Quality Control Commission water quality standard of 10  $\mu\text{g/l}$  for groundwater with a TDS level of less than 10,000 mg/l. No levels of PAH constituents above the test method detection limit were detected in the groundwater sample collected by Western from the on-site water well, on February 21, 1992.

The inorganic analyses of the groundwater samples collected by RSA (December 16, 1991) and Western (February 21, 1992) are slightly lower in concentration in comparison to the sample collected by the OCD. Additionally, no background groundwater quality data for the Facility is available to base a comparison for these results.

Based on the analytical laboratory results of the resampled groundwater, Western believes that additional groundwater investigations are not warranted. However, in accordance with the Work Plan, Western will implement investigations to define the extent of impacts to the shallow soils. The investigations will be conducted in accordance with the procedures presented in the Work Plan, and will include: soil boring drilling, soil sampling, and laboratory analysis. Should you have any questions, please do not hesitate to phone.

Sincerely,



Mark J. Larson  
Senior Hydrogeologist

cc: Mr. Phillip Box, The Western Company of North America  
Mr. Sherman Walters, The Western Company of North America



**TABLE 1**

**SUMMARY OF ORGANIC AND INORGANIC ANALYSIS**

**OF GROUNDWATER FROM ON-SITE**

**WATER SUPPLY WELL**

TABLE 1: SUMMARY OF ORGANIC AND INORGANIC ANALYSES OF GROUNDWATER,  
THE WESTERN COMPANY OF NORTH AMERICA, HOBBS, NEW MEXICO

PARAMETER	REPORTING UNIT	TEST METHOD NUMBER	1 NDRC LABORATORIES INC.	TEST METHOD NUMBER	2 ANA-LAB CORPORATION
BENZENE	UG/L	8020	22.0	8020/8240	130/230
TOLUENE	UG/L	8020	12.0	8020/8240	160/220
ETHYLBENZENE	UG/L	8020	<1.0	8020/8240	5/<7.2
XYLENES	UG/L	8020	<1.0	8020/8240	40/520
TOTAL PETROLEUM HYDROCARBONS					
GASOLINE RANGE	UG/L	8015	460	---	---
DIESEL RANGE	UG/L	8015	<200	---	---
CHLORIDE	MG/L	325.3	784	325.3	890
TOTAL DISSOLVED SOLIDS	MG/L	160.1	2130	160.1	2286
pH	SU	150.1	7.2	150.1	7.2
SPECIFIC CONDUCTANCE	UMHOS/CM	120.1	3040	120.1	3500

NOTES:

1. GROUNDWATER SAMPLES COLLECTED BY PERSONNEL OF ROBERTS/SCHORNICK & ASSOCIATES, INC., DECEMBER 16, 1991. GROUNDWATER ANALYSIS PERFORMED BY NDRC LABORATORIES, INC. HOUSTON, TEXAS.
2. GROUNDWATER SAMPLES COLLECTED BY PERSONNEL OF STATE OF NEW MEXICO, ENERGY MINERALS AND NATURAL RESOURCES DEPARTMENT, OIL CONSERVATION DIVISION, FEBRUARY 7, 1991. GROUNDWATER ANALYSIS PERFORMED BY ANA-LAB CORP., KILGORE, TEXAS.
3. < DENOTES ANALYTE CONCENTRATION BELOW TEST METHOD DETECTION LIMIT NOTED.
4. --- NO DATA AVAILABLE.

**TABLE 2**

**SUMMARY OF POLYNUCLEAR AROMATIC**

**HYDROCARBON ANALYSES OF**

**GROUNDWATER FROM ON-SITE**

**WATER WELL**

TABLE 2 : SUMMARY OF POLYNUCLEAR AROMATIC HYDROCARBONS ANALYSES OF GROUNDWATER,  
THE WESTERN COMPANY OF NORTH AMERICA, HOBBS, NEW MEXICO

PARAMETER	REPORTING UNIT	SAMPLE CONCENTRATION
ACENAPHTHENE	ug/l	<1.8
ACENAPHTHYLENE	ug/l	<2.3
ANTHRACENE	ug/l	<0.66
BENZO(a)ANTHRACENE	ug/l	<0.013
BENZO(b)FLUORANTHENE	ug/l	<0.018
BENZO(k)FLUORANTHENE	ug/l	<0.017
BENZO(g,h,i)PERYLENE	ug/l	<0.076
BENZO(a)PYRENE	ug/l	<0.023
CHRYSENE	ug/l	<0.15
DIBENZ(a,h)ANTHRACENE	ug/l	<0.030
FLUORANTHENE	ug/l	<0.21
FLUORENE	ug/l	<0.21
INDENO(1,2,3-cd)PYRENE	ug/l	<0.043
NAPHTHALENE	ug/l	<1.8
PHENANTHRENE	ug/l	<0.64
PYRENE	ug/l	<0.27

NOTES:

1. GROUNDWATER SAMPLES COLLECTED ON FEBRUARY 21, 1992. GROUNDWATER ANALYSIS PERFORMED BY NDRC LABORATORIES, INC., HOUSTON, TEXAS. ANALYTICAL TEST WAS METHOD 610 FROM "METHOD FOR CHEMICAL ANALYSIS OF WATER AND WASTES", EPA 600/4-79-020.
2. < : DENOTES A SAMPLE VALUE OF LESS THAN THE LABORATORY REPORTING LIMIT.

**TABLE 3**

**SUMMARY OF ANION AND CATION ANALYSES**

**OF GROUNDWATER FROM ON-SITE**

**WATER WELL**

TABLE 3 : SUMMARY OF ANION AND CATION ANALYSES OF GROUNDWATER,  
THE WESTERN COMPANY OF NORTH AMERICA, HOBBS, NEW MEXICO

PARAMETER	REPORTING UNITS	SAMPLE CONCENTRATION
BICARBONATE (as CaCO <sub>3</sub> )	mg/l	209
BROMIDE	mg/l	5.1
CARBONATE (as CaCO <sub>3</sub> )	mg/l	<0.1
CHLORIDE	mg/l	645
FLUORIDE	mg/l	0.8
AMMONIA NITROGEN	mg/l	0.02
NITRATE-NITROGEN	mg/l	1.95
TOTAL PHOSPHATE	mg/l	0.2
BORON	mg/l	0.740
TOTAL SULFATE	mg/l	210
TOTAL CALCIUM	mg/l	382
TOTAL POTASSIUM	mg/l	4.1
TOTAL MAGNESIUM	mg/l	58
SODIUM	mg/l	65.0

NOTES:

1. GROUNDWATER SAMPLES COLLECTED ON FEBRUARY 21, 1992. GROUNDWATER ANALYSIS PERFORMED BY NDRC LABORATORIES, INC., HOUSTON TEXAS.

**ATTACHMENT A**  
**GROUNDWATER ANALYTICAL DATA**  
**NDRC LABORATORIES, INC.**  
**DECEMBER 16, 1991**





# NDRC LABORATORIES, INC.

A member of the Inchcape Environmental Group

11155 South Main, Houston, Texas 77025 • (713) 661-8150 • FAX (713) 661-2661

BEAUMONT

DALLAS

HOUSTON

DATE RECEIVED : 17-DEC-1991

REPORT NUMBER : H91-4243-1

REPORT DATE : 31-DEC-1991

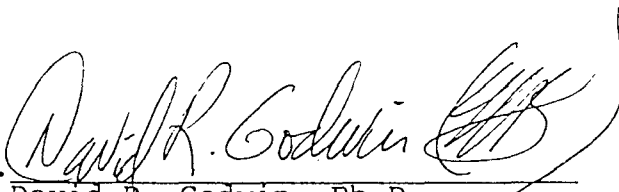
SAMPLE SUBMITTED BY : Roberts/Schornick & Associates, Inc.  
ADDRESS : 3700 West Robinson, Suite 200  
: Norman, OK 73072  
ATTENTION : Ms. Debby McElreath

SAMPLE MATRIX : WATER  
ID MARKS : N/A  
PROJECT : 91137.01/The Western Co.  
PURCHASE ORDER NO : 551  
DATE SAMPLED : 16-DEC-1991  
ANALYSIS METHOD : EPA 8020

BTEX ANALYSIS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Benzene	1.0 µg/L	22.0 µg/L
Toluene	1.0 µg/L	12.0 µg/L
Ethyl benzene	1.0 µg/L	< 1.0 µg/L
Xylenes	1.0 µg/L	< 1.0 µg/L

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene(SS)	100 µg/L	102 %

NDRC Laboratories, Inc.

  
David R. Godwin, Ph.D.  
Chief Executive Officer



# NDRC LABORATORIES, INC.

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BEAUMONT

DALLAS

HOUSTON

DATE RECEIVED : 17-DEC-1991

REPORT NUMBER : H91-4243-1

REPORT DATE : 6-JAN-1992

SAMPLE SUBMITTED BY : Roberts/Schornick & Associates, Inc.

ADDRESS : 3700 West Robinson, Suite 200

: Norman, OK 73072

ATTENTION : Ms. Debby McElreath

SAMPLE MATRIX : WATER

ID MARKS : N/A

PROJECT : 91137.01/The Western Co.

PURCHASE ORDER NO : 551

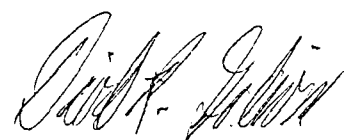
DATE SAMPLED : 16-DEC-1991

ANALYSIS METHOD : EPA 8015

TRPH BY MODIFIED EPA 8015 (PURGE + TRAP)		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Total Petroleum Hydrocarbon *	50 $\mu\text{g/L}$	460 $\mu\text{g/L}$

\* Gasoline, Lightends.  
By purge and trap using FID.

NDRC Laboratories, Inc.

  
David R. Godwin, Ph.D.  
Chief Executive Officer

JAN 21 1992



# NDRC LABORATORIES, INC.

A member of the Inchcape Environmental Group

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BEAUMONT

DALLAS

HOUSTON

DATE RECEIVED : 17-DEC-1991

REPORT NUMBER : H91-4243-1

REPORT DATE : 6-JAN-1992

SAMPLE SUBMITTED BY : Roberts/Schornick &amp; Associates, Inc.

ADDRESS : 3700 West Robinson, Suite 200

: Norman, OK 73072

ATTENTION : Ms. Debby McElreath

SAMPLE MATRIX : WATER

ID MARKS : N/A

PROJECT : 91137.01/The Western Co.

PURCHASE ORDER NO : 551

DATE SAMPLED : 16-DEC-1991

ANALYSIS METHOD : EPA 8015

TRPH BY MODIFIED EPA 8015		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Total Petroleum Hydrocarbon *	0.2 mg/L	< 0.2 mg/L

\* As Diesel, Heavy ends.

By extraction and direct injection using FID.

NDRC Laboratories, Inc.

*David R. Godwin* *RAD*  
David R. Godwin, Ph.D.  
Chief Executive Officer



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BEAUMONT

DALLAS

HOUSTON

DATE RECEIVED : 17-DEC-1991

REPORT NUMBER : H91-4243-1


REPORT DATE : 31-DEC-1991

SAMPLE SUBMITTED BY : Roberts/Schornick & Associates, Inc.  
ADDRESS : 3700 West Robinson, Suite 200  
: Norman, OK 73072  
ATTENTION : Ms. Debby McElreath

SAMPLE MATRIX : WATER  
ID MARKS : N/A  
PROJECT : 91137.01/The Western Co.  
PURCHASE ORDER NO : 551  
DATE SAMPLED : 16-DEC-1991

MISCELLANEOUS ANALYSES		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Chloride	50 mg/L	784 mg/L
Conductivity	1 $\mu$ hos	3040 $\mu$ hos
pH		7.2
Total Dissolved Solids	1.0 mg/L	2130 mg/L

NDRC Laboratories, Inc.

  
David R. Godwin, Ph.D.  
Chief Executive Officer



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BEAUMONT

DALLAS

HOUSTON

DATE RECEIVED : 17-DEC-1991

REPORT NUMBER : H91-4243-2

REPORT DATE : 31-DEC-1991

SAMPLE SUBMITTED BY : Roberts/Schornick & Associates, Inc.

ADDRESS : 3700 West Robinson, Suite 200

: Norman, OK 73072

ATTENTION : Ms. Debby McElreath

SAMPLE MATRIX : WATER

ID MARKS : Trip Blank

PROJECT : 91137.01/The Western Co.

PURCHASE ORDER NO : 551

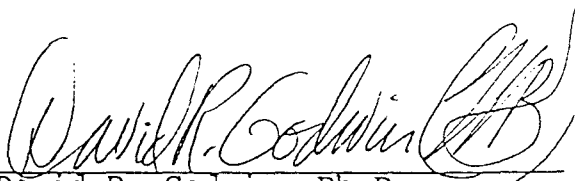
DATE SAMPLED : 14-DEC-1991

ANALYSIS METHOD : EPA 8020

BTEX ANALYSIS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Benzene	1.0 µg/L	< 1.0 µg/L
Toluene	1.0 µg/L	< 1.0 µg/L
Ethyl benzene	1.0 µg/L	< 1.0 µg/L
Xylenes	1.0 µg/L	< 1.0 µg/L

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Bromofluorobenzene(SS)	100 µg/L	102 %

NDRC Laboratories, Inc.

  
David R. Godwin, Ph.D.  
Chief Executive Officer

CLIENT NAME:			SITE MANAGER:			PARAMETERS/METHOD NUMBER			CHAIN-OF-CUSTODY RECORD		
Western Co.			Mark Larson			ROBERTS/SCHORNICK & ASSOCIATES, INC.			Environmental Consultants		
PROJECT NO:			PROJECT NAME:			Environmental Consultants			3700 West Robinson, Suite 200 Norman, Oklahoma 73072 (405) 321-3895		
91137.01			Hobbs, NM			LAB. I.D. NUMBER (LAB USE ONLY)			REMARKS (I.E., FILTERED, UNFILTERED, PRESERVED, UNPRESERVED, GRAB COMPOSITE)		
PAGE 1 OF 1			LAB. PO # 551			LAB. I.D. NUMBER (LAB USE ONLY)			REMARKS (I.E., FILTERED, UNFILTERED, PRESERVED, UNPRESERVED, GRAB COMPOSITE)		
DATE	TIME	SOIL	WATER	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS	TPH - GC (methanol)	BTX 602	TDS	Chloride 300.0	Sp. Conductance	PH
12-16-91	1345		X		2	X					
12-16-91	1345		X		1	X					
12-16-91	1345		X		1	X					
			X	Trip blanks	2	X					
				1-1L Amb							
				1-1L PLAS							
				4-VOA							
				THAIKED W/D McELREATH							
				She said TO RUN GAS & Diesel for TPH							
SAMPLED BY: (Signature) <u>Bob Wilton</u> DATE: 12-16-91 TIME: 1345						RECEIVED BY: (Signature) _____ DATE: _____ TIME: _____					
RELINQUISHED BY: (Signature) <u>Bob Wilton</u> DATE: 12-16-91 TIME: 1420						SAMPLE SHIPPED BY: (Circle) _____ PURO AIRBILL # _____ FEDEX HAND DELIVERED UPS OTHER: _____					
COMMENTS: _____						TURNAROUND TIME NEEDED: _____ Standard					
RECEIVING LABORATORY: NDRC Laboratory RECEIVED BY: (Signature) <u>Debbie McElreath</u>						WHITE - RECEIVING LAB YELLOW - RECEIVING LAB (TO BE RETURNED TO RSA AFTER RECEIPT) PINK - PROJECT MANAGER GOLD - QA/QC COORDINATOR <u>EW</u>					
ADDRESS: 11155 S. Main STATE: TX ZIP: 77025						PHONE # 405-321-3895/360-7410					
CITY: Houston											
CONTACT: Frank Murphree PHONE: 713-661-8150 DATE: 12-17-91 TIME: 10:30AM											
SAMPLE CONDITION WHEN RECEIVED: <u>IN TACT / Cool</u>						RSA CONTACT PERSON: DEBBY McELREATH/ Mark Larson					

# NDRC LABORATORIES, INC.

No

850

Houston - 11155 South Main • Houston, Texas 77025 • (713) 661-8150 • Fax (713) 661-2661

# SAMPLE PRESERVATION INFORMATION SHEET

Field Sampling ☐Incoming Samples ☐

## GENERAL

Company: ROBERTS / SCHORNICK Job No: 4243  
No. of Cooler(s): 1 Temperature of Cooler(s): 4

No. of Cooler(s): 1 Temperature of Cooler(s): 4

## PRESERVATION INFORMATION

[illegible]

PRESERVATION USED \*

- |  |  |
|--|--|
| 1 - Cool to 4° C                             | 5 - NaOH to pH > 12                                      |
| 2 - H <sub>2</sub> SO <sub>4</sub> to pH < 2 | 6 - Na <sub>2</sub> S <sub>2</sub> O <sub>2</sub> 0.008% |
| 3 - HNO <sub>3</sub> to pH < 2               | 7 - 2 mL Zinc Acetate and NaOH to pH > 12                |
| 4 - HCL to pH < 2                            | 8 - None required  |

Preserved by

Date/Time

**ATTACHMENT B**  
**GROUNDWATER ANALYTICAL DATA**  
**ANA-LAB CORPORATION**  
**FEBRUARY 7, 1991**





2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551

Analytical Chemistry • Utility Operations • Equipment Sales

03/15/91

Environmental Bureau NM Oil D.  
PO Box 2088  
Santa Fe, NM 87504

Sample Identification: 9102070955 HOBBS AMERICA  
Collected By: O/A/B  
Date & Time Taken: 02/07/91 0955  
On Site Data: FRESH WATER WESTERN CO.  
Other:

LOW DETECTION LIMIT REQUESTED

Lab Sample Number: 181399

Received: 02/11/91

Client: SNM

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Alkalinity	220	mg/l as C	1100	02/13/91	EPA Method 310.1	BC
Boron	.050	mg/l	1245	02/13/91	EPA Method 212.3	SW
Bromide	14	mg/l	1100	03/03/91		ES
Cation-Anion Balance	37.3/37.9	meq/meq	0800	03/13/91		SK
Carbonate	.7	mg/l	1000	02/25/91	APHA Method 263	BC
Chloride	890	mg/l	0945	02/18/91	EPA Method 325.3	SW
Specific Conductance	3500	Micromhos	1020	02/15/91	EPA Method 120.1	GS
Fluoride	7.8	mg/l	1315	02/21/91	EPA Method 340.1	GS
Bicarbonate	250	mg/l	1000	02/25/91	APHA Method 263	BC
Sulfate	330	mg/l	0815	02/19/91	EPA Method 375.4	DG
Total Dissolved Solids	2286	mg/l	0830	02/22/91	EPA Method 160.1	BC
pH	7.2	5U	1600	02/14/91	EPA Method 150.1	CJ
Silver	<.03	mg/l	1300	02/14/91	EPA Method 6010	GK
Aluminum	.4	mg/l	1130	02/19/91	EPA Method 6010	NT
Arsenic	<.1	mg/l	1300	02/14/91	EPA Method 6010	GI

Continued



2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551

Analytical Chemistry • Utility Operations • Equipment Sales

181399 Continued

Page 2

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Barium	.13	mg/l	1100	02/20/91	EPA Method 6010	GK
Beryllium	<.001	mg/l	1300	02/14/91	EPA Method 6010	GK
Dissolved Calcium	500	mg/l	0830	02/15/91	EPA Method 6010	NT
Cadmium	<.01	mg/l	1300	02/14/91	EPA Method 6010	GK
Cobalt	<.05	mg/l	2045	02/18/91	EPA Method 6010	GK
Chromium	<.03	mg/l	1300	02/14/91	EPA Method 6010	GK
Copper	<.03	mg/l	1300	02/14/91	EPA Method 6010	GK
Dissolved Iron	<.05	mg/l	0830	02/15/91	EPA Method 6010	NT
Dissolved Potassium	1.3	mg/l	0830	02/15/91	EPA Method 6010	NT
Dissolved Magnesium	86	mg/l	0830	02/15/91	EPA Method 6010	NT
Manganese	.02	mg/l	0830	02/15/91	EPA Method 6010	NT
Molybdenum	<.2	mg/l	2045	02/18/91	EPA Method 6010	GK
Dissolved Sodium	120	mg/l	0830	02/15/91	EPA Method 6010	NT
Nickel	<.05	mg/l	1300	02/14/91	EPA Method 6010	GK
Lead	<.1	mg/l	1300	02/14/91	EPA Method 6010	GK
Antimony	<.05	mg/l	1300	02/14/91	EPA Method 6010	GK
Selenium	<.1	mg/l	1300	02/14/91	EPA Method 6010	GK
Silicon (as silica)	30	mg/l	2045	02/18/91	EPA Method 6010	GK
Thallium	<.1	mg/l	1300	02/14/91	EPA Method 6010	GK
Vanadium	<.05	mg/l	2045	02/18/91	EPA Method 6010	GK
Zinc	.06	mg/l	1300	02/14/91	EPA Method 6010	GK

Continued



2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551

Analytical Chemistry • Utility Operations • Equipment Sales

181399 Continued

Page 3

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Benzene	130	ug/l	0800	02/18/91	EPA Method 8020	KB
Ethyl benzene	5	ug/l	0800	02/18/91	EPA Method 8020	KB
Toluene	160	ug/l	0800	02/18/91	EPA Method 8020	KB
Xylenes	40	ug/l	0800	02/18/91	EPA Method 8020	KB
Acrolein	ND(100) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Acrylonitrile	ND(100) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Benzene	230	ug/l	1647	02/15/91	EPA Method 8240	PM
Bromoform	ND(4.7) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Bromomethane	ND(10) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Carbon Tetrachloride	ND(2.8) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Chlorobenzene	ND(6.0) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Chloroethane	ND(10) *	ug/l	1647	02/15/91	EPA Method 8240	PM
2-Chloroethylvinyl ether	ND(10) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Chloroform	ND(1.6) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Chloromethane	ND(10) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Dibromochloromethane	ND(3.1) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Bromodichloromethane	ND(2.2) *	ug/l	1647	02/15/91	EPA Method 8240	PM
1,1-Dichloroethane	ND(4.7) *	ug/l	1647	02/15/91	EPA Method 8240	PM
1,2-Dichloroethane	ND(2.8) *	ug/l	1647	02/15/91	EPA Method 8240	PM
1,1-Dichloroethene	ND(2.8) *	ug/l	1647	02/15/91	EPA Method 8240	PM
trans-1,2-Dichloroethene	ND(1.6) *	ug/l	1647	02/15/91	EPA Method 8240	PM

Continued

Page 4

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
1,2-Dichloropropane	ND(6.0) *	ug/l	1647	02/15/91	EPA Method 8240	PM
cis-1,3-Dichloropropene	ND(5.0) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Ethyl benzene	ND(7.2) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Methylene Chloride	ND(2.8) *	ug/l	1647	02/15/91	EPA Method 8240	PM
1,1,2,2-Tetrachloroethane	ND(6.9) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Tetrachloroethene	ND(4.1) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Toluene	220	ug/l	1647	02/15/91	EPA Method 8240	PM
1,1,1-Trichloroethane	ND(3.8) *	ug/l	1647	02/15/91	EPA Method 8240	PM
1,1,2-Trichloroethane	ND(5.0) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Trichloroethene	ND(1.9) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Vinyl Chloride	ND(10) *	ug/l	1647	02/15/91	EPA Method 8240	PM
trans-1,3-Dichloropropene	ND(10) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Xylenes	520	ug/l	1647	02/15/91	EPA Method 8240	PM

## Quality Assurance for the SET with Sample 181399

[illegible]



2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551

Analytical Chemistry • Utility Operations • Equipment Sales

Quality Assurance for the SET with Sample 181999

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date
	Standard	70	mg/l	71		101	0945	02/18/91
181594	Duplicate	23	mg/l	23		100	0945	02/18/91
181594	Spike		mg/l		100	100	0945	02/18/91
Specific Conductance								
	Standard	1423	Micromhos	1413		101	1020	02/15/91
181397	Duplicate	1681	Micromhos	1677		100	1020	02/15/91
Fluoride								
181397	Spike		mg/l		.5	96	1315	02/21/91
Sulfate								
	Standard	50	mg/l	50		100	0815	02/19/91
181509	Duplicate	32	mg/l	32		100	0815	02/19/91
181511	Duplicate	47	mg/l	47		100	0815	02/19/91
Total Dissolved Solids								
	Blank	0.0000	g				0830	02/22/91
pH								
	Standard	Calibrate	SU	7.0			1600	02/14/91
	Standard	Calibrate	SU	4.0			1600	02/14/91
	Standard	6.0	SU	6.0		100	1600	02/14/91
Silver								
	Blank	<.03	mg/l				1300	02/14/91
	Standard	.21	mg/l	.20		105	1300	02/14/91
	Standard	1.0	mg/l	1.0		100	1300	02/14/91
181401	Duplicate	<.03	mg/l	<.03		100	1300	02/14/91
181401	Spike		mg/l		.20	80	1300	02/14/91
Aluminum								
	Blank	<.1	mg/l				1130	02/19/91
	Blank	<.1	mg/l				1130	02/19/91
	Standard	1.0	mg/l	1.0		100	1130	02/19/91
	Standard	5.1	mg/l	5.0		102	1130	02/19/91
181397	Duplicate	.2	mg/l	.2		100	1130	02/19/91
181401	Spike		mg/l		1.0	99	1130	02/19/91
Arsenic								
	Blank	<.1	mg/l				1300	02/14/91
	Standard	1.0	mg/l	1.0		100	1300	02/14/91
	Standard	5.0	mg/l	5.0		100	1300	02/14/91
181401	Duplicate	.69	mg/l	.71		103	1300	02/14/91
181401	Spike		mg/l		1.7	92	1300	02/14/91
Barium								
	Blank	<.05	mg/l				1100	02/20/91
	Blank	<.05	mg/l				1100	02/20/91
	Standard	1.0	mg/l	1.0		100	1100	02/20/91
	Standard	5.1	mg/l	5.0		102	1100	02/20/91
181397	Duplicate	.17	mg/l	.16		106	1100	02/20/91

Dissolved Potassium



2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551

Analytical Chemistry • Utility Operations • Equipment Sales

Quality Assurance for the SET with Sample 181399

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
181397	Blank	<2	mg/l				0830	02/15/91	NT
	Standard	9.8	mg/l	10		102	0830	02/15/91	NT
	Standard	48	mg/l	50		104	0830	02/15/91	NT
	Duplicate	6.0	mg/l	5.9		102	0830	02/15/91	NT
181399	Spike		mg/l		2.0	87	0830	02/15/91	NT
Dissolved Magnesium									
181397	Blank	<.01	mg/l				0830	02/15/91	NT
	Standard	10	mg/l	10		100	0830	02/15/91	NT
	Standard	50	mg/l	50		100	0830	02/15/91	NT
	Duplicate	25	mg/l	25		100	0830	02/15/91	NT
181399	Spike		mg/l		20	92	0830	02/15/91	NT
Manganese									
181401	Blank	<.01	mg/l				0830	02/15/91	NT
	Standard	1.0	mg/l	1.0		100	0830	02/15/91	NT
	Standard	5.1	mg/l	5.0		102	0830	02/15/91	NT
	Duplicate	.26	mg/l	.26		100	0830	02/15/91	NT
181401	Spike		mg/l		1.0	95	0830	02/15/91	NT
Molybdenum									
181397	Blank	<.2	mg/l				2045	02/18/91	GK
	Standard	10	mg/l	10		100	2045	02/18/91	GK
	Duplicate	<.2	mg/l	<.2		100	2045	02/18/91	GK
181401	Duplicate	<.2	mg/l	<.2		100	2045	02/18/91	GK
181401	Spike		mg/l		2.0	87	2045	02/18/91	GK
Dissolved Sodium									
181397	Blank	<1	mg/l				0830	02/15/91	NT
	Standard	9.8	mg/l	10		102	0830	02/15/91	NT
	Standard	50	mg/l	50		100	0830	02/15/91	NT
	Duplicate	170	mg/l	180		106	0830	02/15/91	NT
181399	Spike		mg/l		20	93	0830	02/15/91	NT
Nickel									
181401	Blank	<.05	mg/l				1300	02/14/91	GK
	Standard	1.0	mg/l	1.0		100	1300	02/14/91	GK
	Standard	5.0	mg/l	5.0		100	1300	02/14/91	GK
	Duplicate	<.05	mg/l	<.05		100	1300	02/14/91	GK
Antimony									
181401	Blank	<.05	mg/l				1300	02/14/91	GK
	Standard	1.0	mg/l	1.0		100	1300	02/14/91	GK
	Standard	5.0	mg/l	5.0		100	1300	02/14/91	GK
	Duplicate	<.05	mg/l	<.05		100	1300	02/14/91	GK
Selenium									
181401	Blank	<.1	mg/l				1300	02/14/91	GK
	Standard	1.0	mg/l	1.0		100	1300	02/14/91	GK
	Standard	5.1	mg/l	5.0		102	1300	02/14/91	GK



2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551

Analytical Chemistry • Utility Operations • Equipment Sales

Quality Assurance for the SET with Sample 181399

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date
181401	Duplicate	<.1	mg/l	<.1		100	1300	02/14/91
				Silicon (as Silica)				
	Blank	.1	mg/l				2045	02/18/91
	Standard	10	mg/l	10		100	2045	02/18/91
181401	Duplicate	34	mg/l	34		100	2045	02/18/91
181397	Duplicate	29	mg/l	30		103	2045	02/18/91
181401	Spike		mg/l		2.0	105	2045	02/18/91
				Thallium				
	Blank	<.1	mg/l				1300	02/14/91
	Standard	1.1	mg/l	1.0		110	1300	02/14/91
	Standard	5.2	mg/l	5.0		104	1300	02/14/91
181401	Duplicate	<.1	mg/l	<.1		100	1300	02/14/91
				Vanadium				
	Blank	<.05	mg/l				2045	02/18/91
	Standard	1.0	mg/l	1.0		100	2045	02/18/91
	Standard	5.0	mg/l	5.0		100	2045	02/18/91
181397	Duplicate	<.05	mg/l	<.05		100	2045	02/18/91
181401	Duplicate	<.05	mg/l	<.05		100	2045	02/18/91
181401	Spike		mg/l		1.0	88	2045	02/18/91
				Zinc				
	Blank	<.01	mg/l				1300	02/14/91
	Standard	1.0	mg/l	1.0		100	1300	02/14/91
	Standard	4.9	mg/l	5.0		102	1300	02/14/91
181401	Duplicate	.03	mg/l	.03		100	1300	02/14/91
181401	Spike		mg/l		1.0	87	1300	02/14/91
				Benzene				
	Blank	<5	ppb				0800	02/18/91
	Standard	68	ppb	50			0800	02/18/91
181438	Duplicate	<5	ppb	<5		100	0800	02/18/91
181438	Spike		ppb		50	103	0800	02/18/91
				Ethyl benzene				
	Blank	<5	ppb				0800	02/18/91
	Standard	66	ppb	50			0800	02/18/91
181438	Duplicate	<5	ppb	<5		100	0800	02/18/91
181438	Spike		ppb		50	99	0800	02/18/91
				Toluene				
	Blank	<5	ppb				0800	02/18/91
	Standard	66	ppb	50			0800	02/18/91
181438	Duplicate	<5	ppb	<5		100	0800	02/18/91
181438	Spike		ppb		50	104	0800	02/18/91
				Xylenes				
	Blank	<5	ppb				0800	02/18/91
	Standard	73	ppb	50			0800	02/18/91





2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551

*Analytical Chemistry • Utility Operations • Equipment Sales***Quality Assurance for the SET with Sample 181399**

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
181438	Duplicate	<5	ppb	<5		100	0800	02/18/91	KB
181438	Spike		ppb		50	98	0800	02/18/91	KB

\* Results reported as "ND" (Not Detected) have the EPA Practical Quantitation Limit in parentheses.

Note that the EPA states that actual PQL's are highly matrix dependent.

I hereby certify that these results were obtained using the methods specified in this report.

C. H. Whiteside, Ph.D., President

**ATTACHMENT C**  
**GROUNDWATER ANALYTICAL DATA**  
**NDRC LABORATORIES, INC.**  
**FEBRUARY 21, 1992**



# NDRC LABORATORIES, INC.

A member of the Incheape Environmental Group

11155 South Main, Houston, Texas 77025 • (713) 661-8150 • FAX (713) 661-2661

BEAUMONT

DALLAS

HOUSTON

DATE RECEIVED : 26-FEB-1992

REPORT NUMBER : H92-770-1

REPORT DATE : 11-MAR-1992

SAMPLE SUBMITTED BY : Roberts/Schornick & Associates, Inc.

ADDRESS : 3700 West Robinson, Suite 200

: Norman, OK 73072

ATTENTION : Ms. Debby McElreath

SAMPLE MATRIX : WATER

ID MARKS : The western Co. Water Sample

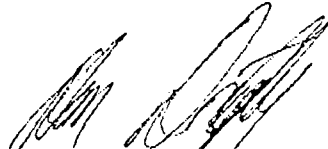
PROJECT : 91037.01/Western--Hobbs

DATE SAMPLED : 21-FEB-1992

ANALYSIS METHOD : EPA 610

POLYNUCLEAR AROMATIC HYDROCARBONS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Acenaphthene	1.8 µg/L	< 1.8 µg/L
Acenaphthylene	2.3 µg/L	< 2.3 µg/L
Anthracene	0.66 µg/L	< 0.66 µg/L
Benzo(a)anthracene	0.013 µg/L	< 0.013 µg/L
Benzo(b)fluoranthene	0.018 µg/L	< 0.018 µg/L
Benzo(k)fluoranthene	0.017 µg/L	< 0.017 µg/L
Benzo(g,h,i)perylene	0.076 µg/L	< 0.076 µg/L
Benzo(a)pyrene	0.023 µg/L	< 0.023 µg/L
Chrysene	0.15 µg/L	< 0.15 µg/L
Dibenz(a,h)anthracene	0.030 µg/L	< 0.030 µg/L
Fluoranthene	0.21 µg/L	< 0.21 µg/L
Fluorene	0.21 µg/L	< 0.21 µg/L
Indeno(1,2,3-cd)pyrene	0.043 µg/L	< 0.043 µg/L
Naphthalene	1.8 µg/L	< 1.8 µg/L
Phenanthrene	0.64 µg/L	< 0.64 µg/L
Pyrene	0.27 µg/L	< 0.27 µg/L

NDRC Laboratories, Inc.

  
Alan Doughty, Ph.D.  
General Manager



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ADDRESS : 3700 West Robinson, Suite 200

: Norman, OK 73072

ATTENTION : Ms. Debby McElreath

SAMPLE MATRIX : WATER

ID MARKS : The western Co. Water Sample

PROJECT : 91037.01/Western--Hobbs

DATE SAMPLED : 21-FEB-1992

TOTAL METALS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Calcium	5 mg/L	382 mg/L
Potassium	0.1 mg/L	4.1 mg/L
Magnesium	1 mg/L	58 mg/L
Sodium	0.01 mg/L	65.0 mg/L

NDRC Laboratories, Inc.

  
Alan Doughty, Ph.D.  
General Manager



# NDRC LABORATORIES, INC.

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11155 South Main, Houston, Texas 77025 • (713) 661-8150 • FAX (713) 661-2661

BEAUMONT

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HOUSTON

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ADDRESS : 3700 West Robinson, Suite 200  
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ATTENTION : Ms. Debby McElreath

SAMPLE MATRIX : WATER  
ID MARKS : The western Co. Water Sample  
PROJECT : 91037.01/Western--Hobbs  
DATE SAMPLED : 21-FEB-1992

MISCELLANEOUS ANALYSES		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Bicarbonate	0.1 mg/L CaCO <sub>3</sub>	209 mg/L CaCO <sub>3</sub>
Bromide	0.5 mg/L	5.1 mg/L
Carbonate (As CaCO <sub>3</sub> )	0.1 mg/L CaCO <sub>3</sub>	< 0.1 mg/L CaCO <sub>3</sub>
Chloride	10 mg/L	645 mg/L
Fluoride	0.1 mg/L	0.8 mg/L
Ammonia Nitrogen	0.01 mg/L	0.02 mg/L
Nitrate-Nitrogen	0.05 mg/L	1.95 mg/L
Total Phosphate	0.1 mg/L	0.2 mg/L
Boron		.740 mg/L
Sulfate, Total	50 mg/L	210 mg/L

NDRC Laboratories, Inc.

  
Alan Doughty, Ph.D.  
General Manager





BRUCE KING  
GOVERNOR

STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION

POST OFFICE BOX 2088  
STATE LAND OFFICE BUILDING  
SANTA FE, NEW MEXICO 87504  
(505) 827-5800

November 15, 1991

**CERTIFIED MAIL**  
**RETURN RECEIPT NO. P-106-675-384**

Mr. Benny Ho  
The Western Company of North America  
P.O. Box 56006  
Houston, Texas 77256

**RE: Hobbs Service Facility (GW-72)**  
**Soil & Groundwater Contamination Investigation**  
**Lea County, New Mexico**

Dear Mr. Ho:

The Oil Conservation Division (OCD) has received the September 5, 1991 "Technical Work Plan, Soil and Groundwater Investigation," submitted on behalf of The Western Company of North America (WCNA) by Roberts/Schornick and Associates, Inc. The above document outlines a plan for an investigation into the sources and extent of soil and groundwater contamination at the WCNA Hobbs Service Facility. The OCD approves the Technical Work Plan with the following conditions:

1. All groundwater samples will be analyzed for Benzene, Toluene, Ethylbenzene, Xylene (BTEX), Polynuclear Aromatic Hydrocarbons (PAH's), and major cations and anions using standard EPA methods.
2. If the results from the fresh water well analysis confirm groundwater impacts then investigation activities will be conducted as described in the Work Plan. However, if the results indicate that groundwater has not been impacted, the WCNA is still required to investigate the extent of the soil contamination from facility leaks and spills and submit a clean-up and remediation plan.

Mr. Benny Ho  
November 15, 1991  
Page - 2

3. The WCNA has proposed 12 soil borings at the facility to delineate the extent of hydrocarbon impacts to soils and groundwater. Any changes in either the number or location of these proposed borings must be approved by the OCD.
4. Soil vapor measurements will be taken with the organic vapor meter (OVM) every 2 feet on all soil borings. For each soil boring, laboratory samples will be taken at the highest OVM reading and at approximately 2 feet above the water table if there is any OVM reading at this location. These samples will be analyzed for volatile aromatic organics using the EPA method 602 and for Total Petroleum Hydrocarbons (TPH) using the modified EPA method 8015.
5. All monitor wells will be constructed with a minimum of 10 feet of screen below the water table and 5 feet of screen above the water table.
6. The WCNA will submit an investigation report to the OCD within 60 days of the last sampling event conducted during the investigation.

Please contact the OCD at least 7 days prior to all soil borings, monitor well installations, and sampling events so that the OCD has the opportunity to have a representative present and split samples.

Please be advised that the OCD approval does not limit you to the work proposed if the investigation fails to fully delineate the extent of contamination related to the WCNA's activities. In addition, the OCD approval does not relieve you of liability which may be actionable under any other laws and/or regulations.

If you have any questions, please contact me at (505) 827-5884.

Sincerely,



Kathy M. Brown  
Geologist

xc: OCD Hobbs District Office  
Herschel Roberts, Roberts/Schornick & Associates, Inc.





STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION

BRUCE KING  
GOVERNOR

October 30, 1991

POST OFFICE BOX 2088  
STATE LAND OFFICE BUILDING  
SANTA FE, NEW MEXICO 87504  
(505) 827-5800

**CERTIFIED MAIL**  
**RETURN RECEIPT NO. P-327-278-269**

Mr. Benny Ho  
The Western Company of North America  
P.O. Box 56006  
Houston, Texas 77256

RE: Discharge Plan GW-72  
Hobbs Service Facility  
Lea County, New Mexico

Dear Mr. Ho:

The Oil Conservation Division (OCD) has received your request, dated October 22, 1991, to transport and dispose of the wastewater generated at your Hobbs Service facility at the Controlled Recovery Inc. (CRI) facility. Enclosed with your request is an analysis of the wastewater that is at your facility now.

Based on the information and analyses provided in your request, you are authorized to dispose of the wastewater at the CRI facility. This authorization includes wastewater generated in the future with the following conditions:

1. There is no change in the wastewater stream that would cause a change in constituents found in the wastewater.
2. There is no change in materials or chemicals used at the facility that could add a "hazardous" constituent to the wastewater stream.
3. The wastewater will be analyzed annually or when there is any process modification or change in the materials or chemicals used at the facility.

If there are any questions, please call me at (505) 827-5884.

Sincerely,

Roger C. Anderson  
Environmental Engineer

xc: OCD Hobbs Office

**INTER-OFFICE CORRESPONDENCE**

TO: Moon Ables AT: Hobbs, NM

FROM: Angela Hardy AT: REFC Dept., Houston


DATE: June 19, 1991

RE: Discharge Plan Application for Oil Field Service Facilities  
Hobbs, New Mexico Facility

Enclosed is a copy of the referenced application. Two copies of this application have been sent to Roger C. Anderson with the State of New Mexico, Oil Conservation Division.

If you have any questions or comments, please call Benny Ho at 713/629-2867.

The application should be filed in environmental Permit files.

  
cc: Shermon Walters  
Benny Ho  
Hobbs Envl file

**RECEIVED**

MAY 08 1995

**UCD HOBBS  
OFFICE**



June 18, 1991

FEDERAL EXPRESS

Mr Roger C Anderson  
Environmental Engineer  
State of New Mexico  
Oil Conservation Division  
Land Office Building  
310 Old Pecos Trail  
Santa Fe NM 87504

RE: The Western Company of North America  
Discharge Plan Application for Oil Field Service Facilities  
at Hobbs, New Mexico

Dear Mr. Anderson:

Enclosed are two copies of the referenced application for The Western Company of North America's Hobbs, New Mexico Facility. If you have any questions or comments, please call Benny Ho at 713/629-2867.

Sincerely,

Ron McKeel, Director  
Real Estate & Facilities Construction  
THE WESTERN COMPANY OF NORTH AMERICA

RM:ah

Enclosures

cc: Benny Ho  
Moon Ables  
Sherman Walters  
Hobbs Permit file

**RECEIVED**

MAY 08 1995  
OCD HOBBS  
OFFICE



2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551

Analytical Chemistry • Utility Operations • Equipment Sales

03/15/91

Environmental Bureau NM Oil D.  
PO Box 2088  
Santa Fe, NM 87504

Sample Identification: 9102071010 HOBBS AMERICA

Collected By: O/A/B

Date & Time Taken: 02/07/91 1010

On Site Data: WASTE WATER WESTERN CO.

91 MAR 13 PM 11 02  
OIL CONSERVATION DIVISION  
REC-20

Lab Sample Number: 181400

Received: 02/11/91

Client: SNM1

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Alkalinity	0	mg/l as C	1100	02/13/91	EPA Method 310.1	BC
Boron	.192	mg/l	1245	02/13/91	EPA Method 212.3	SW
Bromide	120	mg/l	1100	03/03/91		ES
Cation-Anion Balance	62.7/63.6	meq/meq	0800	03/14/91		SK
Carbonate	<.5	mg/l	1000	02/25/91	APHA Method 263	BC
Chloride	2000	mg/l	0945	02/18/91	EPA Method 325.3	SW
Specific Conductance	1301	Micromhos	1020	02/15/91	EPA Method 120.1	GS
Fluoride	3.6	mg/l	1315	02/21/91	EPA Method 340.1	GS
Bicarbonate	<.5	mg/l	1000	02/25/91	APHA Method 263	BC
Sulfate	280	mg/l	0815	02/19/91	EPA Method 375.4	DG
Total Dissolved Solids	3942	mg/l	0830	02/22/91	EPA Method 160.1	BC
pH	2.1	SU	1600	02/14/91	EPA Method 150.1	CJL
Silver	<.03	mg/l	1300	02/14/91	EPA Method 200.7	GK
Aluminum	2.0	mg/l	1130	02/18/91	EPA Method 200.7	NT
Arsenic	<.1	mg/l	1300	02/14/91	EPA Method 200.7	GK
Barium	.14	mg/l	1100	02/20/91	EPA Method 200.7	GDG

Continued



2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551

Analytical Chemistry • Utility Operations • Equipment Sales

181400 Continued

Page 2

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Beryllium	<.001	mg/l	1300	02/14/91	EPA Method 6010	GK
Dissolved Calcium	500	mg/l	0830	02/15/91	EPA Method 215.1	NT
Cadmium	.01	mg/l	1300	02/14/91	EPA Method 200.7	GK
Cobolt	<.05	mg/l	2045	02/18/91	EPA Method 6010	GK
Chromium	<.03	mg/l	1300	02/14/91	EPA Method 200.7	GK
Copper	.13	mg/l	1300	02/14/91	EPA Method 200.7	GK
Dissolved Iron	5.0	mg/l	0830	02/15/91	EPA Method 236.1	NT
Dissolved Potassium	140	mg/l	0830	02/15/91	EPA Method 258.1	NT
Dissolved Magnesium	90	mg/l	0830	02/15/91	EPA Method 242.1	NT
Manganese	.20	mg/l	0830	02/15/91	EPA Method 6010	NT
Molybdenum	<.2	mg/l	2045	02/18/91	EPA Method 6010	GK
Dissolved Sodium	610	mg/l	0830	02/15/91	EPA Method 273.1	NT
Nickel	<.05	mg/l	1300	02/14/91	EPA Method 200.7	GK
Lead	<.1	mg/l	1300	02/14/91	EPA Method 200.7	GK
Antimony	<.05	mg/l	1300	02/14/91	EPA Method 6010	GK
Selenium	<.1	mg/l	1300	02/14/91	EPA Method 200.7	GK
Silicon (as Silica)	30	mg/l	2045	02/18/91	EPA Method 6010	GK
Thallium	<.1	mg/l	1300	02/14/91	EPA Method 6010	GK
Vanadium	<.05	mg/l	2045	02/18/91	EPA Method 6010	GK
Zinc	.54	mg/l	1300	02/14/91	EPA Method 200.7	GK
Benzene	90	ppb	0800	02/19/91	EPA Method 8020	KB

Continued



2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551

Analytical Chemistry • Utility Operations • Equipment Sales

181400 Continued

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PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Ethyl benzene	560	ppb	0800	02/19/91	EPA Method 8020	KB
Toluene	90	ppb	0800	02/19/91	EPA Method 8020	KB
Xylenes	3,140	ppb	0800	02/19/91	EPA Method 8020	KB
Acrolein	ND(100) *	ug/l	1602	02/14/91	EPA Method 624	PM
Acrylonitrile	ND(100) *	ug/l	1602	02/14/91	EPA Method 624	PM
Benzene	120	ug/l	1602	02/14/91	EPA Method 624	PM
Bromoform	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
Bromomethane	ND(10) *	ug/l	1602	02/14/91	EPA Method 624	PM
Carbon Tetrachloride	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
Chlorobenzene	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
Chloroethane	ND(10) *	ug/l	1602	02/14/91	EPA Method 624	PM
2-Chloroethylvinyl ether	ND(10) *	ug/l	1602	02/14/91	EPA Method 624	PM
Chloroform	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
Chloromethane	ND(10) *	ug/l	1602	02/14/91	EPA Method 624	PM
Dibromochloromethane	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
Bromodichloromethane	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
1,1-Dichloroethane	ND(5) *	ug/l	1602	02/14/91	EPA Method 8240	PM
1,2-Dichloroethane	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
1,1-Dichloroethene	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
trans-1,2-Dichloroethene	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
1,2-Dichloropropane	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM

Continued

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
cis-1,3-Dichloropropene	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
Ethyl benzene	890	ug/l	1602	02/14/91	EPA Method 624	PM
Methylene Chloride	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
1,1,2,2-Tetrachloroethane	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
Tetrachloroethene	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
Toluene	175	ug/l	1602	02/14/91	EPA Method 624	PM
1,1,1-Trichloroethane	ND(5) *	ug/l	1602	02/14/91	EPA Method 8240	PM
1,1,2-Trichloroethane	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
Trichloroethene	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
Vinyl Chloride	ND(10) *	ug/l	1602	02/14/91	EPA Method 624	PM
trans-1,3-Dichloropropene	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
Xylenes	1900	ug/l	1602	02/14/91	EPA Method 624	PM

**Quality Assurance for the SET with Sample 181400**

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
<b>Alkalinity</b>									
	Standard	2088	mg/l	2358		112	1100	02/13/91	BC
181397	Duplicate	210	mg/l	210		100	1100	02/13/91	BC
181397	Spike		mg/l		100	99	1100	02/13/91	BC
181397	Spike		mg/l		100	99	1100	02/13/91	BC
<b>Boron</b>									
	Standard	.89	mg/l	1.0		112	1245	02/13/91	SW
181400	Duplicate	.190	mg/l	.194		102	1245	02/13/91	SW
<b>Bromide</b>									
	Blank	<5	ppm				1100	03/03/91	ES
	Standard	96	ppm	100		104	1100	03/03/91	ES
181403	Duplicate	572	ppm	527		108	1100	03/03/91	ES
<b>Chloride</b>									
	Standard	70	mg/l	71		101	0945	02/18/91	SW

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
181594	Duplicate	23	mg/l	23		100	0945	02/18/91	SW
181594	Spike		mg/l		100	100	0945	02/18/91	SW
Specific Conductance									
	Standard	1423	Micromhos	1413		101	1020	02/15/91	GS
181397	Duplicate	1681	Micromhos	1677		100	1020	02/15/91	GS
Fluoride									
181397	Spike		mg/l		.5	96	1315	02/21/91	GS
Sulfate									
	Standard	50	mg/l	50		100	0815	02/19/91	DG
181509	Duplicate	32	mg/l	32		100	0815	02/19/91	DG
181511	Duplicate	47	mg/l	47		100	0815	02/19/91	DG
Total Dissolved Solids									
	Blank	0.0000	g				0830	02/22/91	BC
pH									
	Standard	Calibrate	SU	7.0			1600	02/14/91	CJL
	Standard	Calibrate	SU	4.0			1600	02/14/91	CJL
	Standard	6.0	SU	6.0		100	1600	02/14/91	CJL
Silver									
	Blank	<.03	mg/l				1300	02/14/91	GK
	Standard	.21	mg/l	.20		105	1300	02/14/91	GK
	Standard	1.0	mg/l	1.0		100	1300	02/14/91	GK
181401	Duplicate	<.03	mg/l	<.03		100	1300	02/14/91	GK
181401	Spike		mg/l		.20	80	1300	02/14/91	GK
Aluminum									
	Blank	<.1	mg/l				1130	02/18/91	NT
	Standard	1.0	mg/l	1.0		100	1130	02/18/91	NT
	Standard	5.1	mg/l	5.0		102	1130	02/18/91	NT
181401	Spike		mg/l		1.0	99	1130	02/18/91	NT
Arsenic									
	Blank	<.1	mg/l				1300	02/14/91	GK
	Standard	1.0	mg/l	1.0		100	1300	02/14/91	GK
	Standard	5.0	mg/l	5.0		100	1300	02/14/91	GK
181401	Duplicate	.69	mg/l	.71		103	1300	02/14/91	GK
181401	Spike		mg/l		1.7	92	1300	02/14/91	GK
Barium									
	Blank	<.05	mg/l				1100	02/20/91	GDG
	Blank	<.05	mg/l				1100	02/20/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	02/20/91	GDG
	Standard	5.1	mg/l	5.0		102	1100	02/20/91	GDG
181397	Duplicate	.17	mg/l	.16		106	1100	02/20/91	GDG
181401	Duplicate	.12	mg/l	.08		140	1100	02/20/91	GDG
181399	Spike		mg/l		2.0	84	1100	02/20/91	GDG
Beryllium									





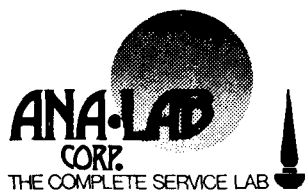
2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551

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**Quality Assurance for the SET with Sample 181400**

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
181401	Blank	<.001	mg/l				1300	02/14/91	GK
	Standard	.41	mg/l	.40		102	1300	02/14/91	GK
	Standard	2.0	mg/l	2.0		100	1300	02/14/91	GK
	Duplicate	<.001	mg/l	<.001		100	1300	02/14/91	GK
	Spike		mg/l		.40	88	1300	02/14/91	GK
<b>Dissolved Calcium</b>									
181397	Blank	.27	mg/l				0830	02/15/91	NT
	Standard	10	mg/l	10		100	0830	02/15/91	NT
	Standard	50	mg/l	50		100	0830	02/15/91	NT
	Duplicate	160	mg/l	160		100	0830	02/15/91	NT
	Spike		mg/l		20	99	0830	02/15/91	NT
<b>Cadmium</b>									
181401	Blank	<.01	mg/l				1300	02/14/91	GK
	Standard	.51	mg/l	.50		102	1300	02/14/91	GK
	Standard	2.5	mg/l	2.5		100	1300	02/14/91	GK
	Duplicate	<.01	mg/l	<.01		100	1300	02/14/91	GK
<b>Cobolt</b>									
181397	Blank	<.05	mg/l				2045	02/18/91	GK
	Standard	1.0	mg/l	1.0		100	2045	02/18/91	GK
	Standard	5.2	mg/l	5.0		104	2045	02/18/91	GK
	Duplicate	<.05	mg/l	<.05		100	2045	02/18/91	GK
	Duplicate	<.05	mg/l	<.05		100	2045	02/18/91	GK
<b>Chromium</b>									
181401	Blank	<.03	mg/l				1300	02/14/91	GK
	Standard	1.0	mg/l	1.0		100	1300	02/14/91	GK
	Standard	5.0	mg/l	5.0		100	1300	02/14/91	GK
	Duplicate	<.03	mg/l	<.03		100	1300	02/14/91	GK
<b>Copper</b>									
181401	Blank	<.03	mg/l				1300	02/14/91	GK
	Standard	1.0	mg/l	1.0		100	1300	02/14/91	GK
	Standard	5.1	mg/l	5.0		102	1300	02/14/91	GK
	Duplicate	<.03	mg/l	<.03		100	1300	02/14/91	GK
	Spike		mg/l		1.0	86	1300	02/14/91	GK
<b>Dissolved Iron</b>									
181397	Blank	<.05	mg/l				0830	02/15/91	NT
	Standard	1.0	mg/l	1.0		100	0830	02/15/91	NT
	Standard	5.1	mg/l	5.0		102	0830	02/15/91	NT
	Duplicate	.07	mg/l	.06		115	0830	02/15/91	NT
	Duplicate	.07	mg/l	.06		115	0830	02/15/91	NT
181399	Spike		mg/l		2.0	81	0830	02/15/91	NT
<b>Dissolved Potassium</b>									
	Blank	<2	mg/l				0830	02/15/91	NT
	Standard	9.8	mg/l	10		102	0830	02/15/91	NT

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Quality Assurance for the SET with Sample 181400

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
181401	Blank	.1	mg/l				2045	02/18/91	GK
	Standard	10	mg/l	10		100	2045	02/18/91	GK
	Duplicate	34	mg/l	34		100	2045	02/18/91	GK
	Duplicate	29	mg/l	30		103	2045	02/18/91	GK
	Spike		mg/l		2.0	105	2045	02/18/91	GK
Thallium									
181401	Blank	<.1	mg/l				1300	02/14/91	GK
	Standard	1.1	mg/l	1.0		110	1300	02/14/91	GK
	Standard	5.2	mg/l	5.0		104	1300	02/14/91	GK
	Duplicate	<.1	mg/l	<.1		100	1300	02/14/91	GK
Vanadium									
181397	Blank	<.05	mg/l				2045	02/18/91	GK
	Standard	1.0	mg/l	1.0		100	2045	02/18/91	GK
	Standard	5.0	mg/l	5.0		100	2045	02/18/91	GK
	Duplicate	<.05	mg/l	<.05		100	2045	02/18/91	GK
	Duplicate	<.05	mg/l	<.05		100	2045	02/18/91	GK
181401	Spike		mg/l		1.0	88	2045	02/18/91	GK
Zinc									
181401	Blank	<.01	mg/l				1300	02/14/91	GK
	Standard	1.0	mg/l	1.0		100	1300	02/14/91	GK
	Standard	4.9	mg/l	5.0		102	1300	02/14/91	GK
	Duplicate	.03	mg/l	.03		100	1300	02/14/91	GK
	Spike		mg/l		1.0	87	1300	02/14/91	GK
Benzene									
181476	Blank	<5	ppb				0800	02/19/91	KB
	Standard	62	ppb	50		121	0800	02/19/91	KB
	Duplicate	<5	ppb	<5		100	0800	02/19/91	KB
	Spike		ppb		50	84	0800	02/19/91	KB
Ethyl benzene									
181476	Blank	<5	ppb				0800	02/19/91	KB
	Standard	68	ppb	50			0800	02/19/91	KB
	Duplicate	<5	ppb	<5		100	0800	02/19/91	KB
	Spike		ppb		50	85	0800	02/19/91	KB
Toluene									
181476	Blank	<5	ppb				0800	02/19/91	KB
	Standard	60	ppb	50		118	0800	02/19/91	KB
	Duplicate	<5	ppb	<5		100	0800	02/19/91	KB
	Spike		ppb		50	85	0800	02/19/91	KB
Xylenes									
181476	Blank	<5	ppb				0800	02/19/91	KB
	Standard	75	ppb	50			0800	02/19/91	KB
	Duplicate	<5	ppb	<5		100	0800	02/19/91	KB
	Spike		ppb		50	85	0800	02/19/91	KB

I hereby certify that these results were obtained using the methods specified in this report.

  
C. H. Whiteside, Ph.D., President



## ANALYSIS REQUEST FORM

Contract Lab

ANA-Lab

Contract No.

OCD Sample No. 910207/010

Collection Date	Collection Time	Collected by —Person/Agency
2/7/91	10/10	Olsen, Anderson, Brown
SITE INFORMATION		
Sample location Waste Water		
Collection Site Description		
Western Co.		Township, Range, Section, Tract:

SEND  
FINAL  
REPORT  
TO ↓ENVIRONMENTAL BUREAU  
NM OIL CONSERVATION DIVISION  
PO Box 2088  
Santa Fe, NM 87504-2088

## SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted: 4

- ☒ NF: Whole sample (Non-filtered)  
☐ F: Filtered in field with 0.45  $\mu$  membrane filter  
☐ PF: Pre-filtered w/45  $\mu$  membrane filter

- 1 ☒ NA: No acid added  
2 ☒ A: HCL  
☐ A: 2ml H<sub>2</sub>SO<sub>4</sub>/L added
- 1 ☒ A: 5ml conc. HNO<sub>3</sub> added  
☐ A: 4ml fuming HNO<sub>3</sub> added

FIELD COMMENTS:

SAMPLING CONDITIONS	Water level
	Discharge
	Sample type grab
	Conductivity (Uncorrected) $\mu$ mho
pH(00400)	Conductivity at 25° C $\mu$ mho
Water Temp. (00010)	

## LAB ANALYSIS REQUESTED:

ITEM	DESC	METHOD	ITEM	DESC	METHOD	ITEM	DESC	METHOD
<input type="checkbox"/> 001	VOA	8020	<input type="checkbox"/> 013	PHENOL	604	<input type="checkbox"/> 026	Cd	7130
<input type="checkbox"/> 002	VOA	602	<input type="checkbox"/> 014	VOC	8240	<input type="checkbox"/> 027	Pb	7421
<input type="checkbox"/> 003	VOH	8010	<input type="checkbox"/> 015	VOC	624	<input type="checkbox"/> 028	Hg(L)	7470
<input type="checkbox"/> 004	VOH	601	<input type="checkbox"/> 016	SVOC	8250	<input type="checkbox"/> 031	Se	7740
<input checked="" type="checkbox"/> 005	SUITE	8010-8020	<input type="checkbox"/> 017	SVOC	625	<input checked="" type="checkbox"/> 032	ICAP	6010
<input type="checkbox"/> 006	SUITE	601-602	<input type="checkbox"/> 018	VOC	8260	<input checked="" type="checkbox"/> 033	CATIONS/ANIONS	
<input type="checkbox"/> 007	HEADSPACE		<input type="checkbox"/> 019	SVOC	8270	<input type="checkbox"/> 034	N SUITE	
<input type="checkbox"/> 008	PAH	8100	<input type="checkbox"/> 020	O&G	9070	<input type="checkbox"/> 035	NITRATE	
<input type="checkbox"/> 009	PAH	610	<input type="checkbox"/> 022	AS	7060	<input type="checkbox"/> 036	NITRITE	
<input type="checkbox"/> 010	PCB	8080	<input type="checkbox"/> 023	Ba	7080	<input type="checkbox"/> 037	AMMONIA	
<input type="checkbox"/> 011	PCB	608	<input type="checkbox"/> 024	Cr	7190	<input type="checkbox"/> 038	TKN	
<input type="checkbox"/> 012	PHENOL	8040	<input type="checkbox"/> 025	Cr6	7198	<input type="checkbox"/>	OTHER	

**ANA-LAB****CORP.**

THE COMPLETE SERVICE LAB

2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551

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03/15/91

Environmental Bureau NM Oil D.  
PO Box 2088  
Santa Fe, NM 87504

**Sample Identification:** 9102070955 HOBBS AMERICA  
**Collected By:** O/A/B  
**Date & Time Taken:** 02/07/91 0955  
**On Site Data:** FRESH WATER WESTERN CO.  
**Other:**

LOW DETECTION LIMIT REQUESTED

OIL CONSERVATION DIVISION  
REC'D  
91 MAR 13 PM 11 02

**Lab Sample Number:** 181399**Received:** 02/11/91**Client:** SNM1

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Alkalinity	220	mg/l as C	1100	02/13/91	EPA Method 310.1	BC
Boron	.050	mg/l	1245	02/13/91	EPA Method 212.3	SW
Bromide	14	mg/l	1100	03/03/91		ES
Cation-Anion Balance	37.3/37.9	meq/meq	0800	03/13/91		SK
Carbonate	.7	mg/l	1000	02/25/91	APHA Method 263	BC
Chloride	890	mg/l	0945	02/18/91	EPA Method 325.3	SW
Specific Conductance	3500	Micromhos	1020	02/15/91	EPA Method 120.1	GS
Fluoride	7.8	mg/l	1315	02/21/91	EPA Method 340.1	GS
Bicarbonate	250	mg/l	1000	02/25/91	APHA Method 263	BC
Sulfate	330	mg/l	0815	02/19/91	EPA Method 375.4	DG
Total Dissolved Solids	2286	mg/l	0830	02/22/91	EPA Method 160.1	BC
pH	7.2	SU	1600	02/14/91	EPA Method 150.1	CJL
Silver	<.03	mg/l	1300	02/14/91	EPA Method 6010	GK
Aluminum	.4	mg/l	1130	02/19/91	EPA Method 6010	NT
Arsenic	<.1	mg/l	1300	02/14/91	EPA Method 6010	GK

Continued



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PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Barium	.13	mg/l	1100	02/20/91	EPA Method 6010	GDG
Beryllium	<.001	mg/l	1300	02/14/91	EPA Method 6010	GK
Dissolved Calcium	500	mg/l	0830	02/15/91	EPA Method 6010	NT
Cadmium	<.01	mg/l	1300	02/14/91	EPA Method 6010	GK
Cobolt	<.05	mg/l	2045	02/18/91	EPA Method 6010	GK
Chromium	<.03	mg/l	1300	02/14/91	EPA Method 6010	GK
Copper	<.03	mg/l	1300	02/14/91	EPA Method 6010	GK
Dissolved Iron	<.05	mg/l	0830	02/15/91	EPA Method 6010	NT
Dissolved Potassium	1.3	mg/l	0830	02/15/91	EPA Method 6010	NT
Dissolved Magnesium	86	mg/l	0830	02/15/91	EPA Method 6010	NT
Manganese	.02	mg/l	0830	02/15/91	EPA Method 6010	NT
Molybdenum	<.2	mg/l	2045	02/18/91	EPA Method 6010	GK
Dissolved Sodium	120	mg/l	0830	02/15/91	EPA Method 6010	NT
Nickel	<.05	mg/l	1300	02/14/91	EPA Method 6010	GK
Lead	<.1	mg/l	1300	02/14/91	EPA Method 6010	GK
Antimony	<.05	mg/l	1300	02/14/91	EPA Method 6010	GK
Selenium	<.1	mg/l	1300	02/14/91	EPA Method 6010	GK
Silicon (as Silica)	30	mg/l	2045	02/18/91	EPA Method 6010	GK
Thallium	<.1	mg/l	1300	02/14/91	EPA Method 6010	GK
Vanadium	<.05	mg/l	2045	02/18/91	EPA Method 6010	GK
Zinc	.06	mg/l	1300	02/14/91	EPA Method 6010	GK

Continued



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181399 Continued

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PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Benzene	130	ug/l	0800	02/18/91	EPA Method 8020	KB
Ethyl benzene	5	ug/l	0800	02/18/91	EPA Method 8020	KB
Toluene	160	ug/l	0800	02/18/91	EPA Method 8020	KB
Xylenes	40	ug/l	0800	02/18/91	EPA Method 8020	KB
Acrolein	ND(100) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Acrylonitrile	ND(100) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Benzene	230	ug/l	1647	02/15/91	EPA Method 8240	PM
Bromoform	ND(4.7) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Bromomethane	ND(10) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Carbon Tetrachloride	ND(2.8) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Chlorobenzene	ND(6.0) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Chloroethane	ND(10) *	ug/l	1647	02/15/91	EPA Method 8240	PM
2-Chloroethylvinyl ether	ND(10) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Chloroform	ND(1.6) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Chloromethane	ND(10) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Dibromochloromethane	ND(3.1) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Bromodichloromethane	ND(2.2) *	ug/l	1647	02/15/91	EPA Method 8240	PM
1,1-Dichloroethane	ND(4.7) *	ug/l	1647	02/15/91	EPA Method 8240	PM
1,2-Dichloroethane	ND(2.8) *	ug/l	1647	02/15/91	EPA Method 8240	PM
1,1-Dichloroethene	ND(2.8) *	ug/l	1647	02/15/91	EPA Method 8240	PM
trans-1,2-Dichloroethene	ND(1.6) *	ug/l	1647	02/15/91	EPA Method 8240	PM

Continued







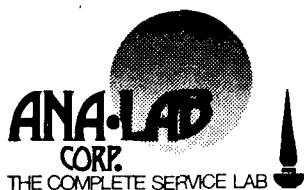
2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551

Analytical Chemistry • Utility Operations • Equipment Sales

**Quality Assurance for the SET with Sample 181399**

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
	Standard	70	mg/l	71		101	0945	02/18/91	SW
181594	Duplicate	23	mg/l	23		100	0945	02/18/91	SW
181594	Spike		mg/l		100	100	0945	02/18/91	SW
<b>Specific Conductance</b>									
	Standard	1423	Micromhos	1413		101	1020	02/15/91	GS
181397	Duplicate	1681	Micromhos	1677		100	1020	02/15/91	GS
<b>Fluoride</b>									
181397	Spike		mg/l		.5	96	1315	02/21/91	GS
<b>Sulfate</b>									
	Standard	50	mg/l	50		100	0815	02/19/91	DG
181509	Duplicate	32	mg/l	32		100	0815	02/19/91	DG
181511	Duplicate	47	mg/l	47		100	0815	02/19/91	DG
<b>Total Dissolved Solids</b>									
	Blank	0.0000	g				0830	02/22/91	BC
<b>pH</b>									
	Standard	Calibrate	SU	7.0			1600	02/14/91	CJL
	Standard	Calibrate	SU	4.0			1600	02/14/91	CJL
	Standard	6.0	SU	6.0		100	1600	02/14/91	CJL
<b>Silver</b>									
	Blank	<.03	mg/l				1300	02/14/91	GK
	Standard	.21	mg/l	.20		105	1300	02/14/91	GK
	Standard	1.0	mg/l	1.0		100	1300	02/14/91	GK
181401	Duplicate	<.03	mg/l	<.03		100	1300	02/14/91	GK
181401	Spike		mg/l		.20	80	1300	02/14/91	GK
<b>Aluminum</b>									
	Blank	<.1	mg/l				1130	02/19/91	NT
	Blank	<.1	mg/l				1130	02/19/91	NT
	Standard	1.0	mg/l	1.0		100	1130	02/19/91	NT
	Standard	5.1	mg/l	5.0		102	1130	02/19/91	NT
181397	Duplicate	.2	mg/l	.2		100	1130	02/19/91	NT
181401	Spike		mg/l		1.0	99	1130	02/19/91	NT
<b>Arsenic</b>									
	Blank	<.1	mg/l				1300	02/14/91	GK
	Standard	1.0	mg/l	1.0		100	1300	02/14/91	GK
	Standard	5.0	mg/l	5.0		100	1300	02/14/91	GK
181401	Duplicate	.69	mg/l	.71		103	1300	02/14/91	GK
181401	Spike		mg/l		1.7	92	1300	02/14/91	GK
<b>Barium</b>									
	Blank	<.05	mg/l				1100	02/20/91	GDG
	Blank	<.05	mg/l				1100	02/20/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	02/20/91	GDG
	Standard	5.1	mg/l	5.0		102	1100	02/20/91	GDG
181397	Duplicate	.17	mg/l	.16		106	1100	02/20/91	GDG

[illegible]



2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551

Analytical Chemistry • Utility Operations • Equipment Sales

**Quality Assurance for the SET with Sample 181399**

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
181397	Blank	<2	mg/l				0830	02/15/91	NT
	Standard	9.8	mg/l	10		102	0830	02/15/91	NT
	Standard	48	mg/l	50		104	0830	02/15/91	NT
	Duplicate	6.0	mg/l	5.9		102	0830	02/15/91	NT
181399	Spike		mg/l		2.0	87	0830	02/15/91	NT
<b>Dissolved Magnesium</b>									
181397	Blank	<.01	mg/l				0830	02/15/91	NT
	Standard	10	mg/l	10		100	0830	02/15/91	NT
	Standard	50	mg/l	50		100	0830	02/15/91	NT
	Duplicate	25	mg/l	25		100	0830	02/15/91	NT
181399	Spike		mg/l		20	92	0830	02/15/91	NT
<b>Manganese</b>									
181401	Blank	<.01	mg/l				0830	02/15/91	NT
	Standard	1.0	mg/l	1.0		100	0830	02/15/91	NT
	Standard	5.1	mg/l	5.0		102	0830	02/15/91	NT
	Duplicate	.26	mg/l	.26		100	0830	02/15/91	NT
181401	Spike		mg/l		1.0	95	0830	02/15/91	NT
<b>Molybdenum</b>									
181397	Blank	<.2	mg/l				2045	02/18/91	GK
	Standard	10	mg/l	10		100	2045	02/18/91	GK
	Duplicate	<.2	mg/l	<.2		100	2045	02/18/91	GK
181401	Duplicate	<.2	mg/l	<.2		100	2045	02/18/91	GK
181401	Spike		mg/l		2.0	87	2045	02/18/91	GK
<b>Dissolved Sodium</b>									
181397	Blank	<1	mg/l				0830	02/15/91	NT
	Standard	9.8	mg/l	10		102	0830	02/15/91	NT
	Standard	50	mg/l	50		100	0830	02/15/91	NT
	Duplicate	170	mg/l	180		106	0830	02/15/91	NT
181399	Spike		mg/l		20	93	0830	02/15/91	NT
<b>Nickel</b>									
181401	Blank	<.05	mg/l				1300	02/14/91	GK
	Standard	1.0	mg/l	1.0		100	1300	02/14/91	GK
	Standard	5.0	mg/l	5.0		100	1300	02/14/91	GK
	Duplicate	<.05	mg/l	<.05		100	1300	02/14/91	GK
<b>Antimony</b>									
181401	Blank	<.05	mg/l				1300	02/14/91	GK
	Standard	1.0	mg/l	1.0		100	1300	02/14/91	GK
	Standard	5.0	mg/l	5.0		100	1300	02/14/91	GK
	Duplicate	<.05	mg/l	<.05		100	1300	02/14/91	GK
<b>Selenium</b>									
	Blank	<.1	mg/l				1300	02/14/91	GK
	Standard	1.0	mg/l	1.0		100	1300	02/14/91	GK
	Standard	5.1	mg/l	5.0		102	1300	02/14/91	GK

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
181401	Duplicate	<.1	mg/l	<.1		100	1300	02/14/91	GK
				<b>Silicon (as Silica)</b>					
	Blank	.1	mg/l				2045	02/18/91	GK
	Standard	10	mg/l	10		100	2045	02/18/91	GK
181401	Duplicate	34	mg/l	34		100	2045	02/18/91	GK
181397	Duplicate	29	mg/l	30		103	2045	02/18/91	GK
181401	Spike		mg/l		2.0	105	2045	02/18/91	GK
				<b>Thallium</b>					
	Blank	<.1	mg/l				1300	02/14/91	GK
	Standard	1.1	mg/l	1.0		110	1300	02/14/91	GK
	Standard	5.2	mg/l	5.0		104	1300	02/14/91	GK
181401	Duplicate	<.1	mg/l	<.1		100	1300	02/14/91	GK
				<b>Vanadium</b>					
	Blank	<.05	mg/l				2045	02/18/91	GK
	Standard	1.0	mg/l	1.0		100	2045	02/18/91	GK
	Standard	5.0	mg/l	5.0		100	2045	02/18/91	GK
181397	Duplicate	<.05	mg/l	<.05		100	2045	02/18/91	GK
181401	Duplicate	<.05	mg/l	<.05		100	2045	02/18/91	GK
181401	Spike		mg/l		1.0	88	2045	02/18/91	GK
				<b>Zinc</b>					
	Blank	<.01	mg/l				1300	02/14/91	GK
	Standard	1.0	mg/l	1.0		100	1300	02/14/91	GK
	Standard	4.9	mg/l	5.0		102	1300	02/14/91	GK
181401	Duplicate	.03	mg/l	.03		100	1300	02/14/91	GK
181401	Spike		mg/l		1.0	87	1300	02/14/91	GK
				<b>Benzene</b>					
	Blank	<5	ppb				0800	02/18/91	KB
	Standard	68	ppb	50			0800	02/18/91	KB
181438	Duplicate	<5	ppb	<5		100	0800	02/18/91	KB
181438	Spike		ppb		50	103	0800	02/18/91	KB
				<b>Ethyl benzene</b>					
	Blank	<5	ppb				0800	02/18/91	KB
	Standard	66	ppb	50			0800	02/18/91	KB
181438	Duplicate	<5	ppb	<5		100	0800	02/18/91	KB
181438	Spike		ppb		50	99	0800	02/18/91	KB
				<b>Toluene</b>					
	Blank	<5	ppb				0800	02/18/91	KB
	Standard	66	ppb	50			0800	02/18/91	KB
181438	Duplicate	<5	ppb	<5		100	0800	02/18/91	KB
181438	Spike		ppb		50	104	0800	02/18/91	KB
				<b>Xylenes</b>					
	Blank	<5	ppb				0800	02/18/91	KB
	Standard	73	ppb	50			0800	02/18/91	KB



2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551

*Analytical Chemistry • Utility Operations • Equipment Sales*


**Quality Assurance for the SET with Sample 181399**

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
181438	Duplicate	<5	ppb	<5		100	0800	02/18/91	KB
181438	Spike		ppb		50	98	0800	02/18/91	KB

\* Results reported as "ND" (Not Detected) have the EPA Practical Quantitation Limit in parentheses.

Note that the EPA states that actual PQL's are highly matrix dependent.

I hereby certify that these results were obtained using the methods specified in this report.

  
C. H. Whiteside, Ph.D., President

STATE ENGINEER OFFICE  
WELL RECORD

FILE NO. 106

Section 1. GENERAL INFORMATION

(A) Owner of well The Western Co. of North America Owner's Well No. \_\_\_\_\_  
Street or Post Office Address O.O. Box 1067  
City and State Hobbs, New Mexico 88240

Well was drilled under Permit No. L-476 & L-333-Comb-A and is located in the:

a.  $\frac{1}{4}$   $\frac{1}{4}$  SW  $\frac{1}{4}$  NE  $\frac{1}{4}$  of Section 20 Township 18S Range 38E N.M.P.M.

b. Tract No. \_\_\_\_\_ of Map No. \_\_\_\_\_ of the \_\_\_\_\_

c. Lot No. \_\_\_\_\_ of Block No. \_\_\_\_\_ of the \_\_\_\_\_  
Subdivision, recorded in Lea County.

d. X= \_\_\_\_\_ feet, Y= \_\_\_\_\_ feet, N.M. Coordinate System \_\_\_\_\_ Zone in the \_\_\_\_\_ Grant.

(B) Drilling Contractor Abbott Bros. License No. WD-46

Address P.O. Box 637, Hobbs, New Mexico 88240

Drilling Began 8/18/75 Completed 8/18/75 Type tools Cable Size of hole 8 in.

Elevation of land surface or \_\_\_\_\_ at well is \_\_\_\_\_ ft. Total depth of well 125 ft.

Completed well is ☒ shallow ☐ artesian. Depth to water upon completion of well 55 ft.

Section 2. PRINCIPAL WATER-BEARING STRATA

Depth in Feet		Thickness in Feet	Description of Water-Bearing Formation	Estimated Yield (gallons per minute)
From	To			
55	125	70		

Section 3. RECORD OF CASING

Diameter (inches)	Pounds per foot	Threads per in.	Depth in Feet		Length (feet)	Type of Shoe	Perforations	
			Top	Bottom			From	To
6 5/8	13	Welded	0	125	125	None	55	125

Section 4. RECORD OF MUDDING AND CEMENTING

Depth in Feet		Hole Diameter	Sacks of Mud	Cubic Feet of Cement	Method of Placement
From	To				
					Cement at top

Section 5. PLUGGING RECORD

Plugging Contractor \_\_\_\_\_  
Address \_\_\_\_\_  
Plugging Method \_\_\_\_\_  
Date Well Plugged \_\_\_\_\_  
Plugging approved by: \_\_\_\_\_

State Engineer Representative

No.	Depth in Feet		Cubic Feet of Cement
	Top	Bottom	
1			
2			
3			
4			

FOR USE OF STATE ENGINEER ONLY

Date Received December 12, 1979

Quad \_\_\_\_\_ FWL \_\_\_\_\_ FSL \_\_\_\_\_

File No. L-476 & L-333-Comb-A

Use IND.

Location No. 18, 38, 20, 23323

[illegible]

79 DEC 12 AM 8 07

STATE ENGINEER'S OFFICE  
ROSWELL, N.M.

Murrell Abbott  
Driller 21.3

INSTRUCTIONS: This form should be executed in triplicate, preferably typewritten, and submitted to the appropriate district office of the State Engineer. All questions, except Section 5, shall be answered as completely and accurately as possible when any well is drilled, repaired or deepened. When this form is used as a plugging record, only Section 1(a) and Section 11 need be completed.



2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551

Analytical Chemistry • Utility Operations • Equipment Sales

03/14/91

Environmental Bureau NM Oil D.  
PO Box 2088  
Santa Fe, NM 87504

Sample Identification: 9102071010 HOBBS AMERICA  
Collected By: O/A/B  
Date & Time Taken: 02/07/91 1010  
On Site Data: WASTE WATER WESTERN CO.

91 MAR 13 PM 11 02  
OIL CONSERVATION DIVISION  
REC'D

Lab Sample Number: 181400 Received: 02/11/91 Client: SNM1

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Alkalinity	0	mg/l as C	1100	02/13/91	EPA Method 310.1	BC
Boron	.192	mg/l	1245	02/13/91	EPA Method 212.3	SW
Bromide	120	mg/l	1100	03/03/91		ES
Cation-Anion Balance	62.7/63.6	meq/meq	0800	03/14/91		SK
Carbonate	<.5	mg/l	1000	02/25/91	APHA Method 263	BC
Chloride	2000	mg/l	0945	02/18/91	EPA Method 325.3	SW
Specific Conductance	1301	Micromhos	1020	02/15/91	EPA Method 120.1	GS
Fluoride	3.6	mg/l	1315	02/21/91	EPA Method 340.1	GS
Bicarbonate	<.5	mg/l	1000	02/25/91	APHA Method 263	BC
Sulfate	280	mg/l	0815	02/19/91	EPA Method 375.4	DG
Total Dissolved Solids	3942	mg/l	0830	02/22/91	EPA Method 160.1	BC
pH	2.1	SU	1600	02/14/91	EPA Method 150.1	CJL
Silver	<.03	mg/l	1300	02/14/91	EPA Method 200.7	GK
Aluminum	2.0	mg/l	1130	02/18/91	EPA Method 200.7	NT
Arsenic	<.1	mg/l	1300	02/14/91	EPA Method 200.7	GK
Barium	.14	mg/l	1100	02/20/91	EPA Method 200.7	GDG

Continued





2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551

*Analytical Chemistry • Utility Operations • Equipment Sales*

181400 Continued

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PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Beryllium	<.001	mg/l	1300	02/14/91	EPA Method 6010	GK
Dissolved Calcium	500	mg/l	0830	02/15/91	EPA Method 215.1	NT
Cadmium	.01	mg/l	1300	02/14/91	EPA Method 200.7	GK
Cobolt	<.05	mg/l	2045	02/18/91	EPA Method 6010	GK
Chromium	<.03	mg/l	1300	02/14/91	EPA Method 200.7	GK
Copper	.13	mg/l	1300	02/14/91	EPA Method 200.7	GK
Dissolved Iron	5.0	mg/l	0830	02/15/91	EPA Method 236.1	NT
Dissolved Potassium	140	mg/l	0830	02/15/91	EPA Method 258.1	NT
Dissolved Magnesium	90	mg/l	0830	02/15/91	EPA Method 242.1	NT
Manganese	.20	mg/l	0830	02/15/91	EPA Method 6010	NT
Molybdenum	<.2	mg/l	2045	02/18/91	EPA Method 6010	GK
Dissolved Sodium	610	mg/l	0830	02/15/91	EPA Method 273.1	NT
Nickel	<.05	mg/l	1300	02/14/91	EPA Method 200.7	GK
Lead	<.1	mg/l	1300	02/14/91	EPA Method 200.7	GK
Antimony	<.05	mg/l	1300	02/14/91	EPA Method 6010	GK
Selenium	<.1	mg/l	1300	02/14/91	EPA Method 200.7	GK
Silicon (as Silica)	30	mg/l	2045	02/18/91	EPA Method 6010	GK
Thallium	<.1	mg/l	1300	02/14/91	EPA Method 6010	GK
Vanadium	<.05	mg/l	2045	02/18/91	EPA Method 6010	GK
Zinc	.54	mg/l	1300	02/14/91	EPA Method 200.7	GK
Benzene	90	ppb	0800	02/19/91	EPA Method 8020	KB

Continued



2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551

Analytical Chemistry • Utility Operations • Equipment Sales

181400 Continued

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PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Ethyl benzene	560	ppb	0800	02/19/91	EPA Method 8020	KB
Toluene	90	ppb	0800	02/19/91	EPA Method 8020	KB
Xylenes	3,140	ppb	0800	02/19/91	EPA Method 8020	KB
Acrolein	ND(100) *	ug/l	1602	02/14/91	EPA Method 624	PM
Acrylonitrile	ND(100) *	ug/l	1602	02/14/91	EPA Method 624	PM
Benzene	120	ug/l	1602	02/14/91	EPA Method 624	PM
Bromoform	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
Bromomethane	ND(10) *	ug/l	1602	02/14/91	EPA Method 624	PM
Carbon Tetrachloride	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
Chlorobenzene	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
Chloroethane	ND(10) *	ug/l	1602	02/14/91	EPA Method 624	PM
2-Chloroethylvinyl ether	ND(10) *	ug/l	1602	02/14/91	EPA Method 624	PM
Chloroform	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
Chloromethane	ND(10) *	ug/l	1602	02/14/91	EPA Method 624	PM
Dibromochloromethane	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
Bromodichloromethane	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
1,1-Dichloroethane	ND(5) *	ug/l	1602	02/14/91	EPA Method 8240	PM
1,2-Dichloroethane	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
1,1-Dichloroethene	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
trans-1,2-Dichloroethene	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
1,2-Dichloropropane	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM

Continued



2600 DUDLEY ROAD — KILGORE, TEXAS 75662 — 903/984-0551

Analytical Chemistry • Utility Operations • Equipment Sales

181400 Continued

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PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
cis-1,3-Dichloropropene	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
Ethyl benzene	890	ug/l	1602	02/14/91	EPA Method 624	PM
Methylene Chloride	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
1,1,2,2-Tetrachloroethane	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
Tetrachloroethene	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
Toluene	175	ug/l	1602	02/14/91	EPA Method 624	PM
1,1,1-Trichloroethane	ND(5) *	ug/l	1602	02/14/91	EPA Method 8240	PM
1,1,2-Trichloroethane	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
Trichloroethene	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
Vinyl Chloride	ND(10) *	ug/l	1602	02/14/91	EPA Method 624	PM
trans-1,3-Dichloropropene	ND(5) *	ug/l	1602	02/14/91	EPA Method 624	PM
Xylenes	1900	ug/l	1602	02/14/91	EPA Method 624	PM

Quality Assurance for the SET with Sample 181400

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
<b>Alkalinity</b>									
	Standard	2088	mg/l	2358		112	1100	02/13/91	BC
181397	Duplicate	210	mg/l	210		100	1100	02/13/91	BC
181397	Spike		mg/l		100	99	1100	02/13/91	BC
181397	Spike		mg/l		100	99	1100	02/13/91	BC
<b>Boron</b>									
	Standard	.89	mg/l	1.0		112	1245	02/13/91	SW
181400	Duplicate	.190	mg/l	.194		102	1245	02/13/91	SW
<b>Bromide</b>									
	Blank	<5	ppm				1100	03/03/91	ES
	Standard	96	ppm	100		104	1100	03/03/91	ES
181403	Duplicate	572	ppm	527		108	1100	03/03/91	ES
<b>Chloride</b>									
	Standard	70	mg/l	71		101	0945	02/18/91	SW

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
181594	Duplicate	23	mg/l	23		100	0945	02/18/91	SW
181594	Spike		mg/l		100	100	0945	02/18/91	SW
Specific Conductance									
	Standard	1423	Micromhos	1413		101	1020	02/15/91	GS
181397	Duplicate	1681	Micromhos	1677		100	1020	02/15/91	GS
Fluoride									
181397	Spike		mg/l		.5	96	1315	02/21/91	GS
Sulfate									
	Standard	50	mg/l	50		100	0815	02/19/91	DG
181509	Duplicate	32	mg/l	32		100	0815	02/19/91	DG
181511	Duplicate	47	mg/l	47		100	0815	02/19/91	DG
Total Dissolved Solids									
	Blank	0.0000	g				0830	02/22/91	BC
pH									
	Standard	Calibrate	SU	7.0			1600	02/14/91	CJL
	Standard	Calibrate	SU	4.0			1600	02/14/91	CJL
	Standard	6.0	SU	6.0		100	1600	02/14/91	CJL
Silver									
	Blank	<.03	mg/l				1300	02/14/91	GK
	Standard	.21	mg/l	.20		105	1300	02/14/91	GK
	Standard	1.0	mg/l	1.0		100	1300	02/14/91	GK
181401	Duplicate	<.03	mg/l	<.03		100	1300	02/14/91	GK
181401	Spike		mg/l		.20	80	1300	02/14/91	GK
Aluminum									
	Blank	<.1	mg/l				1130	02/18/91	NT
	Standard	1.0	mg/l	1.0		100	1130	02/18/91	NT
	Standard	5.1	mg/l	5.0		102	1130	02/18/91	NT
181401	Spike		mg/l		1.0	99	1130	02/18/91	NT
Arsenic									
	Blank	<.1	mg/l				1300	02/14/91	GK
	Standard	1.0	mg/l	1.0		100	1300	02/14/91	GK
	Standard	5.0	mg/l	5.0		100	1300	02/14/91	GK
181401	Duplicate	.69	mg/l	.71		103	1300	02/14/91	GK
181401	Spike		mg/l		1.7	92	1300	02/14/91	GK
Barium									
	Blank	<.05	mg/l				1100	02/20/91	GDG
	Blank	<.05	mg/l				1100	02/20/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	02/20/91	GDG
	Standard	5.1	mg/l	5.0		102	1100	02/20/91	GDG
181397	Duplicate	.17	mg/l	.16		106	1100	02/20/91	GDG
181401	Duplicate	.12	mg/l	.08		140	1100	02/20/91	GDG
181399	Spike		mg/l		2.0	84	1100	02/20/91	GDG
Beryllium									



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**Quality Assurance for the SET with Sample 181400**

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
181401	Blank	<.001	mg/l				1300	02/14/91	GK
	Standard	.41	mg/l	.40		102	1300	02/14/91	GK
	Standard	2.0	mg/l	2.0		100	1300	02/14/91	GK
	Duplicate	<.001	mg/l	<.001		100	1300	02/14/91	GK
	Spike		mg/l		.40	88	1300	02/14/91	GK
<b>Dissolved Calcium</b>									
181397	Blank	.27	mg/l				0830	02/15/91	NT
	Standard	10	mg/l	10		100	0830	02/15/91	NT
	Standard	50	mg/l	50		100	0830	02/15/91	NT
	Duplicate	160	mg/l	160		100	0830	02/15/91	NT
	Spike		mg/l		20	99	0830	02/15/91	NT
<b>Cadmium</b>									
181401	Blank	<.01	mg/l				1300	02/14/91	GK
	Standard	.51	mg/l	.50		102	1300	02/14/91	GK
	Standard	2.5	mg/l	2.5		100	1300	02/14/91	GK
	Duplicate	<.01	mg/l	<.01		100	1300	02/14/91	GK
<b>Cobolt</b>									
181397	Blank	<.05	mg/l				2045	02/18/91	GK
	Standard	1.0	mg/l	1.0		100	2045	02/18/91	GK
	Standard	5.2	mg/l	5.0		104	2045	02/18/91	GK
	Duplicate	<.05	mg/l	<.05		100	2045	02/18/91	GK
	Duplicate	<.05	mg/l	<.05		100	2045	02/18/91	GK
<b>Chromium</b>									
181401	Blank	<.03	mg/l				1300	02/14/91	GK
	Standard	1.0	mg/l	1.0		100	1300	02/14/91	GK
	Standard	5.0	mg/l	5.0		100	1300	02/14/91	GK
	Duplicate	<.03	mg/l	<.03		100	1300	02/14/91	GK
<b>Copper</b>									
181401	Blank	<.03	mg/l				1300	02/14/91	GK
	Standard	1.0	mg/l	1.0		100	1300	02/14/91	GK
	Standard	5.1	mg/l	5.0		102	1300	02/14/91	GK
	Duplicate	<.03	mg/l	<.03		100	1300	02/14/91	GK
	Spike		mg/l		1.0	86	1300	02/14/91	GK
<b>Dissolved Iron</b>									
181397	Blank	<.05	mg/l				0830	02/15/91	NT
	Standard	1.0	mg/l	1.0		100	0830	02/15/91	NT
	Standard	5.1	mg/l	5.0		102	0830	02/15/91	NT
	Duplicate	.07	mg/l	.06		115	0830	02/15/91	NT
	Duplicate	.07	mg/l	.06		115	0830	02/15/91	NT
181399	Spike		mg/l		2.0	81	0830	02/15/91	NT
<b>Dissolved Potassium</b>									
	Blank	<2	mg/l				0830	02/15/91	NT
	Standard	9.8	mg/l	10		102	0830	02/15/91	NT

**Silicon (as Silica)**



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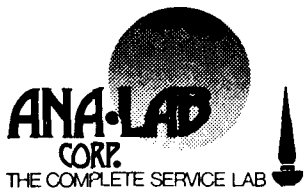
**Quality Assurance for the SET with Sample 181400**

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
181401	Blank	.1	mg/l				2045	02/18/91	GK
	Standard	10	mg/l	10		100	2045	02/18/91	GK
	Duplicate	34	mg/l	34		100	2045	02/18/91	GK
	Duplicate	29	mg/l	30		103	2045	02/18/91	GK
	Spike		mg/l		2.0	105	2045	02/18/91	GK
<b>Thallium</b>									
181401	Blank	<.1	mg/l				1300	02/14/91	GK
	Standard	1.1	mg/l	1.0		110	1300	02/14/91	GK
	Standard	5.2	mg/l	5.0		104	1300	02/14/91	GK
	Duplicate	<.1	mg/l	<.1		100	1300	02/14/91	GK
<b>Vanadium</b>									
181397	Blank	<.05	mg/l				2045	02/18/91	GK
	Standard	1.0	mg/l	1.0		100	2045	02/18/91	GK
	Standard	5.0	mg/l	5.0		100	2045	02/18/91	GK
	Duplicate	<.05	mg/l	<.05		100	2045	02/18/91	GK
	Duplicate	<.05	mg/l	<.05		100	2045	02/18/91	GK
181401	Spike		mg/l		1.0	88	2045	02/18/91	GK
<b>Zinc</b>									
181401	Blank	<.01	mg/l				1300	02/14/91	GK
	Standard	1.0	mg/l	1.0		100	1300	02/14/91	GK
	Standard	4.9	mg/l	5.0		102	1300	02/14/91	GK
	Duplicate	.03	mg/l	.03		100	1300	02/14/91	GK
	Spike		mg/l		1.0	87	1300	02/14/91	GK
<b>Benzene</b>									
181476	Blank	<5	ppb				0800	02/19/91	KB
	Standard	62	ppb	50		121	0800	02/19/91	KB
	Duplicate	<5	ppb	<5		100	0800	02/19/91	KB
	Spike		ppb		50	84	0800	02/19/91	KB
<b>Ethyl benzene</b>									
181476	Blank	<5	ppb				0800	02/19/91	KB
	Standard	68	ppb	50			0800	02/19/91	KB
	Duplicate	<5	ppb	<5		100	0800	02/19/91	KB
	Spike		ppb		50	85	0800	02/19/91	KB
<b>Toluene</b>									
181476	Blank	<5	ppb				0800	02/19/91	KB
	Standard	60	ppb	50		118	0800	02/19/91	KB
	Duplicate	<5	ppb	<5		100	0800	02/19/91	KB
	Spike		ppb		50	85	0800	02/19/91	KB
<b>Xylenes</b>									
181476	Blank	<5	ppb				0800	02/19/91	KB
	Standard	75	ppb	50			0800	02/19/91	KB
	Duplicate	<5	ppb	<5		100	0800	02/19/91	KB
	Spike		ppb		50	85	0800	02/19/91	KB

I hereby certify that these results were obtained using the methods specified in this report.

*Bill Peery*

C. H. Whiteside, Ph.D., President



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03/14/91

Environmental Bureau NM Oil D.  
PO Box 2088  
Santa Fe, NM 87504

**Sample Identification:** 9102070955 HOBBS AMERICA  
**Collected By:** O/A/B  
**Date & Time Taken:** 02/07/91 0955  
**On Site Data:** FRESH WATER WESTERN CO.  
**Other:**

LOW DETECTION LIMIT REQUESTED

OIL CONSERVATION DIVISION  
RECEIVED  
91 MAR 19 6 11 02

**Lab Sample Number:** 181399 **Received:** 02/11/91 **Client:** SNM1

PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Alkalinity	220	mg/l as C	1100	02/13/91	EPA Method 310.1	BC
Boron	.050	mg/l	1245	02/13/91	EPA Method 212.3	SW
Bromide	14	mg/l	1100	03/03/91		ES
Cation-Anion Balance	37.3/37.9	meq/meq	0800	03/13/91		SK
Carbonate	.7	mg/l	1000	02/25/91	APHA Method 263	BC
Chloride	890	mg/l	0945	02/18/91	EPA Method 325.3	SW
Specific Conductance	3500	Micromhos	1020	02/15/91	EPA Method 120.1	GS
Fluoride	7.8	mg/l	1315	02/21/91	EPA Method 340.1	GS
Bicarbonate	250	mg/l	1000	02/25/91	APHA Method 263	BC
Sulfate	330	mg/l	0815	02/19/91	EPA Method 375.4	DG
Total Dissolved Solids	2286	mg/l	0830	02/22/91	EPA Method 160.1	BC
pH	7.2	SU	1600	02/14/91	EPA Method 150.1	CJL
Silver	<.03	mg/l	1300	02/14/91	EPA Method 6010	GK
Aluminum	.4	mg/l	1130	02/19/91	EPA Method 6010	NT
Arsenic	<.1	mg/l	1300	02/14/91	EPA Method 6010	GK

Continued





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181399 Continued

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PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Barium	.13	mg/l	1100	02/20/91	EPA Method 6010	GDG
Beryllium	<.001	mg/l	1300	02/14/91	EPA Method 6010	GK
Dissolved Calcium	500	mg/l	0830	02/15/91	EPA Method 6010	NT
Cadmium	<.01	mg/l	1300	02/14/91	EPA Method 6010	GK
Cobolt	<.05	mg/l	2045	02/18/91	EPA Method 6010	GK
Chromium	<.03	mg/l	1300	02/14/91	EPA Method 6010	GK
Copper	<.03	mg/l	1300	02/14/91	EPA Method 6010	GK
Dissolved Iron	<.05	mg/l	0830	02/15/91	EPA Method 6010	NT
Dissolved Potassium	1.3	mg/l	0830	02/15/91	EPA Method 6010	NT
Dissolved Magnesium	86	mg/l	0830	02/15/91	EPA Method 6010	NT
Manganese	.02	mg/l	0830	02/15/91	EPA Method 6010	NT
Molybdenum	<.2	mg/l	2045	02/18/91	EPA Method 6010	GK
Dissolved Sodium	120	mg/l	0830	02/15/91	EPA Method 6010	NT
Nickel	<.05	mg/l	1300	02/14/91	EPA Method 6010	GK
Lead	<.1	mg/l	1300	02/14/91	EPA Method 6010	GK
Antimony	<.05	mg/l	1300	02/14/91	EPA Method 6010	GK
Selenium	<.1	mg/l	1300	02/14/91	EPA Method 6010	GK
Silicon (as Silica)	30	mg/l	2045	02/18/91	EPA Method 6010	GK
Thallium	<.1	mg/l	1300	02/14/91	EPA Method 6010	GK
Vanadium	<.05	mg/l	2045	02/18/91	EPA Method 6010	GK
Zinc	.06	mg/l	1300	02/14/91	EPA Method 6010	GK

Continued



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181399 Continued

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PARAMETER	RESULTS	UNITS	TIME	DATE	METHOD	BY
Benzene	130	ug/l	0800	02/18/91	EPA Method 8020	KB
Ethyl benzene	5	ug/l	0800	02/18/91	EPA Method 8020	KB
Toluene	160	ug/l	0800	02/18/91	EPA Method 8020	KB
Xylenes	40	ug/l	0800	02/18/91	EPA Method 8020	KB
Acrolein	ND(100) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Acrylonitrile	ND(100) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Benzene	230	ug/l	1647	02/15/91	EPA Method 8240	PM
Bromoform	ND(4.7) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Bromomethane	ND(10) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Carbon Tetrachloride	ND(2.8) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Chlorobenzene	ND(6.0) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Chloroethane	ND(10) *	ug/l	1647	02/15/91	EPA Method 8240	PM
2-Chloroethylvinyl ether	ND(10) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Chloroform	ND(1.6) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Chloromethane	ND(10) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Dibromochloromethane	ND(3.1) *	ug/l	1647	02/15/91	EPA Method 8240	PM
Bromodichloromethane	ND(2.2) *	ug/l	1647	02/15/91	EPA Method 8240	PM
1,1-Dichloroethane	ND(4.7) *	ug/l	1647	02/15/91	EPA Method 8240	PM
1,2-Dichloroethane	ND(2.8) *	ug/l	1647	02/15/91	EPA Method 8240	PM
1,1-Dichloroethene	ND(2.8) *	ug/l	1647	02/15/91	EPA Method 8240	PM
trans-1,2-Dichloroethene	ND(1.6) *	ug/l	1647	02/15/91	EPA Method 8240	PM

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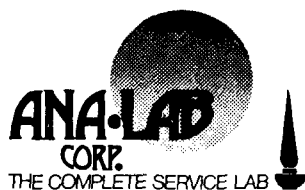
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**Quality Assurance for the SET with Sample 181399**

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
181594	Standard	70	mg/l	71		101	0945	02/18/91	SW
181594	Duplicate	23	mg/l	23		100	0945	02/18/91	SW
181594	Spike		mg/l		100	100	0945	02/18/91	SW
<b>Specific Conductance</b>									
181397	Standard	1423	Micromhos	1413		101	1020	02/15/91	GS
181397	Duplicate	1681	Micromhos	1677		100	1020	02/15/91	GS
<b>Fluoride</b>									
181397	Spike		mg/l		.5	96	1315	02/21/91	GS
<b>Sulfate</b>									
181509	Standard	50	mg/l	50		100	0815	02/19/91	DG
181509	Duplicate	32	mg/l	32		100	0815	02/19/91	DG
181511	Duplicate	47	mg/l	47		100	0815	02/19/91	DG
<b>Total Dissolved Solids</b>									
	Blank	0.0000	g				0830	02/22/91	BC
<b>pH</b>									
	Standard	Calibrate	SU	7.0			1600	02/14/91	CJL
	Standard	Calibrate	SU	4.0			1600	02/14/91	CJL
	Standard	6.0	SU	6.0		100	1600	02/14/91	CJL
<b>Silver</b>									
	Blank	<.03	mg/l				1300	02/14/91	GK
	Standard	.21	mg/l	.20		105	1300	02/14/91	GK
	Standard	1.0	mg/l	1.0		100	1300	02/14/91	GK
181401	Duplicate	<.03	mg/l	<.03		100	1300	02/14/91	GK
181401	Spike		mg/l		.20	80	1300	02/14/91	GK
<b>Aluminum</b>									
	Blank	<.1	mg/l				1130	02/19/91	NT
	Blank	<.1	mg/l				1130	02/19/91	NT
	Standard	1.0	mg/l	1.0		100	1130	02/19/91	NT
	Standard	5.1	mg/l	5.0		102	1130	02/19/91	NT
181397	Duplicate	.2	mg/l	.2		100	1130	02/19/91	NT
181401	Spike		mg/l		1.0	99	1130	02/19/91	NT
<b>Arsenic</b>									
	Blank	<.1	mg/l				1300	02/14/91	GK
	Standard	1.0	mg/l	1.0		100	1300	02/14/91	GK
	Standard	5.0	mg/l	5.0		100	1300	02/14/91	GK
181401	Duplicate	.69	mg/l	.71		103	1300	02/14/91	GK
181401	Spike		mg/l		1.7	92	1300	02/14/91	GK
<b>Barium</b>									
	Blank	<.05	mg/l				1100	02/20/91	GDG
	Blank	<.05	mg/l				1100	02/20/91	GDG
	Standard	1.0	mg/l	1.0		100	1100	02/20/91	GDG
	Standard	5.1	mg/l	5.0		102	1100	02/20/91	GDG
181397	Duplicate	.17	mg/l	.16		106	1100	02/20/91	GDG

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**Quality Assurance for the SET with Sample 181399**

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
181397	Blank	<2	mg/l				0830	02/15/91	NT
	Standard	9.8	mg/l	10		102	0830	02/15/91	NT
	Standard	48	mg/l	50		104	0830	02/15/91	NT
	Duplicate	6.0	mg/l	5.9		102	0830	02/15/91	NT
	Spike		mg/l		2.0	87	0830	02/15/91	NT
<b>Dissolved Magnesium</b>									
181397	Blank	<.01	mg/l				0830	02/15/91	NT
	Standard	10	mg/l	10		100	0830	02/15/91	NT
	Standard	50	mg/l	50		100	0830	02/15/91	NT
	Duplicate	25	mg/l	25		100	0830	02/15/91	NT
	Spike		mg/l		20	92	0830	02/15/91	NT
<b>Manganese</b>									
181401	Blank	<.01	mg/l				0830	02/15/91	NT
	Standard	1.0	mg/l	1.0		100	0830	02/15/91	NT
	Standard	5.1	mg/l	5.0		102	0830	02/15/91	NT
	Duplicate	.26	mg/l	.26		100	0830	02/15/91	NT
	Spike		mg/l		1.0	95	0830	02/15/91	NT
<b>Molybdenum</b>									
181397	Blank	<.2	mg/l				2045	02/18/91	GK
	Standard	10	mg/l	10		100	2045	02/18/91	GK
	Duplicate	<.2	mg/l	<.2		100	2045	02/18/91	GK
	Duplicate	<.2	mg/l	<.2		100	2045	02/18/91	GK
	Spike		mg/l		2.0	87	2045	02/18/91	GK
<b>Dissolved Sodium</b>									
181397	Blank	<1	mg/l				0830	02/15/91	NT
	Standard	9.8	mg/l	10		102	0830	02/15/91	NT
	Standard	50	mg/l	50		100	0830	02/15/91	NT
	Duplicate	170	mg/l	180		106	0830	02/15/91	NT
	Spike		mg/l		20	93	0830	02/15/91	NT
<b>Nickel</b>									
181401	Blank	<.05	mg/l				1300	02/14/91	GK
	Standard	1.0	mg/l	1.0		100	1300	02/14/91	GK
	Standard	5.0	mg/l	5.0		100	1300	02/14/91	GK
	Duplicate	<.05	mg/l	<.05		100	1300	02/14/91	GK
<b>Antimony</b>									
181401	Blank	<.05	mg/l				1300	02/14/91	GK
	Standard	1.0	mg/l	1.0		100	1300	02/14/91	GK
	Standard	5.0	mg/l	5.0		100	1300	02/14/91	GK
	Duplicate	<.05	mg/l	<.05		100	1300	02/14/91	GK
<b>Selenium</b>									
	Blank	<.1	mg/l				1300	02/14/91	GK
	Standard	1.0	mg/l	1.0		100	1300	02/14/91	GK
	Standard	5.1	mg/l	5.0		102	1300	02/14/91	GK

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
181401	Duplicate	<.1	mg/l	<.1		100	1300	02/14/91	GK
				<b>Silicon (as Silica)</b>					
	Blank	.1	mg/l				2045	02/18/91	GK
	Standard	10	mg/l	10		100	2045	02/18/91	GK
181401	Duplicate	34	mg/l	34		100	2045	02/18/91	GK
181397	Duplicate	29	mg/l	30		103	2045	02/18/91	GK
181401	Spike		mg/l		2.0	105	2045	02/18/91	GK
				<b>Thallium</b>					
	Blank	<.1	mg/l				1300	02/14/91	GK
	Standard	1.1	mg/l	1.0		110	1300	02/14/91	GK
	Standard	5.2	mg/l	5.0		104	1300	02/14/91	GK
181401	Duplicate	<.1	mg/l	<.1		100	1300	02/14/91	GK
				<b>Vanadium</b>					
	Blank	<.05	mg/l				2045	02/18/91	GK
	Standard	1.0	mg/l	1.0		100	2045	02/18/91	GK
	Standard	5.0	mg/l	5.0		100	2045	02/18/91	GK
181397	Duplicate	<.05	mg/l	<.05		100	2045	02/18/91	GK
181401	Duplicate	<.05	mg/l	<.05		100	2045	02/18/91	GK
181401	Spike		mg/l		1.0	88	2045	02/18/91	GK
				<b>Zinc</b>					
	Blank	<.01	mg/l				1300	02/14/91	GK
	Standard	1.0	mg/l	1.0		100	1300	02/14/91	GK
	Standard	4.9	mg/l	5.0		102	1300	02/14/91	GK
181401	Duplicate	.03	mg/l	.03		100	1300	02/14/91	GK
181401	Spike		mg/l		1.0	87	1300	02/14/91	GK
				<b>Benzene</b>					
	Blank	<5	ppb				0800	02/18/91	KB
	Standard	68	ppb	50			0800	02/18/91	KB
181438	Duplicate	<5	ppb	<5		100	0800	02/18/91	KB
181438	Spike		ppb		50	103	0800	02/18/91	KB
				<b>Ethyl benzene</b>					
	Blank	<5	ppb				0800	02/18/91	KB
	Standard	66	ppb	50			0800	02/18/91	KB
181438	Duplicate	<5	ppb	<5		100	0800	02/18/91	KB
181438	Spike		ppb		50	99	0800	02/18/91	KB
				<b>Toluene</b>					
	Blank	<5	ppb				0800	02/18/91	KB
	Standard	66	ppb	50			0800	02/18/91	KB
181438	Duplicate	<5	ppb	<5		100	0800	02/18/91	KB
181438	Spike		ppb		50	104	0800	02/18/91	KB
				<b>Xylenes</b>					
	Blank	<5	ppb				0800	02/18/91	KB
	Standard	73	ppb	50			0800	02/18/91	KB



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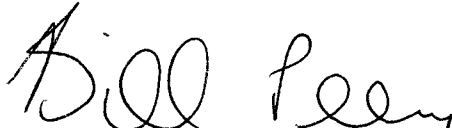
**Quality Assurance for the SET with Sample 181399**

Sample #	Description	Result	Units	Dup/Std Value	Spk Conc.	Percent	Time	Date	By
181438	Duplicate	<5	ppb	<5		100	0800	02/18/91	KB
181438	Spike		ppb		50	98	0800	02/18/91	KB

\* Results reported as "ND" (Not Detected) have the EPA Practical Quantitation Limit in parentheses.

Note that the EPA states that actual PQL's are highly matrix dependent.

I hereby certify that these results were obtained using the methods specified in this report.

  
C. H. Whiteside, Ph.D., President





## ANALYSIS REQUEST FORM

Contract Lab

ANA-Lab

Contract No.

OCD Sample No.

9102070955

Collection Date	Collection Time	Collected by—Person/Agency	OCD
2/7/91	0955	Olson, Anderson, Brown	

## SITE INFORMATION

Sample location

Fresh Water

Collection Site Description

Western Co

Township, Range, Section, Tract:

SEND  
FINAL  
REPORT  
TO ↓ENVIRONMENTAL BUREAU  
NM OIL CONSERVATION DIVISION  
PO Box 2088  
Santa Fe, NM 87504-2088

## SAMPLE FIELD TREATMENT — Check proper boxes

No. of samples submitted:

4

- ☒ NF: Whole sample (Non-filtered)  
☐ F: Filtered in field with 0.45  $\mu$  membrane filter  
☐ PF: Pre-filtered w/45  $\mu$  membrane filter

- 1 ☒ NA: No acid added  
2 ☒ A: HCL  
1 ☒ A: 5ml conc. HNO<sub>3</sub> added  
1 ☐ A: 4ml fuming HNO<sub>3</sub> added  
☐ A: 2ml H<sub>2</sub>SO<sub>4</sub> added

FIELD COMMENTS:

## SAMPLING CONDITIONS

Water level

- ☐ Bailed ☐ Pump  
☐ Dipped ☒ Tap

Discharge

Sample type

pH(00400)

Conductivity (Uncorrected)

 $\mu$ mho

Water Temp. (00010)

Conductivity at 25° C

 $\mu$ mho

## LAB ANALYSIS REQUESTED:

Low Detection Limit Requested

ITEM	DESC	METHOD	ITEM	DESC	METHOD	ITEM	DESC	METHOD
<input type="checkbox"/> 001	VOA	8020	<input type="checkbox"/> 013	PHENOL	604	<input type="checkbox"/> 026	Cd	7130
<input type="checkbox"/> 002	VOA	602	<input type="checkbox"/> 014	VOC	8240	<input type="checkbox"/> 027	Pb	7421
<input type="checkbox"/> 003	VOH	8010	<input type="checkbox"/> 015	VOC	624	<input type="checkbox"/> 028	Hg(L)	7470
<input type="checkbox"/> 004	VOH	601	<input type="checkbox"/> 016	SVOC	8250	<input type="checkbox"/> 031	Se	7740
<input checked="" type="checkbox"/> 005	SUITE	8010-8020	<input type="checkbox"/> 017	SVOC	625	<input checked="" type="checkbox"/> 032	ICAP	6010
<input type="checkbox"/> 006	SUITE	601-602	<input type="checkbox"/> 018	VOC	8260	<input checked="" type="checkbox"/> 033	CATIONS/ANIONS	
<input type="checkbox"/> 007	HEADSPACE		<input type="checkbox"/> 019	SVOC	8270	<input type="checkbox"/> 034	N SUITE	
<input type="checkbox"/> 008	PAH	8100	<input type="checkbox"/> 020	O&G	9070	<input type="checkbox"/> 035	NITRATE	
<input type="checkbox"/> 009	PAH	610	<input type="checkbox"/> 022	AS	7060	<input type="checkbox"/> 036	NITRITE	
<input type="checkbox"/> 010	PCB	8000	<input type="checkbox"/> 023	Ba	7080	<input type="checkbox"/> 037	AMMONIA	
<input type="checkbox"/> 011	PCB	608	<input type="checkbox"/> 024	Cr	7190	<input type="checkbox"/> 038	TKN	
<input type="checkbox"/> 012	PHENOL	8040	<input type="checkbox"/> 025	Cr6	7198	<input type="checkbox"/>	OTHER	

**MATERIAL SAFETY DATA SHEET**

CORPORATE RESEARCH &amp; DEVELOPMENT

SCHENECTADY, N. Y. 12305

Phone: (518) 385-4085

DIAL COM: 8\*235-4085

**MS**  
 MATERIALS SERVICES  
 INFORMATION

No. 71

QUARTZ

Date September 1980

**SECTION I. MATERIAL IDENTIFICATION**

MATERIAL NAME: QUARTZ

 OTHER DESIGNATIONS: Silica, Crystalline; Flint; Agate; Sand; Silicic Anhydride;  
 Silica Flour; Silicon Dioxide;  $\text{SiO}_2$ ; GE Materials D4C15, D4C19, D4C38, D4C39,  
 D4C45-47, and D4C50; CAS #014 808 607

MANUFACTURER: Available from many sources.

**SECTION II. INGREDIENTS AND HAZARDS**

Silicon Dioxide, Crystalline (Quartz form)

Z

HAZARD DATA

&gt;98

 8-hr TWA (Resp. Dust)  
 $\frac{250 \text{ mppcf}^{**}}{\text{ZSiO}_2+5}$  or  $\frac{10 \text{ mg/m}^3}{\text{ZSiO}_2+2}$ 

 \*Current OSHA Standard. ACGIH (1980) 8-hr TWA is  
 3 mppcf\*\* or  $0.1 \text{ mg/m}^3$  for respirable dust. (Values  
 for total dust,  $\text{mg/m}^3$ , are three times higher for  
 both OSHA and ACGIH.)

 NIOSH (1974) has proposed a 10-hr TWA of  $0.05 \text{ mg/m}^3$ ,  
 permissible exposure level.

\*\*Millions of particles per cubic foot of air.

 Human, inhalation  
 TCLO 16 mppcf/8-hr  
 intermittent for 17.9  
 Pulmonary Effects  
 Rat, TDLo 90 mg/kg  
 Intraperitoneal -  
 Neoplastic Effects  
 Intrapleural -  
 Carcinogenic Effects
**SECTION III. PHYSICAL DATA**

Boiling point at 1 atm, deg C	2230	Specific gravity ( $\text{H}_2\text{O}=1$ )	2.65
Vapor pressure at 1732 C, mm Hg	10	Melting point, deg C	1610
Water solubility	Insoluble	Formula weight ( $\text{SiO}_2$ )	60.09

 Appearance: When pure, material is white powder or colorless crystals. Impurities  
 can produce various colorations.
**SECTION IV. FIRE AND EXPLOSION DATA**

LOWER UPPER

Flash Point and Method	Autoignition Temp.	Flammability Limits in Air

 This material is noncombustible. Use extinguishing media appropriate to the surrounding  
 fire.
**SECTION V. REACTIVITY DATA**

Material is highly stable under ordinary conditions (sand-like).

 When exposed to high temperatures, quartz (or amorphous silica) can change crystal  
 structure to form tridymite (above 870 C) or cristobalite (above 1470 C) which have  
 greater health hazards than quartz.

 It is attacked by strong alkalis. It will combine chemically with many metallic oxides  
 upon heating at high temperature. It reacts with hydrofluoric acid to generate volatile  
 $\text{SiF}_4$ . It is incompatible with oxygen difluoride, chlorine trifluoride, manganese  
 trifluoride, and certain other powerful oxidizers and fluorine-containing compounds.

SECTION VI. HEALTH HAZARD INFORMATION	TLV (See Sect. II)
<p>Health hazards can occur from excessive inhalation of silica dust, otherwise nontoxic. Crystalline silica in the lung can produce a pneumoconiosis, commonly called silicosis, which is a chronic, slowly developing disease. Symptoms are usually delayed (10 years or more) but may appear in as little as 8-18 months after initial exposure. Symptoms are dyspnea - caused by the many lung scars that develop from the silica dust - pain in the chest, decreased vital capacity, and cough.</p> <p>Chronic lung scarring leads to a progressive massive fibrosis that is often accompanied by increased susceptibility to pulmonary tuberculosis and other respiratory infections. In a diseased lung, dust particles under 3 microns greatly outnumber larger ones, and many particles are less than 1 micron. Symptoms of silicosis become progressive with continued exposure and advancing age. Smoking can increase the risk of injury.</p> <p><u>FIRST AID:</u></p> <p><u>Eye Contact:</u> Flush eyes thoroughly with running water, including under the eyelids, for at least 15 minutes.</p> <p><u>Skin Contact:</u> Wash affected area with soap and water.</p> <p><u>Inhalation:</u> Remove to fresh air. Give oxygen with intermittent positive-pressure and/or artificial respiration as needed. Seek medical attention for treatment, observation, and support as needed.</p>	
<p><b>SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES</b></p> <p>Notify safety personnel of major spills. Provide ventilation. Clean-up personnel need protection against eye contact and inhalation of dust. Pick up spills taking care to avoid raising dust clouds (use vacuum or wet sweeping). Place in closed container for disposal.</p> <p><u>DISPOSAL:</u> Use waste containers suitable for transportation and dispose in approved landfill. Follow Federal, State, and Local regulations.</p>	
<p><b>SECTION VIII. SPECIAL PROTECTION INFORMATION</b></p> <p>Provide adequate general and local exhaust ventilation to meet TLV requirements. Provide workers with dust respirators for use in emergency or nonroutine situations where dust levels may exceed TLV. Efficient dust respirators can be used up to 10X TLV. For exposure up to 100X TLV use full facepiece respirator with replaceable dust filter. Higher exposures need an approved, air supplied respirator.</p> <p>Workers should wear safety goggles and work gloves for eye and skin protection. (Sand blasters require special protective equipment and safety precautions.)</p> <p>Eyewash fountains should be available to areas of use and handling.</p> <p>Provide preplacement and annual physical exams for exposed workers with emphasis on respiratory and cardiovascular systems. Preclude from exposure those individuals with pulmonary disease.</p>	
<p><b>SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS</b></p> <p>Store powdered silica in closed containers in a dry, well-ventilated area.</p> <p>Keep dust in work area at a minimum and maintain air concentration of silica as far below TLV as feasible. Use good housekeeping techniques, such as, vacuuming and wet sweeping to remove collected dust and prevent formation of dust clouds.</p> <p>Avoid inhalation of dust. Avoid contact of materials with eyes.</p> <p>NIOSH (1976) warns of increased risk of impaired health due to a combination of smoking and silica dust exposure.</p>	
<p>DATA SOURCE(S) CODE: 2-12, 19, 24-27, 31, 34, 37, 38</p> <p><small>Judgments as to the suitability of information herein for purchaser's purposes are necessarily purchaser's responsibility. Therefore, although reasonable care has been taken in the preparation of such information, General Electric Company extends no warranties, makes no representations and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or for consequences of its use.</small></p>	<p>APPROVALS: MIS CRD <i>J. M. Niles</i></p> <p>Industrial Hygiene and Safety <i>10-9-80</i></p> <p>MEDICAL REVIEW: 10/22/80</p>



# Recommended Standard

Attachment to MSDS: W.I.N. 100007, 13, 14, 419, 420,  
Fracturing Sand (substandard)

## I. RECOMMENDATIONS FOR A CRYSTALLINE SILICA STANDARD

The National Institute for Occupational Safety and Health (NIOSH) recommends that employee exposure to crystalline silica in the workplace be controlled by adherence to the following sections. The standard is designed to protect the health and safety of workers for up to a 10-hour workday, 40-hour workweek, over a working lifetime. Compliance with the standard should prevent adverse effects of crystalline silica on the health and safety of workers. The standard is measurable by techniques that are valid, reproducible, and available to industry and government agencies and are attainable with existing technology. The criteria and the standard recommended in this document will be subject to review and revision as necessary.

Crystalline silica, hereafter referred to in this document as free silica, is defined as silicon dioxide ( $\text{SiO}_2$ ). "Crystalline" refers to the orientation of  $\text{SiO}_2$  molecules in a fixed pattern as opposed to a nonperiodic, random molecular arrangement defined as amorphous. The three most common crystalline forms of free silica encountered in industry are quartz, tridymite, and cristobalite. Micro- and crypto-crystalline varieties of free silica, also included in the recommended standard, are composed of minute grains of free silica cemented together with amorphous silica and include tripoli, flint, chalcedony, agate, onyx, and silica flour. Other forms of free silica which, upon analysis, are found to have a crystalline structure as part of their composition are also subject to the recommended standard.

"Exposure to free silica" means exposure of the worker to an airborne concentration of free silica greater than half of the recommended environmental level in the workplace. Worker exposure at lower environmental concentrations will not require adherence to the following sections.

### Section 1—Environmental (Workplace Air)

#### (a) Concentration

Occupational exposure shall be controlled so that no worker is exposed to a time-weighted average (TWA) concentration of free silica greater than 50 micrograms per cubic meter of air (50  $\mu\text{g}/\text{cu m}$ ; 0.050  $\text{mg}/\text{cu m}$ ) as determined by a full-shift sample for up to a 10-hour workday, 40-hour workweek.

#### (b) Sampling, Calibration, and Analysis

Exposure to free silica shall be determined by a personal (breathing zone) sample.

Procedures for sampling, calibration of equipment, and analysis of environmental samples shall be as provided in Appendices I and II, or by methods shown to be equivalent in sensitivity, accuracy, and precision to the method specified.

### Section 2—Medical

(a) Medical examinations shall be made available to all workers subject to "exposure to free silica" prior

to employee placement and at least once each 3 years thereafter. Examinations shall include as a minimum:

(1) A medical and occupational history to elicit data on worker exposure to free silica and signs and symptoms of respiratory disease.

(2) A chest roentgenogram (posteroanterior 14" by 17" or 14" by 14") classified according to the 1971 ILO International Classification of Radiographs of Pneumoconioses. [ILO U/C International Classification of Radiographs of Pneumoconioses 1971, Occupational Safety and Health Series 22 (rev), Geneva, International Labor Office, 1972]

(3) Pulmonary function tests including forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV<sub>1</sub>) to provide a baseline for evaluation of pulmonary function and to help determine the advisability of the workers using negative- or positive-pressure respirators. It should be noted that pulmonary function tests may vary significantly in various ethnic groups. For example, in black persons, the test values for the FVC should be divided by 0.85 before the percentage value is compared with normal figures.

(4) Body weight.

(5) Height.

(6) Age.

(7) Initial medical examinations for presently employed workers shall be offered within 6 months of the promulgation of a standard incorporating these recommendations.

#### (b) Medical Management

An employee with or without roentgenographic evidence of silicosis who has respiratory distress and/or pulmonary functional impairment should be fully evaluated by a physician qualified to advise the employee whether he should continue working in a dusty trade.

(c) These records shall be available to the medical representatives of the Secretary of Health, Education, and Welfare, of the Secretary of Labor, of the employee or former employee, and of the employer.

(d) Medical records shall be maintained for at least 30 years following the employee's termination of employment.

### Section 3 — Labeling (Posting)

(a) The following warning shall be posted to be readily visible at or near entrances or accessways to work areas where there is potential exposure to free silica.

WARNING!

FREE SILICA WORK AREA

Unauthorized Persons Keep Out

(b) The following warning shall be posted in readily visible locations in any work area where there is potential exposure to free silica.

## WARNING!

### FREE SILICA WORK AREA

Avoid Breathing Dust

May Cause Delayed Lung Injury (Silicosis)

The posting required under sections 3(a) and 3(b) shall be printed both in English and in the predominant language of non-English-speaking workers, unless they are otherwise trained and informed of the hazardous areas. Illiterate workers shall receive such training.

(c) The following warning label, in addition to or in combination with labels required by other statutes, regulations, or ordinances, shall be affixed to all new materials, mixtures, and other products containing more than 5% free silica, or to their containers.

## WARNING!

### CONTAINS FREE SILICA

DO NOT BREATHE DUST

May Cause Delayed Lung Injury (Silicosis)

### Section 4 — Personal Protective Equipment and Work Clothing

Engineering controls shall be used to maintain free silica dust exposures below the prescribed limit. Subsection (a) shall apply whenever a variance from the standard recommended in Section 1 is granted under provisions of the Occupational Safety and Health Act, or in the interim period during the application for a

variance. When the limits of exposure to free silica prescribed in paragraph (a) of Section 1 cannot be met by limiting the concentration of free silica in the work environment, an employer must utilize, as provided in subsection (a) of this section, a program of respiratory protection to effect the required protection of every worker exposed.

### (a) Respiratory Protection

Appropriate respirators, as prescribed in Table I-1, shall be provided and used when a variance has been granted to allow respirators as a means of control of exposure to routine operations and while the application is pending. Administrative controls may also be used to reduce exposure. Respirators shall also be provided and used for nonroutine operations (occasional brief exposures above the environmental standard and for emergencies); however, for these instances a variance is not required but the requirements set forth below continue to apply. Appropriate respirators as described in Table I-1 shall only be used pursuant to the following requirements:

(1) For the purpose of determining the type of respirator to be used, the employer shall measure the atmospheric concentration of free silica in the workplace when the initial application for variance is made and thereafter whenever process, worksite, climate, or control changes occur which are likely to affect the free silica concentration. This requirement shall not apply when only atmosphere-supplying positive-pressure respirators are used. The employer shall ensure

TABLE I-1  
REQUIREMENTS FOR RESPIRATOR USAGE AT  
CONCENTRATIONS ABOVE THE STANDARD

Concentrations of Free Silica in Multiples of the Standard	Respirator Type*
Less than or equal to 5X	Single use (valveless type) dust respirator.
Less than or equal to 10X	Quarter or half mask respirator with replaceable dust filter or single use (with valve) dust respirator. Type C, demand type (negative pressure), with quarter or half mask facepiece.
Less than or equal to 100X	Full facepiece respirator with replaceable dust filter. Type C, supplied air respirator, demand type (negative pressure), with full facepiece.
Less than or equal to 200X	Powered air-purifying (positive-pressure) respirator, with replaceable applicable filter.**
Greater than 200X	Type C, supplied air respirator, continuous flow type (positive pressure), with full facepiece, hood, or helmet.

\*Where a variance has been obtained for abrasive blasting with silica sand, use only Type C continuous flow, supplied air respirator with hood or helmet.

\*\*An alternative is to select the standard high efficiency filter which must be at least 99.97% efficient against 0.3-micrometer dioctyl phthalate (DOP).

that no worker is exposed to free silica in excess of the standard because of improper respirator selection, fit, use, or maintenance.

(2) Employees experiencing breathing difficulty while using respirators shall be evaluated by a physician to determine the ability of the worker to wear a respirator.

(3) A respiratory protective program meeting the requirements of Section 1910.134 of the Occupational Safety and Health Standards shall be established and enforced by the employer. [29 CFR 1910.134 published in the Federal Register, vol 39, page 23671, dated June 27, 1974, as amended]

(4) The employer shall provide respirators in accordance with Table I-1 and shall ensure that the employee uses the appropriate respirator.

(5) Respiratory protective devices in Table I-1 shall be those approved either under 30 CFR 11, published March 25, 1972, or under the following regulations:

(A) Filter-type dust, fume, and mist respirators—30 CFR 14 (Bureau of Mines Schedule 21B)

(B) Supplied air respirator—30 CFR 12 (Bureau of Mines Schedule 19B)

(6) A respirator specified for use in higher concentrations of free silica may be used in atmospheres of lower concentrations.

(7) Employees shall be given instruction on the use of respirators assigned to them, on cleaning respirators, and on testing for leakage.

(b) Work Clothing

Where exposure to free silica is above the recommended environmental limit, work clothing shall be vacuumed before removal. Clothes shall not be cleaned by blowing or shaking.

**Section 5 — Informing Employees of Hazards from Free Silica**

(a) Each employee exposed to free silica shall be apprised at the beginning of his employment or assignment to a free silica exposure area of the hazards, relevant symptoms, appropriate emergency procedures, and proper conditions and precautions for safe use or exposure. The employee shall be instructed as to availability of such information including that prescribed in (b) below. Such information shall be kept on file and shall be accessible to the worker at each place of employment where free silica is involved in unit processes and operations. Workers shall also be advised of the increased risk of impaired health due to the combination of smoking and free silica dust exposure.

(b) Information, to the extent applicable to free silica, as specified in Appendix III shall be recorded on U.S. Department of Labor Form OSHA-20, "Material Safety Data Sheet" (see Appendix III) or on a similar form approved by the Occupational Safety and Health Administration, U.S. Department of Labor.

**Section 6 — Work Practices and Control Procedures**

(a) Substitution

(1) Wherever a hazard of silicosis can be elimi-

nated by a reasonable substitution of other less toxic materials for free silica, the substitution shall be made unless the silica sand has been so processed before use to make it nonrespirable such as by washing to remove fine particles. Examples of such substitution are the use of alumina instead of flint for china placing in potteries, and the substitution of a quartz-free grit in abrasive blasting.

(2) Uncontrolled abrasive blasting with silica sand is such a severe silicosis hazard that special attention must be given to this problem. Silica sand, or other materials containing more than 1% free silica, should be prohibited as an abrasive substance in abrasive blasting cleaning operations.

(b) Dust Suppression

Moisture shall be added where such addition can substantially reduce the exposure to airborne respirable free silica dust.

(c) Ventilation

Where a local exhaust ventilation and collection system is used, it shall be designed and maintained to prevent the accumulation or recirculation of free silica dust into the workplace. The total system shall be inspected periodically for efficiency of operation. In addition, necessary measures shall be taken to ensure that discharge outdoors will not produce a health hazard to humans, animals, or plants.

(d) General Housekeeping

(1) Cleaning by blowing with compressed air or dry sweeping shall be avoided and dustless methods of cleaning such as vacuuming or washing down with water shall be substituted.

(2) Emphasis shall be placed upon cleanup of spills, preventive maintenance and repair of equipment, proper storage of materials, and collection of dusts containing free silica. Sanitation shall meet the requirements of 29 CFR 1910.141 as amended.

**Section 7 — Monitoring and Recordkeeping Requirements**

Work environments where it has been determined, on the basis of a professional industrial hygiene survey or by the judgment of a compliance officer, that the workers' exposure does not exceed half of the standard shall not be considered to have exposure to free silica. Records of these surveys, including the basis for concluding that air levels are at or below half of the standard shall be maintained. Surveys shall be repeated when any process change indicates a need for reevaluation or at the discretion of the compliance officer. Requirements set forth below apply to areas in which there is "exposure to free silica."

Employers shall maintain records of the workers' exposure to free silica based upon the following sampling and recording schedules:

(a) In all monitoring, samples representative of the exposure in the breathing zone of employees shall be collected. An adequate number of samples shall be collected to permit construction of a full-shift exposure for every operation or process. The minimum number of time-weighted average determinations for an operation or process shall be based on the number



of workers exposed as provided in Table I-2 or as otherwise indicated by a professional industrial survey.

(b) The first work environment (breathing zone) sampling shall be completed within 6 months of the promulgation of a standard incorporating these recommendations.

(c) Work environment (breathing zone) samples shall be taken within 30 days after installation of a new process or process changes.

TABLE I-2  
SAMPLING SCHEDULE

Number of Employees Exposed	Number of TWA Determinations
1-20	50% of the total number of workers
21-100	10 plus 25% of the excess over 20 workers
Over 100	30 plus 5% of the excess over 100 workers

(d) Samples shall be collected and analyzed at least every 6 months in accordance with Appendices I and II for the evaluation of the workers' exposure with respect to the recommended standard.

(e) When monitoring of the workers' exposure indicates a free silica concentration in excess of the recommended standard, suitable controls shall be initiated to reduce the exposure level to or below the recommended standard. In such cases monitoring shall continue at 30-day intervals until two consecutive surveys indicate the recommended standard is no longer exceeded. Periodic review and evaluation of environmental and medical data shall be performed to determine the effectiveness of control measures.

(f) Records shall be maintained of medical examinations and all sampling schedules to include the sampling and analytical methods, type of personal protection devices, if any, in use at the time of sampling and the determined free silica dust concentration. Records shall be maintained for at least 30 years following termination of workers' employment. Each employee shall be able to obtain information on his exposure.







## Precautionary Labeling for Bags

**Trade Name:** Fracturing Sand (substandard)  
W.I.N.: 100007, 13, 14, 419, 420, 421

### **DIRECTIONS:**

For Proper Use, Refer to Service Bulletin No.(s) 810.OWG

**SPECIFIC USAGE:** Use at the rate of 0.1 to 15 lb/gallon of fracturing fluid.

When Handling This Product Employees **MUST WEAR:** chemical goggles, gloves and dust mask.

### **FOR INDUSTRIAL USE ONLY**

**WARNING!**

CONTAINS FREE SILICA

Do Not Breathe Dust

May cause delayed lung injury (Silicosis)

Refer to MSDS and SPM-04-04 for Safety Requirements.



**U.S. DEPARTMENT OF LABOR**  
Occupational Safety and Health Administration

Form Approved  
OMB No. 44-R1387

# MATERIAL SAFETY DATA SHEET

August 13, 1979

Required under USDL Safety and Health Regulations for Ship Repairing,  
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

## SECTION I

MANUFACTURER'S NAME <b>Texas Mining Company</b>		EMERGENCY TELEPHONE NO. <b>817/277-6471</b>
ADDRESS (Number, Street, City, State, and ZIP Code) <b>2104 East Randol Mill Road, Suite 101 Arlington, Texas 76011</b>		
CHEMICAL NAME AND SYNONYMS <b>Silica Sand SiO<sub>2</sub></b>		TRADE NAME AND SYNONYMS <b>Frac Sand</b>
CHEMICAL FAMILY <b>N/A</b>	FORMULA <b>N/A</b>	

## SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Unit)	ALLOYS AND METALLIC COATINGS	%	TLV (Unit)
PIGMENTS <b>N/A</b>			BASE METAL <b>N/A</b>		
CATALYST <b>N/A</b>			ALLOYS <b>N/A</b>		
VEHICLE <b>N/A</b>			METALLIC COATINGS <b>N/A</b>		
SOLVENTS <b>N/A</b>			FILLER METAL PLUS COATING OR CORE FLUX <b>N/A</b>		
ADDITIVES <b>N/A</b>			OTHERS <b>N/A</b>		
OTHERS <b>N/A</b>					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Unit)

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	<b>N/A</b>	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	<b>2.65</b>
VAPOR PRESSURE (mm Hg.)	<b>N/A</b>	PERCENT VOLATILE BY VOLUME (%)	<b>N/A</b>
VAPOR DENSITY (AIR=1)	<b>N/A</b>	EVAPORATION RATE (_____ =1)	<b>N/A</b>
SOLUBILITY IN WATER	<b>N/A</b>		
APPEARANCE AND ODOR	<b>N/A</b>		

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	<b>N/A</b>	FLAMMABLE LIMITS	LeI	UeI
EXTINGUISHING MEDIA	<b>N/A</b>			
SPECIAL FIRE FIGHTING PROCEDURES	<b>N/A</b>			
UNUSUAL FIRE AND EXPLOSION HAZARDS	<b>N/A</b>			

## SECTION V - HEALTH HAZARD DATA

N/A

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

EMERGENCY AND FIRST AID PROCEDURES

## SECTION VI - REACTIVITY DATA

N/A

STABILITY

UNSTABLE

CONDITIONS TO AVOID

STABLE

INCOMPATIBILITY (Materials to avoid)

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS  
POLYMERIZATION

MAY OCCUR

CONDITIONS TO AVOID

WILL NOT OCCUR

## SECTION VII - SPILL OR LEAK PROCEDURES

N/A

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

## SECTION VIII - SPECIAL PROTECTION INFORMATION

N/A

RESPIRATORY PROTECTION (Specify type)

VENTILATION

LOCAL EXHAUST

SPECIAL

MECHANICAL (General)

OTHER

PROTECTIVE GLOVES

EYE PROTECTION

OTHER PROTECTIVE EQUIPMENT

## SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

N/A

OTHER PRECAUTIONS

N/A



## Precautionary Labeling for Bags

Trade Name: FRACTURING SAND "brady type:  
W.I.N. 100006, 100008, 100010,  
100086, 100302, 100319

### DIRECTIONS:

For Proper Use, Refer to Service Bulletin No.(s) 790.011G

SPECIFIC USAGE: Use at the rate of 0.1 to 18 pounds per gallon  
of frac fluid.

When Handling This Product Employees MUST WEAR: Safety glasses & dust mask.

FOR INDUSTRIAL USE ONLY

### WARNING!

Contains FREE SILICA  
Do Not BREATHE DUST  
May cause delayed lung injury (silicosis)  
Follow OSHA Safety and Health Standards for  
crystalline silica (quartz)

Refer to MSDS and SPM-04-04 for Safety Requirements.

## I. RECOMMENDATIONS FOR A CRYSTALLINE SILICA STANDARD 8/16,12/20,16 20

The National Institute for Occupational Safety and Health (NIOSH) recommends that employee exposure to crystalline silica in the workplace be controlled by adherence to the following sections. The standard is designed to protect the health and safety of workers for up to a 10-hour workday, 40-hour workweek, over a working lifetime. Compliance with the standard should prevent adverse effects of crystalline silica on the health and safety of workers. The standard is measurable by techniques that are valid, reproducible, and available to industry and government agencies and are attainable with existing technology. The criteria and the standard recommended in this document will be subject to review and revision as necessary.

Crystalline silica, hereafter referred to in this document as free silica, is defined as silicon dioxide ( $\text{SiO}_2$ ). "Crystalline" refers to the orientation of  $\text{SiO}_2$  molecules in a fixed pattern as opposed to a nonperiodic, random molecular arrangement defined as amorphous. The three most common crystalline forms of free silica encountered in industry are quartz, tridymite, and cristobalite. Micro- and crypto-crystalline varieties of free silica, also included in the recommended standard, are composed of minute grains of free silica cemented together with amorphous silica and include tripoli, flint, chalcedony, agate, onyx, and silica flour. Other forms of free silica which, upon analysis, are found to have a crystalline structure as part of their composition are also subject to the recommended standard.

"Exposure to free silica" means exposure of the worker to an airborne concentration of free silica greater than half of the recommended environmental level in the workplace. Worker exposure at lower environmental concentrations will not require adherence to the following sections.

### Section 1—Environmental (Workplace Air)

#### (a) Concentration

Occupational exposure shall be controlled so that no worker is exposed to a time-weighted average (TWA) concentration of free silica greater than 50 micrograms per cubic meter of air (50  $\mu\text{g}/\text{cu m}$ ; 0.050  $\text{mg}/\text{cu m}$ ) as determined by a full-shift sample for up to a 10-hour workday, 40-hour workweek.

#### (b) Sampling, Calibration, and Analysis

Exposure to free silica shall be determined by a personal (breathing zone) sample.

Procedures for sampling, calibration of equipment, and analysis of environmental samples shall be as provided in Appendices I and II, or by methods shown to be equivalent in sensitivity, accuracy, and precision to the method specified.

### Section 2—Medical

(a) Medical examinations shall be made available to all workers subject to "exposure to free silica" prior

to employee placement and at least once each 3 years thereafter. Examinations shall include as a minimum:

(1) A medical and occupational history to elicit data on worker exposure to free silica and signs and symptoms of respiratory disease.

(2) A chest roentgenogram (posteroanterior 14" by 17" or 14" by 14") classified according to the 1971 ILO International Classification of Radiographs of Pneumoconioses. [ILO U/C International Classification of Radiographs of Pneumoconioses 1971, Occupational Safety and Health Series 22 (rev). Geneva, International Labor Office, 1972]

(3) Pulmonary function tests including forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV<sub>1</sub>) to provide a baseline for evaluation of pulmonary function and to help determine the advisability of the workers using negative- or positive-pressure respirators. It should be noted that pulmonary function tests may vary significantly in various ethnic groups. For example, in black persons, the test values for the FVC should be divided by 0.85 before the percentage value is compared with normal figures.

(4) Body weight.

(5) Height.

(6) Age.

(7) Initial medical examinations for presently employed workers shall be offered within 6 months of the promulgation of a standard incorporating these recommendations.

#### (b) Medical Management

An employee with or without roentgenographic evidence of silicosis who has respiratory distress and/or pulmonary functional impairment should be fully evaluated by a physician qualified to advise the employee whether he should continue working in a dusty trade.

(c) These records shall be available to the medical representatives of the Secretary of Health, Education, and Welfare, of the Secretary of Labor, of the employee or former employee, and of the employer.

(d) Medical records shall be maintained for at least 30 years following the employee's termination of employment.

### Section 3 — Labeling (Posting)

(a) The following warning shall be posted to be readily visible at or near entrances or accessways to work areas where there is potential exposure to free silica.

**WARNING!**

**FREE SILICA WORK AREA**

**Unauthorized Persons Keep Out**

(b) The following warning shall be posted in readily visible locations in any work area where there is potential exposure to free silica.

**WARNING!**  
**FREE SILICA WORK AREA**  
 Avoid Breathing Dust

May Cause Delayed Lung Injury (Silicosis)

The posting required under sections 3(a) and 3(b) shall be printed both in English and in the predominant language of non-English-speaking workers, unless they are otherwise trained and informed of the hazardous areas. Illiterate workers shall receive such training.

(c) The following warning label, in addition to or in combination with labels required by other statutes, regulations, or ordinances, shall be affixed to all new materials, mixtures, and other products containing more than 5% free silica, or to their containers.

**WARNING!**  
**CONTAINS FREE SILICA**  
**DO NOT BREATHE DUST**

May Cause Delayed Lung Injury (Silicosis)

**Section 4 — Personal Protective Equipment  
 and Work Clothing**

Engineering controls shall be used to maintain free silica dust exposures below the prescribed limit. Subsection (a) shall apply whenever a variance from the standard recommended in Section 1 is granted under provisions of the Occupational Safety and Health Act, or in the interim period during the application for a

variance. When the limits of exposure to free silica prescribed in paragraph (a) of Section 1 cannot be met by limiting the concentration of free silica in the work environment, an employer must utilize, as provided in subsection (a) of this section, a program of respiratory protection to effect the required protection of every worker exposed.

**(a) Respiratory Protection**

Appropriate respirators, as prescribed in Table I-1, shall be provided and used when a variance has been granted to allow respirators as a means of control of exposure to routine operations and while the application is pending. Administrative controls may also be used to reduce exposure. Respirators shall also be provided and used for nonroutine operations (occasional brief exposures above the environmental standard and for emergencies); however, for these instances a variance is not required but the requirements set forth below continue to apply. Appropriate respirators as described in Table I-1 shall only be used pursuant to the following requirements:

(1) For the purpose of determining the type of respirator to be used, the employer shall measure the atmospheric concentration of free silica in the workplace when the initial application for variance is made and thereafter whenever process, worksite, climate, or control changes occur which are likely to affect the free silica concentration. This requirement shall not apply when only atmosphere-supplying positive-pressure respirators are used. The employer shall ensure

**TABLE I-1**  
**REQUIREMENTS FOR RESPIRATOR USAGE AT**  
**CONCENTRATIONS ABOVE THE STANDARD**

Concentrations of Free Silica in Multiples of the Standard	Respirator Type*
Less than or equal to 5X	Single use (valveless type) dust respirator.
Less than or equal to 10X	Quarter or half mask respirator with replaceable dust filter or single use (with valve) dust respirator. Type C, demand type (negative pressure), with quarter or half mask facepiece.
Less than or equal to 100X	Full facepiece respirator with replaceable dust filter. Type C, supplied air respirator, demand type (negative pressure), with full facepiece.
Less than or equal to 200X	Powered air-purifying (positive-pressure) respirator, with replace- able applicable filter.**
Greater than 200X	Type C, supplied air respirator, continuous flow type (positive pres- sure), with full facepiece, hood, or helmet.

\*Where a variance has been obtained for abrasive blasting with silica sand, use only Type C contin-  
uous flow, supplied air respirator with hood or helmet.

\*\*An alternative is to select the standard high efficiency filter which must be at least 99.97% efficient  
against 0.3-micrometer dioctyl phthalate (DOP).



that no worker is exposed to free silica in excess of the standard because of improper respirator selection, fit, use, or maintenance.

(2) Employees experiencing breathing difficulty while using respirators shall be evaluated by a physician to determine the ability of the worker to wear a respirator.

(3) A respiratory protective program meeting the requirements of Section 1910.134 of the Occupational Safety and Health Standards shall be established and enforced by the employer. [29 CFR 1910.134 published in the Federal Register, vol 39, page 23671, dated June 27, 1974, as amended]

(4) The employer shall provide respirators in accordance with Table I-1 and shall ensure that the employee uses the appropriate respirator.

(5) Respiratory protective devices in Table I-1 shall be those approved either under 30 CFR 11, published March 25, 1972, or under the following regulations:

(A) Filter-type dust, fume, and mist respirators—30 CFR 14 (Bureau of Mines Schedule 21B)

(B) Supplied air respirator—30 CFR 12 (Bureau of Mines Schedule 19B)

(6) A respirator specified for use in higher concentrations of free silica may be used in atmospheres of lower concentrations.

(7) Employees shall be given instruction on the use of respirators assigned to them, on cleaning respirators, and on testing for leakage.

#### (b) Work Clothing

Where exposure to free silica is above the recommended environmental limit, work clothing shall be vacuumed before removal. Clothes shall not be cleaned by blowing or shaking.

### Section 5 — Informing Employees of Hazards from Free Silica

(a) Each employee exposed to free silica shall be apprised at the beginning of his employment or assignment to a free silica exposure area of the hazards, relevant symptoms, appropriate emergency procedures, and proper conditions and precautions for safe use or exposure. The employee shall be instructed as to availability of such information including that prescribed in (b) below. Such information shall be kept on file and shall be accessible to the worker at each place of employment where free silica is involved in unit processes and operations. Workers shall also be advised of the increased risk of impaired health due to the combination of smoking and free silica dust exposure.

(b) Information, to the extent applicable to free silica, as specified in Appendix III shall be recorded on U.S. Department of Labor Form OSHA-20, "Material Safety Data Sheet" (see Appendix III) or on a similar form approved by the Occupational Safety and Health Administration, U.S. Department of Labor.

### Section 6 — Work Practices and Control Procedures

#### (a) Substitution

(1) Wherever a hazard of silicosis can be elimi-

nated by a reasonable substitution of other less toxic materials for free silica, the substitution shall be made unless the silica sand has been so processed before use to make it nonrespirable such as by washing to remove fine particles. Examples of such substitution are the use of alumina instead of flint for china placing in potteries, and the substitution of a quartz-free grit in abrasive blasting.

(2) Uncontrolled abrasive blasting with silica sand is such a severe silicosis hazard that special attention must be given to this problem. Silica sand, or other materials containing more than 1% free silica, should be prohibited as an abrasive substance in abrasive blasting cleaning operations.

#### (b) Dust Suppression

Moisture shall be added where such addition can substantially reduce the exposure to airborne respirable free silica dust.

#### (c) Ventilation

Where a local exhaust ventilation and collection system is used, it shall be designed and maintained to prevent the accumulation or recirculation of free silica dust into the workplace. The total system shall be inspected periodically for efficiency of operation. In addition, necessary measures shall be taken to ensure that discharge outdoors will not produce a health hazard to humans, animals, or plants.

#### (d) General Housekeeping

(1) Cleaning by blowing with compressed air or dry sweeping shall be avoided and dustless methods of cleaning such as vacuuming or washing down with water shall be substituted.

(2) Emphasis shall be placed upon cleanup of spills, preventive maintenance and repair of equipment, proper storage of materials, and collection of dusts containing free silica. Sanitation shall meet the requirements of 29 CFR 1910.141 as amended.

### Section 7 — Monitoring and Recordkeeping Requirements

Work environments where it has been determined, on the basis of a professional industrial hygiene survey or by the judgment of a compliance officer, that the workers' exposure does not exceed half of the standard shall not be considered to have exposure to free silica. Records of these surveys, including the basis for concluding that air levels are at or below half of the standard shall be maintained. Surveys shall be repeated when any process change indicates a need for reevaluation or at the discretion of the compliance officer. Requirements set forth below apply to areas in which there is "exposure to free silica."

Employers shall maintain records of the workers' exposure to free silica based upon the following sampling and recording schedules:

(a) In all monitoring, samples representative of the exposure in the breathing zone of employees shall be collected. An adequate number of samples shall be collected to permit construction of a full-shift exposure for every operation or process. The minimum number of time-weighted average determinations for an operation or process shall be based on the number

of workers exposed as provided in Table I-2 or as otherwise indicated by a professional industrial survey.

(b) The first work environment (breathing zone) sampling shall be completed within 6 months of the promulgation of a standard incorporating these recommendations.

(c) Work environment (breathing zone) samples shall be taken within 30 days after installation of a new process or process changes.

TABLE I-2  
SAMPLING SCHEDULE

Number of Employees Exposed	Number of TWA Determinations
1-20	50% of the total number of workers
21-100	10 plus 25% of the excess over 20 workers
Over 100	30 plus 5% of the excess over 100 workers

(d) Samples shall be collected and analyzed at least every 6 months in accordance with Appendices I and II for the evaluation of the workers' exposure with respect to the recommended standard.

(e) When monitoring of the workers' exposure indicates a free silica concentration in excess of the recommended standard, suitable controls shall be initiated to reduce the exposure level to or below the recommended standard. In such cases monitoring shall continue at 30-day intervals until two consecutive surveys indicate the recommended standard is no longer exceeded. Periodic review and evaluation of environmental and medical data shall be performed to determine the effectiveness of control measures.

(f) Records shall be maintained of medical examinations and all sampling schedules to include the sampling and analytical methods, type of personal protection devices, if any, in use at the time of sampling and the determined free silica dust concentration. Records shall be maintained for at least 30 years following termination of workers' employment. Each employee shall be able to obtain information on his exposure.

# MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT

SCHENECTADY, N. Y. 12305

Phone: (518) 385-4085

DIAL COM: 8\*235-4085



No. 71

QUARTZ

Date September 1980

## SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: QUARTZ

OTHER DESIGNATIONS: Silica, Crystalline; Flint; Agate; Sand; Silicic Anhydride; Silica Flour; Silicon Dioxide;  $\text{SiO}_2$ ; GE Materials D4C15, D4C19, D4C38, D4C39, D4C45-47, and D4C50; CAS #014 808 607

MANUFACTURER: Available from many sources.

## SECTION II. INGREDIENTS AND HAZARDS

Silicon Dioxide, Crystalline (Quartz form)

>98

### HAZARD DATA

8-hr TWA (Resp. Dust)  $250 \text{ mppcf}^{**}$  or  $10 \text{ mg/m}^3$   
 $\text{SiO}_2+5$  or  $\text{SiO}_2+2$   
 Human, inhalation  
 TLCo 16 mppcf/8-hr  
 intermittent for 17.9 yr  
 Pulmonary Effects  
 Rat, TDLo 90 mg/kg  
 Intraperitoneal -  
 Neoplastic Effects  
 Intrapleural-  
 Carcinogenic Effects

\*Current OSHA Standard. ACGIH (1980) 8-hr TWA is 3 mppcf\*\* or  $0.1 \text{ mg/m}^3$  for respirable dust. (Values for total dust,  $\text{mg/m}^3$ , are three times higher for both OSHA and ACGIH.)

NIOSH (1974) has proposed a 10-hr TWA of  $0.05 \text{ mg/m}^3$ , permissible exposure level.

\*\*Millions of particles per cubic foot of air.

## SECTION III. PHYSICAL DATA

Boiling point at 1 atm, deg C — 2230 Specific gravity ( $\text{H}_2\text{O}=1$ ) — 2.65  
 Vapor pressure at 1732 C, mm Hg — 10 Melting point, deg C — 1610  
 Water solubility — Insoluble Formula weight ( $\text{SiO}_2$ ) — 60.09

Appearance: When pure, material is white powder or colorless crystals. Impurities can produce various colorations.

## SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits in Air	LOWER	UPPER

This material is noncombustible. Use extinguishing media appropriate to the surrounding fire.

## SECTION V. REACTIVITY DATA

Material is highly stable under ordinary conditions (sand-like).

When exposed to high temperatures, quartz (or amorphous silica) can change crystal structure to form tridymite (above 870 C) or cristobalite (above 1470 C) which have greater health hazards than quartz.

It is attacked by strong alkalis. It will combine chemically with many metallic oxides upon heating at high temperature. It reacts with hydrofluoric acid to generate volatile  $\text{SiF}_4$ . It is incompatible with oxygen difluoride, chlorine trifluoride, manganese trifluoride, and certain other powerful oxidizers and fluorine-containing compounds.

<b>SECTION VI. HEALTH HAZARD INFORMATION</b>	<b>TLV (See Sect. II)</b>						
<p>alth hazards can occur from excessive inhalation of silica dust, otherwise nontoxic. Crystalline silica in the lung can produce a pneumoconiosis, commonly called silicosis, which is a chronic, slowly developing disease. Symptoms are usually delayed (10 years or more) but may appear in as little as 8-18 months after initial exposure. Symptoms are dyspnea - caused by the many lung scars that develop from the silica dust - pain in the chest, decreased vital capacity, and cough.</p> <p>Chronic lung scarring leads to a progressive massive fibrosis that is often accompanied by increased susceptibility to pulmonary tuberculosis and other respiratory infections. In a diseased lung, dust particles under 3 microns greatly outnumber larger ones, and many particles are less than 1 micron. Symptoms of silicosis become progressive with continued exposure and advancing age. Smoking can increase the risk of injury.</p> <p><b>FIRST AID:</b></p> <p><u>Eye Contact:</u> Flush eyes thoroughly with running water, including under the eyelids, for at least 15 minutes.</p> <p><u>Skin Contact:</u> Wash affected area with soap and water.</p> <p><u>Inhalation:</u> Remove to fresh air. Give oxygen with intermittent positive-pressure and/or artificial respiration as needed. Seek medical attention for treatment, observation, and support as needed.</p>							
<b>SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES</b>							
<p>Notify safety personnel of major spills. Provide ventilation. Clean-up personnel need protection against eye contact and inhalation of dust. Pick up spills taking care to avoid raising dust clouds (use vacuum or wet sweeping). Place in closed container for disposal.</p> <p><u>DISPOSAL:</u> Use waste containers suitable for transportation and dispose in approved landfill. Follow Federal, State, and Local regulations.</p>							
<b>SECTION VIII. SPECIAL PROTECTION INFORMATION</b>							
<p>Provide adequate general and local exhaust ventilation to meet TLV requirements. Provide workers with dust respirators for use in emergency or nonroutine situations where dust levels may exceed TLV. Efficient dust respirators can be used up to 10X TLV. For exposure up to 100X TLV use full facepiece respirator with replaceable dust filter. Higher exposures need an approved, air supplied respirator.</p> <p>Workers should wear safety goggles and work gloves for eye and skin protection. (Sand blasters require special protective equipment and safety precautions.)</p> <p>Eyewash fountains should be available to areas of use and handling.</p> <p>Provide preplacement and annual physical exams for exposed workers with emphasis on respiratory and cardiovascular systems. Preclude from exposure those individuals with pulmonary disease.</p>							
<b>SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS</b>							
<p>Store powdered silica in closed containers in a dry, well-ventilated area.</p> <p>Keep dust in work area at a minimum and maintain air concentration of silica as far below TLV as feasible. Use good housekeeping techniques, such as, vacuuming and wet sweeping to remove collected dust and prevent formation of dust clouds.</p> <p>Avoid inhalation of dust. Avoid contact of materials with eyes.</p> <p>NIOSH (1976) warns of increased risk of impaired health due to a combination of smoking and silica dust exposure.</p>							
<p><b>DATA SOURCE(S) CODE:</b> 2-12, 19, 24-27, 31, 34, 37, 38</p> <p><small>Judgments as to the suitability of information herein for purchaser's purposes are necessarily purchaser's responsibility. Therefore, although reasonable care has been taken in the preparation of such information, General Electric Company extends no warranties, makes no representations and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or for consequences of its use.</small></p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;"><b>APPROVALS:</b> HIS CRD</td> <td style="width: 60%; text-align: right;"><i>J. M. Nissen</i></td> </tr> <tr> <td><b>Industrial Hygiene and Safety</b></td> <td style="text-align: right;"><i>10-9-80</i></td> </tr> <tr> <td><b>MEDICAL REVIEW:</b></td> <td style="text-align: right;">10/22/80</td> </tr> </table>	<b>APPROVALS:</b> HIS CRD	<i>J. M. Nissen</i>	<b>Industrial Hygiene and Safety</b>	<i>10-9-80</i>	<b>MEDICAL REVIEW:</b>	10/22/80
<b>APPROVALS:</b> HIS CRD	<i>J. M. Nissen</i>						
<b>Industrial Hygiene and Safety</b>	<i>10-9-80</i>						
<b>MEDICAL REVIEW:</b>	10/22/80						

Attachment to MSDS: W.I.N. 100002, 3, 4, 5&9, PROP, SAND,  
Class E, 12/20, 16/30, 20/40, 30/50 & 40/70 (white)

## I. RECOMMENDATIONS FOR A CRYSTALLINE SILICA STANDARD

The National Institute for Occupational Safety and Health (NIOSH) recommends that employee exposure to crystalline silica in the workplace be controlled by adherence to the following sections. The standard is designed to protect the health and safety of workers for up to a 10-hour workday, 40-hour workweek, over a working lifetime. Compliance with the standard should prevent adverse effects of crystalline silica on the health and safety of workers. The standard is measurable by techniques that are valid, reproducible, and available to industry and government agencies and are attainable with existing technology. The criteria and the standard recommended in this document will be subject to review and revision as necessary.

Crystalline silica, hereafter referred to in this document as free silica, is defined as silicon dioxide ( $\text{SiO}_2$ ). "Crystalline" refers to the orientation of  $\text{SiO}_2$  molecules in a fixed pattern as opposed to a nonperiodic, random molecular arrangement defined as amorphous. The three most common crystalline forms of free silica encountered in industry are quartz, tridymite, and cristobalite. Micro- and crypto-crystalline varieties of free silica, also included in the recommended standard, are composed of minute grains of free silica cemented together with amorphous silica and include tripoli, flint, chalcedony, agate, onyx, and silica flour. Other forms of free silica which, upon analysis, are found to have a crystalline structure as part of their composition are also subject to the recommended standard.

"Exposure to free silica" means exposure of the worker to an airborne concentration of free silica greater than half of the recommended environmental level in the workplace. Worker exposure at lower environmental concentrations will not require adherence to the following sections.

### Section 1—Environmental (Workplace Air)

#### (a) Concentration

Occupational exposure shall be controlled so that no worker is exposed to a time-weighted average (TWA) concentration of free silica greater than 50 micrograms per cubic meter of air (50  $\mu\text{g}/\text{cu m}$ ; 0.050  $\text{mg}/\text{cu m}$ ) as determined by a full-shift sample for up to a 10-hour workday, 40-hour workweek.

#### (b) Sampling, Calibration, and Analysis

Exposure to free silica shall be determined by a personal (breathing zone) sample.

Procedures for sampling, calibration of equipment, and analysis of environmental samples shall be as provided in Appendices I and II, or by methods shown to be equivalent in sensitivity, accuracy, and precision to the method specified.

### Section 2—Medical

(a) Medical examinations shall be made available to all workers subject to "exposure to free silica" prior

to employee placement and at least once each 3 years thereafter. Examinations shall include as a minimum:

(1) A medical and occupational history to elicit data on worker exposure to free silica and signs and symptoms of respiratory disease.

(2) A chest roentgenogram (posteroanterior 14" by 17" or 14" by 14") classified according to the 1971 ILO International Classification of Radiographs of Pneumoconioses. [ILO U/C International Classification of Radiographs of Pneumoconioses 1971, Occupational Safety and Health Series 22 (rev). Geneva, International Labor Office, 1972]

(3) Pulmonary function tests including forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV<sub>1</sub>) to provide a baseline for evaluation of pulmonary function and to help determine the advisability of the workers using negative- or positive-pressure respirators. It should be noted that pulmonary function tests may vary significantly in various ethnic groups. For example, in black persons, the test values for the FVC should be divided by 0.85 before the percentage value is compared with normal figures.

(4) Body weight.

(5) Height.

(6) Age.

(7) Initial medical examinations for presently employed workers shall be offered within 6 months of the promulgation of a standard incorporating these recommendations.

#### (b) Medical Management

An employee with or without roentgenographic evidence of silicosis who has respiratory distress and/or pulmonary functional impairment should be fully evaluated by a physician qualified to advise the employee whether he should continue working in a dusty trade.

(c) These records shall be available to the medical representatives of the Secretary of Health, Education, and Welfare, of the Secretary of Labor, of the employee or former employee, and of the employer.

(d) Medical records shall be maintained for at least 30 years following the employee's termination of employment.

### Section 3 — Labeling (Posting)

(a) The following warning shall be posted to be readily visible at or near entrances or accessways to work areas where there is potential exposure to free silica.

#### WARNING!

FREE SILICA WORK AREA

Unauthorized Persons Keep Out

(b) The following warning shall be posted in readily visible locations in any work area where there is potential exposure to free silica.

## WARNING! FREE SILICA WORK AREA

Avoid Breathing Dust  
May Cause Delayed Lung Injury (Silicosis)

The posting required under sections 3(a) and 3(b) shall be printed both in English and in the predominant language of non-English-speaking workers, unless they are otherwise trained and informed of the hazardous areas. Illiterate workers shall receive such training.

(c) The following warning label, in addition to or in combination with labels required by other statutes, regulations, or ordinances, shall be affixed to all new materials, mixtures, and other products containing more than 5% free silica, or to their containers.

## WARNING! CONTAINS FREE SILICA DO NOT BREATHE DUST

May Cause Delayed Lung Injury (Silicosis)

### Section 4 — Personal Protective Equipment and Work Clothing

Engineering controls shall be used to maintain free silica dust exposures below the prescribed limit. Subsection (a) shall apply whenever a variance from the standard recommended in Section 1 is granted under provisions of the Occupational Safety and Health Act, or in the interim period during the application for a

variance. When the limits of exposure to free silica prescribed in paragraph (a) of Section 1 cannot be met by limiting the concentration of free silica in the work environment, an employer must utilize, as provided in subsection (a) of this section, a program of respiratory protection to effect the required protection of every worker exposed.

### (a) Respiratory Protection

Appropriate respirators, as prescribed in Table I-1, shall be provided and used when a variance has been granted to allow respirators as a means of control of exposure to routine operations and while the application is pending. Administrative controls may also be used to reduce exposure. Respirators shall also be provided and used for nonroutine operations (occasional brief exposures above the environmental standard and for emergencies); however, for these instances a variance is not required but the requirements set forth below continue to apply. Appropriate respirators as described in Table I-1 shall only be used pursuant to the following requirements:

(1) For the purpose of determining the type of respirator to be used, the employer shall measure the atmospheric concentration of free silica in the workplace when the initial application for variance is made and thereafter whenever process, worksite, climate, or control changes occur which are likely to affect the free silica concentration. This requirement shall not apply when only atmosphere-supplying positive-pressure respirators are used. The employer shall ensure

TABLE I-1  
REQUIREMENTS FOR RESPIRATOR USAGE AT  
CONCENTRATIONS ABOVE THE STANDARD

Concentrations of Free Silica in Multiples of the Standard	Respirator Type*
Less than or equal to 5X	Single use (valveless type) dust respirator.
Less than or equal to 10X	Quarter or half mask respirator with replaceable dust filter or single use (with valve) dust respirator. Type C, demand type (negative pressure), with quarter or half mask facepiece.
Less than or equal to 100X	Full facepiece respirator with replaceable dust filter. Type C, supplied air respirator, demand type (negative pressure), with full facepiece.
Less than or equal to 200X	Powered air-purifying (positive-pressure) respirator, with replace- able applicable filter.**
Greater than 200X	Type C, supplied air respirator, continuous flow type (positive pres- sure), with full facepiece, hood, or helmet.

\*Where a variance has been obtained for abrasive blasting with silica sand, use only Type C contin-  
uous flow, supplied air respirator with hood or helmet.

\*\*An alternative is to select the standard high efficiency filter which must be at least 99.97% efficient  
against 0.3-micrometer dioctyl phthalate (DOP).

that no worker is exposed to free silica in excess of the standard because of improper respirator selection, fit, use, or maintenance.

(2) Employees experiencing breathing difficulty while using respirators shall be evaluated by a physician to determine the ability of the worker to wear a respirator.

(3) A respiratory protective program meeting the requirements of Section 1910.134 of the Occupational Safety and Health Standards shall be established and enforced by the employer. [29 CFR 1910.134 published in the Federal Register, vol 39, page 23671, dated June 27, 1974, as amended]

(4) The employer shall provide respirators in accordance with Table I-1 and shall ensure that the employee uses the appropriate respirator.

(5) Respiratory protective devices in Table I-1 shall be those approved either under 30 CFR 11, published March 25, 1972, or under the following regulations:

(A) Filter-type dust, fume, and mist respirators—30 CFR 14 (Bureau of Mines Schedule 21B)

(B) Supplied air respirator—30 CFR 12 (Bureau of Mines Schedule 19B)

(6) A respirator specified for use in higher concentrations of free silica may be used in atmospheres of lower concentrations.

(7) Employees shall be given instruction on the use of respirators assigned to them, on cleaning respirators, and on testing for leakage.

**(b) Work Clothing**

Where exposure to free silica is above the recommended environmental limit, work clothing shall be vacuumed before removal. Clothes shall not be cleaned by blowing or shaking.

**Section 5 — Informing Employees of Hazards from Free Silica**

(a) Each employee exposed to free silica shall be apprised at the beginning of his employment or assignment to a free silica exposure area of the hazards, relevant symptoms, appropriate emergency procedures, and proper conditions and precautions for safe use or exposure. The employee shall be instructed as to availability of such information including that prescribed in (b) below. Such information shall be kept on file and shall be accessible to the worker at each place of employment where free silica is involved in unit processes and operations. Workers shall also be advised of the increased risk of impaired health due to the combination of smoking and free silica dust exposure.

(b) Information, to the extent applicable to free silica, as specified in Appendix III shall be recorded on U.S. Department of Labor Form OSHA-20, "Material Safety Data Sheet" (see Appendix III) or on a similar form approved by the Occupational Safety and Health Administration, U.S. Department of Labor.

**Section 6 — Work Practices and Control Procedures**

**(a) Substitution**

(1) Wherever a hazard of silicosis can be elimi-

nated by a reasonable substitution of other less toxic materials for free silica, the substitution shall be made unless the silica sand has been so processed before use to make it nonrespirable such as by washing to remove fine particles. Examples of such substitution are the use of alumina instead of flint for china placing in potteries, and the substitution of a quartz-free grit in abrasive blasting.

(2) Uncontrolled abrasive blasting with silica sand is such a severe silicosis hazard that special attention must be given to this problem. Silica sand, or other materials containing more than 1% free silica, should be prohibited as an abrasive substance in abrasive blasting cleaning operations.

**(b) Dust Suppression**

Moisture shall be added where such addition can substantially reduce the exposure to airborne respirable free silica dust.

**(c) Ventilation**

Where a local exhaust ventilation and collection system is used, it shall be designed and maintained to prevent the accumulation or recirculation of free silica dust into the workplace. The total system shall be inspected periodically for efficiency of operation. In addition, necessary measures shall be taken to ensure that discharge outdoors will not produce a health hazard to humans, animals, or plants.

**(d) General Housekeeping**

(1) Cleaning by blowing with compressed air or dry sweeping shall be avoided and dustless methods of cleaning such as vacuuming or washing down with water shall be substituted.

(2) Emphasis shall be placed upon cleanup of spills, preventive maintenance and repair of equipment, proper storage of materials, and collection of dusts containing free silica. Sanitation shall meet the requirements of 29 CFR 1910.141 as amended.

**Section 7 — Monitoring and Recordkeeping Requirements**

Work environments where it has been determined, on the basis of a professional industrial hygiene survey or by the judgment of a compliance officer, that the workers' exposure does not exceed half of the standard shall not be considered to have exposure to free silica. Records of these surveys, including the basis for concluding that air levels are at or below half of the standard shall be maintained. Surveys shall be repeated when any process change indicates a need for reevaluation or at the discretion of the compliance officer. Requirements set forth below apply to areas in which there is "exposure to free silica."

Employers shall maintain records of the workers' exposure to free silica based upon the following sampling and recording schedules:

(a) In all monitoring, samples representative of the exposure in the breathing zone of employees shall be collected. An adequate number of samples shall be collected to permit construction of a full-shift exposure for every operation or process. The minimum number of time-weighted average determinations for an operation or process shall be based on the number

of workers exposed as provided in Table I-2 or as otherwise indicated by a professional industrial survey.

(b) The first work environment (breathing zone) sampling shall be completed within 6 months of the promulgation of a standard incorporating these recommendations.

(c) Work environment (breathing zone) samples shall be taken within 30 days after installation of a new process or process changes.

TABLE I-2  
SAMPLING SCHEDULE

Number of Employees Exposed	Number of TWA Determinations
1-20	50% of the total number of workers
21-100	10 plus 25% of the excess over 20 workers
Over 100	30 plus 5% of the excess over 100 workers

(d) Samples shall be collected and analyzed at least every 6 months in accordance with Appendices I and II for the evaluation of the workers' exposure with respect to the recommended standard.

(e) When monitoring of the workers' exposure indicates a free silica concentration in excess of the recommended standard, suitable controls shall be initiated to reduce the exposure level to or below the recommended standard. In such cases monitoring shall continue at 30-day intervals until two consecutive surveys indicate the recommended standard is no longer exceeded. Periodic review and evaluation of environmental and medical data shall be performed to determine the effectiveness of control measures.

(f) Records shall be maintained of medical examinations and all sampling schedules to include the sampling and analytical methods, type of personal protection devices, if any, in use at the time of sampling and the determined free silica dust concentration. Records shall be maintained for at least 30 years following termination of workers' employment. Each employee shall be able to obtain information on his exposure.





# Precautionary Labeling for Bags

**Trade Name:** "Ottawa" (white) Fracturing Sand  
W.I.N.: 100002, 3, 4, 5&9

## **DIRECTIONS:**

For Proper Use, Refer to Service Bulletin No.(s) 810.OWG

**SPECIFIC USAGE:** Use at the rate of 0.1 to 15 lb/gallon of fracturing fluid.

When Handling This Product Employees **MUST WEAR:** chemical goggles, gloves and dust mask.

## **FOR INDUSTRIAL USE ONLY**

### **WARNING!**

CONTAINS FREE SILICA  
Do Not Breathe Dust  
May cause delayed lung injury (Silicosis)

Refer to MSDS and SPM-04-04 for Safety Requirements

W.I.N. 100122, FLUIDLOSS, AGENT, stim, 100 mesh sand (SF-4)

# MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT

SCHENECTADY, N. Y. 12305

Phone: (518) 385-4085

DIAL COMM: 8\*235-4085

MATERIALS  
IS  
SERVICES  
INFORMATION

No. 71

QUARTZ

Date September 1980

## SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: QUARTZ

OTHER DESIGNATIONS: Silica, Crystalline; Flint; Agate; Sand; Silicic Anhydride; Silica Flour; Silicon Dioxide;  $\text{SiO}_2$ ; GE Materials D4C15, D4C19, D4C38, D4C39, D4C45-47, and D4C50; CAS #014 808 607

MANUFACTURER: Available from many sources.

## SECTION II. INGREDIENTS AND HAZARDS

Silicon Dioxide, Crystalline (Quartz form)

>98

### HAZARD DATA

8-hr TWA (Resp. Dust) \*  
 $\frac{250 \text{ mppcf}^{**}}{\text{ZSiO}_2+5}$  or  $\frac{10 \text{ mg/m}^3}{\text{ZSiO}_2+2}$

\*Current OSHA Standard. ACGIH (1980) 8-hr TWA is  
3 mppcf\*\* or  $0.1 \text{ mg/m}^3$  for respirable dust. (Values  
for total dust,  $\text{mg/m}^3$ , are three times higher for  
both OSHA and ACGIH.)

NIOSH (1974) has proposed a 10-hr TWA of  $0.05 \text{ mg/m}^3$ ,  
permissible exposure level.

\*\*Millions of particles per cubic foot of air.

Human, Inhalation  
TCLo 16 mppcf/8-hr  
intermittent for 17.9 yr  
Pulmonary Effects  
Rat, TDLo 90 mg/kg  
Intraperitoneal -  
Neoplastic Effects  
Intrapleural -  
Carcinogenic Effects

## SECTION III. PHYSICAL DATA

Boiling point at 1 atm, deg C ----- 2230

Specific gravity ( $\text{H}_2\text{O}=1$ ) ----- 2.65

Vapor pressure at 1732 C, mm Hg ----- 10

Melting point, deg C ----- 1610

Water solubility ----- Insoluble

Formula weight ( $\text{SiO}_2$ ) ----- 60.09

Appearance: When pure, material is white powder or colorless crystals. Impurities  
can produce various colorations.

## SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method	Autoignition Temp.	Flammability Limits in Air	LOWER	UPPER

This material is noncombustible. Use extinguishing media appropriate to the surrounding  
fire.

## SECTION V. REACTIVITY DATA

Material is highly stable under ordinary conditions (sand-like).

When exposed to high temperatures, quartz (or amorphous silica) can change crystal  
structure to form tridymite (above 870 C) or cristobalite (above 1470 C) which have  
greater health hazards than quartz.

It is attacked by strong alkalis. It will combine chemically with many metallic oxides  
upon heating at high temperature. It reacts with hydrofluoric acid to generate volatile  
 $\text{SiF}_4$ . It is incompatible with oxygen difluoride, chlorine trifluoride, manganese  
trifluoride, and certain other powerful oxidizers and fluorine-containing compounds.

SECTION VI. HEALTH HAZARD INFORMATION	TLV (See Sect. II)
<p>Health hazards can occur from excessive inhalation of silica dust, otherwise nontoxic. Crystalline silica in the lung can produce a pneumoconiosis, commonly called silicosis, which is a chronic, slowly developing disease. Symptoms are usually delayed (10 years or more) but may appear in as little as 8-18 months after initial exposure. Symptoms are dyspnea - caused by the many lung scars that develop from the silica dust - pain in the chest, decreased vital capacity, and cough.</p> <p>Chronic lung scarring leads to a progressive massive fibrosis that is often accompanied by increased susceptibility to pulmonary tuberculosis and other respiratory infections. In a diseased lung, dust particles under 3 microns greatly outnumber larger ones, and many particles are less than 1 micron. Symptoms of silicosis become progressive with continued exposure and advancing age. Smoking can increase the risk of injury.</p> <p><b>FIRST AID:</b></p> <p><u>Eye Contact:</u> Flush eyes thoroughly with running water, including under the eyelids. For at least 15 minutes.</p> <p><u>Skin Contact:</u> Wash affected area with soap and water.</p> <p><u>Inhalation:</u> Remove to fresh air. Give oxygen with intermittent positive-pressure and/or artificial respiration as needed. Seek medical attention for treatment, observation, and support as needed.</p>	
<p><b>SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES</b></p> <p>Notify safety personnel of major spills. Provide ventilation. Clean-up personnel need protection against eye contact and inhalation of dust. Pick up spills taking care to avoid raising dust clouds (use vacuum or wet sweeping). Place in closed container for disposal.</p> <p><u>DISPOSAL:</u> Use waste containers suitable for transportation and dispose in approved landfill. Follow Federal, State, and Local regulations.</p>	
<p><b>SECTION VIII. SPECIAL PROTECTION INFORMATION</b></p> <p>Provide adequate general and local exhaust ventilation to meet TLV requirements. Provide workers with dust respirators for use in emergency or nonroutine situations where dust levels may exceed TLV. Efficient dust respirators can be used up to 10X TLV. For exposure up to 100X TLV use full facepiece respirator with replaceable dust filter. Higher exposures need an approved, air supplied respirator.</p> <p>Workers should wear safety goggles and work gloves for eye and skin protection. (Sand blasters require special protective equipment and safety precautions.)</p> <p>Eyewash fountains should be available to areas of use and handling.</p> <p>Provide preplacement and annual physical exams for exposed workers with emphasis on respiratory and cardiovascular systems. Preclude from exposure those individuals with pulmonary disease.</p>	
<p><b>SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS</b></p> <p>Store powdered silica in closed containers in a dry, well-ventilated area.</p> <p>Keep dust in work area at a minimum and maintain air concentration of silica as far below TLV as feasible. Use good housekeeping techniques, such as, vacuuming and wet sweeping to remove collected dust and prevent formation of dust clouds.</p> <p>Avoid inhalation of dust. Avoid contact of materials with eyes.</p> <p>NIOSH (1976) warns of increased risk of impaired health due to a combination of smoking and silica dust exposure.</p>	
<p>DATA SOURCE(S) CODE: 2-12, 19, 24-27, 31, 34, 37, 38</p> <p><small>Judgments as to the suitability of information herein for purchaser's purposes are necessarily purchaser's responsibility. Therefore, although reasonable care has been taken in the preparation of such information, General Electric Company extends no warranties, makes no representations and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or for consequences of its use.</small></p>	<p>APPROVALS: MIS CRD <i>J. M. Nielsen</i></p> <p>Industrial Hygiene and Safety <i>10-9-80</i></p> <p>MEDICAL REVIEW: 10/22/80</p>

## I. RECOMMENDATIONS FOR A CRYSTALLINE SILICA STANDARD

The National Institute for Occupational Safety and Health (NIOSH) recommends that employee exposure to crystalline silica in the workplace be controlled by adherence to the following sections. The standard is designed to protect the health and safety of workers for up to a 10-hour workday, 40-hour workweek, over a working lifetime. Compliance with the standard should prevent adverse effects of crystalline silica on the health and safety of workers. The standard is measurable by techniques that are valid, reproducible, and available to industry and government agencies and are attainable with existing technology. The criteria and the standard recommended in this document will be subject to review and revision as necessary.

Crystalline silica, hereafter referred to in this document as free silica, is defined as silicon dioxide ( $\text{SiO}_2$ ). "Crystalline" refers to the orientation of  $\text{SiO}_2$  molecules in a fixed pattern as opposed to a nonperiodic, random molecular arrangement defined as amorphous. The three most common crystalline forms of free silica encountered in industry are quartz, tridymite, and cristobalite. Micro- and crypto-crystalline varieties of free silica, also included in the recommended standard, are composed of minute grains of free silica cemented together with amorphous silica and include tripoli, flint, chalcedony, agate, onyx, and silica flour. Other forms of free silica which, upon analysis, are found to have a crystalline structure as part of their composition are also subject to the recommended standard.

"Exposure to free silica" means exposure of the worker to an airborne concentration of free silica greater than half of the recommended environmental level in the workplace. Worker exposure at lower environmental concentrations will not require adherence to the following sections.

### Section 1—Environmental (Workplace Air)

#### (a) Concentration

Occupational exposure shall be controlled so that no worker is exposed to a time-weighted average (TWA) concentration of free silica greater than 50 micrograms per cubic meter of air (50  $\mu\text{g}/\text{cu m}$ ; 0.050  $\text{mg}/\text{cu m}$ ) as determined by a full-shift sample for up to a 10-hour workday, 40-hour workweek.

#### (b) Sampling, Calibration, and Analysis

Exposure to free silica shall be determined by a personal (breathing zone) sample.

Procedures for sampling, calibration of equipment, and analysis of environmental samples shall be as provided in Appendices I and II, or by methods shown to be equivalent in sensitivity, accuracy, and precision to the method specified.

### Section 2—Medical

(a) Medical examinations shall be made available to all workers subject to "exposure to free silica" prior

to employee placement and at least once each 3 years thereafter. Examinations shall include as a minimum:

(1) A medical and occupational history to elicit data on worker exposure to free silica and signs and symptoms of respiratory disease.

(2) A chest roentgenogram (posteroanterior 14" by 17" or 14" by 14") classified according to the 1971 ILO International Classification of Radiographs of Pneumoconioses. [ILO U/C International Classification of Radiographs of Pneumoconioses 1971, Occupational Safety and Health Series 22 (rev). Geneva, International Labor Office, 1972]

(3) Pulmonary function tests including forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV<sub>1</sub>) to provide a baseline for evaluation of pulmonary function and to help determine the advisability of the workers using negative- or positive-pressure respirators. It should be noted that pulmonary function tests may vary significantly in various ethnic groups. For example, in black persons, the test values for the FVC should be divided by 0.85 before the percentage value is compared with normal figures.

(4) Body weight.

(5) Height.

(6) Age.

(7) Initial medical examinations for presently employed workers shall be offered within 6 months of the promulgation of a standard incorporating these recommendations.

#### (b) Medical Management

An employee with or without roentgenographic evidence of silicosis who has respiratory distress and/or pulmonary functional impairment should be fully evaluated by a physician qualified to advise the employee whether he should continue working in a dusty trade.

(c) These records shall be available to the medical representatives of the Secretary of Health, Education, and Welfare, of the Secretary of Labor, of the employee or former employee, and of the employer.

(d) Medical records shall be maintained for at least 30 years following the employee's termination of employment.

### Section 3 — Labeling (Posting)

(a) The following warning shall be posted to be readily visible at or near entrances or accessways to work areas where there is potential exposure to free silica.

**WARNING!**

**FREE SILICA WORK AREA**

**Unauthorized Persons Keep Out**

(b) The following warning shall be posted in readily visible locations in any work area where there is potential exposure to free silica.

## WARNING! FREE SILICA WORK AREA

Avoid Breathing Dust  
May Cause Delayed Lung Injury (Silicosis)

The posting required under sections 3(a) and 3(b) shall be printed both in English and in the predominant language of non-English-speaking workers, unless they are otherwise trained and informed of the hazardous areas. Illiterate workers shall receive such training.

(c) The following warning label, in addition to or in combination with labels required by other statutes, regulations, or ordinances, shall be affixed to all new materials, mixtures, and other products containing more than 5% free silica, or to their containers.

WARNING!  
CONTAINS FREE SILICA  
DO NOT BREATHE DUST  
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### Section 4 — Personal Protective Equipment and Work Clothing

Engineering controls shall be used to maintain free silica dust exposures below the prescribed limit. Subsection (a) shall apply whenever a variance from the standard recommended in Section 1 is granted under provisions of the Occupational Safety and Health Act, or in the interim period during the application for a

variance. When the limits of exposure to free silica prescribed in paragraph (a) of Section 1 cannot be met by limiting the concentration of free silica in the work environment, an employer must utilize, as provided in subsection (a) of this section, a program of respiratory protection to effect the required protection of every worker exposed.

#### (a) Respiratory Protection

Appropriate respirators, as prescribed in Table I-1, shall be provided and used when a variance has been granted to allow respirators as a means of control of exposure to routine operations and while the application is pending. Administrative controls may also be used to reduce exposure. Respirators shall also be provided and used for nonroutine operations (occasional brief exposures above the environmental standard and for emergencies); however, for these instances a variance is not required but the requirements set forth below continue to apply. Appropriate respirators as described in Table I-1 shall only be used pursuant to the following requirements:

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(7) Employees shall be given instruction on the use of respirators assigned to them, on cleaning respirators, and on testing for leakage.

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(b) Information, to the extent applicable to free silica, as specified in Appendix III shall be recorded on U.S. Department of Labor Form OSHA-20, "Material Safety Data Sheet" (see Appendix III) or on a similar form approved by the Occupational Safety and Health Administration, U.S. Department of Labor.

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nated by a reasonable substitution of other less toxic materials for free silica, the substitution shall be made unless the silica sand has been so processed before use to make it nonrespirable such as by washing to remove fine particles. Examples of such substitution are the use of alumina instead of flint for china placing in potteries, and the substitution of a quartz-free grit in abrasive blasting.

(2) Uncontrolled abrasive blasting with silica sand is such a severe silicosis hazard that special attention must be given to this problem. Silica sand, or other materials containing more than 1% free silica, should be prohibited as an abrasive substance in abrasive blasting cleaning operations.

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Moisture shall be added where such addition can substantially reduce the exposure to airborne respirable free silica dust.

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Where a local exhaust ventilation and collection system is used, it shall be designed and maintained to prevent the accumulation or recirculation of free silica dust into the workplace. The total system shall be inspected periodically for efficiency of operation. In addition, necessary measures shall be taken to ensure that discharge outdoors will not produce a health hazard to humans, animals, or plants.

(d) General Housekeeping

(1) Cleaning by blowing with compressed air or dry sweeping shall be avoided and dustless methods of cleaning such as vacuuming or washing down with water shall be substituted.

(2) Emphasis shall be placed upon cleanup of spills, preventive maintenance and repair of equipment, proper storage of materials, and collection of dusts containing free silica. Sanitation shall meet the requirements of 29 CFR 1910.141 as amended.

**Section 7 — Monitoring and Recordkeeping Requirements**

Work environments where it has been determined, on the basis of a professional industrial hygiene survey or by the judgment of a compliance officer, that the workers' exposure does not exceed half of the standard shall not be considered to have exposure to free silica. Records of these surveys, including the basis for concluding that air levels are at or below half of the standard shall be maintained. Surveys shall be repeated when any process change indicates a need for reevaluation or at the discretion of the compliance officer. Requirements set forth below apply to areas in which there is "exposure to free silica."

Employers shall maintain records of the workers' exposure to free silica based upon the following sampling and recording schedules:

(a) In all monitoring, samples representative of the exposure in the breathing zone of employees shall be collected. An adequate number of samples shall be collected to permit construction of a full-shift exposure for every operation or process. The minimum number of time-weighted average determinations for an operation or process shall be based on the number

of workers exposed as provided in Table I-2 or as otherwise indicated by a professional industrial survey.

(b) The first work environment (breathing zone) sampling shall be completed within 6 months of the promulgation of a standard incorporating these recommendations.

(c) Work environment (breathing zone) samples shall be taken within 30 days after installation of a new process or process changes.

TABLE I-2  
SAMPLING SCHEDULE

Number of Employees Exposed	Number of TWA Determinations
1-20	50% of the total number of workers
21-100	10 plus 25% of the excess over 20 workers
Over 100	30 plus 5% of the excess over 100 workers

(d) Samples shall be collected and analyzed at least every 6 months in accordance with Appendices I and II for the evaluation of the workers' exposure with respect to the recommended standard.

(e) When monitoring of the workers' exposure indicates a free silica concentration in excess of the recommended standard, suitable controls shall be initiated to reduce the exposure level to or below the recommended standard. In such cases monitoring shall continue at 30-day intervals until two consecutive surveys indicate the recommended standard is no longer exceeded. Periodic review and evaluation of environmental and medical data shall be performed to determine the effectiveness of control measures.

(f) Records shall be maintained of medical examinations and all sampling schedules to include the sampling and analytical methods, type of personal protection devices, if any, in use at the time of sampling and the determined free silica dust concentration. Records shall be maintained for at least 30 years following termination of workers' employment. Each employee shall be able to obtain information on his exposure.



# Precautionary Labeling for Bags

Trade Name: 100 mesh sand  
W.I.N.: 100122

## DIRECTIONS:

For Proper Use, Refer to Service Bulletin No.(s) 455.0WG

SPECIFIC USAGE: Use at the rate of 1 to 4 lb/gallon of pad fluid.

When Handling This Product Employees **MUST WEAR:** Chemical goggles and gloves.

## FOR INDUSTRIAL USE ONLY

### WARNING!

Contains Free Silica  
Do Not Breathe Dust  
May cause delayed Lung injury (Silicosis)

Refer to MSDS and SPM-04-04 for Safety Requirements.





# Precautionary Labeling for Bags

Trade Name: SF-4  
W.I.N. : 100122

## DIRECTIONS:

For Proper Use, Refer to Service Bulletin No.(s) 2390.0W, Sec. I

**SPECIFIC USAGE:** Use at the rate of 20-50 % based on the weight of cement.

When Handling This Product Employees **MUST WEAR:** Chemical goggles and gloves.

## FOR INDUSTRIAL USE ONLY

### WARNING!

Contains Free Silica  
Do NOT Breathe Dust  
May cause delayed Lung injury (Silicosis)

Refer to MSDS and SPM-04-04 for Safety Requirements.

Precautionary Labeling

FRAC SAND

WARNING!

Contains FREE SILICA

Do Not BREATHE DUST

May cause delayed lung injury (silicosis)

Follow OSHA Safety and Health Standards for  
crystalline silica (quartz)

Date: August 23, 1977

U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health AdministrationForm Approved  
OMB No. 44-R138

SF4

## MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing,  
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

## SECTION I

MANUFACTURER'S NAME Pennsylvania Glass Sand Corporation	EMERGENCY TELEPHONE NO.
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 187, Berkeley Springs, West Virginia 25411	
CHEMICAL NAME AND SYNONYMS Silicon Dioxide (Silica)	TRADE NAME AND SYNONYMS Oklahoma #1 Dry (100 mesh)
CHEMICAL FAMILY Natural Mineral, extracted from earth	FORMULA SiO <sub>2</sub> ( 99.8% Free Silica)

## SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS	None		BASE METAL	None	
CATALYST	None		ALLOYS	None	
VEHICLE	None		METALLIC COATINGS	None	
SOLVENTS	None		FILLER METAL PLUS COATING OR CORE FLUX	None	
ADDITIVES	None		OTHERS	None	
OTHERS	None				
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)
None					

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	N.A.	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	2.65
VAPOR PRESSURE (mm Hg.)	N.A.	PERCENT, VOLATILE BY VOLUME (%)	None
VAPOR DENSITY (AIR=1)	N.A.	EVAPORATION RATE (_____ =1)	None
SOLUBILITY IN WATER	None		
APPEARANCE AND ODOR	Sand - whole grains or flour - No odor		

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LeI	UeI
EXTINGUISHING MEDIA	No fire or explosive hazard		
SPECIAL FIRE FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARDS			

## SECTION V - HEALTH HAZARD DATA \*

**THRESHOLD LIMIT VALUE**  
As specified in OSHA Standard currently #1910.1000, table Z-3 for silica:crystalline

**EFFECTS OF OVEREXPOSURE**  
Repeated inhalation of respirable dust for extended period of time may cause injury to the lungs.

**EMERGENCY AND FIRST AID PROCEDURES**  
None

## SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	
INCOMPATIBILITY (Materials to avoid) None			
HAZARDOUS DECOMPOSITION PRODUCTS			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

## SECTION VII - SPILL OR LEAK PROCEDURES \*

**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED**  
Clean up by use of recommended dustless methods - water or vacuum - Limit exposure so that it does not exceed OSHA Standard TLV.

**WASTE DISPOSAL METHOD**  
Any approved solid waste disposal method - Limit exposure so that it does not exceed OSHA Standard TLV.

## SECTION VIII - SPECIAL PROTECTION INFORMATION \*

**RESPIRATORY PROTECTION (Specify type)**  
Dust respirator in compliance with OSHA Standard currently 29 CFR 1910.134

VENTILATION	LOCAL EXHAUST Follow OSHA Standard	SPECIAL
	MECHANICAL (General) Follow OSHA Standard	OTHER

**PROTECTIVE GLOVES**  
As required

**EYE PROTECTION**  
As required

**OTHER PROTECTIVE EQUIPMENT**  
As required to meet applicable OSHA Standards

## SECTION IX - SPECIAL PRECAUTIONS \*

**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING**  
Use dustless systems for handling, storage and clean-up so that exposure does not exceed OSHA Standard TLV.

**OTHER PRECAUTIONS**  
Practice Good Housekeeping; Maintain and test equipment; Suggest posting work areas where product is used, handled or stored warning employees that repeated inhalation of respirable dust for extended period of time may cause injury to lung

PAGE (27)

CPO 920-540

Form OS  
Rev. May

\* Note: Follow OSHA Standards as they may presently exist or as hereafter amended, modified, or adopted. See 29 CFR Part 1910

## I. RECOMMENDATIONS FOR A CRYSTALLINE SILICA STANDARD

The National Institute for Occupational Safety and Health (NIOSH) recommends that employee exposure to crystalline silica in the workplace be controlled by adherence to the following sections. The standard is designed to protect the health and safety of workers for up to a 10-hour workday, 40-hour workweek, over a working lifetime. Compliance with the standard should prevent adverse effects of crystalline silica on the health and safety of workers. The standard is measurable by techniques that are valid, reproducible, and available to industry and government agencies and are attainable with existing technology. The criteria and the standard recommended in this document will be subject to review and revision as necessary.

Crystalline silica, hereafter referred to in this document as free silica, is defined as silicon dioxide ( $\text{SiO}_2$ ). "Crystalline" refers to the orientation of  $\text{SiO}_2$  molecules in a fixed pattern as opposed to a nonperiodic, random molecular arrangement defined as amorphous. The three most common crystalline forms of free silica encountered in industry are quartz, tridymite, and cristobalite. Micro- and crypto-crystalline varieties of free silica, also included in the recommended standard, are composed of minute grains of free silica cemented together with amorphous silica and include tripoli, flint, chalcedony, agate, onyx, and silica flour. Other forms of free silica which, upon analysis, are found to have a crystalline structure as part of their composition are also subject to the recommended standard.

"Exposure to free silica" means exposure of the worker to an airborne concentration of free silica greater than half of the recommended environmental level in the workplace. Worker exposure at lower environmental concentrations will not require adherence to the following sections.

### Section 1—Environmental (Workplace Air)

#### (a) Concentration

Occupational exposure shall be controlled so that no worker is exposed to a time-weighted average (TWA) concentration of free silica greater than 50 micrograms per cubic meter of air (50  $\mu\text{g}/\text{cu m}$ ; 0.050  $\text{mg}/\text{cu m}$ ) as determined by a full-shift sample for up to a 10-hour workday, 40 hour workweek.

#### (b) Sampling, Calibration, and Analysis

Exposure to free silica shall be determined by a personal (breathing zone) sample.

Procedures for sampling, calibration of equipment, and analysis of environmental samples shall be as provided in Appendices I and II, or by methods shown to be equivalent in sensitivity, accuracy, and precision to the method specified.

### Section 2—Medical

(a) Medical examinations shall be made available to all workers subject to "exposure to free silica" prior

to employee placement and at least once each 3 years thereafter. Examinations shall include as a minimum:

(1) A medical and occupational history to elicit data on worker exposure to free silica and signs and symptoms of respiratory disease.

(2) A chest roentgenogram (posteroanterior 14" by 17" or 14" by 14") classified according to the 1971 ILO International Classification of Radiographs of Pneumoconioses. [ILO U/C International Classification of Radiographs of Pneumoconioses 1971, Occupational Safety and Health Series 22 (rev). Geneva, International Labor Office, 1972]

(3) Pulmonary function tests including forced vital capacity (FVC) and forced expiratory volume at 1 second ( $\text{FEV}_1$ ) to provide a baseline for evaluation of pulmonary function and to help determine the advisability of the workers using negative- or positive-pressure respirators. It should be noted that pulmonary function tests may vary significantly in various ethnic groups. For example, in black persons, the test values for the FVC should be divided by 0.85 before the percentage value is compared with normal figures.

(4) Body weight.

(5) Height.

(6) Age.

(7) Initial medical examinations for presently employed workers shall be offered within 6 months of the promulgation of a standard incorporating these recommendations.

#### (b) Medical Management

An employee with or without roentgenographic evidence of silicosis who has respiratory distress and/or pulmonary functional impairment should be fully evaluated by a physician qualified to advise the employee whether he should continue working in a dusty trade.

(c) These records shall be available to the medical representatives of the Secretary of Health, Education, and Welfare, of the Secretary of Labor, of the employee or former employee, and of the employer.

(d) Medical records shall be maintained for at least 30 years following the employee's termination of employment.

### Section 3 — Labeling (Posting)

(a) The following warning shall be posted to be readily visible at or near entrances or accessways to work areas where there is potential exposure to free silica.

WARNING!

FREE SILICA WORK AREA

Unauthorized Persons Keep Out

(b) The following warning shall be posted in readily visible locations in any work area where there is potential exposure to free silica.

**WARNING!**  
**FREE SILICA WORK AREA**  
 Avoid Breathing Dust  
 May Cause Delayed Lung Injury (Silicosis)

The posting required under sections 3(a) and 3(b) shall be printed both in English and in the predominant language of non-English-speaking workers, unless they are otherwise trained and informed of the hazardous areas. Illiterate workers shall receive such training.

(c) The following warning label, in addition to or in combination with labels required by other statutes, regulations, or ordinances, shall be affixed to all new materials, mixtures, and other products containing more than 5% free silica, or to their containers.

**WARNING!**  
**CONTAINS FREE SILICA**  
**DO NOT BREATHE DUST**  
 May Cause Delayed Lung Injury (Silicosis)

**Section 4 — Personal Protective Equipment  
 and Work Clothing**

Engineering controls shall be used to maintain free silica dust exposures below the prescribed limit. Subsection (a) shall apply whenever a variance from the standard recommended in Section 1 is granted under provisions of the Occupational Safety and Health Act, or in the interim period during the application for a

variance. When limits of exposure to free silica prescribed in paragraph (a) of Section 1 cannot be met by limiting the concentration of free silica in the work environment, an employer must utilize, as provided in subsection (a) of this section, a program of respiratory protection to effect the required protection of every worker exposed.

**(a) Respiratory Protection**

Appropriate respirators, as prescribed in Table I-1, shall be provided and used when a variance has been granted to allow respirators as a means of control of exposure to routine operations and while the application is pending. Administrative controls may also be used to reduce exposure. Respirators shall also be provided and used for nonroutine operations (occasional brief exposures above the environmental standard and for emergencies); however, for these instances a variance is not required but the requirements set forth below continue to apply. Appropriate respirators as described in Table I-1 shall only be used pursuant to the following requirements:

(1) For the purpose of determining the type of respirator to be used, the employer shall measure the atmospheric concentration of free silica in the workplace when the initial application for variance is made and thereafter whenever process, worksite, climate, or control changes occur which are likely to affect the free silica concentration. This requirement shall not apply when only atmosphere-supplying positive-pressure respirators are used. The employer shall ensure

**TABLE I-1**  
**REQUIREMENTS FOR RESPIRATOR USAGE AT**  
**CONCENTRATIONS ABOVE THE STANDARD**

Concentrations of Free Silica in Multiples of the Standard	Respirator Type*
Less than or equal to 5X	Single use (valveless type) dust respirator.
Less than or equal to 10X	Quarter or half mask respirator with replaceable dust filter or single use (with valve) dust respirator. Type C, demand type (negative pressure), with quarter or half mask facepiece.
Less than or equal to 100X	Full facepiece respirator with replaceable dust filter. Type C, supplied air respirator, demand type (negative pressure), with full facepiece.
Less than or equal to 200X	Powered air-purifying (positive-pressure) respirator, with replace- able applicable filter.**
Greater than 200X	Type C, supplied air respirator, continuous flow type (positive pres- sure), with full facepiece, hood, or helmet.

\*Where a variance has been obtained for abrasive blasting with silica sand, use only Type C continuous flow, supplied air respirator with hood or helmet.

\*\*An alternative is to select the standard high efficiency filter which must be at least 99.97% efficient against 0.3-micrometer dioctyl phthalate (DOP).

that no worker is exposed to free silica in excess of the standard because of improper respirator selection, fit, use, or maintenance.

(2) Employees experiencing breathing difficulty while using respirators shall be evaluated by a physician to determine the ability of the worker to wear a respirator.

(3) A respiratory protective program meeting the requirements of Section 1910.134 of the Occupational Safety and Health Standards shall be established and enforced by the employer. [29 CFR 1910.134 published in the Federal Register, vol 39, page 23671, dated June 27, 1974, as amended]

(4) The employer shall provide respirators in accordance with Table I-1 and shall ensure that the employee uses the appropriate respirator.

(5) Respiratory protective devices in Table I-1 shall be those approved either under 30 CFR 11, published March 25, 1972, or under the following regulations:

(A) Filter-type dust, fume, and mist respirators—30 CFR 14 (Bureau of Mines Schedule 21B)

(B) Supplied air respirator—30 CFR 12 (Bureau of Mines Schedule 19B)

(6) A respirator specified for use in higher concentrations of free silica may be used in atmospheres of lower concentrations.

(7) Employees shall be given instruction on the use of respirators assigned to them, on cleaning respirators, and on testing for leakage.

(b) Work Clothing

Where exposure to free silica is above the recommended environmental limit, work clothing shall be vacuumed before removal. Clothes shall not be cleaned by blowing or shaking.

Section 5 — Informing Employees of Hazards from Free Silica

(a) Each employee exposed to free silica shall be apprised at the beginning of his employment or assignment to a free silica exposure area of the hazards, relevant symptoms, appropriate emergency procedures, and proper conditions and precautions for safe use or exposure. The employee shall be instructed as to availability of such information including that prescribed in (b) below. Such information shall be kept on file and shall be accessible to the worker at each place of employment where free silica is involved in unit processes and operations. Workers shall also be advised of the increased risk of impaired health due to the combination of smoking and free silica dust exposure.

(b) Information, to the extent applicable to free silica, as specified in Appendix III shall be recorded on U.S. Department of Labor Form OSHA-20, "Material Safety Data Sheet" (see Appendix III) or on a similar form approved by the Occupational Safety and Health Administration, U.S. Department of Labor.

Section 6 — Work Practices and Control Procedures

(a) Substitution

(1) Wherever a hazard of silicosis can be elimi-

nated by a reasonable substitution of other less toxic materials for free silica, the substitution shall be made unless the silica sand has been so processed before use to make it nonrespirable such as by-washing to remove fine particles. Examples of such substitution are the use of alumina instead of flint for china placing in potteries, and the substitution of a quartz-free grit in abrasive blasting.

(2) Uncontrolled abrasive blasting with silica sand is such a severe silicosis hazard that special attention must be given to this problem. Silica sand, or other materials containing more than 1% free silica, should be prohibited as an abrasive substance in abrasive blasting cleaning operations.

(b) Dust Suppression

Moisture shall be added where such addition can substantially reduce the exposure to airborne respirable free silica dust.

(c) Ventilation

Where a local exhaust ventilation and collection system is used, it shall be designed and maintained to prevent the accumulation or recirculation of free silica dust into the workplace. The total system shall be inspected periodically for efficiency of operation. In addition, necessary measures shall be taken to ensure that discharge outdoors will not produce a health hazard to humans, animals, or plants.

(d) General Housekeeping

(1) Cleaning by blowing with compressed air or dry sweeping shall be avoided and dustless methods of cleaning such as vacuuming or washing down with water shall be substituted.

(2) Emphasis shall be placed upon cleanup of spills, preventive maintenance and repair of equipment, proper storage of materials, and collection of dusts containing free silica. Sanitation shall meet the requirements of 29 CFR 1910.141 as amended.

Section 7 — Monitoring and Recordkeeping Requirements

Work environments where it has been determined, on the basis of a professional industrial hygiene survey or by the judgment of a compliance officer, that the workers' exposure does not exceed half of the standard shall not be considered to have exposure to free silica. Records of these surveys, including the basis for concluding that air levels are at or below half of the standard shall be maintained. Surveys shall be repeated when any process change indicates a need for reevaluation or at the discretion of the compliance officer. Requirements set forth below apply to areas in which there is "exposure to free silica."

Employers shall maintain records of the workers' exposure to free silica based upon the following sampling and recording schedules:

(a) In all monitoring, samples representative of the exposure in the breathing zone of employees shall be collected. An adequate number of samples shall be collected to permit construction of a full-shift exposure for every operation or process. The minimum number of time-weighted average determinations for an operation or process shall be based on the number

of workers exposed as provided in Table I-2 or as otherwise indicated by a professional industrial survey.

(b) The first work environment (breathing zone) sampling shall be completed within 6 months of the promulgation of a standard incorporating these recommendations.

(c) Work environment (breathing zone) samples shall be taken within 30 days after installation of a new process or process changes.

TABLE I-2  
SAMPLING SCHEDULE

Number of Employees Exposed	Number of TWA Determinations
1-20	50% of the total number of workers
21-100	10 plus 25% of the excess over 20 workers
Over 100	30 plus 5% of the excess over 100 workers

(d) Samples shall be collected and analyzed at least every 6 months in accordance with Appendices I and II for the evaluation of the workers' exposure with respect to the recommended standard.

(e) When monitoring of the workers' exposure indicates a free silica concentration in excess of the recommended standard, suitable controls shall be initiated to reduce the exposure level to or below the recommended standard. In such cases monitoring shall continue at 30-day intervals until two consecutive surveys indicate the recommended standard is no longer exceeded. Periodic review and evaluation of environmental and medical data shall be performed to determine the effectiveness of control measures.

(f) Records shall be maintained of medical examinations and all sampling schedules to include the sampling and analytical methods, type of personal protection devices, if any, in use at the time of sampling and the determined free silica dust concentration. Records shall be maintained for at least 30 years following termination of workers' employment. Each employee shall be able to obtain information on his exposure.



U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

Form Approved  
OMB No. 44-R1387

# MATERIAL SAFETY DATA SHEET

July 27, 1979  
**RECEIVED**

Required under USDL Safety and Health Regulations for Ship Repairing,  
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

JAN 23 1985

## SECTION I

REC

MANUFACTURER'S NAME

Texas Mining Company

EMERGENCY TELEPHONE NO.

214/745-1831

ADDRESS (Number, Street, City, State, and ZIP Code)

1525 Elm Street, Suite 2420 Dallas, Texas 75201

CHEMICAL NAME AND SYNONYMS

Silica Dioxide (Silica)

TRADE NAME AND SYNONYMS

Frac Sand, Pulverized Sand

CHEMICAL FAMILY

Silica - Natural Mineral

FORMULA

SiO<sub>2</sub>

## SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS		None	BASE METAL		None
CATALYST		None	ALLOYS		None
VEHICLE		None	METALLIC COATINGS		None
SOLVENTS		None	FILLER METAL PLUS COATING OR CORE FLUX		None
ADITIVES		None	OTHERS		None
OTHERS		None			
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)
					None

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	2.65
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT VOLATILE BY VOLUME (%)	None
VAPOR DENSITY (AIR=1)	N/A	EVAPORATION RATE (_____ =1)	None
SOLUBILITY IN WATER	None		
APPEARANCE AND ODOR	Tan Sand, Buff Flour, No Odor - Inert		

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	None	FLAMMABLE LIMITS	Let	Uel
EXTINGUISHING MEDIA	Inert - Nonflammable			
SPECIAL FIRE FIGHTING PROCEDURES	None			
UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

### SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE As specified in OSHA Standard 1910.93, Table G-3 for Silica

EFFECTS OF OVEREXPOSURE Crystalline Quartz.

Repeated inhalation of dust over an extended period of time may result in injury to the lungs.

EMERGENCY AND FIRST AID PROCEDURES

None

### SECTION VI - REACTIVITY DATA

STABILITY

UNSTABLE

CONDITIONS TO AVOID

STABLE

X

INCOMPATIBILITY (Materials to avoid)

None

HAZARDOUS DECOMPOSITION PRODUCTS

None

HAZARDOUS  
POLYMERIZATION

MAY OCCUR

CONDITIONS TO AVOID

WILL NOT OCCUR

X

### SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

None

WASTE DISPOSAL METHOD

Any - not hazardous

### SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

Dust respirator in compliance with OSHA Standard 1910.134

VENTILATION

LOCAL EXHAUST

SPECIAL

Follow OSHA Standards

MECHANICAL (General)

OTHER

PROTECTIVE GLOVES

Not necessary

EYE PROTECTION

Normal for dust

OTHER PROTECTIVE EQUIPMENT

None

### SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

None other than above

OTHER PRECAUTIONS

None other than above



OIL CONSERVATION DIVISION  
RECEIVED

'91 OCT 24 AM 10 15

October 22, 1991

Mr Roger Anderson  
New Mexico Energy Minerals & Natural  
Resources Department  
Oil Conservation Division  
P O Box 2088  
Santa Fe NM 87504

RE: Wastewater Disposal - The Western Company of North America  
Hobbs, New Mexico Facility

Dear Mr. Anderson:

Enclosed is a photocopy of the wastewater analysis results for The Western Company of North America's Hobbs Facility. Please review this data and provide us the permission to dispose of the water at the Controlled Recovery Inc. facility.

If you have any questions, please call me.

Sincerely,

Benny Ho  
Environmental Specialist  
THE WESTERN COMPANY OF NORTH AMERICA

BH:ah

Enclosure

cc: Moon Ables, Hobbs  
Shermon Walters, Hobbs  
Kim Marsh, Controlled Recovery Inc.  
Hobbs Envl file

Hobbs

**NDRC LABORATORIES, INC.**

A member of the Inciscope Environmental Group

11155 South Main, Houston, Texas 77025 • (713) 661-8150 • FAX (713) 661-2661

BEAUMONT

DALLAS

HOUSTON

DATE RECEIVED : 27-SEP-1991

REPORT NUMBER : H91-2993-1

REPORT DATE : 21-OCT-1991

SAMPLE SUBMITTED BY : The Western Company  
ADDRESS : 515 Post Oak Blvd., Suite 915  
: Houston, TX 77027  
ATTENTION : Mr. Benny Ho

SAMPLE MATRIX : WASTEWATER  
ID MARKS : Wastewater

DATE SAMPLED : 26-SEP-1991  
ANALYSIS METHOD : EPA 8080

TCLP PESTICIDES		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Chlordane	0.014 mg/L	< 0.014 mg/L
Heptachlor	0.0010 mg/L	< 0.0010 mg/L
Heptachlor epoxide	0.0010 mg/L	< 0.0010 mg/L
Endrin	0.006 mg/L	< 0.006 mg/L
Lindane	0.004 mg/L	< 0.004 mg/L
Methoxychlor	0.18 mg/L	< 0.18 mg/L
Toxaphene	0.24 mg/L	< 0.24 mg/L

NDRC Laboratories, Inc.

*David R. Godwin*  
David R. Godwin, Ph.D.  
Chief Executive Officer



# NDRC LABORATORIES, INC.

A member of the Inchoape Environmental Group

11155 South Main, Houston, Texas 77025 • (713) 661-8150 • FAX (713) 661-2661

BEAUMONT

DALLAS

HOUSTON

DATE RECEIVED : 27-SEP-1991

REPORT NUMBER : H91-2993-1  
REPORT DATE : 21-OCT-1991

SAMPLE SUBMITTED BY : The Western Company  
ADDRESS : 515 Post Oak Blvd., Suite 915  
: Houston, TX 77027  
ATTENTION : Mr. Benny Ho

SAMPLE MATRIX : WASTEWATER  
ID MARKS : Wastewater

DATE SAMPLED : 26-SEP-1991  
ANALYSIS METHOD : EPA 8150

TCLP HERBICIDES		
TEST REQUESTED	DETECTION LIMIT	RESULTS
2,4-D	5.0 mg/L	< 5.0 mg/L
2,4,5-TP Silvex	0.5 mg/L	< 0.5 mg/L

NDRC Laboratories, Inc.

*David R. Godwin*  
David R. Godwin, Ph.D.  
Chief Executive Officer



# NDRC LABORATORIES, INC.

A member of the Inchoape Environmental Group

11155 South Main, Houston, Texas 77025 • (713) 661-8150 • FAX (713) 661-2661

BEAUMONT

DALLAS

HOUSTON

DATE RECEIVED : 27-SEP-1991

REPORT NUMBER : H91-2993-1  
REPORT DATE : 21-OCT-1991

SAMPLE SUBMITTED BY : The Western Company  
ADDRESS : 515 Post Oak Blvd., Suite 915  
Houston, TX 77027  
ATTENTION : Mr. Benny Ho

SAMPLE MATRIX : WASTEWATER  
ID MARKS : Wastewater

DATE SAMPLED : 26-SEP-1991  
ANALYSIS METHOD : EPA 8240

TCCLP VOLATILE ORGANICS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Benzene	0.03 mg/L	< 0.03 mg/L
Carbon tetrachloride	0.03 mg/L	< 0.03 mg/L
Chlorobenzene	0.03 mg/L	< 0.03 mg/L
Chloroform	0.03 mg/L	< 0.03 mg/L
1,4-Dichlorobenzene	0.03 mg/L	< 0.03 mg/L
1,2-Dichloroethane	0.03 mg/L	< 0.03 mg/L
1,1-Dichloroethene	0.03 mg/L	< 0.03 mg/L
Methyl ethyl ketone	0.15 mg/L	0.68 mg/L
Tetrachloroethene	0.03 mg/L	< 0.03 mg/L
Trichloroethene	0.03 mg/L	< 0.03 mg/L
Vinyl chloride	0.06 mg/L	< 0.06 mg/L

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
1,2-Dichloroethane-d4(SS)	50.0 µg/L	104 %
Toluene-d8(SS)	50.0 µg/L	96.9 %
Bromofluorobenzene(SS)	50.0 µg/L	86.9 %

NDRC Laboratories, Inc.

David R. Godwin, Ph.D.  
Chief Executive Officer



# NDRC LABORATORIES, INC.

A member of the Inchoape Environmental Group

11155 South Main, Houston, Texas 77025 • (713) 661-8150 • FAX (713) 661-2661

BEAUMONT

DALLAS

HOUSTON

DATE RECEIVED : 27-SEP-1991

REPORT NUMBER : H91-2993-1  
REPORT DATE : 21-OCT-1991

SAMPLE SUBMITTED BY : The Western Company  
ADDRESS : 515 Post Oak Blvd., Suite 915  
: Houston, TX 77027  
ATTENTION : Mr. Benny Ho

SAMPLE MATRIX : WASTEWATER  
ID MARKS : Wastewater

DATE SAMPLED : 26-SEP-1991  
ANALYSIS METHOD : EPA 8270

TCLP EXTRACTABLE ORGANICS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
o-Cresol	0.2 mg/L	< 0.2 mg/L
m-Cresol	0.2 mg/L	< 0.2 mg/L
p-Cresol	0.2 mg/L	< 0.2 mg/L
2,4-Dinitrotoluene	0.1 mg/L	< 0.1 mg/L
Hexachlorobenzene	0.1 mg/L	< 0.1 mg/L
Hexachlorobutadiene	0.1 mg/L	< 0.1 mg/L
Hexachloroethane	0.1 mg/L	< 0.1 mg/L
Nitrobenzene	0.1 mg/L	< 0.1 mg/L
Pentachlorophenol	0.5 mg/L	< 0.5 mg/L
Pyridine	0.1 mg/L	< 0.1 mg/L
2,4,5-Trichlorophenol	0.1 mg/L	< 0.1 mg/L
2,4,6-Trichlorophenol	0.1 mg/L	< 0.1 mg/L

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
Nitrobenzene-d5(SS)	50.0 µg/L	68.7 %
2-Fluorobiphenyl(SS)	50.0 µg/L	103 %
Terphenyl-d14(SS)	50.0 µg/L	69.4 %
Phenol-d6(SS)	50.0 µg/L	36.8 %



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BEAUMONT

DALLAS

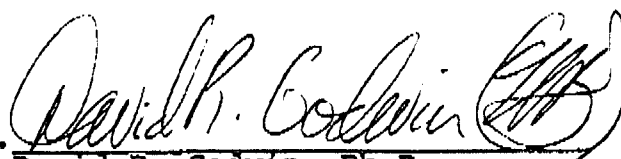
HOUSTON

REPORT NUMBER : H91-2993-1  
ANALYSIS METHOD : EPA 8270

PAGE 2

QUALITY CONTROL DATA		
SURROGATE COMPOUND	SPIKE LEVEL	SPIKE RECOVERED
2-Fluorophenol (SS)	50.0 $\mu\text{g/L}$	64.3 %
2,4,6-Tribromophenol (SS)	50.0 $\mu\text{g/L}$	56.9 %

NDRC Laboratories, Inc.

  
David R. Godwin, Ph.D.  
Chief Executive Officer





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11155 South Main, Houston, Texas 77025 • (713) 661-8150 • FAX (713) 661-2661

BEAUMONT

DALLAS

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ADDRESS : 515 Post Oak Blvd., Suite 915  
: Houston, TX 77027  
ATTENTION : Mr. Benny Ho

SAMPLE MATRIX : WASTEWATER  
ID MARKS : Wastewater

DATE SAMPLED : 26-SEP-1991

TCLP METALS		
TEST REQUESTED	DETECTION LIMIT	RESULTS
Silver	0.01 mg/L	< 0.01 mg/L
Arsenic	0.5 mg/L	< 0.5 mg/L
Barium	1 mg/L	< 1 mg/L
Cadmium	0.1 mg/L	< 0.1 mg/L
Chromium	0.5 mg/L	< 0.5 mg/L
Mercury	0.001 mg/L	< 0.001 mg/L
Lead	0.2 mg/L	< 0.2 mg/L
Selenium	0.5 mg/L	< 0.5 mg/L

NDRC Laboratories, Inc.

*David R. Godwin*  
David R. Godwin, Ph.D.  
Chief Executive Officer

**ROBERTS/SCHORNICK**  
**& ASSOCIATES, INC.**

**Environmental  
Consultants**

Hazardous Waste Management

Underground Tank Management

Wastewater Treatment Design

Industrial/Solid Waste Management

Groundwater Investigation/Monitoring

Hydrocarbon Recovery/Remediation

Environmental Audits

Environmental Permit Application Preparation

RCRA Compliance Studies

Closure & Remedial Action

RCRA Safety Training

3700 West Robinson  
Suite 200  
Norman, Oklahoma 73072  
405/321-3895  
FAX No. 405/364-1708

September 5, 1991

Mr. Roger C. Anderson  
State of New Mexico  
Energy, Minerals and Natural  
Resources Department  
Oil Conservation Division  
Post Office Box 2088  
State Land Office Building  
Santa Fe, New Mexico 87504

Re: Letter Requesting Information  
Discharge Plan GN-72  
Hobbs Service Facility  
Lea County, New Mexico

Dear Mr. Anderson:

In accordance with your letter dated August 6, 1991, The Western Company of North America has retained Roberts/Schornick and Associates, Inc. (RSA) to conduct a soil and groundwater investigation at the Hobbs Facility.

The attached Technical Work Plan outlines proposed actions to determine if a release has occurred and, if so, to determine the extent and concentration of the release. Upon completion of the investigation, a comprehensive report detailing the results of the investigation and any corrective action that may be necessary will be forwarded to your office.

If you should have any questions or comments, please feel free to phone me.

Sincerely,

*Herschel Roberts*

Herschel Roberts  
Principal

HR/te

cc: Benny Ho

RECEIVED

SEP 06 1991

OIL CONSERVATION DIV.  
SANTA FE

**RSA**



STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION

BRUCE KING  
GOVERNOR

August 6, 1991

POST OFFICE BOX 2088  
STATE LAND OFFICE BUILDING  
SANTA FE, NEW MEXICO 87504  
(505) 827-5800

CERTIFIED MAIL  
RETURN RECEIPT NO. P-757-737-748

Mr. Ron McKeel  
The Western Company of North America  
515 Post Oak Boulevard  
Suite 915  
Houston, Texas 77027

RE: Discharge Plan GW-72  
Hobbs Service Facility  
Lea County, New Mexico

Dear Mr. McKeel:

The Oil Conservation Division (OCD) has received the discharge plan application, dated June 18, 1991, for the above referenced facility. The following comments and requests for additional information are based on review of the application and observations from the February 7, 1991 OCD site inspection:

1. Section IX: Proposed Modification

- a) Wastewater - The proposed monitor wells around the below grade wastewater tanks are approvable only if a definitive demonstration can be made that any fluid from any leak at any point in the tank will be transmitted to one of the wells. Due to the extensive fracturing of the caliche in the area, the demonstration must include the possibility of a leak in the bottom where there is a possibility of the fluids intercepting a fracture and moving vertically to the water table outside the vicinity of the monitor wells. If this demonstration cannot be made, approved secondary containment will be required with proper leak detection between the tank and secondary containment. Please submit the plans and specifications for the option you choose for OCD approval prior to beginning construction.
- b) Drainage - WCNA proposes to conduct a study to obtain an alternative to closing the drainage culvert. Submit a reasonable timetable to complete this study.

2. Section XII: Geological Hydrological Evidence

- a) A copy of the well record on file in the New Mexico State Engineer Office is enclosed for inclusion in your records. This log is to be included in your application.

3. Miscellaneous:

- a) Spill reporting: The notification of spills and leaks at the facility will be pursuant to OCD Rule 116 (enclosed). All spills will be cleaned up immediately with any wastes tested and disposed of at an OCD approved disposal facility.
- b) Waste disposal: All wastes generated at the facility will be disposed of at an OCD approved disposal facility after testing. Those wastes that test as hazardous by Toxic Constituent Leaching Procedure (TCLP) will be disposed of at an approved hazardous waste disposal site. Those wastes that are shown to be nonhazardous will be disposed of at an OCD approved facility. This may include a class I disposal well or a surface waste disposal facility. Class II produced water disposal facilities are not authorized by USEPA UIC regulations to accept service company wastes except for wastewater approved for injection in a secondary recovery project.
- c) Below grade sumps: A number of waste sumps were noted at the facility. Those sumps not equipped with leak detection are required to be cleaned and visually inspected for integrity on an annual basis. If the sumps are repaired or replaced, leak detection will be incorporated in the design. Construction designs must be submitted to the OCD for approval prior to beginning construction.

4. Contamination Investigation:

- a) The above ground diesel and gasoline tanks inside the retainer wall next to the fuel island show evidence of extensive spillage. Submit plans and completion timetable for total containment of these tanks. Include in the plan an investigation and cleanup chronology to determine the extent of soil contamination due to the spills from these tanks and spills and leaks from the fueling island.
- b) The sample analysis from the fresh water well (enclosed) obtained during the OCD site inspection shows the aquifer has been contaminated. Within thirty (30) days of receipt of this letter submit a plan for an investigation into the sources and extent of the contamination of the ground water.

Mr. Ron McKeel

August 6, 1991

-3-

Submission of the requested information and commitments will allow review of the application to continue.

If you have any questions, please call me at (505) 827-5884.

Sincerely,

A handwritten signature in cursive script, reading "Roger C. Anderson". The signature is fluid and extends to the right.

Roger C. Anderson  
Environmental Engineer

RCA/sl

Enclosures

cc: OCD Hobbs Office

NOTICE OF PUBLICATION

STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations, the following discharge plan applications and renewal applications have been submitted to the Director of the Oil Conservation Division, State Land Office Building, P. O. Box 2088, Santa Fe, New Mexico 87504-2088, Telephone (505) 827-5800:

(GW-85) - Union Oil Company of California, DBA UNOCAL, Glen O. Papp, District Production Engineer, 3300 North Butler, Suite 200, Farmington, New Mexico 87401, has submitted a discharge plan application for its Navajo Compressor Station located in the NW/4, NW/4, Section 7, Township 25 North, Range 10 West, NMPM, San Juan County, New Mexico. Approximately 4 gallons per day of washdown water and natural gas liquids will be collected in a double lined pond equipped with leak detection prior to disposal at an OCD approved offsite disposal facility. Groundwater most likely to be affected by an accidental discharge is at a depth in excess of 100 feet with a total dissolved solids concentration of approximately 700 mg/l. The discharge plan addresses how spills, leaks and other accidental discharges to the surface will be managed.

(GW-86) - BCO, Inc., Elizabeth B. Keeshan, President, 135 Grant, Santa Fe, New Mexico, 87501, has submitted a discharge plan application for its North Lybrook Compressor Station located in the SE/4 SE/4, Section 2, Township 23 North, Range 7 West, NMPM, Rio Arriba County, New Mexico. Approximately 14 gallons per day of wastewater will be stored in an above-ground fiberglass tank prior to disposal in an OCD approved offsite disposal facility. Groundwater most likely to be affected by an accidental discharge is at a depth of approximately 225 feet with a total dissolved solids concentration of approximately 1470 mg/l. The discharge plan addresses how spills, leaks and other accidental discharges to the surface will be managed.

(GW-75) - HOMCO International, Inc., Robert J. Meddler, Director, Environmental and Safety, P. O. Box 2442, Houston, Texas 77252, has submitted a discharge plan application for its Hobbs service facility located in Section 29, Township 18 South, Range 38 East, NMPM, 3000 West County Road, Lea County, New Mexico. Approximately 800 gallons per day of wastewater are presently stored in an above ground storage tank prior to disposal in an OCD approved offsite disposal facility. Proposed modifications include the installation of a wastewater recycling system. Unrecyclable wastes will be stored in below grade concrete sump equipped with leak detection prior to disposal at an OCD approved offsite disposal facility. Groundwater most likely to be affected by an accidental discharge is in the Ogallala aquifer at a depth of 55 feet with a total dissolved solids concentration ranging from 300 mg/l to 700 mg/l. The discharge plan addresses how spills, leaks and other accidental discharges to the surface will be managed.

(GW-72) - The Western Company of North America, Ron McKeel, Director, Real Estate and Facilities, 515 Post Oak Blvd., Suite 915, Houston, Texas 77027, has submitted a discharge plan application for its Hobbs service facility located in the NE/4, Section 20, Township 18 South, Range 38 East, NMPM, Lea County, New Mexico. Approximately 3350 gallons per day of wastewater with a total dissolved solids concentration of 3942 mg/l is stored in below grade fiberglass tanks prior to disposal at an OCD approved offsite disposal facility. Groundwater most likely to be affected by an accidental discharge is in the Ogallala aquifer at a depth of approximately 55 feet with a total dissolved solids concentration of ranging from 300 mg/l to 700 mg/l. The discharge plan addresses how spills, leaks and other accidental discharges to the surface will be managed.

(GW-76) - Star Tool Company, David T. Taylor, Vice President, P. O. Box 2008, Hobbs, New Mexico 88240, has submitted a discharge plan application for its Hobbs service facility located in the NE/4 NW/4, Section 32, Township 18 South, Range 38 East, NMPM, Lea County, New Mexico. Approximately 10 gallons per day of wastewater are currently stored in unlined pits prior to disposal at an OCD approved offsite disposal facility. Proposed modifications include the installation of a wastewater recycling system. Unrecyclable wastes will be collected in above ground tanks prior to disposal at an OCD approved offsite disposal facility. Groundwater most likely to be affected by an accidental discharge is at a depth of 44 feet with a total dissolved solids concentration ranging from 300 mg/l to 700 mg/l. The discharge plan addresses how spills, leaks and other accidental discharges to the surface will be managed.

(GW-73) - Dowell Schlumberger, Inc., M. L. Wood Jr., Environmental Coordinator, 1105 West Bender Street, Hobbs, New Mexico 88240, has submitted a discharge plan application for its Hobbs service facility located in the NE/4 NE/4, Section 28, Township 18 South, Range 38 East, NMPM, Lea County, New Mexico. Approximately 2200 gallons per day of wastewater is stored in above grade tanks and lined pits prior to disposal at an OCD approved offsite disposal facility. Proposed modifications include the installation of a wastewater recycling system and closure of all surface impoundments. Wastes not recyclable will be disposed of at an OCD approved offsite disposal facility. Groundwater most likely to be affected by an accidental discharge is at a depth of 68 feet with a total dissolved solids concentration ranging from 300 mg/l to 700 mg/l. The discharge plan addresses how spills, leaks and other accidental discharges to the surface will be managed.

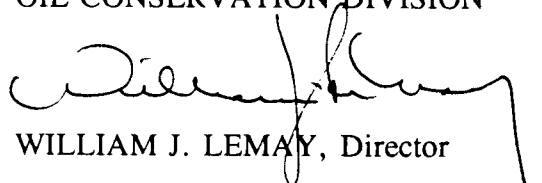
(GW-14) - Navajo Refining Company, David G. Griffin, Superintendent, Environmental Affairs, P. O. Box 159, Artesia, New Mexico 88210, has submitted a discharge plan renewal application for its Lovington Refinery located in the SW/4, Section 31, Township 16 South, Range 37 East; the SE/4 of Section 36, Township 16 South, Range 36 East; the NW/4 of Section 6, Township 17 South, Range 37 East; and the NE/4 of Section 1, Township 17 South, Range 36 East, NMPM, Lea County, New Mexico. Approximately 175,000 gallons per day of process wastewater with a total dissolved solids concentration of 1300 mg/l will undergo treatment in a USEPA regulated pretreatment unit prior to discharge to the City of Lovington sanitary sewer system. Groundwater most likely to be affected by an accidental discharge is at a depth ranging from 60 feet to 80 feet with a total dissolved solids concentration of 450 mg/l. The discharge plan addresses how spills, leaks and other accidental discharges to the surface will be managed.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. The discharge plan application may be viewed at the above address between 8:00 a.m. and 5:00 p.m., Monday through Friday. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him and public hearing may be requested by any interested person. Requests for public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed plan based on information available. If a public hearing is held, the Director will approve or disapprove the proposed plan based on information in the plan and information submitted at the hearing.

GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 5th day of August, 1991.

STATE OF NEW MEXICO  
OIL CONSERVATION DIVISION



WILLIAM J. LEMAY, Director

S E A L



AFFIDAVIT OF PUBLICATION

No. 28175

STATE OF NEW MEXICO,  
County of San Juan:

CHRISTINE HILL being duly  
sworn, says: "That she is the  
NATIONAL AD MANAGER of  
The Farmington Daily Times, a daily  
newspaper of general circulation  
published in English in Farmington,  
said county and state, and that the  
hereto attached LEGAL NOTICE

was published in a regular and entire  
issue of the said Farmington Daily  
Times, a daily newspaper duly quali-  
fied for the purpose within the  
meaning of Chapter 167 of the 1937  
Session Laws of the State of New  
Mexico for ONE consecutive  
(days) (weeks) on the same day as  
follows:

First Publication FRIDAY, AUGUST 16, 1991

Second Publication \_\_\_\_\_

Third Publication \_\_\_\_\_

Fourth Publication \_\_\_\_\_

and that payment therefore in the  
amount of \$101.69 has been made.

Christine Hill

Subscribed and sworn to before me  
this 30th day of  
AUGUST, 1991.

Connie Andrae  
Notary Public, San Juan County,  
New Mexico

My Comm expires: JULY 3, 1993

*RA*

COPY OF PUBLICATI

NOTICE OF PUBLICATION  
STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL  
RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION

Notice is hereby given that pursuant to New Mexico  
Water Quality Control Commission Regulations, the  
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Telephone (505)827-5800:

(GW-85) - Union Oil Company of California, DBA  
UNOCAL, Glen O. Papp, District Production Engi-  
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application for its Navajo Compressor Station  
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New Mexico. Approximately 4 gallons per day of  
washdown water and natural gas liquids will be  
collected in a double lined pond equipped with leak  
detection prior to disposal at an OCD approved  
offsite disposal facility. Groundwater most likely to  
be affected by an accidental discharge is at a depth  
in excess of 100 feet with a total dissolved solids  
concentration of approximately 700 mg/l. The dis-  
charge plan addresses how spills, leaks and other  
accidental discharges to the surface will be man-  
aged.

(GW-86) - BCO, Inc., Elizabeth B. Keeshan, Presi-  
dent, 135 Grant, Santa Fe, New Mexico, 87501, has  
submitted a discharge plan application for its North  
Lybrook Compressor Station located in the SE/4 SE  
/4, Section 2, Township 23 North, Range 7 West,  
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stored in an above-ground fiberglass tank prior to  
disposal in an OCD approved offsite disposal fac-  
ility. Groundwater most likely to be affected by an  
accidental discharge is at a depth of approximately  
225 feet with a total dissolved solids concentration  
of approximately 1470 mg/l. The discharge plan  
addresses how spills, leaks and other accidental  
discharges to the surface will be managed.

(GW-75) - HOMCO International, Inc., Robert J.  
Meddler, Director, Environmental and Safety, P.O.  
Box 2442, Houston, Texas 77252, has submitted a  
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facility located in Section 29, Township 18 South,  
Range 38 East, NMPM, 3000 West County Road,  
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an above ground storage tank prior to disposal in an  
OCD approved offsite disposal facility. Proposed  
modifications include the installation of a waste-  
water recycling system. Unrecyclable wastes will be  
stored in below grade concrete sump equipped with  
leak detection prior to disposal at an OCD approved  
offsite disposal facility. Groundwater most likely to  
be affected by an accidental discharge is in the  
Ogallala aquifer at a depth of 55 feet with a total  
dissolved solids concentration ranging from 300 mg  
/l of 700 mg/l. The discharge plan addresses how  
spills, leaks and other accidental discharges to the  
surface will be managed.

(GW-72) - The Western Company of North America,  
Ron McKeel, Director, Real Estate and Facilities,  
515 Post Oak Blvd., Suite 915, Houston, Texas  
77027, has submitted a discharge plan application  
for its Hobbs service facility located in the NE/4,  
Section 20, Township 18 South, Range 28 East,  
NMPM, Lea County, New Mexico. Approximately  
3350 gallons per day of waste water with a total  
dissolved solids concentration of 3942 mg/l is stored  
in below grade fiberglass tanks prior to disposal at  
an OCD approved offsite disposal facility.  
Groundwater most likely to be affected by an  
accidental discharge is in the Ogallala aquifer at a  
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will be managed.

(GW-76) - Star Tool Company, David T. Taylor, Vice-  
President, P.O. Box 2008, Hobbs, New Mexico  
88240, has submitted a discharge plan application  
for its Hobbs service facility located in the NE/4 NW  
/4, Section 32, Township 18 South, Range 38 East,  
NMPM, Lea County, New Mexico. Approximately 10  
gallons per day of wastewater are currently stored  
in unlined pits prior to disposal at an OCD approved  
offsite disposal facility. Proposed modifications in-  
clude the installation of a wastewater recycling  
system. Unrecyclable wastes will be collected in  
above ground tanks prior to disposal at an OCD  
approved offsite disposal facility. Groundwater  
most likely to be affected by an accidental discharge  
is at a depth of 44 feet with a total dissolved solids  
concentration ranging from 300 mg/l to 700 mg/l.  
The discharge plan addresses how spills, leaks and  
other accidental discharges to the surface will be  
managed.

(GW-73) - Dowell Schlumberger, Inc., M. L. Wood  
Jr., Environmental Coordinator, 1105 West  
Bender Street, Hobbs, New Mexico 88240, has  
submitted a discharge plan application for its Hobbs  
service facility located in the NE/4 NE/4, Section 28,  
Township 18 South, Range 38 East, NMPM, Lea  
County, New Mexico. Approximately 2200 gallons  
per day of wastewater is stored in above grade tanks  
and lined pits prior to disposal at an OCD approved  
offsite disposal facility. Proposed modifications in-  
clude the installation of a wastewater recycling  
system and closure of all surface impoundments.



**The Western Company  
of North America**

**Real Estate and Facilities Construction Department  
Houston, Texas**

DISCHARGE PLAN  
APPLICATION FOR  
OIL FIELD SERVICE FACILITIES

THE WESTERN COMPANY OF NORTH AMERICA  
HOBBS, NEW MEXICO FACILITY

OIL CONSERVATION DIVISION  
RECEIVED  
JUN 21 1991  
AM 11 22

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II	OPERATOR
III	LOCATION
IV	OWNER
V	FACILITY DESCRIPTION & DIAGRAM
VI	MATERIAL STORED
VII & VIII	CURRENT WASTE STREAM AND TREATMENT PROCEDURE
IX	PROPOSED MODIFICATION
X	INSPECTION PLAN
XI	CONTINGENCY PLAN
XII	GEOLOGICAL/HYDROLOGICAL EVIDENCE

SECTIONS I, II, III & IV

## I TYPE OF OPERATION

The Western Company of North America, Hobbs, New Mexico Facility provides cementation, acidizing and high pressure pumping services for oil and gas wells.

## II OPERATOR: The Western Company of North America

ADDRESS: 515 Post Oak Blvd., Ste. 915  
Houston, TX 77027-7407

CONTACT PERSON: Benny Ho

PHONE: 713/629-2867

## III LOCATION: Northeast quarter of Section 20, Township 18 South, Range 38 Est, N.M.P.M. Lea County, New Mexico

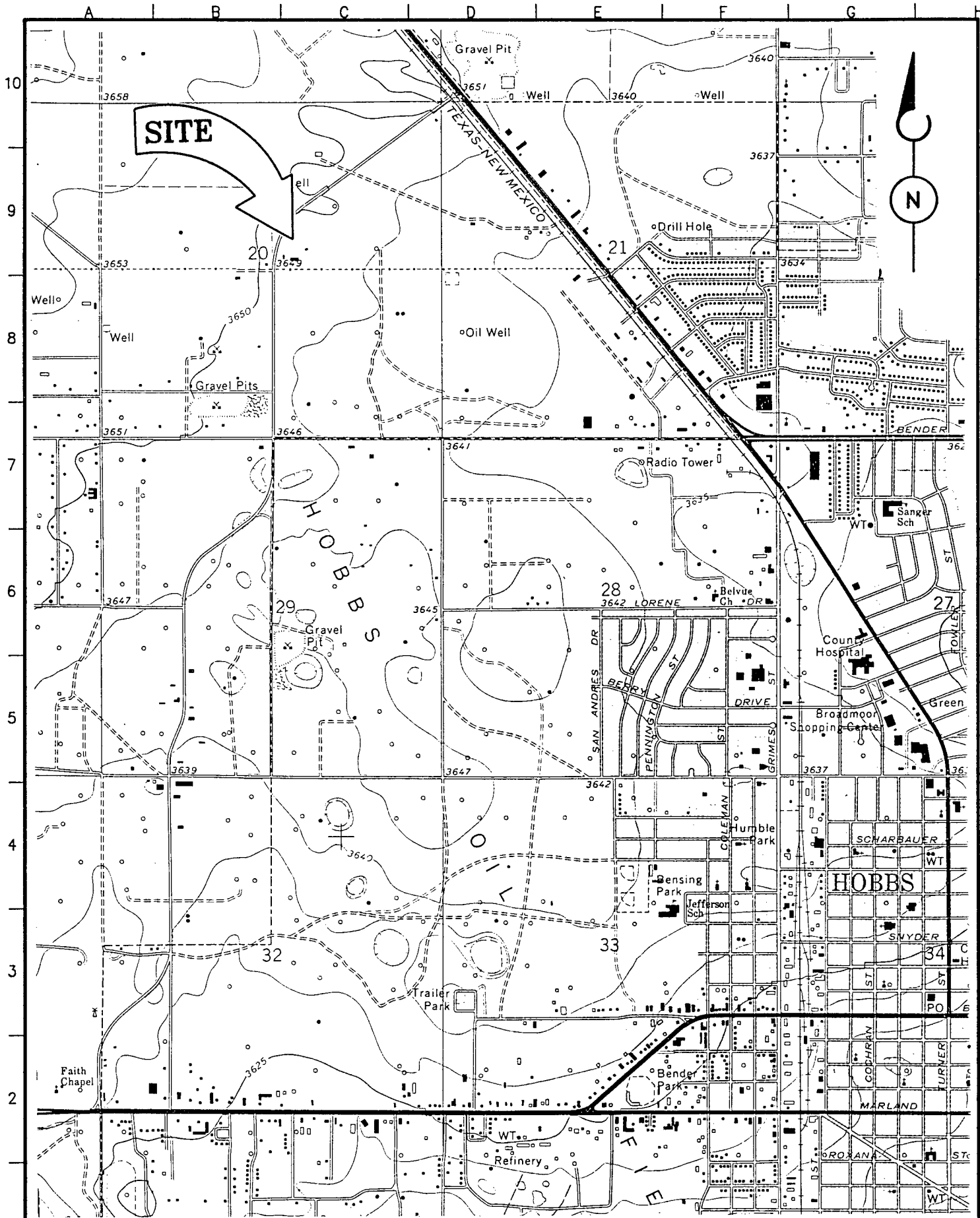
TOPOGRAPHIC MAP: Figure III.1

## IV OWNER: The Western Company of North America

ADDRESS: 515 Post Oak Blvd., Ste. 915  
Houston, TX 77027-7407  
713/629-2867

FIGURE III.1

LOCATION - TOPOGRAPHIC MAP



**BC** Brown and Caldwell  
Consultants  
DALLAS-HOUSTON, TEXAS

0 1000 2000



SCALE: 1" = 2000'

DRAWN BY: DHD DATE 2-6

CHK'D BY: LB DATE 2-7

APPROVED: SAM DATE

TITLE

VICINITY MAP

CLIENT

WESTERN CO. OF NORTH AMERICA

SITE LOCATION

HOBBS, NEW MEXICO

DATE

2-6-91

PROJECT NUMBER

4579-09

FIGURE NUMBER

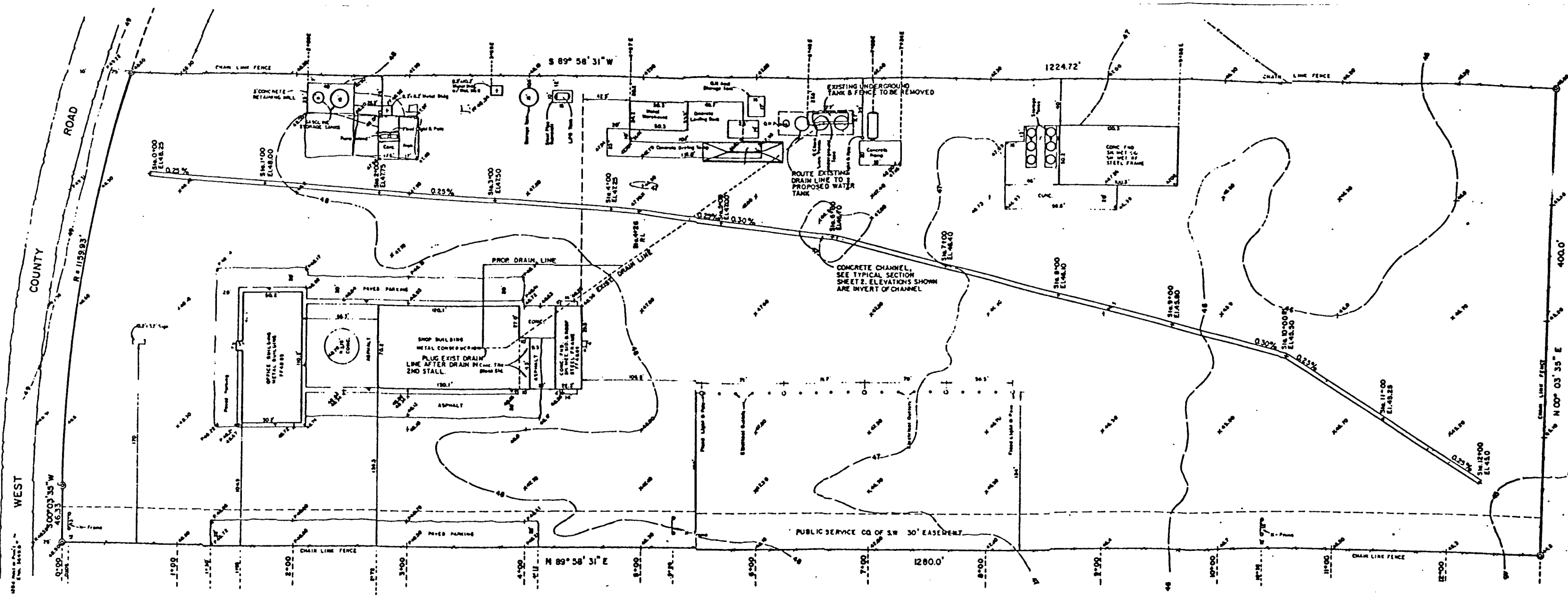
1

REV.	DESCRIPTION	BY	DATE



SECTION V  
FACILITY DESCRIPTION & DIAGRAM

The Western Company of North America (WCNA) provides cementing, acidizing and high pressure pumping services to oil and gas well operators in the Hobbs, New Mexico area. The principal materials stored and utilized in the servicing operations at the wellhead include: hydrochloric acid, cement, sand and liquid and dry chemical additives. Material Safety Data Sheets (MSDS) for the materials used by WCNA at the Hobbs Facility are included in this section.



SECTION VI  
MATERIALS STORED



**Industrial Hygiene and Toxicology Data Sheet**  
**Industrial Hygiene And Toxicology Division**  
**Environmental Conservation And Toxicology Department**  
Form U-1967-C (8-78)

100109  
This IHT & SDS is sent either  
as a revision or new Amoco  
product for your records.  
J.B. Dobbs - Prod. Dev. Supv.

**Section I**

Trade Name and Synonyms <b>AMOCO A-SOL</b>		Emergency Phone Number <b>(312) 856 - 5371</b>
Manufacturer's Name <b>Amoco Chemicals Corporation</b>		Warning Statement <b>WARNING! FLAMMABLE CONTAINS ISOPROPANOL CAN CAUSE EYE IRRITATION.</b>
Address <b>200 East Randolph Drive, Chicago, Illinois 60601</b>		
Product Identification <b>MISCIBLE SOLVENT</b>		DOT Classification <b>FLAMMABLE LIQUID, N.O.S.</b>
CAS Number <b>—</b>	Formula <b>—</b>	
PA Number <b>—</b>		

**Section II - Important Components**

**ISOPROPANOL**

Permissible Exposure Concentration

**NOT DETERMINED FOR PRODUCT; FOR ISOPROPANOL TWA 400 ppm (SKIN)**

**Section III - Health Effects Of Exposure**

Eye	<b>CAN CAUSE IRRITATION.</b>
Skin	<b>PROLONGED OR REPEATED SKIN CONTACT CAN CAUSE DERMATITIS.</b>
Inhalation	<b>IRRITATION. CAN BE NARCOTIC IN HIGH CONCENTRATIONS.</b>
Ingestion	<b>CAN BE HARMFUL IF SWALLOWED.</b>

**Section IV - Emergency And First Aid Procedures**

Contact	<b>FLUSH EYES WITH WATER FOR 15 MINUTES. GET MEDICAL ATTENTION IF IRRITATION PERSISTS.</b>
Contact	<b>FLUSH EXPOSED SKIN WITH WATER.</b>
Inhalation	<b>IF ADVERSE EFFECTS OCCUR, REMOVE TO UNCONTAMINATED AREA, GET MEDICAL ATTENTION.</b>
Ingestion	<b>INDUCE VOMITING; GET MEDICAL ATTENTION.</b>

**Section V - Personal Protection Information**

AMOCO A-SOL

Eye  
EYE PROTECTION IF CONTACT IS LIKELY.

Skin  
PROTECTIVE GLOVES TO AVOID REPEATED OR PROLONGED CONTACT.

Respiratory  
IF VENTILATION IS INADEQUATE, USE ORGANIC VAPOR RESPIRATOR APPROVED BY MSHA-NIOSH.

Ventilation (Type Required) GENERAL AREA

**Section VI - Fire Protection Information**

Flash Point (Method) 60°F (16°C) ASTM D-56-77 Autoignition Temperature N/A

Flammable Limits (by Volume in Air) Upper N/A Lower N/A

Extinguishing Media  
DRY CHEMICAL (B-C), CARBON DIOXIDE, WATER FOG, ALCOHOL FOAM. WATER MAY BE INEFFECTIVE.

Unusual Fire and Explosion Hazards  
NONE

**Section VII - Physical Properties And Reactivity Data**

Boiling Point (°F) N/A Vapor Pressure (mm Hg 20 °C) N/A

Melting Point (°F) — Vapor Density (Air = 1) N/A pH 6-7

Specific Gravity (Water = 1) 0.802 Solubility in Water APPRECIABLE

Viscosity N/A

Appearance and Odor COLORLESS LIQUID; ODOR OF ALCOHOL

Hazardous Polymerization Occurs Does NOT Occur X

Products Formed When Subjected to High Temperature or Combustion  
N/A

Materials to Avoid N/A

**Section VIII - Storage and Environmental Protection**

Storage Requirements  
STORE IN A FLAMMABLE LIQUIDS STORAGE AREA.

Procedures In Case of Breakage or Leakage SHUT OFF ALL SOURCES OF IGNITION; WATER SPRAY CAN BE USED TO DISPERSE VAPORS. CONTAIN ON AN ABSORBENT MATERIAL.

Waste Disposal  
CONTROLLED INCINERATION UNLESS DIRECTED OTHERWISE BY APPLICABLE ORDINANCES.

Biodegradability ☒ Yes ☐ No ☐ Unknown Bioaccumulation ☐ Yes ☒ No ☐ Unknown

**Section IX - Marketing And Use Regulated By (Specific Regulations)**

☐ FDA ☐ USDA ☐ Other (Specify)

**Section X - Comments**

Label copy:

WARNING! FLAMMABLE.  
CONTAINS ISOPROPANOL.  
CAN CAUSE EYE IRRITATION.

Avoid eye contact and repeated or prolonged skin contact.

Use with adequate ventilation.

Keep away from heat, sparks and open flame.

FOR EYES: In case of contact, flush eyes with water for 15 minutes. Get medical attention if irritation persists.

FOR SKIN: In case of contact, flush exposed skin with water.

HANDLING: Eye protection if contact is likely. Protective gloves to avoid repeated or prolonged contact.

- ATTENTION -

After this container has been emptied, it may contain flammable and toxic liquid or vapors; observe all warnings and precautions listed for this product. Do not cut, puncture or weld on or near this container.

N/A - Data not available.

Information Supplied By

Signature

Title

Revised

Paul D. Halley

Director, Industrial Hygiene and Toxicology

March 26, 1980

100109

# Explanation of Terms Used on the Industrial Hygiene and Toxicology Data Sheet

## Section I

### Trade Name & Synonyms

The name under which the product is marketed and the common commercial name of the product.

### Product Identification

The chemical or generic name of single elements and compounds or for compounded products and mixtures, the general type of product, e.g., calcium complex grease, motor oil, polymer, sulfonate, surfactant, etc.

### CAS Number

The Chemical Abstracts Registry number, if applicable.

### EPA Number

The code number assigned by the Environmental Protection Agency, if applicable.

### Formula

The chemical formula for single elements or compounds.

### DOT Classification

The appropriate classification as determined by the regulations of the Office of Hazardous Materials, Department of Transportation.

## Section II

### Important Components

The major component as well as any minor one(s) having potential for harm which are considered when evaluating the product.

### Permissible Exposure Concentration

Indicates Threshold Limit Value (TLV), any limit established by a governmental regulatory agency, or an estimate if none have been established.

## Section III Health Effects of Exposure

Possible health hazards as derived from human observation, animal studies or from the results of studies with similar products.

### Medial Lethal Dose or Concentration (LD50, LC50)

That dose or concentration of the material which will produce death in 50 per cent of test animals. For inhalation, the exposure time is indicated.

### Irritation Index

An empirical score for eye and skin irritation when tested by the methods described in Section 1600.40 of the Federal Hazardous Substances Act.

### Sensitizer

A substance which will cause an or in normal living tissue an hypersensitivity which becomes evident on reapplication of, or exposure to, the same substance.

## Section IV Emergency and First Aid Procedures

Gives first aid and emergency procedures in case of eye and/or skin contact, ingestion and inhalation.

## Section V Personal Protection Information

### Eye, Skin, Respiratory

The type of protective equipment that is necessary for the safe handling and use of the product.

### Ventilation

Refers to the type recommended: i.e., local exhaust, mechanical, etc.

## Section VI Fire Hazard Information

### Flash Point (State Method Used)

The temperature in degrees F at which a liquid will give off enough flammable vapor to ignite in the presence of a source of ignition.

### Autoignition Temperature

The minimum temperature required for a substance to initiate self combustion in the absence of a spark or flame.

### Flammable Limits

The range of gas or vapor concentration (per cent by volume in air) which will burn or explode if an ignition source is present. Lower means the lower flammable limit and upper the upper flammable limit given in per cent.

### Extinguishing Media

Specifies the fire fighting agent(s) that should be used to extinguish fires.

### Unusual Fire and Explosion Hazards

Refers to special procedures required if unusual fire hazards are involved.

## Section VII Physical Properties and Reactivity Data

### Vapor Pressure

The pressure of saturated vapor above the liquid expressed in mm Hg at 20°C.

### Viscosity

A measure of the resistive flow of liquid due to gravity or for viscous liquids a measure of the resistance to turning or twisting. State method, units and temperature.

### Vapor Density

The relative density or weight of a vapor or gas (with no air present) compared with an equal volume of air at ambient temperature.

**pH**

The degree of acidity or basicity of the material in specific concentration

**Specific Gravity**

The ratio of the weight of a volume of the material to the weight of an equal volume of water.

**Solubility in Water**

The solubility of a material by weight in water at room temperature. The terms negligible, less than 0.1 per cent; slight, 0.1 to 1 per cent; moderate 1 to 10 per cent; appreciable, 10 per cent or greater.

**Appearance and Odor**

The general characterization of the material, i.e., powder, colorless liquid, aromatic odor, etc.

**Hazardous Polymerization**

Refers to that reaction which takes place at a rate which releases large amounts of energy. Indicates whether or not it may occur and under what storage conditions.

**Materials to Avoid**

Indicates those material or conditions causing the product to react violently, releasing large amounts of energy.

**Section VIII Storage and Environmental Protection****Procedure in Case of Breakage or Leakage**

Indicates precautions necessary in such events. Includes clean-up procedures and hazards that may be created, i.e., fire, explosions, etc.

**Biodegradability/Bioaccumulation**

Indicates whether or not the product will biodegrade or bioaccumulate.

The information contained herein is based on data available to us and is believed to be correct. Since this information may have been obtained in part from independent laboratories or other sources not under our direct supervision, no representation is made that the information is accurate, reliable, complete or representative and Buyer may rely thereon only at Buyer's risk. We have made no effort to censor nor to conceal deleterious aspects of this product. Further, since we cannot anticipate or control the many different conditions under which this information or our products may be used, we make no guarantee that the health and safety precautions we have suggested will be adequate for all individuals and/or situations involving its handling and use. Likewise we make no guarantee or warranty of any kind that the use or disposal of this product is in compliance with all federal, state or local laws. It is the obligation of each user of the product mentioned herein to determine and comply with the requirements of all applicable statutes.



Amoco Chemicals Corporation  
200 East Randolph Drive  
Chicago, Illinois 60601



# Material Safety Data Sheet

from Genium's Reference Collection  
Genium Publishing Corporation  
1145 Catalyn Street  
Schenectady, NY 12303-1836 USA  
(518) 377-8855



GENIUM PUBLISHING CORP.

No. 30A

HYDROCHLORIC ACID

(Revision B)

Issued: October 1977

Revised: November 1988

## SECTION 1. MATERIAL IDENTIFICATION

27

Material Name: HYDROCHLORIC ACID

Description (Origin/Uses): Used in the production of chlorides; in refining ore in the production of tin and tantalum; for the neutralization of bases; for pickling and cleaning metal products; for oil- and gas-well treatments; and in removing scale from boilers and heat-exchange equipment.

Other Designations: Aqueous Hydrogen Chloride; Muriatic Acid; HCl/H<sub>2</sub>O; CAS No. 7647-01-0

Manufacturer: Contact your supplier or distributor. Consult the latest edition of the *Chemicalweek Buyers' Guide* (Genium ref. 73) for a list of suppliers.

HMIS		
H	3	R 1
F	0	I 4
R	0	S 4
PPG*		K 0
*See sect. 8		



NFPA

## SECTION 2. INGREDIENTS AND HAZARDS

%

## EXPOSURE LIMITS

Hydrogen Chloride, CAS No. 7647-01-0

38 or Less

OSHA PEL  
Ceiling: 5 ppm, 7 mg/m<sup>3</sup>

Water

Balance\*

ACGIH TLV, 1988-89  
TLV-Ceiling: 5 ppm, 7 mg/m<sup>3</sup>

Toxicity Data\*\*  
Human, Inhalation, LC<sub>50</sub>: 1300 ppm (30 Mins)  
Rat, Inhalation, LC<sub>50</sub>: 3124 ppm (1 Hr)  
Rabbit, Oral, LD<sub>50</sub>: 900 mg/kg

\*Impurities such as iron, chlorine, and traces of organic matter may be present in small amounts, depending on the grade of acid.  
\*\*See NIOSH, RTECS (MW-025000), for additional data with references to reproductive and mutagenic effects. Continue to monitor NIOSH, RTECS (MW-0300000), for toxicity data on hydrochloric acid itself.

## SECTION 3. PHYSICAL DATA

Boiling Point: 227°F (109°C) (20.22%)

Melting Point: -85°F (-65°C) (20.69%)

Vapor Density (Air = 1): 1.268

pH: Strong Mineral Acid

Molecular Weight: Not Applicable  
Solubility in Water (%): Complete  
Specific Gravity (H<sub>2</sub>O = 1): >1  
% Volatile by Volume: Ca 100

Appearance and Odor: A clear, colorless-to-lightly yellowed, fuming liquid; sharp, pungent, characteristic, irritating odor of hydrogen chloride gas. This odor is detectable at 1 to 5 ppm and becomes unpleasant and irritating at 5 to 10 ppm; however, the odor serves as a good warning property.

Comments: The specific physical properties of aqueous hydrochloric acid solutions vary with the amount of dissolved hydrogen chloride gas. Hydrochloric acid forms a constant boiling azeotrope (a mixture of hydrochloric acid and water that behaves like a single substance in that its vapor has the same composition as the mixture itself) with water (at 227°F or 109°C) that contains 20.22% hydrogen chloride and has a density of 1.096. Boiling weaker or stronger aqueous solutions results in the loss of either component until the constant boiling acid is produced.

## SECTION 4. FIRE AND EXPLOSION DATA

LEL

UEL

Flash Point and Method

Autoignition Temperature

Extinguishing Media: \*Hydrochloric acid solutions do not burn. Use extinguishing agents that will put out the surrounding fire. Unusual Fire or Explosion Hazards: Use a water spray to cool fire-exposed containers of hydrochloric acid to prevent ruptures. Explosive hydrogen gas can be produced by the reaction of hydrochloric acid with metals such as iron. Neutralize spilled hydrochloric acid with limestone, slaked lime, or soda ash to minimize the possible generation of hydrogen gas. Special Fire-fighting Procedures: Wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in the pressure-demand or positive-pressure mode. Special neutralization procedures, if applicable, include the application of chemically basic substances such as soda ash or slaked lime.

## SECTION 5. REACTIVITY DATA

Stability/Polymerization: Hydrochloric acid is stable in closed containers during routine operations at room temperature. Hazardous polymerization cannot occur. Chemical Incompatibilities: Hydrochloric acid reacts dangerously with acetic anhydride, 2-aminoethanol, ammonium hydroxide, calcium phosphide, chlorosulfonic acid, ethylene diamine, ethylenimine, oleum, perchloric acid, 8-propiolactone, propylene oxide, silver perchlorate and carbon tetrachloride, sodium hydroxide, sulfuric acid, uranium phosphide, vinyl acetate, sodium, and many carbide compounds (Genium ref. 84). This material is a strong mineral acid that is very reactive with bases. Conditions to Avoid: Avoid exposure to incompatible chemicals and to any other material whose compatibility with hydrochloric acid or its vapor has not yet been established. The corrosive action of hydrochloric acid on most metals can liberate extremely flammable/explosive hydrogen gas (H<sub>2</sub>); piping systems and containment systems must be chosen carefully. Hazardous Products of Decomposition: During fires hydrochloric acid may decompose by reacting with certain metals to produce very flammable and explosive hydrogen gas (H<sub>2</sub>). Significant amounts of hydrogen chloride gas (HCl) are given off at room temperature; the rate of this generation increases as the temperature and the strength (1%) by weight of HCl in H<sub>2</sub>O increase. Comments: Reactions between hydrochloric acid and cyanides, sulfides, and formaldehyde, will produce extremely toxic hydrogen cyanide (HCN), hydrogen sulfide (H<sub>2</sub>S), sulfur dioxide (SO<sub>2</sub>), and bischloromethylether, respectively.

## SECTION 6. HEALTH HAZARD INFORMATION

**Carcinogenicity:** Hydrochloric acid is not listed as a carcinogen by the NTP, IARC, or OSHA.

**Summary of Risks:** See Genium Industrial MSDS 30 for details of the health effects of hydrogen chloride gas. Hydrochloric acid solutions will generate hydrogen chloride gas with all its health effects. These are irritating to the skin, eyes, and mucous membranes of the upper respiratory tract (URT). The severity of eye injury from splashes depends upon quantity, concentration/strength, and duration of the contact. Permanent visual damage has been reported. Ingestion of hydrochloric acid causes corrosion of the mucous membranes, esophagus, and stomach, as well as nausea, vomiting, intense thirst, and diarrhea. Erosion of exposed teeth may occur. Circulatory collapse and death are possible. Medical Conditions Aggravated by Long-Term Exposure: None reported. Target Organs: Skin, eyes, URT. Primary Entry: Inhalation, skin contact. Acute Effects: Corrosive skin and eye burns, tissue damage, and severe irritation of the URT. Chronic Effects: None reported. **FIRST AID:** Eyes. Immediately flush eyes, including under the eyelids, gently but thoroughly with plenty of running water for at least 15 minutes. Skin. Rinse the affected area with flooding amounts of water and then wash it with soap and water. Remove contaminated clothing under a safety shower. Inhalation. Remove the exposed person to fresh air; restore and/or support his or her breathing as needed. Have qualified medical personnel administer oxygen as required. Ingestion. Not likely. Should this type of exposure occur, and the exposed person is responsive, give him or her 2 to 3 glasses of water, then milk of magnesia or limewater to drink. Do not induce vomiting. Spontaneous laryngeal spasms can occur. Never give anything by mouth to someone who is unconscious or convulsing. Get medical help (in plant, paramedic, community) for all exposures. Seek prompt medical assistance for further treatment, observation, and support after first aid. Note to physician: Treatment for respiratory effects following inhalation of hydrogen chloride gas includes using a 5% sodium bicarbonate solution as an aerosol; maintaining a proper fluid balance (diuretics may be useful); and decreasing the inflammatory response of the lungs by administering steroids on a short-term basis (2 to 4 days). Severe inhalation exposure requires hospitalization and observation (72-hour minimum) for the delayed onset of pulmonary edema. Serial chest X rays and respiratory support, including intubation, may be required as an early intervention.

## SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES

**Spill/Leak:** Notify safety personnel, evacuate unnecessary personnel, eliminate all sources of ignition immediately (hydrogen gas may be generated), and provide adequate ventilation. Cleanup personnel need a full set of protective clothing, including a self-contained breathing apparatus (SCBA). Small spills and residue can be covered with an excess of a mixture of soda ash and slaked lime. After neutralization, do not flush waste directly to a sewer or into lakes, ponds, or streams. **Waste Disposal:** Contact your supplier or a licensed contractor for detailed recommendations. The allowable concentration of neutral salt in the effluent discharge is apt to be regulated; study and follow Federal, state, and local regulations. Consider saving the waste hydrochloric acid for use as a neutralizing agent during cleanup operations of basic materials.

**OSHA Designations**

Listed as an Air Contaminant (29 CFR 1910.1000 Subpart Z).

**EPA Designations** (40 CFR 302.4)

**CERCLA Hazardous Substance, Reportable Quantity:** 5000 lbs (2270 kg), per the Clean Water Act (CWA), §311 (b) (4)

## SECTION 8. SPECIAL PROTECTION INFORMATION

**Goggles:** Always wear protective eyeglasses or chemical safety goggles. Where splashing is possible, wear a full face shield. Follow OSHA eye- and face-protection regulations (29 CFR 1910.133). **Respirator:** Wear a NIOSH-approved respirator per Genium reference 88 for the maximum-use concentrations and/or the exposure limits cited in section 2. Follow OSHA respirator regulations (29 CFR 1910.134). For emergency or nonroutine operations (spills or cleaning reactor vessels and storage tanks), wear an SCBA. All respirators must be acid resistant. **Warning:** Air-purifying respirators will not protect workers in oxygen-deficient atmospheres. **Other:** Wear impervious gloves, boots, aprons, gauntlets, etc., to prevent any contact with this material. All clothing must be acid resistant. **Ventilation:** Install and operate general and local maximum-explosion-proof ventilation systems powerful enough to maintain airborne levels of hydrogen chloride below the OSHA PEL cited in section 2. Local exhaust ventilation is preferred because it prevents dispersion of the contaminant into the general work area by eliminating it at its source. Consult the latest edition of Genium reference 103 for detailed recommendations. Make ventilation system ductwork and exposed fan components acid resistant. **Safety Stations:** Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work areas. **Contaminated Equipment:** Contact lenses pose a special hazard; soft lenses may absorb irritants, and all lenses concentrate them. Do not wear contact lenses in any work area. Remove contaminated clothing and launder it before wearing it again; clean this material from your shoes and equipment. **Other:** Design all engineering systems to be acid resistant and explosion proof (hydrogen gas may be accidentally generated). **Comments:** Practice good personal hygiene; always wash thoroughly after using this material and before eating, drinking, smoking, using the toilet, or applying cosmetics. Keep it off your clothing and equipment. Avoid transferring it from your hands to your mouth while eating, drinking, or smoking. Do not eat, drink, or smoke in any work area. Do not inhale hydrochloric acid vapor.

## SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS

**Storage/Segregation:** Store hydrochloric acid in closed containers in a cool, dry, well-ventilated area away from sources of ignition, strong oxidizers, strong bases, out of direct sunlight, and away from incompatible chemicals (see sect. 5). Protect containers from physical damage. **Special Handling/Storage:** Storage areas should have acid-resistant floors and approved drainage facilities. Use nonsparking tools in areas around tanks and pipes where hydrogen gas may be generated. **Engineering Controls:** Make sure all engineering systems (production, transportation) are of maximum-explosion-proof design. Ground and bond all containers and pipelines, etc., used in shipping, transferring, reacting, production, and sampling operations to prevent static sparks. Hydrogen gas may become concentrated inside metal equipment; perform operations to search out possible hidden areas of hydrogen gas carefully. **Other Precautions:** Carefully follow your supplier's recommendations concerning the proper handling and storage procedures for hydrochloric acid. Provide emergency neutralization materials (soda ash, limestone, or slaked lime) and equipment near storage and use areas.

**Transportation Data** (49 CFR 172.101-2)

**DOT Shipping Name:** Hydrochloric Acid

**DOT Hazard Class:** Corrosive Material

**ID No.** UN1789

**DOT Label:** Corrosive

**DOT Packaging Requirements, DOT Packaging Exceptions:** 49 CFR 173.263

**IMO Shipping Name:** Hydrochloric Acid, Solution

**IMO Hazard Class:** 8

**IMO Label:** Corrosive

**IMDG Packaging Group:** II

**References:** 1, 26, 38, 84-94, 100, 116, 117, 120, 122.

Judgments as to the suitability of information herein for purchaser's purposes are necessarily purchaser's responsibility. Therefore, although reasonable care has been taken in the preparation of such information, Genium Publishing Corp. extends no warranties, makes no representations and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or for consequences of its use.

Prepared by PJ Igoe, BS

Industrial Hygiene Review: DJ Wilson, CIH

Medical Review: W Silverman, MD

BENTONITE

PAGE: 1

## MATERIAL SAFETY DATA SHEET

ACCEPTED BY O.S.H.A. AS ESSENTIALLY SIMILAR TO O.S.H.A. FORM 20  
D CHEMICAL CO, ENVIRONMENTAL & OCCUPATIONAL SAFETY DEPT, BOX 2219, COLUMBUS, OH 4321  
24-HOUR EMERGENCY TELEPHONE: 606-324-1133 (LOCATED AT ASHLAND, KENTUCKY)

\*\*\*\*\*  
LAND PRODUCT NAME: BENTONITE

WESTERN COMPANY OF NORTH  
AMERICA  
ACCOUNTING DEPT  
PO BOX 186  
FORT WORTH TX 76101

05 50 078 9639600-  
DATA SHEET NO: 0015584-001  
LATEST REVISION DATE: 04/78-78102  
PRODUCT: 3024800  
INVOICE: 353371  
INVOICE DATE: 09/10/78  
TO: WESTERN COMPANY  
HWY 90 WEST  
CROWLEY LA 70526

ATTN: PURCHASING/SAFETY DEPT.

\*\*\*\*\* SECTION I-PRODUCT IDENTIFICATION \*\*\*\*\*

GENERAL OR GENERIC ID: BENTONITE

HAZARD CLASSIFICATION: (99) NOT APPLICABLE

\*\*\*\*\* SECTION II-HAZARDOUS COMPONENTS \*\*\*\*\*

<u>INGREDIENT</u>	<u>PERCENT</u>	<u>TLV</u>
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ICE DUST	>60 %	15 MG/CUM (1)
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TLV IS FOR TOTAL NUISANCE DUST. FOR THE RESPIRABLE FRACTION, THE TLV IS 5  
MG/CUM. THE ACGIH TLV FOR TOTAL NUISANCE DUST IS 10 MG/CUM.

\*\*\*\*\* SECTION III-PHYSICAL DATA \*\*\*\*\*

<u>PROPERTY</u>	<u>REFINEMENT</u>	<u>MEASUREMENT</u>
-----------------	-------------------	--------------------

INITIAL BOILING POINT	NOT APPLICABLE	
-----------------------	----------------	--

VAPOR PRESSURE	NOT APPLICABLE	
----------------	----------------	--

VAPOR DENSITY	NOT APPLICABLE	
---------------	----------------	--

SPECIFIC GRAVITY	NOT APPLICABLE	
------------------	----------------	--

PERCENT VOLATILES		9.00 %
-------------------	--	--------

EVAPORATION RATE	NOT APPLICABLE	
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CONTINUED ON PAGE: 2

## \*\*\*\*\* SECTION IV-FIRE AND EXPLOSION DATA \*\*\*\*\*

H POINT(CLOSED CUP) NOT APPLICABLE

ER EXPLOSIVE LIMIT NOT APPLICABLE

INGUISHING MEDIA:

HAZARDOUS DECOMPOSITION PRODUCTS: NOT APPLICABLE

SPECIAL FIREFIGHTING PROCEDURES: NOT APPLICABLE

USUAL FIRE & EXPLOSION HAZARDS: NOT APPLICABLE

## \*\*\*\*\* SECTION V-HEALTH HAZARD DATA \*\*\*\*\*

RESHOLD LIMIT VALUE: 15 MG/CUM

EFFECTS OF OVEREXPOSURE: FOR PRODUCT

1. FORM DUST WHICH MAY CAUSE UNPLEASANT DEPOSITS IN THE EYES, EARS, AND NASAL PASSAGES OR INJURY TO THE SKIN OR MUCCOUS MEMBRANES BY CHEMICAL OR MECHANICAL ACTION. NUISANCE DUSTS DO NOT FORM SCAR TISSUE NOR AFFECT THE STRUCTURE OF AIR SPACES IN THE LUNGS, AND THEIR EFFECTS ON THE TISSUES ARE POTENTIALLY REVERSIBLE.

FIRST AID:

ON SKIN: THOROUGHLY WASH EXPOSED AREA WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING. LAUNDRY CONTAMINATED CLOTHING BEFORE RE-USE.

IN EYES: FLUSH WITH LARGE AMOUNTS OF WATER, LIFTING UPPER AND LOWER LIDS OCCASIONALLY, GET MEDICAL ATTENTION.

SWALLOWED: GIVE TWO GLASSES OF WATER; INDUCE VOMITING IMMEDIATELY BY STICKING FINGER DOWN THROAT. CALL A PHYSICIAN. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

BREATHED: REMOVE INDIVIDUAL TO FRESH AIR

## \*\*\*\*\* SECTION VI-REACTIVITY DATA \*\*\*\*\*

HAZARDOUS POLYMERIZATION: CANNOT OCCUR  
STABILITY: STABLE

COMPATABILITY: NOT APPLICABLE

## \*\*\*\*\* SECTION VII-SPILL OR LEAK PROCEDURES \*\*\*\*\*

TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

---

ALL SPILL: SWEEP UP MATERIAL ONTO PAPER.

LE SPILL: SHOVEL MATERIAL INTO CONTAINERS. THOROUGHLY SWEEP AREA OF SPILL TO CLEAN UP ANY RESIDUAL MATERIAL.

TE DISPOSAL METHOD:

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LL SPILL: PACKAGE MATERIAL IN PAPER AND DEPOSIT IN POSTED TOXIC SUBSTANCE LANDFILL IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.

GE SPILL: DEPOSIT IN A POSTED TOXIC SUBSTANCE LANDFILL IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.

## \*\*\*\*\* SECTION VIII-PROTECTIVE EQUIPMENT TO BE USED \*\*\*\*\*

PIRATORY PROTECTION: A NIOSH/MSHA JOINTLY APPROVED DUST RESPIRATOR. (SEE YOUR SAFETY EQUIPMENT SUPPLIER)

NTILATION: PROVIDE SUFFICIENT MECHANICAL (GENERAL) AND/OR LOCAL EXHAUST VENTILATION TO MAINTAIN EXPOSURE BELOW TLV(S).

ROTECTIVE GLOVES: WEAR RESISTANT GLOVES. (SEE YOUR SAFETY EQUIPMENT SUPPLIER).

PROTECTION: CHEMICAL SPLASH GOGGLES IN COMPLIANCE WITH OSHA REGULATIONS ARE ADVISED; HOWEVER, OSHA REGULATIONS ALSO PERMIT OTHER TYPE SAFETY GLASSES. (SEE YOUR SAFETY EQUIPMENT SUPPLIER).

OTHER PROTECTIVE EQUIPMENT: NORMAL WORK CLOTHING COVERING ARMS AND LEGS.

## \*\*\*\*\* SECTION IX-SPECIAL PRECAUTIONS OR OTHER COMMENTS \*\*\*\*\*

CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTIED. SINCE EMPTIED CONTAINERS RETAIN PRODUCT RESIDUES (VAPOR, LIQUID, AND/OR SOLID), ALL HAZARD PRECAUTIONS GIVEN IN THIS DATA SHEET MUST BE OBSERVED.

INFORMATION ACCUMULATED HEREIN IS BELIEVED TO BE ACCURATE BUT IS NOT WARRANTED TO BE WHETHER ORIGINATING WITH ASHLAND OR NOT. RECIPIENTS ARE ADVISED TO CONFIRM IN ADVANCE OF NEED THAT THE INFORMATION IS CURRENT, APPLICABLE, AND SUITABLE TO THEIR CIRCUMSTANCES.

1000000

## MATERIAL SAFETY INFORMATION SHEET

Manufacturer's Name:	<u>Lone Star Industries</u>
Chemical Name and Synonyms:	<u>Portland Cement</u>
Trade Names:	<u>Lone Star, Incor, API Class H, A &amp; C</u>

Portland Cements do not contain concentrations of the heavy metals which are considered hazardous to health.

No formally established tests for eye and skin irritation have been conducted to establish the degree, if any, to which irritation may be caused by it. Eye irritation may develop if high concentrations of cement come in contact with the eye and are not removed by physical means and then washed shortly after contact with the eye.

Past experience indicates that Portland Cement does not cause skin sensitivity. However, normally sensitive skins will become irritated after prolonged exposure to the product or from wet concrete in which the product is used. Exhaustive tests conducted by certified medical authorities have concluded that inhalation of finished cement dusts does not predispose to tuberculosis or emphysema.

There is no evidence that Portland Cement has any adverse physiological effect as a result of chronic exposure to it.

No hazard or toxicity rating for this product has been established by any governmental, industrial, or trade group that routinely rates compounds.

The material is not required to be registered with the Food and Drug Administration.

Portland Cement would not be considered hazardous as defined by the Bureau of Labor Statistics in 29CFR Part 1501.2. That means it is non-volatile, does not release large amounts of energy, does not cause first degree burns to skin in short time exposures, and is not systemically toxic.

Emptied Portland Cement bags should be discarded in such a manner as to prevent any unused residue from being blown back into the eyes. Otherwise no special precautions are necessary.

### General

Portland Cement is a fine brown to grey solid chemical whose composition is primarily Calcium Silicates and Aluminates, together with small amounts of sulfates.

As such it poses no known or proven hazard to health except in such cases where previous sensitivity of skin to such materials, in either a dry or wet state, has been established. Prolonged contact with the eyes may bring about temporary irritation of these organs.

Although contractors, ready-mix operators and other high volume users of cement and concrete mixtures do not always require employees handling these products to

use safety goggles or gloves, the use of such safety equipment will provide protection for the eyes and for sensitive skins.

Similar safety precautions should be taken when handling dry cement and/or using it to prepare, mix and place various types of concrete.

# MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing,  
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

## SECTION I

MANUFACTURER'S NAME General Portland Inc., Trinity North Div.		EMERGENCY TELEPHONE NO. 214/387-4700
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 324, Dallas, TX 75221 (12700 Park Central III Bldg., LBJ)		
CHEMICAL NAME AND SYNONYMS API Class H		TRADE NAME AND SYNONYMS Trinity Special-API Class H
CHEMICAL FAMILY N/A	FORMULA N/A	

## SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS N/A			BASE METAL N/A		
CATALYST N/A			ALLOYS N/A		
VEHICLE N/A			METALLIC COATINGS N/A		
SOLVENTS N/A			FILLER METAL PLUS COATING OR CORE FLUX N/A		
ADDITIVES N/A			OTHERS N/A		
OTHERS N/A					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)
None					

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	3.15
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT, VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR=1)	N/A	EVAPORATION RATE (_____ =1)	N/A
SOLUBILITY IN WATER	N/A		
APPEARANCE AND ODOR		Grey powder, odorless	

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	Inflammable	FLAMMABLE LIMITS	N/A	Lel	Uel
EXTINGUISHING MEDIA	N/A				
SPECIAL FIRE FIGHTING PROCEDURES	N/A				
UNUSUAL FIRE AND EXPLOSION HAZARDS					
None					



## SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE 50 million particles per cubic foot/15 milligrams per M

EFFECTS OF OVEREXPOSURE Some individuals - possible dermatosis

### EMERGENCY AND FIRST AID PROCEDURES

If in eyes - flush with H<sub>2</sub>O

Skin - wash with vinegar

## SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	

INCOMPATIBILITY (Materials to avoid) None

HAZARDOUS DECOMPOSITION PRODUCTS None

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

## SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

No special steps required.

WASTE DISPOSAL METHOD

No special steps required.

## SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type) Respirator approved for inert dust.

VENTILATION	LOCAL EXHAUST	X	SPECIAL
	MECHANICAL (General)		OTHER

PROTECTIVE GLOVES None EYE PROTECTION None

OTHER PROTECTIVE EQUIPMENT None

## SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

None

OTHER PRECAUTIONS

# Material Safety Data Sheet

Genium Publishing Corporation  
1145 Catalyn Street  
Schenectady, NY 12303-1836 USA  
(518) 377-8855



No. 180

SODIUM CHLORIDE

Issued: March 1986

## SECTION 1. MATERIAL IDENTIFICATION

20

**MATERIAL NAME:** Sodium Chloride

**DESCRIPTION:** Colorless (white) transparent or white crystals.

**OTHER DESIGNATIONS:** Common Salt, HALIK, Halite, Rock Salt, Saline, Salt, Sea Salt, Table Salt, NaCl

**MANUFACTURER/SUPPLIER:** Available from many suppliers.

HMIS

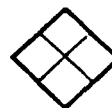
H: 1

F: 0

R: 0

PPE\*

\*See sect. 8



Not Found

## SECTION 2. INGREDIENTS AND HAZARDS

%

### HAZARD DATA

Sodium Chloride (CAS #7647-14-5)

>98

No OSHA PEL No ACGIH TLV.  
Human, Oral, TDL<sub>0</sub>:  
12357 mg/kg

W.I.N.100116,BLOCK,NaCl,coarse rock salt,S-6  
W.I.N.100218,BLOCK,Westblock 1  
W.I.N.100258,COMPONENT,flour salt  
W.I.N.100404,SALT,NaCl,fine rock salt, Cement & Stim.  
W.I.N.100495,SALT,NaCl,medium rock salt, Cemt & Stim.

Rat, Oral, LD<sub>50</sub>:  
3000 mg/kg

Rabbit, Skin: 500 mg/24 Hrs.,  
Mild

Rabbit, Eye: 100 mg/24 Hrs.,  
Severe

## SECTION 3. PHYSICAL DATA

Boiling Point ... 2575°F (1413°C)

Vapor Pressure ... 1 mm @ 865°C

Water Solubility ... 37%

Vapor Density (Air = 1) ... Not Found

Evaporation Rate ... Not Found

Specific Gravity (H<sub>2</sub>O = 1) ... 2.2

Melting Point ... 1474°F (801°C)

Percent Volatile by Volume ... Not Found

Molecular Weight ... 58.45

**Appearance and odor:** Colorless transparent crystal or white crystalline powder.

**COMMENTS:** Sodium Chloride maintains a neutral pH in solution and is slightly soluble in alcohol or liquid ammonia.

## SECTION 4. FIRE AND EXPLOSION DATA

LOWER

UPPER

Flash Point and Method

Autoignition Temp.

Flammability Limits In Air

Not Flammable

Not Found

Not Found

Not  
Found

Not  
Found

**EXTINGUISHING MEDIA:** Sodium chloride presents a negligible fire or explosion hazard as a dust when it is exposed to heat or flame. The extinguishing media for fires involving sodium chloride depend on the surrounding chemical environment.

**UNUSUAL FIRE/EXPLOSION HAZARDS:** Sodium Chloride should not be used as a fire-extinguishing medium on fires involving lithium. Sodium chloride and lithium will react to yield elemental sodium, which will cause the fire to burn more violently.

**SPECIAL FIRE-FIGHTING PROCEDURES:** A self-contained breathing apparatus with a full facepiece is recommended for fire fighters.

## SECTION 5. REACTIVITY DATA

Sodium chloride is stable. Hazardous polymerization cannot occur. **CHEMICAL INCOMPATIBILITIES:** Under conditions of high heat, sodium chloride will react with lithium and release elemental sodium, which will intensify fire conditions. Sodium chloride will react with most nonnoble metals (such as iron or steel), building materials (such as cement), bromine, or trifluoride. **CONDITIONS TO AVOID:** Avoid heating sodium chloride to the boiling point in moist environments. Sodium chloride will sublime at 2579°F (1415°C).

There are no hazardous decomposition products of this material under normal temperatures and pressures.

**COMMENTS:** Sodium chloride in the ionized state (water solution) is highly corrosive to many construction metals; therefore consideration of such potential for corrosion must be considered prior to exposing a material to sodium chloride/water solutions.

**SECTION 6. HEALTH HAZARD INFORMATION [TLV]**

Sodium chloride is not listed as a carcinogen by the NTP, IARC, or OSHA. **SUMMARY OF RISKS:** Sodium Chloride is not normally considered hazardous; however, exposure to high concentrations of this material as a solid, particulate, or water solution may cause irritation of the upper respiratory tract, eyes, or skin. Ingestion of a large dose may cause nausea or vomiting. Removal from exposure or washing the affected body part will normally remove symptoms. **TARGET ORGANS:** Eyes, upper respiratory tract, mucous membrane, or skin. **PRIMARY ENTRY:** Inhalation, ingestion, or dermal contact. **ACUTE EFFECTS:** The degree of irritation to an organ depends on the size of the dose and the duration of exposure. **CHRONIC EFFECTS:** Chronic exposure to moderate levels of sodium chloride may cause elevation of blood pressure in sodium-sensitive individuals, who make up approximately 5 to 10% of the population.

**FIRST AID:**

**EYE CONTACT:** Acute exposure to sodium chloride will cause redness, pain, and irritation of the eyes. Wash the eyes immediately with large amounts of water for about 15 minutes, including under the eyelids, until no evidence of the chemical remains. Get medical attention.\*

**SKIN CONTACT:** Acute skin exposure may cause irritation and skin dehydration. Remove contaminated clothing immediately and wash affected skin well with water.

**INHALATION:** Inhalation of high concentrations of salt crystals or dust may produce upper respiratory irritation and coughing. Remove victim to fresh air.

**INGESTION:** Ingestion of large amounts of sodium chloride may cause nausea and vomiting, rigidity, or convulsions. Continued exposure can produce coma, dehydration, and internal organ congestion. If the victim is conscious, give him 2 to 4 glasses of water and induce vomiting. Get medical attention immediately.\*

**COMMENTS:** Normal removal from exposure and washing the affected organ with water will reduce adverse symptoms.

\* GET MEDICAL ASSISTANCE = In plant, paramedic, community. Get medical help for further treatment, observation, and support after first aid, if indicated.

**SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES**

**SPILL/LEAK:** Notify safety personnel of large spills, clean up with corrosion-resistant tools. Minimize generation of dust to reduce upper respiratory irritation. Ventilate confined areas and collect spilled material in suitable corrosion-resistant containers.

**WASTE DISPOSAL:** Dispose of unsalvageable waste in an approved landfill considering Federal, state, and local waste-disposal regulations.

EPA, Clean Water Act, or Reportable Spill Quantity not found.

**SECTION 8. SPECIAL PROTECTION INFORMATION**

**GOGGLES:** Employees should wear rustproof safety goggles to prevent contact of sodium chloride with eyes.

**GLOVES:** Protective gloves are not required but are recommended.

**RESPIRATOR:** A dust mask should be worn where there is a possibility of high-level exposure to airborne particulate.

**VENTILATION:** Where dust buildup is possible, provide general dilution ventilation.

**OTHER:** An eyewash station should be available near sodium chloride use areas. Contact lens use near sodium chloride handling areas should be prohibited because they pose a special hazard; soft lenses may absorb salt, and all lenses concentrate irritants.

**SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS**

**STORAGE SEGREGATION:** Sodium chloride does not require special storage segregation. However, because salt is highly soluble in water, dry forms of sodium chloride should be stored in cool, dry, well-ventilated storage areas, preferably in waterproof containers.

**SPECIAL HANDLING/STORAGE:** Storage containers should be resistant to salt corrosion.

**ENGINEERING CONTROLS:** Dilution ventilation (opening windows and turning on a fan) may be necessary to reduce high concentrations of dust. Dehumidification of storage areas may be necessary in moist environments.

**OTHER PRECAUTIONS:** Prevent prolonged contact with the skin or other organs. Follow good personal hygiene practices. Wash after handling this material.

**COMMENTS:** Remove severely contaminated clothing and launder before reuse.

Data Source(s) Code: 2-12, 14, 59, 61, 62, 82, 84. OW

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Approvals *JO DeMarco, 11/86*

Indust. Hygiene/Safety *QJW 10/86*

Medical Review *[Signature]*

U.S. DEPARTMENT OF LABOR

100-294  
Form No. OSHA-20  
June 1971

Occupational Safety & Health Adm.  
MATERIAL SAFETY DATA SHEET

SECTION I

MANUFACTURER'S NAME <b>AMERICAN GILSONITE COMPANY</b>		EMERGENCY TELEPHONE NO. <b>801 328-0311</b>
ADDRESS (Number, Street, City, State, and ZIP Code) <b>1150 Kennecott Building, Salt Lake City, Utah</b>		
CHEMICAL NAME AND SYNONYMS <b>Asphaltite</b>		TRADE NAME AND SYNONYMS <b>American Gilsonite</b>
CHEMICAL FAMILY <b>--</b>	FORMULA <b>-- W.I.N. 100294</b>	

SECTION II HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS			FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)

SECTION III PHYSICAL DATA

BOILING POINT (°F.)	--	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	1.05
VAPOR PRESSURE (mm Hg.)	--	PERCENT VOLATILE BY VOLUME (%)	--
VAPOR DENSITY (AIR=1)	--	EVAPORATION RATE (_____=1)	--
SOLUBILITY IN WATER	0		
APPEARANCE AND ODOR <b>Dark Brown - Asphaltic</b>			

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	<b>600+ °F - COC</b>	FLAMMABLE LIMITS	Lel	Uel
EXTINGUISHING MEDIA	<b>Water</b>			
SPECIAL FIRE FIGHTING PROCEDURES	<b>None</b>			
UNUSUAL FIRE AND EXPLOSION HAZARDS <b>Dust concentrations of minus 250 mesh material exceeding 20 oz. per 1,000 cu. ft. could result in a potential explosive atmosphere.</b>				

## SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

Non-Toxic

EFFECTS OF OVEREXPOSURE

EMERGENCY AND FIRST AID PROCEDURES

## SECTION VI REACTIVITY DATA

STABILITY

UNSTABLE

CONDITIONS TO AVOID

STABLE

X

INCOMPATIBILITY (Materials to avoid)

None

HAZARDOUS DECOMPOSITION PRODUCTS

None

HAZARDOUS  
POLYMERIZATION

MAY OCCUR

CONDITIONS TO AVOID

WILL NOT OCCUR

X

## SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

No special hazard - use good housekeeping procedures.

WASTE DISPOSAL METHOD

Return material to container

## SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

None

VENTILATION

LOCAL EXHAUST

As necessary for non-hazardous dust control

SPECIAL

MECHANICAL (General)

OTHER

PROTECTIVE GLOVES

None

EYE PROTECTION

None

OTHER PROTECTIVE EQUIPMENT

Avoid sources of ignition in dust concentration areas.

## SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

None

OTHER PRECAUTIONS



U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET

DATE: 19SEP85

## SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS Acetylenic alcohols, amine quats, methanol	TRADE NAME AND SYNONYMS INHIBITOR, acid, I-17A
CHEMICAL FAMILY amines and acetylenic alcohols	FORMULA W.I.N. 499620

## SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	flammable liquid, corrosive, n.o.s.
NAME OF HAZARDOUS COMPONENT	methanol, acetylenic alcohols, organic amines
HAZARD CLASS	Flammable Liquid, Corrosive
IDENTIFICATION NUMBER	UN2924
D.O.T. LABEL(S) REQUIRED	Flammable liquid and corrosive
PRECAUTIONARY LABEL	Attached

## SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
methanol	50	ppm 200
propargyl alcohol		1
formamide		20
heavy aromatic naptha - 100 ppm; ethyl octynol - 1 ppm; isopropanol		400

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	192	SPECIFIC GRAVITY (H <sub>2</sub> O=1) (@ 25°C)	0.820
VAPOR PRESSURE (mm Hg.) (MeOH @ 212°C)	100	PERCENT VOLATILE BY VOLUME (%)	63
VAPOR DENSITY (AIR=1)	1.20	EVAPORATION RATE (n-butylac = 1)	2.07
SOLUBILITY IN WATER	dispersible		
APPEARANCE AND ODOR	dark brown liquid, pine odor		

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) 12.2°C, PMCC, ASTM D93-73	FLAMMABLE LIMITS	Lel	Uel
EXTINGUISHING MEDIA	CO <sub>2</sub> , alcohol foam, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES	Use water spray to cool fire-exposed surfaces and to protect personnel.		
UNUSUAL FIRE AND EXPLOSION HAZARDS	Respiratory protection required. Full body protection needed if fumes, mist or liquid may be contacted.		

TRADE NAME: W.I.N. 499620; INHIBITOR, acid, T-17A

### SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE ethyl octynol - 1 ppm -  
propargyl alcohol, formamide, methanol, naphtha, isopropanol (1,20,200,100,400 ppm)  
EFFECTS OF OVEREXPOSURE  
anesthesia, nausea, headache, dizziness, blindness, convulsions, death - may be fatal if  
- Eye Contact - permanent blindness -  
inhaled/absorbed via skin - severe irritant to skin -chronic: liver, lung, kidney  
EMERGENCY AND FIRST AID PROCEDURES  
flush skin and eyes with water for 15 min and remove to fresh air - call a doctor;  
artificial respiration: if swallowed, induce vomiting if victim is conscious -  
100-200 ml usually fatal; no known antidote - treat symptoms

### SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID Conditions - open flames, sparks, heat
	STABLE	X	
INCOMPATABILITY (Materials to avoid) strong oxidizers, mineral acids, olefins, esters, alkylene oxides, cyanohydrides			
HAZARDOUS DECOMPOSITION PRODUCTS does not decompose unless burned, but vapors are very toxic. Decomposes, when burned, into HCl acid and toxic smoke and fumes			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

### SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED  
eliminate ignition sources; keep public away - vapors can be fatal; avoid contact  
and evacuate occupants from downwind areas; prevent from entering sewers, water sources, low  
areas - advise authorities of contact with sewer, water, soil, vegetation  
WASTE DISPOSAL METHOD DANGER!  
contain liquid with sand/earth; recover by pumping or with suitable absorbent -  
consult expert on disposal

### SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type) Use NIOSH/MSHA approved self-contained or respirator with amine cartridges.		
VENTILATION	LOCAL EXHAUST greater than 60 fpm hood/face velocity	SPECIAL explosion proof
	MECHANICAL (General) equal to outdoors	OTHER N/A
PROTECTIVE GLOVES rubber		EYE PROTECTION splash goggles
OTHER PROTECTIVE EQUIPMENT chemical-resistant suit and boots		

### SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING  
close container when not in use - containers hazardous when empty - observe all  
precautions given in this sheet - wear protective equipment  
OTHER PRECAUTIONS  
keep away from heat, sparks, flames - contains acetylenic alcohols, no known  
antidote - permanent blindness

# MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH &amp; DEVELOPMENT

SCHENECTADY, N. Y.

**MS**  
 MATERIALS  
 SERVICES  
 INFORMATION

No. 354

METHYL ALCOHOL

Revision A

Date November 1977

## SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: METHYL ALCOHOL

OTHER DESIGNATION: Methanol, Wood alcohol, GE Material D5B51, ASTM D1152, CH<sub>3</sub>OH, CAS# 000 067 561

MANUFACTURER: Available from many suppliers.

## SECTION II. INGREDIENTS AND HAZARDS

Methyl Alcohol -----

%

HAZARD DATA

ca 100

TLV 200 ppm\*(Skin)  
or 260 mg/m<sup>3</sup>

\*Current OSHA TLV; ACGIH (1977) TLV adds (skin) notation which indicates a potential contribution to overall exposure via absorption through the skin.

NIOSH has recommended a 10-hr TWA of 200 ppm with a ceiling of 800 ppm (15 minute sample).

Human, oral LDLo  
340 mg/kg

## SECTION III. PHYSICAL DATA

Boiling point at 1 atm, deg C --- 64.5

Specific gravity (20°/40°) --- 0.791

Vapor density (Air=1) ----- 1.1

Volatiles, % ----- ca 100

Vapor pressure @ 21.2°C, mm Hg - 100

Evaporation rate (CCl<sub>4</sub>=1) ----- 1

Water solubility --- Totally miscible

Molecular weight ----- 32.04

Appearance & Odor: A clear, colorless liquid with a characteristic alcohol odor which is detectable at 50 to 100 ppm and above in air.

## SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method

Autoignition Temp.

Flammability Limits In Air

LOWER

UPPER

52°F (11 C) (closed cup)

867°F (465°C)

% by Volume

6

36.5

Extinguishing media: CO<sub>2</sub>, dry chemical, alcohol foam, and water mist or fog.

Methyl alcohol fires are Class B fires, use a blanketing effect to smother fire. It is a moderate explosion hazard and dangerous fire hazard when exposed to heat, sparks or flames and can react vigorously with oxidizing agents.

Firefighters should use self-contained breathing apparatus with full facepiece and full protective clothing where this material is involved in a fire in an enclosed place.

## SECTION V. REACTIVITY DATA

Methyl alcohol is a flammable material, but it is stable under normal storage and use conditions. It does not undergo hazardous polymerization.

Avoid contact with strong oxidizing agents such as nitrates, perchlorates or sulfuric acid.

Oxidation products in air include oxides of carbon and nitrogen.



No. 354

SECTION VI. HEALTH HAZARD INFORMATION	TLV 200 ppm (Skin) or 260 mg/m <sup>3</sup>
<p>Methanol is a poisonous, narcotic chemical that may exert its effects through inhalation, skin absorption or ingestion. Body elimination of methanol is slow, and the toxic effects can be compounded by repeated excessive exposures over several days. Toxic effects are exerted upon the nervous system, especially the optic nerve. Ingestion can produce blindness. Symptoms of overexposure include dizziness, blurring of vision, nausea, cardiac depression, muscular incoordination and narcosis. Solvent action can dry the skin and cause dermatitis.</p> <p><b>FIRST AID:</b></p> <p><u>Inhalation:</u> Remove victim to fresh air and prevent further exposure for 7 days. Obtain medical assistance if victim is not fully normal within 10 minutes.</p> <p><u>Skin Contact:</u> Wash affected area with soap and water; apply skin lotions.</p> <p><u>Eye Contact:</u> Irrigate with running water for 15 minutes. Get medical help.</p> <p><u>Ingestion:</u> Drink 3 glasses milk, water or 4% sodium bicarbonate. Obtain immediate medical aid for gastric lavage. (NIOSH recommends inducing vomiting if victim is conscious).</p>	
<p>SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES</p> <p>Notify safety personnel. Remove all sources of ignition; provide adequate ventilation. Absorb on vermiculite, paper or other absorbent. Burn in an approved incinerator or open pit away from buildings and people. Dispose of large quantities of waste via a licensed waste solvent disposal company, or reclaim via filtration and distillation procedures. It can be incinerated. Spills in sensitive areas may be diluted and flushed to ground with a water spray. Do not flush to sewer. Follow Federal, State and local regulations.</p>	
<p>SECTION VIII. SPECIAL PROTECTION INFORMATION</p> <p>Provide adequate ventilation to meet TLV requirements. Exhaust ventilation with 100 lfm minimum should be used where vapor exposure is likely. Prevent skin contact by wearing rubber gloves. Protective aprons, boots and face shields should be used where splashing may occur. Use safety glasses in other areas of use. Remove methanol contaminated clothing promptly. Eye wash stations and safety showers should be available in areas of use. Exhaust fans should be explosion proof. No smoking in areas of use. Respirator protection for emergency: Use air-supplied or self-contained respirators above TLV. A full facepiece is required above 2000 ppm.</p>	
<p>SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS</p> <p>Prevent skin contact! Do not breathe vapors! This material is poisonous when introduced into the body metabolism. Do not ingest! Store in a well-ventilated, fire proof area. Ground and electrically interconnect containers for transfer. Use spark-proof tools. Keep away from heat and ignition sources. No smoking in areas of storage or use. NIOSH recommends preplacement medical exams for industrially exposed workers, periodic medical surveillance, and prompt eye examinations for eye contact with methanol or for any overexposure.</p> <div> <p>APPROVALS: MIS, CRD <i>J. M. Nielsen</i></p> <p>Industrial Hygiene and Safety <i>Q. L. W.</i></p> <p>MEDICAL REVIEW:</p> </div> <p><small>Judgments as to the suitability of information herein for purchaser's purposes are necessarily purchaser's responsibility. Therefore, although reasonable care has been taken in the preparation of such information, General Electric Company extends no warranties, makes no representations and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or for consequences of its use.</small></p>	

# Material Safety Information

## MURIATE OF POTASH and POTASSIUM CHLORIDE



**KERR-McGEE CHEMICAL CORPORATION**  
KERR-McGEE CENTER ■ OKLAHOMA CITY, OKLAHOMA 73125

June 1978

For more detailed information on the hazards of this product, contact Technical Service Department at the address above.

For emergency information, telephone 405 270-1313 any time.

Although we believe the information given here is correct, we recommend that you verify it with independent authoritative sources.

### NOMENCLATURE

Chemical name ... Potassium Chloride  
Brand names ... TRONA® muriate of potash  
KM® muriate of potash  
TRONA® potassium chloride  
KM® potassium chloride  
Common name ... Potash  
Formula ... KCl  
Shipping names:  
DOT ... Not applicable  
IATA ... Not applicable  
CAS number ... 7447-40-7  
pH of 1% solution ... 9.2

### PHYSICAL PROPERTIES

State ... Granular solid  
Melting point °C ... 776° C  
Boiling point °C ...  
Color ... White to grey  
Odor ... None  
Bulk density, lb/cu ft ... 58 to 67  
Weight per gallon, lb ...  
Water solubility, % by wt @ 20°C ... 25.5

### HAZARDOUS INGREDIENTS

COMPONENT	CAS NUMBER	%	HAZARD
None			

### CHEMICAL REACTIVITY

A stable salt

### STABILITY

A stable salt

### FLAME HAZARD and FIRE FIGHTING PROCEDURES

Not flammable. Does not support combustion.

## HEALTH HAZARDS

	HAZARD CLASSIFICATION	EFFECTS
INHALATION	Irritant	Minor local irritation
EYE CONTACT	Irritant	Minor local irritation
SKIN CONTACT	Irritant	Minor local irritation
INGESTION	Irritant	Gastrointestinal irritation

## EFFECTS OF OVEREXPOSURE

Unknown. Probably slight.

## WARNING PROPERTIES

None

## TOXICITY

Not considered an industrial poison.

## FIRST AID

## WHAT TO DO

INHALATION

Obtain medical attention in severe cases.

EYE CONTACT

Wash thoroughly with running water for at least 15 minutes. Obtain medical attention.

SKIN CONTACT

Wash thoroughly with water.  
Obtain medical attention.

INGESTION

No special procedures are required.

## NOTE TO PHYSICIANS

## PRECAUTIONS FOR NORMAL USE

No special procedure required.

THRESHOLD LIMIT VALUE<sup>1</sup>

Nuisance particulate level is 10mg/m<sup>3</sup> of total dust <1% quartz or 5 mg/m<sup>3</sup> respirable dust.

## RECOMMENDED SAFETY EQUIPMENT

Dust respirator when necessary.

## CORROSIVITY TO MATERIALS OF CONSTRUCTION

Moist material mildly corrosive to carbon steel. Aluminum and carbon steel are not a suitable material at low liquid concentrations and ambient temperatures. Rubber-lined carbon steel or FRP construction is suitable for service temperatures under 160°F.

## STORAGE

No special procedures

## CONTAINER DISPOSAL

No special procedures.

## UNUSED MATERIAL and WASTE DISPOSAL

Solid material: bury in an appropriate chemical dump. Solutions can be diluted with large volume of water.

## HANDLING SPILLS

Dry spill: Sweep up and dispose as above.

Solution spill: Wash into a drain or an industrial sewer using a large volume of water.

## REFERENCES

<sup>1</sup> Threshold Limit Values for Chemical Substances and Physical Agents for 1977 - ACGIH. P.O. Box 1937, Cincinnati, OH 45201.

# Material Safety Data Sheet

Genium Publishing Corporation  
1145 Catalyn Street  
Schenectady, NY 12303-1836 USA  
(518) 377-8855



No. 180

SODIUM CHLORIDE

Issued: March 1986

## SECTION 1. MATERIAL IDENTIFICATION

20

**MATERIAL NAME:** Sodium Chloride

**DESCRIPTION:** Colorless (white) transparent or white crystals.

**OTHER DESIGNATIONS:** Common Salt, HALIK, Halite, Rock Salt, Saline, Salt, Sea Salt, Table Salt, NaCl.

**MANUFACTURER/SUPPLIER:** Available from many suppliers.

HMIS

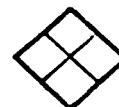
H: 1

F: 0

R: 0

PPE\*

\*See sect. 8



Not Found

## SECTION 2. INGREDIENTS AND HAZARDS

%

## HAZARD DATA

Sodium Chloride (CAS #7647-14-5)

>98

No OSHA PEL. No ACGIH TLV.  
Human, Oral, TDLo:  
12357 mg/kg

W.I.N.100116,BLOCK,NaCl,coarse rock salt,S-6  
W.I.N.100218,BLOCK,Westblock 1  
W.I.N.100258,COMPONENT,flour salt  
W.I.N.100404,SALT,NaCl,fine rock salt, Cement & Stim.  
W.I.N.100495,SALT,NaCl,medium rock salt, Cemt & Stim.

Rat, Oral, LD<sub>50</sub>:  
3000 mg/kg

Rabbit, Skin: 500 mg/24 Hrs.,  
Mild

Rabbit, Eye: 100 mg/24 Hrs.,  
Severe

## SECTION 3. PHYSICAL DATA

Boiling Point ... 2575°F (1413°C)

Vapor Pressure ... 1 mm @ 865°C

Water Solubility ... 37%

Vapor Density (Air = 1) ... Not Found

Evaporation Rate ... Not Found

Specific Gravity (H<sub>2</sub>O = 1) ... 2.2

Melting Point ... 1474°F (801°C)

Percent Volatile by Volume ... Not Found

Molecular Weight ... 58.45

**Appearance and odor:** Colorless transparent crystal or white crystalline powder.

**COMMENTS:** Sodium Chloride maintains a neutral pH in solution and is slightly soluble in alcohol or liquid ammonia.

## SECTION 4. FIRE AND EXPLOSION DATA

LOWER UPPER

Flash Point and Method

Autoignition Temp.

Flammability Limits In Air

Not Flammable

Not Found

Not Found

Not  
Found

Not  
Found

**EXTINGUISHING MEDIA:** Sodium chloride presents a negligible fire or explosion hazard as a dust when it is exposed to heat or flame. The extinguishing media for fires involving sodium chloride depend on the surrounding chemical environment.

**UNUSUAL FIRE/EXPLOSION HAZARDS:** Sodium Chloride should not be used as a fire-extinguishing medium on fires involving lithium. Sodium chloride and lithium will react to yield elemental sodium, which will cause the fire to burn more violently.

**SPECIAL FIRE-FIGHTING PROCEDURES:** A self-contained breathing apparatus with a full facepiece is recommended for fire fighters.

## SECTION 5. REACTIVITY DATA

Sodium chloride is stable. Hazardous polymerization cannot occur. **CHEMICAL INCOMPATIBILITIES:** Under conditions of high heat, sodium chloride will react with lithium and release elemental sodium, which will intensify fire conditions. Sodium chloride will react with most nonnoble metals (such as iron or steel), building materials (such as cement), bromine, or trifluoride. **CONDITIONS TO AVOID:** Avoid heating sodium chloride to the boiling point in moist environments. Sodium chloride will sublime at 2579°F (1415°C).

There are no hazardous decomposition products of this material under normal temperatures and pressures.

**COMMENTS:** Sodium chloride in the ionized state (water solution) is highly corrosive to many construction metals; therefore consideration of such potential for corrosion must be considered prior to exposing a material to sodium chloride/water solutions.

**SECTION 6. HEALTH HAZARD INFORMATION TLV**

Sodium chloride is not listed as a carcinogen by the NTP, IARC, or OSHA. **SUMMARY OF RISKS:** Sodium Chloride is not normally considered hazardous; however, exposure to high concentrations of this material as a solid, particulate, or water solution may cause irritation of the upper respiratory tract, eyes, or skin. Ingestion of a large dose may cause nausea or vomiting. Removal from exposure or washing the affected body part will normally remove symptoms. **TARGET ORGANS:** Eyes, upper respiratory tract, mucous membrane, or skin.

**PRIMARY ENTRY:** Inhalation, ingestion, or dermal contact. **ACUTE EFFECTS:** The degree of irritation to an organ depends on the size of the dose and the duration of exposure. **CHRONIC EFFECTS:** Chronic exposure to moderate levels of sodium chloride may cause elevation of blood pressure in sodium-sensitive individuals, who make up approximately 5 to 10% of the population.

**FIRST AID:**

**EYE CONTACT:** Acute exposure to sodium chloride will cause redness, pain, and irritation of the eyes. Wash the eyes immediately with large amounts of water for about 15 minutes, including under the eyelids, until no evidence of the chemical remains. Get medical attention.\*

**SKIN CONTACT:** Acute skin exposure may cause irritation and skin dehydration. Remove contaminated clothing immediately and wash affected skin well with water.

**INHALATION:** Inhalation of high concentrations of salt crystals or dust may produce upper respiratory irritation and coughing. Remove victim to fresh air.

**INGESTION:** Ingestion of large amounts of sodium chloride may cause nausea and vomiting, rigidity, or convulsions. Continued exposure can produce coma, dehydration, and internal organ congestion. If the victim is conscious, give him 2 to 4 glasses of water and induce vomiting. Get medical attention immediately.\*

**COMMENTS:** Normal removal from exposure and washing the affected organ with water will reduce adverse symptoms.

\* GET MEDICAL ASSISTANCE = In plant, paramedic, community. Get medical help for further treatment, observation, and support after first aid, if indicated.

**SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES**

**SPILL/LEAK:** Notify safety personnel of large spills, clean up with corrosion-resistant tools. Minimize generation of dust to reduce upper respiratory irritation. Ventilate confined areas and collect spilled material in suitable corrosion-resistant containers.

**WASTE DISPOSAL:** Dispose of unsalvageable waste in an approved landfill considering Federal, state, and local waste-disposal regulations.

EPA, Clean Water Act, or Reportable Spill Quantity not found.

**SECTION 8. SPECIAL PROTECTION INFORMATION**

**GOGGLES:** Employees should wear rustproof safety goggles to prevent contact of sodium chloride with eyes.

**GLOVES:** Protective gloves are not required but are recommended.

**RESPIRATOR:** A dust mask should be worn where there is a possibility of high-level exposure to airborne particulate.

**VENTILATION:** Where dust buildup is possible, provide general dilution ventilation.

**OTHER:** An eyewash station should be available near sodium chloride use areas. Contact lens use near sodium chloride handling areas should be prohibited because they pose a special hazard; soft lenses may absorb salt, and all lenses concentrate irritants.

**SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS**

**STORAGE SEGREGATION:** Sodium chloride does not require special storage segregation. However, because salt is highly soluble in water, dry forms of sodium chloride should be stored in cool, dry, well-ventilated storage areas, preferably in waterproof containers.

**SPECIAL HANDLING/STORAGE:** Storage containers should be resistant to salt corrosion.

**ENGINEERING CONTROLS:** Dilution ventilation (opening windows and turning on a fan) may be necessary to reduce high concentrations of dust. Dehumidification of storage areas may be necessary in moist environments.

**OTHER PRECAUTIONS:** Prevent prolonged contact with the skin or other organs. Follow good personal hygiene practices. Wash after handling this material.

**COMMENTS:** Remove severely contaminated clothing and laundry before reuse.

Data Source(s) Code: 2-12, 14, 59, 61, 62, 82, 84. OW

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Approvals *DO Repasco, 11/86*

Indust. Hygiene/Safety *OW 10/86*

Medical Review *[Signature]*

190112

Ashland

 MATERIAL SAFETY  
 DATA SHEET

24-HOUR EMERGENCY TELEPHONE (606) 324-1133

002799

CAL CHLORIDE PEL 94-97% 808BAG

PAGE: 1

ACCEPTED BY O.S.H.A. AS ESSENTIALLY SIMILAR TO O.S.H.A. FORM 20

MAR78

W.I.N.100112,SALT,calcium chloride

RECEIVED

MAY 13 1988

R.E.F.C.

## SECTION I-PRODUCT IDENTIFICATION

GENERAL OR GENERIC ID: SALTS

HAZARD CLASSIFICATION: (99) NOT APPLICABLE

## SECTION II-HAZARDOUS COMPONENTS

INGREDIENT	PERCENT	PEL	TLV	B
CALCIUM CHLORIDE	94		10 MG/CUM	

## SECTION III-PHYSICAL DATA

PROPERTY	REFINEMENT	MEASUREMENT
INITIAL BOILING POINT	NOT APPLICABLE	
VAPOR PRESSURE	NOT APPLICABLE	
VAPOR DENSITY	NOT APPLICABLE	
SPECIFIC GRAVITY		2.150 77.00 DEG F 25.00 DEG C
PERCENT VOLATILES	NOT APPLICABLE	
EVAPORATION RATE	NOT APPLICABLE	

## SECTION IV-FIRE AND EXPLOSION DATA

FLASH POINT NOT APPLICABLE

EXPLOSIVE LIMIT NOT APPLICABLE

EXTINGUISHING MEDIA: WATER FOG

SPECIAL FIREFIGHTING PROCEDURES: WATER MAY BE USED TO KEEP FIRE-EXPOSED CONTAINERS COOL UNTIL FIRE IS OUT.

## SECTION V-HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE 10 MG/CUM

NOT ESTABLISHED FOR PRODUCT. SEE SECTION II.

EFFECTS OF OVEREXPOSURE: FOR PRODUCT

EYES - MAY CAUSE IRRITATION.

SKIN - MAY CAUSE IRRITATION.

BREATHING - OF DUST CAN CAUSE IRRITATION OF NASAL AND RESPIRATORY PASSAGES.

IF SWALLOWED - BY NATURE OF PRODUCT PROBLEMS NOT EXPECTED, BUT INDUSTRIAL PRODUCTS ARE NEVER MEANT TO BE SWALLOWED.

## FIRST AID:

IF ON SKIN: THOROUGHLY WASH EXPOSED AREA WITH SOAP AND WATER. REMOVE CONTAMINATED CLOTHING. LAUNDRY CONTAMINATED CLOTHING BEFORE RE-USE.

IF IN EYES: FLUSH WITH LARGE AMOUNTS OF WATER, LIFTING UPPER AND LOWER LIDS OCCASIONALLY.

IF SWALLOWED: IMMEDIATELY DRINK TWO GLASSES OF WATER AND INDUCE VOMITING BY EITHER GIVING IPECAC SYRUP OR BY PLACING FINGER AT BACK OF THROAT. NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON. GET MEDICAL ATTENTION IMMEDIATELY.

IF BREATHED: IF AFFECTED, REMOVE INDIVIDUAL TO FRESH AIR. IF BREATHING IS DIFFICULT, ADMINISTER OXYGEN. IF BREATHING HAS STOPPED GIVE ARTIFICIAL RESPIRATION. KEEP PERSON WARM, QUIET AND GET MEDICAL ATTENTION.



MATERIAL SAFETY  
DATA SHEET

24-HOUR EMERGENCY TELEPHONE (606) 324-1133

002799

CAL CHLORIDE PEL 94-97% 80#BAG

PAGE: 2

## SECTION VI-REACTIVITY DATA

HAZARDOUS POLYMERIZATION: CANNOT OCCUR

STABILITY: STABLE

INCOMPATIBILITY: AVOID CONTACT WITH: STRONG MINERAL ACIDS, NON-FERROUS METALS, FERROUS METALS

## SECTION VII-SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:

SMALL SPILL: SWEEP UP MATERIAL ONTO PAPER.

LARGE SPILL: COLLECT AND ADD SLOWLY TO LARGE VOLUME OF WATER.

WASTE DISPOSAL METHOD:

SMALL SPILL: PACKAGE MATERIAL IN PAPER AND DEPOSIT IN LANDFILL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

LARGE SPILL: COLLECT AND ADD TO LARGE CONTAINER OF WATER. STIR IN SLIGHT EXCESS OF SODA ASH. LET STAND 24 HOURS. DECANT INTO ANOTHER CONTAINER, NEUTRALIZE WITH 6N-HYDROCHLORIC ACID. FLUSH DOWN DRAIN WITH LARGE EXCESS OF WATER IN ACCORDANCE WITH APPLICABLE REGULATIONS. DEPOSIT SLUDGE IN A LANDFILL IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

## SECTION VIII-PROTECTIVE EQUIPMENT TO BE USED

RESPIRATORY PROTECTION: NOT REQUIRED UNDER NORMAL CONDITIONS OF USE.

VENTILATION: PROVIDE SUFFICIENT MECHANICAL (GENERAL AND/OR LOCAL EXHAUST) VENTILATION TO MAINTAIN EXPOSURE BELOW LEVEL OF OVEREXPOSURE (FROM KNOWN, SUSPECTED OR APPARENT ADVERSE EFFECTS).

PROTECTIVE GLOVES: WEAR RESISTANT GLOVES SUCH AS: POLYVINYL CHLORIDE

EYE PROTECTION: WEAR SAFETY GLASSES IN COMPLIANCE WITH OSHA REGULATIONS. (CONSULT YOUR SAFETY EQUIPMENT SUPPLIER)

OTHER PROTECTIVE EQUIPMENT: NORMAL WORK CLOTHING COVERING ARMS AND LEGS.

## SECTION IX-SPECIAL PRECAUTIONS OR OTHER COMMENTS

CONTAINERS OF THIS MATERIAL MAY BE HAZARDOUS WHEN EMPTIED. SINCE EMPTIED CONTAINERS RETAIN PRODUCT RESIDUES (VAPOR, LIQUID, AND/OR SOLID), ALL HAZARD PRECAUTIONS GIVEN IN THE DATA SHEET MUST BE OBSERVED.

THE INFORMATION ACCUMULATED HEREIN IS BELIEVED TO BE ACCURATE BUT IS NOT WARRANTED TO BE WHETHER ORIGINATING WITH ASHLAND OR NOT. RECIPIENTS ARE ADVISED TO CONFIRM IN ADVANCE OF NEED THAT THE INFORMATION IS CURRENT, APPLICABLE, AND SUITABLE TO THEIR CIRCUMSTANCES.

# Material Safety Data Sheet

Genium Publishing Corporation  
1145 Catalyn Street  
Schenectady, NY 12303-1836 USA  
(518) 377-8855



No. 180

SODIUM CHLORIDE

Issued: March 1986

## SECTION 1. MATERIAL IDENTIFICATION

20

**MATERIAL NAME:** Sodium Chloride

**DESCRIPTION:** Colorless (white) transparent or white crystals.

**OTHER DESIGNATIONS:** Common Salt, HALIK, Halite, Rock Salt, Saline, Salt, Sea Salt, Table Salt, NaCl.

**MANUFACTURER/SUPPLIER:** Available from many suppliers.

HMIS

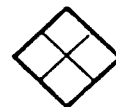
H: 1

F: 0

R: 0

PPE\*

\*See sect. 8



Not Found

## SECTION 2. INGREDIENTS AND HAZARDS

%

### HAZARD DATA

Sodium Chloride (CAS #7647-14-5)

W.I.N.100116,BLOCK,NaCl,coarse rock salt,S-6  
W.I.N.100218,BLOCK,Westblock 1  
W.I.N.100258,COMPONENT,flour salt  
W.I.N.100404,SALT,NaCl,fine rock salt, Cement & Stim.  
W.I.N.100495,SALT,NaCl,medium rock salt, Cemt & Stim.

>98

No OSHA PEL No ACGIH TLV.  
Human, Oral, TDLo:  
12357 mg/kg

Rat, Oral, LD50:  
3000 mg/kg

Rabbit, Skin: 500 mg/24 Hrs.,  
Mild

Rabbit, Eye: 100 mg/24 Hrs.,  
Severe

## SECTION 3. PHYSICAL DATA

Boiling Point ... 2575°F (1413°C)  
Vapor Pressure ... 1 mm @ 865°C  
Water Solubility ... 37%  
Vapor Density (Air = 1) ... Not Found  
Evaporation Rate ... Not Found

Specific Gravity (H<sub>2</sub>O = 1) ... 2.2  
Melting Point ... 1474°F (801°C)  
Percent Volatile by Volume ... Not Found  
Molecular Weight ... 58.45

**Appearance and odor:** Colorless transparent crystal or white crystalline powder.

**COMMENTS:** Sodium Chloride maintains a neutral pH in solution and is slightly soluble in alcohol or liquid ammonia.

## SECTION 4. FIRE AND EXPLOSION DATA

LOWER

UPPER

Flash Point and Method

Autoignition Temp.

Flammability Limits In Air

Not

Not

Not Flammable

Not Found

Not Found

Found

Found

**EXTINGUISHING MEDIA:** Sodium chloride presents a negligible fire or explosion hazard as a dust when it is exposed to heat or flame. The extinguishing media for fires involving sodium chloride depend on the surrounding chemical environment.

**UNUSUAL FIRE/EXPLOSION HAZARDS:** Sodium Chloride should not be used as a fire-extinguishing medium on fires involving lithium. Sodium chloride and lithium will react to yield elemental sodium, which will cause the fire to burn more violently.

**SPECIAL FIRE-FIGHTING PROCEDURES:** A self-contained breathing apparatus with a full facepiece is recommended for fire fighters.

## SECTION 5. REACTIVITY DATA

Sodium chloride is stable. Hazardous polymerization cannot occur. **CHEMICAL INCOMPATIBILITIES:** Under conditions of high heat, sodium chloride will react with lithium and release elemental sodium, which will intensify fire conditions. Sodium chloride will react with most nonnoble metals (such as iron or steel), building materials (such as cement), bromine, or trifluoride. **CONDITIONS TO AVOID:** Avoid heating sodium chloride to the boiling point in moist environments. Sodium chloride will sublime at 2579°F (1415°C).

There are no hazardous decomposition products of this material under normal temperatures and pressures.

**COMMENTS:** Sodium chloride in the ionized state (water solution) is highly corrosive to many construction metals; therefore consideration of such potential for corrosion must be considered prior to exposing a material to sodium chloride/water solutions.

**SECTION 6. HEALTH HAZARD INFORMATION | TLV**

Sodium chloride is not listed as a carcinogen by the NTP, IARC, or OSHA. **SUMMARY OF RISKS:** Sodium Chloride is not normally considered hazardous; however, exposure to high concentrations of this material as a solid, particulate, or water solution may cause irritation of the upper respiratory tract, eyes, or skin. Ingestion of a large dose may cause nausea or vomiting. Removal from exposure or washing the affected body part will normally remove symptoms. **TARGET ORGANS:** Eyes, upper respiratory tract, mucous membrane, or skin.

**PRIMARY ENTRY:** Inhalation, ingestion, or dermal contact. **ACUTE EFFECTS:** The degree of irritation to an organ depends on the size of the dose and the duration of exposure. **CHRONIC EFFECTS:** Chronic exposure to moderate levels of sodium chloride may cause elevation of blood pressure in sodium-sensitive individuals, who make up approximately 5 to 10% of the population.

**FIRST AID:**

**EYE CONTACT:** Acute exposure to sodium chloride will cause redness, pain, and irritation of the eyes. Wash the eyes immediately with large amounts of water for about 15 minutes, including under the eyelids, until no evidence of the chemical remains. Get medical attention.\*

**SKIN CONTACT:** Acute skin exposure may cause irritation and skin dehydration. Remove contaminated clothing immediately and wash affected skin well with water.

**INHALATION:** Inhalation of high concentrations of salt crystals or dust may produce upper respiratory irritation and coughing. Remove victim to fresh air.

**INGESTION:** Ingestion of large amounts of sodium chloride may cause nausea and vomiting, rigidity, or convulsions. Continued exposure can produce coma, dehydration, and internal organ congestion. If the victim is conscious, give him 2 to 4 glasses of water and induce vomiting. Get medical attention immediately.\*

**COMMENTS:** Normal removal from exposure and washing the affected organ with water will reduce adverse symptoms.

\* **GET MEDICAL ASSISTANCE** - In plant, paramedic, community. Get medical help for further treatment, observation, and support after first aid, if indicated.

**SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES**

**SPILL/LEAK:** Notify safety personnel of large spills, clean up with corrosion-resistant tools. Minimize generation of dust to reduce upper respiratory irritation. Ventilate confined areas and collect spilled material in suitable corrosion-resistant containers.

**WASTE DISPOSAL:** Dispose of unsalvageable waste in an approved landfill considering Federal, state, and local waste-disposal regulations.

EPA, Clean Water Act, or Reportable Spill Quantity not found.

**SECTION 8. SPECIAL PROTECTION INFORMATION**

**GOGGLES:** Employees should wear rustproof safety goggles to prevent contact of sodium chloride with eyes.

**GLOVES:** Protective gloves are not required but are recommended.

**RESPIRATOR:** A dust mask should be worn where there is a possibility of high-level exposure to airborne particulate.

**VENTILATION:** Where dust buildup is possible, provide general dilution ventilation.

**OTHER:** An eyewash station should be available near sodium chloride use areas. Contact lens use near sodium chloride handling areas should be prohibited because they pose a special hazard; soft lenses may absorb salt, and all lenses concentrate irritants.

**SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS**

**STORAGE SEGREGATION:** Sodium chloride does not require special storage segregation. However, because salt is highly soluble in water, dry forms of sodium chloride should be stored in cool, dry, well-ventilated storage areas, preferably in waterproof containers.

**SPECIAL HANDLING/STORAGE:** Storage containers should be resistant to salt corrosion.

**ENGINEERING CONTROLS:** Dilution ventilation (opening windows and turning on a fan) may be necessary to reduce high concentrations of dust. Dehumidification of storage areas may be necessary in moist environments.

**OTHER PRECAUTIONS:** Prevent prolonged contact with the skin or other organs. Follow good personal hygiene practices. Wash after handling this material.

**COMMENTS:** Remove severely contaminated clothing and laundry before reuse.

Data Source(s) Code: 2-12, 14, 59, 61, 62, 82, 84. OW

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Approvals *JO DeCarlo, 11/86*

Indust. Hygiene/Safety *QJW 10/86*

Medical Review *[Signature]*

N. 100006, 8, 10, 86, 302 &amp; 319, PROP, Sand, Class D 8/16, 12/20, 16/30 &amp; 20/40 (brown)

**MATERIAL SAFETY DATA SHEET**

CORPORATE RESEARCH &amp; DEVELOPMENT

SCHENECTADY, N. Y. 12305

Phone: (518) 385-4085

DIAL COM: 8\*235-4085

MATERIALS  
SERVICES  
INFORMATION

No. 71

QUARTZ

Date September 1980

**SECTION I. MATERIAL IDENTIFICATION**

MATERIAL NAME: QUARTZ

OTHER DESIGNATIONS: Silica, Crystalline; Flint; Agate; Sand; Silicic Anhydride; Silica Flour; Silicon Dioxide; SiO<sub>2</sub>; GE Materials D4C15, D4C19, D4C38, D4C39, D4C45-47, and D4C50; CAS #014 808 607

MANUFACTURER: Available from many sources.

**SECTION II. INGREDIENTS AND HAZARDS**

Silicon Dioxide, Crystalline (Quartz form)

&gt;98

**HAZARD DATA**

\*Current OSHA Standard. ACGIH (1980) 8-hr TWA is 3 mppcf\*\* or 0.1 mg/m<sup>3</sup> for respirable dust. (Values for total dust, mg/m<sup>3</sup>, are three times higher for both OSHA and ACGIH.)

NIOSH (1974) has proposed a 10-hr TWA of 0.05 mg/m<sup>3</sup>, permissible exposure level.

\*\*Millions of particles per cubic foot of air.

8-hr TWA (Resp. Dust) \*  
250 mppcf\*\* or 10 mg/m<sup>3</sup>  
ZSiO<sub>2</sub>+5 or ZSiO<sub>2</sub>+2

Human, inhalation  
TCLo 16 mppcf/8-hr  
intermittent for 17.9 yr  
Pulmonary Effects

Rat. TDLo 90 mg/kg  
Intraperitoneal -  
Neoplastic Effects  
Intrapleural -  
Carcinogenic Effects

**SECTION III. PHYSICAL DATA**

Boiling point at 1 atm, deg C ----- 2230      Specific gravity (H<sub>2</sub>O=1) ----- 2.65  
Vapor pressure at 1732 C, mm Hg --- 10      Melting point, deg C ----- 1610  
Water solubility ----- Insoluble      Formula weight (SiO<sub>2</sub>) ----- 60.09

Appearance: When pure, material is white powder or colorless crystals. Impurities can produce various colorations.

**SECTION IV. FIRE AND EXPLOSION DATA**

Flash Point and Method

Autoignition Temp.

Flammability Limits In Air

LOWER

UPPER

This material is noncombustible. Use extinguishing media appropriate to the surrounding fire.

**SECTION V. REACTIVITY DATA**

Material is highly stable under ordinary conditions (sand-like).

When exposed to high temperatures, quartz (or amorphous silica) can change crystal structure to form tridymite (above 870 C) or cristobalite (above 1470 C) which have greater health hazards than quartz.

It is attacked by strong alkalis. It will combine chemically with many metallic oxides upon heating at high temperature. It reacts with hydrofluoric acid to generate volatile SiF<sub>4</sub>. It is incompatible with oxygen difluoride, chlorine trifluoride, manganese trifluoride, and certain other powerful oxidizers and fluorine-containing compounds.

SECTION VI. HEALTH HAZARD INFORMATION	TLV (See Sect. II)						
<p>Health hazards can occur from excessive inhalation of silica dust, otherwise nontoxic. Crystalline silica in the lung can produce a pneumoconiosis, commonly called <u>silicosis</u>, which is a chronic, slowly developing disease. Symptoms are usually delayed (10 years or more) but may appear in as little as 8-18 months after initial exposure. Symptoms are dyspnea - caused by the many lung scars that develop from the silica dust - pain in the chest, decreased vital capacity, and cough.</p> <p>Chronic lung scarring leads to a progressive massive fibrosis that is often accompanied by increased susceptibility to pulmonary tuberculosis and other respiratory infections. In a diseased lung, dust particles under 3 microns greatly outnumber larger ones, and many particles are less than 1 micron. Symptoms of silicosis become progressive with continued exposure and advancing age. Smoking can increase the risk of injury.</p> <p><b>FIRST AID:</b></p> <p><u>Eye Contact:</u> Flush eyes thoroughly with running water, including under the eyelids. for at least 15 minutes.</p> <p><u>Skin Contact:</u> Wash affected area with soap and water.</p> <p><u>Inhalation:</u> Remove to fresh air. Give oxygen with intermittent positive-pressure and/or artificial respiration as needed. Seek medical attention for treatment, observation, and support as needed.</p>							
SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES							
<p>Notify safety personnel of major spills. Provide ventilation. Clean-up personnel need protection against eye contact and inhalation of dust. Pick up spills taking care to avoid raising dust clouds (use vacuum or wet sweeping). Place in closed container for disposal.</p> <p><b>DISPOSAL:</b> Use waste containers suitable for transportation and dispose in approved landfill. Follow Federal, State, and Local regulations.</p>							
SECTION VIII. SPECIAL PROTECTION INFORMATION							
<p>Provide adequate general and local exhaust ventilation to meet TLV requirements. Provide workers with dust respirators for use in emergency or nonroutine situations where dust levels may exceed TLV. Efficient dust respirators can be used up to 10X TLV. For exposure up to 100X TLV use full facepiece respirator with replaceable dust filter. Higher exposures need an approved, air supplied respirator.</p> <p>Workers should wear safety goggles and work gloves for eye and skin protection. (Sand blasters require special protective equipment and safety precautions.)</p> <p>Eyewash fountains should be available to areas of use and handling.</p> <p>Provide preplacement and annual physical exams for exposed workers with emphasis on respiratory and cardiovascular systems. Preclude from exposure those individuals with pulmonary disease.</p>							
SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS							
<p>Store powdered silica in closed containers in a dry, well-ventilated area.</p> <p>Keep dust in work area at a minimum and maintain air concentration of silica as far below TLV as feasible. Use good housekeeping techniques, such as, vacuuming and wet sweeping to remove collected dust and prevent formation of dust clouds.</p> <p>Avoid inhalation of dust. Avoid contact of materials with eyes.</p> <p>NIOSH (1976) warns of increased risk of impaired health due to a combination of smoking and silica dust exposure.</p>							
<p>DATA SOURCE(S) CODE: 2-12, 19, 24-27, 31, 34, 37, 38</p> <p><small>Judgments as to the suitability of information herein for purchaser's purposes are necessarily purchaser's responsibility. Therefore, although reasonable care has been taken in the preparation of such information, General Electric Company extends no warranties, makes no representations and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or for consequences of its use.</small></p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;">APPROVALS: MIS CRD</td> <td style="padding: 5px; text-align: right;"><i>J. M. Nielsen</i></td> </tr> <tr> <td style="padding: 5px;">Industrial Hygiene and Safety</td> <td style="padding: 5px; text-align: right;"><i>10-9-80</i></td> </tr> <tr> <td style="padding: 5px;">MEDICAL REVIEW:</td> <td style="padding: 5px; text-align: right;">10/22/80</td> </tr> </table>	APPROVALS: MIS CRD	<i>J. M. Nielsen</i>	Industrial Hygiene and Safety	<i>10-9-80</i>	MEDICAL REVIEW:	10/22/80
APPROVALS: MIS CRD	<i>J. M. Nielsen</i>						
Industrial Hygiene and Safety	<i>10-9-80</i>						
MEDICAL REVIEW:	10/22/80						

**MATERIAL SAFETY DATA SHEET**

CORPORATE RESEARCH &amp; DEVELOPMENT

SCHENECTADY, N. Y. 12305

Phone: (518) 385-4085

DIAL COM: 8\*235-4085

**MS**  
 MATERIALS SERVICES  
 INFORMATION

No. 71 100004

QUARTZ

Date September 1980

**SECTION I. MATERIAL IDENTIFICATION**

MATERIAL NAME: QUARTZ

 OTHER DESIGNATIONS: Silica, Crystalline; Flint; Agate; Sand; Silicic Anhydride;  
 Silica Flour; Silicon Dioxide; SiO<sub>2</sub>; GE Materials D4C15, D4C19, D4C38, D4C39,  
 D4C45-47, and D4C50; CAS #014 808 607

MANUFACTURER: Available from many sources.

**SECTION II. INGREDIENTS AND HAZARDS**

Silicon Dioxide, Crystalline (Quartz form)

&gt;98

**HAZARD DATA**
 8-hr TWA (Resp. Dust) \*  
 250 mppcf\*\* or 10 mg/m<sup>3</sup>  
 ZSiO<sub>2</sub>+5 or ZSiO<sub>2</sub>+2  
 Human, inhalation  
 TClO 16 mppcf/8-hr  
 intermittent for 17.9 yr  
 Pulmonary Effects  
 Rat, TDLo 90 mg/kg  
 Intraperitoneal -  
 Neoplastic Effects  
 Intraleural-  
 Carcinogenic Effects

 \*Current OSHA Standard. ACGIH (1980) 8-hr TWA is  
 3 mppcf\*\* or 0.1 mg/m<sup>3</sup> for respirable dust. (Values  
 for total dust, mg/m<sup>3</sup>, are three times higher for  
 both OSHA and ACGIH.)  
 NIOSH (1974) has proposed a 10-hr TWA of 0.05 mg/m<sup>3</sup>,  
 permissible exposure level.

\*\*Millions of particles per cubic foot of air.

**SECTION III. PHYSICAL DATA**

Boiling point at 1 atm, deg C	2230	Specific gravity (H <sub>2</sub> O=1)	2.65
Vapor pressure at 1732 C, mm Hg	10	Melting point, deg C	1610
Water solubility	Insoluble	Formula weight (SiO <sub>2</sub> )	60.09

 Appearance: When pure, material is white powder or colorless crystals. Impurities  
 can produce various colorations.
**SECTION IV. FIRE AND EXPLOSION DATA**

Flash Point and Method	Autoignition Temp.	Flammability Limits In Air

LOWER UPPER

 This material is noncombustible. Use extinguishing media appropriate to the surrounding  
 fire.
**SECTION V. REACTIVITY DATA**

Material is highly stable under ordinary conditions (sand-like).

 When exposed to high temperatures, quartz (or amorphous silica) can change crystal  
 structure to form tridymite (above 870 C) or cristobalite (above 1470 C) which have  
 greater health hazards than quartz.

 It is attacked by strong alkalis. It will combine chemically with many metallic oxides  
 upon heating at high temperature. It reacts with hydrofluoric acid to generate volatile  
 SiF<sub>4</sub>. It is incompatible with oxygen difluoride, chlorine trifluoride, manganese  
 trifluoride, and certain other powerful oxidizers and fluorine-containing compounds.

SECTION VI. HEALTH HAZARD INFORMATION	TLV (See Sect. II)			
<p>Health hazards can occur from excessive inhalation of silica dust, otherwise nontoxic. Crystalline silica in the lung can produce a pneumoconiosis, commonly called silicosis, which is a chronic, slowly developing disease. Symptoms are usually delayed (10 years or more) but may appear in as little as 8-18 months after initial exposure. Symptoms are dyspnea - caused by the many lung scars that develop from the silica dust - pain in the chest, decreased vital capacity, and cough.</p> <p>Chronic lung scarring leads to a progressive massive fibrosis that is often accompanied by increased susceptibility to pulmonary tuberculosis and other respiratory infections. In a diseased lung, dust particles under 3 microns greatly outnumber larger ones, and many particles are less than 1 micron. Symptoms of silicosis become progressive with continued exposure and advancing age. Smoking can increase the risk of injury.</p> <p><b>FIRST AID:</b></p> <p><u>Eye Contact:</u> Flush eyes thoroughly with running water, including under the eyelids, for at least 15 minutes.</p> <p><u>Skin Contact:</u> Wash affected area with soap and water.</p> <p><u>Inhalation:</u> Remove to fresh air. Give oxygen with intermittent positive-pressure and/or artificial respiration as needed. Seek medical attention for treatment, observation, and support as needed.</p>				
SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES				
<p>Notify safety personnel of major spills. Provide ventilation. Clean-up personnel need protection against eye contact and inhalation of dust. Pick up spills taking care to avoid raising dust clouds (use vacuum or wet sweeping). Place in closed container for disposal.</p> <p><b>DISPOSAL:</b> Use waste containers suitable for transportation and dispose in approved landfill. Follow Federal, State, and Local regulations.</p>				
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<b>Industrial Hygiene and Safety</b> 10-9-80				
<b>MEDICAL REVIEW:</b> 10/22/80				

N. 100006, 8, 10, 36, 302 & 319, PROP, Sand, Class D 8/16, 12/20, 16/30 & 20/40 (brown)

# MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT

SCHENECTADY, N. Y. 12305

Phone: (518) 385-4085

DIAL COMM 8\*235-4085



No. 71

QUARTZ

Date September 1980

## SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: QUARTZ

OTHER DESIGNATIONS: Silica, Crystalline; Flint; Agate; Sand; Silicic Anhydride; Silica Flour; Silicon Dioxide; SiO<sub>2</sub>; GE Materials D4C15, D4C19, D4C38, D4C39, D4C45-47, and D4C50; CAS #014 808 607

MANUFACTURER: Available from many sources.

## SECTION II. INGREDIENTS AND HAZARDS

Silicon Dioxide, Crystalline (Quartz form)

>98

### HAZARD DATA

8-hr TWA (Resp. Dust) \*  
250 mppcf\*\* or 10 mg/m<sup>3</sup>  
ZSiO<sub>2</sub>+5 or ZSiO<sub>2</sub>+2

\*Current OSHA Standard. ACGIH (1980) 8-hr TWA is 3 mppcf\*\* or 0.1 mg/m<sup>3</sup> for respirable dust. (Values for total dust, mg/m<sup>3</sup>, are three times higher for both OSHA and ACGIH.)  
NIOSH (1974) has proposed a 10-hr TWA of 0.05 mg/m<sup>3</sup>, permissible exposure level.

\*\*Millions of particles per cubic foot of air.

Human, inhalation  
TCLo 16 mppcf/8-hr  
intermittent for 17.9 yr  
Pulmonary Effects  
Rat, TDLo 90 mg/kg  
Intraperitoneal -  
Neoplastic Effects  
Intrapleural -  
Carcinogenic Effects

## SECTION III. PHYSICAL DATA

Boiling point at 1 atm, deg C ----- 2230

Specific gravity (H<sub>2</sub>O=1) ----- 2.65

Vapor pressure at 1732 C, mm Hg ----- 10

Melting point, deg C ----- 1610

Water solubility ----- Insoluble

Formula weight (SiO<sub>2</sub>) ----- 60.09

Appearance: When pure, material is white powder or colorless crystals. Impurities can produce various colorations.

## SECTION IV. FIRE AND EXPLOSION DATA

Flash Point and Method

Autoignition Temp.

Flammability Limits In Air

LOWER

UPPER

This material is noncombustible. Use extinguishing media appropriate to the surrounding fire.

## SECTION V. REACTIVITY DATA

Material is highly stable under ordinary conditions (sand-like).

When exposed to high temperatures, quartz (or amorphous silica) can change crystal structure to form tridymite (above 870 C) or cristobalite (above 1470 C) which have greater health hazards than quartz.

It is attacked by strong alkalis. It will combine chemically with many metallic oxides upon heating at high temperature. It reacts with hydrofluoric acid to generate volatile SiF<sub>4</sub>. It is incompatible with oxygen difluoride, chlorine trifluoride, manganese trifluoride, and certain other powerful oxidizers and fluorine-containing compounds.



SECTION VI. HEALTH HAZARD INFORMATION	TLV (See Sect. II)
<p>Health hazards can occur from excessive inhalation of silica dust, otherwise nontoxic. Crystalline silica in the lung can produce a pneumoconiosis, commonly called <u>silicosis</u>, which is a chronic, slowly developing disease. Symptoms are usually delayed (10 years or more) but may appear in as little as 8-18 months after initial exposure. Symptoms are dyspnea - caused by the many lung scars that develop from the silica dust - pain in the chest, decreased vital capacity, and cough.</p> <p>Chronic lung scarring leads to a progressive massive fibrosis that is often accompanied by increased susceptibility to pulmonary tuberculosis and other respiratory infections. In a diseased lung, dust particles under 3 microns greatly outnumber larger ones, and many particles are less than 1 micron. Symptoms of silicosis become progressive with continued exposure and advancing age. Smoking can increase the risk of injury.</p> <p><b>FIRST AID:</b></p> <p><u>Eye Contact:</u> Flush eyes thoroughly with running water, including under the eyelids. for at least 15 minutes.</p> <p><u>Skin Contact:</u> Wash affected area with soap and water.</p> <p><u>Inhalation:</u> Remove to fresh air. Give oxygen with intermittent positive-pressure and/or artificial respiration as needed. Seek medical attention for treatment, observation, and support as needed.</p>	
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N. 100006, 8, 10, 86, 302 &amp; 319, PROP, Sand, Class D 8/16, 12/20, 16/30 &amp; 20/40 (brown)

**MATERIAL SAFETY DATA SHEET**

CORPORATE RESEARCH &amp; DEVELOPMENT

SCHENECTADY, N. Y. 12305

Phone: (518) 385-4085

DIAL COMM: 8\*235-4085

MATERIALS  
SERVICES  
INFORMATION

No. 71

QUARTZ

Date September 1980

**SECTION I. MATERIAL IDENTIFICATION**

MATERIAL NAME: QUARTZ

OTHER DESIGNATIONS: Silica, Crystalline; Flint; Agate; Sand; Silicic Anhydride; Silica Flour; Silicon Dioxide;  $\text{SiO}_2$ ; GE Materials D4C15, D4C19, D4C38, D4C39, D4C45-47, and D4C50; CAS #014 808 607

MANUFACTURER: Available from many sources.

**SECTION II. INGREDIENTS AND HAZARDS**

Silicon Dioxide, Crystalline (Quartz form)

&gt;98

**HAZARD DATA**

8-hr TWA (Resp. Dust) \*  
 $250 \text{ mppcf}^{**}$  or  $10 \text{ mg/m}^3$   
 $\text{ZSiO}_2+5$  or  $\text{ZSiO}_2+2$

Human, Inhalation  
 TClO 16 mppcf/8-hr  
 Intermittent for 17.9 yr  
 Pulmonary Effects

Rat, TDLo 90 mg/kg  
 Intraperitoneal -  
 Neoplastic Effects  
 Intraleural -  
 Carcinogenic Effects

\*Current OSHA Standard. ACGIH (1980) 8-hr TWA is  
 3 mppcf\*\* or  $0.1 \text{ mg/m}^3$  for respirable dust. (Values  
 for total dust,  $\text{mg/m}^3$ , are three times higher for  
 both OSHA and ACGIH.)  
 NIOSH (1974) has proposed a 10-hr TWA of  $0.05 \text{ mg/m}^3$ ,  
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\*\*Millions of particles per cubic foot of air.

**SECTION III. PHYSICAL DATA**

Boiling point at 1 atm, deg C ----- 2230      Specific gravity ( $\text{H}_2\text{O}=1$ ) ----- 2.65  
 Vapor pressure at 1732 C, mm Hg --- 10      Melting point, deg C ----- 1610  
 Water solubility ----- Insoluble      Formula weight ( $\text{SiO}_2$ ) ----- 60.09

Appearance: When pure, material is white powder or colorless crystals. Impurities  
 can produce various colorations.

**SECTION IV. FIRE AND EXPLOSION DATA**

LOWER UPPER

Flash Point and Method

Autoignition Temp.

Flammability Limits In Air

This material is noncombustible. Use extinguishing media appropriate to the surrounding  
 fire.

**SECTION V. REACTIVITY DATA**

Material is highly stable under ordinary conditions (sand-like).

When exposed to high temperatures, quartz (or amorphous silica) can change crystal  
 structure to form tridymite (above 870 C) or cristobalite (above 1470 C) which have  
 greater health hazards than quartz.

It is attacked by strong alkalis. It will combine chemically with many metallic oxides  
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No. 71

SECTION VI. HEALTH HAZARD INFORMATION	TLV (See Sect. II)
<p>Health hazards can occur from excessive inhalation of silica dust, otherwise nontoxic. Crystalline silica in the lung can produce a pneumoconiosis, commonly called silicosis, which is a chronic, slowly developing disease. Symptoms are usually delayed (10 years or more) but may appear in as little as 8-18 months after initial exposure. Symptoms are dyspnea - caused by the many lung scars that develop from the silica dust - pain in the chest, decreased vital capacity, and cough.</p> <p>Chronic lung scarring leads to a progressive massive fibrosis that is often accompanied by increased susceptibility to pulmonary tuberculosis and other respiratory infections. In a diseased lung, dust particles under 3 microns greatly outnumber larger ones, and many particles are less than 1 micron. Symptoms of silicosis become progressive with continued exposure and advancing age. Smoking can increase the risk of injury.</p> <p><b>FIRST AID:</b></p> <p><u>Eye Contact:</u> Flush eyes thoroughly with running water, including under the eyelids. For at least 15 minutes.</p> <p><u>Skin Contact:</u> Wash affected area with soap and water.</p> <p><u>Inhalation:</u> Remove to fresh air. Give oxygen with intermittent positive-pressure and/or artificial respiration as needed. Seek medical attention for treatment, observation, and support as needed.</p>	
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**MATERIAL SAFETY DATA SHEET**

CORPORATE RESEARCH &amp; DEVELOPMENT

SCHENECTADY, N. Y. 12305

Phone: (518) 385-4085

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**ms**  
 MATERIALS SERVICES  
 INFORMATION

No. 71

QUARTZ

Date September 1980

**SECTION I. MATERIAL IDENTIFICATION****MATERIAL NAME:** QUARTZ
**OTHER DESIGNATIONS:** Silica, Crystalline; Flint; Agate; Sand; Silicic Anhydride; Silica Flour; Silicon Dioxide; SiO<sub>2</sub>; GE Materials D4C15, D4C19, D4C38, D4C39, D4C45-47, and D4C50; CAS #014 808 607
**MANUFACTURER:** Available from many sources.**SECTION II. INGREDIENTS AND HAZARDS**

Silicon Dioxide, Crystalline (Quartz form)

&gt;98

**HAZARD DATA**
 8-hr TWA (Resp. Dust)\*  
 250 mppcf\*\* or 10 mg/m<sup>3</sup>  
 ZSiO<sub>2</sub>+5 or ZSiO<sub>2</sub>+2

 Human, inhalation  
 TL<sub>0</sub> 16 mppcf/8-hr  
 intermittent for 17.9 yr  
 Pulmonary Effects

 Rat, TD<sub>0</sub> 90 mg/kg  
 Intraperitoneal -  
 Neoplastic Effects  
 Intrapleural -  
 Carcinogenic Effects

 \*Current OSHA Standard. ACGIH (1980) 8-hr TWA is  
 3 mppcf\*\* or 0.1 mg/m<sup>3</sup> for respirable dust. (Values  
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Boiling point at 1 atm, deg C ----- 2230

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Vapor pressure at 1732 C, mm Hg --- 10

Melting point, deg C ----- 1610

Water solubility ----- Insoluble

Formula weight (SiO<sub>2</sub>) ----- 60.09
**Appearance:** When pure, material is white powder or colorless crystals. Impurities  
 can produce various colorations.
**SECTION IV. FIRE AND EXPLOSION DATA**

Flash Point and Method

Autoignition Temp.

Flammability Limits In Air

LOWER

UPPER

 This material is noncombustible. Use extinguishing media appropriate to the surrounding  
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**SECTION V. REACTIVITY DATA**

Material is highly stable under ordinary conditions (sand-like).

 When exposed to high temperatures, quartz (or amorphous silica) can change crystal  
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 It is attacked by strong alkalis. It will combine chemically with many metallic oxides  
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 trifluoride, and certain other powerful oxidizers and fluorine-containing compounds.

W.I.N. 100002, 3, 4, 5&9, PROP, SAND Class E, 12/20, 16/30, 20/40, 30/50 & 40/70 (white)

No. 71

<b>SECTION VI. HEALTH HAZARD INFORMATION</b>		<b>TLV (See Sect. II)</b>	
<p>Health hazards can occur from excessive inhalation of silica dust, otherwise nontoxic. Crystalline silica in the lung can produce a pneumoconiosis, commonly called silicosis, which is a chronic, slowly developing disease. Symptoms are usually delayed (10 years or more) but may appear in as little as 8-18 months after initial exposure. Symptoms are dyspnea - caused by the many lung scars that develop from the silica dust - pain in the chest, decreased vital capacity, and cough.</p> <p>Chronic lung scarring leads to a progressive massive fibrosis that is often accompanied by increased susceptibility to pulmonary tuberculosis and other respiratory infections. In a diseased lung, dust particles under 3 microns greatly outnumber larger ones, and many particles are less than 1 micron. Symptoms of silicosis become progressive with continued exposure and advancing age. Smoking can increase the risk of injury.</p> <p><b>FIRST AID:</b></p> <p><u>Eye Contact:</u> Flush eyes thoroughly with running water, including under the eyelids. for at least 15 minutes.</p> <p><u>Skin Contact:</u> Wash affected area with soap and water.</p> <p><u>Inhalation:</u> Remove to fresh air. Give oxygen with intermittent positive-pressure and/or artificial respiration as needed. Seek medical attention for treatment, observation, and support as needed.</p>			
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<p>Notify safety personnel of major spills. Provide ventilation. Clean-up personnel need protection against eye contact and inhalation of dust. Pick up spills taking care to avoid raising dust clouds (use vacuum or wet sweeping). Place in closed container for disposal.</p> <p><b>DISPOSAL:</b> Use waste containers suitable for transportation and dispose in approved landfill. Follow Federal, State, and Local regulations.</p>			
<b>SECTION VIII. SPECIAL PROTECTION INFORMATION</b>			
<p>Provide adequate general and local exhaust ventilation to meet TLV requirements. Provide workers with dust respirators for use in emergency or nonroutine situations where dust levels may exceed TLV. Efficient dust respirators can be used up to 10X TLV. For exposure up to 100X TLV use full facepiece respirator with replaceable dust filter. Higher exposures need an approved, air supplied respirator.</p> <p>Workers should wear safety goggles and work gloves for eye and skin protection. (Sand blasters require special protective equipment and safety precautions.)</p> <p>Eyewash fountains should be available to areas of use and handling.</p> <p>Provide preplacement and annual physical exams for exposed workers with emphasis on respiratory and cardiovascular systems. Preclude from exposure those individuals with pulmonary disease.</p>			
<b>SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS</b>			
<p>Store powdered silica in closed containers in a dry, well-ventilated area.</p> <p>Keep dust in work area at a minimum and maintain air concentration of silica as far below TLV as feasible. Use good housekeeping techniques, such as, vacuuming and wet sweeping to remove collected dust and prevent formation of dust clouds.</p> <p>Avoid inhalation of dust. Avoid contact of materials with eyes.</p> <p>NIOSH (1976) warns of increased risk of impaired health due to a combination of smoking and silica dust exposure.</p>			
<p><b>DATA SOURCE(S) CODE:</b> 2-12, 19, 24-27, 31, 34, 37, 38</p>		<p><b>APPROVALS:</b> MIS CRD <i>J. M. Nielsen</i></p> <p>Industrial Hygiene and Safety <i>10-9-80</i></p> <p>MEDICAL REVIEW: 10/22/80</p>	
<p><small>Judgments as to the suitability of information herein for purchaser's purposes are necessarily purchaser's responsibility. Therefore, although reasonable care has been taken in the preparation of such information, General Electric Company extends no warranties, makes no representations and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or for consequences of its use.</small></p>			

Attachment to MSDS: W.I.N. 100002, 3, 4, 5&9, PROP, SAND,  
Class E, 12/20, 16/30, 20/40, 30/50 & 40/70 (white)

## I. RECOMMENDATIONS FOR A CRYSTALLINE SILICA STANDARD

The National Institute for Occupational Safety and Health (NIOSH) recommends that employee exposure to crystalline silica in the workplace be controlled by adherence to the following sections. The standard is designed to protect the health and safety of workers for up to a 10-hour workday, 40-hour workweek, over a working lifetime. Compliance with the standard should prevent adverse effects of crystalline silica on the health and safety of workers. The standard is measurable by techniques that are valid, reproducible, and available to industry and government agencies and are attainable with existing technology. The criteria and the standard recommended in this document will be subject to review and revision as necessary.

Crystalline silica, hereafter referred to in this document as free silica, is defined as silicon dioxide ( $\text{SiO}_2$ ). "Crystalline" refers to the orientation of  $\text{SiO}_2$  molecules in a fixed pattern as opposed to a nonperiodic, random molecular arrangement defined as amorphous. The three most common crystalline forms of free silica encountered in industry are quartz, tridymite, and cristobalite. Micro- and crypto-crystalline varieties of free silica, also included in the recommended standard, are composed of minute grains of free silica cemented together with amorphous silica and include tripoli, flint, chalcedony, agate, onyx, and silica flour. Other forms of free silica which, upon analysis, are found to have a crystalline structure as part of their composition are also subject to the recommended standard.

"Exposure to free silica" means exposure of the worker to an airborne concentration of free silica greater than half of the recommended environmental level in the workplace. Worker exposure at lower environmental concentrations will not require adherence to the following sections.

### Section 1—Environmental (Workplace Air)

#### (a) Concentration

Occupational exposure shall be controlled so that no worker is exposed to a time-weighted average (TWA) concentration of free silica greater than 50 micrograms per cubic meter of air (50  $\mu\text{g}/\text{cu m}$ ; 0.050  $\text{mg}/\text{cu m}$ ) as determined by a full-shift sample for up to a 10-hour workday, 40-hour workweek.

#### (b) Sampling, Calibration, and Analysis

Exposure to free silica shall be determined by a personal (breathing zone) sample.

Procedures for sampling, calibration of equipment, and analysis of environmental samples shall be as provided in Appendices I and II, or by methods shown to be equivalent in sensitivity, accuracy, and precision to the method specified.

### Section 2—Medical

(a) Medical examinations shall be made available to all workers subject to "exposure to free silica" prior

to employee placement and at least once each 3 years thereafter. Examinations shall include as a minimum:

(1) A medical and occupational history to elicit data on worker exposure to free silica and signs and symptoms of respiratory disease.

(2) A chest roentgenogram (posteroanterior 14" by 17" or 14" by 14") classified according to the 1971 ILO International Classification of Radiographs of Pneumoconioses. [ILO U/C International Classification of Radiographs of Pneumoconioses 1971, Occupational Safety and Health Series 22 (rev). Geneva, International Labor Office, 1972]

(3) Pulmonary function tests including forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV<sub>1</sub>) to provide a baseline for evaluation of pulmonary function and to help determine the advisability of the workers using negative- or positive-pressure respirators. It should be noted that pulmonary function tests may vary significantly in various ethnic groups. For example, in black persons, the test values for the FVC should be divided by 0.85 before the percentage value is compared with normal figures.

(4) Body weight.

(5) Height.

(6) Age.

(7) Initial medical examinations for presently employed workers shall be offered within 6 months of the promulgation of a standard incorporating these recommendations.

#### (b) Medical Management

An employee with or without roentgenographic evidence of silicosis who has respiratory distress and/or pulmonary functional impairment should be fully evaluated by a physician qualified to advise the employee whether he should continue working in a dusty trade.

(c) These records shall be available to the medical representatives of the Secretary of Health, Education, and Welfare, of the Secretary of Labor, of the employee or former employee, and of the employer.

### Section 3 — Labeling (Posting)

(a) The following warning shall be posted to be readily visible at or near entrances or accessways to work areas where there is potential exposure to free silica.

**WARNING!**

**FREE SILICA WORK AREA**

**Unauthorized Persons Keep Out**

(b) The following warning shall be posted in readily visible locations in any work area where there is potential exposure to free silica.

## WARNING!

### FREE SILICA WORK AREA

Avoid Breathing Dust

May Cause Delayed Lung Injury (Silicosis)

The posting required under sections 3(a) and 3(b) shall be printed both in English and in the predominant language of non-English-speaking workers, unless they are otherwise trained and informed of the hazardous areas. Illiterate workers shall receive such training.

(c) The following warning label, in addition to or in combination with labels required by other statutes, regulations, or ordinances, shall be affixed to all new materials, mixtures, and other products containing more than 5% free silica, or to their containers.

## WARNING!

### CONTAINS FREE SILICA

DO NOT BREATHE DUST

May Cause Delayed Lung Injury (Silicosis)

### Section 4 — Personal Protective Equipment and Work Clothing

Engineering controls shall be used to maintain free silica dust exposures below the prescribed limit. Subsection (a) shall apply whenever a variance from the standard recommended in Section 1 is granted under provisions of the Occupational Safety and Health Act, or in the interim period during the application for a

variance. When the limits of exposure to free silica prescribed in paragraph (a) of Section 1 cannot be met by limiting the concentration of free silica in the work environment, an employer must utilize, as provided in subsection (a) of this section, a program of respiratory protection to effect the required protection of every worker exposed.

### (a) Respiratory Protection

Appropriate respirators, as prescribed in Table I-1, shall be provided and used when a variance has been granted to allow respirators as a means of control of exposure to routine operations and while the application is pending. Administrative controls may also be used to reduce exposure. Respirators shall also be provided and used for nonroutine operations (occasional brief exposures above the environmental standard and for emergencies); however, for these instances a variance is not required but the requirements set forth below continue to apply. Appropriate respirators as described in Table I-1 shall only be used pursuant to the following requirements:

(1) For the purpose of determining the type of respirator to be used, the employer shall measure the atmospheric concentration of free silica in the workplace when the initial application for variance is made and thereafter whenever process, worksite, climate, or control changes occur which are likely to affect the free silica concentration. This requirement shall not apply when only atmosphere-supplying positive-pressure respirators are used. The employer shall ensure

TABLE I-1  
REQUIREMENTS FOR RESPIRATOR USAGE AT  
CONCENTRATIONS ABOVE THE STANDARD

Concentrations of Free Silica in Multiples of the Standard	Respirator Type*
Less than or equal to 5X	Single use (valveless type) dust respirator.
Less than or equal to 10X	Quarter or half mask respirator with replaceable dust filter or single use (with valve) dust respirator. Type C, demand type (negative pressure), with quarter or half mask facepiece.
Less than or equal to 100X	Full facepiece respirator with replaceable dust filter. Type C, supplied air respirator, demand type (negative pressure), with full facepiece.
Less than or equal to 200X	Powered air-purifying (positive-pressure) respirator, with replace- able applicable filter.**
Greater than 200X	Type C, supplied air respirator, continuous flow type (positive pres- sure), with full facepiece, hood, or helmet.

\*Where a variance has been obtained for abrasive blasting with silica sand, use only Type C continuous flow, supplied air respirator with hood or helmet.

\*\*An alternative is to select the standard high efficiency filter which must be at least 99.97% efficient against 0.3-micrometer dioctyl phthalate (DOP).

that no worker is exposed to free silica in excess of the standard because of improper respirator selection, fit, use, or maintenance.

(2) Employees experiencing breathing difficulty while using respirators shall be evaluated by a physician to determine the ability of the worker to wear a respirator.

(3) A respiratory protective program meeting the requirements of Section 1910.134 of the Occupational Safety and Health Standards shall be established and enforced by the employer. [29 CFR 1910.134 published in the Federal Register, vol 39, page 23671, dated June 27, 1974, as amended]

(4) The employer shall provide respirators in accordance with Table I-1 and shall ensure that the employee uses the appropriate respirator.

(5) Respiratory protective devices in Table I-1 shall be those approved either under 30 CFR 11, published March 25, 1972, or under the following regulations:

(A) Filter-type dust, fume, and mist respirators—30 CFR 14 (Bureau of Mines Schedule 21B)

(B) Supplied air respirator—30 CFR 12 (Bureau of Mines Schedule 19B)

(6) A respirator specified for use in higher concentrations of free silica may be used in atmospheres of lower concentrations.

(7) Employees shall be given instruction on the use of respirators assigned to them, on cleaning respirators, and on testing for leakage.

**(b) Work Clothing**

Where exposure to free silica is above the recommended environmental limit, work clothing shall be vacuumed before removal. Clothes shall not be cleaned by blowing or shaking.

**Section 5 — Informing Employees of Hazards from Free Silica**

(a) Each employee exposed to free silica shall be apprised at the beginning of his employment or assignment to a free silica exposure area of the hazards, relevant symptoms, appropriate emergency procedures, and proper conditions and precautions for safe use or exposure. The employee shall be instructed as to availability of such information including that prescribed in (b) below. Such information shall be kept on file and shall be accessible to the worker at each place of employment where free silica is involved in unit processes and operations. Workers shall also be advised of the increased risk of impaired health due to the combination of smoking and free silica dust exposure.

(b) Information, to the extent applicable to free silica, as specified in Appendix III shall be recorded on U.S. Department of Labor Form OSHA-20, "Material Safety Data Sheet" (see Appendix III) or on a similar form approved by the Occupational Safety and Health Administration, U.S. Department of Labor.

**Section 6 — Work Practices and Control Procedures**

**(a) Substitution**

(1) Wherever a hazard of silicosis can be elimi-

nated by a reasonable substitution of other less toxic materials for free silica, the substitution shall be made unless the silica sand has been so processed before use to make it nonrespirable such as by washing to remove fine particles. Examples of such substitution are the use of alumina instead of flint for china placing in potteries, and the substitution of a quartz-free grit in abrasive blasting.

(2) Uncontrolled abrasive blasting with silica sand is such a severe silicosis hazard that special attention must be given to this problem. Silica sand, or other materials containing more than 1% free silica, should be prohibited as an abrasive substance in abrasive blasting cleaning operations.

**(b) Dust Suppression**

Moisture shall be added where such addition can substantially reduce the exposure to airborne respirable free silica dust.

**(c) Ventilation**

Where a local exhaust ventilation and collection system is used, it shall be designed and maintained to prevent the accumulation or recirculation of free silica dust into the workplace. The total system shall be inspected periodically for efficiency of operation. In addition, necessary measures shall be taken to ensure that discharge outdoors will not produce a health hazard to humans, animals, or plants.

**(d) General Housekeeping**

(1) Cleaning by blowing with compressed air or dry sweeping shall be avoided and dustless methods of cleaning such as vacuuming or washing down with water shall be substituted.

(2) Emphasis shall be placed upon cleanup of spills, preventive maintenance and repair of equipment, proper storage of materials, and collection of dusts containing free silica. Sanitation shall meet the requirements of 29 CFR 1910.141 as amended.

**Section 7 — Monitoring and Recordkeeping Requirements**

Work environments where it has been determined, on the basis of a professional industrial hygiene survey or by the judgment of a compliance officer, that the workers' exposure does not exceed half of the standard shall not be considered to have exposure to free silica. Records of these surveys, including the basis for concluding that air levels are at or below half of the standard shall be maintained. Surveys shall be repeated when any process change indicates a need for reevaluation or at the discretion of the compliance officer. Requirements set forth below apply to areas in which there is "exposure to free silica."

Employers shall maintain records of the workers' exposure to free silica based upon the following sampling and recording schedules:

(a) In all monitoring, samples representative of the exposure in the breathing zone of employees shall be collected. An adequate number of samples shall be collected to permit construction of a full-shift exposure for every operation or process. The minimum number of time-weighted average determinations for an operation or process shall be based on the number



of workers exposed as provided in Table I-2 or as otherwise indicated by a professional industrial survey.

(b) The first work environment (breathing zone) sampling shall be completed within 6 months of the promulgation of a standard incorporating these recommendations.

(c) Work environment (breathing zone) samples shall be taken within 30 days after installation of a new process or process changes.

TABLE I-2  
SAMPLING SCHEDULE

Number of Employees Exposed	Number of TWA Determinations
1-20	50% of the total number of workers
21-100	10 plus 25% of the excess over 20 workers
Over 100	30 plus 5% of the excess over 100 workers

(d) Samples shall be collected and analyzed at least every 6 months in accordance with Appendices I and II for the evaluation of the workers' exposure with respect to the recommended standard.

(e) When monitoring of the workers' exposure indicates a free silica concentration in excess of the recommended standard, suitable controls shall be initiated to reduce the exposure level to or below the recommended standard. In such cases monitoring shall continue at 30-day intervals until two consecutive surveys indicate the recommended standard is no longer exceeded. Periodic review and evaluation of environmental and medical data shall be performed to determine the effectiveness of control measures.

(f) Records shall be maintained of medical examinations and all sampling schedules to include the sampling and analytical methods, type of personal protection devices, if any, in use at the time of sampling and the determined free silica dust concentration. Records shall be maintained for at least 30 years following termination of workers' employment. Each employee shall be able to obtain information on his exposure.



100005

# Precautionary Labeling for Bags

**Trade Name:** "Ottawa" (white) Fracturing Sand  
W.I.N.: 100002, 3, 4, 5&9

## **DIRECTIONS:**

**For Proper Use, Refer to Service Bulletin No.(s) 810.0WG**

**SPECIFIC USAGE:** Use at the rate of 0.1 to 15 lb/gallon of fracturing fluid.

**When Handling This Product Employees MUST WEAR:** chemical goggles, gloves and dust mask.

## **FOR INDUSTRIAL USE ONLY**

### **WARNING!**

**CONTAINS FREE SILICA**  
**Do Not Breathe Dust**  
**May cause delayed lung injury (Silicosis)**

**Refer to MSDS and SPM-04-04 for Safety Requirements.**

**MATERIAL SAFETY DATA SHEET****CORPORATE RESEARCH & DEVELOPMENT****SCHENECTADY, N. Y. 12305**

Phone: (518) 385-4085

DIAL COM: 8\*235-4085

**MS SERVICES**  
**INFORMATION**No. 71**QUARTZ**Date **September 1980****SECTION I. MATERIAL IDENTIFICATION****MATERIAL NAME:** QUARTZ**OTHER DESIGNATIONS:** Silica, Crystalline; Flint; Agate; Sand; Silicic Anhydride; Silica Flour; Silicon Dioxide; SiO<sub>2</sub>; GE Materials D4C15, D4C19, D4C38, D4C39, D4C45-47, and D4C50; CAS #014 808 607**MANUFACTURER:** Available from many sources.**SECTION II. INGREDIENTS AND HAZARDS**

Silicon Dioxide, Crystalline (Quartz form)

&gt;98

**HAZARD DATA**8-hr TWA (Resp. Dust) \*  
250 mppcf\*\* or 10 mg/m<sup>3</sup>  
ZS10<sub>2</sub>+5 or ZS10<sub>2</sub>+2Human, inhalation  
TCLo 16 mppcf/8-hr  
intermittent for 17.9 yr  
Pulmonary EffectsRat, TDLo 90 mg/kg  
Intraperitoneal -  
Neoplastic Effects  
Intrapleural -  
Carcinogenic Effects\*Current OSHA Standard. ACGIH (1980) 8-hr TWA is  
3 mppcf\*\* or 0.1 mg/m<sup>3</sup> for respirable dust. (Values  
for total dust, mg/m<sup>3</sup>, are three times higher for  
both OSHA and ACGIH.)NIOSH (1974) has proposed a 10-hr TWA of 0.05 mg/m<sup>3</sup>,  
permissible exposure level.

\*\*Millions of particles per cubic foot of air.

**SECTION III. PHYSICAL DATA**

Boiling point at 1 atm, deg C ----- 2230

Specific gravity (H<sub>2</sub>O=1) ----- 2.65

Vapor pressure at 1732 C, mm Hg ----- 10

Melting point, deg C ----- 1610

Water solubility ----- Insoluble

Formula weight (SiO<sub>2</sub>) ----- 60.09Appearance: When pure, material is white powder or colorless crystals. Impurities  
can produce various colorations.**SECTION IV. FIRE AND EXPLOSION DATA**

LOWER UPPER

Flash Point and Method

Autoignition Temp.

Flammability Limits In Air

This material is noncombustible. Use extinguishing media appropriate to the surrounding  
fire.**SECTION V. REACTIVITY DATA**

Material is highly stable under ordinary conditions (sand-like).

When exposed to high temperatures, quartz (or amorphous silica) can change crystal  
structure to form tridymite (above 870 C) or cristobalite (above 1470 C) which have  
greater health hazards than quartz.It is attacked by strong alkalis. It will combine chemically with many metallic oxides  
upon heating at high temperature. It reacts with hydrofluoric acid to generate volatile  
SiF<sub>4</sub>. It is incompatible with oxygen difluoride, chlorine trifluoride, manganese  
trifluoride, and certain other powerful oxidizers and fluorine-containing compounds.

SECTION VI. HEALTH HAZARD INFORMATION	TLV (See Sect. II)						
<p>Health hazards can occur from excessive inhalation of silica dust, otherwise nontoxic. Crystalline silica in the lung can produce a pneumoconiosis, commonly called silicosis, which is a chronic, slowly developing disease. Symptoms are usually delayed (10 years or more) but may appear in as little as 8-18 months after initial exposure. Symptoms are dyspnea - caused by the many lung scars that develop from the silica dust - pain in the chest, decreased vital capacity, and cough.</p> <p>Chronic lung scarring leads to a progressive massive fibrosis that is often accompanied by increased susceptibility to pulmonary tuberculosis and other respiratory infections. In a diseased lung, dust particles under 3 microns greatly outnumber larger ones, and many particles are less than 1 micron. Symptoms of silicosis become progressive with continued exposure and advancing age. Smoking can increase the risk of injury.</p> <p><b>FIRST AID:</b></p> <p><u>Eye Contact:</u> Flush eyes thoroughly with running water, including under the eyelids. for at least 15 minutes.</p> <p><u>Skin Contact:</u> Wash affected area with soap and water.</p> <p><u>Inhalation:</u> Remove to fresh air. Give oxygen with intermittent positive-pressure and/or artificial respiration as needed. Seek medical attention for treatment, observation, and support as needed.</p>							
SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES							
<p>Notify safety personnel of major spills. Provide ventilation. Clean-up personnel need protection against eye contact and inhalation of dust. Pick up spills taking care to avoid raising dust clouds (use vacuum or wet sweeping). Place in closed container for disposal.</p> <p><u>DISPOSAL:</u> Use waste containers suitable for transportation and dispose in approved landfill. Follow Federal, State, and Local regulations.</p>							
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"Exposure to free silica" means exposure of the worker to an airborne concentration of free silica greater than half of the recommended environmental level in the workplace. Worker exposure at lower environmental concentrations will not require adherence to the following sections.

### Section 1—Environmental (Workplace Air)

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Exposure to free silica shall be determined by a personal (breathing zone) sample.

Procedures for sampling, calibration of equipment, and analysis of environmental samples shall be as provided in Appendices I and II, or by methods shown to be equivalent in sensitivity, accuracy, and precision to the method specified.

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(a) Medical examinations shall be made available to all workers subject to "exposure to free silica" prior

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(7) Initial medical examinations for presently employed workers shall be offered within 6 months of the promulgation of a standard incorporating these recommendations.

#### (b) Medical Management

An employee with or without roentgenographic evidence of silicosis who has respiratory distress and/or pulmonary functional impairment should be fully evaluated by a physician qualified to advise the employee whether he should continue working in a dusty trade.

(c) These records shall be available to the medical representatives of the Secretary of Health, Education, and Welfare, of the Secretary of Labor, of the employee or former employee, and of the employer.

(d) Medical records shall be maintained for at least 30 years following the employee's termination of employment.

### Section 3 — Labeling (Posting)

(a) The following warning shall be posted to be readily visible at or near entrances or accessways to work areas where there is potential exposure to free silica.

#### WARNING!

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(b) The following warning shall be posted in readily visible locations in any work area where there is potential exposure to free silica.

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The posting required under sections 3(a) and 3(b) shall be printed both in English and in the predominant language of non-English-speaking workers, unless they are otherwise trained and informed of the hazardous areas. Illiterate workers shall receive such training.

(c) The following warning label, in addition to or in combination with labels required by other statutes, regulations, or ordinances, shall be affixed to all new materials, mixtures, and other products containing more than 5% free silica, or to their containers.

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**DO NOT BREATHE DUST**  
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**Section 4 — Personal Protective Equipment and Work Clothing**

Engineering controls shall be used to maintain free silica dust exposures below the prescribed limit. Subsection (a) shall apply whenever a variance from the standard recommended in Section 1 is granted under provisions of the Occupational Safety and Health Act, or in the interim period during the application for a

variance. When the limits of exposure to free silica prescribed in paragraph (a) of Section 1 cannot be met by limiting the concentration of free silica in the work environment, an employer must utilize, as provided in subsection (a) of this section, a program of respiratory protection to effect the required protection of every worker exposed.

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Appropriate respirators, as prescribed in Table I-1, shall be provided and used when a variance has been granted to allow respirators as a means of control of exposure to routine operations and while the application is pending. Administrative controls may also be used to reduce exposure. Respirators shall also be provided and used for nonroutine operations (occasional brief exposures above the environmental standard and for emergencies); however, for these instances a variance is not required but the requirements set forth below continue to apply. Appropriate respirators as described in Table I-1 shall only be used pursuant to the following requirements:

(1) For the purpose of determining the type of respirator to be used, the employer shall measure the atmospheric concentration of free silica in the workplace when the initial application for variance is made and thereafter whenever process, worksite, climate, or control changes occur which are likely to affect the free silica concentration. This requirement shall not apply when only atmosphere-supplying positive-pressure respirators are used. The employer shall ensure

**TABLE I-1**  
**REQUIREMENTS FOR RESPIRATOR USAGE AT**  
**CONCENTRATIONS ABOVE THE STANDARD**

Concentrations of Free Silica in Multiples of the Standard	Respirator Type*
Less than or equal to 5X	Single use (valveless type) dust respirator.
Less than or equal to 10X	Quarter or half mask respirator with replaceable dust filter or single use (with valve) dust respirator. Type C, demand type (negative pressure), with quarter or half mask facepiece.
Less than or equal to 100X	Full facepiece respirator with replaceable dust filter. Type C, supplied air respirator, demand type (negative pressure), with full facepiece.
Less than or equal to 200X	Powered air-purifying (positive-pressure) respirator, with replaceable applicable filter.**
Greater than 200X	Type C, supplied air respirator, continuous flow type (positive pressure), with full facepiece, hood, or helmet.

\*Where a variance has been obtained for abrasive blasting with silica sand, use only Type C continuous flow, supplied air respirator with hood or helmet.

\*\*An alternative is to select the standard high efficiency filter which must be at least 99.97% efficient against 0.3-micrometer dioctyl phthalate (DOP).

that no worker is exposed to free silica in excess of the standard because of improper respirator selection, fit, use, or maintenance.

(2) Employees experiencing breathing difficulty while using respirators shall be evaluated by a physician to determine the ability of the worker to wear a respirator.

(3) A respiratory protective program meeting the requirements of Section 1910.134 of the Occupational Safety and Health Standards shall be established and enforced by the employer. [29 CFR 1910.134 published in the Federal Register, vol 39, page 23671, dated June 27, 1974, as amended]

(4) The employer shall provide respirators in accordance with Table I-1 and shall ensure that the employee uses the appropriate respirator.

(5) Respiratory protective devices in Table I-1 shall be those approved either under 30 CFR 11, published March 25, 1972, or under the following regulations:

(A) Filter-type dust, fume, and mist respirators—30 CFR 14 (Bureau of Mines Schedule 21B)

(B) Supplied air respirator—30 CFR 12 (Bureau of Mines Schedule 19B)

(6) A respirator specified for use in higher concentrations of free silica may be used in atmospheres of lower concentrations.

(7) Employees shall be given instruction on the use of respirators assigned to them, on cleaning respirators, and on testing for leakage.

**(b) Work Clothing**

Where exposure to free silica is above the recommended environmental limit, work clothing shall be vacuumed before removal. Clothes shall not be cleaned by blowing or shaking.

**Section 5 — Informing Employees of Hazards from Free Silica**

(a) Each employee exposed to free silica shall be apprised at the beginning of his employment or assignment to a free silica exposure area of the hazards, relevant symptoms, appropriate emergency procedures, and proper conditions and precautions for safe use or exposure. The employee shall be instructed as to availability of such information including that prescribed in (b) below. Such information shall be kept on file and shall be accessible to the worker at each place of employment where free silica is involved in unit processes and operations. Workers shall also be advised of the increased risk of impaired health due to the combination of smoking and free silica dust exposure.

(b) Information, to the extent applicable to free silica, as specified in Appendix III shall be recorded on U.S. Department of Labor Form OSHA-20, "Material Safety Data Sheet" (see Appendix III) or on a similar form approved by the Occupational Safety and Health Administration, U.S. Department of Labor.

**Section 6 — Work Practices and Control Procedures**

**(a) Substitution**

(1) Wherever a hazard of silicosis can be elimi-

nated by a reasonable substitution of other less toxic materials for free silica, the substitution shall be made unless the silica sand has been so processed before use to make it nonrespirable such as by washing to remove fine particles. Examples of such substitution are the use of alumina instead of flint for china placing in potteries, and the substitution of a quartz-free grit in abrasive blasting.

(2) Uncontrolled abrasive blasting with silica sand is such a severe silicosis hazard that special attention must be given to this problem. Silica sand, or other materials containing more than 1% free silica, should be prohibited as an abrasive substance in abrasive blasting cleaning operations.

**(b) Dust Suppression**

Moisture shall be added where such addition can substantially reduce the exposure to airborne respirable free silica dust.

**(c) Ventilation**

Where a local exhaust ventilation and collection system is used, it shall be designed and maintained to prevent the accumulation or recirculation of free silica dust into the workplace. The total system shall be inspected periodically for efficiency of operation. In addition, necessary measures shall be taken to ensure that discharge outdoors will not produce a health hazard to humans, animals, or plants.

**(d) General Housekeeping**

(1) Cleaning by blowing with compressed air or dry sweeping shall be avoided and dustless methods of cleaning such as vacuuming or washing down with water shall be substituted.

(2) Emphasis shall be placed upon cleanup of spills, preventive maintenance and repair of equipment, proper storage of materials, and collection of dusts containing free silica. Sanitation shall meet the requirements of 29 CFR 1910.141 as amended.

**Section 7 — Monitoring and Recordkeeping Requirements**

Work environments where it has been determined, on the basis of a professional industrial hygiene survey or by the judgment of a compliance officer, that the workers' exposure does not exceed half of the standard shall not be considered to have exposure to free silica. Records of these surveys, including the basis for concluding that air levels are at or below half of the standard shall be maintained. Surveys shall be repeated when any process change indicates a need for reevaluation or at the discretion of the compliance officer. Requirements set forth below apply to areas in which there is "exposure to free silica."

Employers shall maintain records of the workers' exposure to free silica based upon the following sampling and recording schedules:

(a) In all monitoring, samples representative of the exposure in the breathing zone of employees shall be collected. An adequate number of samples shall be collected to permit construction of a full-shift exposure for every operation or process. The minimum number of time-weighted average determinations for an operation or process shall be based on the number

of workers exposed as provided in Table I-2 or as otherwise indicated by a professional industrial survey.

(b) The first work environment (breathing zone) sampling shall be completed within 6 months of the promulgation of a standard incorporating these recommendations.

(c) Work environment (breathing zone) samples shall be taken within 30 days after installation of a new process or process changes.

TABLE I-2  
SAMPLING SCHEDULE

Number of Employees Exposed	Number of TWA Determinations
1-20	50% of the total number of workers
21-100	10 plus 25% of the excess over 20 workers
Over 100	30 plus 5% of the excess over 100 workers

(d) Samples shall be collected and analyzed at least every 6 months in accordance with Appendices I and II for the evaluation of the workers' exposure with respect to the recommended standard.

(e) When monitoring of the workers' exposure indicates a free silica concentration in excess of the recommended standard, suitable controls shall be initiated to reduce the exposure level to or below the recommended standard. In such cases monitoring shall continue at 30-day intervals until two consecutive surveys indicate the recommended standard is no longer exceeded. Periodic review and evaluation of environmental and medical data shall be performed to determine the effectiveness of control measures.

(f) Records shall be maintained of medical examinations and all sampling schedules to include the sampling and analytical methods, type of personal protection devices, if any, in use at the time of sampling and the determined free silica dust concentration. Records shall be maintained for at least 30 years following termination of workers' employment. Each employee shall be able to obtain information on his exposure.





1000021

## Precautionary Labeling for Bags

**Trade Name:** "Ottawa" (white) Fracturing Sand  
W.I.N.: 100002, 3, 4, 5&9

### **DIRECTIONS:**

For Proper Use, Refer to Service Bulletin No.(s) 810.OWG

**SPECIFIC USAGE:** Use at the rate of 0.1 to 15 lb/gallon of fracturing fluid.

**When Handling This Product Employees MUST WEAR:** chemical goggles, gloves and dust mask.

### **FOR INDUSTRIAL USE ONLY**

#### **WARNING!**

**CONTAINS FREE SILICA**  
**Do Not Breathe Dust**  
May cause delayed lung injury (Silicosis)

Refer to MSDS and SPM-04-04 for Safety Requirements.



**U.S. DEPARTMENT OF LABOR**  
Occupational Safety and Health Administration

**MATERIAL SAFETY DATA SHEET**

Date: October 24, 1990

**SECTION I**

SUPPLIER'S NAME The Western Company

EMERGENCY TELEPHONE NO. (817) 731-5100

ADDRESS (Number, Street, City, State and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101

CHEMICAL NAME AND SYNONYMS Silicon Dioxide, Amorphous,  
Silica, Fumed

TRADE NAME AND SYNONYMS Silica Fume

CHEMICAL FAMILY Silica

FORMULA  $\text{SiO}_2$

W.I.N. 499588

**SECTION IA - HAZARDOUS MATERIAL CLASSIFICATION**

D.O.T. PROPER SHIPPING NAME N/A

(RQ / )

NAME OF HAZARDOUS COMPONENT Not regulated

HAZARD CLASS Health

IDENTIFICATION NUMBER CAS No. 7631-86-9

D.O.T. LABEL(S) REQUIRED

PRECAUTIONARY LABEL

**SECTION II - HAZARDOUS INGREDIENTS**

	%	TLV (Units)
Silicon Dioxide - amorphous, fumed ( $\text{SiO}_2$ )	87 98	80 $\text{mg}/\text{m}^3$ OSHA 20 mpp CF
Magnesium Oxide ( $\text{MgO}$ )	.1 5	15 $\text{mg}/\text{m}^3$ as fume 10 $\text{mg}/\text{m}^3$ as fume
Iron Oxide ( $\text{Fe}_2\text{O}_3$ )	.1 5	10 $\text{mg}/\text{m}^3$ as fume 5 $\text{mg}/\text{m}^3$ as fume
Carbon	1-3	3.5 $\text{mg}/\text{m}^3$
Calcium Oxide ( $\text{CaO}$ )	< 2	5 $\text{mg}/\text{m}^3$

**SECTION III - PHYSICAL DATA**

BOILING POINT (°F.)/MELTING POINT	2300°C	SPECIFIC GRAVITY ( $\text{H}_2\text{O}=1$ )	0.25
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT, VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR=1)	N/A	EVAPORATION RATE (_____ -1)	N/A
SOLUBILITY IN WATER	Insoluble		

APPEARANCE AND ODOR Medium gray submicron powder, no odor

**SECTION IV - FIRE AND EXPLOSION HAZARD DATA**

FLASH POINT (Method used) N/A

FLAMMABLE LIMITS N/A

Lel

Uel

EXTINGUISHING MEDIA None needed

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS None

TRADE NAME: W.I.N. 499588

SECTION V - HEALTH HAZARD DATA			
THRESHOLD LIMIT VALUE Unknown			
EFFECTS OF OVEREXPOSURE Inhalation: Coughing, sneezing. Eye Contact: Irritation.			
EMERGENCY AND FIRST AID PROCEDURES Inhalation: Remove victim from exposure. Eye Contact: Flush eyes with water.			
SECTION VI - REACTIVITY DATA			
STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	
INCOMPATIBILITY (Materials to avoid) Silica fume is soluble in hydrofluoric acid.			
HAZARDOUS DECOMPOSITION PRODUCTS None.			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	
SECTION VII - SPILL OR LEAK PROCEDURES			
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Vacuum cleaner is recommended to recover spilled material.			
WASTE DISPOSAL METHOD Prevent airborne emissions. Treat as inert and non-toxic.			
SECTION VIII - SPECIAL PROTECTION INFORMATION			
RESPIRATORY PROTECTION (Specify type) In dusty areas, use NIOSH approved Sch 21 respiratory protection.			
VENTILATION	LOCAL EXHAUST In dusty areas.	SPECIAL	
	MECHANICAL (General)	OTHER	
PROTECTIVE GLOVES			
EYE PROTECTION Safety goggles			
OTHER PROTECTIVE EQUIPMENT			
SECTION IX - SPECIAL PRECAUTIONS			
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE Silica fume may cause drying of exposed skin after prolonged exposure.			
OTHER PRECAUTIONS			



U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET

DATE: January 18, 1990

## SECTION I

Supplier's Name <b>The Western Company of North America</b>		EMERGENCY TELEPHONE NO. <b>(817) 731-5100</b>
ADDRESS (Number, Street, City, State, and ZIP Code) <b>P. O. Box 186, Ft. Worth, TX 76101</b>		
CHEMICAL NAME AND SYNONYMS <b>PROPRIETARY</b>	TRADE NAME AND SYNONYMS <b>H1-Seal 2</b>	
CHEMICAL FAMILY <b>PROPRIETARY</b>	FORMULA	<b>W.I.N.499634</b>

## SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	NONE	(RQ / )
NAME OF HAZARDOUS COMPONENT	NONE	
HAZARD CLASS	NONE	
IDENTIFICATION NUMBER	NONE	
D.O.T. LABEL(S) REQUIRED	NONE	
PRECAUTIONARY LABEL	NONE	

## SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
NONE KNOWN		

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	1.30
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR=1)	N/A	EVAPORATION RATE (_____=1)	N/A
SOLUBILITY IN WATER	Insoluble		
APPEARANCE AND ODOR	black powder or chunks		

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	200 F(Tag closed cup)	FLAMMABLE LIMITS	Sto in air	LeI	Uel
EXTINGUISHING MEDIA	Water fog, foam, dry chemical				
SPECIAL FIRE FIGHTING PROCEDURES	Wear self-contained breathing apparatus in closed or poorly ventilated areas				
UNUSUAL FIRE AND EXPLOSION HAZARDS					

TRADE NAME: W.I.N. 499634,

**SECTION V - HEALTH HAZARD DATA**

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Prolonged or repeated inhalation of dust concentrations in excess of TLV may result in lung injury.

EMERGENCY AND FIRST AID PROCEDURES

Eyes - Irrigation of the eye immediately with water for 5 minutes

Skin - Contact will probably cause no more than irritation

Inhalation - Remove to fresh air if occur. Consult medical personnel

**SECTION VI - REACTIVITY DATA**

STABILITY

UNSTABLE

CONDITIONS TO AVOID

STABLE

X

INCOMPATIBILITY (Materials to avoid)

Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS

Oxides of nitrogen, carbon monoxide, carbon dioxide expected on burning

HAZARDOUS  
POLYMERIZATION

MAY OCCUR

WILL NOT OCCUR

X

CONDITIONS TO AVOID

**SECTION VII - SPILL OR LEAK PROCEDURES**

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Scoop and sweep up and return to container or place in container for disposal

WASTE DISPOSAL METHOD

Dispose in accordance with federal, state, and local regulations. Incineration is preferred

**SECTION VIII - SPECIAL PROTECTION INFORMATION**

RESPIRATORY PROTECTION (Specify type)

Prolonged or repeated exposure will require NIOSH approved dust respirator

VENTILATION

LOCAL EXHAUST

sufficient to control dust

MECHANICAL (General)

SPECIAL

NONE

OTHER

PROTECTIVE GLOVES  
recommended

EYE PROTECTION

safety glasses

OTHER PROTECTIVE EQUIPMENT

**SECTION IX - SPECIAL PRECAUTIONS**

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Avoid breathing high dust concentrations. Avoid accumulation of dust.

Store away from sources of ignition.

OTHER PRECAUTIONS

W.I.N. 100122, FLUIDLOSS, AGENT; stim, 100 mesh sand (SF-4)

# MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT

SCHENECTADY, N. Y. 12305

Phone: (518) 385-4085

DIAL COMM: 8\*235-4085

MATERIALS  
IS  
SERVICES  
INFORMATION

No. 71

QUARTZ

Date September 1980

## SECTION I. MATERIAL IDENTIFICATION

MATERIAL NAME: QUARTZ

OTHER DESIGNATIONS: Silica, Crystalline; Flint; Agate; Sand; Silicic Anhydride; Silica Flour; Silicon Dioxide; SiO<sub>2</sub>; GE Materials D4C15, D4C19, D4C38, D4C39, D4C45-47, and D4C50; CAS #014 808 607

MANUFACTURER: Available from many sources.

## SECTION II. INGREDIENTS AND HAZARDS

Silicon Dioxide, Crystalline (Quartz form)

>98

HAZARD DATA

8-hr TWA (Resp. Dust) \*  
250 mppcf\*\* or 10 mg/m<sup>3</sup>  
ZSiO<sub>2</sub>+5 or ZSiO<sub>2</sub>+2

\*Current OSHA Standard. ACGIH (1980) 8-hr TWA is 3 mppcf\*\* or 0.1 mg/m<sup>3</sup> for respirable dust. (Values for total dust, mg/m<sup>3</sup>, are three times higher for both OSHA and ACGIH.)

NIOSH (1974) has proposed a 10-hr TWA of 0.05 mg/m<sup>3</sup>, permissible exposure level.

\*\*Millions of particles per cubic foot of air.

Human, inhalation  
TCLo 16 mppcf/8-hr  
intermittent for 17.9 yr  
Pulmonary Effects  
Rat, TDLo 90 mg/kg  
Intraperitoneal -  
Neoplastic Effects  
Intrapleural -  
Carcinogenic Effects

## SECTION III. PHYSICAL DATA

Boiling point at 1 atm, deg C ----- 2230

Specific gravity (H<sub>2</sub>O=1) ----- 2.65

Vapor pressure at 1732 C, mm Hg --- 10

Melting point, deg C ----- 1610

Water solubility ----- Insoluble

Formula weight (SiO<sub>2</sub>) ----- 60.09

Appearance: When pure, material is white powder or colorless crystals. Impurities can produce various colorations.

## SECTION IV. FIRE AND EXPLOSION DATA

LOWER UPPER

Flash Point and Method

Autoignition Temp.

Flammability Limits In Air

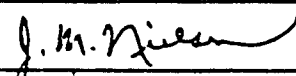
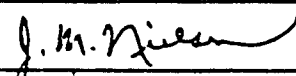
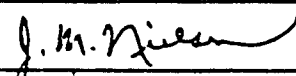
This material is noncombustible. Use extinguishing media appropriate to the surrounding fire.

## SECTION V. REACTIVITY DATA

Material is highly stable under ordinary conditions (sand-like).

When exposed to high temperatures, quartz (or amorphous silica) can change crystal structure to form tridymite (above 870 C) or cristobalite (above 1470 C) which have greater health hazards than quartz.

It is attacked by strong alkalis. It will combine chemically with many metallic oxides upon heating at high temperature. It reacts with hydrofluoric acid to generate volatile SiF<sub>4</sub>. It is incompatible with oxygen difluoride, chlorine trifluoride, manganese trifluoride, and certain other powerful oxidizers and fluorine-containing compounds.

SECTION VI. HEALTH HAZARD INFORMATION	TLV (See Sect. II)			
<p>Health hazards can occur from excessive inhalation of silica dust, otherwise nontoxic. Crystalline silica in the lung can produce a pneumoconiosis, commonly called silicosis, which is a chronic, slowly developing disease. Symptoms are usually delayed (10 years or more) but may appear in as little as 8-18 months after initial exposure. Symptoms are dyspnea - caused by the many lung scars that develop from the silica dust - pain in the chest, decreased vital capacity, and cough.</p> <p>Chronic lung scarring leads to a progressive massive fibrosis that is often accompanied by increased susceptibility to pulmonary tuberculosis and other respiratory infections. In a diseased lung, dust particles under 3 microns greatly outnumber larger ones, and many particles are less than 1 micron. Symptoms of silicosis become progressive with continued exposure and advancing age. Smoking can increase the risk of injury.</p> <p><b>FIRST AID:</b></p> <p><u>Eye Contact:</u> Flush eyes thoroughly with running water, including under the eyelids, for at least 15 minutes.</p> <p><u>Skin Contact:</u> Wash affected area with soap and water.</p> <p><u>Inhalation:</u> Remove to fresh air. Give oxygen with intermittent positive-pressure and/or artificial respiration as needed. Seek medical attention for treatment, observation, and support as needed.</p>				
SECTION VII. SPILL, LEAK, AND DISPOSAL PROCEDURES				
<p>Notify safety personnel of major spills. Provide ventilation. Clean-up personnel need protection against eye contact and inhalation of dust. Pick up spills taking care to avoid raising dust clouds (use vacuum or wet sweeping). Place in closed container for disposal.</p> <p><b>DISPOSAL:</b> Use waste containers suitable for transportation and dispose in approved landfill. Follow Federal, State, and Local regulations.</p>				
SECTION VIII. SPECIAL PROTECTION INFORMATION				
<p>Provide adequate general and local exhaust ventilation to meet TLV requirements. Provide workers with dust respirators for use in emergency or nonroutine situations where dust levels may exceed TLV. Efficient dust respirators can be used up to 10X TLV. For exposure up to 100X TLV use full facepiece respirator with replaceable dust filter. Higher exposures need an approved, air supplied respirator.</p> <p>Workers should wear safety goggles and work gloves for eye and skin protection. (Sand blasters require special protective equipment and safety precautions.)</p> <p>Eyewash fountains should be available to areas of use and handling.</p> <p>Provide preplacement and annual physical exams for exposed workers with emphasis on respiratory and cardiovascular systems. Preclude from exposure those individuals with pulmonary disease.</p>				
SECTION IX. SPECIAL PRECAUTIONS AND COMMENTS				
<p>Store powdered silica in closed containers in a dry, well-ventilated area. Keep dust in work area at a minimum and maintain air concentration of silica as far below TLV as feasible. Use good housekeeping techniques, such as, vacuuming and wet sweeping to remove collected dust and prevent formation of dust clouds. Avoid inhalation of dust. Avoid contact of materials with eyes.</p> <p>NIOSH (1976) warns of increased risk of impaired health due to a combination of smoking and silica dust exposure.</p>				
<p><b>DATA SOURCE(S) CODE:</b> 2-12, 19, 24-27, 31, 34, 37, 38</p> <p><small>Judgments as to the suitability of information herein for purchaser's purposes are necessarily purchaser's responsibility. Therefore, although reasonable care has been taken in the preparation of such information, General Electric Company extends no warranties, makes no representations and assumes no responsibility as to the accuracy or suitability of such information for application to purchaser's intended purposes or for consequences of its use.</small></p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 5px;"> <b>APPROVALS:</b> MIS CRD <div style="text-align: right; margin-top: 5px;">  </div> </td> </tr> <tr> <td style="padding: 5px;"> Industrial Hygiene and Safety <div style="text-align: right; margin-top: 5px;"> 10-9-80 </div> </td> </tr> <tr> <td style="padding: 5px;"> <b>MEDICAL REVIEW:</b> <div style="text-align: right; margin-top: 5px;"> 10/22/80 </div> </td> </tr> </table>	<b>APPROVALS:</b> MIS CRD <div style="text-align: right; margin-top: 5px;">  </div>	Industrial Hygiene and Safety <div style="text-align: right; margin-top: 5px;"> 10-9-80 </div>	<b>MEDICAL REVIEW:</b> <div style="text-align: right; margin-top: 5px;"> 10/22/80 </div>
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Industrial Hygiene and Safety <div style="text-align: right; margin-top: 5px;"> 10-9-80 </div>				
<b>MEDICAL REVIEW:</b> <div style="text-align: right; margin-top: 5px;"> 10/22/80 </div>				

## I. RECOMMENDATIONS FOR A CRYSTALLINE SILICA STANDARD

The National Institute for Occupational Safety and Health (NIOSH) recommends that employee exposure to crystalline silica in the workplace be controlled by adherence to the following sections. The standard is designed to protect the health and safety of workers for up to a 10-hour workday, 40-hour workweek, over a working lifetime. Compliance with the standard should prevent adverse effects of crystalline silica on the health and safety of workers. The standard is measurable by techniques that are valid, reproducible, and available to industry and government agencies and are attainable with existing technology. The criteria and the standard recommended in this document will be subject to review and revision as necessary.

Crystalline silica, hereafter referred to in this document as free silica, is defined as silicon dioxide ( $\text{SiO}_2$ ). "Crystalline" refers to the orientation of  $\text{SiO}_2$  molecules in a fixed pattern as opposed to a nonperiodic, random molecular arrangement defined as amorphous. The three most common crystalline forms of free silica encountered in industry are quartz, tridymite, and cristobalite. Micro- and crypto-crystalline varieties of free silica, also included in the recommended standard, are composed of minute grains of free silica cemented together with amorphous silica and include tripoli, flint, chalcedony, agate, onyx, and silica flour. Other forms of free silica which, upon analysis, are found to have a crystalline structure as part of their composition are also subject to the recommended standard.

"Exposure to free silica" means exposure of the worker to an airborne concentration of free silica greater than half of the recommended environmental level in the workplace. Worker exposure at lower environmental concentrations will not require adherence to the following sections.

### Section 1—Environmental (Workplace Air)

#### (a) Concentration

Occupational exposure shall be controlled so that no worker is exposed to a time-weighted average (TWA) concentration of free silica greater than 50 micrograms per cubic meter of air (50  $\mu\text{g}/\text{cu m}$ ; 0.050  $\text{mg}/\text{cu m}$ ) as determined by a full-shift sample for up to a 10-hour workday, 40-hour workweek.

#### (b) Sampling, Calibration, and Analysis

Exposure to free silica shall be determined by a personal (breathing zone) sample.

Procedures for sampling, calibration of equipment, and analysis of environmental samples shall be as provided in Appendices I and II, or by methods shown to be equivalent in sensitivity, accuracy, and precision to the method specified.

### Section 2—Medical

(a) Medical examinations shall be made available to all workers subject to "exposure to free silica" prior

to employee placement and at least once each 3 years thereafter. Examinations shall include as a minimum:

(1) A medical and occupational history to elicit data on worker exposure to free silica and signs and symptoms of respiratory disease.

(2) A chest roentgenogram (posteroanterior 14" by 17" or 14" by 14") classified according to the 1971 ILO International Classification of Radiographs of Pneumoconioses. [ILO U/C International Classification of Radiographs of Pneumoconioses 1971, Occupational Safety and Health Series 22 (rev). Geneva, International Labor Office, 1972]

(3) Pulmonary function tests including forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV<sub>1</sub>) to provide a baseline for evaluation of pulmonary function and to help determine the advisability of the workers using negative- or positive-pressure respirators. It should be noted that pulmonary function tests may vary significantly in various ethnic groups. For example, in black persons, the test values for the FVC should be divided by 0.85 before the percentage value is compared with normal figures.

(4) Body weight.

(5) Height.

(6) Age.

(7) Initial medical examinations for presently employed workers shall be offered within 6 months of the promulgation of a standard incorporating these recommendations.

#### (b) Medical Management

An employee with or without roentgenographic evidence of silicosis who has respiratory distress and/or pulmonary functional impairment should be fully evaluated by a physician qualified to advise the employee whether he should continue working in a dusty trade.

(c) These records shall be available to the medical representatives of the Secretary of Health, Education, and Welfare, of the Secretary of Labor, of the employee or former employee, and of the employer.

(d) Medical records shall be maintained for at least 30 years following the employee's termination of employment.

### Section 3 — Labeling (Posting)

(a) The following warning shall be posted to be readily visible at or near entrances or accessways to work areas where there is potential exposure to free silica.

WARNING!

FREE SILICA WORK AREA

Unauthorized Persons Keep Out

(b) The following warning shall be posted in readily visible locations in any work area where there is potential exposure to free silica.



**WARNING!**  
**FREE SILICA WORK AREA**

Avoid Breathing Dust  
May Cause Delayed Lung Injury (Silicosis)

The posting required under sections 3(a) and 3(b) shall be printed both in English and in the predominant language of non-English-speaking workers, unless they are otherwise trained and informed of the hazardous areas. Illiterate workers shall receive such training.

(c) The following warning label, in addition to or in combination with labels required by other statutes, regulations, or ordinances, shall be affixed to all new materials, mixtures, and other products containing more than 5% free silica, or to their containers.

**WARNING!**  
**CONTAINS FREE SILICA**  
**DO NOT BREATHE DUST**  
May Cause Delayed Lung Injury (Silicosis)

**Section 4 — Personal Protective Equipment  
and Work Clothing**

Engineering controls shall be used to maintain free silica dust exposures below the prescribed limit. Subsection (a) shall apply whenever a variance from the standard recommended in Section 1 is granted under provisions of the Occupational Safety and Health Act, or in the interim period during the application for a

variance. When the limits of exposure to free silica prescribed in paragraph (a) of Section 1 cannot be met by limiting the concentration of free silica in the work environment, an employer must utilize, as provided in subsection (a) of this section, a program of respiratory protection to effect the required protection of every worker exposed.

**(a) Respiratory Protection**

Appropriate respirators, as prescribed in Table I-1, shall be provided and used when a variance has been granted to allow respirators as a means of control of exposure to routine operations and while the application is pending. Administrative controls may also be used to reduce exposure. Respirators shall also be provided and used for nonroutine operations (occasional brief exposures above the environmental standard and for emergencies); however, for these instances a variance is not required but the requirements set forth below continue to apply. Appropriate respirators as described in Table I-1 shall only be used pursuant to the following requirements:

(1) For the purpose of determining the type of respirator to be used, the employer shall measure the atmospheric concentration of free silica in the workplace when the initial application for variance is made and thereafter whenever process, worksite, climate, or control changes occur which are likely to affect the free silica concentration. This requirement shall not apply when only atmosphere-supplying positive-pressure respirators are used. The employer shall ensure

**TABLE I-1**  
**REQUIREMENTS FOR RESPIRATOR USAGE AT**  
**CONCENTRATIONS ABOVE THE STANDARD**

Concentrations of Free Silica in Multiples of the Standard	Respirator Type*
Less than or equal to 5X	Single use (valveless type) dust respirator.
Less than or equal to 10X	Quarter or half mask respirator with replaceable dust filter or single use (with valve) dust respirator. Type C, demand type (negative pressure), with quarter or half mask facepiece.
Less than or equal to 100X	Full facepiece respirator with replaceable dust filter. Type C, supplied air respirator, demand type (negative pressure), with full facepiece.
Less than or equal to 200X	Powered air-purifying (positive-pressure) respirator, with replace- able applicable filter.**
Greater than 200X	Type C, supplied air respirator, continuous flow type (positive pres- sure), with full facepiece, hood, or helmet.

\*Where a variance has been obtained for abrasive blasting with silica sand, use only Type C contin-  
uous flow, supplied air respirator with hood or helmet.

\*\*An alternative is to select the standard high efficiency filter which must be at least 99.97% efficient  
against 0.3-micrometer dioctyl phthalate (DOP).

that no worker is exposed to free silica in excess of the standard because of improper respirator selection, fit, use, or maintenance.

(2) Employees experiencing breathing difficulty while using respirators shall be evaluated by a physician to determine the ability of the worker to wear a respirator.

(3) A respiratory protective program meeting the requirements of Section 1910.134 of the Occupational Safety and Health Standards shall be established and enforced by the employer. [29 CFR 1910.134 published in the Federal Register, vol 39, page 23671, dated June 27, 1974, as amended]

(4) The employer shall provide respirators in accordance with Table I-1 and shall ensure that the employee uses the appropriate respirator.

(5) Respiratory protective devices in Table I-1 shall be those approved either under 30 CFR 11, published March 25, 1972, or under the following regulations:

(A) Filter-type dust, fume, and mist respirators—30 CFR 14 (Bureau of Mines Schedule 21B)

(B) Supplied air respirator—30 CFR 12 (Bureau of Mines Schedule 19B)

(6) A respirator specified for use in higher concentrations of free silica may be used in atmospheres of lower concentrations.

(7) Employees shall be given instruction on the use of respirators assigned to them, on cleaning respirators, and on testing for leakage.

(b) Work Clothing

Where exposure to free silica is above the recommended environmental limit, work clothing shall be vacuumed before removal. Clothes shall not be cleaned by blowing or shaking.

**Section 5 — Informing Employees of Hazards from Free Silica**

(a) Each employee exposed to free silica shall be apprised at the beginning of his employment or assignment to a free silica exposure area of the hazards, relevant symptoms, appropriate emergency procedures, and proper conditions and precautions for safe use or exposure. The employee shall be instructed as to availability of such information including that prescribed in (b) below. Such information shall be kept on file and shall be accessible to the worker at each place of employment where free silica is involved in unit processes and operations. Workers shall also be advised of the increased risk of impaired health due to the combination of smoking and free silica dust exposure.

(b) Information, to the extent applicable to free silica, as specified in Appendix III shall be recorded on U.S. Department of Labor Form OSHA-20, "Material Safety Data Sheet" (see Appendix III) or on a similar form approved by the Occupational Safety and Health Administration, U.S. Department of Labor.

**Section 6 — Work Practices and Control Procedures**

(a) Substitution

(1) Wherever a hazard of silicosis can be elimi-

nated by a reasonable substitution of other less toxic materials for free silica, the substitution shall be made unless the silica sand has been so processed before use to make it nonrespirable such as by washing to remove fine particles. Examples of such substitution are the use of alumina instead of flint for china placing in potteries, and the substitution of a quartz-free grit in abrasive blasting.

(2) Uncontrolled abrasive blasting with silica sand is such a severe silicosis hazard that special attention must be given to this problem. Silica sand, or other materials containing more than 1% free silica, should be prohibited as an abrasive substance in abrasive blasting cleaning operations.

(b) Dust Suppression

Moisture shall be added where such addition can substantially reduce the exposure to airborne respirable free silica dust.

(c) Ventilation

Where a local exhaust ventilation and collection system is used, it shall be designed and maintained to prevent the accumulation or recirculation of free silica dust into the workplace. The total system shall be inspected periodically for efficiency of operation. In addition, necessary measures shall be taken to ensure that discharge outdoors will not produce a health hazard to humans, animals, or plants.

(d) General Housekeeping

(1) Cleaning by blowing with compressed air or dry sweeping shall be avoided and dustless methods of cleaning such as vacuuming or washing down with water shall be substituted.

(2) Emphasis shall be placed upon cleanup of spills, preventive maintenance and repair of equipment, proper storage of materials, and collection of dusts containing free silica. Sanitation shall meet the requirements of 29 CFR 1910.141 as amended.

**Section 7 — Monitoring and Recordkeeping Requirements**

Work environments where it has been determined, on the basis of a professional industrial hygiene survey or by the judgment of a compliance officer, that the workers' exposure does not exceed half of the standard shall not be considered to have exposure to free silica. Records of these surveys, including the basis for concluding that air levels are at or below half of the standard shall be maintained. Surveys shall be repeated when any process change indicates a need for reevaluation or at the discretion of the compliance officer. Requirements set forth below apply to areas in which there is "exposure to free silica."

Employers shall maintain records of the workers' exposure to free silica based upon the following sampling and recording schedules:

(a) In all monitoring, samples representative of the exposure in the breathing zone of employees shall be collected. An adequate number of samples shall be collected to permit construction of a full-shift exposure for every operation or process. The minimum number of time-weighted average determinations for an operation or process shall be based on the number

of workers exposed as provided in Table I-2 or as otherwise indicated by a professional industrial survey.

(b) The first work environment (breathing zone) sampling shall be completed within 6 months of the promulgation of a standard incorporating these recommendations.

(c) Work environment (breathing zone) samples shall be taken within 30 days after installation of a new process or process changes.

TABLE I-2  
SAMPLING SCHEDULE

Number of Employees Exposed	Number of TWA Determinations
1-20	50% of the total number of workers
21-100	10 plus 25% of the excess over 20 workers
Over 100	30 plus 5% of the excess over 100 workers

(d) Samples shall be collected and analyzed at least every 6 months in accordance with Appendices I and II for the evaluation of the workers' exposure with respect to the recommended standard.

(e) When monitoring of the workers' exposure indicates a free silica concentration in excess of the recommended standard, suitable controls shall be initiated to reduce the exposure level to or below the recommended standard. In such cases monitoring shall continue at 30-day intervals until two consecutive surveys indicate the recommended standard is no longer exceeded. Periodic review and evaluation of environmental and medical data shall be performed to determine the effectiveness of control measures.

(f) Records shall be maintained of medical examinations and all sampling schedules to include the sampling and analytical methods, type of personal protection devices, if any, in use at the time of sampling and the determined free silica dust concentration. Records shall be maintained for at least 30 years following termination of workers' employment. Each employee shall be able to obtain information on his exposure.



100122

## Precautionary Labeling for Bags

**Trade Name:** 100 mesh sand  
W.I.N.: 100122

### **DIRECTIONS:**

For Proper Use, Refer to Service Bulletin No.(s) 455.0WG

**SPECIFIC USAGE:** Use at the rate of 1 to 4 lb/gallon of pad fluid.

When Handling This Product Employees **MUST WEAR:** Chemical goggles and gloves.

### **FOR INDUSTRIAL USE ONLY**

#### **WARNING!**

Contains Free Silica  
Do Not Breathe Dust  
May cause delayed Lung injury (Silicosis)

Refer to MSDS and SPM-04-04 for Safety Requirements.



## Precautionary Labeling for Bags

Trade Name: SF-4  
W.I.N. : 100122

### DIRECTIONS:

For Proper Use, Refer to Service Bulletin No.(s) 2390.0W, Sec. 1

SPECIFIC USAGE: Use at the rate of 20-50 % based on the weight of cement.

When Handling This Product Employees **MUST WEAR:** Chemical goggles and gloves.

### FOR INDUSTRIAL USE ONLY

#### WARNING!

Contains Free Silica  
Do NOT Breathe Dust  
May cause delayed Lung injury (Silicosis)

Refer to MSDS and SPM-04-04 for Safety Requirements.



U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET

DATE: 15 Mar 78

## SECTION I

Supplier's Name <u>The Western Company of North America</u>		EMERGENCY TELEPHONE NO. <u>(817) 731-5100</u>
ADDRESS (Number, Street, City, State, and ZIP Code) <u>P. O. Box 186, Ft. Worth, TX 76101</u>		
CHEMICAL NAME AND SYNONYMS <u>Acetic Acid &amp; Acetic Anhydride</u>		TRADE NAME AND SYNONYMS <u>AC-2</u>
CHEMICAL FAMILY <u>Acid</u>	FORMULA <u>40% acetic acid, 60% acetic anhydride</u>	

## SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	<u>Corrosive liquid, N.O.S.</u>
NAME OF HAZARDOUS COMPONENT	<u>Acetic Anhydride</u>
HAZARD CLASS	<u>Corrosive material</u>
IDENTIFICATION NUMBER	<u>UN1760</u>
D.O.T. LABEL(S) REQUIRED	<u>Corrosive</u>
PRECAUTIONARY LABEL	

## SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H <sub>2</sub> O=1)	
VAPOR PRESSURE (mm Hg.)		PERCENT, VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER			
APPEARANCE AND ODOR <u>clear, colorless liquid - sharp acrid odor</u>			

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) <u>112°F, Tag Open cup; 109°F, Tag Closed Cup</u>	FLAMMABLE LIMITS	<u>2.9%</u> <sup>Lel</sup>	<u>10.3%</u> <sup>Uel</sup>
EXTINGUISHING MEDIA <u>Water spray, dry chemical, and alcohol foam are effective extinguishing agents for acetic anhydride fires.</u>			
SPECIAL FIRE FIGHTING PROCEDURES <u>Addition of water will reduce intensity of flames. If a leak or spill has not ignited, use water spray to disperse the vapor and to protect the personnel trying to stop the leak. Fire fighters should wear self-contained breathing apparatus and full protective clothing.</u>			
UNUSUAL FIRE AND EXPLOSION HAZARDS <u>Water and foam react with chemical, but the heat liberated is not enough to create a hazard. Dry chemical forced below surface can cause foaming and boiling.</u>			

TRADE NAME: <sup>AC-2</sup> ~~AB-54~~

### SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

2.5 mg/m<sup>3</sup> as F

EFFECTS OF OVEREXPOSURE

Skin: may cause burns or rash. Eyes: irritation. Internal: harmful if swallowed.

Inhalation of dust may cause irritation of the respiratory system.

EMERGENCY AND FIRST AID PROCEDURES

Skin: wash with water. Tincture of zephiran chloride, iced, soaks.

Eyes: flush with water at least 15 minutes. Consult a physician.

### SECTION VI - REACTIVITY DATA

STABILITY

UNSTABLE

CONDITIONS TO AVOID

STABLE

INCOMPATIBILITY (Materials to avoid)

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS  
POLYMERIZATION

MAY OCCUR

CONDITIONS TO AVOID

WILL NOT OCCUR

### SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

### SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

Bureau of Mines approved respirator.

VENTILATION

LOCAL EXHAUST

SPECIAL

MECHANICAL (General)

OTHER

PROTECTIVE GLOVES

EYE PROTECTION

Goggles or shield

OTHER PROTECTIVE EQUIPMENT

### SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

OTHER PRECAUTIONS



U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET

DATE: 10/1/85

## SECTION I

Supplier's Name <b>The Western Company of North America</b>		EMERGENCY TELEPHONE NO. <b>(817) 731-5100</b>
ADDRESS (Number, Street, City, State, and ZIP Code) <b>P. O. Box 186, Ft. Worth, TX 76101</b>		
CHEMICAL NAME AND SYNONYMS <b>Proprietary</b>		TRADE NAME AND SYNONYMS <b>Gelling Agent, Acid, Acigel IT</b>
CHEMICAL FAMILY	FORMULA <b>W.I.N. 499518</b>	

## SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	<b>Flammable Liquid, n.o.s.</b>
NAME OF HAZARDOUS COMPONENT	<b>Methanol</b>
HAZARD CLASS	<b>Flammable Liquid</b>
IDENTIFICATION NUMBER	<b>UN 1993</b>
D.O.T. LABEL(S) REQUIRED	<b>Flammable.</b>
PRECAUTIONARY LABEL	

## SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
Methanol		200ppm
Acetic Acid		10ppm

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	<b>147</b>	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	<b>0.914</b>
VAPOR PRESSURE (mm Hg.) @ 20°C	<b>96</b>	PERCENT VOLATILE BY VOLUME (%)	<b>37</b>
VAPOR DENSITY (AIR=1)	<b>1.11</b>	EVAPORATION RATE (_____=1)	<b>3.5</b>
SOLUBILITY IN WATER	<b>soluble</b>		
APPEARANCE AND ODOR <b>Amber Liquid; Alcohol odor</b>			

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	<b>56°F ASTM D3828</b>	FLAMMABLE LIMITS	LeI <b>N/A</b>	UeI <b>N/A</b>
EXTINGUISHING MEDIA	<b>CO<sub>2</sub>, dry powder or foam</b>			
SPECIAL FIRE FIGHTING PROCEDURES				
<b>Self-contained breathing apparatus required</b>				
UNUSUAL FIRE AND EXPLOSION HAZARDS				
<b>None known</b>				



TRADE NAME: Gelling Agent, Acid. Acigel LT W.I.N. 499518

### SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE Not established

EFFECTS OF OVEREXPOSURE See attached

EMERGENCY AND FIRST AID PROCEDURES See attached

### SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	

INCOMPATIBILITY (Materials to avoid) Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS Oxides of Nitrogen

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

### SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Absorb on sand, dirt or suitable absorbant.

WASTE DISPOSAL METHOD Dispose of in an appropriate waste disposal site in accordance with applicable waste management regulations.

### SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type) Use self-contained breathing apparatus in enclosed areas.

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL (General)	OTHER

PROTECTIVE GLOVES	Synthetic	EYE PROTECTION	Chemical goggles
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OTHER PROTECTIVE EQUIPMENT

### SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Flammable liquid, avoid heat, sparks or open flames. Avoid contact with vapor or liquid.

OTHER PRECAUTIONS Do not cut empty drums.

Attachment 1

V - HEALTH HAZARD DATA

EFFECTS OF OVEREXPOSURE

**INHALATION:**

May cause nausea, headache, and respiratory irritation. Daily exposure might result in accumulation of sufficient methyl alcohol in the body to cause illness.

**SKIN AND EYE CONTACT:** A moderate skin irritant. Eye contact may cause irritation/burns and may lead to persistent corneal opacity.

**INGESTION:**

May be harmful if swallowed. May cause headache, gastrointestinal disturbances, dizziness and a feeling of intoxication.

**EMERGENCY AND FIRST AID PROCEDURES:**

Avoid contact with eyes and skin. In case of eye contact, irrigate eyes with flowing water immediately and continuously for fifteen minutes. Consult a physician. Wash skin with soap and water. Avoid breathing vapor. If swallowed, induce vomiting, call a physician immediately.



U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET

DATE: 15JUL85

## SECTION I

Supplier's Name The Western Company of North America		EMERGENCY TELEPHONE NO. (817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101		
CHEMICAL NAME AND SYNONYMS Proprietary Blend	TRADE NAME AND SYNONYMS Gelling Agent, Acigel	
CHEMICAL FAMILY Acrylamide Copolymer	FORMULA	W.I.N. 499520

## SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Not Regulated
NAME OF HAZARDOUS COMPONENT	N/A
HAZARD CLASS	N/A
IDENTIFICATION NUMBER	N/A
D.O.T. LABEL(S) REQUIRED	N/A
PRECAUTIONARY LABEL	Attached

## SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
paraffin oil		

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	212°F	SPECIFIC GRAVITY (H <sub>2</sub> O=1) @ 60°F	1.08
VAPOR PRESSURE (mm Hg.)	No Data	PERCENT VOLATILE BY weight % @ 75°F	44
VAPOR DENSITY (AIR=1)	No Data	EVAPORATION RATE (_____=1)	-----
SOLUBILITY IN WATER	Polymer Soluble in Water at pH < 7		
APPEARANCE AND ODOR	Milky white liquid, Sweet odor		

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) None, flames out @ 52°C (125°F) PMCC	FLAMMABLE LIMITS	Lel	Uel
EXTINGUISHING MEDIA carbon dioxide, dry chemical, alcohol foam			
SPECIAL FIRE FIGHTING PROCEDURES none			
UNUSUAL FIRE AND EXPLOSION HAZARDS none			

TRADE NAME: W.I.N. 499520, Gelling Agent, acid, Acigel

### SECTION V - HEALTH HAZARD DATA

**THRESHOLD LIMIT VALUE**

None established for the product

**EFFECTS OF OVEREXPOSURE**

May cause irritation with prolonged contact

**EMERGENCY AND FIRST AID PROCEDURES**

Eyes: Flush with water for 15 minutes, Call a physician.

Skin: Wash thoroughly with soap and water.

Ingestion: Do not induce vomiting. Give water, Call a physician.

### SECTION VI - REACTIVITY DATA

**STABILITY**

UNSTABLE

**CONDITIONS TO AVOID**

none

STABLE

X

**INCOMPATIBILITY (Materials to avoid)**

**HAZARDOUS DECOMPOSITION PRODUCTS**

oxides of nitrogen

**HAZARDOUS  
POLYMERIZATION**

MAY OCCUR

**CONDITIONS TO AVOID**

WILL NOT OCCUR

X

### SECTION VII - SPILL OR LEAK PROCEDURES

**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED**

Contain with absorbent material.

**WASTE DISPOSAL METHOD**

No special method. Consult local, state, and federal regulations for appropriate disposal methods. This product is not regulated under RCRA.

### SECTION VIII - SPECIAL PROTECTION INFORMATION

**RESPIRATORY PROTECTION (Specify type)**

None normally required.

**VENTILATION**

LOCAL EXHAUST

SPECIAL

MECHANICAL (General)

OTHER

**PROTECTIVE GLOVES**

synthetic

**EYE PROTECTION**

chemical goggles

**OTHER PROTECTIVE EQUIPMENT**

### SECTION IX - SPECIAL PRECAUTIONS

**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING**

none

**OTHER PRECAUTIONS**

Do not take internally. Avoid eye and prolonged skin contact.

499520

INSTRUCTIONS

For Proper Use, Refer to Service Bulletin No.(s) 683.0

**SPECIFIC USAGE:** Use at the rate of 1 to 60 gal/1000 gal of acid.

FOR INDUSTRIAL USE ONLY

**CAUTION!**

- Avoid contact with eyes, skin and clothing.
- Wash thoroughly after handling.
- Keep container closed.
- Avoid breathing vapor. Use with adequate ventilation.
- At elevated temperatures this product may burn.
- Use foam, dry chemical or CO<sub>2</sub>.

- FIRST AID:**
- FOR EYES:** In case of contact, immediately wash with water for at least 15 minutes. Call physician.
- FOR SKIN:** In case of contact, wash thoroughly with water. Wash clothing before re-use.

- HANDLING:** Employees must wear chemical goggles, plastic gloves.
- ATTENTION!** After this container has been emptied, it may contain flammable and toxic liquid or vapor; observe all warnings and precautions listed for this product. Donot cut, puncture or weld on or near this container.
- Refer to MSDS and SPM-04-04 for Safety Requirements.**



**Western Petroleum Services**

W.I.N. 499520

**ACIGEL**

**Acid Gellant**

Net Content: 498 lb(226 kg)  
55 gal(208 L)@60°F

Manufactured for:

**The Western Company of North America**

Batch no.

**P.O. BOX 186 • FORT WORTH, TEXAS 76101**

\*\*\*\*\*D.O.T. PROPER SHIPPING NAME: Not Regulated\*\*\*\*\*

# Material Safety Data Sheet

from Genium's Reference Collection  
Genium Publishing Corporation  
1145 Catalyn Street  
Schenectady, NY 12303-1836 USA  
(518) 377-8855



GENIUM PUBLISHING CORP.

No. 1A

AMMONIUM HYDROXIDE  
(28-30%)

(Revision A)

Issued: April 1980

Revised: November 1988

## SECTION 1. MATERIAL IDENTIFICATION

27

Material Name: AMMONIUM HYDROXIDE (28-30%)

Description (Origin/Uses): Used in bleaching, fabric printing, as a detergent, and in manufacturing ammonium salts and aniline dyes.

Other Designations: Ammonium Solution; Ammonium Hydroxide; Strong Ammonia Water; Spirit of Hartshorn;  $\text{NH}_4\text{OH}$ ; Aqueous  $\text{NH}_4\text{OH}$ ; CAS No. 1336-21-6

Manufacturer: Contact your supplier or distributor. Consult the latest edition of the *Chemicalweek Buyers' Guide* (Genium ref. 73) for a list of suppliers.



Genium

HMIS

H 2 R 1

F 1 I 3

R 0 S 3

PPG\* K 1

\*See sect. 8

## SECTION 2. INGREDIENTS AND HAZARDS

%

## EXPOSURE LIMITS

Anhydrous Ammonia,\* CAS No. 7664-41-7

28-30

OSHA PEL

STEL: 35 ppm, 27 mg/m<sup>3</sup>

Water, CAS No. 7732-18-5

70-72

ACGIH TLVs, 1988-89\*\*

TLV-TWA: 25 ppm, 18 mg/m<sup>3</sup>

TLV-STEL: 35 ppm, 27 mg/m<sup>3</sup>

\*See Genium Industrial MSDS 1.

\*\*Set to protect against irritation to the eyes and respiratory tract.

\*\*\*See NIOSH, RTECS (BQ9625000), for additional data with references to irritative and mutagenic effects.

Toxicity Data\*\*\*

Human, Oral, LD<sub>50</sub>: 43 mg/kg

Human, Inhalation, LC<sub>50</sub>: 5000 ppm

Human, Inhalation, TC<sub>50</sub>: 408 ppm

## SECTION 3. PHYSICAL DATA

Boiling Point: Ca 82°F (28°C)

Melting Point: Ca -98°F (-72°C)

Vapor Density (Air = 1): 0.6 (as  $\text{NH}_3$ )

pH: >13 (Very Basic)

% Volatile by Volume: 28 to 30

Molecular Weight: 35 Grams/Mole ( $\text{NH}_4\text{OH}$ )

Solubility in Water (%): Complete

Specific Gravity ( $\text{H}_2\text{O} = 1$ ): 0.9

Appearance and Odor: A clear, colorless liquid; strong, pungent, suffocating, characteristic ammonia odor (like dried urine). The odor is detectable at 5 ppm, irritating at 25 to 50 ppm, and provides a warning of hazardous concentration in the air.

Comments: The temperature at which the solution is saturated with the dissolved ammonia is approximately 80 to 85°F (27 to 29°C) at standard pressure (1 atmosphere). Above these temperatures the excess ammonia gas will bubble out of solution.

## SECTION 4. FIRE AND EXPLOSION DATA

Flash Point and Method

Not Applicable

Autoignition Temperature

1204°F (651°C) (as  $\text{NH}_3$ )

LEL: 15% v/v (as  $\text{NH}_3$ )

UEL: 28% v/v (as  $\text{NH}_3$ )

Extinguishing Media: Ammonium hydroxide solutions are not likely to burn. Although the ammonia gas can burn, it is hard to ignite. Use extinguishing agents that will put out the surrounding fire. Use a cold water spray to cool fire-exposed containers and to control, disperse, or knock down the ammonia vapor. Unusual Fire or Explosion Hazards: When ammonium hydroxide solutions are heated, they evolve substantial quantities of  $\text{NH}_3$  vapor. This ammonia gas is dangerously irritating. Special Fire-fighting Procedures: Wear a self-contained breathing apparatus (SCBA) with a full facepiece operated in the pressure-demand or positive-pressure mode. Fire fighters must also wear a complete set of protective clothing designed to prevent any contact with ammonia gas.

## SECTION 5. REACTIVITY DATA

Stability/Polymerization: Ammonium hydroxide is stable in closed containers during routine work operations. Hazardous polymerization cannot occur. Chemical Incompatibilities: Avoid hazardous reactions brought about by accidental exposure of ammonium hydroxide solutions and ammonia gas to copper, tin, zinc, aluminum, galvanized surfaces, acrolein, iodine, dimethyl sulfate, fluorine, gold, aqua regia, propylene oxide,  $\beta$ -propiolactone, silver nitrate, silver oxide, silver permanganate, and strong mineral acids such as hydrofluoric acid, hydrochloric acid, nitric acid, and oleum (a mixture of sulfuric acid [ $\text{H}_2\text{SO}_4$ ] and its anhydride [ $\text{SO}_3$ ]). Conditions to Avoid: Avoid direct contact with incompatible chemicals. Always establish compatibility between ammonium hydroxide solutions and other materials by testing small quantities of materials to replicate the expected conditions of bulk operations. Do not heat ammonium hydroxide solutions.

Hazardous Products of Decomposition: Ammonia gas ( $\text{NH}_3$ ) will be given off from ammonium hydroxide solutions if they are heated or if sodium hydroxide ( $\text{NaOH}$ ) is added to them. Comments: Ammonia gas is likely to be present in work areas where ammonium hydroxide solutions are used. If gases that react violently with ammonia are also found there, establish appropriate engineering controls to minimize any potential hazard associated with mixing them.

No. 1A AMMONIUM HYDROXIDE 11/88

**SECTION 6. HEALTH HAZARD INFORMATION**

**Carcinogenicity:** Ammonium hydroxide is not listed as a carcinogen by the NTP, IARC, or OSHA.

**Summary of Risks:** Ammonium hydroxide is very irritating and corrosive to all body tissue. Accidental ingestion of ammonium hydroxide solutions damages the gastrointestinal tract. Permanent blindness can result from accidentally splashing these solutions into the eyes. Excessive inhalation of ammonia vapor causes severe irritation to the respiratory system, coughing, difficulty in breathing, severe lung congestion, and possibly fatal pulmonary edema (lungs filled with fluid). Tolerance to higher concentrations may develop. Medical Conditions Aggravated by Long-Term Exposure: None reported. Target Organs: Skin, eyes, and respiratory system. Primary Entry: Inhalation, skin or eye contact. Acute Effects: Severe irritation of all exposed tissue (eyes, skin, and respiratory system). Swelling and coughing of the lining of the air passages may occur; opening them may require emergency measures. First- and second-degree burns may also occur. Chronic Effects: Asthma and chronic hyperactivity of air passages may occur after massive exposure. **FIRST AID:** Eyes. Immediately flush eyes, including under the eyelids, gently but thoroughly with flooding amounts of running water for at least 15 minutes. Speed and thoroughness in rinsing the eyes is vital to preventing permanent eye injury. Skin. Immediately rinse the area with flooding amounts of water while removing grossly contaminated clothing and shoes, then wash with soap and water. Inhalation. Remove the exposed person to fresh air; restore and/or support his or her breathing as needed. Qualified medical personnel should administer oxygen as required. Ingestion (applicable only to accidental ingestion of ammonium hydroxide solutions; not applicable to ammonia gas). Never give anything by mouth to someone who is unconscious or convulsing. If the exposed person is responsive, promptly give him or her plenty of water, dilute vinegar, or citrus juice to drink, followed by milk. Do not induce vomiting. Get medical help (in plant, paramedic, community) for all exposures. Seek prompt medical assistance for further treatment, observation, and support after first aid. Note to physician: Immediate hospitalization and observation for 72 hours to detect delayed pulmonary edema is advised in cases of severe exposure.

**SECTION 7. SPILL, LEAK, AND DISPOSAL PROCEDURES**

**Spill/Leak:** Preplan emergency response to spills or leaks of ammonium hydroxide solutions. Evacuate all nonessential personnel, notify safety personnel, eliminate all sources of ignition, and provide adequate ventilation. Cleanup personnel need protection against skin and eye contact with the liquid as well as inhalation of its vapor (see sect. 8). Contain large spills and absorb waste with sand, earth, or vermiculite. Neutralize the spilled ammonium hydroxide with dilute hydrochloric acid (HCl) or dilute sulfuric acid (H<sub>2</sub>SO<sub>4</sub>). The neutralized ammonium hydroxide solutions must be extensively diluted with water before discharge. Prevent runoff from directly entering streams, surface waters, waterways, watersheds, and sewers. Waste Disposal: Consider reclamation, recycling, or destruction rather than disposal in a landfill. Recyclable scrap ammonium hydroxide recovered from spills or leaks may be useful in neutralizing acidic wastes. Monitor effluents for pH, ammonia, and salt content because these properties can be subject to specific regulations. Follow Federal, state, and local regulations.

**OSHA Designations**

Listed as an Air Contaminant (29 CFR 1910.1000 Subpart Z, for NH<sub>3</sub>)

EPA Designations (40 CFR 302.4)

RCRA Hazardous Substance, Reportable Quantity: 1000 lbs (454 kg), per the Clean Water Act (CWA), §311 (b) (4). If this waste ammonium hydroxide satisfies the characteristic of corrosivity detailed in 40 CFR 261.22, it is assigned the RCRA hazardous waste number 3002.

**SECTION 8. SPECIAL PROTECTION INFORMATION**

**Goggles:** Always wear protective eyeglasses or chemical safety goggles. Where splashing of ammonium hydroxide solutions is possible, wear a full face shield. Follow OSHA eye- and face-protection regulations (29 CFR 1910.133). **Respirator:** Wear a NIOSH-approved respirator per Genium reference 88 for the maximum-use concentrations and/or the exposure limits cited in section 2 as applied to ammonia gas. Follow OSHA respirator regulations (29 CFR 1910.134). For emergency or nonroutine operations (spills or cleaning reactor vessels and storage tanks), wear an SCBA. **Warning:** Air-purifying respirators will not protect workers in oxygen-deficient atmospheres. **Other:** Wear impervious rubber gloves, boots, aprons, and gauntlets, etc., to prevent excessive or prolonged skin contact. **Ventilation:** Install and operate general and local exhaust-ventilation systems powerful enough to maintain airborne concentrations of ammonia gas below the OSHA PEL standard cited in section 2. **Safety Stations:** Make emergency eyewash stations, safety/quick-drench showers, and washing facilities available in work areas. A large amount of clean water must be available for emergency response to accidental ammonium hydroxide spills. **Contaminated Equipment:** Contact lenses pose a special hazard; soft lenses may absorb irritants and all lenses concentrate them. Do not wear contact lenses in any work area. Remove contaminated clothing and launder it before wearing it again; clean this material from your shoes and equipment. **Comments:** Practice good personal hygiene; always wash thoroughly after using this material. Keep it off your clothing and equipment. Avoid transferring it from your hands to your mouth while eating, drinking, or smoking. Do not eat, drink, or smoke in any work area.

**SECTION 9. SPECIAL PRECAUTIONS AND COMMENTS**

**Storage/Segregation:** Store ammonium hydroxide solutions in insulated, closed containers in a cool, dry, well-ventilated area separate from incompatible chemicals (see sect. 5) and direct sunlight. **Special Handling/Storage:** Protect containers from physical damage and handle them carefully. Use caution when opening sealed containers to relieve pressure. Drain empty containers well and flush them with water before discarding them. **Engineering Controls:** Follow established safety procedures during transfers of ammonium hydroxide solutions. The ammonia vapor produced by an ammonium hydroxide spill can be a serious hazard at temperatures above 50°F. Monitor the amount of ammonia gas present in pipelines, storage tanks, reactor vessels, etc., with appropriate equipment, especially before entering or inspecting these areas. **Comments:** Train personnel who work with ammonium hydroxide solutions in their safe use and in proper emergency response. Maintain accurate medical records of employee exposure to ammonia gas from ammonium hydroxide solutions. Severe exposure requires a medical exam to assess any damage and to make recommendations concerning possible future restrictions on job assignments.

**Transportation Data (49 CFR 172.101-2)**

**DOT Shipping Name:** Ammonium Hydroxide\*

**DOT Hazard Class:** Corrosive Material

**ID No. NA2672**

**DOT Label:** Corrosive

**IMO Hazard Class: 8**

**IMO Label:** Corrosive

Limited to solutions containing at least 12% and not more than 44% ammonia.

References: 1, 26, 38, 84, 86-94, 100, 116, 117.

Judgments as to the suitability of information herein for purchaser's purposes are necessarily purchaser's responsibility. Therefore, although reasonable care has been taken in the preparation of such information, Genium Publishing Corp.

Prepared by PJ Igoe, BS

Industrial Hygiene Review: DJ Wilson, CIH



U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET

DATE: 19 SEP 84

## SECTION I

Supplier's Name The Western Company of North America		EMERGENCY TELEPHONE NO. (817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101		
CHEMICAL NAME AND SYNONYMS Proprietary Blend		TRADE NAME AND SYNONYMS De-emulsifier, Aqua Flow
CHEMICAL FAMILY resin	FORMULA W.I.N.100146	

## SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Flammable liquid, n.s.s.
NAME OF HAZARDOUS COMPONENT	Isopropanol
HAZARD CLASS	Flammable liquid
IDENTIFICATION NUMBER	UN 1993
D.O.T. LABEL(S) REQUIRED	Flammable liquid
PRECAUTIONARY LABEL	attached

## SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
Heavy aromatic petroleum solvent, mostly alkbenzenes except toluene and naphthalenes B.P. 350-750°F	7-15	200ppm
Methylisobutylcarbinol (skin)	2	25ppm
Isopropanol	75	400ppm

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	84.4°C	SPECIFIC GRAVITY (H <sub>2</sub> O=1) @ 21.1°C	0.848
VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____=1)	
SOLUBILITY IN WATER	Dispersible		
APPEARANCE AND ODOR	Dark liquid - alcoholic odor		

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) 11.6°C (PMCC)	FLAMMABLE LIMITS	Let	Uet
EXTINGUISHING MEDIA Water, foam, dry chemical			
SPECIAL FIRE FIGHTING PROCEDURES Wear self-contained breathing apparatus			
UNUSUAL FIRE AND EXPLOSION HAZARDS Produces toxic fumes when burned			



TRADE NAME: W.I.N. 100146, Aqua flow, DE-EMULSIFIER

SECTION V - HEALTH HAZARD DATA	
THRESHOLD LIMIT VALUE Not available	
EFFECTS OF OVEREXPOSURE Liquid is irritating to the eyes. May be harmful if swallowed or absorbed through the skin.	
EMERGENCY AND FIRST AID PROCEDURES Eyes: flush with water for 15 min. and get medical attention. Skin: wash skin thoroughly with soap and water. Launder clothing before re-use. Internal: drink large volumes of water, induce vomiting, call a physician.	

SECTION VI - REACTIVITY DATA			
STABILITY	UNSTABLE		CONDITIONS TO AVOID Keep away from heat and open flames.
	STABLE	XXX	
INCOMPATIBILITY (Materials to avoid) Avoid contact with strong oxidizing agents			
HAZARDOUS DECOMPOSITION PRODUCTS None			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	XXX	

SECTION VII - SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Extinguish all sources of ignition. Soak up on sand and dispose of in an approved industrial landfill.	
WASTE DISPOSAL METHOD Incinerate in an incinerator equipped with an afterburner and scrubber or bury in an approved industrial landfill.	

SECTION VIII - SPECIAL PROTECTION INFORMATION		
RESPIRATORY PROTECTION (Specify type) None required in normal use		
VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL (General)	OTHER
PROTECTIVE GLOVES rubber		EYE PROTECTION Face shield or goggles
OTHER PROTECTIVE EQUIPMENT rubber boots and apron		

SECTION IX - SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Avoid contact with eyes, skin and clothing. Avoid breathing vapors, store away from heat, sparks and open flames.	
OTHER PRECAUTIONS Do not transfer to improperly marked containers. Keep container closed when not in use.	



Western Petroleum Services

W.I.N. 100146

AQUA FLOW

DE-EMULSIFIER

Flash Point: 54°F PMCC  
Net Contents: 374 lb (170 kg)  
54 gal (204 L) @ 77°F

## DIRECTIONS:

For Proper Use, Refer to Service Bulletin No.(s) 550.0 WG

**SPECIFIC USAGE:** Use at a concentration of 3/4 to 1 gallon per 1000 gallons of water. Use at a concentration of 3 to 8 gallons per 1000 gallons of acid.

**When Handling This Product Employees MUST WEAR:** Face shield or goggles, rubber gloves, rubber boots, and apron.

## FOR INDUSTRIAL USE ONLY WARNING

**HAZARDOUS LIQUID AND VAPOR, IF ABSORBED THROUGH SKIN OR INHALED. HARMFUL IF SWALLOWED.**

Do not store near heat, sparks or flames. Avoid contact with eyes, skin and clothing. Avoid breathing vapors. Do not transfer to improperly marked containers. Keep container closed when not in use.

**FIRST AID: EYES:** Flush with water for 15 minutes and get medical attention. **SKIN:** Wash skin thoroughly with soap and water. Launder clothing before re-use. **INTERNAL:** Drink large volumes of water and induce vomiting. Do not induce vomiting in unconscious person. Call a physician.

**SPILL OR LEAK:** Extinguish all sources of ignition. Soak up on sand and dispose of in an approved industrial landfill. Incinerate in an incinerator equipped with an afterburner and scrubber or bury in an approved industrial landfill.

**FIRE FIGHTING:** Use water, foam or dry chemical. Wear self-contained breathing apparatus. Produces toxic fumes when burned.

Refer to MSDS and SPM-04-04 for Safety Requirements.

Manufactured for

# The Western Company of North America

P.O. BOX 186 • FORT WORTH, TEXAS 76101

NET CONTENTS 374 lbs (169 kg)  
54 gals (204 liters) at 77°F

Batch no.

\*\*\*\*\*D.O.T. PROPER SHIPPING NAME: Flammable liquid, n.o.s., contains isopropanol, UN1993 \*\*\*\*\*

100146



100091

# MATERIAL SAFETY DATA SHEET

DATE: FEB. 1985

## SECTION I

Supplier's Name The Western Company of North America		EMERGENCY TELEPHONE NO. (817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101		
CHEMICAL NAME AND SYNONYMS 50% solution of citric acid	TRADE NAME AND SYNONYMS Citric Acid, Liquid (XR-2L)	
CHEMICAL FAMILY citric acid	FORMULA W.I.N. 100091	

## SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Corrosive Liquid, n.o.s.
NAME OF HAZARDOUS COMPONENT	Citric Acid
HAZARD CLASS	Corrosive Liquid, n.o.s.
IDENTIFICATION NUMBER	UN1760
D.O.T. LABEL(S) REQUIRED	Corrosive Label must be applied
PRECAUTIONARY LABEL	Attached

## SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
Citric Acid	50	

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	not established	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	1.2
VAPOR PRESSURE (mm Hg.)	not established	PERCENT VOLATILE BY VOLUME (%)	not established
VAPOR DENSITY (AIR=1)	not established	EVAPORATION RATE	(_____ "1) not established
SOLUBILITY IN WATER	1.25		
APPEARANCE AND ODOR Clear, colorless to faintly yellow-green liquid, essentially no odor			

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	N/A	FLAMMABLE LIMITS	LeI	UeI
EXTINGUISHING MEDIA	N/A			
SPECIAL FIRE FIGHTING PROCEDURES	N/A			
UNUSUAL FIRE AND EXPLOSION HAZARDS				

TRADE NAME : W.I.N.100091, ACID, citric, 50% solution, XR-2L

### SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

No TLV established

EFFECTS OF OVEREXPOSURE

May be mild eye and skin irritant

EMERGENCY AND FIRST AID PROCEDURES

Flush skin contact with water and flush eye contact immediately with plenty of water. Seek medical care for eyes.

### SECTION VI - REACTIVITY DATA

STABILITY

UNSTABLE

CONDITIONS TO AVOID

STABLE

X

N/A

INCOMPATIBILITY (Materials to avoid)

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS  
POLYMERIZATION

MAY OCCUR

CONDITIONS TO AVOID

WILL NOT OCCUR

X

N/A

### SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Do not attempt to recover.

WASTE DISPOSAL METHOD

Flush with water to drains.

### SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

None

VENTILATION

LOCAL EXHAUST

None

SPECIAL

MECHANICAL (General)

None

OTHER

PROTECTIVE GLOVES

Standard work gloves

EYE PROTECTION

Safety glasses

OTHER PROTECTIVE EQUIPMENT

### SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

None normally required.

OTHER PRECAUTIONS

None

100154



U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET

DATE: 26AUG86

## SECTION I

Supplier's Name The Western Company of North America		EMERGENCY TELEPHONE NO. (817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101		
CHEMICAL NAME AND SYNONYMS Proprietary blend		TRADE NAME AND SYNONYMS GEL COMPLEXER, water, CL-12
CHEMICAL FAMILY metal chelate	FORMULA W.I.N.100154	

## SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Flammable liquid, n.o.s.
NAME OF HAZARDOUS COMPONENT	isopropanol
HAZARD CLASS	Flammable liquid
IDENTIFICATION NUMBER	UN1993
D.O.T. LABEL(S) REQUIRED	Flammable liquid
PRECAUTIONARY LABEL	attached

## SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
Isopropanol	80	400ppm

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H <sub>2</sub> O=1) @ 60 °F	0.850
VAPOR PRESSURE (mm Hg.)		PERCENT, VOLATILE BY VOLUME (%)	80%
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER	soluble		
APPEARANCE AND ODOR Clear amber, isopropyl alcohol odor			

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) 54 °F PMCC	FLAMMABLE LIMITS % by volume (IPA)	Let 2%	Uet 12%
EXTINGUISHING MEDIA Any type CO <sub>2</sub> , dry chemical or water			
SPECIAL FIRE FIGHTING PROCEDURES none			
UNUSUAL FIRE AND EXPLOSION HAZARDS none			

TRADE NAME: W.I.N. 100154, GEL COMPLEXER, water, CL-12

### SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

IPA damages eye tissue and may cause skin irritation upon prolonged or repeated skin contact. Prolonged or repeated breathing of IPA causes eye, nose and throat

EMERGENCY AND FIRST AID PROCEDURES

irritation. Depression of the nervous system, and narcosis. Wash skin thoroughly with soap and water. Flush eyes with water for at least 15 minutes. Call a physician. If vapors are inhaled, move to fresh air and call a physician.

### SECTION VI - REACTIVITY DATA

STABILITY

UNSTABLE

CONDITIONS TO AVOID

STABLE

xxx

Hydrolyzed slowly by water

INCOMPATIBILITY (Materials to avoid)

May cause rapid corrosion of ferrous metals

HAZARDOUS DECOMPOSITION PRODUCTS

none

HAZARDOUS  
POLYMERIZATION

MAY OCCUR

WILL NOT OCCUR

xxx

CONDITIONS TO AVOID

### SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Collect large spills with sawdust or other absorbent solid. Small spills and residues may be flushed to the drain with water.

WASTE DISPOSAL METHOD

Pour waste on the ground in a protected dumping area, bury or burn in accordance with local ordinances.

### SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

VENTILATION

LOCAL EXHAUST

SPECIAL

MECHANICAL (General)

OTHER

PROTECTIVE GLOVES

Elbow length

EYE PROTECTION

Goggles or face shield

OTHER PROTECTIVE EQUIPMENT

### SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

See attached

OTHER PRECAUTIONS



Attachment to and continuation of

# MATERIAL SAFETY DATA SHEET

DATE: 26AUG86

## SECTION I

Supplier's Name		EMERGENCY TELEPHONE NO.
The Western Company of North America		(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101		
CHEMICAL NAME AND SYNONYMS Proprietary blend		TRADE NAME AND SYNONYMS GEL COMPLEXER, water, CL-12
CHEMICAL FAMILY metal chelate	FORMULA W.I.N. 100154	

## SECTION IXA - - SPECIAL PRECAUTIONS

### SECTION V - HEALTH HAZARD DATA - Effects of Overexposure

"CL-12" appears to be slightly toxic when administered to rats in single doses. The ALD was 5,000 mg/kg of body weight. Then daily doses of 1,000 mg/kg over a two-week period caused depressed rate of weight gain, salivation and restlessness during the period of treatment. One animal died two days after the tenth dose. the others showed no pathological lesions attributable to "CL-12" when sacrificed after the tenth treatment of ten days later. There was definite indication of cumulative toxicity when fed repeatedly at a high dose level.

Laboratory studies of the effect of "CL-12" on the skin and eyes have not been made. The material is assumed to be an irritant.

### SECTION IX - SPECIAL PRECAUTIONS - Handling and Storage

Handle "CL-12" in accordance with good industrial hygiene. Avoid unnecessary personal contact and wear goggles and protective gloves when handling substantial quantities. Wash spills from the skin with soap and water without undue delay. Wash the face and hands after exposure.

"CL-12" is classified as a flammable liquid and shipping containers carry the I.C.C. red label. This classification arises from the 80% isopropanol content in the product. Do not expose "CL-12" to flames or sparks.

"CL-12" may be stored in its original shipping container at normal indoor or outdoor temperatures. Containers must be kept tightly closed to prevent the loss of isopropanol and to prevent contact with water or water vapors. "CL-12" may cause rapid corrosion of some metals, particularly ferrous metals.



**Western Petroleum Services**

**W.I.N. 100154**

**CL-12**

**GEL COMPLEXER**

Flash Point: 54°F (12°C) PMCC  
Net Content: 368 lb (167 kg)  
52 gal (197 L) @ 60°F (15.6°C)

**DIRECTIONS:**

For Proper Use, Refer to Service Bulletin No.(s) 385.0, 384.0

**SPECIFIC USAGE:** Use at the rate of 1 gal per 1000 gal of frac fluid.

**NOTE:** Moisture degrades product. Keep from moisture. Use with T.I.C. Injector only. Do not batch mix into frac fluid.

**When Handling This Product Employees MUST WEAR:** Chemical goggles, rubber apron, and rubber gloves.

**FOR INDUSTRIAL USE ONLY  
WARNING**

**CAUSE IRRITATION.** Keep away from heat, sparks and flames. Avoid contact with eyes, skin and clothing. Avoid prolonged or repeated breathing of vapors. Use with adequate ventilation. Keep container closed. Wash thoroughly after handling.

**FIRST AID:** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician. Flush skin with water. Wash clothing before reuse.

**FIRE:** In case of fire, flood with water or "alcohol" foam or use dry chemical or CO<sub>2</sub>.

**SPILL OR LEAK:** Contain or soak up with sand or earth. Flush balance to a waste water treatment system.

**Refer to MSDS and SPM-04-04 for Safety Requirements.**

Manufactured for:

**The Western Company of North America**

**P.O. BOX 186 • FORT WORTH, TEXAS 76101**

**Emergency Telephone: (817) 731-5100  
(817) 731-5433**

batch no.

D.O.T. PROPER SHIPPING NAME: Flammable liquid, n.o.s. Contains isopropanol, UN1993\*\*\*\*\*



100150



U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET

RECEIVED

JAN 23 1989

R.E.F.C.

DATE: 17JUL86

## SECTION I

Supplier's Name <u>The Western Company of North America</u>		EMERGENCY TELEPHONE NO. <u>(817) 731-5100</u>
ADDRESS (Number, Street, City, State, and ZIP Code) <u>P. O. Box 186, Ft. Worth, TX 76101</u>		
CHEMICAL NAME AND SYNONYMS <u>Proprietary Blend</u>	TRADE NAME AND SYNONYMS <u>GEL COMPLEXER, water, CL-9</u>	
CHEMICAL FAMILY <u>metal chelate</u>	FORMULA <u>W.I.N. 100150</u>	

## SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	<u>Flammable liquid, n.o.s.</u>
NAME OF HAZARDOUS COMPONENT	<u>isopropanol</u>
HAZARD CLASS	<u>Flammable liquid</u>
IDENTIFICATION NUMBER	<u>Un 1993</u>
D.O.T. LABEL(S) REQUIRED	<u>Flammable liquid</u>
PRECAUTIONARY LABEL	<u>attached</u>

## SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
<u>isopropanol</u>	<u>80</u>	<u>400ppm</u>

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H <sub>2</sub> O=1) @ 25°C	<u>0.857</u>
VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	<u>80%</u>
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____=1)	
SOLUBILITY IN WATER	<u>Solubule</u>		
APPEARANCE AND ODOR <u>Clear amber, isopropyl alcohol odor</u>			

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) <u>54 F (PMCC)</u>	FLAMMABLE LIMITS % by volume (IPA)	Lel <u>2%</u>	Uel <u>12%</u>
EXTINGUISHING MEDIA <u>any type CO<sub>2</sub>, dry chemical or water</u>			
SPECIAL FIRE FIGHTING PROCEDURES <u>none</u>			
UNUSUAL FIRE AND EXPLOSION HAZARDS <u>none</u>			

TRADE NAME: W.I.N. 100150, GEL COMPLEXER, water, CL-9

### SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

see attached

EFFECTS OF OVEREXPOSURE

IPA damages eye tissue and may cause skin irritation upon prolonged or repeated skin contact. Prolonged or repeated breathing of IPA causes eye, nose and throat

EMERGENCY AND FIRST AID PROCEDURES

irritation, depression of the nervous system and narcosis. Wash skin thoroughly with soap and water. Flush eyes with water for at least 15 minutes. Call a physician. If vapors are inhaled, move to fresh air and call a physician.

### SECTION VI - REACTIVITY DATA

STABILITY

UNSTABLE

CONDITIONS TO AVOID

STABLE

XXX

Hydrolyzed slowly by water

INCOMPATIBILITY (Materials to avoid)

May cause rapid corrosion of ferrous metals.

HAZARDOUS DECOMPOSITION PRODUCTS

HAZARDOUS  
POLYMERIZATION

MAY OCCUR

CONDITIONS TO AVOID

WILL NOT OCCUR

XXX

### SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Collect large spills with sawdust or other absorbent solid. Small spills and residues may be flushed to the drain with water.

WASTE DISPOSAL METHOD

Pour waste on the ground in a protected dumping area, bury or burn in accordance with local ordinances.

### SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

VENTILATION

LOCAL EXHAUST

SPECIAL

MECHANICAL (General)

OTHER

PROTECTIVE GLOVES

Elbow length rubber gloves

EYE PROTECTION

Goggles or face shield

OTHER PROTECTIVE EQUIPMENT

### SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

See attached sheet.

OTHER PRECAUTIONS



Attachment to and continuation of

# MATERIAL SAFETY DATA SHEET

DATE: 17JUL86

## SECTION I

Supplier's Name		EMERGENCY TELEPHONE NO.
The Western Company of North America		(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code)		
P. O. Box 186, Ft. Worth, TX 76101		
CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS	
Proprietary Blend	GEL COMPLEXER, water, CL-9	
CHEMICAL FAMILY	FORMULA	
metal chelate	W.I.N. 100150	

## SECTION IXA - - SPECIAL PRECAUTIONS

### SECTION V - HEALTH HAZARD DATA - Effects of Overexposure

"CL-9" appears to be slightly toxic when administered to rats in single doses. The ALD was 5,000 mg/kg of body weight. Then daily doses of 1,000 mg/kg over a two-week period caused depressed rate of weight gain, salivation and restlessness during the period of treatment. One animal died two days after the tenth dose. the others showed no pathological lesions attributable to "CL-9" when sacrificed after the tenth treatment of ten days later. There was definite indication of cumulative toxicity when fed repeatedly at a high dose level.

Laboratory studies of the effect of "CL-9" on the skin and eyes have not been made. The material is assumed to be an irritant.

### SECTION IX - SPECIAL PRECAUTIONS - Handling and Storage

Handle "CL-9" in accordance with good industrial hygiene. Avoid unnecessary personal contact and wear goggles and protective gloves when handling substantial quantities. Wash spills from the skin with soap and water without undue delay. Wash the face and hands after exposure.

"CL-9" is classified as a flammable liquid and shipping containers carry the I.C.C. red label. This classification arises from the 80% isopropanol content in the product. Do not expose "CL-9" to flames or sparks.

"CL-9" may be stored in its original shipping container at normal indoor or outdoor temperatures. Containers must be kept tightly closed to prevent the loss of isopropanol and to prevent contact with water or water vapors. "CL-9" may cause rapid corrosion of some metals, particularly ferrous metals.



**Western Petroleum Services**

**W.I.N. 100150**

**CL-9**

**GEL COMPLEXER**

Flash Point: 12°C(54°F)PMCC  
Net Content: 368 lb(167 kg)  
52 gal(197 L)@ 77°F

Manufactured for:

**The Western Company of North America**

**P.O. BOX 186 • FORT WORTH, TEXAS 76101**

**Emergency Telephone: (817) 731-5100  
(817) 731-5433**

**Batch No.**

## **DIRECTIONS:**

**For Proper Use, Refer to Service Bulletin No.(s) 385.0, 384.0**

**SPECIFIC USAGE:** Use at the rate of 1 gal per 1000 gal of frac fluid.

**NOTE:** Moisture degrades product. Keep from moisture. Use with T.I.C. Injector only. Do not batch mix into frac fluid.

**When Handling This Product Employees MUST WEAR:** Chemical goggles, rubber apron, and rubber gloves.

## **FOR INDUSTRIAL USE ONLY WARNING**

**CAUSE IRRITATION.** Keep away from heat, sparks and flames. Avoid contact with eyes, skin and clothing. Avoid prolonged or repeated breathing of vapors. Use with adequate ventilation. Keep container closed. Wash thoroughly after handling.

**FIRST AID:** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician. Flush skin with water. Wash clothing before reuse.

**FIRE:** In case of fire, flood with water or "alcohol" foam or use dry chemical or CO<sub>2</sub>.

**SPILL OR LEAK:** Contain or soak up with sand or earth. Flush balance to a waste water treatment system.

**Refer to MSDS and SPM-04-04 for Safety Requirements.**

**FLAMMABLE. MAY**

**D.O.T. PROPER SHIPPING NAME:** Flammable liquid n.o.s. contains isopropanol, UN1993\*\*\*\*\*



**U.S. DEPARTMENT OF LABOR**  
Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET

DATE: 12 Jan 87

## SECTION I

Supplier's Name The Western Company of North America		EMERGENCY TELEPHONE NO. (817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101		
CHEMICAL NAME AND SYNONYMS Proprietary blend	TRADE NAME AND SYNONYMS Clay stabilizer, Clay Master-4.	
CHEMICAL FAMILY cationic polymer solution	FORMULA Proprietary blend	W.I.N. 499545

## SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Combustible Liquid, n.o.s.
NAME OF HAZARDOUS COMPONENT	Methanol
HAZARD CLASS	Combustible Liquid
IDENTIFICATION NUMBER	NA 1993
D.O.T. LABEL(S) REQUIRED	None
PRECAUTIONARY LABEL	Attached

## SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
Methanol	5-15	200 ppm

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H <sub>2</sub> O=1) @ 60°F	1.010
VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER	soluble	pH (100%)	6-8
APPEARANCE AND ODOR Liquid; sweet odor			

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) 126°F (52°C) PMCC	FLAMMABLE LIMITS	Lel	Uel
EXTINGUISHING MEDIA Foam, dry chemical, CO <sub>2</sub> , water fog or spray			
SPECIAL FIRE FIGHTING PROCEDURES Wear self-contained breathing apparatus. Cool exposed containers with water spray.			
Avoid breathing vapors or fumes.			
UNUSUAL FIRE AND EXPLOSION HAZARDS Combustible. Do not store with strong oxidants. Vapors are heavier than air.			
Do not use welding or cutting torch near drum. Explosion may result.			

TRADE NAME: W.I.N. 499545, Clay Stabilizer, Clay Master-4

### SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE  
See Section II

EFFECTS OF OVEREXPOSURE Inhalation may cause dizziness, headaches, or unconsciousness. Prolonged or repeated skin contact may result in dermatitis. Eye contact may cause severe irritation, tearing or blurred vision. Ingestion can cause nausea, vomiting or death.

EMERGENCY AND FIRST AID PROCEDURES If ingested, do not induce vomiting. Drink large quantities of water and call a physician. If overcome by vapors, remove to fresh air and call a physician. If breathing is irregular, start resuscitation. For skin contact, wash skin thoroughly with soap and water. Remove contaminated clothes. For eye contact, flush eyes with large amounts of water for at least 15 minutes and call a physician.

### SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID use away from heat, sparks or open flames
	STABLE	X	

INCOMPATIBILITY (Materials to avoid)

Avoid strong oxidizers.

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide, oxides of nitrogen and sulfur.

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

### SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Eliminate ignition sources. Shut off leak. Wear appropriate protective clothing and respiratory protection. Dike and pump large spills into salvage containers. Soak up residue and small spills with absorbent clay, sand, or dirt, and place in salvage container.

WASTE DISPOSAL METHOD

Incinerate in an incinerator equipped with a afterburner and scrubber or bury in an approved industrial landfill.

### SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type) Use with adequate ventilation. If ventilation is not adequate, use approved NIOSH vapor canister.

VENTILATION	LOCAL EXHAUST	SPECIAL
	Normally sufficient	
	MECHANICAL (General)	OTHER

PROTECTIVE GLOVES	EYE PROTECTION
Chemical resistant	Chemical goggles or face shield

OTHER PROTECTIVE EQUIPMENT  
Chemical resistant apron

### SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Use proper protective clothing and equipment. Do not store near heat, sparks or open flames. Reseal container when not in use and do not add any foreign matter. Store in well ventilated area. Do not store with strong oxidizers. Make sure all electrical equipment is explosion-proof.

OTHER PRECAUTIONS

499545



**Western Petroleum Services**

**W.I.N. 499545**

**CLAY MASTER-4**

**Clay Stabilizer**

**Flash Point: 126°F ( 52°C ) PMCC**

**Net Contents 460 pound (207 kg)**

**55 gallon (209 liter) @ 60°F**

**Manufactured by:**

**The Western Company of North America**

**P.O. BOX 186 • FORT WORTH, TEXAS 76101**

**Emergency Telephone (817) 5166 or 781-5433**

**Batch no.**



R-3G1(01/00)

\*\*\*\*\*D.O.T. PROPER SHIPPING NAME: Combustible liquid, n.o.s., contains methanol (NA1933)\*\*\*\*\*

**DIRECTIONS:**

For Proper Use, Refer to Service Bulletin No.(s) 736.0 WG

**SPECIFIC USAGE:**

Use at the rate of 0.5 to 5.0 gal/1000 gal of brine or acid based fracturing fluids.  
Use at the rate of 4 to 100 gal/1000 gal of brine or acid for matrix treatments.

**FOR INDUSTRIAL USE ONLY**

**WARNING**

MAY CAUSE IRRITATION OF THE SKIN AND EYES. AVOID CONTACT WITH EYES. AVOID PROLONGED OR REPEATED CONTACT WITH SKIN. AVOID PROLONGED INHALATION OF VAPOR. DO NOT TAKE INTERNALLY.

**FIRST AID:**

**FOR EYES:** In case of contact, flush eyes with large amounts of water for at least 15 minutes. Call a physician.  
**FOR SKIN:** In case of contact, remove contaminated clothes. Wash skin thoroughly with soap and water.  
**FOR INGESTION:** If swallowed, do not induce vomiting. Drink large quantities of water. Call a physician from exposed area to fresh air. Call a physician. If breathing is irregular, start resuscitation.  
**HANDLING:** Employees must wear chemical resistant gloves, chemical goggles and chemical resistant apron. It may contain flammable and toxic liquid or vapor; observe all warnings and precautions listed for this product. Do not cut, puncture or weld on or near this container.

Refer to MSDS and SPM-04-04 for Safety Requirements.

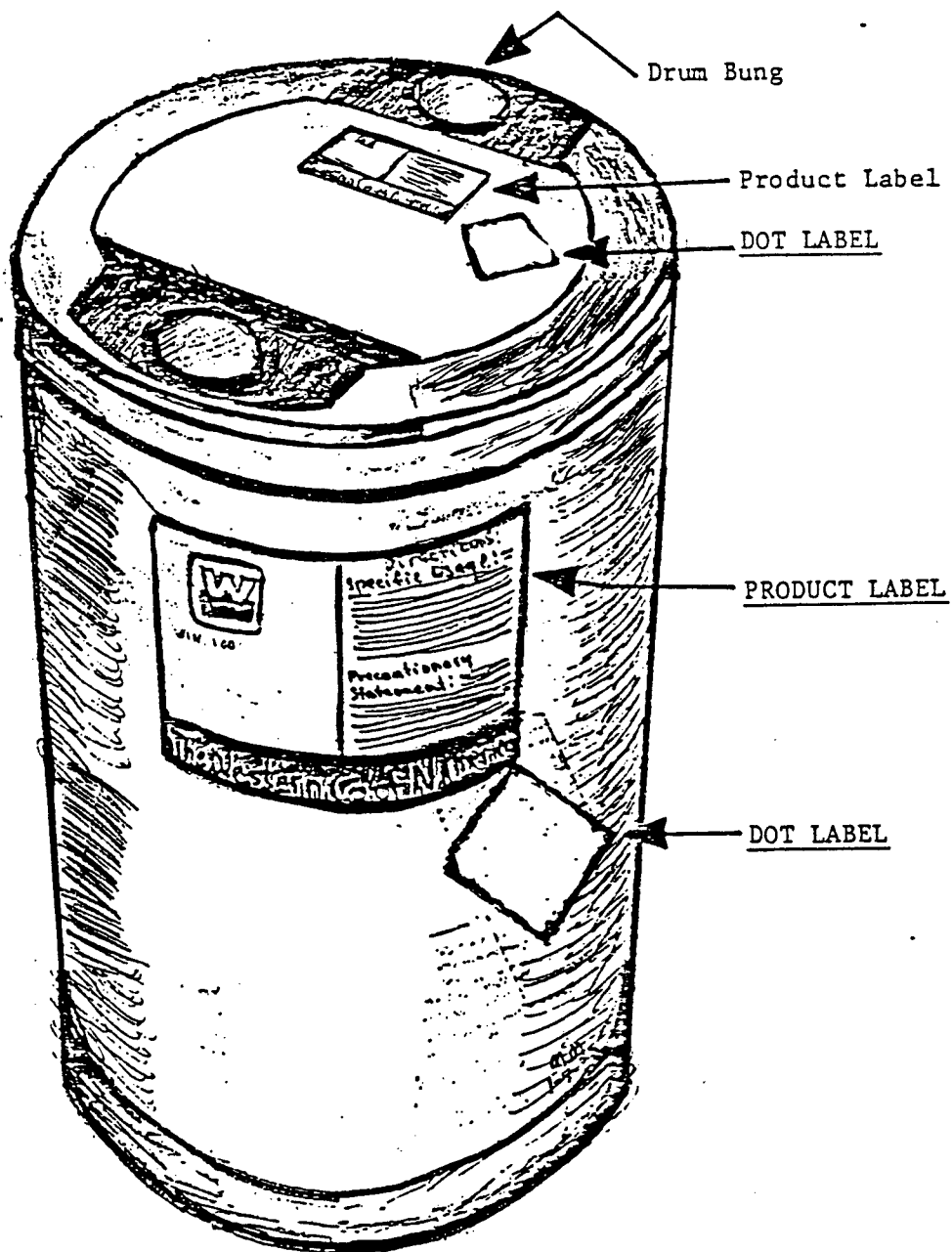
499545

R-3E2(01/86) -

RECOMMENDED  
DRUM LABELING  
TYPICAL

(lettering size and color as per guidelines)

DOO1







PRECAUTIONARY LABELS  
for  
PROPRIETARY PRODUCTS

Drum Label\*

Label Description: (see attached example)

material	- permanent vinyl
type	- "Crack & Peel"
size	- $8\frac{1}{2} \pm 1/16 \times 11 \pm 1/16$ "
color	- white
ink	- red on white as per attached example, this is the same crimson red as is used on DOT flammable liquid labels
print type	- silkscreen process
basic format	- as per attached example
specific directions	- supplied by WPS Product Development
specific precautionary wording	- supplied by Manufacturer/Vendor of specific product and approved by WPS Field Development

Label Manufacturer: the following Company has produced such labels.

Industrial Tape & Label, Inc.  
7028 Burkett  
P. O. Box 14206  
Houston, TX 77021  
(713) 748-3105

\* To be supplied by Manufacturer/Vendor of product.  
This type label may be used on bags or other paper containers, in which case lesser quality paper labels are acceptable.

9 FEB 84  
RWA  
R-3D2(01/86)



U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET

DATE: 18DEC85

## SECTION I

Supplier's Name The Western Company of North America		EMERGENCY TELEPHONE NO. (817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101		
CHEMICAL NAME AND SYNONYMS Proprietary blend		TRADE NAME AND SYNONYMS SURFACTANT, Flo Back 10
CHEMICAL FAMILY ethoxylated surfactant	FORMULA W.I.N.100462	

## SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Flammable liquid, n.o.s.
NAME OF HAZARDOUS COMPONENT	isopropanol
HAZARD CLASS	Flammable liquid
IDENTIFICATION NUMBER	UN1993
D.O.T. LABEL(S) REQUIRED	Flammable liquid
PRECAUTIONARY LABEL	attached

## SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
isopropanol	38	400ppm
heavy aromatic petroleum solvent, mostly alkylbenenes except toluene and napthalenes	3-9	100ppm
methylisobutylcarbinol	1	15ppm

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H <sub>2</sub> O=1) @ 15°C	0.934
VAPOR PRESSURE (mm Hg.)		PERCENT, VOLATILE BY VOLUME (%)	63
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER	soluble		
APPEARANCE AND ODOR alcoholic odor, amber liquid			

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) 55 F (PMCC)	FLAMMABLE LIMITS	LeI	UeI
EXTINGUISHING MEDIA Water, foam, dry chemical			
SPECIAL FIRE FIGHTING PROCEDURES Self-contained breathing apparatus			
UNUSUAL FIRE AND EXPLOSION HAZARDS Produces toxic fumes when burned			

TRADE NAME: W.I.N. 100462, SURFACTANT, Flo-Back 10

### SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE  
N/A

EFFECTS OF OVEREXPOSURE

Eyes: irritant, toxic if inhaled or ingested.

EMERGENCY AND FIRST AID PROCEDURES

Eyes: flush with water for 15 minutes; seek medical attention. Skin: wash skin with soap and water, wash clothes before wearing. Internal: drink large volumes of water; induce vomiting call physician.

### SECTION VI - REACTIVITY DATA

STABILITY

UNSTABLE

CONDITIONS TO AVOID

STABLE

XXX

INCOMPATIBILITY (Materials to avoid)  
Avoid strong oxidants

HAZARDOUS DECOMPOSITION PRODUCTS

none

HAZARDOUS  
POLYMERIZATION

MAY OCCUR

CONDITIONS TO AVOID

WILL NOT OCCUR

XXX

### SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED  
Absorb on sand, bury in approved landfill

WASTE DISPOSAL METHOD  
Incinerate or bury in land fill

### SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

none with adequate ventilation

VENTILATION

LOCAL EXHAUST

SPECIAL

MECHANICAL (General)  
XXX

OTHER

PROTECTIVE GLOVES

rubber

EYE PROTECTION

goggles or face shield

OTHER PROTECTIVE EQUIPMENT

rubber boots and apron

### SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING  
Avoid contact with body, store away from ignition sources

OTHER PRECAUTIONS



W.I.N. 100462

# FLO BACK 10

## WATER CLEANING AGENT

Flash Point: 54°F (12°C) PMCC  
Net Content: 389 lb (177 kg)  
50 gal (189 L) @ 60°F

### DIRECTIONS:

**For Proper Use, Refer to Service Bulletin No.(s) 530.0**

**SPECIFIC USAGE:** Use at a concentration of 2 gallons per 1000 gallons in water-based fracturing fluids.

**When Handling This Product Employees MUST WEAR:** Chemical goggles, rubber apron and boots.

## FOR INDUSTRIAL USE ONLY

### WARNING

**FLAMMABLE. CAUSES EYE INJURY AND SKIN IRRITATION, MAY BE HARMFUL IF INHALED, INGESTED OR ABSORBED THROUGH SKIN.**

Do not get in eyes. Avoid contact with skin and clothing. Wear goggles or face shield when handling. Avoid breathing vapor. Use with adequate ventilation. Do not take internally. Keep away from heat and open flames. Keep container closed when not in use.

In case of contact, wash skin with soap and water, for eyes, flush with large amounts of water for at least 15 min. and get medical attention. Remove contaminated clothing and wash before reuse. If inhaled, remove to fresh air. If not breathing, give artificial respiration, preferably mouth to mouth. If breathing is difficult, give oxygen, get medical attention.

**Refer to MSDS and SPM-04-04 for Safety Requirements.**

Manufactured for:

# The Western Company of North America

P.O. BOX 186 • FORT WORTH, TEXAS 76101

Emergency Telephone: (817) 731-5100  
(817) 731-5433

batch no.

\*\*\*\*\*D.O.T. PROPER SHIPPING NAME: Flammable liquid, n.o.s., contains isopropanol (UN1993)\*\*\*\*\*



U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

DATE: 16 May 78

SECTION I

Supplier's Name		EMERGENCY TELEPHONE NO.
The Western Company of North America		(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
CHEMICAL FAMILY Acrylic polymer emulsion		FORMULA FR-20 proprietary blend

SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Not regulated
NAME OF HAZARDOUS COMPONENT	N/A
HAZARD CLASS	N/A
IDENTIFICATION NUMBER	N/A
D.O.T. LABEL(S) REQUIRED	N/A
PRECAUTIONARY LABEL	Attached

SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	200°F	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	1.04 @	60°F
VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)		65
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)		Slow
SOLUBILITY IN WATER (limited by viscosity)	3-4%			
APPEARANCE AND ODOR White, low viscosity emulsion. Every slight odor.				

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) None below 200°F	FLAMMABLE LIMITS	LeI	UeI
EXTINGUISHING MEDIA Dry chemical, foam or CO <sub>2</sub>			
SPECIAL FIRE FIGHTING PROCEDURES None			
UNUSUAL FIRE AND EXPLOSION HAZARDS None			

## SECTION V - HEALTH HAZARD DATA

## THRESHOLD LIMIT VALUE

None for the product

## EFFECTS OF OVEREXPOSURE

May cause irritation

## EMERGENCY AND FIRST AID PROCEDURES

Eyes: Flush with large amounts of water. Skin: Wash with a mild soap and water. Inhalation: Remove to fresh air.

## SECTION VI - REACTIVITY DATA

## STABILITY

UNSTABLE

CONDITIONS TO AVOID

STABLE

X

## INCOMPATIBILITY (Materials to avoid)

## HAZARDOUS DECOMPOSITION PRODUCTS

CO, CO<sub>2</sub>, if incomplete combustion.HAZARDOUS  
POLYMERIZATION

MAY OCCUR

CONDITIONS TO AVOID

WILL NOT OCCUR

X

## SECTION VII - SPILL OR LEAK PROCEDURES

## STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Contain with absorbent material. Wash down with fuel oil or kerosene and final clean up with detergent and a lot of water.

## WASTE DISPOSAL METHOD

No special method required, but incineration is recommended.

## SECTION VIII - SPECIAL PROTECTION INFORMATION

## RESPIRATORY PROTECTION (Specify type)

None normally required

## VENTILATION

LOCAL EXHAUST

SPECIAL

MECHANICAL (General)

OTHER

## PROTECTIVE GLOVES

Rubber

## EYE PROTECTION

Goggles

## OTHER PROTECTIVE EQUIPMENT

None

## SECTION IX - SPECIAL PRECAUTIONS

## PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Avoid contact with skin and eyes. Launder contaminated clothing before reuse.

## OTHER PRECAUTIONS

Do not take internally. If spilled, may cause slippery floor conditions.

## DIRECTIONS:

Refer to Stimulation Services Bulletin for proper use.

As a friction reducer in acid use from 1 to 1.5 gallons/1000 gallons.

NOTE: FR-20 is anionic.

Separation may occur if FR-20 has been stored for a prolonged period of time. Agitate the drum to redisperse the polymer



# FR-20

**SYNTHETIC POLYMER  
LIQUID FRICTION REDUCER FOR  
ACID, BRINES AND FRESH WATER**

**KEEP OUT OF REACH OF CHILDREN**

**CAUTION! MAY CAUSE IRRITATION TO SKIN AND EYES.** Avoid contact with skin, eyes, and clothing. Do not take internally.

In case of contact, wash skin with soap and water; for eyes, immediately flush with large amounts of water for at least 5 minutes, and get medical attention. Remove contaminated clothing and wash before reuse.

**IMPORTANT!** The physical, chemical and toxicological properties of this product have not been thoroughly investigated; exercise due care in its use and handling.

Refer to Stimulation Services Technical Bulletin No. 1020.0W for safety requirements.

Employees must wear rubber gloves & safety goggles when handling FR-20 or its components.

*Manufactured for:*

# The Western Company of North America

P.O. BOX 186 • FORT WORTH, TEXAS 76101

8. 6079.2W

NET CONTENTS SHOWN ELSEWHERE ON CONTAINER

100205

100167



U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET

DATE: 26 SEP 84

## SECTION I

Supplier's Name The Western Company of North America		EMERGENCY TELEPHONE NO. (817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101		
CHEMICAL NAME AND SYNONYMS Proprietary blend		TRADE NAME AND SYNONYMS SURFACTANT, FS-2
CHEMICAL FAMILY Surfactant	FORMULA W.I.N. 100167	

## SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Flammable liquid, n.o.s.
NAME OF HAZARDOUS COMPONENT	methanol
HAZARD CLASS	Flammable liquid
IDENTIFICATION NUMBER	UN 1993
D.O.T. LABEL(S) REQUIRED	Flammable liquid
PRECAUTIONARY LABEL	attached

## SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
methanol: Rat oral LD <sub>50</sub> 12.88 g/kg, LC <sub>50</sub> 64,000 ppm 4 hours	30-35	300ppm
isopropanol	0-3	400ppm

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	150°F	SPECIFIC GRAVITY (H <sub>2</sub> O=1) @ 60°F	0.960
VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	35-40%
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____=1)	
SOLUBILITY IN WATER			
APPEARANCE AND ODOR Clear to amber, alcoholic odor			

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) 62°F PMCC	FLAMMABLE LIMITS	LeI	UeI
EXTINGUISHING MEDIA CO <sub>2</sub> , dry chemicals, alcohol type foams			
SPECIAL FIRE FIGHTING PROCEDURES Dilution of burning liquid with 22 to 25 volumes of water will effect extinguish- ment. Wear self-contained breathing apparatus.			
UNUSUAL FIRE AND EXPLOSION HAZARDS Combustion products may contain hydrofluoric acid and must not be breathed.			



TRADE NAME: W.I.N. 100167, SURFACTANT, FS-2

### SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

400 ppm (skin) - ACCIH (1975)

EFFECTS OF OVEREXPOSURE

None expected except for giddiness. Low toxicity. Approximately lethal dose = 17,000 mg/kg (rats).

EMERGENCY AND FIRST AID PROCEDURES

Skin: Wash with soap and water. Eyes: Flush with water for at least 15 min and call a physician. Inhalation: Move to fresh air. Ingestion: Induce vomiting and call a physician.

### SECTION VI - REACTIVITY DATA

STABILITY

UNSTABLE

CONDITIONS TO AVOID

Excessive heat, sparks and open flames.

STABLE

XXXX

INCOMPATIBILITY (Materials to avoid)

Anhydride, isocyanate, monomer, and organometallic contamination.

HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide, carbon dioxide, hydrofluoric acid.

HAZARDOUS  
POLYMERIZATION

MAY OCCUR

CONDITIONS TO AVOID

WILL NOT OCCUR

XXX

### SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Eliminate all sources of ignition. Flush small spills to the sewer with water.

Large spills should be collected for disposal.

WASTE DISPOSAL METHOD

Dispose of in a sanitary landfill according to local, state and federal regulations

### SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

Air supplied masks in closed area.

VENTILATION

LOCAL EXHAUST

SPECIAL

MECHANICAL (General)

OTHER

PROTECTIVE GLOVES

Rubber

EYE PROTECTION

goggles

OTHER PROTECTIVE EQUIPMENT

Eye bath and safety shower

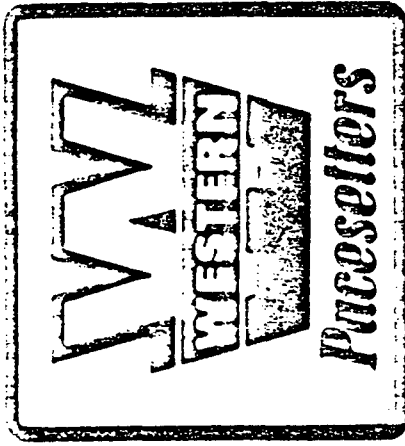
### SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep away from heat, sparks and open flames. Keep container closed

OTHER PRECAUTIONS

Use with adequate ventilation. Do not take internally.



Western Petroleum Services

W.I.N. 100167

FS-2

Surfactant

Flash Point: 62°F PMCC  
Net Content: 429 lb(195 kg)  
54 gal(204 L) @ 60°F

## DIRECTIONS:

For Proper Use, Refer to Service Bulletin No.(s) 531.0 WG

**SPECIFIC USAGE:** Use at the rate of 1/2 to 4 gal/1000 gal of treatment fluid.

**When Handling This Product Employees MUST WEAR:** Rubber gloves, goggles.

## FOR INDUSTRIAL USE ONLY WARNING!

**FLAMMABLE LIQUID** Keep away from heat, sparks and open flames. Keep container closed when not in use. Use with adequate ventilation. Do not take internally. **FIRST AID:** Skin: wash with soap and water. Eyes: Flush with water for at least 15 minutes and call a physician. Inhalation: Move to fresh air. Ingestion: Induce vomiting and call a physician. **SPILL OR LEAK:** Eliminate all sources of ignition. Flush small spills to the sewer with water. Large spills should be collected for disposal. Dispose of in a sanitary landfill according to local, state and federal regulations. **FIRE FIGHTING:** Dilution of burning liquid with 22 to 25 volumes of water will effect extinguishment. Wear self contained breathing apparatus. Use CO<sub>2</sub>, dry chemical or alcohol type foams. Combustion products may contain hydrofluoric acid and must not be breathed.

Refer to MSDS and SPM-04-04 for Safety Requirements.

**The Western Company of North America**

P.O. BOX 186, FORT WORTH, TEXAS 76101

Batch no.

100484



**U.S. DEPARTMENT OF LABOR**  
Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET

DATE: 19SEP85

## SECTION I

Supplier's Name The Western Company of North America		EMERGENCY TELEPHONE NO. (817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101		
CHEMICAL NAME AND SYNONYMS Acetylenic alcohols, amine quats, methanol	TRADE NAME AND SYNONYMS INHIBITOR, acid, I-17	
CHEMICAL FAMILY amines and acetylenic alcohols	FORMULA	W.I.N. 100484

## SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	flammable liquid, corrosive, n.o.s.
NAME OF HAZARDOUS COMPONENT	methanol, acetylenic alcohols, organic amines
HAZARD CLASS	Flammable Liquid, Corrosive
IDENTIFICATION NUMBER	UN2924
D.O.T. LABEL(S) REQUIRED	Flammable liquid and corrosive
PRECAUTIONARY LABEL	Attached

## SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
methanol	50	ppm 260
propargyl alcohol		1
formamide		20
heavy aromatic naptha - 100 ppm; ethyl octynol - 1 ppm; isopropanol		400

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	192	SPECIFIC GRAVITY (H <sub>2</sub> O=1) (@ 25°C)	0.820
VAPOR PRESSURE (mm Hg.) (MeOH @ 212°C)	100	PERCENT VOLATILE BY VOLUME (%)	63
VAPOR DENSITY (AIR=1)	1.20	EVAPORATION RATE (n-butylac =1)	2.07
SOLUBILITY IN WATER	dispersible		
APPEARANCE AND ODOR	dark brown liquid, pine odor		

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) 12.2°C, PMCC, ASTM D93-73	FLAMMABLE LIMITS	Lel	Uel
EXTINGUISHING MEDIA CO <sub>2</sub> , alcohol foam, dry chemical			
SPECIAL FIRE FIGHTING PROCEDURES Use water spray to cool fire-exposed surfaces and to protect personnel.			
UNUSUAL FIRE AND EXPLOSION HAZARDS Respiratory protection required. Full body protection needed if fumes, mist or liquid may be contacted.			

TRADE NAME: W.I.N. 100484, INHIBITOR, acid, I-17

### SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE ethyl octynol - 1 ppm -  
 propargyl alcohol, formamide, methanol, naphtha, isopropanol (1,20,200,100,400 ppm)  
 EFFECTS OF OVEREXPOSURE  
 anesthesia, nausea, headache, dizziness, blindness, convulsions, death - may be fatal if  
 Eye Contact - permanent blindness -  
 inhaled/absorbed via skin - severe irritant to skin -chronic:liver, lung, kidney  
 EMERGENCY AND FIRST AID PROCEDURES  
 flush skin and eyes with water for 15 min and remove to fresh air - call a doctor;  
 artificial respiration: if swallowed, induce vomiting if victim is conscious -  
 100-200 ml usually fatal; no known antidote - treat symptoms

### SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID conditions - open flames, sparks, heat
	STABLE	X	
INCOMPATIBILITY (Materials to avoid) strong oxidizers, mineral acids, olefins, esters, alkylene oxides, cyanohydrides			
HAZARDOUS DECOMPOSITION PRODUCTS Does not decompose unless burned, but vapors are very toxic. Decomposes, when burned, into HCl acid and toxic smoke and fumes			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

### SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED  
 eliminate ignition sources; keep public away - vapors can be fatal; avoid contact  
 and evacuate occupants from downwind areas; prevent from entering sewers, water sources, low  
 areas - advise authorities of contact with sewer, water, soil, vegetation  
 WASTE DISPOSAL METHOD DANGER!  
 contain liquid with sand/earth; recover by pumping or with suitable absorbent -  
 consult expert on disposal

### SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type) Use NIOSH/MSHA approved self-contained or respirator with amine cartridges.		
VENTILATION	LOCAL EXHAUST greater than 60 fpm hood/face velocity	SPECIAL explosion proof
	MECHANICAL (General) equal to outdoors	OTHER N/A
PROTECTIVE GLOVES	rubber	EYE PROTECTION splash goggles
OTHER PROTECTIVE EQUIPMENT chemical-resistant suit and boots		

### SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING  
 close container when not in use - containers hazardous when empty - observe all  
 precautions given in this sheet - wear protective equipment  
 OTHER PRECAUTIONS  
 keep away from heat, sparks, flames - contains acetylenic alcohols, no known  
 antidote - permanent blindness

## DIRECTIONS:

For Proper Use, Refer to Service Bulletin No.(s) 465.0

**SPECIFIC USAGE:** Use at concentrations of 1 to 30 gal/1000 gal HCl, HCl/HF or HCl/Organic Acid blends.

WHEN HANDLING THIS PRODUCT EMPLOYEES MUST WEAR: Goggles, rubber gloves and apron, and chemical respirator with green cartridge R54A for amines.

## FOR INDUSTRIAL USE ONLY DANGER

EXTREMELY FLAMMABLE - MAY CAUSE FLASH FIRE - MAY BE FATAL IF INHALED, INGESTED OR ABSORBED THROUGH SKIN - MAY CAUSE BLINDNESS IF SWALLOWED - EYE CONTACT CAUSES PERMANENT BLINDNESS - MAY CAUSE SKIN SENSITIZATION - VAPOR HARMFUL - NO KNOWN ANTIDOTE

Keep away from heat, sparks or open flame. Do not breathe vapors. Do not get in eyes, on skin, or on clothing. Wash after handling. Keep this container closed.

IF INHALED: Remove to fresh air and call a physician.

FOR EYE OR SKIN CONTACT: Flush with water for 15 min., remove contaminated clothing and call a physician.

IF INGESTED: Give large volumes of water, induce vomiting if victim is conscious and call a physician; contains acetylenic alcohol, no known antidote - treat symptoms.

FIRE FIGHTING: Extinguish fire with dry chemicals, foam or water spray. Empty container contains flammable, toxic materials. Do not cut, puncture or weld.

Refer to MSDS and SPM-04-04 for Safety Requirements.



**Western Petroleum Services**

W.I.N. 100484

**1-17**

**ACID CORROSION INHIBITOR**

Flash Point: 54°F(12°C) PMCC  
Net Content: 380.6 lb(173 kg)  
55 gal(208 L) @ 60°F

Manufactured for:

# The Western Company of North America

Batch no.

P.O. BOX 186 • FORT WORTH, TEXAS 76101

Emergency Telephone: (817) 731-5100

(817) 731-5433

\*\*\*\*\*DOT PROPER SHIPPING NAME: FLAMMABLE Liquid, corrosive, n.o.s., contains methanol, acetylenic alcohol and organic amine

## WESTERN PETROLEUM SERVICES

W.I.N. 100484

I-17

### CORROSION INHIBITOR

**DANGER!**

**FLAMMABLE**

**CORROSIVE TO EYES AND SKIN**  
**TOXIC**

**MAY CAUSE SKIN SENSITIZATION**  
**CONTAINS: ACETYLENIC ALCOHOLS; METHANOL; ISOPROPANOL;**  
**ALKYL HETEROCYCLIC AMINE**

MANUFACTURED FOR:

**THE WESTERN COMPANY OF NORTH AMERICA**

P. O. BOX 186

FORT WORTH, TEXAS 76101

MADE IN U.S.A.

**PRECAUTIONS:** KEEP AWAY FROM HEAT, SPARKS, AND OPEN FLAME. DO NOT GET IN EYES, ON SKIN OR ON CLOTHING. WEAR SUITABLE PROTECTIVE CLOTHING AND CHEMICAL SAFETY GOGGLES. AVOID BREATHING MISTS OR VAPORS. USE WITH VENTILATION EQUAL TO UNOBSTRUCTED OUTDOORS IN MODERATE BREEZE. KEEP CONTAINER CLOSED.

**FIRST AID:** IMMEDIATELY FLUSH EYES AND SKIN WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES WHILE CONTAMINATED CLOTHING AND SHOES ARE REMOVED. CALL A PHYSICIAN. REMOVE TO FRESH AIR. IF NOT BREATHING, APPLY ARTIFICIAL RESPIRATION. LAUNDER CLOTHING BEFORE RE-USE. DISCARD CONTAMINATED SHOES.

**FIRE FIGHTING:** USE WATERSPRAY TO COOL FIRE EXPOSED SURFACES AND PROTECT PERSONNEL. EXTINGUISH WITH DRY CHEMICAL OR ALCOHOL-TYPE FOAM. WATERSPRAY MAY BE INEFFECTIVE AS AN EXTINGUISHING AGENT.

**USE INSTRUCTIONS:** FOR PROPER USE, REFER TO SERVICE BULLETIN NUMBER 000.0 HG.

**SPILL CONTROL:** KEEP PUBLIC AWAY. ELIMINATE SOURCES OF IGNITION. HARM OCCUPANTS OF DOWNWIND AREAS OF FIRE AND EXPLOSION HAZARD. SHUT OFF SOURCE IF POSSIBLE TO DO SO SAFELY. PREVENT LIQUID FROM ENTERING SEWERS, WATERCOURSES, OR LOW AREAS. ADVISE AUTHORITIES IF MATERIAL HAS ENTERED A WATERCOURSE OR SEWER OR HAS CONTAMINATED SOIL OR VEGETATION. CONTAIN SPILLED LIQUID WITH SAND OR EARTH, AND DILUTE WITH WATER. RECOVER BY PUMPING OR WITH SUITABLE ABSORBENT. CONSULT AN EXPERT ON DISPOSAL OF RECOVERED MATERIAL AND ENSURE CONFORMITY WITH LOCAL DISPOSAL REGULATIONS.

**WARNING:** OBSERVE ALL PRECAUTIONARY MEASURES ON THIS LABEL. STORE EMPTY CONTAINERS AWAY FROM HEAT AND FLAME WITH DRUM PLUGS CLOSED. EMPLOY CONTAINERS MAY CONTAIN PRODUCT RESIDUE. DO NOT PRESSURIZE, CUT, HEAT, WELD, OR EXPOSE CONTAINERS TO FLAME OR OTHER SOURCES OF IGNITION. ENSURE COMPLIANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS IN DISPOSING OF THIS CONTAINER, RESIDUAL CONTENTS, OR RINSING. ENSURE RECONDITIONERS, RECYCLERS, OR DISPOSAL OPERATORS ARE AWARE OF HAZARDS ASSOCIATED WITH CONTENTS.



NET CONTENTS: 55 U.S. GALLONS 208.2 LITERS

7-8518

100484



U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET

DATE: Oct. 28, 1982

## SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS
	Hi-Seal
CHEMICAL FAMILY Synthetic Polymers	FORMULA Blend of Synthetic polymers

## SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	none
NAME OF HAZARDOUS COMPONENT	none
HAZARD CLASS	none
IDENTIFICATION NUMBER	none
D.O.T. LABEL(S) REQUIRED	none
PRECAUTIONARY LABEL	none

## SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
none		

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	1.2
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT VOLATILE BY VOLUME (%)	1%
VAPOR DENSITY (AIR=1)	N/A	EVAPORATION RATE (_____ =1)	0
SOLUBILITY IN WATER	0		
APPEARANCE AND ODOR Black ground material with rubber odor			

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LeI	UeI
+ 405°F			
EXTINGUISHING MEDIA	water, CO <sub>2</sub> , Chemical.		
SPECIAL FIRE FIGHTING PROCEDURES			
none			
UNUSUAL FIRE AND EXPLOSION HAZARDS			
none			

TRADE NAME: Hi-Seal

### SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE 2 mg./m<sup>3</sup>

EFFECTS OF OVEREXPOSURE  
not established

EMERGENCY AND FIRST AID PROCEDURES

### SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	x	dust explosion condition

INCOMPATIBILITY (Materials to avoid) none

HAZARDOUS DECOMPOSITION PRODUCTS none

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	x	

### SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

sweep up and dispose in land-fill

WASTE DISPOSAL METHOD

### SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type) Filter type to avoid inhalation of dust

VENTILATION	LOCAL EXHAUST	SPECIAL
	MECHANICAL (General)	OTHER

PROTECTIVE GLOVES EYE PROTECTION

OTHER PROTECTIVE EQUIPMENT

### SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

OTHER PRECAUTIONS





U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET

RECEIVED

JAN 23 1989

R.E.F.C.

DATE: 21JAN85

## SECTION I

Supplier's Name The Western Company of North America		EMERGENCY TELEPHONE NO. (817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101		
CHEMICAL NAME AND SYNONYMS proprietary		TRADE NAME AND SYNONYMS DE-EMULSIFIER, I-5
CHEMICAL FAMILY ethoxylated amine	FORMULA W.I.N.100137	

## SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Flammable liquid, n.o.s.	(RQ 3300/1500)
NAME OF HAZARDOUS COMPONENT	methanol	
HAZARD CLASS	flammable material	
IDENTIFICATION NUMBER	UN1993	
D.O.T. LABEL(S) REQUIRED	flammable liquid	
PRECAUTIONARY LABEL	attached	NFPA code = 2-3-0

## SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
methanol, CAS#[67-56-1]	30	200 ppm
NA = not available		

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	NA	SPECIFIC GRAVITY (H <sub>2</sub> O=1) @ 60°F	0.953
VAPOR PRESSURE (mm Hg.)	NA	PERCENT VOLATILE BY VOLUME (%)	30
VAPOR DENSITY (AIR=1)	NA	EVAPORATION RATE (_____=1)	NA
SOLUBILITY IN WATER	dispersible		
APPEARANCE AND ODOR	amber to brown liquid		

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) 58°F(14°C) TCC	FLAMMABLE LIMITS NA	Let	Uel
EXTINGUISHING MEDIA Foam, dry chemical, CO <sub>2</sub> , water fog or spray			
SPECIAL FIRE FIGHTING PROCEDURES Do not enter fire area without proper protective equipment, including NIOSH approved self-contained breathing apparatus. Cool exposed containers with water spray. Avoid breathing vapors or fumes.			
UNUSUAL FIRE AND EXPLOSION HAZARDS Material is flammable. Do not store with strong oxidants. Vapors are heavier than air and may travel along ground to ignition source and flash back. Never use welding or cutting torch on or near drum, even when empty. Explosion may result.			

100137

TRADE NAME: W.I.N.100137, DE-EMULSIFIER,I-5

SECTION V - HEALTH HAZARD DATA	
THRESHOLD LIMIT VALUE	see Section II
EFFECTS OF OVEREXPOSURE	see Section IXA on p. 3
EMERGENCY AND FIRST AID PROCEDURES	see Section X - Label Copy

SECTION VI - REACTIVITY DATA			
STABILITY	UNSTABLE		CONDITIONS TO AVOID Use and store away from heat, sparks or open flames.
	STABLE	X	
INCOMPATIBILITY (Materials to avoid) Avoid strong oxidizers			
HAZARDOUS DECOMPOSITION PRODUCTS carbon monoxide and oxides of nitrogen			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID not applicable
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Eliminate ignition sources. Shut off leak if it can be done safely. Wear appropriate protective clothing and respiratory protection. Dike and pump large spills into salvage containers. Soak up residue and small spills with absorbent clay, sand, or dirt, and place in salvage containers.	
WASTE DISPOSAL METHOD	

SECTION VIII - SPECIAL PROTECTION INFORMATION		
RESPIRATORY PROTECTION (Specify type) If ventilation is not adequate, use approved NIOSH vapor canister		
VENTILATION	LOCAL EXHAUST Use with adequate ventilation	SPECIAL
	MECHANICAL (General) if ventilation does not prevent vapor build up	OTHER
PROTECTIVE GLOVES	chemically resistant	EYE PROTECTION goggles or face shield
OTHER PROTECTIVE EQUIPMENT boots and apron.		

SECTION IX - SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Use proper protective clothing and equipment. Do not handle or store near heat, sparks, and open flames. Reseal container when not in use. Do not add any foreign material to container. Do not reuse empty container. If used or stored in enclosed area, be sure that there is adequate ventilation and all electrical equipment is explosion proof. Do not store with strong oxidizers.	



Attachment to and continuation of

# MATERIAL SAFETY DATA SHEET

**RECEIVED**

JAN 23 1986

DATE: 21JAN86

R.E.F.C.

## SECTION I

Supplier's Name		EMERGENCY TELEPHONE NO.
The Western Company of North America		(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101		
CHEMICAL NAME AND SYNONYMS	proprietary	TRADE NAME AND SYNONYMS DE-EMULSIFIER, I-5
CHEMICAL FAMILY ethoxylated amine	FORMULA	W.I.N. 100137

## SECTION X - LABEL COPY

**When Handling This Product Employees MUST WEAR:**

Chemical goggles, rubber apron and rubber gloves

**FOR INDUSTRIAL USE ONLY**

# WARNING!

HAZARDOUS LIQUID AND VAPOR, IF ABSORBED THROUGH THE SKIN OR INHALED, HARMFUL IF SWALLOWED. Avoid contact with skin, eyes and clothing. Avoid breathing mist or vapor. Do not take internally. FIRST AID: In case of contact with eyes or skin, immediately flush with plenty of water for 15 minutes; for eyes get medical attention. Remove contaminated clothing and shoes at once. Wash thoroughly before re-use.

### FIRST AID:

**FOR EYES:** In case of contact, Flush eyes immediately with large amounts of water for at least 15 minutes. Call a physician.

**FOR SKIN:** In case of contact, Remove contaminated clothes. Wash skin thoroughly with soap and water. Launder clothes before reuse.

**FOR INGESTION:** If swallowed, Do not induce vomiting. Drink large quantities of water and call a physician.

**FOR INHALATION:** If overcome by vapors, remove immediately from exposed area to fresh air. Call a physician. If breathing is irregular or stopped, start resuscitation, administer oxygen, and call a physician.

**ATTENTION!** After this container has been emptied, it may contain flammable and toxic liquid or vapor; observe all warnings and precautions listed for this product. Do not cut, puncture or weld on or near this container. Refer to MSDS and SPM-04-04 for other safety requirements.



Attachment to and continuation of

# MATERIAL SAFETY DATA SHEET

DATE: 21JAN86

## SECTION I

Supplier's Name		EMERGENCY TELEPHONE NO.
The Western Company of North America		(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101		
CHEMICAL NAME AND SYNONYMS	proprietary	TRADE NAME AND SYNONYMS DE-EMULSIFIER, I-5
CHEMICAL FAMILY ethoxylated amine	FORMULA	W.I.N. 100137

## SECTION IXA - - SPECIAL PRECAUTIONS

continued from p.2

### Effects of Overexposure

Inhalation of concentrated vapors may cause dizziness, headaches, or unconsciousness. Prolonged or repeated skin contact may result in irritation or dermatitis. Eye contact may cause severe irritation, redness, tearing, or blurred vision. Ingestion can cause gastro-intestinal irritation, nausea, vomiting or death.



U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET

DATE: 11 SEPT 85

## SECTION I

Supplier's Name <b>The Western Company of North America</b>		EMERGENCY TELEPHONE NO. <b>(817) 731-5100</b>
ADDRESS (Number, Street, City, State, and ZIP Code) <b>P. O. Box 186, Ft. Worth, TX 76101</b>		
CHEMICAL NAME AND SYNONYMS <b>Proprietary blend</b>		TRADE NAME AND SYNONYMS <b>GELLING AGENT, water, J-20</b>
CHEMICAL FAMILY <b>Galacto-Mannan gum</b>	FORMULA <b>W.I.N. 499517</b>	

*NAI CO  
see I  
size*

## SECTION II HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	not regulated
NAME OF HAZARDOUS COMPONENT	N/A
HAZARD CLASS	N/A
IDENTIFICATION NUMBER	N/A
D.O.T. LABEL(S) REQUIRED	N/A
PRECAUTIONARY LABEL	Attached

## 2 SECTION III - HAZARDOUS INGREDIENTS

	%	TLV (Units)
N/A		
<i>1-10 lines + 1 line label</i>		

## SECTION III PHYSICAL DATA

BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	1.3
VAPOR PRESSURE (mm Hg.)	<1 @ 20°C	PERCENT VOLATILE BY VOLUME (%)	non-volatile
VAPOR DENSITY (AIR=1)	N/A	EVAPORATION RATE (_____=1)	non-volatile
SOLUBILITY IN WATER	forms gels		
APPEARANCE AND ODOR Off-white powder, bean like odor			

*NAI CO  
see  
see  
7*

## SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	>200°F	FLAMMABLE LIMITS	see attached	LeI	Uel
EXTINGUISHING MEDIA	water, carbon dioxide or foam				
SPECIAL FIRE FIGHTING PROCEDURES	None				
UNUSUAL FIRE AND EXPLOSION HAZARDS	See Attachment				

*OK*

TRADE NAME: W.I.N. 499517, GELLING AGENT, water, J-20

**SECTION V HEALTH HAZARD DATA**

**THRESHOLD LIMIT VALUE**

TWA: 10 mg/M<sup>3</sup> total, 5 mg/M<sup>3</sup> respirable

**EFFECTS OF OVEREXPOSURE**

Like any dust, may be an irritant to skin, eyes and nose.

**EMERGENCY AND FIRST AID PROCEDURES**

Eyes: flush with large amounts of water for at least 15 min. If irritation persists, seek medical attention. Skin: wash with soap & water. Ingestion: if large quantities are swallowed, seek medical attention. Inhalation: remove to fresh air. Call a physician if symptoms persist.

**SECTION VI REACTIVITY DATA**

**STABILITY**

UNSTABLE

**CONDITIONS TO AVOID**

fire, excessive heat

STABLE

X

**INCOMPATIBILITY (Materials to avoid)**

**HAZARDOUS DECOMPOSITION PRODUCTS**

**HAZARDOUS  
POLYMERIZATION**

MAY OCCUR

**CONDITIONS TO AVOID**

WILL NOT OCCUR

X

**SECTION VII SPILL OR LEAK PROCEDURES**

**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED**

Dry powder spills: sweep up or vacuum immediately & put in disposable container. Wet material will become slippery. Eliminate ignition sources. Water solutions: Dike spill to minimize contamination. Completely absorb with inert material (sand, vermiculite, etc.) sweep or scoop up & put in disposable container. Flush area immediately with plenty of water; prevent washings from entering sewers & waterways.

Incinerate in furnace or bury in landfill in accordance with federal, state and local regulations. U.S. EPA does not define this product as a hazardous waster under RCRA.

**SECTION VIII SPECIAL PROTECTION INFORMATION**

**RESPIRATORY PROTECTION (Specify type)**

Dust mask in open areas

**VENTILATION**

LOCAL EXHAUST

Preferred

SPECIAL

MECHANICAL (General) Not recommended as the sole means of controlling employee exposure.

OTHER

**PROTECTIVE GLOVES**

Impervious gloves

**EYE PROTECTION**

safety glasses

**OTHER PROTECTIVE EQUIPMENT**

safety shower and eyewash facility

**SECTION IX SPECIAL PRECAUTIONS**

**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING**

Store in dry place, keep container closed to avoid moisture pickup. Practice reasonable care and cleanliness.

**OTHER PRECAUTIONS**

None



U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET

DATE: 20JUN88

## SECTION I

Supplier's Name The Western Company of North America		EMERGENCY TELEPHONE NO. (817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101		
CHEMICAL NAME AND SYNONYMS Proprietary blend		TRADE NAME AND SYNONYMS Deemulsifier, LT-22
CHEMICAL FAMILY Surfactant	FORMULA W.I.N.100135	

## SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Flammable liquid, n.o.s.	RQ 5500/2500
NAME OF HAZARDOUS COMPONENT	Methanol	
HAZARD CLASS	Flammable Liquid	
IDENTIFICATION NUMBER	UN1993	
D.O.T. LABEL(S) REQUIRED	Flammable liquid	
PRECAUTIONARY LABEL	Attached	

## SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
Methanol	10-20	200ppm
Isopropanol	<5	400ppm

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H <sub>2</sub> O=1) @ 60°F	0.968
VAPOR PRESSURE (mm Hg.)		PERCENT VOLATILE BY VOLUME (%)	
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____=1)	
SOLUBILITY IN WATER	Soluble		
APPEARANCE AND ODOR: Light amber liquid; nonspecific odor			

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) 93°F (34°C) PMCC	FLAMMABLE LIMITS	Let	Uel
EXTINGUISHING MEDIA Water spray, dry chemical, carbon dioxide, or foam			
SPECIAL FIRE FIGHTING PROCEDURES Wear self-contained breathing apparatus. Dilute rapidly with large volumes of water. Avoid breathing vapors or fumes.			
UNUSUAL FIRE AND EXPLOSION HAZARDS Flammable. Keep heat, sparks, and fire away. Produces toxic fumes when burned. Do not store with strong oxidants. Vapors are heavier than air.			

TRADE NAME: W.I.N. 100135, DE-EMULSIFIER, LT-22

SECTION V - HEALTH HAZARD DATA	
THRESHOLD LIMIT VALUE	See Section II
EFFECTS OF OVEREXPOSURE	Liquid is corrosive to eyes and skin. Harmful if ingested or absorbed through skin. Inhalation may cause dizziness, headaches, or unconsciousness. Ingestion can cause nausea, vomiting, or death.
EMERGENCY AND FIRST AID PROCEDURES	Flush eyes or skin with water for 15 min. and call a physician. If ingested, drink large quantities of water and call a physician. Do not induce vomiting. Launder clothes before reuse. If overcome by vapors, remove immediately to fresh air and call a physician.

SECTION VI - REACTIVITY DATA			
STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	
INCOMPATIBILITY (Materials to avoid) Avoid contact with strong oxidizing agents.			
HAZARDOUS DECOMPOSITION PRODUCTS Produces toxic oxides of carbon and HCl when burned.			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Extinguish all sources of ignition. Wash down with water or soak up on sand and dispose of in an approved industrial waste landfill. Do not wash down with water where runoff will contaminate important water sources.	
WASTE DISPOSAL METHOD Incinerate in an incinerator equipped with an afterburner and scrubber or bury in an approved industrial landfill.	

SECTION VIII - SPECIAL PROTECTION INFORMATION		
RESPIRATORY PROTECTION (Specify type) None required in normal use, assuming adequate ventilation		
VENTILATION	LOCAL EXHAUST Normally sufficient	SPECIAL
	MECHANICAL (General) If local exhaust is not adequate	OTHER
PROTECTIVE GLOVES Chemical resistant	EYE PROTECTION Face shield or goggles	
OTHER PROTECTIVE EQUIPMENT Chemical resistant boots and apron, if possibility of contact during use exists.		

SECTION IX - SPECIAL PRECAUTIONS	
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Avoid contact with eyes, skin and clothing. Make sure all electrical equipment is explosion-proof. Store away from heat, sparks and open flames. Do not store with strong oxidizers.	
OTHER PRECAUTIONS Do not transfer to improperly marked containers. Keep container closed when not in use. Do not add any foreign material to container.	





**Western Petroleum Services**

**W.I.N. 100135**

**LT-22**

**De-emulsifier**

Flash Point: 93°F(34°C) PMCC

Net Content: 440 lb. (200 kg)

55 gal. (208 L) @ 60°F (15.6°C)

Manufactured for:

**The Western Company of North America**

**P.O. BOX 186 • FORT WORTH, TEXAS 76101**

Emergency Telephone: (817) 731-5100  
(817) 731-5433

## **DIRECTIONS:**

**FOR PROPER USE, REFER TO SERVICE BULLETIN NOS.: 100, 850, 1300, 5290**  
**SPECIFIC USAGE:** Use at the rate of 0.5 to 5.0 gal/1000 gal. of water, acid, brine or oil-based stimulation fluids.

**FOR INDUSTRIAL USE ONLY**

## **WARNING**

**FLAMMABLE LIQUID:** Keep away from heat, sparks, and open flame. Wear appropriate protective clothing and eye protection. Use with adequate ventilation. Keep container closed when not in use. May cause irritation of the eyes and skin. May be harmful if inhaled or swallowed.

**FIRST AID:** For eye contact flush eyes with water for at least 15 minutes and get medical attention. For skin contact wash skin thoroughly with soap and water. Remove contaminated clothing. If irritation develops get medical attention. If overcome by vapors remove to fresh air. If breathing is effected give oxygen and call a physician. If breathing has stopped start resuscitation and call a physician. If swallowed do not induce vomiting. Drink large amounts of water and call a physician.

**FIRE ACTION:** Use waterspray to cool fire exposed surfaces and protect personnel. Extinguish preferentially with dry chemical, foam, waterspray or waterfog. Full protective clothing and NIOSH/OSHA approved self-contained breathing apparatus required for fire fighting personnel. May explode in heat of fire. Flammable vapors may spread away from spill. Incomplete thermal decomposition may produce toxic gases.

**SPILL OR LEAK ACTION:** Use protective equipment. In confined spaces wear self-contained breathing apparatus. Remove ignition sources. Isolate area. Stop leak where safe. Contain and absorb spill with sorbent material. Dispose in accordance with local, state and federal regulations.

**STORAGE AND DISPOSAL:** Store away from heat sparks and open flame with closures in place. If empty container retains product residues, all hazard precautions must be observed. Insure that reconditioner and disposer are aware of the hazards associated with this product. Dispose of according to local, state and federal regulations.

**REFER TO MSDS AND SPM-04-04 FOR SAFETY REQUIREMENTS.**



U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET

DATE: 26 SEP 84

## SECTION I

Supplier's Name The Western Company of North America		EMERGENCY TELEPHONE NO. (817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101		
CHEMICAL NAME AND SYNONYMS Proprietary blend		TRADE NAME AND SYNONYMS SURFACTANT, LT-25
CHEMICAL FAMILY Surfactant	FORMULA W.I.N. 100144	

## SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Flammable liquid, n.o.s.
NAME OF HAZARDOUS COMPONENT	Isopropanol
HAZARD CLASS	Flammable liquid
IDENTIFICATION NUMBER	UN1993
D.O.T. LABEL(S) REQUIRED	Flammable liquid
PRECAUTIONARY LABEL	Attached

## SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
Isopropanol	30	400ppm

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H <sub>2</sub> O=1) @ 25°C	1.08
VAPOR PRESSURE (mm Hg.) @ 100°F	<16 psia	PERCENT VOLATILE BY VOLUME (%)	15
VAPOR DENSITY (AIR=1) IPA/H <sub>2</sub> O		EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER	miscible	PH	8.5
APPEARANCE AND ODOR	Light amber clear liquid - isopropanol odor		

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) 67°F PMCC	FLAMMABLE LIMITS Not known	Lel	Uel
EXTINGUISHING MEDIA CO <sub>2</sub> , dry chemical, foam			
SPECIAL FIRE FIGHTING PROCEDURES None			
UNUSUAL FIRE AND EXPLOSION HAZARDS May evolve toxic SO <sub>x</sub> fumes.			

TRADE NAME: W.I.N. 100144, SURFACTANT, LT-25

### SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

Not established for the product

EFFECTS OF OVEREXPOSURE

See attached Section IXA

EMERGENCY AND FIRST AID PROCEDURES

Wash spills from skin with water. If eye contact occurs, flush with plenty of water and consult a physician if irritation persists. If ingested, consult a physician.

### SECTION VI - REACTIVITY DATA

STABILITY

UNSTABLE

CONDITIONS TO AVOID

STABLE

X

INCOMPATIBILITY (Materials to avoid)

Strong oxidizers

HAZARDOUS DECOMPOSITION PRODUCTS

SO<sub>2</sub> X

HAZARDOUS  
POLYMERIZATION

MAY OCCUR

CONDITIONS TO AVOID

WILL NOT OCCUR

X

### SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb large spills with sawdust or other absorbant material and transfer to a container for disposal. Small spills and residue may be flushed to the drain with water.

WASTE DISPOSAL METHOD

complete incineration in accordance with local ordinances.

### SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

none normally required

VENTILATION

LOCAL EXHAUST

SPECIAL

MECHANICAL (General)

OTHER

PROTECTIVE GLOVES

Rubber

EYE PROTECTION

Chemical goggles

OTHER PROTECTIVE EQUIPMENT

### SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

See attached Section IXA

OTHER PRECAUTIONS

Attachment to and continuation of



# MATERIAL SAFETY DATA SHEET

DATE: 26 SEP 84

## SECTION I

Supplier's Name		EMERGENCY TELEPHONE NO.
The Western Company of North America		(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101		
CHEMICAL NAME AND SYNONYMS Proprietary blend		TRADE NAME AND SYNONYMS SURFACTANT, LT-25
CHEMICAL FAMILY Surfactant	FORMULA W.I.N. 100144	

## SECTION IXA - - SPECIAL PRECAUTIONS

### SECTION V - HEALTH HAZARD DATA

Effects of overexposure - Specific laboratory toxicity information on LT-25 has not been obtained. From its chemical nature, toxicity problems are not expected; but, since it is an excellent wetting agent, there is the possibility that some individuals may be allergic to it. LT-25 has been manufactured for more than twenty-five years and no toxicity problems have been encountered to our knowledge, either at our plant or in customers' plants.

LT-25 is not intended for internal consumption. It is assumed that it is irritating to eyes and that it could cause corneal injury if left in contact. Repeated exposure or prolonged contact with skin may cause irritation or chapping by removal of natural oils.

### SECTION IX - SPECIAL PRECAUTIONS

Handling and Storing - LT-25 is handled similarly to concentrated solutions of other common detergents and wetting agents and no special precautions are taken. Avoid contact of the skin and eyes with the concentrated product. In accordance with good industrial hygiene wear elbow-length gloves, goggles or side-shield spectacles and normal protection for the body and head when handling LT-25 in large quantities. Wash spills from the skin without undue delay and wash the face and hands after exposure. If contact with the eyes occurs, flush with water using an eye cup or eye fountain; secure medical attention if irritation persists. Soiled clothing is readily cleaned by laundering.

LT-25 may be stored in its shipping container at normal indoor or outdoor temperatures. Freezing will affect the physical condition of this product, but will not damage it. Thaw and mix before using.



Western Petroleum Services

WIN 100144

# LT-25

## ACID RETARDER

FlashPoint: 79°F PMCC  
Net Contents: 440 lb(200 kg)  
53.3 gal(202 L) @ 60°F

Manufactured for

# The Western Company of North America

P.O. BOX 186 • FORT WORTH, TEXAS 76101

Batch no.

## DIRECTIONS

FOR PROPER USE, REFER TO SERVICE BULLETIN NO.: 170.0MG, 537.0 WG

LT-25 MUST BE ADDED "ON THE FLY" TO ANY INHIBITED ACID.

HANDLING LT-25 REQUIRES THE USE OF RUBBER APRON, RUBBER GLOVES, SAFETY GOGGLES AND AN APPROVED RESPIRATOR.

FOR INDUSTRIAL USE ONLY

## WARNING!

FLAMMABLE. MAY CAUSE IRRITATION TO SKIN

AND EYES.

DO NOT USE, STORE, SPILL OR POUR NEAR HEAT, SPARKS OR OPEN FLAME. KEEP CONTAINER CLOSED WHEN NOT IN USE. AVOID CONTACT WITH SKIN, EYES, AND CLOTHING. AVOID PROLONGED OR REPEATED BREATHING OF VAPORS. USE WITH ADEQUATE VENTILATION. DO NOT TAKE INTERNALLY.

IN CASE OF CONTACT, WASH SKIN WITH SOAP AND WATER; FOR EYES, IMMEDIATELY FLUSH WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES AND GET MEDICAL ATTENTION. REMOVE CONTAMINATED CLOTHING AND WASH BEFORE REUSE.

CONSULT A PHYSICIAN IF CHEMICAL CAUSES BURNS OR IRRITATION. IF INGESTED CONSULT A PHYSICIAN AT ONCE.

**ATTENTION:** SINCE EMPTY CONTAINERS CAN STILL CONTAIN PRODUCT RESIDUES, CONTINUE TO OBSERVE LABEL EVEN WHEN EMPTY. DO NOT REUSE EMPTY CONTAINER FOR ANY PURPOSE.

Refer to MSDS and SPM-04-04 for Safety Requirements.

O.T. PROPER SHIPPING NAME: FLAMMABLE LIQUID, N. CONTAINS ISOPROPANOL, UN 1993

100193



U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET

DATE: 26 SEP 84

## SECTION I

Supplier's Name The Western Company of North America		EMERGENCY TELEPHONE NO. (817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101		
CHEMICAL NAME AND SYNONYMS Proprietary blend		TRADE NAME AND SYNONYMS SURFACTANT, LT-5
CHEMICAL FAMILY Surfactant	FORMULA W.I.N. 100193	

## SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Flammable liquid, n.o.s.
NAME OF HAZARDOUS COMPONENT	Isopropanol
HAZARD CLASS	Flammable liquid
IDENTIFICATION NUMBER	UN1993
D.O.T. LABEL(S) REQUIRED	Flammable liquid
PRECAUTIONARY LABEL	Attached

## SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
Isopropanol	16-18	400 ppm

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	163	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	0.996
VAPOR PRESSURE (mm Hg.)	IPA & H <sub>2</sub> O	PERCENT VOLATILE BY VOLUME (%)	46.50
VAPOR DENSITY (AIR=1)	IPA & H <sub>2</sub> O	EVAPORATION RATE (_____ =1)	
SOLUBILITY IN WATER	soluble		
APPEARANCE AND ODOR Light yellow to white, clear liquid; mild alcoholic odor			

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) 79°F (PMCC)	FLAMMABLE LIMITS	LeI	UeI
		Not determined	
EXTINGUISHING MEDIA Water spray, dry chemical carb on dioxide, alcohol foam			
SPECIAL FIRE FIGHTING PROCEDURES Dilute rapidly with large quantities of water.			
UNUSUAL FIRE AND EXPLOSION HAZARDS No unusual hazards.			

## SECTION V - HEALTH HAZARD DATA

## THRESHOLD LIMIT VALUE

Not determined

## EFFECTS OF OVEREXPOSURE

Liquid is irritating to eyes. May be harmful if swallowed or absorbed through skin.

## EMERGENCY AND FIRST AID PROCEDURES

Flush eyes for 15 min. and get medical attention. Wash skin thoroughly with soap and water and get medical attention if irritation or redness develops. Launder clothes before reuse. If ingested, vomiting may be induced.

## SECTION VI - REACTIVITY DATA

## STABILITY

UNSTABLE

STABLE

## CONDITIONS TO AVOID

Keep away from heat, sparks, and open flames.

X

## INCOMPATIBILITY (Materials to avoid)

Acidic conditions, quaternary ammonium compounds.

## HAZARDOUS DECOMPOSITION PRODUCTS

None

HAZARDOUS  
POLYMERIZATION

MAY OCCUR

WILL NOT OCCUR

## CONDITIONS TO AVOID

Keep away from heat, sparks, and open flames.

X

## SECTION VII - SPILL OR LEAK PROCEDURES

## STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Extinguish all sources of ignition. Wash down with water or soak up on sand and dispose of in an approved industrial waste landfill. Do not wash down with water where runoff will contaminate important water sources.

## WASTE DISPOSAL METHOD

Incinerate in an incinerator equipped with an afterburner and scrubber or bury in an approved industrial landfill.

## SECTION VIII - SPECIAL PROTECTION INFORMATION

## RESPIRATORY PROTECTION (Specify type)

None required in normal use.

## VENTILATION

LOCAL EXHAUST

If used at high temperatures

MECHANICAL (General)

Satisfactory

SPECIAL

OTHER

## PROTECTIVE GLOVES

Rubber

## EYE PROTECTION

Face shield or goggles

## OTHER PROTECTIVE EQUIPMENT

Rubber boots and apron, if possibility of contact during use exists.

## SECTION IX - SPECIAL PRECAUTIONS

## PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Avoid contact with eyes, skin and clothing. Avoid breathing vapors. Store away from heat, sparks, and open flames. Do not use at extremely low or high pH for best product quality.

## OTHER PRECAUTIONS:

Do not transfer to improperly marked containers. Keep container closed when not in use.



**Western Petroleum Services**

W.I.N. 100193

**LT-5**

**SPECIAL WETTING AGENT  
DE-EMULSIFIER**

Flash Point: 79°F PMCC  
Net Content: 457 lb(208 kg)  
55 gal(208 L) @ 77°F

**DIRECTIONS:**

For Proper Use, Refer to Service Bulletin No.(s) 547,OWG

**SPECIFIC USAGE:**

Use at the rate of 1 to 5 gallons per 1000 gallons of hydrochloric acid, fresh water or brine.

NOTE: LT-5 is anionic.

**When Handling This Product Employees MUST WEAR:**

Chemical goggles, plastic apron and rubber gloves

**FOR INDUSTRIAL USE ONLY**

**DANGER!**

**FLAMMABLE LIQUID!** Do not use near heat, sparks or open flame.  
**MAY CAUSE IRRITATION OF THE SKIN AND EYES.** Avoid contact with eyes  
Avoid prolonged or repeated contact with skin. Avoid prolonged inhalation of vapors.

**ATTENTION!** After this container has been emptied, it may contain flammable and toxic liquid or vapor; observe all warnings and precautions listed for this product. Do not cut, puncture or weld on or near this container.

Refer to MSDS and SPM-04-04 for Safety Requirements.

**The Western Company of North America**

**P.O. BOX 186 • FORT WORTH, TEXAS 76101**

Batch no.

\*\*\*\*\*NOT FOR SHIPPING NAME: Flammable liquid, n.o.s., contains isopropanol. UN1993\*\*\*\*\*





U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET

DATE: 14JUN85

## SECTION I

Supplier's Name The Western Company of North America		EMERGENCY TELEPHONE NO. (817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101		
CHEMICAL NAME AND SYNONYMS Proprietary blend		TRADE NAME AND SYNONYMS SUSPENDING AGENT, LT-21
CHEMICAL FAMILY ethoxylated fatty compounds	FORMULA W.I.N.100138	

## SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Flammable liquid, n.o.s.
NAME OF HAZARDOUS COMPONENT	methanol
HAZARD CLASS	Flammable liquid
IDENTIFICATION NUMBER	UN 1993
D.O.T. LABEL(S) REQUIRED	Flammable liquid
PRECAUTIONARY LABEL	attached

## SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
methanol	20	200ppm

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	162°F	SPECIFIC GRAVITY (H <sub>2</sub> O=1) @ 60°F	1.06
VAPOR PRESSURE (mm Hg.)		PERCENT, VOLATILE BY VOLUME (%)	30
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____=1)	
SOLUBILITY IN WATER	soluble		
APPEARANCE AND ODOR Clear amber liquid; odor of varnish			

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) 54°F (PMCC)	FLAMMABLE LIMITS	Lel	Uel
EXTINGUISHING MEDIA Dry chemical, carbon dioxide, alcohol foam			
SPECIAL FIRE FIGHTING PROCEDURES Addition of water will reduce the intensity of the flame.			
UNUSUAL FIRE AND EXPLOSION HAZARDS			

TRADE NAME : W.I.N.100138,SUSPENDING AGENT, LT-21

### SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE  
200 ppm for methanol

EFFECTS OF OVEREXPOSURE  
Swallowing the liquid causes inebriation, headache, nausea, and vomiting leading to severe illness, blindness or perhaps death.

#### EMERGENCY AND FIRST AID PROCEDURES

Skin: flush with plenty of water. Eyes: flush with water and get medical attention  
Inhalation: remove to fresh air and give artificial respiration. If breathing has stopped, call a physician. If swallowed, induce vomiting at once. Then give 2 tablespoons of baking soda in a glass of water. Call a physician.

### SECTION VI - REACTIVITY DATA

#### STABILITY

UNSTABLE

#### CONDITIONS TO AVOID

Sparks, heat and fires.

STABLE

XXX

INCOMPATIBILITY (Materials to avoid)

#### HAZARDOUS DECOMPOSITION PRODUCTS

#### HAZARDOUS POLYMERIZATION

MAY OCCUR

#### CONDITIONS TO AVOID

WILL NOT OCCUR

XXX

### SECTION VII - SPILL OR LEAK PROCEDURES

#### STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Eliminate all sources of ignition. Flush spilled material with large volumes of water. Dike large spills and dump to salvage tank.

#### WASTE DISPOSAL METHOD

Incinerator.

### SECTION VIII - SPECIAL PROTECTION INFORMATION

#### RESPIRATORY PROTECTION (Specify type)

Self-contained breathing apparatus

#### VENTILATION

LOCAL EXHAUST

Preferred

SPECIAL

MECHANICAL (General)

Acceptable

OTHER

#### PROTECTIVE GLOVES

Impervious gloves

#### EYE PROTECTION

Chemical safety goggles or face shield

#### OTHER PROTECTIVE EQUIPMENT

Impervious apron and boots; eye bath and safety shower

### SECTION IX - SPECIAL PRECAUTIONS

#### PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

May be fatal or cause blindness if swallowed. Keep away from heat, sparks and fires. Do not leave container open.

#### OTHER PRECAUTIONS



## DIRECTIONS:

For Proper Use, Refer to Service Bulletin No.(s) 85.0, 721.0

**SPECIFIC USAGE:** Use at a concentration of 1 to 10 gallons per 1000 gallons of acid.

**When Handling This Product Employees MUST WEAR:** Chemical safety goggles or face shield, impervious gloves, impervious boots and apron.

## FOR INDUSTRIAL USE ONLY WARNING

**MAY BE FATAL OR CAUSE BLINDNESS IF SWALLOWED.**

Keep away from heat, sparks and open flames.

**FIRST AID:** Swallowing the liquid causes inebriation, headache, nausea and vomiting, leading to severe illness, blindness or even death. Skin: flush with plenty of water. Eyes: flush with water and get medical attention. Inhalation: remove to fresh air and give artificial respiration. If breathing has stopped call a physician. If swallowed, induce vomiting at once. Then give 2 tablespoons of baking soda in a glass of water. Call a physician.

**SPILL OR LEAK:** Eliminate all sources of ignition. Flush spilled material with large volumes of water. Dike large spills and dump to salvage tank. Incinerate.

**FIRE FIGHTING:** Self-contained breathing apparatus and protective clothing. Dry chemical, carbon dioxide, alcohol foam.

Refer to MSDS and SPM-04-04 for Safety Requirements.

W.I.N. 100138

LT-21

## SILT SUSPENDING AGENT

Flash Point: 54°F(12°C) PMCC

Net Content: 466 lb(212 kg)

54 gal(204 L) @ 77°F

Manufactured for:

# The Western Company of North America

P.O. BOX 186 • FORT WORTH, TEXAS 76101

Emergency Telephone: (817) 731-5100  
(817) 731-5433

batch no.

\*\*\*\*\*D.O.T. PROPER SHIPPING NAME: Flammable liquid, n.o.s., contains methanol (UN1993)\*\*\*\*\*

100138

100472



U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET

DATE: September, 1984

## SECTION I

Supplier's Name The Western Company of North America		EMERGENCY TELEPHONE NO. (817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101		
CHEMICAL NAME AND SYNONYMS Proprietary blend		TRADE NAME AND SYNONYMS De-emulsifier Nine-40
CHEMICAL FAMILY Surfactant	FORMULA W.I.N. 100472	

## SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Flammable Liquid, n.o.s.
NAME OF HAZARDOUS COMPONENT	Methanol
HAZARD CLASS	Flammable Liquid
IDENTIFICATION NUMBER	UN1993
D.O.T. LABEL(S) REQUIRED	Flammable Liquid
PRECAUTIONARY LABEL	Attached

## SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
Xylene	2	100ppm
Methanol		200ppm
Isopropanol		400ppm
Heavy Aromatic Naphtha		100ppm

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	162	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	0.881
VAPOR PRESSURE (mm Hg.)	200	PERCENT, VOLATILE BY VOLUME (%)	62
VAPOR DENSITY (AIR=1) @ 100°F	>5	EVAPORATION RATE (n-Butyl Acetate=1)	2.03
SOLUBILITY IN WATER	Dispersible		
APPEARANCE AND ODOR light yellow liquid, hydrocarbon odor			

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) 52°F Seta CC-ASTM	FLAMMABLE LIMITS	LeI 0.8	Uel 36.0
EXTINGUISHING MEDIA Dry chemical, foam, water spray or water fog			
SPECIAL FIRE FIGHTING PROCEDURES Use water spray to cool fire exposed surfaces and to protect personnel.			
UNUSUAL FIRE AND EXPLOSION HAZARDS Respiratory protection required for fire-fighting personnel.			

TRADE NAME: W.I.N. 100472, De-emulsifier, Nine-40

### SECTION V - HEALTH HAZARD DATA

**THRESHOLD LIMIT VALUE**

Isopropanol, Methanol, Xylene, heavy aromatic naphtha (400, 200, 100, 100 ppm)

**EFFECTS OF OVEREXPOSURE**

Acute: Liquid is irritating to skin and eyes

Chronic: Prolonged or repeated skin contact may cause dermatitis

**EMERGENCY AND FIRST AID PROCEDURES**

Remove to fresh air. If not breathing, apply artificial respiration and call

a physician. Immediately flush eyes with plenty of water for at least

15 minutes. Call a physician. If skin contact occurs, wash with soap and water.

### SECTION VI - REACTIVITY DATA

**STABILITY**

UNSTABLE

CONDITIONS TO AVOID  
None

STABLE

X

**INCOMPATIBILITY (Materials to avoid)**  
strong oxidizing agents

**HAZARDOUS DECOMPOSITION PRODUCTS**

burning will emit smoke, fumes, CO and CO<sub>2</sub>

**HAZARDOUS  
POLYMERIZATION**

MAY OCCUR

CONDITIONS TO AVOID

WILL NOT OCCUR

X

### SECTION VII - SPILL OR LEAK PROCEDURES

**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED**

Keep public away. Eliminate source of ignition. Shut off source, if possible to do so safely. Prevent liquid from entering sewers, watercourses, or low areas. Advise authorities if material has entered a watercourse, or sewer or has contaminated soil or vegetation.

**WASTE DISPOSAL METHOD**

Contain spilled liquid with sand or earth. Recover by pumping or with suitable absorbent. Consult an expert on disposal of recovered material.

### SECTION VIII - SPECIAL PROTECTION INFORMATION

**RESPIRATORY PROTECTION (Specify type)** Use NIOSH/MSHA approved respiratory protection such as air-supplied mask if used in confined spaces or other poorly ventilated areas.

**VENTILATION**

LOCAL EXHAUST Provide >60 fpm hood or face velocity for confined spaces.

SPECIAL Explosion-proof ventilation equipment.

MECHANICAL (General) To provide ventilation equal to outdoors.

OTHER Not Applicable

**PROTECTIVE GLOVES**

Chemical resistant gloves

**EYE PROTECTION**

Chemical splash goggles

**OTHER PROTECTIVE EQUIPMENT**

Usually not needed.

### SECTION IX - SPECIAL PRECAUTIONS

**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING**

Keep container closed when not in use. Containers used for this material may be hazardous when emptied. Observe all hazard precautions outlined in this sheet. Emptied containers retain product residues (vapor, liquid, etc.).

**OTHER PRECAUTIONS**

Keep away from heat, sparks and open flames.

WESTERN PETROLEUM SERVICES

W.I.N. 100472

**NINE-40**

De-emulsifier

FLASH POINT: 52°F(11°C) SETAFLASH

**DANGER!**

EXTREMELY FLAMMABLE

MAY CAUSE FLASH FIRE

MAY CAUSE EYE BURNS

CAUSES SKIN IRRITATION ON PROLONGED CONTACT

MAY BE A SKIN SENSITIZER

MANUFACTURED FOR:

THE WESTERN COMPANY OF NORTH AMERICA

P. O. BOX 186

BATCH NO.

FORT WORTH, TEXAS 76101

MADE IN U.S.A.

**PRECAUTIONS:**

KEEP AWAY FROM HEAT, SPARKS, AND OPEN FLAME. DO NOT GET IN EYES. WEAR CHEMICAL SAFETY GOGGLES. AVOID CONTACT WITH SKIN OR CLOTHING. AVOID BREATHING MISTS OR VAPORS. USE WITH VENTILATION EQUAL TO UNOCCUPIATED OUTDOORS IN MODERATE BREEZE. KEEP CONTAINER CLOSED. WASH THOROUGHLY AFTER HANDLING.

**FIRST AID:**

IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. CALL A PHYSICIAN. WASH SKIN WITH SOAP AND WATER.

\*\*\* D. O. T. PROPER SHIPPING NAME\*\*\*

FLAMMABLE N. O. S.

**FIRE FIGHTING:**

USE WATERSPRAY TO COOL FIRE EXPOSED SURFACES AND PROTECT PERSONNEL. EXTINGUISH WITH DRY CHEMICAL OR ALCOHOL-TYPE FOAM. WATER-SPRAY MAY BE INEFFECTIVE AS AN EXTINGUISHING AGENT.

**USE INSTRUCTIONS:**

FOR PROPER USE, REFER TO SERVICE BULLETIN

NUMBER 552.0 IIC

\*\*\*SPECIFIC USAGE\*\*\*

0.5-10.0 GAL/1000 GAL HCL, HCL/HF BLENDS, AND HCL/ACETIC ACID BLENDS.

**SPILL CONTROL:**

KEEP PUBLIC AWAY. ELIMINATE SOURCES OF IGNITION. WARN OCCUPANTS OF DRAINING AREAS OF FIRE AND EXPLOSION HAZARD. SHUT OFF SOURCE IF POSSIBLE TO DO SO SAFELY. PREVENT LIQUID FROM ENTERING SEWERS, INTERSECTIONS, OR LOW AREAS. ADVISE AUTHORITIES IF MATERIAL HAS ENTERED A WATERCOURSE OR SEWER OR HAS CONTAMINATED SOIL OR VEGETATION. CONTAIN SPILLED LIQUID WITH SAND OR EARTH, AND DILUTE WITH WATER. RECOVER BY PUMPING OR WITH SUITABLE ABSORBENT. CONSULT AN EXPERT ON DISPOSAL OF RECOVERED MATERIAL AND ENSURE CONFORMITY WITH LOCAL DISPOSAL REGULATIONS.

WARNING: EMPTY CONTAINER HAZARDOUS

OBSERVE ALL PRECAUTIONARY MEASURES ON THIS LABEL. CONTAINER MAY BE HAZARDOUS WHEN EMPTY. STORE EMPTY CONTAINERS AWAY FROM HEAT AND FLAME WITH DRUM PLUGS CLOSED. DO NOT CUT OR WELD. ENSURE COMPLIANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS IN DISPOSING OF THIS CONTAINER. RESIDUAL CONTENTS, OR RINSING, TRIPLE RINSE CONTAINER AND OFFER FOR RECYCLING, RECONDITIONING, OR DISPOSAL IN AN APPROVED MANNER. ENSURE RE-CONDITIONERS, RECYCLERS, OR DISPOSAL ARE AWARE OF HAZARDS ASSOCIATED WITH CONTENTS.



NET CONTENTS: 55 U.S. GALLONS 208.2 LITERS

7-8537



U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET

100129  
**RECEIVED**

MAY 13 1988

R.E.F.C.

DATE: 10MAR88

## SECTION I

Supplier's Name The Western Company of North America		EMERGENCY TELEPHONE NO. (817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101		
CHEMICAL NAME AND SYNONYMS blend		TRADE NAME AND SYNONYMS SCALE INHIBITOR, P-9
CHEMICAL FAMILY phosphate ester	FORMULA W.I.N. 100129	

## SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Flammable liquid, n.o.s. (RQ33000/15000)
NAME OF HAZARDOUS COMPONENT	methanol
HAZARD CLASS	Flammable material
IDENTIFICATION NUMBER	UN1993
D.O.T. LABEL(S) REQUIRED	Flammable liquid
PRECAUTIONARY LABEL	See Page 4

## SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
ethylene glycol	75	
methanol	75	200 ppm

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)		SPECIFIC GRAVITY (H <sub>2</sub> O=1) @ 60°F	1.09
VAPOR PRESSURE (mm Hg.) @ 100°F	101	PERCENT VOLATILE BY VOLUME (%) @ 75°F	11
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____=1)	
SOLUBILITY IN WATER	dispersible	pH neat	4.4
APPEARANCE AND ODOR clear colorless liquid, sweet odor			

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) 98°F(TCC)	FLAMMABLE LIMITS	LeI	UeI
EXTINGUISHING MEDIA Dry chemical, alcohol foam, CO <sub>2</sub> or other suitable for class B fires.			
SPECIAL FIRE FIGHTING PROCEDURES Use water to cool containers exposed to fire.			
UNUSUAL FIRE AND EXPLOSION HAZARDS May evolve nitrogen oxides if burning			

TRADE NAME: W.I.N. 100129, SCALE INHIBITOR, P-9

### SECTION V - HEALTH HAZARD DATA

**THRESHOLD LIMIT VALUE**

50 ppm for ethylene glycol, 200 ppm for methanol, see section IXA

**EFFECTS OF OVEREXPOSURE** May cause irritation with prolonged skin or eye contact. May cause blindness if ingested. Can cause depression of central nervous system, nausea, dizziness, vomiting if ingested.

**EMERGENCY AND FIRST AID PROCEDURES**

Prolonged inhalation of vapor may cause nausea, vomiting, dizziness or unconsciousness see Section X, Page 4

### SECTION VI - REACTIVITY DATA

**STABILITY**

UNSTABLE

**CONDITIONS TO AVOID**

STABLE

X

**INCOMPATIBILITY (Materials to avoid)**

strong oxidizing agents

**HAZARDOUS DECOMPOSITION PRODUCTS**

oxides of carbon and nitrogen if burning

**HAZARDOUS POLYMERIZATION**

MAY OCCUR

**CONDITIONS TO AVOID**

WILL NOT OCCUR

X

### SECTION VII - SPILL OR LEAK PROCEDURES

**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED**

Dike to prevent large spills from further movement and reclaim into salvage drums or tank truck for disposal. Absorb residue and small spills on clay, soil or commercial absorbant.

**WASTE DISPOSAL METHOD**

If this product becomes a waste it is hazardous waste and must be solidified before disposal in a land fill. It can be incenerated in accordance with local, state and federal regulations.

### SECTION VIII - SPECIAL PROTECTION INFORMATION

**RESPIRATORY PROTECTION (Specify type)**

not normally required due to low toxicity and volatility

**VENTILATION**

LOCAL EXHAUST

SPECIAL

recommend

MECHANICAL (General)

OTHER

**PROTECTIVE GLOVES**

impermeable

**EYE PROTECTION**

chemical goggles

**OTHER PROTECTIVE EQUIPMENT**

### SECTION IX - SPECIAL PRECAUTIONS

**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING**

**OTHER PRECAUTIONS**



100129

RECEIVED

MAY 13 1988

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Attachment to and continuation of

## MATERIAL SAFETY DATA SHEET

DATE: 10MAR88

## SECTION I

Supplier's Name		EMERGENCY TELEPHONE NO.
The Western Company of North America		(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code)		
P. O. Box 186, Ft. Worth, TX 76101		
CHEMICAL NAME AND SYNONYMS		TRADE NAME AND SYNONYMS
blend		SCALE INHIBITOR, P-9
CHEMICAL FAMILY	FORMULA	
phosphate ester		W.I.N. 100129

## SECTION IXA - - SPECIAL PRECAUTIONS

Toxicology Information:

ACUTE TOXICITY STUDIES: Acute toxicity studies have been conducted on this product along with acute toxicity studies on the hazardous ingredients in Section 2. The results are shown below.

## ACUTE ORAL TOXICITY (ALBINO RATS):

Ethylene glycol  $LD_{50}$  = 6,000 - 8,000 mg/kg

## ACUTE DERMAL TOXICITY (ALBINO RABBITS):

Ethylene glycol (estimated)  $LD_{50}$  = 1,000 - 3,000 mg/kg

## ACUTE INHALATION TOXICITY (ALBINO RATS):

Ethylene glycol = Saturated vapor atmosphere no deaths (8-hour exposure)

## PRIMARY SKIN IRRITATION TEST (ALBINO RABBITS):

SKIN IRRITATION INDEX DRAIZE RATING:

0.5/8.0 Ethylene glycol

## PRIMARY EYE IRRITATION TEST (ALBINO RABBITS):

EYE IRRITATION INDEX DRAIZE RATING:

0-15/110.0 Ethylene glycol

CHRONIC TOXICITY RESULTS: A 2-year feeding study in rats with 1 - 2% ethylene glycol, produced liver and kidney injury.



Attachment to and continuation of

# MATERIAL SAFETY DATA SHEET

DATE: 10MAR88

## SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS
blend	SCALE INHIBITOR, P-9
CHEMICAL FAMILY	FORMULA
phosphate ester	W.I.N. 100129

## SECTION X - LABEL COPY

### FOR INDUSTRIAL USE ONLY **WARNING!**

Flammable. Contains methanol. May cause blindness if swallowed. May cause irritation to skin and eyes. Do not use, store, spill or pour near heat, sparks or open flames. Keep container closed when not in use. Use with adequate ventilation. Do not take internally. Avoid prolonged or repeated breathing of vapor. Avoid contact with skin, eyes and clothing.

#### FIRST AID:

FOR EYES: In case of contact, flush with water for 15 minutes. Call a physician.

FOR SKIN: In case of contact, wash thoroughly with soap & water. Call a physician.

FOR INGESTION: If swallowed, induce vomiting. Give water. Call a physician.

HANDLING: Employees must wear impermeable gloves and chemical goggles.

ATTENTION! After this container has been emptied, it may contain flammable and toxic liquid or vapor; observe all warnings and precautions listed for this product. Do not cut, puncture or weld on or near this container. Refer to MSDS and SPM-04-04 for other safety requirements.

100317

**U.S. DEPARTMENT OF LABOR**  
Occupational Safety and Health Administration

Form Approved  
OMB No. 44-R1387

# MATERIAL SAFETY DATA SHEET

September 26, 1978

Required under USDL Safety and Health Regulations for Ship Repairing,  
Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

## SECTION I

MANUFACTURER'S NAME (Marketing Agent) GENERAL PORTLAND INC., Trinity North Division		EMERGENCY TELEPHONE NO. 214-387-4700
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 324, Dallas, Texas 75221		
CHEMICAL NAME AND SYNONYMS Tan powder - odorless		TRADE NAME AND SYNONYMS Fly Ash
CHEMICAL FAMILY Fly Ash	FORMULA	

## SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS Not Applicable			BASE METAL N/A		
CATALYST Not Applicable			ALLOYS N/A		
VEHICLE Not Applicable			METALLIC COATINGS N/A		
SOLVENTS Not Applicable			FILLER METAL PLUS COATING OR CORE FLUX N/A		
ADDITIVES Not Applicable			OTHERS		
OTHERS Not Applicable					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)
None					

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	2.65
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR=1)	N/A	EVAPORATION RATE (_____ =1)	N/A
SOLUBILITY IN WATER	N/A		
APPEARANCE AND ODOR	Very fine dry powder (odorless)		

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	Inflammable	FLAMMABLE LIMITS	Lel	Uel
		N/A		
EXTINGUISHING MEDIA	N/A			
SPECIAL FIRE FIGHTING PROCEDURES	N/A			
UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

## SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE	We do not have sufficient data to make objective statement. Material is generally considered safe, but there can be some health hazard in handling any material.
EFFECTS OF OVEREXPOSURE	
EMERGENCY AND FIRST AID PROCEDURES	

## SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	
INCOMPATIBILITY <i>(Materials to avoid)</i> None			
HAZARDOUS DECOMPOSITION PRODUCTS      None			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

## SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
No special steps required.	
WASTE DISPOSAL METHOD	
No special steps required.	

## SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION <i>(Specify type)</i> Dust filter.		
VENTILATION	LOCAL EXHAUST      X	SPECIAL
	MECHANICAL <i>(General)</i>	OTHER
PROTECTIVE GLOVES      None		EYE PROTECTION      Safety glasses.
OTHER PROTECTIVE EQUIPMENT      None		

## SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	
General precautions applicable to handling and storing fine dry (odorless) powders.	
OTHER PRECAUTIONS	



U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET

DATE: 3 JUL 84

## SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS
quartz sand coated with phenol/formaldehyde	PROP.CRC, Westprod 4, all sizes
CHEMICAL FAMILY	FORMULA
N/A	W.I.N. 100492

## SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Not regulated
NAME OF HAZARDOUS COMPONENT	N/A
HAZARD CLASS	N/A
IDENTIFICATION NUMBER	N/A
D.O.T. LABEL(S) REQUIRED	N/A
PRECAUTIONARY LABEL	Attached

## SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
Silica sand, see CFR Subpart 2 1910 1000		Variable
phenol		5ppm

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	2.55
VAPOR PRESSURE (mm Hg.)	Unknown	PERCENT VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR=1)	Unknown	EVAPORATION RATE (_____ %)	N/A
SOLUBILITY IN WATER	Slight		
APPEARANCE AND ODOR	Looks like sand		

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	N/A	FLAMMABLE LIMITS	Lo	Hi
EXTINGUISHING MEDIA	CO <sub>2</sub> , dry chemical or water			
SPECIAL FIRE FIGHTING PROCEDURES	None			
UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

TRADE NAME: W. I. N. 100452

DDO2, CDC, Westron 4

## SECTION V - HEALTH HAZARD DATA

## THRESHOLD LIMIT VALUE

phenol - 500ppm. Silica (see values in 29 CFR subpart 119.1010-1000)

## EFFECTS OF OVEREXPOSURE

ambient temperature - none.

ignition temperatures - headache, blurred vision, dizziness from products decomposition

## EMERGENCY AND FIRST AID PROCEDURES

Remove victim to fresh air and get medical attention if there are symptoms of overexposure. If breathing has stopped, apply artificial respiration

## SECTION VI - REACTIVITY DATA

## STABILITY

UNSTABLE

STABLE

## CONDITIONS TO AVOID

Avoid storage at high temperatures (120°F) or

high humidities. product may cake.

## INCOMPATIBILITY (Materials to avoid)

None

## HAZARDOUS DECOMPOSITION PRODUCTS

At ignition temps: CO, phenol, hydrocarbons including benzox-pyrene &amp; other aromatics

HAZARDOUS  
POLYMERIZATION

MAY OCCUR

WILL NOT OCCUR

## CONDITIONS TO AVOID

None

X

## SECTION VII - SPILL OR LEAK PROCEDURES

## STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Shovel or vacuum up.

## WASTE DISPOSAL METHOD

Dispose of in a land fill in accordance with local, State and Federal regulations.

## SECTION VIII - SPECIAL PROTECTION INFORMATION

## RESPIRATORY PROTECTION (Specify type)

Approved equipment recommended depending on plant conditions

## VENTILATION

LOCAL EXHAUST

Yes\*

MECHANICAL (General)

Yes\*

SPECIAL

None

OTHER

None

## PROTECTIVE GLOVES

Recommended

## EYE PROTECTION

Safety glasses

## OTHER PROTECTIVE EQUIPMENT

\*Recommended to prevent exposure to dust or vapors.

## SECTION IX - SPECIAL PRECAUTIONS

## PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Product may cake if stored in hot and/or humid environment. Avoid direct skin contact with resin coated sand.

## OTHER PRECAUTIONS

Crystalline silica exposure can occur in any operation where sand dust is generated due to product misuse.



# Precautionary Labeling for Bags

Trade Name: WESTPROP 4  
W.I.N. 100492

## DIRECTIONS:

For Proper Use, Refer to Service Bulletin No.(s) 310.0MG

SPECIFIC USAGE: USE AT THE RATE OF  $\frac{1}{4}$  TO 15 LB/GALLON  
OF FRAC FLUID.

When Handling This Product Employees MUST WEAR: DUST MASK & SAFETY GLASSES

FOR INDUSTRIAL USE ONLY

WARNING  
CONTAINS FREE SILICA  
DO NOT BREATHE DUST  
MAY CAUSE DELAYED LUNG INJURY (SILICOSIS)

Refer to MSDS and SP11-04-04 for Safety Requirements.



# Recommended Standard

Attachment to MSDS: W.I.N. 100492

PROP. CRC Westprop 4

## I. RECOMMENDATIONS FOR A CRYSTALLINE SILICA STANDARD

The National Institute for Occupational Safety and Health (NIOSH) recommends that employee exposure to crystalline silica in the workplace be controlled by adherence to the following sections. The standard is designed to protect the health and safety of workers for up to a 10-hour workday, 40-hour workweek, over a working lifetime. Compliance with the standard should prevent adverse effects of crystalline silica on the health and safety of workers. The standard is measurable by techniques that are valid, reproducible, and available to industry and government agencies and are attainable with existing technology. The criteria and the standard recommended in this document will be subject to review and revision as necessary.

Crystalline silica, hereafter referred to in this document as free silica, is defined as silicon dioxide ( $\text{SiO}_2$ ). "Crystalline" refers to the orientation of  $\text{SiO}_2$  molecules in a fixed pattern as opposed to a nonperiodic, random molecular arrangement defined as amorphous. The three most common crystalline forms of free silica encountered in industry are quartz, tridymite, and cristobalite. Micro- and crypto-crystalline varieties of free silica, also included in the recommended standard, are composed of minute grains of free silica cemented together with amorphous silica and include tripoli, flint, chalcedony, agate, onyx, and silica flour. Other forms of free silica which, upon analysis, are found to have a crystalline structure as part of their composition are also subject to the recommended standard.

"Exposure to free silica" means exposure of the worker to an airborne concentration of free silica greater than half of the recommended environmental level in the workplace. Worker exposure at lower environmental concentrations will not require adherence to the following sections.

### Section 1—Environmental (Workplace Air)

#### (a) Concentration

Occupational exposure shall be controlled so that no worker is exposed to a time-weighted average (TWA) concentration of free silica greater than 50 micrograms per cubic meter of air (50  $\mu\text{g}/\text{cu m}$ ; 0.050  $\text{mg}/\text{cu m}$ ) as determined by a full-shift sample for up to a 10-hour workday, 40-hour workweek.

#### (b) Sampling, Calibration, and Analysis

Exposure to free silica shall be determined by a personal (breathing zone) sample.

Procedures for sampling, calibration of equipment, and analysis of environmental samples shall be as provided in Appendices I and II, or by methods shown to be equivalent in sensitivity, accuracy, and precision to the method specified.

### Section 2—Medical

(a) Medical examinations shall be made available to all workers subject to "exposure to free silica" prior

to employee placement and at least once each 3 years thereafter. Examinations shall include as a minimum:

(1) A medical and occupational history to elicit data on worker exposure to free silica and signs and symptoms of respiratory disease.

(2) A chest roentgenogram (posteroanterior 14" by 17" or 14" by 14") classified according to the 1971 ILO International Classification of Radiographs of Pneumoconioses. [ILO U/C International Classification of Radiographs of Pneumoconioses 1971, Occupational Safety and Health Series 22 (rev), Geneva, International Labor Office, 1972]

(3) Pulmonary function tests including forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV<sub>1</sub>) to provide a baseline for evaluation of pulmonary function and to help determine the advisability of the workers using negative- or positive-pressure respirators. It should be noted that pulmonary function tests may vary significantly in various ethnic groups. For example, in black persons, the test values for the FVC should be divided by 0.85 before the percentage value is compared with normal figures.

(4) Body weight.

(5) Height.

(6) Age.

(7) Initial medical examinations for presently employed workers shall be offered within 6 months of the promulgation of a standard incorporating these recommendations.

#### (b) Medical Management

An employee with or without roentgenographic evidence of silicosis who has respiratory distress and/or pulmonary functional impairment should be fully evaluated by a physician qualified to advise the employee whether he should continue working in a dusty trade.

(c) These records shall be available to the medical representatives of the Secretary of Health, Education, and Welfare, of the Secretary of Labor, of the employee or former employee, and of the employer.

(d) Medical records shall be maintained for at least 30 years following the employee's termination of employment.

### Section 3 — Labeling (Posting)

(a) The following warning shall be posted to be readily visible at or near entrances or accessways to work areas where there is potential exposure to free silica.

**WARNING!**  
**FREE SILICA WORK AREA**  
**Unauthorized Persons Keep Out**

(b) The following warning shall be posted in readily visible locations in any work area where there is potential exposure to free silica.





## WARNING!

### FREE SILICA WORK AREA

Avoid Breathing Dust

May Cause Delayed Lung Injury (Silicosis)

The posting required under sections 3(a) and 3(b) shall be printed both in English and in the predominant language of non-English-speaking workers, unless they are otherwise trained and informed of the hazardous areas. Illiterate workers shall receive such training.

(c) The following warning label, in addition to or in combination with labels required by other statutes, regulations, or ordinances, shall be affixed to all new materials, mixtures, and other products containing more than 5% free silica, or to their containers.

## WARNING!

### CONTAINS FREE SILICA

DO NOT BREATHE DUST

May Cause Delayed Lung Injury (Silicosis)

#### Section 4 — Personal Protective Equipment and Work Clothing

Engineering controls shall be used to maintain free silica dust exposures below the prescribed limit\*. Subsection (a) shall apply whenever a variance from the standard recommended in Section 1 is granted under provisions of the Occupational Safety and Health Act, or in the interim period during the application for a

variance. When the limits of exposure to free silica prescribed in paragraph (a) of Section 1 cannot be met by limiting the concentration of free silica in the work environment, an employer must utilize, as provided in subsection (a) of this section, a program of respiratory protection to effect the required protection of every worker exposed.

#### (a) Respiratory Protection

Appropriate respirators, as prescribed in Table I-1, shall be provided and used when a variance has been granted to allow respirators as a means of control of exposure to routine operations and while the application is pending. Administrative controls may also be used to reduce exposure. Respirators shall also be provided and used for nonroutine operations (occasional brief exposures above the environmental standard and for emergencies); however, for these instances a variance is not required but the requirements set forth below continue to apply. Appropriate respirators as described in Table I-1 shall only be used pursuant to the following requirements:

(1) For the purpose of determining the type of respirator to be used, the employer shall measure the atmospheric concentration of free silica in the workplace when the initial application for variance is made and thereafter whenever process, worksite, climate, or control changes occur which are likely to affect the free silica concentration. This requirement shall not apply when only atmosphere-supplying positive-pressure respirators are used. The employer shall ensure

TABLE I-1  
REQUIREMENTS FOR RESPIRATOR USAGE AT  
CONCENTRATIONS ABOVE THE STANDARD

Concentrations of Free Silica in Multiples of the Standard	Respirator Type*
Less than or equal to 5X	Single use (valveless type) dust respirator.
Less than or equal to 10X	Quarter or half mask respirator with replaceable dust filter or single use (with valve) dust respirator. Type C, demand type (negative pressure), with quarter or half mask facepiece.
Less than or equal to 100X	Full facepiece respirator with replaceable dust filter. Type C, supplied air respirator, demand type (negative pressure), with full facepiece.
Less than or equal to 200X	Powered air-purifying (positive-pressure) respirator, with replace- able applicable filter.**
Greater than 200X	Type C, supplied air respirator, continuous flow type (positive pres- sure), with full facepiece, hood, or helmet.

\*Where a variance has been obtained for abrasive blasting with silica sand, use only Type C continuous flow, supplied air respirator with hood or helmet.

\*\*An alternative is to select the standard high efficiency filter which must be at least 99.97% efficient against 0.3-micrometer dioctyl sebacate (DOP).



# Recommended Standard

that no worker is exposed to free silica in excess of the standard because of improper respirator selection, fit, use, or maintenance.

(2) Employees experiencing breathing difficulty while using respirators shall be evaluated by a physician to determine the ability of the worker to wear a respirator.

(3) A respiratory protective program meeting the requirements of Section 1910.134 of the Occupational Safety and Health Standards shall be established and enforced by the employer. [29 CFR 1910.134 published in the Federal Register; vol 39, page 23671, dated June 27, 1974, as amended]

(4) The employer shall provide respirators in accordance with Table I-1 and shall ensure that the employee uses the appropriate respirator.

(5) Respiratory protective devices in Table I-1 shall be those approved either under 30 CFR 11, published March 25, 1972, or under the following regulations:

(A) Filter-type dust, fume, and mist respirators—30 CFR 14 (Bureau of Mines Schedule 21B)

(B) Supplied air respirator—30 CFR 12 (Bureau of Mines Schedule 19B)

(6) A respirator specified for use in higher concentrations of free silica may be used in atmospheres of lower concentrations.

(7) Employees shall be given instruction on the use of respirators assigned to them, on cleaning respirators, and on testing for leakage.

## (b) Work Clothing

Where exposure to free silica is above the recommended environmental limit, work clothing shall be vacuumed before removal. Clothes shall not be cleaned by blowing or shaking.

## Section 5 — Informing Employees of Hazards from Free Silica

(a) Each employee exposed to free silica shall be apprised at the beginning of his employment or assignment to a free silica exposure area of the hazards, relevant symptoms, appropriate emergency procedures, and proper conditions and precautions for safe use or exposure. The employee shall be instructed as to availability of such information including that prescribed in (b) below. Such information shall be kept on file and shall be accessible to the worker at each place of employment where free silica is involved in unit processes and operations. Workers shall also be advised of the increased risk of impaired health due to the combination of smoking and free silica dust exposure.

(b) Information, to the extent applicable to free silica, as specified in Appendix III shall be recorded on U.S. Department of Labor Form OSHA-20, "Material Safety Data Sheet" (see Appendix III) or on a similar form approved by the Occupational Safety and Health Administration, U.S. Department of Labor.

## Section 6 — Work Practices and Control Procedures

### (a) Substitution

(1) Wherever a hazard of silicosis can be elimi-

nated by a reasonable substitution of other less toxic materials for free silica, the substitution shall be made unless the silica sand has been so processed before use to make it nonrespirable such as by washing to remove fine particles. Examples of such substitution are the use of alumina instead of flint for china placing in potteries, and the substitution of a quartz-free grit in abrasive blasting.

(2) Uncontrolled abrasive blasting with silica sand is such a severe silicosis hazard that special attention must be given to this problem. Silica sand, or other materials containing more than 1% free silica, should be prohibited as an abrasive substance in abrasive blasting cleaning operations.

### (b) Dust Suppression

Moisture shall be added where such addition can substantially reduce the exposure to airborne respirable free silica dust.

### (c) Ventilation

Where a local exhaust ventilation and collection system is used, it shall be designed and maintained to prevent the accumulation or recirculation of free silica dust into the workplace. The total system shall be inspected periodically for efficiency of operation. In addition, necessary measures shall be taken to ensure that discharge outdoors will not produce a health hazard to humans, animals, or plants.

### (d) General Housekeeping

(1) Cleaning by blowing with compressed air or dry sweeping shall be avoided and dustless methods of cleaning such as vacuuming or washing down with water shall be substituted.

(2) Emphasis shall be placed upon cleanup of spills, preventive maintenance and repair of equipment, proper storage of materials, and collection of dusts containing free silica. Sanitation shall meet the requirements of 29 CFR 1910.141 as amended.

## Section 7 — Monitoring and Recordkeeping Requirements

Work environments where it has been determined, on the basis of a professional industrial hygiene survey or by the judgment of a compliance officer, that the workers' exposure does not exceed half of the standard shall not be considered to have exposure to free silica. Records of these surveys, including the basis for concluding that air levels are at or below half of the standard shall be maintained. Surveys shall be repeated when any process change indicates a need for reevaluation or at the discretion of the compliance officer. Requirements set forth below apply to areas in which there is "exposure to free silica."

Employers shall maintain records of the workers' exposure to free silica based upon the following sampling and recording schedules:

(a) In all monitoring, samples representative of the exposure in the breathing zone of employees shall be collected. An adequate number of samples shall be collected to permit construction of a full-shift exposure for every operation or process. The minimum number of time-weighted average determinations for an operation or process shall be based on the number

of workers exposed as provided in Table I-2 or as otherwise indicated by a professional industrial survey.

(b) The first work environment (breathing zone) sampling shall be completed within 6 months of the promulgation of a standard incorporating these recommendations.

(c) Work environment (breathing zone) samples shall be taken within 30 days after installation of a new process or process changes.

**TABLE I-2  
SAMPLING SCHEDULE**

Number of Employees Exposed	Number of TWA Determinations
1-20	50% of the total number of workers
21-100	10 plus 25% of the excess over 20 workers
Over 100	30 plus 5% of the excess over 100 workers

(d) Samples shall be collected and analyzed at least every 6 months in accordance with Appendices I and II for the evaluation of the workers' exposure with respect to the recommended standard.

(e) When monitoring of the workers' exposure indicates a free silica concentration in excess of the recommended standard, suitable controls shall be initiated to reduce the exposure level to or below the recommended standard. In such cases monitoring shall continue at 30-day intervals until two consecutive surveys indicate the recommended standard is no longer exceeded. Periodic review and evaluation of environmental and medical data shall be performed to determine the effectiveness of control measures.

(f) Records shall be maintained of medical examinations and all sampling schedules to include the sampling and analytical methods, type of personal protection devices, if any, in use at the time of sampling and the determined free silica dust concentration. Records shall be maintained for at least 30 years following termination of workers' employment. Each employee shall be able to obtain information on his exposure.



U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET

DATE:

## SECTION I

Supplier's Name The Western Company of North America		EMERGENCY TELEPHONE NO. (817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101		
CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS THIXAD	
CHEMICAL FAMILY	FORMULA Proprietary blend	

## SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Not regulated
NAME OF HAZARDOUS COMPONENT	N/A
HAZARD CLASS	N/A
IDENTIFICATION NUMBER	N/A
D.O.T. LABEL(S) REQUIRED	N/A
PRECAUTIONARY LABEL	

## SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
None		

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	2.3
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT, VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR=1)		EVAPORATION RATE (_____ =1)	N/A
SOLUBILITY IN WATER	Cold-.2 Hot-Slight		
APPEARANCE AND ODOR White powder - odorless			

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) Nonflammable O/F Open Flame	FLAMMABLE LIMITS	Lel Nonflammable	Uel Nonflammable
EXTINGUISHING MEDIA			
SPECIAL FIRE FIGHTING PROCEDURES None			
UNUSUAL FIRE AND EXPLOSION HAZARDS None			

TRADE NAME: THIXAD

### SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE

Oral ingestion: no effect, eye contact: slight irritation 0 no ill effects, skin contact: no effect, skin absorption - none.

EMERGENCY AND FIRST AID PROCEDURES

Eye: wash with water. Skin: wash with water. Inhalation: none - treated as nuisance dust. Ingestion: none (Industrial Health, Vol. 12, No. 3, Sept. 1955).

### SECTION VI - REACTIVITY DATA

STABILITY

UNSTABLE

CONDITIONS TO AVOID

None

STABLE

None

INCOMPATIBILITY (Materials to avoid)

None

HAZARDOUS DECOMPOSITION PRODUCTS

None

HAZARDOUS  
POLYMERIZATION

MAY OCCUR

CONDITIONS TO AVOID

None

WILL NOT OCCUR

None

### SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

May be cleaned up with normal housekeeping procedures.

WASTE DISPOSAL METHOD

Any normal disposal method.

### SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

Non-nuisance dust equipment when conditions demand.

VENTILATION

LOCAL EXHAUST

SPECIAL

MECHANICAL (General)

OTHER

PROTECTIVE GLOVES

Not normally necessary

EYE PROTECTION

Not normally necessary

OTHER PROTECTIVE EQUIPMENT

### SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Store in dry place to prevent setting and bag breakage. No detrimental health effects.

OTHER PRECAUTIONS

None



U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

DATE: 11 Sept. 78

SECTION I

Supplier's Name

The Western Company of North America

EMERGENCY TELEPHONE NO.

(817) 731-5100

ADDRESS (Number, Street, City, State, and ZIP Code)

P. O. Box 186, Ft. Worth, TX 76101

CHEMICAL NAME AND SYNONYMS

TRADE NAME AND SYNONYMS

WE-11

CHEMICAL FAMILY

FORMULA

Proprietary Blend

SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME Not regulated

NAME OF HAZARDOUS COMPONENT N/A

HAZARD CLASS N/A

IDENTIFICATION NUMBER N/A

D.O.T. LABEL(S) REQUIRED N/A

PRECAUTIONARY LABEL

SECTION II - HAZARDOUS INGREDIENTS

%

TLV  
(Units)

None

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	214-216°F	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	1.39-1.61
VAPOR PRESSURE (mm Hg.) 61.5°C	140.5-156.5	PERCENT VOLATILE BY VOLUME (%)	70-80%
VAPOR DENSITY (AIR=1)	N/A	EVAPORATION RATE (_____ =1) varies with time and temperature.	
SOLUBILITY IN WATER 20°C	100%		
APPEARANCE AND ODOR Colorless soapy odored liquid			

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	LeI	UeI
N/A	N/A		
EXTINGUISHING MEDIA			
SPECIAL FIRE FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARDS			

TRADE NAME: WE-IL

### SECTION V - HEALTH HAZARD DATA

**THRESHOLD LIMIT VALUE**

Contact with skin or eyes.

**EFFECTS OF OVEREXPOSURE**

**EMERGENCY AND FIRST AID PROCEDURES**

Ingestion: Call physician immediately.

Inhalation: Causes sneezing, call physician.

Skin: Flush with water. Apply petroleum jelly or cream.

Eyes: Flush with water. Call physician.

### SECTION VI - REACTIVITY DATA

**STABILITY**

UNSTABLE

**CONDITIONS TO AVOID**

STABLE

X

**INCOMPATIBILITY (Materials to avoid)**

**HAZARDOUS DECOMPOSITION PRODUCTS**

**HAZARDOUS  
POLYMERIZATION**

MAY OCCUR

**CONDITIONS TO AVOID**

WILL NOT OCCUR

### SECTION VII - SPILL OR LEAK PROCEDURES

**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED**

Flood to sewer.

**WASTE DISPOSAL METHOD**

Dilute waste silicate to less than 3% concentration and sewer.

### SECTION VIII - SPECIAL PROTECTION INFORMATION

**RESPIRATORY PROTECTION (Specify type)**

**VENTILATION**

LOCAL EXHAUST

SPECIAL

MECHANICAL (General)

OTHER

**PROTECTIVE GLOVES**

Rubber or plastic

**EYE PROTECTION**

Goggles

**OTHER PROTECTIVE EQUIPMENT**

### SECTION IX - SPECIAL PRECAUTIONS

**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING**

Do not store in nonferrous metal tanks.

**OTHER PRECAUTIONS**

Hydrogels are slippery, dry gels are abrasive.



U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET

DATE: June 19, 1984

## SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS
Quartz sand coated with phenolic resin	PROP, PRC, Westprop 3
CHEMICAL FAMILY	FORMULA
Quartz sand coated	W.I.N. 100468, 480, 489

## SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Not Regulated
NAME OF HAZARDOUS COMPONENT	N/A
HAZARD CLASS	N/A
IDENTIFICATION NUMBER	N/A
D.O.T. LABEL(S) REQUIRED	N/A
PRECAUTIONARY LABEL	Attached

## SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
Quartz	96	
Phenol	<5	5ppm

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	2.55
VAPOR PRESSURE (mm Hg.)	Nil	PERCENT VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR=1)	Nil	EVAPORATION RATE (_____=1)	N/A
SOLUBILITY IN WATER	Slight		
APPEARANCE AND ODOR Amber colored granular solid, dusty odor			

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	N/A	FLAMMABLE LIMITS	N/A	Lel	Uel
EXTINGUISHING MEDIA	CO <sub>2</sub> or dry chemical or water				
SPECIAL FIRE FIGHTING PROCEDURES	None				
UNUSUAL FIRE AND EXPLOSION HAZARDS	None				



TRADE NAME: W.I.N. 100468,480,489, PROP, PRC, Westprop 3

### SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

Phenol, 5ppm; Silica see 29 CFR sub part Z1910.1000

EFFECTS OF OVEREXPOSURE

None at ambient temperature; at elevated temperature-headache, blurred vision, dizziness from decomposition products.

EMERGENCY AND FIRST AID PROCEDURES

Remove victim to fresh air, get medical attention if there are symptoms of over-exposure. If breathing has stopped, apply artificial respiration.

### SECTION VI - REACTIVITY DATA

STABILITY

UNSTABLE

STABLE

X

CONDITIONS TO AVOID

Avoid storage at high temperatures, 120°F or high humidities, product may cake.

INCOMPATIBILITY (Materials to avoid)

None

HAZARDOUS DECOMPOSITION PRODUCTS

At ignition temperatures: CO, phenol, benzopyrene & other aromatic hydrocarbons.

HAZARDOUS POLYMERIZATION

MAY OCCUR

WILL NOT OCCUR

X

CONDITIONS TO AVOID

None

### SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Shovel or vacuum up

WASTE DISPOSAL METHOD

Dispose of in a land fill in accordance with local, State and Federal regulations.

### SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

Approved equipment recommended depending on conditions.

VENTILATION

LOCAL EXHAUST

Yes, see note\*

MECHANICAL (General)

Yes, see note\*

SPECIAL

None

OTHER

None

PROTECTIVE GLOVES

Recommended

EYE PROTECTION

Safety glasses

OTHER PROTECTIVE EQUIPMENT \*

Note: recommended to prevent exposure to dust or vapors

### SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Product may cake if stored in hot and/or humid conditions. Avoid direct skin contact with resin coated sand.

OTHER PRECAUTIONS

Crystalline silica exposure can occur at any operation where dust is generated.



# Recommended Standard

Attachment to MSDS: W.I.N. 100468,480,489 Westprop 3

## I. RECOMMENDATIONS FOR A CRYSTALLINE SILICA STANDARD

The National Institute for Occupational Safety and Health (NIOSH) recommends that employee exposure to crystalline silica in the workplace be controlled by adherence to the following sections. The standard is designed to protect the health and safety of workers for up to a 10-hour workday, 40-hour workweek, over a working lifetime. Compliance with the standard should prevent adverse effects of crystalline silica on the health and safety of workers. The standard is measurable by techniques that are valid, reproducible, and available to industry and government agencies and are attainable with existing technology. The criteria and the standard recommended in this document will be subject to review and revision as necessary.

Crystalline silica, hereafter referred to in this document as free silica, is defined as silicon dioxide ( $\text{SiO}_2$ ). "Crystalline" refers to the orientation of  $\text{SiO}_2$  molecules in a fixed pattern as opposed to a nonperiodic, random molecular arrangement defined as amorphous. The three most common crystalline forms of free silica encountered in industry are quartz, tridymite, and cristobalite. Micro- and crypto-crystalline varieties of free silica, also included in the recommended standard, are composed of minute grains of free silica cemented together with amorphous silica and include tripoli, flint, chalcedony, agate, onyx, and silica flour. Other forms of free silica which, upon analysis, are found to have a crystalline structure as part of their composition are also subject to the recommended standard.

"Exposure to free silica" means exposure of the worker to an airborne concentration of free silica greater than half of the recommended environmental level in the workplace. Worker exposure at lower environmental concentrations will not require adherence to the following sections.

### Section 1—Environmental (Workplace Air)

#### (a) Concentration

Occupational exposure shall be controlled so that no worker is exposed to a time-weighted average (TWA) concentration of free silica greater than 50 micrograms per cubic meter of air (50  $\mu\text{g}/\text{cu m}$ ; 0.050  $\text{mg}/\text{cu m}$ ) as determined by a full-shift sample for up to a 10-hour workday, 40-hour workweek.

#### (b) Sampling, Calibration, and Analysis

Exposure to free silica shall be determined by a personal (breathing zone) sample.

Procedures for sampling, calibration of equipment, and analysis of environmental samples shall be as provided in Appendices I and II, or by methods shown to be equivalent in sensitivity, accuracy, and precision to the method specified.

### Section 2—Medical

(a) Medical examinations shall be made available to all workers subject to "exposure to free silica" prior

to employee placement and at least once each 3 years thereafter. Examinations shall include as a minimum:

(1) A medical and occupational history to elicit data on worker exposure to free silica and signs and symptoms of respiratory disease.

(2) A chest roentgenogram (posteroanterior 14" by 17" or 14" by 14") classified according to the 1971 ILO International Classification of Radiographs of Pneumoconioses. [ILO U/C International Classification of Radiographs of Pneumoconioses 1971, Occupational Safety and Health Series 22 (rev). Geneva, International Labor Office, 1972]

(3) Pulmonary function tests including forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV<sub>1</sub>) to provide a baseline for evaluation of pulmonary function and to help determine the advisability of the workers using negative- or positive-pressure respirators. It should be noted that pulmonary function tests may vary significantly in various ethnic groups. For example, in black persons, the test values for the FVC should be divided by 0.85 before the percentage value is compared with normal figures.

(4) Body weight.

(5) Height.

(6) Age.

(7) Initial medical examinations for presently employed workers shall be offered within 6 months of the promulgation of a standard incorporating these recommendations.

#### (b) Medical Management

An employee with or without roentgenographic evidence of silicosis who has respiratory distress and/or pulmonary functional impairment should be fully evaluated by a physician qualified to advise the employee whether he should continue working in a dusty trade.

(c) These records shall be available to the medical representatives of the Secretary of Health, Education, and Welfare, of the Secretary of Labor, of the employee or former employee, and of the employer.

(d) Medical records shall be maintained for at least 30 years following the employee's termination of employment.

### Section 3 — Labeling (Posting)

(a) The following warning shall be posted to be readily visible at or near entrances or accessways to work areas where there is potential exposure to free silica.

#### WARNING!

#### FREE SILICA WORK AREA

Unauthorized Persons Keep Out

(b) The following warning shall be posted in readily visible locations in any work area where there is potential exposure to free silica.



# Recommended Standard

**WARNING!**  
**FREE SILICA WORK AREA**  
**Avoid Breathing Dust**

May Cause Delayed Lung Injury (Silicosis)

The posting required under sections 3(a) and 3(b) shall be printed both in English and in the predominant language of non-English-speaking workers, unless they are otherwise trained and informed of the hazardous areas. Illiterate workers shall receive such training.

(c) The following warning label, in addition to or in combination with labels required by other statutes, regulations, or ordinances, shall be affixed to all new materials, mixtures, and other products containing more than 5% free silica, or to their containers.

**WARNING!**  
**CONTAINS FREE SILICA**  
**DO NOT BREATHE DUST**  
May Cause Delayed Lung Injury (Silicosis)

**Section 4 — Personal Protective Equipment  
and Work Clothing**

Engineering controls shall be used to maintain free silica dust exposures below the prescribed limit. Subsection (a) shall apply whenever a variance from the standard recommended in Section 1 is granted under provisions of the Occupational Safety and Health Act, or in the interim period during the application for a

variance. When the limits of exposure to free silica prescribed in paragraph (a) of Section 1 cannot be met by limiting the concentration of free silica in the work environment, an employer must utilize, as provided in subsection (a) of this section, a program of respiratory protection to effect the required protection of every worker exposed.

**(a) Respiratory Protection**

Appropriate respirators, as prescribed in Table I-1, shall be provided and used when a variance has been granted to allow respirators as a means of control of exposure to routine operations and while the application is pending. Administrative controls may also be used to reduce exposure. Respirators shall also be provided and used for nonroutine operations (occasional brief exposures above the environmental standard and for emergencies); however, for these instances a variance is not required but the requirements set forth below continue to apply. Appropriate respirators as described in Table I-1 shall only be used pursuant to the following requirements:

(1) For the purpose of determining the type of respirator to be used, the employer shall measure the atmospheric concentration of free silica in the workplace when the initial application for variance is made and thereafter whenever process, worksite, climate, or control changes occur which are likely to affect the free silica concentration. This requirement shall not apply when only atmosphere-supplying positive-pressure respirators are used. The employer shall ensure

**TABLE I-1**  
**REQUIREMENTS FOR RESPIRATOR USAGE AT**  
**CONCENTRATIONS ABOVE THE STANDARD**

Concentrations of Free Silica in Multiples of the Standard	Respirator Type*
Less than or equal to 5X	Single use (valveless type) dust respirator.
Less than or equal to 10X	Quarter or half mask respirator with replaceable dust filter or single use (with valve) dust respirator. Type C, demand type (negative pressure), with quarter or half mask facepiece.
Less than or equal to 100X	Full facepiece respirator with replaceable dust filter. Type C, supplied air respirator, demand type (negative pressure), with full facepiece.
Less than or equal to 200X	Powered air-purifying (positive-pressure) respirator, with replace- able applicable filter.**
Greater than 200X	Type C, supplied air respirator, continuous flow type (positive pres- sure), with full facepiece, hood, or helmet.

\*Where a variance has been obtained for abrasive blasting with silica sand, use only Type C continuous flow, supplied air respirator with hood or helmet.

\*\*An alternative is to select the standard high efficiency filter which must be at least 99.97% efficient against 0.3-micrometer dioctyl phthalate (DOP).



U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET

DATE: 3 JUL 84

## SECTION I

Supplier's Name		EMERGENCY TELEPHONE NO.
The Western Company of North America		(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101		
CHEMICAL NAME AND SYNONYMS quartz sand coated with phenol/formaldehyde		TRADE NAME AND SYNONYMS PROP, CRC, Westprop 4, all sizes
CHEMICAL FAMILY N/A	FORMULA W.I.N. 100017,18,490	

## SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Not regulated
NAME OF HAZARDOUS COMPONENT	N/A
HAZARD CLASS	N/A
IDENTIFICATION NUMBER	N/A
D.O.T. LABEL(S) REQUIRED	N/A
PRECAUTIONARY LABEL	Attached

## SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
Silica sand, see CFR Subpart z 1910.1000		Variable
phenol		5ppm

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	2.55
VAPOR PRESSURE (mm Hg.)	Unknown	PERCENT VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR=1)	Unknown	EVAPORATION RATE (_____ =1)	N/A
SOLUBILITY IN WATER	Slight		
APPEARANCE AND ODOR Looks like sand			

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	N/A	FLAMMABLE LIMITS	Lei	Uei
EXTINGUISHING MEDIA	CO <sub>2</sub> , dry chemical or water			
SPECIAL FIRE FIGHTING PROCEDURES	None			
UNUSUAL FIRE AND EXPLOSION HAZARDS				
None				

TRADE NAME: W.I.N. 100017, 018, 490, PROP. CRC, Westprop 4

## SECTION V - HEALTH HAZARD DATA

## THRESHOLD LIMIT VALUE

phenol - 5ppm, Silica(see values in 29 CFR subpart z 1910.1000)

## EFFECTS OF OVEREXPOSURE

ambient temperature - none.

decomposition

ignition temperatures - headache, blurred vision, dizziness from products.

## EMERGENCY AND FIRST AID PROCEDURES

Remove victim to fresh air and get medical attention if there are symptoms of overexposure. If breathing has stopped, apply artificial respiration.

## SECTION VI - REACTIVITY DATA

## STABILITY

UNSTABLE

## CONDITIONS TO AVOID

Avoid storage at high temperatures (120°F) or

STABLE

X

high humidities, product may cake.

## INCOMPATIBILITY (Materials to avoid)

None

## HAZARDOUS DECOMPOSITION PRODUCTS

At ignition temps: CO, phenol, hydrocarbons including benzox- pyrene &amp; other aromatics

HAZARDOUS  
POLYMERIZATION

MAY OCCUR

## CONDITIONS TO AVOID

None

WILL NOT OCCUR

X

## SECTION VII - SPILL OR LEAK PROCEDURES

## STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Shovel or vacuum up.

## WASTE DISPOSAL METHOD

Dispose of in a land fill in accordance with local, State and Federal regulations.

## SECTION VIII - SPECIAL PROTECTION INFORMATION

## RESPIRATORY PROTECTION (Specify type)

Approved equipment recommended depending on plant conditions

## VENTILATION

LOCAL EXHAUST

Yes\*

SPECIAL

None

MECHANICAL (General)

Yes\*

OTHER

None

## PROTECTIVE GLOVES

Recommended

## EYE PROTECTION

Safety glasses

## OTHER PROTECTIVE EQUIPMENT

\*Recommended to prevent exposure to dust or vapors.

## SECTION IX - SPECIAL PRECAUTIONS

## PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Product may cake if stored in hot and/or humid environment. Avoid direct skin contact with resin coated sand.

## OTHER PRECAUTIONS

Crystalline silica exposure can occur in any operation where sand dust is generated due to product misuse.

## I. RECOMMENDATIONS FOR A CRYSTALLINE SILICA STANDARD

The National Institute for Occupational Safety and Health (NIOSH) recommends that employee exposure to crystalline silica in the workplace be controlled by adherence to the following sections. The standard is designed to protect the health and safety of workers for up to a 10-hour workday, 40-hour workweek, over a working lifetime. Compliance with the standard should prevent adverse effects of crystalline silica on the health and safety of workers. The standard is measurable by techniques that are valid, reproducible, and available to industry and government agencies and are attainable with existing technology. The criteria and the standard recommended in this document will be subject to review and revision as necessary.

Crystalline silica, hereafter referred to in this document as free silica, is defined as silicon dioxide ( $\text{SiO}_2$ ). "Crystalline" refers to the orientation of  $\text{SiO}_2$  molecules in a fixed pattern as opposed to a nonperiodic, random molecular arrangement defined as amorphous. The three most common crystalline forms of free silica encountered in industry are quartz, tridymite, and cristobalite. Micro- and crypto-crystalline varieties of free silica, also included in the recommended standard, are composed of minute grains of free silica cemented together with amorphous silica and include tripoli, flint, chalcedony, agate, onyx, and silica flour. Other forms of free silica which, upon analysis, are found to have a crystalline structure as part of their composition are also subject to the recommended standard.

"Exposure to free silica" means exposure of the worker to an airborne concentration of free silica greater than half of the recommended environmental level in the workplace. Worker exposure at lower environmental concentrations will not require adherence to the following sections.

### Section 1—Environmental (Workplace Air)

#### (a) Concentration

Occupational exposure shall be controlled so that no worker is exposed to a time-weighted average (TWA) concentration of free silica greater than 50 micrograms per cubic meter of air (50  $\mu\text{g}/\text{cu m}$ ; 0.050  $\text{mg}/\text{cu m}$ ) as determined by a full-shift sample for up to a 10-hour workday, 40-hour workweek.

#### (b) Sampling, Calibration, and Analysis

Exposure to free silica shall be determined by a personal (breathing zone) sample.

Procedures for sampling, calibration of equipment, and analysis of environmental samples shall be as provided in Appendices I and II, or by methods shown to be equivalent in sensitivity, accuracy, and precision to the method specified.

### Section 2—Medical

(a) Medical examinations shall be made available to all workers subject to "exposure to free silica" prior

to employee placement and at least once each 3 years thereafter. Examinations shall include as a minimum:

(1) A medical and occupational history to elicit data on worker exposure to free silica and signs and symptoms of respiratory disease.

(2) A chest roentgenogram (posteroanterior 14" by 17" or 14" by 14") classified according to the 1971 ILO International Classification of Radiographs of Pneumoconioses. [ILO U/C International Classification of Radiographs of Pneumoconioses 1971, Occupational Safety and Health Series 22 (rev). Geneva, International Labor Office, 1972]

(3) Pulmonary function tests including forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV<sub>1</sub>) to provide a baseline for evaluation of pulmonary function and to help determine the advisability of the workers using negative- or positive-pressure respirators. It should be noted that pulmonary function tests may vary significantly in various ethnic groups. For example, in black persons, the test values for the FVC should be divided by 0.85 before the percentage value is compared with normal figures.

(4) Body weight.

(5) Height.

(6) Age.

(7) Initial medical examinations for presently employed workers shall be offered within 6 months of the promulgation of a standard incorporating these recommendations.

#### (b) Medical Management

An employee with or without roentgenographic evidence of silicosis who has respiratory distress and/or pulmonary functional impairment should be fully evaluated by a physician qualified to advise the employee whether he should continue working in a dusty trade.

(c) These records shall be available to the medical representatives of the Secretary of Health, Education, and Welfare, of the Secretary of Labor, of the employee or former employee, and of the employer.

(d) Medical records shall be maintained for at least 30 years following the employee's termination of employment.

### Section 3 — Labeling (Posting)

(a) The following warning shall be posted to be readily visible at or near entrances or accessways to work areas where there is potential exposure to free silica.

**WARNING!**

**FREE SILICA WORK AREA**

**Unauthorized Persons Keep Out**

(b) The following warning shall be posted in readily visible locations in any work area where there is potential exposure to free silica.

## WARNING!

### FREE SILICA WORK AREA

Avoid Breathing Dust

May Cause Delayed Lung Injury (Silicosis)

The posting required under sections 3(a) and 3(b) shall be printed both in English and in the predominant language of non-English-speaking workers, unless they are otherwise trained and informed of the hazardous areas. Illiterate workers shall receive such training.

(c) The following warning label, in addition to or in combination with labels required by other statutes, regulations, or ordinances, shall be affixed to all new materials, mixtures, and other products containing more than 5% free silica, or to their containers.

## WARNING!

### CONTAINS FREE SILICA

DO NOT BREATHE DUST

May Cause Delayed Lung Injury (Silicosis)

### Section 4 — Personal Protective Equipment and Work Clothing

Engineering controls shall be used to maintain free silica dust exposures below the prescribed limit. Subsection (a) shall apply whenever a variance from the standard recommended in Section 1 is granted under provisions of the Occupational Safety and Health Act, or in the interim period during the application for a

variance. When the limits of exposure to free silica prescribed in paragraph (a) of Section 1 cannot be met by limiting the concentration of free silica in the work environment, an employer must utilize, as provided in subsection (a) of this section, a program of respiratory protection to effect the required protection of every worker exposed.

### (a) Respiratory Protection

Appropriate respirators, as prescribed in Table I-1, shall be provided and used when a variance has been granted to allow respirators as a means of control of exposure to routine operations and while the application is pending. Administrative controls may also be used to reduce exposure. Respirators shall also be provided and used for nonroutine operations (occasional brief exposures above the environmental standard and for emergencies); however, for these instances a variance is not required but the requirements set forth below continue to apply. Appropriate respirators as described in Table I-1 shall only be used pursuant to the following requirements:

(1) For the purpose of determining the type of respirator to be used, the employer shall measure the atmospheric concentration of free silica in the workplace when the initial application for variance is made and thereafter whenever process, worksite, climate, or control changes occur which are likely to affect the free silica concentration. This requirement shall not apply when only atmosphere-supplying positive-pressure respirators are used. The employer shall ensure

TABLE I-1  
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Concentrations of Free Silica in Multiples of the Standard	Respirator Type*
Less than or equal to 5X	Single use (valveless type) dust respirator.
Less than or equal to 10X	Quarter or half mask respirator with replaceable dust filter or single use (with valve) dust respirator. Type C, demand type (negative pressure), with quarter or half mask facepiece.
Less than or equal to 100X	Full facepiece respirator with replaceable dust filter. Type C, supplied air respirator, demand type (negative pressure), with full facepiece.
Less than or equal to 200X	Powered air-purifying (positive-pressure) respirator, with replace- able applicable filter.**
Greater than 200X	Type C, supplied air respirator, continuous flow type (positive pres- sure), with full facepiece, hood, or helmet.

\*Where a variance has been obtained for abrasive blasting with silica sand, use only Type C continuous flow, supplied air respirator with hood or helmet.

\*\*An alternative is to select the standard high efficiency filter which must be at least 99.97% efficient against 0.3-micrometer dioctyl phthalate (DOP).

that no worker is exposed to free silica in excess of the standard because of improper respirator selection, fit, use, or maintenance.

(2) Employees experiencing breathing difficulty while using respirators shall be evaluated by a physician to determine the ability of the worker to wear a respirator.

(3) A respiratory protective program meeting the requirements of Section 1910.134 of the Occupational Safety and Health Standards shall be established and enforced by the employer. [29 CFR 1910.134 published in the Federal Register, vol 39, page 23671, dated June 27, 1974, as amended]

(4) The employer shall provide respirators in accordance with Table I-1 and shall ensure that the employee uses the appropriate respirator.

(5) Respiratory protective devices in Table I-1 shall be those approved either under 30 CFR 11, published March 25, 1972, or under the following regulations:

(A) Filter-type dust, fume, and mist respirators—30 CFR 14 (Bureau of Mines Schedule 21B)

(B) Supplied air respirator—30 CFR 12 (Bureau of Mines Schedule 19B)

(6) A respirator specified for use in higher concentrations of free silica may be used in atmospheres of lower concentrations.

(7) Employees shall be given instruction on the use of respirators assigned to them, on cleaning respirators, and on testing for leakage.

## (b) Work Clothing

Where exposure to free silica is above the recommended environmental limit, work clothing shall be vacuumed before removal. Clothes shall not be cleaned by blowing or shaking.

## Section 5 — Informing Employees of Hazards from Free Silica

(a) Each employee exposed to free silica shall be apprised at the beginning of his employment or assignment to a free silica exposure area of the hazards, relevant symptoms, appropriate emergency procedures, and proper conditions and precautions for safe use or exposure. The employee shall be instructed as to availability of such information including that prescribed in (b) below. Such information shall be kept on file and shall be accessible to the worker at each place of employment where free silica is involved in unit processes and operations. Workers shall also be advised of the increased risk of impaired health due to the combination of smoking and free silica dust exposure.

(b) Information, to the extent applicable to free silica, as specified in Appendix III shall be recorded on U.S. Department of Labor Form OSHA-20, "Material Safety Data Sheet" (see Appendix III) or on a similar form approved by the Occupational Safety and Health Administration, U.S. Department of Labor.

## Section 6 — Work Practices and Control Procedures

### (a) Substitution

(1) Wherever a hazard of silicosis can be elimi-

nated by a reasonable substitution of other less toxic materials for free silica, the substitution shall be made unless the silica sand has been so processed before use to make it nonrespirable such as by washing to remove fine particles. Examples of such substitution are the use of alumina instead of flint for china placing in potteries, and the substitution of a quartz-free grit in abrasive blasting.

(2) Uncontrolled abrasive blasting with silica sand is such a severe silicosis hazard that special attention must be given to this problem. Silica sand, or other materials containing more than 1% free silica, should be prohibited as an abrasive substance in abrasive blasting cleaning operations.

### (b) Dust Suppression

Moisture shall be added where such addition can substantially reduce the exposure to airborne respirable free silica dust.

### (c) Ventilation

Where a local exhaust ventilation and collection system is used, it shall be designed and maintained to prevent the accumulation or recirculation of free silica dust into the workplace. The total system shall be inspected periodically for efficiency of operation. In addition, necessary measures shall be taken to ensure that discharge outdoors will not produce a health hazard to humans, animals, or plants.

### (d) General Housekeeping

(1) Cleaning by blowing with compressed air or dry sweeping shall be avoided and dustless methods of cleaning such as vacuuming or washing down with water shall be substituted.

(2) Emphasis shall be placed upon cleanup of spills, preventive maintenance and repair of equipment, proper storage of materials, and collection of dusts containing free silica. Sanitation shall meet the requirements of 29 CFR 1910.141 as amended.

## Section 7 — Monitoring and Recordkeeping Requirements

Work environments where it has been determined, on the basis of a professional industrial hygiene survey or by the judgment of a compliance officer, that the workers' exposure does not exceed half of the standard shall not be considered to have exposure to free silica. Records of these surveys, including the basis for concluding that air levels are at or below half of the standard shall be maintained. Surveys shall be repeated when any process change indicates a need for reevaluation or at the discretion of the compliance officer. Requirements set forth below apply to areas in which there is "exposure to free silica."

Employers shall maintain records of the workers' exposure to free silica based upon the following sampling and recording schedules:

(a) In all monitoring, samples representative of the exposure in the breathing zone of employees shall be collected. An adequate number of samples shall be collected to permit construction of a full-shift exposure for every operation or process. The minimum number of time-weighted average determinations for an operation or process shall be based on the number



of workers exposed as provided in Table I-2 or as otherwise indicated by a professional industrial survey.

(b) The first work environment (breathing zone) sampling shall be completed within 6 months of the promulgation of a standard incorporating these recommendations.

(c) Work environment (breathing zone) samples shall be taken within 30 days after installation of a new process or process changes.

TABLE I-2  
SAMPLING SCHEDULE

Number of Employees Exposed	Number of TWA Determinations
1-20	50% of the total number of workers
21-100	10 plus 25% of the excess over 20 workers
Over 100	30 plus 5% of the excess over 100 workers

(d) Samples shall be collected and analyzed at least every 6 months in accordance with Appendices I and II for the evaluation of the workers' exposure with respect to the recommended standard.

(e) When monitoring of the workers' exposure indicates a free silica concentration in excess of the recommended standard, suitable controls shall be initiated to reduce the exposure level to or below the recommended standard. In such cases monitoring shall continue at 30-day intervals until two consecutive surveys indicate the recommended standard is no longer exceeded. Periodic review and evaluation of environmental and medical data shall be performed to determine the effectiveness of control measures.

(f) Records shall be maintained of medical examinations and all sampling schedules to include the sampling and analytical methods, type of personal protection devices, if any, in use at the time of sampling and the determined free silica dust concentration. Records shall be maintained for at least 30 years following termination of workers' employment. Each employee shall be able to obtain information on his exposure.



U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET

DATE: 3 JUL 84

## SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS quartz sand coated with phenol/formaldehyde	TRADE NAME AND SYNONYMS PROP, CRC, Westprop 4, all sizes
CHEMICAL FAMILY N/A	FORMULA W.I.N. 100017, 18,490

## SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Not regulated
NAME OF HAZARDOUS COMPONENT	N/A
HAZARD CLASS	N/A
IDENTIFICATION NUMBER	N/A
D.O.T. LABEL(S) REQUIRED	N/A
PRECAUTIONARY LABEL	Attached

## SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
Silica sand, see CFR Subpart z 1910.1000		Variable
phenol		5ppm

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	2.55
VAPOR PRESSURE (mm Hg.)	Unknown	PERCENT, VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR=1)	Unknown	EVAPORATION RATE (_____ =1)	N/A
SOLUBILITY IN WATER	Slight		
APPEARANCE AND ODOR	Looks like sand		

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	N/A	FLAMMABLE LIMITS	Lei	Uel
EXTINGUISHING MEDIA	CO <sub>2</sub> , dry chemical or water			
SPECIAL FIRE FIGHTING PROCEDURES	None			
UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

100018  
TRADE NAME: W.I.N. 100017, 018, 490, PROP. CRC, Westprop 4

### SECTION V - HEALTH HAZARD DATA

**THRESHOLD LIMIT VALUE**

phenol - 5ppm, Silica(see values in 29 CFR subpart z 1910.1000)

**EFFECTS OF OVEREXPOSURE**

ambient temperature - none.

decomposition

ignition temperatures - headache, blurred vision, dizziness from products.

**EMERGENCY AND FIRST AID PROCEDURES**

Remove victim to fresh air and get medical attention if there are symptoms of overexposure. If breathing has stopped, apply artificial respiration.

### SECTION VI - REACTIVITY DATA

**STABILITY**

UNSTABLE

STABLE

**CONDITIONS TO AVOID**

Avoid storage at high temperatures (120°F) or

high humidities, product may cake.

**INCOMPATIBILITY (Materials to avoid)**

None

**HAZARDOUS DECOMPOSITION PRODUCTS**

At ignition temps: CO, phenol, hydrocarbons including benzo $\alpha$ -pyrene & other aromatics

**HAZARDOUS  
POLYMERIZATION**

MAY OCCUR

WILL NOT OCCUR

**CONDITIONS TO AVOID**

None

X

### SECTION VII - SPILL OR LEAK PROCEDURES

**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED**

Shovel or vacuum up.

**WASTE DISPOSAL METHOD**

Dispose of in a land fill in accordance with local, State and Federal regulations.

### SECTION VIII - SPECIAL PROTECTION INFORMATION

**RESPIRATORY PROTECTION (Specify type)**

Approved equipment recommended depending on plant conditions.

**VENTILATION**

LOCAL EXHAUST

Yes\*

MECHANICAL (General)

Yes\*

SPECIAL

None

OTHER

None

**PROTECTIVE GLOVES**

Recommended

**EYE PROTECTION**

Safety glasses

**OTHER PROTECTIVE EQUIPMENT**

\*Recommended to prevent exposure to dust or vapors.

### SECTION IX - SPECIAL PRECAUTIONS

**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING**

Product may cake if stored in hot and/or humid environment. Avoid direct skin contact with resin coated sand.

**OTHER PRECAUTIONS**

Crystalline silica exposure can occur in any operation where sand dust is generated due to product misuse.

## I. RECOMMENDATIONS FOR A CRYSTALLINE SILICA STANDARD

The National Institute for Occupational Safety and Health (NIOSH) recommends that employee exposure to crystalline silica in the workplace be controlled by adherence to the following sections. The standard is designed to protect the health and safety of workers for up to a 10-hour workday, 40-hour workweek, over a working lifetime. Compliance with the standard should prevent adverse effects of crystalline silica on the health and safety of workers. The standard is measurable by techniques that are valid, reproducible, and available to industry and government agencies and are attainable with existing technology. The criteria and the standard recommended in this document will be subject to review and revision as necessary.

Crystalline silica, hereafter referred to in this document as free silica, is defined as silicon dioxide ( $\text{SiO}_2$ ). "Crystalline" refers to the orientation of  $\text{SiO}_2$  molecules in a fixed pattern as opposed to a nonperiodic, random molecular arrangement defined as amorphous. The three most common crystalline forms of free silica encountered in industry are quartz, tridymite, and cristobalite. Micro- and crypto-crystalline varieties of free silica, also included in the recommended standard, are composed of minute grains of free silica cemented together with amorphous silica and include tripoli, flint, chalcedony, agate, onyx, and silica flour. Other forms of free silica which, upon analysis, are found to have a crystalline structure as part of their composition are also subject to the recommended standard.

"Exposure to free silica" means exposure of the worker to an airborne concentration of free silica greater than half of the recommended environmental level in the workplace. Worker exposure at lower environmental concentrations will not require adherence to the following sections.

### Section 1—Environmental (Workplace Air)

#### (a) Concentration

Occupational exposure shall be controlled so that no worker is exposed to a time-weighted average (TWA) concentration of free silica greater than 50 micrograms per cubic meter of air (50  $\mu\text{g}/\text{cu m}$ ; 0.050  $\text{mg}/\text{cu m}$ ) as determined by a full-shift sample for up to a 10-hour workday, 40-hour workweek.

#### (b) Sampling, Calibration, and Analysis

Exposure to free silica shall be determined by a personal (breathing zone) sample.

Procedures for sampling, calibration of equipment, and analysis of environmental samples shall be as provided in Appendices I and II, or by methods shown to be equivalent in sensitivity, accuracy, and precision to the method specified.

### Section 2—Medical

(a) Medical examinations shall be made available to all workers subject to "exposure to free silica" prior

to employee placement and at least once each 3 years thereafter. Examinations shall include as a minimum:

(1) A medical and occupational history to elicit data on worker exposure to free silica and signs and symptoms of respiratory disease.

(2) A chest roentgenogram (posteroanterior 14" by 17" or 14" by 14") classified according to the 1971 ILO International Classification of Radiographs of Pneumoconioses. [ILO U/C International Classification of Radiographs of Pneumoconioses 1971, Occupational Safety and Health Series 22 (rev). Geneva, International Labor Office, 1972]

(3) Pulmonary function tests including forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV<sub>1</sub>) to provide a baseline for evaluation of pulmonary function and to help determine the advisability of the workers using negative- or positive-pressure respirators. It should be noted that pulmonary function tests may vary significantly in various ethnic groups. For example, in black persons, the test values for the FVC should be divided by 0.85 before the percentage value is compared with normal figures.

(4) Body weight.

(5) Height.

(6) Age.

(7) Initial medical examinations for presently employed workers shall be offered within 6 months of the promulgation of a standard incorporating these recommendations.

#### (b) Medical Management

An employee with or without roentgenographic evidence of silicosis who has respiratory distress and/or pulmonary functional impairment should be fully evaluated by a physician qualified to advise the employee whether he should continue working in a dusty trade.

(c) These records shall be available to the medical representatives of the Secretary of Health, Education, and Welfare, of the Secretary of Labor, of the employee or former employee, and of the employer.

(d) Medical records shall be maintained for at least 30 years following the employee's termination of employment.

### Section 3 — Labeling (Posting)

(a) The following warning shall be posted to be readily visible at or near entrances or accessways to work areas where there is potential exposure to free silica.

#### WARNING!

#### FREE SILICA WORK AREA

Unauthorized Persons Keep Out

(b) The following warning shall be posted in readily visible locations in any work area where there is potential exposure to free silica.



# Recommended Standard

## WARNING! FREE SILICA WORK AREA

Avoid Breathing Dust  
May Cause Delayed Lung Injury (Silicosis)

The posting required under sections 3(a) and 3(b) shall be printed both in English and in the predominant language of non-English-speaking workers, unless they are otherwise trained and informed of the hazardous areas. Illiterate workers shall receive such training.

(c) The following warning label, in addition to or in combination with labels required by other statutes, regulations, or ordinances, shall be affixed to all new materials, mixtures, and other products containing more than 5% free silica, or to their containers.

## WARNING! CONTAINS FREE SILICA DO NOT BREATHE DUST

May Cause Delayed Lung Injury (Silicosis)

### Section 4 — Personal Protective Equipment and Work Clothing

Engineering controls shall be used to maintain free silica dust exposures below the prescribed limit. Subsection (a) shall apply whenever a variance from the standard recommended in Section 1 is granted under provisions of the Occupational Safety and Health Act, or in the interim period during the application for a

variance. When the limits of exposure to free silica prescribed in paragraph (a) of Section 1 cannot be met by limiting the concentration of free silica in the work environment, an employer must utilize, as provided in subsection (a) of this section, a program of respiratory protection to effect the required protection of every worker exposed.

### (a) Respiratory Protection

Appropriate respirators, as prescribed in Table I-1, shall be provided and used when a variance has been granted to allow respirators as a means of control of exposure to routine operations and while the application is pending. Administrative controls may also be used to reduce exposure. Respirators shall also be provided and used for nonroutine operations (occasional brief exposures above the environmental standard and for emergencies); however, for these instances a variance is not required but the requirements set forth below continue to apply. Appropriate respirators as described in Table I-1 shall only be used pursuant to the following requirements:

(1) For the purpose of determining the type of respirator to be used, the employer shall measure the atmospheric concentration of free silica in the workplace when the initial application for variance is made and thereafter whenever process, worksite, climate, or control changes occur which are likely to affect the free silica concentration. This requirement shall not apply when only atmosphere-supplying positive-pressure respirators are used. The employer shall ensure

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Concentrations of Free Silica in Multiples of the Standard	Respirator Type*
Less than or equal to 5X	Single use (valveless type) dust respirator.
Less than or equal to 10X	Quarter or half mask respirator with replaceable dust filter or single use (with valve) dust respirator. Type C, demand type (negative pressure), with quarter or half mask facepiece.
Less than or equal to 100X	Full facepiece respirator with replaceable dust filter. Type C, supplied air respirator, demand type (negative pressure), with full facepiece.
Less than or equal to 200X	Powered air-purifying (positive-pressure) respirator, with replace- able applicable filter.**
Greater than 200X	Type C, supplied air respirator, continuous flow type (positive pres- sure), with full facepiece, hood, or helmet.

\*Where a variance has been obtained for abrasive blasting with silica sand, use only Type C continuous flow, supplied air respirator with hood or helmet.

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Work environments where it has been determined, on the basis of a professional industrial hygiene survey or by the judgment of a compliance officer, that the workers' exposure does not exceed half of the standard shall not be considered to have exposure to free silica. Records of these surveys, including the basis for concluding that air levels are at or below half of the standard shall be maintained. Surveys shall be repeated when any process change indicates a need for reevaluation or at the discretion of the compliance officer. Requirements set forth below apply to areas in which there is "exposure to free silica."

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(a) In all monitoring, samples representative of the exposure in the breathing zone of employees shall be collected. An adequate number of samples shall be collected to permit construction of a full-shift exposure for every operation or process. The minimum number of time-weighted average determinations for an operation or process shall be based on the number

of workers exposed as provided in Table I-2 or as otherwise indicated by a professional industrial survey.

(b) The first work environment (breathing zone) sampling shall be completed within 6 months of the promulgation of a standard incorporating these recommendations.

(c) Work environment (breathing zone) samples shall be taken within 30 days after installation of a new process or process changes.

**TABLE I-2  
SAMPLING SCHEDULE**

Number of Employees Exposed	Number of TWA Determinations
1-20	50% of the total number of workers
21-100	10 plus 25% of the excess over 20 workers
Over 100	30 plus 5% of the excess over 100 workers

(d) Samples shall be collected and analyzed at least every 6 months in accordance with Appendices I and II for the evaluation of the workers' exposure with respect to the recommended standard.

(e) When monitoring of the workers' exposure indicates a free silica concentration in excess of the recommended standard, suitable controls shall be initiated to reduce the exposure level to or below the recommended standard. In such cases monitoring shall continue at 30-day intervals until two consecutive surveys indicate the recommended standard is no longer exceeded. Periodic review and evaluation of environmental and medical data shall be performed to determine the effectiveness of control measures.

(f) Records shall be maintained of medical examinations and all sampling schedules to include the sampling and analytical methods, type of personal protection devices, if any, in use at the time of sampling and the determined free silica dust concentration. Records shall be maintained for at least 30 years following termination of workers' employment. Each employee shall be able to obtain information on his exposure.





## Precautionary Labeling for Bags

Trade Name: WESTPROP 4  
W.I.N. 100017, 018, 490

### DIRECTIONS:

For Proper Use, Refer to Service Bulletin No.(s) 810.0WG

SPECIFIC USAGE: USE AT THE RATE OF  $\frac{1}{4}$  TO 15 LB/GALLON  
OF FRAC FLUID.

When Handling This Product Employees MUST WEAR: DUST MASK & SAFETY GLASSES

### FOR INDUSTRIAL USE ONLY

WARNING  
CONTAINS FREE SILICA  
DO NOT BREATHE DUST  
MAY CAUSE DELAYED LUNG INJURY (SILICOSIS)

Refer to MSDS and SPM-04-04 for Safety Requirements.



U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET

DATE: 3 JUL 84

## SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS quartz sand coated with phenol/formaldehyde	TRADE NAME AND SYNONYMS PROP, CRC, Westprop 4, all sizes
CHEMICAL FAMILY N/A	FORMULA W.I.N. 100017, 18,490

## SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Not regulated
NAME OF HAZARDOUS COMPONENT	N/A
HAZARD CLASS	N/A
IDENTIFICATION NUMBER	N/A
D.O.T. LABEL(S) REQUIRED	N/A
PRECAUTIONARY LABEL	Attached

## SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
Silica sand, see CFR Subpart z 1910.1000		Variable
phenol		5ppm

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	2.55
VAPOR PRESSURE (mm Hg.)	Unknown	PERCENT VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR=1)	Unknown	EVAPORATION RATE (_____=1)	N/A
SOLUBILITY IN WATER	Slight		
APPEARANCE AND ODOR	Looks like sand		

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	N/A	FLAMMABLE LIMITS	Lel	Uel
EXTINGUISHING MEDIA	CO <sub>2</sub> , dry chemical or water			
SPECIAL FIRE FIGHTING PROCEDURES	None			
UNUSUAL FIRE AND EXPLOSION HAZARDS	None			

100 017

TRADE NAME: W.I.N. 100017, 018, 490, PROP. CRC. Westprop 4

### SECTION V - HEALTH HAZARD DATA

**THRESHOLD LIMIT VALUE**

phenol - 5ppm, Silica(see values in 29 CFR subpart z 1910.1000)

**EFFECTS OF OVEREXPOSURE**

ambient temperature - none.

ignition temperatures - headache, blurred vision, dizziness from products decomposition

**EMERGENCY AND FIRST AID PROCEDURES**

Remove victim to fresh air and get medical attention if there are symptoms of overexposure. If breathing has stopped, apply artificial respiration

### SECTION VI - REACTIVITY DATA

**STABILITY**

UNSTABLE

STABLE

X

**CONDITIONS TO AVOID**

Avoid storage at high temperatures (120°F) or high humidities, product may cake.

**INCOMPATIBILITY (Materials to avoid)**

None

**HAZARDOUS DECOMPOSITION PRODUCTS**

At ignition temps: CO, phenol, hydrocarbons including benzo $\alpha$ -pyrene & other aromatics

**HAZARDOUS POLYMERIZATION**

MAY OCCUR

WILL NOT OCCUR

X

**CONDITIONS TO AVOID**

None

### SECTION VII - SPILL OR LEAK PROCEDURES

**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED**

Shovel or vacuum up.

**WASTE DISPOSAL METHOD**

Dispose of in a land fill in accordance with local, State and Federal regulations.

### SECTION VIII - SPECIAL PROTECTION INFORMATION

**RESPIRATORY PROTECTION (Specify type)**

Approved equipment recommended depending on plant conditions.

**VENTILATION**

LOCAL EXHAUST

Yes\*

MECHANICAL (General)

Yes\*

SPECIAL

None

OTHER

None

**PROTECTIVE GLOVES**

Recommended

**EYE PROTECTION**

Safety glasses

**OTHER PROTECTIVE EQUIPMENT**

\*Recommended to prevent exposure to dust or vapors.

### SECTION IX - SPECIAL PRECAUTIONS

**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING**

Product may cake if stored in hot and/or humid environment. Avoid direct skin contact with resin coated sand.

**OTHER PRECAUTIONS**

Crystalline silica exposure can occur in any operation where sand dust is generated due to product misuse.



# Recommended Standard

Attachment to MSDS: W.I.N. 100017, 018, 490,  
PROP, CRC Westprop 4

## I. RECOMMENDATIONS FOR A CRYSTALLINE SILICA STANDARD

The National Institute for Occupational Safety and Health (NIOSH) recommends that employee exposure to crystalline silica in the workplace be controlled by adherence to the following sections. The standard is designed to protect the health and safety of workers for up to a 10-hour workday, 40-hour workweek, over a working lifetime. Compliance with the standard should prevent adverse effects of crystalline silica on the health and safety of workers. The standard is measurable by techniques that are valid, reproducible, and available to industry and government agencies and are attainable with existing technology. The criteria and the standard recommended in this document will be subject to review and revision as necessary.

Crystalline silica, hereafter referred to in this document as free silica, is defined as silicon dioxide ( $\text{SiO}_2$ ). "Crystalline" refers to the orientation of  $\text{SiO}_2$  molecules in a fixed pattern as opposed to a nonperiodic, random molecular arrangement defined as amorphous. The three most common crystalline forms of free silica encountered in industry are quartz, tridymite, and cristobalite. Micro- and crypto-crystalline varieties of free silica, also included in the recommended standard, are composed of minute grains of free silica cemented together with amorphous silica and include tripoli, flint, chalcedony, agate, onyx, and silica flour. Other forms of free silica which, upon analysis, are found to have a crystalline structure as part of their composition are also subject to the recommended standard.

"Exposure to free silica" means exposure of the worker to an airborne concentration of free silica greater than half of the recommended environmental level in the workplace. Worker exposure at lower environmental concentrations will not require adherence to the following sections.

### Section 1—Environmental (Workplace Air)

#### (a) Concentration

Occupational exposure shall be controlled so that no worker is exposed to a time-weighted average (TWA) concentration of free silica greater than 50 micrograms per cubic meter of air (50  $\mu\text{g}/\text{cu m}$ ; 0.050  $\text{mg}/\text{cu m}$ ) as determined by a full-shift sample for up to a 10-hour workday, 40-hour workweek.

#### (b) Sampling, Calibration, and Analysis

Exposure to free silica shall be determined by a personal (breathing zone) sample.

Procedures for sampling, calibration of equipment, and analysis of environmental samples shall be as provided in Appendices I and II, or by methods shown to be equivalent in sensitivity, accuracy, and precision to the method specified.

### Section 2—Medical

(a) Medical examinations shall be made available to all workers subject to "exposure to free silica" prior

to employee placement and at least once each 3 years thereafter. Examinations shall include as a minimum:

(1) A medical and occupational history to elicit data on worker exposure to free silica and signs and symptoms of respiratory disease.

(2) A chest roentgenogram (posteroanterior 14" by 17" or 14" by 14") classified according to the 1971 ILO International Classification of Radiographs of Pneumoconioses. [ILO U/C International Classification of Radiographs of Pneumoconioses 1971, Occupational Safety and Health Series 22 (rev). Geneva, International Labor Office, 1972]

(3) Pulmonary function tests including forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV<sub>1</sub>) to provide a baseline for evaluation of pulmonary function and to help determine the advisability of the workers using negative- or positive-pressure respirators. It should be noted that pulmonary function tests may vary significantly in various ethnic groups. For example, in black persons, the test values for the FVC should be divided by 0.85 before the percentage value is compared with normal figures.

(4) Body weight.

(5) Height.

(6) Age.

(7) Initial medical examinations for presently employed workers shall be offered within 6 months of the promulgation of a standard incorporating these recommendations.

#### (b) Medical Management

An employee with or without roentgenographic evidence of silicosis who has respiratory distress and/or pulmonary functional impairment should be fully evaluated by a physician qualified to advise the employee whether he should continue working in a dusty trade.

(c) These records shall be available to the medical representatives of the Secretary of Health, Education, and Welfare, of the Secretary of Labor, of the employee or former employee, and of the employer.

(d) Medical records shall be maintained for at least 30 years following the employee's termination of employment.

### Section 3 — Labeling (Posting)

(a) The following warning shall be posted to be readily visible at or near entrances or accessways to work areas where there is potential exposure to free silica.

**WARNING!**

**FREE SILICA WORK AREA**

**Unauthorized Persons Keep Out**

(b) The following warning shall be posted in readily visible locations in any work area where there is potential exposure to free silica.



# Recommended Standard

100917

**WARNING!**  
**FREE SILICA WORK AREA**  
**Avoid Breathing Dust**

May Cause Delayed Lung Injury (Silicosis)

The posting required under sections 3(a) and 3(b) shall be printed both in English and in the predominant language of non-English-speaking workers, unless they are otherwise trained and informed of the hazardous areas. Illiterate workers shall receive such training.

(c) The following warning label, in addition to or in combination with labels required by other statutes, regulations, or ordinances, shall be affixed to all new materials, mixtures, and other products containing more than 5% free silica, or to their containers.

**WARNING!**  
**CONTAINS FREE SILICA**  
**DO NOT BREATHE DUST**  
May Cause Delayed Lung Injury (Silicosis)

**Section 4 — Personal Protective Equipment  
and Work Clothing**

Engineering controls shall be used to maintain free silica dust exposures below the prescribed limit. Subsection (a) shall apply whenever a variance from the standard recommended in Section 1 is granted under provisions of the Occupational Safety and Health Act, or in the interim period during the application for a

variance. When the limits of exposure to free silica prescribed in paragraph (a) of Section 1 cannot be met by limiting the concentration of free silica in the work environment, an employer must utilize, as provided in subsection (a) of this section, a program of respiratory protection to effect the required protection of every worker exposed.

**(a) Respiratory Protection**

Appropriate respirators, as prescribed in Table I-1, shall be provided and used when a variance has been granted to allow respirators as a means of control of exposure to routine operations and while the application is pending. Administrative controls may also be used to reduce exposure. Respirators shall also be provided and used for nonroutine operations (occasional brief exposures above the environmental standard and for emergencies); however, for these instances a variance is not required but the requirements set forth below continue to apply. Appropriate respirators as described in Table I-1 shall only be used pursuant to the following requirements:

(1) For the purpose of determining the type of respirator to be used, the employer shall measure the atmospheric concentration of free silica in the workplace when the initial application for variance is made and thereafter whenever process, worksite, climate, or control changes occur which are likely to affect the free silica concentration. This requirement shall not apply when only atmosphere-supplying positive-pressure respirators are used. The employer shall ensure

**TABLE I-1**  
**REQUIREMENTS FOR RESPIRATOR USAGE AT**  
**CONCENTRATIONS ABOVE THE STANDARD**

Concentrations of Free Silica in Multiples of the Standard	Respirator Type*
Less than or equal to 5X	Single use (valveless type) dust respirator.
Less than or equal to 10X	Quarter or half mask respirator with replaceable dust filter or single use (with valve) dust respirator. Type C, demand type (negative pressure), with quarter or half mask facepiece.
Less than or equal to 100X	Full facepiece respirator with replaceable dust filter. Type C, supplied air respirator, demand type (negative pressure), with full facepiece.
Less than or equal to 200X	Powered air-purifying (positive-pressure) respirator, with replace- able applicable filter.**
Greater than 200X	Type C, supplied air respirator, continuous flow type (positive pres- sure), with full facepiece, hood, or helmet.

\*Where a variance has been obtained for abrasive blasting with silica sand, use only Type C contin-  
uous flow, supplied air respirator with hood or helmet.

\*\*An alternative is to select the standard high efficiency filter which must be at least 99.97% efficient  
against 0.3-micrometer dioctyl phthalate (DOP).

that no worker is exposed to free silica in excess of the standard because of improper respirator selection, fit, use, or maintenance.

(2) Employees experiencing breathing difficulty while using respirators shall be evaluated by a physician to determine the ability of the worker to wear a respirator.

(3) A respiratory protective program meeting the requirements of Section 1910.134 of the Occupational Safety and Health Standards shall be established and enforced by the employer. [29 CFR 1910.134 published in the Federal Register, vol 39, page 23671, dated June 27, 1974, as amended]

(4) The employer shall provide respirators in accordance with Table I-1 and shall ensure that the employee uses the appropriate respirator.

(5) Respiratory protective devices in Table I-1 shall be those approved either under 30 CFR 11, published March 25, 1972, or under the following regulations:

(A) Filter-type dust, fume, and mist respirators—30 CFR 14 (Bureau of Mines Schedule 21B)

(B) Supplied air respirator—30 CFR 12 (Bureau of Mines Schedule 19B)

(6) A respirator specified for use in higher concentrations of free silica may be used in atmospheres of lower concentrations.

(7) Employees shall be given instruction on the use of respirators assigned to them, on cleaning respirators, and on testing for leakage.

## (b) Work Clothing

Where exposure to free silica is above the recommended environmental limit, work clothing shall be vacuumed before removal. Clothes shall not be cleaned by blowing or shaking.

## Section 5 — Informing Employees of Hazards from Free Silica

(a) Each employee exposed to free silica shall be apprised at the beginning of his employment or assignment to a free silica exposure area of the hazards, relevant symptoms, appropriate emergency procedures, and proper conditions and precautions for safe use or exposure. The employee shall be instructed as to availability of such information including that prescribed in (b) below. Such information shall be kept on file and shall be accessible to the worker at each place of employment where free silica is involved in unit processes and operations. Workers shall also be advised of the increased risk of impaired health due to the combination of smoking and free silica dust exposure.

(b) Information, to the extent applicable to free silica, as specified in Appendix III shall be recorded on U.S. Department of Labor Form OSHA-20, "Material Safety Data Sheet" (see Appendix III) or on a similar form approved by the Occupational Safety and Health Administration, U.S. Department of Labor.

## Section 6 — Work Practices and Control Procedures

### (a) Substitution

(1) Wherever a hazard of silicosis can be elimi-

nated by a reasonable substitution of other less toxic materials for free silica, the substitution shall be made unless the silica sand has been so processed before use to make it nonrespirable such as by washing to remove fine particles. Examples of such substitution are the use of alumina instead of flint for china placing in potteries, and the substitution of a quartz-free grit in abrasive blasting.

(2) Uncontrolled abrasive blasting with silica sand is such a severe silicosis hazard that special attention must be given to this problem. Silica sand, or other materials containing more than 1% free silica, should be prohibited as an abrasive substance in abrasive blasting cleaning operations.

### (b) Dust Suppression

Moisture shall be added where such addition can substantially reduce the exposure to airborne respirable free silica dust.

### (c) Ventilation

Where a local exhaust ventilation and collection system is used, it shall be designed and maintained to prevent the accumulation or recirculation of free silica dust into the workplace. The total system shall be inspected periodically for efficiency of operation. In addition, necessary measures shall be taken to ensure that discharge outdoors will not produce a health hazard to humans, animals, or plants.

### (d) General Housekeeping

(1) Cleaning by blowing with compressed air or dry sweeping shall be avoided and dustless methods of cleaning such as vacuuming or washing down with water shall be substituted.

(2) Emphasis shall be placed upon cleanup of spills, preventive maintenance and repair of equipment, proper storage of materials, and collection of dusts containing free silica. Sanitation shall meet the requirements of 29 CFR 1910.141 as amended.

## Section 7 — Monitoring and Recordkeeping Requirements

Work environments where it has been determined, on the basis of a professional industrial hygiene survey or by the judgment of a compliance officer, that the workers' exposure does not exceed half of the standard shall not be considered to have exposure to free silica. Records of these surveys, including the basis for concluding that air levels are at or below half of the standard shall be maintained. Surveys shall be repeated when any process change indicates a need for reevaluation or at the discretion of the compliance officer. Requirements set forth below apply to areas in which there is "exposure to free silica."

Employers shall maintain records of the workers' exposure to free silica based upon the following sampling and recording schedules:

(a) In all monitoring, samples representative of the exposure in the breathing zone of employees shall be collected. An adequate number of samples shall be collected to permit construction of a full-shift exposure for every operation or process. The minimum number of time-weighted average determinations for an operation or process shall be based on the number

of workers exposed as provided in Table I-2 or as otherwise indicated by a professional industrial survey.

(b) The first work environment (breathing zone) sampling shall be completed within 6 months of the promulgation of a standard incorporating these recommendations.

(c) Work environment (breathing zone) samples shall be taken within 30 days after installation of a new process or process changes.

TABLE I-2  
SAMPLING SCHEDULE

Number of Employees Exposed	Number of TWA Determinations
1-20	50% of the total number of workers
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Over 100	30 plus 5% of the excess over 100 workers

(d) Samples shall be collected and analyzed at least every 6 months in accordance with Appendices I and II for the evaluation of the workers' exposure with respect to the recommended standard.

(e) When monitoring of the workers' exposure indicates a free silica concentration in excess of the recommended standard, suitable controls shall be initiated to reduce the exposure level to or below the recommended standard. In such cases monitoring shall continue at 30-day intervals until two consecutive surveys indicate the recommended standard is no longer exceeded. Periodic review and evaluation of environmental and medical data shall be performed to determine the effectiveness of control measures.

(f) Records shall be maintained of medical examinations and all sampling schedules to include the sampling and analytical methods, type of personal protection devices, if any, in use at the time of sampling and the determined free silica dust concentration. Records shall be maintained for at least 30 years following termination of workers' employment. Each employee shall be able to obtain information on his exposure.



100017

# Precautionary Labeling for Bags

Trade Name: WESTPROP 4  
W.I.N. 100017, 018, 490

## DIRECTIONS:

For Proper Use, Refer to Service Bulletin No.(s) 810.0WG

SPECIFIC USAGE: USE AT THE RATE OF  $\frac{1}{4}$  TO 15 LB/GALLON  
OF FRAC FLUID.

When Handling This Product Employees MUST WEAR: DUST MASK & SAFETY GLASSES

## FOR INDUSTRIAL USE ONLY

WARNING  
CONTAINS FREE SILICA  
DO NOT BREATHE DUST  
MAY CAUSE DELAYED LUNG INJURY (SILICOSIS)

Refer to MSDS and SPM-04-04 for Safety Requirements.





U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET

DATE: 4 NOV 85

## SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS Acetylenic alcohols, amine quats, methanol	TRADE NAME AND SYNONYMS INHIBITOR, acid, WZ-499527
CHEMICAL FAMILY amines and acetylenic alcohols	FORMULA W.I.N. 499527

## SECTION IA - HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	flammable liquid, corrosive, n.o.s.
NAME OF HAZARDOUS COMPONENT	methanol, acetylenic alcohols, organic amines
HAZARD CLASS	Flammable Liquid, Corrosive
IDENTIFICATION NUMBER	UN2924
D.O.T. LABEL(S) REQUIRED	Flammable liquid and corrosive
PRECAUTIONARY LABEL	Attached

## SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
methanol	65	ppm 200
propargyl alcohol		1
formamide		20
heavy aromatic naptha - 100 ppm; ethyl octynol - 1 ppm; isopropanol		400

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	192	SPECIFIC GRAVITY (H <sub>2</sub> O=1) (@ 25°C)	0.800
VAPOR PRESSURE (mm Hg.) (MeOH @ 21.2°C)	100	PERCENT. VOLATILE BY VOLUME (%)	80
VAPOR DENSITY (AIR=1)	1.20	EVAPORATION RATE (n-butylac = 1)	2.07
SOLUBILITY IN WATER	dispersible		
APPEARANCE AND ODOR	dark brown liquid, pine odor		

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) 52°F PMCC, ASTM D93-73	FLAMMABLE LIMITS	LeL	UeL
EXTINGUISHING MEDIA	CO <sub>2</sub> , alcohol foam, dry chemical		
SPECIAL FIRE FIGHTING PROCEDURES	Use water spray to cool fire-exposed surfaces and to protect personnel.		
UNUSUAL FIRE AND EXPLOSION HAZARDS	Respiratory protection required. Full body protection needed if fumes, mist or liquid may be contacted.		

TRADE NAME: W.I.N. 499527, INHIBITOR, acid, WZ-499527

### SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE ethyl octynol - 1 ppm -  
propargyl alcohol, formamide, methanol, naphtha, isopropanol (1,20,200,100,400 ppm)

EFFECTS OF OVEREXPOSURE  
anesthesia, nausea, headache, dizziness, blindness, convulsions, death - may be fatal if  
Eye Contact - permanent blindness -  
inhaled/absorbed via skin - severe irritant to skin -chronic:liver, lung, kidney

EMERGENCY AND FIRST AID PROCEDURES  
flush skin and eyes with water for 15 min and remove to fresh air - call a doctor;  
artificial respiration; if swallowed, induce vomiting if victim is conscious -  
100-200 ml usually fatal; no known antidote - treat symptoms

### SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID Conditions - open flames, sparks, heat
	STABLE	X	
INCOMPATIBILITY (Materials to avoid) strong oxidizers, mineral acids, olefins, esters, alkylene oxides, cyanohydrides			
HAZARDOUS DECOMPOSITION PRODUCTS Does not decompose unless burned, but vapors are very toxic. Decomposes, when burned, into HCl acid and toxic smoke and fumes			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

### SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED  
eliminate ignition sources; keep public away - vapors can be fatal; avoid contact  
and evacuate occupants from downwind areas; prevent from entering sewers, water sources, low  
areas - advise authorities of contact with sewer, water, soil, vegetation  
WASTE DISPOSAL METHOD DANGER!  
contain liquid with sand/earth; recover by pumping or with suitable absorbent -  
consult expert on disposal

### SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type) Use NIOSH/MSHA approved self-contained or respirator with amine cartridges.		
VENTILATION	LOCAL EXHAUST greater than 60 fpm hood/face velocity	SPECIAL explosion proof
	MECHANICAL (General) equal to outdoors	OTHER N/A
PROTECTIVE GLOVES rubber		EYE PROTECTION splash goggles
OTHER PROTECTIVE EQUIPMENT chemical-resistant suit and boots		

### SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING  
close container when not in use - containers hazardous when empty - observe all  
precautions given in this sheet - wear protective equipment  
OTHER PRECAUTIONS  
keep away from heat, sparks, flames - contains acetylenic alcohols, no known  
antidote - permanent blindness

Proper Use, Refer to Service Bulletin No.(s) 441.0 WG



**Western Petroleum Services**

**W.I.N. 499527**

**WZ-499527**

**ACID CORROSION INHIBITOR**

Flash Point: 52°F (11.1°C)  
Net Content: 367 pound (167 kg)  
55 gallon (208 liter) @ 75°F

**SPECIFIC USAGE:** Use at concentrations of 1 to 30 gal/1000 gal HCL, HCl/HF or HCl/Organic Acid blends.

WHEN HANDLING THIS PRODUCT EMPLOYEES MUST WEAR: Goggles, rubber gloves and apron, and chemical respirator with green cartridge R54A for amines.

## FOR INDUSTRIAL USE ONLY DANGER

EXTREMELY FLAMMABLE - MAY CAUSE FLASH FIRE - MAY BE FATAL IF INHALED, INGESTED OR ABSORBED THROUGH SKIN - MAY CAUSE BLINDNESS IF SWALLOWED - MAY CAUSE EYE BURNS - MAY CAUSE SKIN SENSITIZATION - VAPOR HARMFUL - NO KNOWN ANTIDOTE

Keep away from heat, sparks or open flame. Do not breathe vapors. Do not get in eyes, on skin, or on clothing. Wash after handling. Keep this container closed.

IF INHALED: Remove to fresh air and call a physician.

FOR EYE OR SKIN CONTACT: Flush with water for 15 min., remove contaminated clothing and call a physician.

IF INGESTED: Give large volumes of water, induce vomiting and call a physician; contains acetylenic alcohol, no known antidote - treat symptoms.

FIRE FIGHTING: Extinguish fire with dry chemicals, foam or water spray. Empty container contains flammable, toxic materials. Do not cut, puncture or weld.

Refer to MSDS and SPM-04-04 for Safety Requirements.

Manufactured for

# The Western Company of North America

Batch no.

**P.O. BOX 186 • FORT WORTH, TEXAS 76101**

Emergency telephone: (817)731-5100  
(817)731-5433

\*\*\*\*\*D.O.T. PROPER SHIPPING NAME:

Flammable Liquid, corrosive, n.o.s., contains methanol, acetylenic alcohol and organic amine (UN2924) \*\*\*\*\*

499527



U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration

# MATERIAL SAFETY DATA SHEET

DATE: June 19, 1984

## SECTION I

Supplier's Name	EMERGENCY TELEPHONE NO.
The Western Company of North America	(817) 731-5100
ADDRESS (Number, Street, City, State, and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS
Quartz sand coated with phenolic resin	PROP, PRC, Westprop 3
CHEMICAL FAMILY	FORMULA
Quartz sand coated	W.I.N. 100468, 480, 489

## SECTION IA HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME	Not Regulated
NAME OF HAZARDOUS COMPONENT	N/A
HAZARD CLASS	N/A
IDENTIFICATION NUMBER	N/A
D.O.T. LABEL(S) REQUIRED	N/A
PRECAUTIONARY LABEL	Attached

## SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
Quartz	96	
Phenol	<5	5ppm

## SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	2.55
VAPOR PRESSURE (mm Hg.)	Nil	PERCENT VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR=1)	Nil	EVAPORATION RATE (_____ =1)	N/A
SOLUBILITY IN WATER	Slight		
APPEARANCE AND ODOR Amber colored granular solid, dusty odor			

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	N/A	FLAMMABLE LIMITS	N/A	Let	Uet
EXTINGUISHING MEDIA	CO <sub>2</sub> or dry chemical or water				
SPECIAL FIRE FIGHTING PROCEDURES	None				
UNUSUAL FIRE AND EXPLOSION HAZARDS	None				

TRADE NAME: W.I.N. 100468,480,489, PROP, PRC, Westprop 3

### SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

Phenol, 5ppm; Silica see 29 CFR sub part Z1910.1000

EFFECTS OF OVEREXPOSURE

None at ambient temperature; at elevated temperature-headache,

blurred vision, dizziness from decomposition products.

EMERGENCY AND FIRST AID PROCEDURES

Remove victim to fresh air, get medical attention if there are symptoms of over-exposure. If breathing has stopped, apply artificial respiration.

### SECTION VI - REACTIVITY DATA

STABILITY

UNSTABLE

STABLE

X

CONDITIONS TO AVOID

Avoid storage at high temperatures, 120°F or high humidities, product may cake.

INCOMPATIBILITY (Materials to avoid)

None

HAZARDOUS DECOMPOSITION PRODUCTS

At ignition temperatures: CO, phenol, benzopyrene & other aromatic hydrocarbons.

HAZARDOUS  
POLYMERIZATION

MAY OCCUR

WILL NOT OCCUR

X

CONDITIONS TO AVOID

None

### SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Shovel or vacuum up

WASTE DISPOSAL METHOD

Dispose of in a land fill in accordance with local, State and Federal regulations

### SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

Approved equipment recommended depending on conditions.

VENTILATION

LOCAL EXHAUST

Yes, see note\*

MECHANICAL (General)

Yes, see note\*

SPECIAL

None

OTHER

None

PROTECTIVE GLOVES

Recommended

EYE PROTECTION

Safety glasses

OTHER PROTECTIVE EQUIPMENT \*

Note: recommended to prevent exposure to dust or vapors

### SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Product may cake if stored in hot and/or humid conditions. Avoid direct skin

contact with resin coated sand.

OTHER PRECAUTIONS

Crystalline silica exposure can occur at any operation where dust is generated.



# Recommended Standard

Attachment to MSDS: W.I.N. 100468,480,489 Westprop 3

## I. RECOMMENDATIONS FOR A CRYSTALLINE SILICA STANDARD

The National Institute for Occupational Safety and Health (NIOSH) recommends that employee exposure to crystalline silica in the workplace be controlled by adherence to the following sections. The standard is designed to protect the health and safety of workers for up to a 10-hour workday, 40-hour workweek, over a working lifetime. Compliance with the standard should prevent adverse effects of crystalline silica on the health and safety of workers. The standard is measurable by techniques that are valid, reproducible, and available to industry and government agencies and are attainable with existing technology. The criteria and the standard recommended in this document will be subject to review and revision as necessary.

Crystalline silica, hereafter referred to in this document as free silica, is defined as silicon dioxide ( $\text{SiO}_2$ ). "Crystalline" refers to the orientation of  $\text{SiO}_2$  molecules in a fixed pattern as opposed to a nonperiodic, random molecular arrangement defined as amorphous. The three most common crystalline forms of free silica encountered in industry are quartz, tridymite, and cristobalite. Micro- and crypto-crystalline varieties of free silica, also included in the recommended standard, are composed of minute grains of free silica cemented together with amorphous silica and include tripoli, flint, chalcedony, agate, onyx, and silica flour. Other forms of free silica which, upon analysis, are found to have a crystalline structure as part of their composition are also subject to the recommended standard.

"Exposure to free silica" means exposure of the worker to an airborne concentration of free silica greater than half of the recommended environmental level in the workplace. Worker exposure at lower environmental concentrations will not require adherence to the following sections.

### Section 1—Environmental (Workplace Air)

#### (a) Concentration

Occupational exposure shall be controlled so that no worker is exposed to a time-weighted average (TWA) concentration of free silica greater than 50 micrograms per cubic meter of air (50  $\mu\text{g}/\text{cu m}$ ; 0.050  $\text{mg}/\text{cu m}$ ) as determined by a full-shift sample for up to a 10-hour workday, 40-hour workweek.

#### (b) Sampling, Calibration, and Analysis

Exposure to free silica shall be determined by a personal (breathing zone) sample.

Procedures for sampling, calibration of equipment, and analysis of environmental samples shall be as provided in Appendices I and II, or by methods shown to be equivalent in sensitivity, accuracy, and precision to the method specified.

### Section 2—Medical

(a) Medical examinations shall be made available to all workers subject to "exposure to free silica" prior

to employee placement and at least once each 3 years thereafter. Examinations shall include as a minimum:

(1) A medical and occupational history to elicit data on worker exposure to free silica and signs and symptoms of respiratory disease.

(2) A chest roentgenogram (posteroanterior 14" by 17" or 14" by 14") classified according to the 1971 ILO International Classification of Radiographs of Pneumoconioses. [ILO U/C International Classification of Radiographs of Pneumoconioses 1971, Occupational Safety and Health Series 22 (rev). Geneva, International Labor Office, 1972]

(3) Pulmonary function tests including forced vital capacity (FVC) and forced expiratory volume at 1 second (FEV<sub>1</sub>) to provide a baseline for evaluation of pulmonary function and to help determine the advisability of the workers using negative- or positive-pressure respirators. It should be noted that pulmonary function tests may vary significantly in various ethnic groups. For example, in black persons, the test values for the FVC should be divided by 0.85 before the percentage value is compared with normal figures.

(4) Body weight.

(5) Height.

(6) Age.

(7) Initial medical examinations for presently employed workers shall be offered within 6 months of the promulgation of a standard incorporating these recommendations.

#### (b) Medical Management

An employee with or without roentgenographic evidence of silicosis who has respiratory distress and/or pulmonary functional impairment should be fully evaluated by a physician qualified to advise the employee whether he should continue working in a dusty trade.

(c) These records shall be available to the medical representatives of the Secretary of Health, Education, and Welfare, of the Secretary of Labor, of the employee or former employee, and of the employer.

(d) Medical records shall be maintained for at least 30 years following the employee's termination of employment.

### Section 3 — Labeling (Posting)

(a) The following warning shall be posted to be readily visible at or near entrances or accessways to work areas where there is potential exposure to free silica.

#### WARNING!

FREE SILICA WORK AREA

Unauthorized Persons Keep Out

(b) The following warning shall be posted in readily visible locations in any work area where there is potential exposure to free silica.



# Recommended Standard

## WARNING! FREE SILICA WORK AREA

Avoid Breathing Dust  
May Cause Delayed Lung Injury (Silicosis)

The posting required under sections 3(a) and 3(b) shall be printed both in English and in the predominant language of non-English-speaking workers, unless they are otherwise trained and informed of the hazardous areas. Illiterate workers shall receive such training.

(c) The following warning label, in addition to or in combination with labels required by other statutes, regulations, or ordinances, shall be affixed to all new materials, mixtures, and other products containing more than 5% free silica, or to their containers.

WARNING!  
CONTAINS FREE SILICA  
DO NOT BREATHE DUST  
May Cause Delayed Lung Injury (Silicosis)

### Section 4 — Personal Protective Equipment and Work Clothing

Engineering controls shall be used to maintain free silica dust exposures below the prescribed limit. Subsection (a) shall apply whenever a variance from the standard recommended in Section 1 is granted under provisions of the Occupational Safety and Health Act, or in the interim period during the application for a

variance. When the limits of exposure to free silica prescribed in paragraph (a) of Section 1 cannot be met by limiting the concentration of free silica in the work environment, an employer must utilize, as provided in subsection (a) of this section, a program of respiratory protection to effect the required protection of every worker exposed.

#### (a) Respiratory Protection

Appropriate respirators, as prescribed in Table I-1, shall be provided and used when a variance has been granted to allow respirators as a means of control of exposure to routine operations and while the application is pending. Administrative controls may also be used to reduce exposure. Respirators shall also be provided and used for nonroutine operations (occasional brief exposures above the environmental standard and for emergencies); however, for these instances a variance is not required but the requirements set forth below continue to apply. Appropriate respirators as described in Table I-1 shall only be used pursuant to the following requirements:

(1) For the purpose of determining the type of respirator to be used, the employer shall measure the atmospheric concentration of free silica in the workplace when the initial application for variance is made and thereafter whenever process, worksite, climate, or control changes occur which are likely to affect the free silica concentration. This requirement shall not apply when only atmosphere-supplying positive-pressure respirators are used. The employer shall ensure

TABLE I-1  
REQUIREMENTS FOR RESPIRATOR USAGE AT  
CONCENTRATIONS ABOVE THE STANDARD

Concentrations of Free Silica in Multiples of the Standard	Respirator Type*
Less than or equal to 5X	Single use (valveless type) dust respirator.
Less than or equal to 10X	Quarter or half mask respirator with replaceable dust filter or single use (with valve) dust respirator. Type C, demand type (negative pressure), with quarter or half mask facepiece.
Less than or equal to 100X	Full facepiece respirator with replaceable dust filter. Type C, supplied air respirator, demand type (negative pressure), with full facepiece.
Less than or equal to 200X	Powered air-purifying (positive-pressure) respirator, with replace- able applicable filter.**
Greater than 200X	Type C, supplied air respirator, continuous flow type (positive pres- sure), with full facepiece, hood, or helmet.

\*Where a variance has been obtained for abrasive blasting with silica sand, use only Type C continuous flow, supplied air respirator with hood or helmet.

\*\*An alternative is to select the standard high efficiency filter which must be at least 99.97% efficient against 0.3-micrometer dioctyl phthalate (DOP).



## Precautionary Labeling for Bags

Trade Name: Westprop 3  
W.I.N. 100468, 480, 489

### DIRECTIONS:

For Proper Use, Refer to Service Bulletin No.(s) 840.0W

**SPECIFIC USAGE:** Use at the rate of 0.5 to 15 lb added to each gallon of frac fluid.

When Handling This Product Employees **MUST WEAR:** Dust mask, goggles and protective gloves

### FOR INDUSTRIAL USE ONLY

#### WARNING

Contains FREE SILICA  
Do Not BREATHE DUST  
May cause delayed lung injury (silicosis)  
Follow OSHA Safety and Health Standards for  
crystalline silica (quartz)

Refer to MSDS and SPM-04-04 for Safety Requirements.



VII  
VIII

SECTION VII & VIII

CURRENT WASTE STREAM AND TREATMENT PROCEDURE

## WASTE STREAMS

The waste streams currently generated in The Western Company of North America (WCNA), Hobbs Facility and its associated disposal methods are defined and listed below:

1. A. Truck Wash Wastewater

✓  
? This waste stream is generated at the Truck Wash Bay as a result of washing the truck exterior after returning from field operations. The Truck Wash Wastewater is made up of three components: water, inert solids, and oil. The waste is passed through a sump to remove the solids. The treated waste liquid, approximately 100,000 gallons per month, is piped to a series of 3 tanks. The effluent is picked up on a daily basis and taken to a disposal well for final off site disposal.

B. Inert Solids - Truck Wash

These are the sand and dirt commingled in a sludge collected from the sump of the Truck Wash Bay as a result of washing of the truck exterior. Approximately two cubic yards per month of solids are removed for off site disposal.

2. Inert Solids - Cement

Off-spec cement of approximately 225,600 pounds per month is generated from the well servicing activity. This excess cement is given away for construction use or will be taken to an approved landfill for disposal.

3. Used Oil (From Truck Maintenance Activities)

Used lubricating oil of about 450 gallons per month is generated from truck oil changes and is collected into a 1,000 gallon aboveground storage tank. The oil is collected on a monthly basis for disposal.

4. Spent Shop Solvents (From Truck Maintenance Activities)

Approximately three gallons per month of Spent Shop Solvents is generated during truck maintenance and parts cleaning activities. It is collected and recycled monthly on site in an enclosed recycling system.

5. Solids - Tires

Worn tires, approximately 15 per month, generated through replacement on the trucks used by WCNA, are traded in for new tires.

6. Solids - Car And Truck Batteries

About 8 used batteries per month are generated through vehicle maintenance. The used batteries are traded in to the new battery supplier for recycling and/or disposal.

7. Solids - Empty Drums

Empty drums, 300 per month, are generated as Western chemicals and lube oil are used. They are all sent back to the WCNA Fort Worth warehouse for reuse or disposal.

8. Solids - Domestic Trash

Domestic Trash is generated by normal operation from the office and site buildings. About 15,000 pounds per month is picked up and disposed of.

9. Domestic Sanitary Wastewater

Domestic wastewater, generated from sinks, showers and toilets, is piped to two septic tanks at the facility.

10. Used Filter - (Oil And Fuel)

Used oil and fuel filters, approximately forty per month, are generated through maintenance operations on vehicles and are disposed of with the domestic trash.

11. Waste Antifreeze

Used antifreeze, approximately fifty gallons per month, is generated during truck maintenance. It is collected through the truck maintenance area floor drain and piped into the three large waste tanks to be commingled with the truck wash wastewater.

12. Scrap Metal

Scrap metal is generated from miscellaneous truck repair and well maintenance/servicing. About 400 pounds per month is collected on site. The scrap metal is picked up on a monthly basis for recycling.

13. Truck Maintenance Area waste.

The truck maintenance area floor drain collects liquid waste from truck maintenance activities. The liquid is piped it into the three large waste tanks to be commingled with the truck wash wastewater. Approximately 1,000 gallons of truck maintenance area waste are generated each month.

14. Acidic Wastewater and Field Wastewater

Generated from overflow from truck loading and minor chemical spillage from truck tanks. It is collected and treated by elementary neutralization in the Truck Loading facility. This facility is used also for the Field Wastewater which is generated as a result of rinsing the interior of pump trucks, blenders and transportation trucks. All of these, approximately 104,000 gallons per month, are piped into the three large waste tanks to be commingled with the truck wash wastewater.

## WASTE FACILITIES

The waste facilities currently utilized at this location and the waste streams treated by these facilities are listed below.

1. Truck Wash Bay

The waste treatment facilities include a fluid collection area, a solids collection sump and three fiberglass underground storage tanks. The fluid collection area consists of a sloped concrete foundation that allows the washwater to drain into the solids collection sump. The solids collection sump measures 3 ft. by 3 ft. by 5 ft. deep and is covered by a steel grate. A pipe from the sump is connected to the three fiberglass underground storage tanks which allows liquids to flow from the sump and be collected in the tanks. The tanks have an approximate capacity of 10,000 gallons each.

2. Used Solvent Recycle Facility

This is used to recycle the Safety Kleen solvent used during truck maintenance and parts cleaning operations.

3. Septic Tanks

The septic tanks are located between the facility office building and the truck maintenance building (see Section V, Facility Diagram).

4. Acidic Wastewater and Field Wastewater Collection System

Overfill from acid truck loading and minor chemical spillage from acid truck tanks is collected and treated by elementary neutralization in the truck loading facility. This facility is also used for treatment and containment of field wastewater which is generated as a result of rinsing the interior of pump trucks, blenders and transportation trucks. Liquids are collected, treated by elementary neutralization then passed through a 1 ft. by 20 ft. by 10 inch deep sump. Liquids are piped from the sump to the three fiberglass underground storage tanks utilized for truck washwater.

5. Drum Storage Area

Empty drums generated at the facility are stored in a bermed area specifically designated for this purpose. The area may contain up to 200 drums at one time.

SECTION IX  
PROPOSED MODIFICATION

## PROPOSED MODIFICATION

On February 7, 1991, The Western Company of North America (Western-Hobbs) facility was inspected by Oil Conservation, Division of the State of New Mexico. During the visit, modifications to the Western-Hobbs facility were proposed to improve the quality of effluent discharged from the facility. Table IX-I summarizes these modifications and schedule to perform the modifications.

Fuel Island and Acid Dock The Western-Hobbs is planning to complete renovating the Fuel Island and the Acid Loading Dock by year end 1992. The renovation for the fuel island will consist of all three items listed in Table I under Fuel Island. The acid loading area will be rebuilt with new drive and drain. The vent system will be moved inside the retaining wall.

Wastewater A leak detection system will be installed for the three buried fiberglass tanks used to store wastewater at the facility. The leak detection system will consist of monitor wells placed around the buried tanks. The monitor wells will be checked on a monthly basis to insure no leaks are present in the tanks. This monthly monitoring will be done instead of performing an annual leak inspection on the three tanks. The monitor wells are expected to be installed by year end 1992.

Facility Wide Drum storage areas will have concrete pads built so that drums will be on concrete not soil. The concrete pads will have retaining curbs on all sides to prevent runoff from spills or rainfall. The curbs will extend 3 to 4 inches above the top of the pad. These drum storage pads are expected to be completed by year end 1992.

Drainage A proposed modification was made to close off the drainage culvert on the southeast corner of the facility yard and install a retaining wall to stop runoff. The Western Company of North America (WCNA) feels that closing off the drainage culvert will create drainage problems on the facility yard. WCNA plans to conduct an engineering study to look at alternative solutions to closing the culvert.



**TABLE IX.1**  
**PROPOSED MODIFICATIONS**

**Fuel Island:**

1. Need to expand pad to end of retaining wall around fuel tanks to catch any spillage.
2. Put curb around diesel pump. Packing oil and diesel tanks to be moved 100' from water wall bore and put on pad with curb.
3. Engine oil tank needs pad and containment wall.

**Acid Dock:**

1. Rebuild drive and drain.
2. Vent system needs retaining wall.

**Wastewater:**

1. Buried tanks need inspection annually for leaks.
2. Need to set up leak detection system.

**Drainage:**

1. Southeast corner of yard - close off culvert and put up retaining wall to stop runoff.

**Facility Wide:**

1. All drums must be on pads with curbs.
2. All curbs as mentioned above are suggested to be 3" to 4" high.

SECTION X  
INSPECTION PLAN

X

## INSPECTION PLAN

The Western Company of North America's (Western-Hobbs) facility is inspected monthly (to be performed during the calendar month) by the designated Environmental Coordinator on site using an inspection check list as shown as Table X-1. The facility is also inspected yearly by the Environmental Supervisor sent from the WCNA Houston office. Corrective action will be taken whenever deficiency is found. The actions taken are documented, dated and signed by the Environmental Coordinator on site.

THE WESTERN COMPANY OF NORTH AMERICA  
SITE FACILITY ENVIRONMENTAL INSPECTION REPORT

page 1 of 2

LOCATION:

DATE:

BY:

ITEMS:

OK

A

RECORDS

IS THE ENVIRONMENTAL FILING SYSTEM IN GOOD ORDER?  
HAVE THE DISPOSAL RECORDS BEEN FILED?  
HAVE THE DAILY TANK GAUGING RECORDS BEEN FILED?  
HAVE THE ENVIRONMENTAL INSPECTION RECORDS BEEN  
FILED?  
HAVE PERMITS & REGISTRATIONS BEEN FILED?  
HAVE THE ENVIRONMENTAL REPORTS TO THE GOVERNMENT  
BEEN SUBMITTED ON TIME?  
HAS THE TEST DATA BEEN FILED?

YARD:

IS THE YARD CLEAN, FREE OF TRASH & OIL STAINS,  
OVERALL?  
ARE ALL OF THE SPILLS CLEANED?  
IS ALL VEGETATION HEALTHY?  
ARE THE DRAINAGE DITCHES CLEAN WITH NO OIL SHEEN  
ON THE STANDING WATER?  
IS THE pH OF THE SURFACE WATER IN THE YARD OR IN  
THE DRAINAGE DITCH BETWEEN 6 & 8?  
IS THERE AN EFFORT TO ASSURE THAT NO OILY OR  
ACIDIC FLUID IS FLOWING OFF THE SITE?  
IS THERE AN EFFORT TO ASSURE THAT NO POLLUTANT  
IS FLOWING TO OUR SITE?

FUEL ISLAND:

ARE ALL SPILLS PROMPTLY CLEANED AND OIL STAIN  
FREE?  
IS THE SLB CLEAN AND OIL STAIN FREE?  
ARE TANK VALVES IN GOOD WORKING ORDER?

MAINTENANCE SHOP:

IS THE PLACE CLEAN?  
IS THE WASTE OIL COLLECTING AREA CLEAN WITH  
MINIMUM OIL STAIN?  
IS THE WASTE ANTIFREEZE BEING PROPERLY HANDLED?  
ARE THE WASTE OIL & WASTE ANTIFREEZE COLLECTION  
DRUMS BEING PROPERLY LABELED & DATED?  
IS THE SAFETY KLEEN APPARATUS WORKING PROPERLY?

06/19/90

THE WESTERN COMPANY OF NORTH AMERICA  
SITE FACILITY ENVIRONMENTAL INSPECTION REPORT

page 2 of 2

LOCATION:

DATE:

BY:

ITEMS:

OK

A

DRUM STORAGE:

IS THERE AN EFFORT TO ELIMINATE EMPTY DRUMS? \_\_\_\_\_  
ARE ALL CONTAINERS IN GOOD CONDITION? \_\_\_\_\_  
ARE ALL CONTAINERS PROPERLY LABELED WITH READABLE  
LABELS? \_\_\_\_\_  
ARE ALL CONTAINERS CLOSED? \_\_\_\_\_  
ARE ALL SPILLS CLEANED & LEAKS PROMPTLY FIXED WITH  
NO CHEMICAL LEFT ON THE GROUND? \_\_\_\_\_

WET CHEMICAL STORAGE & DISPENSING AREA:

ARE ALL SPILLS CLEANED UP, FLOORS CLEANED & LEAKS  
PROMPTLY FIXED? \_\_\_\_\_  
ARE ALL CONTAINERS PROPERLY LABELED WITH READABLE  
LABELS? \_\_\_\_\_  
ARE PROPER CHEMICAL DISPENSING PROCEDURES  
PRACTICED? \_\_\_\_\_  
IS THE PLACE CLEAN AND DRY? \_\_\_\_\_

ACID TANK:

ARE ALL SPILLS CLEANED UP & LEAKS PROPERLY FIXED? \_\_\_\_\_  
IS THE OVERFILL STORAGE TANK ROUTINELY CHECKED FOR  
pH? \_\_\_\_\_  
IS THE TANK PROPERLY LABELED WITH A READABLE LABEL? \_\_\_\_\_

TRUCK WASH AREA:

IS THE WASTE STORAGE TANK ROUTINELY CHECKED FOR  
PROPER pH? \_\_\_\_\_  
IS THE WASTE STORAGE TANK FULL? \_\_\_\_\_

DRY CHEMICAL STORAGE AREA:

IS THE PLACE CLEAN & DRY? \_\_\_\_\_

SPC AREA:

IS THE PLACE CLEAN AND FREE OF OIL STAINS? \_\_\_\_\_  
ARE ALL SPILLS CLEANED? \_\_\_\_\_

TRUCK INTERIOR CLEANING STATION:

IS THE PLACE CLEAN AND THE GROUND FREE OF OIL  
STAIN? \_\_\_\_\_  
IS THE WASTE STORAGE TANK ROUTINELY CHECKED FOR  
PROPER pH? \_\_\_\_\_  
IS THE WASTE STORAGE TANK FULL? \_\_\_\_\_

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SECTION XI  
CONTINGENCY PLAN

## EMERGENCY RESPONSE PLAN

This Emergency Plan is necessary for the district and its personnel to minimize personal injury, property damage and business interruptions caused by any catastrophe; such as, fire, flood, storm, tornado, etc.

### I. Emergency Telephone Numbers

- A. Emergency Number - 911
- B. Hospital - 392-6581
- C. Ambulance - 393-8215
- D. Fire Department - 393-2105
- E. Police Department - 397-2431
- F. District Manager - 397-4105

### II. Action Team Members

- A. Action Team make-up and duties - All operations concerning evacuation, rescue, spill containment, fire fighting procedures, securing utilities, medical (First Aid), public relations, clean-up and all clear to re-enter areas, will be handled by the district action team. This team will be made up of the district manager, operations supervisors, assistant operations supervisors and maintenance supervisor as listed below:

Moonroe Ables, District Manager  
1125 Mesa Verde  
Hobbs, NM 88240  
505/392-4564

James Boling, Operations Supervisor  
726 E Mesa  
Hobbs, NM 88240  
505/397-3792

Jim Kennedy, Maintenance Supervisor  
208 E Mesa  
Hobbs, NM 88240  
505/393-4285

Bobby Rich, Facilities Supervisor  
1626 N Gila Drive  
Hobbs, NM 88240  
505/393-6946

Morris Keith, Field Engineer  
509 E Kiva  
Hobbs, NM m 88240  
505/392-1495

Shermon Walters, Environmental Coordinator  
RR 1, 4614 Plains Hwy.  
Lovington, NM 88260  
505/396-5047

They will coordinate all operations and assign qualified personnel to perform whatever necessary actions or precautions that should be taken. This team will be the only authority when it comes to any operation that involves the districts security and protection. The "All Clear: signal to re-enter areas will come from them and only after inspecting those areas personally for safety and secured condition of each one. The team members will assign their standbys in the event of absence. Dispatch will be notified of these personnel and their location.

- B. Central control area will be under main sign on west side of yard next to West County Road, unless conditions permit to use of front office, where the dispatch office will be control area.

### III. Fire Fighting Procedures

- A. Hazardous Materials Handling - Check hazardous material list of chemicals before attempting to fight any fires in bulk plant or acid dock area. Knowledgeable people such as facilities manager and bulk plant operators should be consulted before any fire fighting is attempted. Radioactive area is clearly marked on the back of the yard and should not be entered without contacting district engineer or lab personnel.
- B. Fire Extinguisher Locations - Location of all fire extinguishers is on map of yard facilities. Consult this reference before attempting to enter an area to fight a fire. All mobile equipment have a fire extinguisher mounted behind the cab.



- C. Securing Utilities - Electricity for entire district facility can be secured by throwing switches on power panels located on pole on the south side of the service road running along south fence line of Western property. This pole is situated at a point even with the southwest corner of the maintenance shop approximately 20 feet from Western property line. Power to the bulk plant alone is on the pole due north of bulk plant tanks, outside of Western fence line. The only gas to the wash-rack is from the butane tank on south side of general maintenance shop. Valve is on the tank which is approximately 100 feet from any building or structure. Only qualified personnel will be assigned to secure these areas with approval of the district and/or facilities manager.
- D. Fire Fighting Water Available - After power is secured the only available water source is the 10,000 gallon galvanized water tank on north side of the yard between the fuel island and chemical house. This tank is kept full at all times, but once power is out and tank drained, the well is unavailable for use. Fire department officials will make the decision as to what is needed. City water source connection is down West County Road south to Bender, then east to first hydrant on right, approximately one-half to three-fourths miles from Western property.

#### IV. Evacuation of Personnel and Equipment

- A. Personnel - All personnel on the district facility will meet in front of main office after given the order to evacuate. From that point, all personnel will go to the nearest safe point near the district to receive information on rescue, recovery and control measures to be taken. All clear signal will be given from this point as well.
- B. Equipment - Only equipment that is to be used in control and containment will be removed from the facility. Also any equipment that could be in immediate danger that can be removed without risking any personal harm or injury to personnel in the area should be removed. Equipment used to contain hazardous material spills will be moved to a safe place on the facility until ready for use.

V. Security

All Situations and Incidence - All outside persons, except fire fighting personnel, will be kept off of the facility until the all clear has been given. The district manager will assign all those in charge of this duty. All outsiders must be kept out of the dangerous areas. The possibility of explosion, fumes, radioactive materials, etc., may be present and complete measures must be taken to control its confinement.

VI. Radioactive Material Handling

Review Western Radiation Manual for emergency procedures involving radioactive materials. Manuals for both Western and the State can be found in the front office in the lab and Safety & Training offices. Contact district engineer and safety & training supervisors. Only qualified personnel should be involved in clean-up and containment procedures.

VII. Public Relations

The district policy is to cooperate fully with members of the press and representatives of the public. District policy is to provide all possible factual information as quickly as possible within the normal limits of safety and security. The district manager will designate the person or persons responsible for this activity.

VIII. Serious Injuries and Fatalities

Responsibility - A personal visit by the manager and any other personnel assigned by the manager is recommended when informing the family of the circumstances. This should be done as soon as possible and in a manner in line with Western philosophy and procedure.

IX. Medical

A. All operating field personnel will be qualified in basic first aid and will help with the injuries on the scene until qualified medical help arrives. These personnel will be designated by the district manager or any other personnel assigned by the manager. First aid supplies will be supplied using facility and mobile kits available at the time.

B. In case of chemical poisoning and help cannot be obtained from the Fort Worth office, you should call

the nearest poison control center available. Consult Material Safety Data Sheets manual to find information on first aid measures to be taken until qualified help can be reached. Manual can be found in district safety & training supervisor's office.

X. Spill Control and Containment

- A. Acid Tank Failure - First clear area of all personnel and give aid to the injured. Establish security measures and keep all personnel clear of the area. An action team comprised of district manager, facilities manager and safety & training supervisor will select personnel to start clean-up and containment procedures. A forklift will be activated and utilized to move soda ash and lime to the lowest point in the facilities to dam up fluid flow and neutralize strong acid on the surface. Construction companies in the area will be contacted to bring in materials to strengthen the dam so as to contain all fluid within the facilities. Next will be the ordering of clean-up equipment, ie; front loader, dump trucks, fill material, vacuum trucks, etc. Western (district) transports will be positioned on the east side of the maintenance shop and office area. There the vacuum trucks will meet with the transports to begin pulling fluid off the ground and washing down with fresh water to force the strong fluid to the low point in the yard where all fluid on the ground will be pulled into the vacuum trucks and moved to a disposal well or area.

After all fluid is picked up off of the ground, clean-up and repair operations will commence using all district personnel available. Action team will coordinate all operations.

- B. Hazardous Material Leakage - When there is a leak or suspected leakage occurs at a hazardous materials storage facility, efforts shall be made to stop the leakage as soon as possible without endangering personnel safety. Containment dikes shall be built to contain the spillage. The materials will be picked up by absorbent material and placed inside containers or containment area before disposal by qualifying disposal company. The incident shall be reported to the National Response Center, the local authority and Western's corporate environmental office.

SECTION XII  
GEOLOGICAL/HYDROLOGICAL EVIDENCE

### **GEOLOGICAL/HYDROLOGICAL EVIDENCE**

No geological information is available. When the water well on this site was drilled there was either no well log run or the log cannot be located.



**NOTICE OF PUBLICATION**  
**STATE OF NEW MEXICO**  
**ENERGY, MINERALS AND**  
**NATURAL RESOURCES DEPART-**  
**MENT**

**OIL CONSERVATION DIVISION**  
 Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations, the following discharge plan applications and renewal applications have been submitted to the Director of the Oil Conservation Division, State Land Office Building, P.O. Box 2088, Santa Fe, New Mexico 87504-2088, Telephone (505) 827-5800:

(GW-65)-Union Oil Company of California, DBA UNOCAL, Glen O. Papp, District Production Engineer, 3300 North Butler, Suite 200, Farmington, New Mexico, 87401, has submitted a discharge plan application for its Navajo Compressor Station located in the NW/4, Section 7, Township 25 North, Range 10 West, NMPM, San Juan County, New Mexico. Approximately 4 gallons per day of washdown water and natural gas liquids will be collected in a double lined pond equipped with leak detection prior to disposal at an OCD approved offsite disposal facility. Groundwater most likely to be affected by an accidental discharge is at a depth in excess of 100 feet with a total dissolved solids concentration of approximately 700 mg/l. The discharge plan addresses how spills, leaks and other accidental discharges to the surface will be managed.

(GW-66)-ECO, Inc., Elizabeth B. Keeshan, President, 135 Grant, Santa Fe, New Mexico, 87501, has submitted a discharge plan application for its North Lybrook Compressor Station located in the SE/4 SE/4, Section 2, Township 23 North, Range 7 West, NMPM, Rio Arriba County, New Mexico. Approximately 14 gallons per day of wastewater will be stored in an aboveground fiberglass tank prior to disposal in an OCD approved offsite disposal facility. Groundwater most likely to be affected by an accidental discharge is at a depth of approximately 225 feet with a total dissolved solids concentration of approximately 1470 mg/l. The discharge plan addresses how spills, leaks and other accidental discharges to the surface will be managed.

(GW-75)-HOMCO International, Inc., Robert J. Meddler, Director, Environmental and Safety, P.O. Box 2442, Houston, Texas 77252, has submitted a discharge plan application for its Hobbs service facility located in Section 29, Township 18 South, Range 38 East, NMPM, 3000 West County Road, Lea County, New Mexico. Approximately 800 gallons per day of wastewater are presently stored in an above ground storage tank prior to disposal in an OCD approved offsite disposal facility. Proposed modifications include the installation of a wastewater recycling system. Unrecyclable wastes will be stored in below grade concrete sump equipped with leak detection prior to disposal at an OCD approved offsite disposal facility. Groundwater most likely to be affected by an accidental discharge is in the Ogallala aquifer at a depth of 55 feet with a total dissolved solids concentration ranging from 300 mg/l to 700 mg/l. The discharge plan addresses how spills, leaks and other accidental discharges to the surface will be managed.

(GW-72)-The Western Company of North America, Ron McKee, Director, Real Estate and Facilities, 515 Post Oak Blvd., Suite 915, Houston, Texas 77027, has submitted a discharge plan application for its Hobbs service facility located in the NE/4, Section 20, Township 18 South, Range 38 East, NMPM, Lea County, New Mexico. Approximately 3350 gallons per day of wastewater with a total dissolved solids concentration of 3942 mg/l is stored in below grade fiberglass tanks prior to disposal at an OCD approved offsite disposal facility. Groundwater most likely to be affected by an accidental discharge is in the Ogallala aquifer at a depth of approximately 55 feet with a total dissolved solids concentration of ranging from 300 mg/l to 700 mg/l. The discharge plan addresses how spills, leaks and other accidental discharges to the surface will be managed.

**STATE OF NEW MEXICO**  
**County of Bernalillo**

ss

OIL CONS

Thomas J. Smithson being duly sworn declares and says that he is National Advertising manager of the **Albuquerque Journal**, and that this newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Session Laws of 1937, and that payment therefore has been made or assessed as court costs; that the notice, a copy of which is hereto attached, was published in said paper in the regular daily edition,

for.....1.....times, the first publication being on the.....14.....day  
 of.....Aug....., 1991, and the subsequent consecutive  
 publications on....., 1991.

*Thomas J. Smithson*

Sworn and subscribed to before me, a Notary Public in and for the County of Bernalillo and State of New Mexico, this.....14.....day of.....Aug....., 1991.

PRICE.....\$67.95.....

Statement to come at end of month.

ACCOUNT NUMBER.....C.81184.....

CLA-22-A (R-12/91)

OFFICIAL SEAL  
*Bernadette Ortiz*  
 BERNADETTE ORTIZ  
 PUBLIC-NEW MEXICO  
 WITH SECRETARY OF STATE  
 expires 12/18/93

(GW-76)-Star Tool Company, David T. Taylor, Vice President, P.O. Box 2008, Hobbs, New Mexico 88240, has submitted a discharge plan application for its Hobbs service facility located in the NE/4, NW/4, Section 32, Township 18 South, Range 38 East, NMPM, Lea County, New Mexico. Approximately 10 gallons per day of wastewater are currently stored in unlined pits prior to disposal at an OCD approved offsite disposal facility. Proposed modifications include the installation of a wastewater recycling system. Unrecyclable wastes will be collected in above ground water tanks prior to disposal at an OCD approved offsite disposal facility. Groundwater most likely to be affected by an accidental discharge is at a depth of 44 feet with a total dissolved solids concentration ranging from 300 mg/l to 700 mg/l. The discharge plan addresses how spills, leaks and other accidental discharges to the surface will be managed.

(GW-73)-Dowell Schlumberger, Inc., M.L. Wood Jr., Environmental Coordinator, 1105 West Bender Street, Hobbs, New Mexico 88240, has submitted a discharge plan application for its Hobbs service facility located in the NE/4 NE/4, Section 28, Township 18 South, Range 38 East, NMPM, Lea County, New Mexico. Approximately 2200 gallons per day of wastewater is stored in above grade tanks and lined pits prior to disposal at an OCD approved offsite disposal facility. Proposed modifications include the installation of a wastewater recycling system and closure of all surface impoundments. Wastes not recyclable will be disposed of at an OCD approved offsite disposal facility. Groundwater most likely to be affected by an accidental discharge is at a depth of 88 feet with a total dissolved solids concentration ranging from 300 mg/l to 700 mg/l. The discharge plan addresses how spills, leaks and other accidental discharges to the surface will be managed.

(GW-14)-Navajo Refining Company, David G. Griffin, Superintendent, Environmental Affairs, P.O. Box 159, Artesia, New Mexico 88210, has submitted a discharge plan renewal application for its Lovington Refinery located in the SE/4, Section 31, Township 16 South, Range 37 East; the SE/4 of Section 36, Township 16 South, Range 36 East; the NW/4 of Section 6, Township 17 South, Range 37 East; and the NE/4 of Section 1, Township 17 South, Range 36 East, NMPM, Lea County, New Mexico. Approximately 175,000 gallons per day of process wastewater with a total dissolved solids concentration of 1300 mg/l will undergo treatment in a USEPA regulated pretreatment unit prior to discharge to the City of Lovington sanitary sewer system. Groundwater most likely to be affected by an accidental discharge is at a depth ranging from 60 feet to 80 feet with a total dissolved solids concentration of 450 mg/l. The discharge plan addresses how spills, leaks and other accidental discharges to the surface will be managed.

Any interested person may obtain further information from the Oil Conservation Discharge Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. The discharge plan application may be viewed at the above address between 8:00 a.m. and 5:00 p.m., Monday through Friday. Prior to ruling on any proposed discharge plan or its modification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after the date of publication of this notice during which comments may be submitted to him and public hearing may be requested by any interested person. Requests for public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed plan based on information available. If a public hearing is held, the Director will approve or disapprove the proposed plan based on information in the plan and information submitted at the hearing. GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 5th

# Affidavit of Publication

STATE OF NEW MEXICO )  
 ) ss.  
COUNTY OF LEA )

**Joyce Clemens** being first duly sworn on oath deposes and says that he is **Adv. Director** of THE LOVINGTON DAILY LEADER, a daily newspaper of general paid circulation published in the English language at Lovington, Lea County, New Mexico; that said newspaper has been so published in such county continuously and uninterruptedly for a period in excess of Twenty-six (26) consecutive weeks next prior to the first publication of the notice hereto attached as hereinafter shown; and that said newspaper is in all things duly qualified to publish legal notices within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico.

That the notice which is hereto attached, entitled

## Notice Of Publication

and numbered \_\_\_\_\_ in the

\_\_\_\_\_ Court of Lea County, New Mexico, was published in a regular and entire issue of THE LOVINGTON DAILY LEADER and not in any supplement thereof, once each week on the same day of the week, for one (1)

consecutive weeks, beginning with the issue of \_\_\_\_\_

August 8, 1991

and ending with the issue of \_\_\_\_\_

August 8, 1991

And that the cost of publishing said notice is the sum of \$ 79.56

which sum has been (Paid) ~~(Assessed)~~ as Court Costs

*Joyce Clemens*  
Subscribed and sworn to before me this \_\_\_\_\_ 9th

day of August, 1991

*Mrs Jean Jensen*  
Notary Public, Lea County, New Mexico

My Commission Expires Sept. 28, 1994

## NOTICE OF PUBLICATION STATE OF NEW MEXICO ENERGY, MINERAL AND NATURAL RESOURCES DEPARTMENT OIL CONSERVATION DIVISION

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(GW-86)-BCO, Inc. Elizabeth B. Keeshan, President, 135 Grant, Santa Fe, New Mexico, 87501, has submitted a discharge plan application for its North Lybrook Compressor Station located in the SE/4 SE/4, Section 2, Township 23 North, Range 7 West, NMPM, Rio Arriba County, New Mexico. Approximately 14 gallons per day of wastewater will be stored in an aboveground fiberglass tank prior to disposal in an OCD approved offsite disposal facility. Groundwater most likely to be affected by an accidental discharge is at a depth of approximately 225 feet with a total dissolved solids concentration of approximately 1470 mg/l. The discharge plan addresses how spills, leaks and other accidental discharges to the surface will be managed.

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(GW-14)-Navajo Refining Company, David G. Griffin, Superintendent, Environmental Affairs, P.O. Box 159, Artesia, New Mexico 88210, has submitted a discharge plan renewal application for its Lovington Refinery located in the SW/4, Section 31, Township 16 South, Range 37 East; the SE/4 of Section 36, Township 16 South, Range 36 East; the NW/4 of Section 6, Township 17 South, Range 37 East; and the NE/4 of Section 1, Township 17 South, Range 36 East, NMPM, Lea County, New Mexico. Approximately 175,000 gallons per day of process wastewater with a total dissolved solids concentration of 1300 mg/l will undergo treatment in a USEPA regulated pretreatment unit prior to discharge to the City of Lovington sanitary sewer system. Groundwater most likely to be affected by an accidental discharge is at a depth ranging from 60 feet to 80 feet with a total dissolved solids concentration of 450 mg/l. The discharge plan addresses how spills, leaks and



STATE OF NEW MEXICO  
Energy, Minerals and Natural Resources Department  
**OIL CONSERVATION DIVISION**  
P.O. Box 2088  
Santa Fe, NM 87501

OIL CONSERVATION DIVISION  
RECEIVED

'91 JUN 20 AM 11 22

**DISCHARGE PLAN APPLICATION FOR OILFIELD SERVICE FACILITIES**

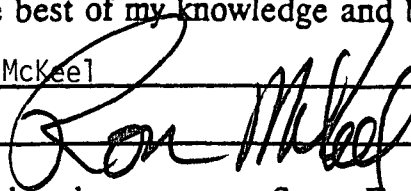
(Refer to OCD Guidelines for assistance in completing the application.)

- I. TYPE: Cementing, acidizing and high pressure pumping services for oil & gas wells
- II. OPERATOR: THE WESTERN COMPANY OF NORTH AMERICA  
ADDRESS: 515 Post Oak Blvd., Suite 915 Houston, TX 77027  
CONTACT PERSON: Benny Ho, Environmental Specialist PHONE: 713/629-2867
- III. LOCATION:     /4     /4 Section 20 Township 18 S Range 38 E  
Submit large scale topographic map showing exact location.
- IV. Attach the name and address of the landowner of the facility site.
- V. Attach a description of the facility with a diagram indicating location of fences, pits, dikes, and tanks on the facility.
- VI. Attach a description of all materials stored or used at the facility.
- VII. Attach a description of present sources and quantities of effluent and waste solids.
- VIII. Attach a description of current liquid and solid waste collection/treatment/disposal procedure.
- IX. Attach a description of proposed modifications to existing collection/treatment/disposal system.
- X. Attach a routine inspection, maintenance plan and reporting to ensure permit compliance.
- XI. Attach a contingency plan for reporting and clean-up of spills or releases.
- XII. Attach geological/hydrological evidence demonstrating that disposal of oil field wastes will not adversely impact fresh water.
- XIII. Attach such other information as is necessary to demonstrate compliance with any other OCD rules, regulations and/or orders.
- XIV. CERTIFICATION

I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

Name: Ron McKee

Title: Director, Real Estate & Facilities Construction

Signature: 

Date: 6/18/91

DISTRIBUTION: Original and one copy to Santa Fe with one copy to appropriate Division District Office



June 18, 1991

FEDERAL EXPRESS

Mr Roger C Anderson  
Environmental Engineer  
State of New Mexico  
Oil Conservation Division  
Land Office Building  
310 Old Pecos Trail  
Santa Fe NM 87504

RE: The Western Company of North America  
Discharge Plan Application for Oil Field Service Facilities  
at Hobbs, New Mexico

Dear Mr. Anderson:

Enclosed are two copies of the referenced application for The Western Company of North America's Hobbs, New Mexico Facility. If you have any questions or comments, please call Benny Ho at 713/629-2867.

Sincerely,

Ron McKeel, Director  
Real Estate & Facilities Construction  
THE WESTERN COMPANY OF NORTH AMERICA

RM:ah

Enclosures



OIL CONSERVATION DIVISION  
RECEIVED

'91 MAY 22 AM 8 36

May 17, 1991

Mr Robert J Medler  
Director of Environment-Safety  
Homco International Inc  
4710 Bellaire Blvd Suite 200  
Bellaire TX 77401

Dear Mr. Medler:

Last week, Ms Darlene Venable, who identified herself as a staff member of ENSR, called on behalf of Homco to request approval to collect soil and/or groundwater samples on The Western Company of North America's Hobbs Facility (Western, Hobbs). She provided no specific information regarding the scope or purpose of the proposed sampling activities and directed us to the New Mexico Oil Conservation Division for information regarding Homco's site investigation plan. It is Western's position that the approval can only be granted provided that more information be submitted to Western regarding this matter.

Please understand that Western's corporate environmental policy is to comply with all environmental regulatory requirements and to respond appropriately to any environmental issues associated with Western's facilities. In those cases of on-site impact, Western utilizes its own qualified environmental consultants to conduct site investigations and to make recommendations for any needed corrective action. However, we are unaware of any contaminant releases at the Western, Hobbs Facility that would require action at this time.

In order to evaluate the potential need for cooperative efforts between Western and Homco or independent investigation by Western, we request that you provide us with the following information:

1. The purpose of ENSR's proposed sampling on Western's property,
2. The types of samples Homco wishes to collect on Western's property,

3. All data available to ENSR and Homco that support the need for sampling on Western's property, including information regarding groundwater quality and flow characteristics in the area,
4. Results of any investigation activities completed and a scope of planned activities in the area adjacent to Western's property,
5. Current regulatory status of the Homco facility regarding site investigation (e.g. administrative orders, enforcement actions, or other requirements, and
6. A listing of all regulatory agencies involved in site investigation activities by Homco at Hobbs.

After a review of this information, Western would be willing to discuss any appropriate action to be taken independently or jointly by Western and Homco. If you have any questions regarding this request or if you wish to discuss it further, please give me a call at 713/629-2861.

Sincerely,



Ron McKeel, Director  
Real Estate & Facilities Construction  
THE WESTERN COMPANY OF NORTH AMERICA

RM:ah

cc: Moon Ables, Hobbs  
Hobbs Envl file  
Benny Ho

 Roger Anderson, NMOCD



STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION

BRUCE KING  
GOVERNOR

February 26, 1991

POST OFFICE BOX 2088  
STATE LAND OFFICE BUILDING  
SANTA FE, NEW MEXICO 87504  
(505) 827-5800

CERTIFIED MAIL  
RETURN RECEIPT NO. P-327-278-328

Mr. Benny Ho  
Environmental Specialist  
The Western Company of North America  
515 Post Oak, 9th Floor  
Houston, Texas 77027

RE: Discharge Plan GW-72  
Hobbs Service Facility  
Lee County, New Mexico

Dear Mr. Ho:

Under the provisions of the Water Quality Control Commission (WQCC) Regulations, you are hereby notified that the filing of a discharge plan is required for your existing Hobbs Service Facility located in Section 29, Township 18 South, Range 38 East (NMPM), Lee County, New Mexico.

This notification of discharge plan requirement is pursuant to Sections 3-104 and 3-106 of the WQCC Regulations. The discharge plan, defined in Section 1.101.P. of the WQCC Regulations, should cover all discharges of effluent or leachate at the plant site or adjacent to the plant site. Included in the application should be plans for controlling spills and accidental discharges at the facility (including detection of leaks in buried underground tanks and/or piping), and closure plans for any ponds whose use will be discontinued.

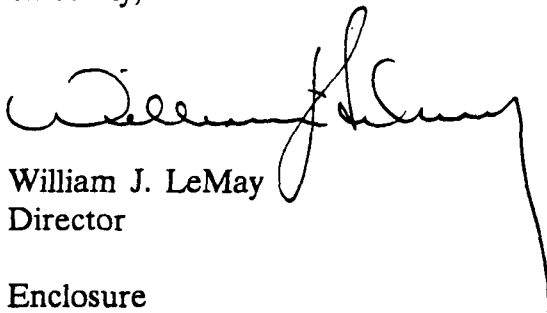
A copy of the regulations and application form is enclosed for your convenience. Also enclosed is a copy of an OCD guide to the preparation of discharge plans for oilfield service facilities.

Mr. Benny Ho  
February 26, 1991  
Page -2-

Section 3-106.A of the regulations requires a submittal of the discharge plan within 120 days of receipt of this notice unless an extension of this time period is sought and approved for good cause. Section 3-106.A also allows the discharge to continue without an approved discharge plan until 240 days after written notification by the Director of the OCD that a discharge plan is required. An extension of this time may be sought and approved for good cause.

If there are any questions on this matter, please feel free to call David Boyer at 827-5812, or Roger Anderson at 827-5884 as they have the assigned responsibility for review of all discharge plans.

Sincerely,



William J. LeMay  
Director

Enclosure

WJL/RCA/sl

cc: Hobbs OCD Office



OIL CONSERVATION DIVISION  
RECEIVED

'91 FEB 21 AM 8 41

February 14, 1991

Mr. William J Lemay  
Director of Oil Conservation Division  
P O Box 2088  
Land Office Building  
Santa Fe NM 87504-2088

Dear Sir:

After talking to Mr. William Olson on February 14, 1991, with regard to the inspection of The Western Company of North America's Hobbs Facility (Western) it is my understanding that the only thing that Western needs to do is to proceed with the filing of the application of the discharge plan. It is also my understanding that a water sample was taken from the facility and when the analytical results come back a copy of the result will be forwarded to The Western Company at the address shown below.

Thank you for your assistance. If you have any questions, please call me at 713/629-2867.

Sincerely,

Benny Ho  
Environmental Specialist  
THE WESTERN COMPANY OF NORTH AMERICA

BH:ah

cc: Moon Ables  
Shermon Walters  
Ron McKeel  
Hobbs Envl file

499588

U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration



MATERIAL SAFETY DATA SHEET

Date: October 24, 1990

SECTION I

SUPPLIER'S NAME The Western Company	EMERGENCY TELEPHONE NO. (817) 731-5100
ADDRESS (Number, Street, City, State and ZIP Code) P. O. Box 186, Ft. Worth, TX 76101	
CHEMICAL NAME AND SYNONYMS Silicon Dioxide, Amorphous, Silica, Fumed	TRADE NAME AND SYNONYMS Silica Fume
CHEMICAL FAMILY Silica	FORMULA $\text{SiO}_2$ W.I.N. 499588

SECTION IA - HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME N/A	(RQ / )
NAME OF HAZARDOUS COMPONENT Not regulated	
HAZARD CLASS Health	
IDENTIFICATION NUMBER CAS No. 7631-86-9	
D.O.T. LABEL(S) REQUIRED	
PRECAUTIONARY LABEL	

SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
Silicon Dioxide - amorphous, fumed ( $\text{SiO}_2$ )	87 98	80 $\text{mg}/\text{m}^3$ OSHA 20 mpp CF
Magnesium Oxide ( $\text{MgO}$ )	.1 5	15 $\text{mg}/\text{m}^3$ as fume 10 $\text{mg}/\text{m}^3$ as fume
Iron Oxide ( $\text{Fe}_2\text{O}_3$ )	.1 5	10 $\text{mg}/\text{m}^3$ as fume 5 $\text{mg}/\text{m}^3$ as fume
Carbon	1-3	3.5 $\text{mg}/\text{m}^3$
Calcium Oxide ( $\text{CaO}$ )	< 2	5 $\text{mg}/\text{m}^3$

SECTION III - PHYSICAL DATA

BOILING POINT ( $^{\circ}\text{F}$ ./MELTING POINT	2300 $^{\circ}\text{C}$	SPECIFIC GRAVITY ( $\text{H}_2\text{O}=1$ )	0.25
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT. VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR=1)	N/A	EVAPORATION RATE (_____-1)	N/A
SOLUBILITY IN WATER	Insoluble		

APPEARANCE AND ODOR Medium grey submicron powder, no odor

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) N/A	FLAMMABLE LIMITS N/A	LeI	UeI
EXTINGUISHING MEDIA None needed			
SPECIAL FIRE FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARDS None			



499588

TRADE NAME: W.I.N. 499588

## SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE Unknown

EFFECTS OF OVEREXPOSURE Inhalation: Coughing, sneezing. Eye Contact: Irritation.

EMERGENCY AND FIRST AID PROCEDURES Inhalation: Remove victim from exposure. Eye Contact: Flush eyes with water.

## SECTION VI - REACTIVITY DATA

STABILITY

UNSTABLE

CONDITIONS TO AVOID

STABLE

X

INCOMPATIBILITY (Materials to avoid) Silica fume is soluble in hydrofluoric acid.

HAZARDOUS DECOMPOSITION PRODUCTS None.

HAZARDOUS  
POLYMERIZATION

MAY OCCUR

CONDITIONS TO AVOID

WILL NOT OCCUR

X

## SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED Vacuum cleaner is recommended to recover spilled material.

WASTE DISPOSAL METHOD Prevent airborne emissions. Treat as inert and non-toxic.

## SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type) In dusty areas, use NIOSH approved Sch 21 respiratory protection.

VENTILATION

LOCAL EXHAUST In dusty areas.

SPECIAL

MECHANICAL (General)

OTHER

PROTECTIVE GLOVES

EYE PROTECTION Safety goggles

OTHER PROTECTIVE EQUIPMENT

## SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Silica fume may cause drying of exposed skin after prolonged exposure.

OTHER PRECAUTIONS

499680

U.S. DEPARTMENT OF LABOR  
Occupational Safety and Health Administration



# MATERIAL SAFETY DATA SHEET

Date: October 28, 1991

## SECTION I

SUPPLIER'S NAME The Western Company	EMERGENCY TELEPHONE NO. (817) 731-5433
ADDRESS (Number, Street, City, State and ZIP Code) 515 Post Oak Blvd., Houston, Texas 77027	
CHEMICAL NAME AND SYNONYMS Anti-Static Agent	TRADE NAME AND SYNONYMS Static Free
CHEMICAL FAMILY Silica Flour	FORMULA Proprietary W.I.N. 499680

## SECTION IA - HAZARDOUS MATERIAL CLASSIFICATION

D.O.T. PROPER SHIPPING NAME Oilwell Treating Compound	(RQ / N/A )
NAME OF HAZARDOUS COMPONENT N/A	
HAZARD CLASS N/A	
IDENTIFICATION NUMBER N/A	<i>Silica CAS: 7631-86-9</i>
D.O.T. LABEL(S) REQUIRED None	
PRECAUTIONARY LABEL	

## SECTION II - HAZARDOUS INGREDIENTS

	%	TLV (Units)
N/A		

## SECTION III - PHYSICAL DATA

BOILING POINT (°F) N/A	SPECIFIC GRAVITY (H <sub>2</sub> O=1)
VAPOR PRESSURE (mm Hg) N/A	PERCENT. VOLATILE BY VOLUME (%)
VAPOR DENSITY (AIR=1) > 1	EVAPORATION RATE (_____=1) N/A
SOLUBILITY IN WATER Dispersible	
APPEARANCE AND ODOR Milky white dispersion; odorless	

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used) > 200°F (TCC)	FLAMMABLE LIMITS	LeI	UeI
EXTINGUISHING MEDIA Use foam dry chemical. CO2. water fog or spray			
SPECIAL FIRE FIGHTING PROCEDURES NIOSH/MSHA approved. self-contained breathing apparatus. Cool exposed containers with water spray. Avoid vapors.			
UNUSUAL FIRE AND EXPLOSION HAZARDS No unusual fire hazards; material is not flammable and/or combustible			

TRADE NAME: W.I.N.

499680

## SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE

EFFECTS OF OVEREXPOSURE Inhalation: Inhalation of high levels of vapors or mists may cause lightheadedness, dizziness, headaches or unconsciousness

EMERGENCY AND FIRST AID PROCEDURES Eyes: Flush with plenty of water. If irritation develops, call a physician. Skin

Contact: Remove contaminated clothes. Wash skin thoroughly with mild soap and water. Inhalation: Remove to fresh air. If labored breathing continues, contact a physician.

## SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	

INCOMPATIBILITY (Materials to avoid) Oxidizers: heat sparks, or open flame

HAZARDOUS DECOMPOSITION PRODUCTS carbon monoxide

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

## SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED If dry, shovel, vacuum, or sweep up spilled materials. Wet materials will be extremely slippery.

WASTE DISPOSAL METHOD Handle as non-hazardous material.

## SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)

VENTILATION	LOCAL EXHAUST	X	SPECIAL
	MECHANICAL (General)		OTHER

PROTECTIVE GLOVES Chemical Resistant Gloves

EYE PROTECTION Goggles

OTHER PROTECTIVE EQUIPMENT In heavy dust concentration, a NIOSH approved mask is recommended.

## SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING Keep container closed when not in use. Wear suitable protection for eyes and skin when handling. Avoid contact with oxidizers. Store in well-ventilated area. Store in cool, dry area.

OTHER PRECAUTIONS

499680

ATTACHMENT TO AND CONTINUATION OF



MATERIAL SAFETY DATA SHEET

Date: October 28, 1991

SECTION I

SUPPLIER'S NAME The Western Company

EMERGENCY TELEPHONE NO. (817) 731-5433

ADDRESS (Number, Street, City, State and ZIP Code) 515 Post Oak Blvd., Houston, Texas 77027

CHEMICAL NAME AND SYNONYMS Anti-Static Agent

TRADE NAME AND SYNONYMS Static Free

CHEMICAL FAMILY Silica Flour

FORMULA

W.I.N. 499680

SECTION X - LABEL COPY

FOR INDUSTRIAL USE ONLY

FIRST AID:

FOR EYES : In case of contact, flush with plenty of clean water for at least 15 minutes. Call a physician.

FOR SKIN : In case of contact, ordinary measures of personal hygiene should be adequate.

FOR INGESTION: If swallowed, essentially non-toxic.

FOR INHALATION: If breathed in, excessive inhalation of dust may impede respiration.

FOR HANDLING: Employees must wear chemical resistant gloves and chemical safety goggles.

**ATTENTION!!** After this container has been emptied, it may contain flammable and toxic liquid or vapor; observe all warnings and precautions listed for this product. Do not cut, puncture, or weld on or near this container. Refer to MSDS and SPM-04-04 for other safety requirements.



Western Petroleum Services

WIN 499680

STATIC FREE

ANTI-STATIC AGENT

Flash Point: > 200° F  
Net Content: 40 pounds (18.4 kg)  
5 gallons (18.9 liters) @ 25° C

## DIRECTIONS:

For Proper Use, Refer to Service Bulletin No.(s): 2475.0W, 2475.0Y

FOR INDUSTRIAL USE ONLY

WARNING: STORE IN COOL AND DRY PLACE.

### FIRST AID: FOR EYES:

In case of contact, flush with plenty of clean water for at least 15 minutes. Call a physician.

### FOR SKIN:

In case of contact, ordinary measures of personal hygiene should be adequate. If swallowed, essentially non-toxic.

### FOR INGESTION:

If breathed in, excessive inhalation of dust may impede respiration.

### FOR INHALATION:

Employees must wear chemical resistant gloves and chemical safety goggles.

### HANDLING: ATTENTION:

After this container has been emptied, it may contain flammable toxic liquid or vapor; observe all warnings and precautions listed for this product. DO NOT cut, puncture or weld on or near this container.

Refer to MSDS for Safety Requirements.

Manufactured for:

**THE WESTERN COMPANY OF NORTH AMERICA**

515 Post Oak Blvd., Houston, Texas 77027

Emergency Telephone: 1-800-424-9300

499680