

GENERAL CORRESPONDENCE

YEAR(S):

1994 - 1989

STATE OF NEW MEXICO



ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION

BRUCE KING

August 26, 1994

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

ANITA LOCKWOOD CABINET SECRETARY

CERTIFIED MAIL RETURN RECEIPT NO. P-111-334-168

Mr. Thomas D. Hutchins Environmental Compliance Engineering El Paso Natural Gas Company P.O. Box 1492 El Paso, TX 79978

RE: PHASE IV GROUND WATER CONTAMINATION STUDY EPNG JAL NO. 4 GAS PLANT LEA COUNTY, NEW MEXICO

Dear Mr. Hutchins:

The New Mexico Oil Conservation Division (OCD) is in the process of reviewing El Paso Natural Gas Company's (EPNG) June 20, 1994 "JAL NO. 4 PLANT, PHASE IV GROUNDWATER STUDY, EL PASO NATURAL GAS COMPANY". This document contains the results of EPNG's recent offsite investigations of the extent of ground water contamination related to the operation of the Jal No. 4 Gas Plant.

The OCD has the following comments, questions and requests regarding the above referenced document:

- 1. EPNG's initial March 30, 1993 investigation work plan set the depth interval for completion of monitor wells ACW-8, ACW-9, ACW-10 and ACW-11 at 150-170 feet (ie. at the contact of the top of the red bed). However, according to the well logs and monitor well completion diagrams, these wells were completed at 140-160 feet. This is approximately 10 feet above the top of the red bed contact. Please provide the reasoning for the change in the depth of the monitor well completion interval.
- 2. The document recommends initiating recovery of contaminated ground water from the vicinity of ACW-4 as soon as possible. Please provide the OCD with a work plan for implementing this recommendation.
- 3. The document recommends installation of additional monitor wells to define the downgradient extent of the plume. Please provide the OCD with a work plan for determining the full extent of contamination related to EPNG's activities.

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Mr. Thomas D. Hutchins August 26, 1994 Page 2

- 4. Please provide the OCD with a plan for regularly monitoring ground water quality and potential contaminant migration both onsite and downgradient of the facility.
- 5. Please submit all original documents to the OCD Santa Fe Office with copies provided to the OCD Hobbs Office.

Submission of the above items will allow the OCD to complete a review of EPNG's Phase IV Report.

If you have any questions, please call me at (505) 827-5885.

Sincerely,

William C. Olson Hydrogeologist Environmental Bureau

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



P 111 334 168 **Receipt for Certified Mail** No Insurance Coverage Provided NTED STATES Do not use for International Mail

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P. O. BOX 1492 EL PASO, TEXAS 79978 PHONE: 915-541-2600

294 JUH 22 RM 8 50

Thomas D. Hutchins

June 20, 1994

Mr. Roger C. Anderson New Mexico Oil Conservation Division P.O. Box 2088 Land Office Building Santa Fe, New Mexico 87504-2088

Re: Jal No. 4 Plant, Phase IV Groundwater Study, El Paso Natural Gas Company

It is my pleasure to provide two (2) copies of the referenced report for your review and comment. The report was requested by NMOCD and is provided to advise you of the status of the Jal No. 4 Groundwater Study.

El Paso Natural Gas Company (EPNG) would like to meet with you and your staff to discuss the report recommendations in early July. I will contact you to set up the meeting.

EPNG appreciates your patience and we look forward to working with you to a successful completion of this project. If you have questions or need additional documentation please call me at 915/541-3242.

Sincerely,

Thomas D. Hutchins, Manager Environmental Compliance Engineering

Attachments: As Stated

EPN6/OCD Jul # 4 Meeting 3/30/83 10:00 m

Bill Olson OCP Phil Baca FENG Luri Saylor 6. Garbay see handeret agande map show, ver just locations smight for BTEX, cations-anions check on Christie injection well for , anediation EPNG will submit full report on all Inverte work after instillation & sampling at her min's. Report will hostocile remetration proposal

OCD MEETING JAL #4

NAME G. GARIBAY LORI A. Saylor PHILIP BACA Bill Olyon Rozen Ardenson

COMPAN
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EPNG
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OCD
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PHONE 915/541-5764 915/686-3226 915/541-2323 (505) 827-5885 (505)827-5812

3/30/93

3/30/93 EPHIG/OCD meetry

AGENDA

JAL NO. 4

EL PASO NATURAL GAS COMPANY and NEW MEXICO OIL CONSERVATION DIVISION

March 30, 1993

I. PHASE III ACTIVITIES

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- A. Installation of monitoring wells in Phase III
- B. Presence of a vertical gradient

II. PHASE IV INSTALLATION OF ADDITIONAL WELLS

- A. Surface locations
- B. Screened interval
- C. Sampling Protocol
- III. STATUS REPORT
- IV. OTHER BUSINESS

Table 3

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SUMMARY OF INORGANIC ANALYTICAL RESULTS FOR GROUNDWATER SAMPLES COLLECTED JULY 1992

PHASE III GROUNDWATER STUDY JAL NO. 4 PLANT

	Ilnaradiant		<u>On-Site Doundradian</u>	scription (Name and	Depth of Screened II	<u> Mterval)</u> Mtf.site Dommanadia	ut.	
Parameter	EPNG-1* (1201-1601)	ACW-2A (98'-118')	(1211-1461)	ACW-4 (154'-169')	ACN-6 (1101-1201)	(1051-1151)	ACW-5 (105'-115')	WOCC Standard
Conductance (µmhos/cm)	986.0	43,500	106,500	80,762	871.5	7,069.40	1,304.50	No Standard
Chloride (mg/L)	72.0	15,275	30,676	38,350	172	2,232	418	250
Hd	7.7	8.07	8.53	7.07	8.67	7.12	7.08	Between 6 and 9
Potassium (mg/L)	5.5	35.9	159	165	3.59	6.12	10.3	No Standard
Sodium (mg/L)	85.7	5,080	12,400	26,700	173	1,200	324	No Standard
Sulfate (mg/L)	0.02	16.4	1,502	1,963	144	<2.0	457	600
Total Dissolved Solids (TDS) (mg/L)	NA	24,900	62,300	69,100	600	4,840	1,880	1,000

Note: Results from Sample EPNG-1 were obtained from K.W. Brown & Associates' report titled "Expanded Hydrogeology Study for the El Paso Natural Gas Company Jal #4 Facility" dated August 1990.

mg/L Milligrams per liter.

NA Not available.

µmhos/cm Micromhos per centimeter.

WQCC Water Quality Control Commission.

Feet.

11/92/224856/JAL/1

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21 1,304 0 ACW-5 (105'-115') · ACW-11 (150'-170') 300 600 SCALE IN FEET

STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION



BRUCE KING GOVERNOR

ANITA LOCKWOOD CABINET SECRETARY June 29, 1993

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

<u>CERTIFIED MAIL</u> <u>RETURN RECEIPT NO.P-111-334-220</u>

Mr. Michael J. McConnell Sid Richardson Gasoline, Ltd. First City Bank Tower 201 Main St., Suite 3000 Ft. Worth, Texas 76102

RE: Discharge Plan GW-10 Jal #3 Plant Discharge Plan GW-107 Jal #4 Compressor Station Lea County, New Mexico

Dear Mr. McConnell:

Pursuant your letter dated June 10, 1993, this letter aknowledges and approves your request to change the operator name for both the discharge plans associated with the above mentioned facilities. A copy of this letter and your request will be placed in our discharge plan files. The operator name will now be "Sid Richardson Gasoline, Ltd." per your request.

The Oil Conservation Division will continue to address all correspondence to you on all environmental matters until you tell us otherwise.

Sincerely,

Roger C. Anderson Environmental Bureau Chief

RCA.cee xc: OCD Hobbs Office

OIL CONSERVE ON DIVISION SID RICHARDSON CARBON & GASOLINE CO. RECEIVED

FIRST CITY BANK TOWER 201 MAIN STREET FORT WORTH, TEXAS 76102

'93 JUN TH AM 8 51

MICHAEL J. MCCONNELL COMPLIANCE COORDINATOR ENVIRONMENTAL HEALTH & SAFETY

June 10, 1993 MJM-73-93

File: NM-6

817/390-8600

CERTIFIED MAIL - RETURN RECEIPT

P 078 226 219 Mr. Roger Anderson New Mexico Energy, Minerals & Natural Resources Department Oil Conservation Division P.O. Box 2088 Santa Fe, New Mexico 87504-2088

Subject: Jal No. 3 and Jal No. 4 Water Discharge Plans Injection Well Permit - Administrative Order SWD-231

Dear Mr. Anderson:

Sid Richardson Gasoline, Ltd. is requesting an administrative modification to the subject water discharge plans which are in effect at our Jal No. 3 and Jal No. 4 gas processing plants. This modification will change the company name from that which is currently on file.

A recent organizational restructuring of the Company segregated our carbon black operations from our natural gas processing operations. In order to accurately reflect this change, we are updating all legal documents which include operating permits and related regulatory documents. No other changes to plant operations, facilities or processes are involved. Ownership is not changing. Only the company name is being revised. The Sid Richardson Jal No. 3 and Jal No. 4 gas plants will continue to adhere to all subject discharge plan requirements as they currently exist.

Please revise the company name on each discharge plan as follows:

Sid Richardson Gasoline, Ltd. d/b/a Sid Richardson Gasoline Co. Mr. Roger Anderson MJM-73-93; 06/10/93 PAGE TWO

It would be greatly appreciated if you could send an acknowledgment and an approval letter to this request at your earliest convenience. Also, are we correct in our assessment that the subject Administrative Order, by virtue of its inclusion in the Jal No. 3 Discharge Plan as Appendix F, does not require a separate request for a company name revision? Please advise. If you require any additional information or have any questions, please do not hesitate to call.

Sincerely,

michael Mc Connell

Michael J. McConnell Compliance Coordinator Environmental Health & Safety (817) 338-8386

MJM:gad

cc: C. P. O'Farrell/E. F. Gunn W. J. Farley K. C. Clark/R. L. Gawlik G. W. Washburn

NOTICE OF PUBLICATION

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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 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-108) - Williams Field Services, Robert Peacock, Project Manager, P.O. Box 58900, M.S. 10368, Salt Lake City, Utah, 84158-0900, has submitted a discharge plan application for their San Juan 30-5 No. 1 C.D.P., located in the NW/4 SW/4 and NE/4 SW/4, Section 18, Township 30 North, Range 5 West, NMPM, Rio Arriba County, New Mexico. Approximately 5 gallons per day of wastewater will be contained in above ground tanks prior to disposal in an OCD approved disposal facility. Groundwater most likely to be affected by an accidental discharge is at a depth of approximately 160 feet with a total dissolved solids concentration of approximately 2000 mg/l. The discharge plan addresses how spills, leaks, and other accidental discharges to the surface will be managed.

(GW-103) - Yates Petroleum Corporation, Chuck Morgan, 105 South Fourth Street, Artesia, New Mexico, 88210, has submitted a discharge plan application for their Livingston Ridge Compressor Station located in the SW/4 SW/4, Section 7, Township 22 South, Range 32 East, NMPM, Lea County, New Mexico. Approximately 100 gallons per day of waste water is contained in above ground tanks prior to disposal in an OCD approved Class II disposal well. There is no known protectable groundwater below the site. The discharge plan addresses how spills, leaks, and other accidental discharges to the surface will be managed.

(GW-107) - Sid Richardson Carbon & Gasoline Company, Wayne J. Farley, Manager, Gas Operations, 201 Main Street, Fort Worth, Texas 76102, has submitted a discharge plan renewal application for their Jal #4 Compressor Facility located in the SE/4, Section 31, Township 23 South, Range 37 East, NMPM, Lea County, New Mexico. This facility is the compressor portion of the former El Paso Natural Gas Company Jal #4 Gas Processing Plant (GW-7). Approximately 3500 gallons per day of wastewater is collected in above ground tanks prior to disposal in an OCD approved Class II disposal well. Groundwater most likely to be affected by an accidental discharge is at a depth of approximately 105 feet with a total dissolved solids concentration of approximately

7500 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 aa.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 9th day of March, 1992.

> STATE OF NEW MEXICO OIL CONSERVATION DIVISION

SEAL

WILLIAM J. LEMAY, Director



March 19, 1992

Mr. Roger Anderson Acting Bureau Chief Environmental Bureau Oil Conservation Division P.O. Box 2088 Santa Fe, New Mexico 87504-2088

Dear Mr. Anderson:

This responds to the Notice of Publication dated March 12, 1992, regarding the Oil Conservation Division discharge permit applications GW-108, GW-103, and GW-107 on fish, shellfish, and wildlife resources in New Mexico.

The U.S. Fish and Wildlife Service (Service) has determined there are no wetlands or other environmentally sensitive habitats, plants, or animals that will be adversely affected by the following discharges.

GW-108 - Williams Field Services San Juan 30-5 No. 1 C.D.P., NW 1/4, SW 1/4, and NE 1/4, SW 1/4 of Section 18, T30N, R5W, Rio Arriba County, New Mexico.

GW-103 - Yates Petroleum Corporation Livingston Ridge Compressor Station, SW 1/4, SW 1/4 of Section 7, T22S, R32E, Lea County, New Mexico.

GW-107 - Sid Richardson Carbon and Gasoline Company Jal #4 Compressor Facility, SE 1/4 of Section 31, T23S, R37E, Lea County, New Mexico.

If you have any questions concerning our comments, please contact Laurie S. Shomo at (505) 883-7877.

Sincerely,

Jennifer Fowler-Propst Field Supervisor

cc:

Director, New Mexico Department of Game and Fish, Santa Fe, New Mexico Regional Director, U.S. Fish and Wildlife Service, Fish and Wildlife Enhancement, Albuquerque, New Mexico.

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Affidavit of Publication

STATE OF NEW MEXICO)) ss. COUNTY OF LEA)

being first duly sworn on oath Joyce Clemens Adv. Director deposes and says that he is 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		
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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		
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compared with the issue of		
March 18 19 19 92		
and ending with the issue of		
March 18 19.92		

which sum has been (Paid) (Assesseds as Court Costs
Desce lemens
Subscribed and sworn to before me this
day of92
Mrs Jean Lemen
Notary Public, Lea County, New Mexico
My Commission Expires Sept. 28 94

LEGAL NOTICE NOTICE OF PUBLICATION STATE OF NEW MEXIC ENERGY, MINERALS NATURAL RESOURCES DEPARTMENT OIL CONSERVATION DIVISION

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GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 9th day of March, 1992.

STATE OF NEW MEXICO OIL CONSERVATION DIVISION WILLIAM J. LEMAY, DIRECTOR

SEAL Published in

Published in the Lovington Daily Leader March 18, 1992.

discharge is at a depth of approximately 105 feet with a total dissolved solids concentration of approximately 7500 mg/1. 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

PUBLICATION STATE OF NEW MEXICO ENERGY, MINERALS AND NATURAL RESOURCES DEPART-MENT OIL CONSERVATION DIVISION Notice is hereby given that

NOTICE OF

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Affidavit o blication

NEW MEXICO Rio Arriba

rt Trapp, being first duly sworn, declare and say that I am the Pub-Rio Grande Sun, a weekly newspaper, published in the English lanhaving a general circulation in the City of Espanola and County of State of New Mexico, and being a newspaper duly qualified to pubtices and advertisements under the provisions of Chapter 167 of the s of 1937; that the publication, a copy of which is hereto attached,

ed in said paper once each week for \ldots consecutive weeks, and day of each week in the regular issue of the paper during the time **n**, and that the notice was published in the newspaper proper, and

ade), or (assessed as court costs); that the undersigned has personof the matters and things set forth in this affidavit.

101 Publisher Subscribed and sworn to before me this day of Notary Public My Commission expires _ SS - Stand Sales isplay Advertising balance after 30 days

NOTICE OF PUBLICATION

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

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> STATE OF NEW MEXICO OIL CONSERVATION DIVISION

SEAL

WILLIAM J. LEMAY, Director

SID RICHARDSON CARBON & GASOLINE CONSEN

J DIVISION RE... 220

FIRST CITY BANK TOWER 201 MAIN STREET FORT WORTH, TEXAS 76102 *92 FE 20 11 9 08 817/390-8600

February 18, 1992

File: Co-05-92

NMED-Water Quality Management P. O. Box 2088 Santa Fe, NM 87504-2088

Attn: Roger Anderson

Jal No. 4 Discharge Plan Re:

Dear Mr. Anderson:

In accordance with our telephone conversation on February 14, 1992, I am forwarding for your review and approval three copies of the Discharge Plan for our Jal No. 4 compressor facility located near Jal, New Mexico. Also enclosed is a check for the amount of \$50.00 for the filing fee.

If you have any questions, please do not hesitate to call me at (817) 390-8684. Thank you for your help.

Very truly yours, Larry B. Copeland Project Éngineer

LBC:cg

Enclosures

CC: WJF (w/o att.) EFG (w/o att.) KRC/CEA/LBC/File (w/o att) STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT



OIL CONSERVATION DIVISION

BRUCE KING GOVERNOR

August 5, 1991

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

CERTIFIED MAIL RETURN RECEIPT NO. P-756-666-890

Mr. William C. Jones, Project Engineer Sid Richardson Carbon & Gasoline Company 201 Main Street, Suite 3000 Fort Worth, Texas 76102

RE: Hydrostatic Test Water Discharge Jal 3 Gas Plant Lea County, New Mexico

Dear Mr. Jones:

The Oil Conservation Division (OCD) has received your request, dated July 31, 1991, to discharge approximately 315,000 gallons of hydrostatic test waters to the Class II disposal located at the Jal #3 Gas Processing Plant. The wastewater will be generated from the testing of a gathering line between the Jal #4 and Jal #3 Gas Processing Plants. The wastewater will be stored in frac tanks prior to disposal.

Based on the information provided your request, disposal of the hydrostatic test waters in the Jal #3 Class II disposal well is hereby approved.

Please be aware that this approval does not relieve you of liability should your operation result in actual pollution of surface or ground waters or the environment actionable under other laws and/or regulations.

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

Sincerely,

William J. LeMay Director WJL/sl

cc: OCD Hobbs Office

SID RICHARDSON CARBON & GASOLINE COLD 19

FIRST CITY BANK TOWER 201 MAIN STREET FORT WORTH, TEXAS 76102 817/390-8600

191 AUR - HM 10 19

H DIVISION

July 31, 1991

File: 1-Jo-19-91

New Mexico Energy, Minerals, and Natural Resources Department OIL CONSERVATION DIVISION P. O. Box 2088 Santa Fe, NM 87504-2088

Attn: Roger Anderson

فالمنتخفة

Re: Hydrostatic Test of a Gathering Pipeline

Dear Mr. Anderson:

Sid Richardson Carbon & Gasoline Co., located at 201 Main Street, Suite 3000 Ft. Worth, Texas, hereinafter called Sid Richardson, plans to conduct a hydrostatic test of a 16 inch gathering pipeline between the Jal #4 and Jal #3 gas plants near Jal, New Mexico. With the Oil Conservation Division's approval, Sid Richardson plans to begin testing various segments of the pipeline on August 7, 1991 and complete testing by August 28, 1991.

The pipeline begins at the Sid Richardson Jal #4 gas plant,

LEGAL DESCRIPTION:

SE/4 SE/4, Section 31, S/2 SW/4, West T & N, R.R.R.O.W., Section 32, T-23-S, R-37-E, Lea County, New Mexico. Also portions of Lots 3 & 4, SW/4 NW/4 and W/2 SW/4 of Section 5, T-24-S, R-37-E, N.M.P.M., lying West of Texas-New Mexico R.O.W.,

Location: Approx. 11 miles North of Jal, N.M., on State Highway No. 18,

and terminates at the Sid Richardson Jal #3 gas plant,

LEGAL DESCRIPTION:

NW/4 SW/4, Section 33, T-24-S, R-37-E, Lea County, New Mexico,

Location: Approx. 5 miles North of Jal, N.M., and 2 miles East of State Highway No. 18. July 31, 1991 1-Jo-19-91 Page 2

The estimated volume of water required to conduct the hydrostatic test is 315,000 gallons of fresh water. After said testing is completed, we plan to discharge the test water into frac tanks and transport the water to a Class 2 disposal well operated by XL Transportation Company of Jal, New Mexico.

Please send our discharge permit to:

SID RICHARDSON CARBON & GASOLINE CO. 201 Main Street, Suite 3000 Fort Worth, TX 76102

William C. Jones Attn: **Project Engineer**

If you have any additional questions, please contact me at (817) 390-8760.

\$incerely, William C. Jones

Project Engineer

WCJ:cg

CC: WJF NWM HEH KCC KRC/CEA/WCJ/File



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OIL CONSERV IN DIVISION RECEIVED

P. O. BOX 1492 EL PASO, TEXAS 79978 PHONE: 915-541-2600

'91 JUL B AM 9 39

July 3, 1991

Mr. Bill Olson, Hydrogeologist Environmental Bureau New Mexico Oil Conservation Division P.O. Box 2088 State Land Office Bldg. Santa Fe, NM 87504

Subject: ENSR Groundwater Assessment Report at EPNG's Jal No. 4 Plant.

Dear Mr. Olson:

Please find enclosed a copy of the subject report. Please feel free to contact me at 915/541-2323 if you have any questions concerning the content of this report.

Sincerely, Philip L. Baca, P.E. Sr. Compliance Engineer

PLB:vo

bc: D.R. Payne H. Van File: 5004 (w/w) ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION



BRUCE KING GOVERNOR

June 24, 1991

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

CERTIFED MAIL RETURN RECIEPT NO. P-106-675-361

Mr. Philip L. Baca Compliance Engineering El Paso Natural Gas Company P.O. Box 1492 El Paso, TX 79978

RE: EPNG JAL NO. 4 GAS PLANT GROUND WATER CONTAMINATION STUDY EDDY COUNTY, NEW MEXICO

Dear Mr. Baca:

On June 20, 1991, the New Mexico Oil Conservation Division (OCD) met with you to discuss the January 1991 "EXPANDED HYDROGEOLOGY STUDY FOR THE EL PASO NATURAL GAS COMPANY JAL-4 FACILITY, PHASE 2 REPORT". The discussion focused on the following conclusions contained within the Phase 2 report for which there was general agreement between OCD and EPNG:

- 1. Ground water under and downgradient of the facility is contaminated with dissolved phase volatile organics and total dissolved solids (TDS).
- 2. The contaminated ground water is a result of the use of the former unlined disposal ponds.
- 3. A plume of ground water contaminated with TDS and benzene in excess of New Mexico Water Quality Control Commission ground water standards is migrating downgradient and offsite of the facility.
- 4. There is no imminent danger of contamination of water supply or private water wells.

OCD stated during the September 24, 1990 meeting between OCD and EPNG that the results of the Phase 2 investigation would determine the necessity of performing additional investigations and/or remedial actions. The Phase 2 report has documented the occurrence of both heavily contaminated ground water and the offsite migration of these contaminants. Mr. Philip L. Baca June 24, 1991 Page - 2

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Therefore, OCD requests that EPNG submit a proposal to determine the full extent of ground water contamination related to the Jal-4 facility. The proposal should address:

- 1. The horizontal extent of the plume.
- 2. Installation of vertically nested monitor wells to determine if there are any density effects due to the high TDS nature of the plume. At a minimum, monitor wells should be installed at the base, the middle and top of the aquifer in areas of high concentrations of TDS.
- 3. Water quality testing of ground water for:
 - a. Aromatic and halogenated volatile organics.
 - b. Major cations and anions.
 - c. Nitrogen (nitrate, nitrite and total nitrogen)

Due to the lack of an imminent threat to water supply or private water wells and a lack of knowledge of the extent of contamination, the OCD defers comment on the Phase 2 proposed remedies for contaminated ground waters.

In addition, OCD requests that EPNG provide OCD with a copy of the first hydrogeological report on Jal-4 prepared by ENSR Consulting and Engineering.

If you have any questions, please call me at (505) 827-5885.

Sincerely,

William C. Olson Hydrogeologist Environmental Bureau

xc: OCD Hobbs Office



P. O. BOX 1492 EL PASO, TEXAS 79978 PHONE: 915-541-2600

April 26, 1991



APR 2 9 1991

OIL CONSERVATION DIV. SANTA FE

New Mexico Oil Conservation Division P.O. Box 2088 State Land Office Bldg. Santa Fe, NM 87504

Subject: Report for Groundwater Study at EPNG's Jal No. 4 Plant

Dear Mr. Boyer:

Please find enclosed a copy of the subject report. EPNG would appreciate meeting with you in the near future to discuss the report's recommendations. Please phone me at 915/541-2323 at your earliest convenience so that we may arrange for a meeting.

Sincerely,

Philip L. Baca, P.E.

Philip L. Baca, P.E. Sr. Compliance Engineer

PLB/vo Enclosure

EPNG Phase I Jal # 4 G.W. Investigation Review I. Comments / Questions 1) No Phase I report in OCD Riles Vell locations not as proposed? (ACW-2)
(agreed to at previous meeting)
Vells screened below W.T. ? (=4-10') / 4) Analytical Parameters - No results of 1) Cations/Anions 2) PAH's 3) NO3⁻ 5.) G.W. Modeling (extent of plume) a) Assumptions of unitarm fluid density, no vertical concentration gradients may not be valid b.) Input parameters -- model assumes no storage in agaiton ? $\sqrt{}$ - source at data for ? a) pond leakage rate & quality - (coling town = 10 time b) aquiter thickness - prevent into Hydro report 6) Pump + Treat Modeling a) model used? (USGS MOC) b) results of options 2,3,4,6,7

Additional Work Needer 1) Water quality samples for a.) Cations Anions 6.) PAH's c.) NO3 2) Complete definition of plume boundarres a) horizontally b) vertically 3.) Sample ? (or is intermation available) a.) upgradiant windmill (not sumpled Timeithe phase I-II b.) EPNG -5 in phase I report c.) EPNG -6

OCD/EPNG Meeting 6/20/91 1000 hrs perticipants - Dave Boyon Bill Olson OCD Rosen Anderson Kethy Brown Cori Saylor Phil Baca Z EMNG Anon Non A) Hydrotest. (re. 6/13/91 EPN6. correspondence) discuss results 6/13/91 O like to discharge to unlind pits for waters under Wacc stas. sample show the filter meaning? RCA hay bailes insich pipe used as fith P.B. More anal with organics in early and of N.M. like crase oils nove likely to drop out it beginning of pipelines Кb 0+P.D Most pigsing done early in lines Lines from Farmington pigsed Not much problem after Guadalupe Station and libe

across @ SE Caprock area which transmit Tesa gas REA Want to discharge test with not work water? AGB. How will operation wards De 1st pig, the since mate, 2nd pig to push then Wash, capture the test. Willhard off wash water Want to discharge test water P.B. In Texas have to build pre pit to fifth alt oil/grease For Texas require texts at beginning/middle/end text water RCA We will require same it goes to milimil pit P.B. We must to do that to protect against Putur DCA, DGB Need a separate rinse a front buck at piss to for tring rinse before test and also run thra hey buils in case at oil forecoe Disharge approved conditioned upon depith to G.W. possibly other conditions

P.D. Ask for list of analysus regurned is what PAH'. W.O. Need at least WACC PAH's REA Differe you can analyzed piggin studges A.C. Have, at San Jnan Station for heavy metels, PAH's RCA If you know what normally in wester then know what to part for RCA Are most dicharges expected to be one 100,000 gals. P.B. Yes, because an recorditioning all pipelies DGB. Would like general criteria of at least Jo feet above G.W. 0 + P.B Don't have pollow with that RCA De Is there priodic testin, of pipetine. P.B. Only fested prior to expection as per DDT for mainline transmission, does not include sathering lines. Trank gathering lines are under DDT

Summary 1) Wach mater follow by wash collocted for disposal 2) Discharge test water at avers of over 50 DTW 3.) Sample beginning /middle / end test waters DGD 4) bet constituent list for sampling 5.) Filter for potential oil/grasse > 6.) No sheen or oil on pond it is clean up P.l. Devid Hall has hydrotest comi, up in July socnear Laguna up 2000 main line DGB. Le con approve for above conditions RCA Anything own 100,000 sals will need D.P. for new pipe and all old pipe VDGB Samples will be provided when available (condition 7) D. Ve will notity District affice 24 hrs in advance AC. What type at soap a used Biodegradeble, non-haz Ø.

DGB Need application at Laguna soon in a orden to get timely approval B. Washington Ranch P.B. Discuss handout. Rom caliper log on well 9 x R Not sme why problem with tabing Production casing in good shape Review well location - on ariel photo ation tentos Get bank to OCD with basin jufo (next work will call to tell when an set) and proposal free well #9 Want up to keys press. on prod. I surtee casily OGB Yes, but also need to Know what's causing problem befor determining solution
DGR Comple at other wells also show low H.S Resample proceeding on #9 P.D Will do

() Jal #4 Phan II Contamination Study

PGB When are top of red bed 1.1. = 200 fact ? screen base & middle



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EXPANDED HYDROGEOLOGY STUDY FOR THE EL PASO NATURAL GAS COMPANY JAL 4 FACILITY: PHASE 2

RECEIVED

prepared for

El Paso Natural Gas Company El Paso, Texas APR 2 9 1991

OIL CONSERVATION DIV. SANTA FE

prepared by

K. W. Brown & Associates, Inc. 500 Graham Road College Station, Texas 77845

January 1991

Sidney H./Johnson Project Manager

WORK K

Minie Michael P. Sherrier Contributing Author

Michael Trojan / Division Director/Regional Manager

Robert C. Speake, Jr. QC Reviewer

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1.0 INTRODUCTION

In August 1990, K. W. Brown & Associates, Inc. (KWB&A) prepared a report (KWB&A, 1990) $\frac{1}{2}$ that addressed the hydrogeologic setting of the El Paso Natural Gas Company (EPNG) Jal 4 facility (Jal 4). In addition to presenting the hydrogeologic setting, the report offered information on the regional and local geology as well as the climatic setting. Since this information is () fully discussed in the Phase 1 report, it will not be repeated here. Rather, this report will focus on events that have transpired since the submittal of the Phase 1 report.

Events conducted under the Phase 2 effort include installing four monitoring wells and one piezometer, conducting a pump test to empirically determine hydraulic conductivity, storativity, and transmissivity of the aquifer, and calibrating the model which was used in Phase 1 with site specific data gathered during the Phase 2 investigation. Although four monitoring wells were installed, only three are functional. A full discussion on the monitoring well installation is presented in Section 3.1.

2.0 REVIEW OF PHASE 1 REPORT-PERTINENT POINTS

The Phase 1 effort indicated Jal 4 is situated over the Ogallala aquifer. Water quality in the area upgradient of Jal 4, characterized by EPNG well 12 (EPNG 12), was relatively good as compared to water retrieved from downgradient wells. Depth to water at the site was approximately 100 to 110 feet and the groundwater was found to exist under unconfined conditions. The hydraulic gradient was determined to be 0.0018 ft/ft and the flow direction was determined to be to the southeast.

It was also determined that the area receives an average annual precipitation of 8 inches and the surface soils are of a sandy texture. Texture of the underlying sediments varies from sandy to cemented sandstones and caliche.

Analytical results for groundwater samples collected from on-site monitoring wells illustrated a large concentration of saline water in the area where old-wastewater ponds were once located. The configuration of the saline plume was determined to trend from the northwest to the southeast along the axis of the groundwater flow direction. In addition to identifying the presence of "saltwater", several organic constituents, including but not limited to BETX, naphthalenes, and phenols were identified in the Phase 1 investigation.

Groundwater data known and assumed about the site were used to predict the configuration of the plume identified. Since firm data for each of the hydrologic parameters were not available during Phase 1, reasonable estimates were made. The computer simulation illustrated the plume extended from Jal 4 to the southeast, under Highway 18, for a distance of approximately 300 feet.

3.0 WELL INSTALLATION, DEVELOPMENT, AND SURVEY

Information presented in this section describes the installation and completion of the monitoring wells installed by KWB&A during the Phase 2 investigation.

3.1 WELL INSTALLATION

A total of four monitoring wells and one piezometer were installed during the Phase 2 field activities. It was originally intended that three monitoring wells would be installed, however, one of the wells could not be developed properly and it was necessary to install a replacement well. The locations of all monitoring wells are illustrated on Figure 1; the ACW-series wells $\langle \rangle$ were installed during the Phase 2 effort. Locations for the ACW wells were selected so they would be perpendicular to axis of the documented groundwater plume. Additionally, they were placed to the east as far as possible, while remaining on EPNG property, in an effort to further define the downgradient configuration of the plume.

Each of the wells, and the piezometer, were installed by West Texas Water Well Service. The drill rig used was a Badger 2000 rotary that could drill either on air or using water/mud. Each of the wells at the site was drilled using the rotary mud wash and completed using 4-inch schedule 40 PVC flush-thread casing with 0.010 machine slot screens. Stainless-steel centralizers were used to hold the PVC screen in the center of the bore hole during completion. An 8/16 Brady sand was tremmied in place around the screen and a bentonite seal was placed above the sand. The thickness of the seal ranged from 2 feet to 11 feet. A standard neat cement was used to seal the annular space from the bentonite seal to the ground surface. The well head assembly consists of a locking steel casing and a 4'x4'x4" concrete pad. Construction details and the geo-logic logs are included in Appendix A.

 d_{e}/d_{c} During the first field trip, conducted November 12-17, 1990, two of the three monitoring wells and the piezometer were successfully installed. One of the wells, ACW-2, would not produce sufficient water to allow the well to be developed. Therefore, the decision was made to install a replacement well. The replacement well is designated as ACW-2a and was installed on December 10, 1990.

3.2 WELL DEVELOPMENT

Upon completion, a 4-inch submersible pump was used to purge water from each of the wells. During purging, the pH, electrical conductivity (EC), and the temperature of the well was monitored. As these values stabilized and the turbidity of the purged water cleared, the well was considered completely developed and ready for sampling. As part of the well development



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Analytical results for the samples indicate the presence of benzene in each of the three wells; the remaining volatiles appear in one or more of the wells. With the exception of the presence of $36 \ \mu g/L$ benzene in ACW-2a, all concentrations for volatiles are below the standards established by the New Mexico Water Quality Control Commission (WQCC). Phenols, as measured by an analytical method to quantify "total phenols", is above the 0.005 mg/L standard. Figure 2 graphically illustrates the concentrations of constituents noted in the ACW wells. For comparison purposes, values from the ENSR wells obtained during the Phase 1 report have been included to illustrate the concentrations of constituents present in the ENSR wells. In addition to the relative concentrations of organic constituents, the figure presents concentrations of some inorganic indicators.

Without exception, the total dissolved solid (TDS) content of the groundwater extracted from the ACW wells is above the upper WQCC limit for usable water. However, as was discussed in the Phase 1 report, groundwater being sampled by the monitoring wells is from an area which is impacted by past wastewater disposal practices at Jal 4. Therefore, the high TDS of the water is not representative of background water quality.

The quality of the local groundwater was established during Phase 1 by sampling EPNG well 12, which is located upgradient of the facility. A complete discussion on the water quality for this well is presented in Section 3.3 of the Phase 1 report. In general terms, however, it can be stated that the water quality from EPNG 12, as determined by major cations and anions, is considerably better than that measured in monitoring wells. Furthermore, the disparity in water quality can be illustrated by comparing EC values for EPNG 12 (background) and the ACW wells (downgradient). EPNG 12 has an EC value of 695 µmhos/cm, whereas the average EC value for the three ACW wells is 24,500 µmhos/cm.

Comparison of the EC values measured during Phase 2 with those gathered during Phase 1, ⁴ indicate the configuration of the plume, as it was presented on Figure 4 of the Phase 1 report, ⁴ were reasonably accurate. Specifically, the concentrations noted in the ACW wells fall within ⁵ the predicted EC isopleths.

Numerical values for organic and inorganic parameters from Phase 2 are presented in Table 3 and Appendix B.

3.5 WELL SURVEY

Each of the ACW monitoring wells, and the piezometer, were surveyed by KWB&A field personnel. Although the survey can't be certified, the locations and elevations are considered to be accurate. The elevations for the ACW wells were established by back-sighting on ENSR 2. The elevation of ENSR 2 was then used as a benchmark to calculate the elevation of the well. Likewise, ENSR 3 was used as a benchmark for the survey of the piezometer. Table 4 lists the



casing elevations established for the wells and the piezometer; ENSR wells and EPNG wells are included for completeness.

Table 5. Daboratory	Acsults.				
	WQCC	ACW-1	ACW-1	ACW-2a	ACW-3
Parameter	Standard	11/16/90	12/14/90	12/13/90	11/16/90
Total phenols (mg/L)	0.005	0.15	0.07	0.24	0.10
Total dissolved solids (mg/L)	1,000 lower, 10,000 upper	12,900	12,000	10,200	23,600
Electrical conductivity (µmhos/cm)	No standard	22,000	19,300	16,500	35,000
Benzene (µg/L)	10	9.0	6.5	36	7.3
Ethylbenzene (µg/L)	750	<5.0	<2.5	5.4	4.5
Toluene (ug/L)	750	<5.0	<2.5	5.2	<0.5
Total xylenes (µg/L)	620	<5.0	16	12	0.6

Table 3. Laboratory Results.

Table 4. Well Elevations.

	Casing Elevation
Well Identification	(ft. above MSL)
ACW-1	3,300.87
ACW-2	3,301.07
ACW-2a	3,300.88
ACW-3	3,300.34
PTP-1 (Piezometer)	3,304.41
ENSR 1	3,305.40
ENSR 2	3,301.60
ENSR 3	3,303.80
EPNG 1	3,308.60
EPNG 5	3,308.90
EPNG 6	3,305.30
EPNG 12	3,324.90

4.0 AQUIFER CHARACTERISTICS

The primary focus of the Phase 2 effort was to gather accurate data for physical aquifer characteristics needed to predict the migration of the plume at the site. To this end, a piezometer was installed near ENSR 3 for the sole purpose of conducting a pump test. The piezometer was designated as PTP-1 (Pump Test Piezometer). The completion detail for this piezometer is included in Appendix A. Data from the pump test was used in conjunction with analytical data from the monitoring wells.

4.1 PUMP TEST

By pumping a well and observing the behavior of adjacent wells screened at similar depths, one can calculate the transmissivity¹ and storage coefficient² of the aquifer by the application of an appropriate method of analysis. These numbers define the geometry of the cone-of-depression surrounding a pumping well. For example, an aquifer having high transmissivity will have a very broad cone-of-depression, extending for, in some cases, miles in all directions away from the pumping well. Conversely, an aquifer possessing a low value for transmissivity will have a cone-of-depression that is tightly wrapped around the pumping well. Additionally, an aquifer with a low storage coefficient, for a given rate of pumpage, will generate more draw-down³ than an aquifer having a higher storage coefficient (Freeze and Cherry, 1979). By having these hydraulic descriptors available, it is possible to model the hydraulics of an aquifer system.

On November 12, 1990, the first of two separate pump tests was conducted. This pump test, however, did not continue to a satisfactory conclusion. Approximately 52 minutes into the test, the pump failed in such a manner that it could not be repaired in the field. An attempt was made to analyze the data collected during this "brief" pump test to determine whether or not useful data could be extracted. It was decided that the test was simply too short to offer credible data. Therefore, a decision was made to repeat the test at a later date.

The second pump test was conducted during December. The methods and results presented in the following sections are from the second pump test.

¹ Transmissivity is defined as the rate at which water of prevailing kinematic viscosity is transmitted through a unit width of aquifer under a unit hydraulic gradient (Todd, 1980).

Storage coefficient is defined as the volume of water that an aquifer releases from or takes into storage per unit surface area of aquifer per unit change in the component of hydraulic head oriented normal to that surface (Todd, 1980).

³ Drawdown is simply the numerical difference between pumping and nonpumping water levels in an aquifer.

4.1.1 Pump Test Methods

Pretest conceptual modeling demonstrated that a sufficiently-high pumping rate (i.e., 20 GPM) could be maintained in the pumping well (ENSR-3) for inducing drawdown in the piezometer, without the generation of excessive drawdown in the pumping well. For the pump test, an Aeromotor A20B-75 submersible pump was used to withdraw water from ENSR-3. A gate valve and flow meter were used to control and determine the pumping rate during the test.

A two-channel data logger (SE1000B), manufactured by In-Situ, Inc. (Laramie, Wyoming), was used to collect readings of water levels via pressure transducer in both the pumping and observation well. This device was programmed to sample the transducers on a logarithmic interval for the first few minutes of the test, where it then assumed an arithmetic, or linear, sampling rate. By having values of water levels on a logarithmic schedule initially, it is possible to evaluate the effects of pumping during the early portion of the test. The SE1000B records readings from a pressure transducer placed below the expected level of drawdown. For the observation well, the pressure transducer was placed at a depth within the screened interval of the casing. The pressure transducer for the pumping well was placed at the top of the pump, below the static water level.

4.1.2 Pump Test Procedure

Water level measurements were taken in the pumping well prior to initiation of the pump test. This procedure was performed to obtain a baseline value for the pre-pumping water level in each well and to calibrate the data logger.

The pump test began at 11:38 am and ended at 5:28 pm on December 11, 1990. From the start of the test, the gate valve was fully opened to obtain the highest pumping rate possible. An average pump rate of 13.37 GPM was maintained during the test.

4.1.3 Results of Pump Test

The variation in drawdown vs time for the observation well is presented in Figure 3. The figure shows that during pumping, the recorded drawdown in the observation well ranged from 0 to 1.1 feet. Figure 3 also shows the recovery curve for the observation well. The recorded recovery in the observation well ranged from 1.1 to 0.09 feet.

The raw data obtained by the data logger for the pumping and recovery periods are available in Appendix C. The recovery portion of the time/drawdown curve for PTP-1 was analyzed using the type curve solution of the Theis equation. The Theis equation assumes nonsteady, radial flow in a confined aquifer, without vertical leakage from overlying or underlying aquitards, and constant well discharge. Although it was determined that the aquifer was unconfined, the drawdown to saturated thickness ratio was acceptable to warrant application of the Theis method. Based upon the type curve solution of the recovery data, the values of transmissivity, storage coefficient, and hydraulic conductivity are given in Table 5.

Pumping/Recovery Curves for Observation Well PTP-1



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Figure 3. Pumping/Recovery Curves for Observation Well PTP-1.

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Observation Well	Transu	nissivity	Storage	Coefficient	Hydraulic Conductivity
PTP-1	Theis Analysis: 6,128 GPD/FT	Theis Recovery: 3,800 GPD/FT	Theis Analysis: 0.0152	Theis Recovery: Not Possible	4.5 x10 ⁻³ cm/sec
				and a second	

Table 5. Results of Pump Test.

4.2 HYDRAULIC GRADIENT AND FLOW DIRECTION

The hydraulic gradient and flow direction were established by Phase 1 data and were thoroughly explained in the Phase 1 report. It was determined during the Phase 2 effort that the hydraulic gradient was stable at 0.0018 ft/ft. Likewise, a southeast groundwater flow direction was again confirmed. In fact, the direction of groundwater flow did not differ from that presented in the Phase 1 report. The Phase 1 report documented a flow direction of N125°E (S55°E) and the Phase 2 data indicates a flow direction of N120°E (S60°E). Figure 4 illustrates the groundwater contours as determined by Phase 2 data. Methods used to make the Phase 2 determinations are consistent with the methods described in Section 4.3 of the Phase 1 report.



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5.0 PLUME CONFIGURATION

The configuration of the plume as it was presented on Figure 4 and discussed in Section 4.5 of the Phase 1 report are considered to be reasonably accurate. This assessment is based on data collected for the ACW monitoring wells which support the predictions made by the Phase 1 report. Figure 5 collectively illustrates the EC data collected from the Phase 1 sampling effort and data from Phase 2. From this figure, it is apparent that the plume is oriented in a northwest to southeast position. Likewise, it is clearly evident that the plume is restricted to the area where wastewater ponds were previously located. Predictions of the southeast extent of the plume have been calculated using a contaminant transport model. Results of this effort are offered in Section 6.4.

The conclusion reached during Phase 1 that the groundwater quality beneath the area where the wastewater ponds were located has been impacted by past activities, was supported by Phase 2 data. Specifically, the electrical conductivity of groundwater in the area of the old ponds was drastically greater than background and trace levels of organic constituents were present. Additionally, each of the ACW wells exhibited a distinctive "propane" odor (i.e., mercaptans were present).

It is interesting to note the difference in water quality between ENSR-3 and ACW-3. ENSR-3 is relatively clean when compared to the other monitoring wells. However, ACW-3 yields water which contains trace levels of organic constituents and elevated levels of salts (as suggested by EC and TDS). The most plausible cause for the difference is their location relative to the now closed wastewater ponds. ENSR-3 is in an upgradient position of the ponds (e.g., Ponds 6 and 7) and ACW-3 is in a downgradient position.



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6.0 GROUNDWATER MODELING

A thorough discussion of the model used to predict the configuration of the plume is presented in the Phase 1 report (Section 4.6). Moreover, predictions on the configuration and "character" of the plume were also presented in the Phase 1 report. However, the Phase 1 modeling effort was hampered because site-specific data were not available concerning the physical characteristics of the aquifer. Also, the locations of the ENSR monitoring wells (those used for the Phase 1 work) were not optimum for predicting plume configuration and migration. Hence, the Phase 2 effort was undertaken to better position monitoring wells and to collect accurate values for physical aquifer characteristics.

Unlike the previous sections of this report, where the reader is referred back to the Phase 1 report for information, this section on groundwater modeling has been extracted from the first report in its entirety. This was done because the modeling effort is the keystone of the Phase 2 effort and a complete discussion is warranted even though it is, in many respects, redundant with the Phase 1 report. In reading this section, it will become apparent that much of the text is identical; however, the numerical values have been revised to reflect Phase 2 data.

6.1 DESCRIPTION OF THE MODEL

The mathematical model used to simulate groundwater flow and solute transport in the uppermost aquifer at the Jal 4 site is a two-dimensional finite-difference model that computes values of hydraulic head (sum of pressure and elevation heads) and reactive or nonreactive solute concentration on a rectangular grid having equal spacing between nodes. The model was written by Konikow and Bredehoeft (1978), and is typically referred to as the USGS Method of Characteristics (MOC) model. The program is capable of generating transient or steady-state solutions for the hydraulic head field.

In a review of mathematical models for the U.S. Nuclear Regulatory Agency (NRC), Thomas et al. (1982) state that MOC "... is a well-tested and well-documented code that would be wellsuited for solving single-aquifer problems. Its high degree of acceptance makes it stand out among solute transport codes ..."

The model has undergone verification by comparison with several analytical models and has demonstrated excellent comparisons (Thomas et al., 1982). Field validation has been carried out for chloride movement at the Rocky Mountain Arsenal (Konikow, 1977), and for radionuclide transport at the National Reactor Testing Station (Robertson, 1974).

6.2 MODEL ASSUMPTIONS

In order to effect a practical solution to complex hydrogeologic problems, a number of simplifying assumptions have been invoked by the model authors (Konikow and Bredehoeft, 1978); the following is a synopsis of those assumptions

- 1. Darcy's Law is valid and hydraulic head gradients are the only significant driving mechanism for fluid flow.
- 2. The porosity and hydraulic conductivity of the aquifer are constant in time, and porosity is uniform in space.
- 23. Gradients of fluid density, viscosity, and temperature do not affect the velocity distribution.

. Ionic and molecular diffusion are negligible contributors to the total dispersive flux.

- 5. Vertical variations in head and concentration are negligible (i.e., computed values of head and concentration are averaged over the thickness of the aquifer).
- 6. The aquifer is homogeneous and isotropic with respect to the coefficients of longitudinal and transverse dispersivity.

There are no reasons to believe that Darcy's Law is not valid for description of the flow system at Jal 4. Factors governing the validity of Darcy's Law are: (a) fluid density, (b) pore fluid velocity, (c) average pore (grain size) diameter, and (d) dynamic fluid viscosity. Readers trained in the field of fluid mechanics will recognize these factors as those variables that define the Reynolds Number:

 $N_R = \frac{\rho V D}{\mu}$

Where:

 N_R = Reynolds Number

- ρ = fluid density
- V = pore fluid velocity

D = average pore (grain size) diameter

 μ = dynamic fluid viscosity

Most agree that the upper limit for the validity of Darcy's Law is when the N_R rises above the range 1 to 10. Thus, given the prevailing conditions at Jal 4, it is asserted that assumption (1) is met at both waste management areas.

Obviously, porosity and hydraulic conductivity are spatially-varying quantities for naturally-occurring aquifers. Without extensive field and laboratory measurements, the spatial distribution of the parameters remains unknown. The assignment of point estimates for porosity represents a significant departure from reality, and the application of assumption (2)

is questionable. Given the limitations constraining the study, however, the approximation of some variables by point estimates and supplementing these estimates with site-specific values is deemed acceptable.

The high levels of EC in the groundwater beneath Jal 4 (i.e., up to 70,000 µmhos/cm), suggest a significant concentration of dissolved salts. It is possible that the groundwater contains salt levels in sufficient quantities to affect its density and viscosity. Although groundwater temperature may remain fairly constant throughout the year, density and viscosity will probably vary as a function of position (laterally and vertically) within the aquifer, and assumption (3) may not be valid.

The dispersion coefficient is generally defined as follows (Freeze and Cherry, 1979):

 $D_1 = \alpha_1 v_1 + D^*$

Where:

 D_1 = coefficient of hydrodynamic dispersion

 α_1 = dispersivity along flow path 1

v₁ = average linear groundwater velocity

 D^{\bullet} = coefficient of molecular diffusion

For assumption (4) to be met, the first term in equation (2) must overshadow the second term; a quick calculation shows this to be the case:

Let $\alpha_1 = 100$ feet (selected through trial and error) $v_1 = 9$ feet/year (based on field data) $D^* = 5 \times 10^{-9} \text{ ft}^2/\text{sec}$ (Freeze and Cherry, 1979) $\alpha_1 v_1 = 2.9 \times 10^{-5} \text{ ft}^2/\text{sec}$

Thus, the first term dominates the expression by four orders-of-magnitude, and the contribution to the dispersion coefficient by the diffusion coefficient is negligible.

With regard to assumption (5), where vertical gradients are absent, the variation of hydraulic head with depth is nonexistent. That is to say that, along a vertical line, the total head is constant, and this portion of assumption (5) is valid. The vertical variation of solute concentration with depth is much less known, and the viability of assumption (5) in this regard is in question. However, the small aquifer thickness at Jal 4 should aid in uniform mixing of solute.

Finally, it is generally recognized that dispersivity is a scale-dependent quantity. Molz et al. (1983) summarized the problematic nature of dispersivity measurement as follows: "... the greater the travel distance in a tracer test used to measure dispersivity, the larger the dispersivity value that is calculated." This phenomenon is largely attributed to vertical variations in aquifer hydraulic conductivity. Thus, at the current level of knowledge regarding dispersivity,

precise spatial distributions for this parameter are very difficult to determine. Assumption (6) is considered to be reasonable in light of the absence of concrete methods with which to measure field values of longitudinal and transverse dispersivity.

6.3 INPUT REQUIREMENTS

The principal data required by the model to generate a solution are given in Table 6. Table 7 lists all of the parameter values used during the model runs. The model runs illustrate calibration of the model (Run 1) and recovery of impacted groundwater. The calculations are discussed below and the computer output is included as Appendix D.

Model Calibration

Hydraulic head contours were generated from water level measurements made in the monitoring wells on-site. These wells included ENSR-1, -2, -3, ACW-1, -2a, -3 and EPNG-1.

The primary constituent focused on during calibration was EC. EC was used as the "contaminant" in the model, and the assumption was made that no adsorption processes would be simulated. That is, the modeled contaminant would move at the velocity of the groundwater.

The procedure generally involved identifying parameters with the least-known values, and utilizing those as the parameters that would be varied throughout the trial-and-error procedure. For this analysis, pond water EC, pond leakage rate, and longitudinal and transverse dispersivity were the most-unknown parameters available.

The remainder of the parameters, such as transmissivity, aquifer recharge, and porosity were estimated by the modelers based on experience and knowledge of the site, or were determined empirically through field testing.

It was assumed that the ponds had leaked at a constant rate, with constant pond water EC, for a period of 30 years. Thus, Run 1 extended from 1961 through 1990. Figure 6 is a graph of observed versus computed EC. For a good calibration, these data points should lie on a 45-degree line. As is apparent from an examination of this figure, all data points lie on a 45-degree line, or deviate slightly. ACW-2a is the only well that does not fit well. EC is overpredicted at this location, suggesting that perhaps this well would need to be pumped for an additional time to achieve steady-state conditions. The configuration of the plume at the end of the calibration run is illustrated in Figure 7.

6.4 GROUNDWATER MODELING RESULTS

Information presented in this section is intended to provided qualitative predictions on the status of groundwater conditions at the site. Because it was necessary to make assumptions to supplement the available site-specific data, the numerical values presented are not offered

	Spatially ¹	Temporally ²
Parameter	Varying?	Varying?
Number of time steps	N/A	Yes
Simulation duration (Years)	N/A	N/A
Number of nodes in X-direction	N/A	No
Number of nodes in Y-direction	N/A	No
X-direction nodal spacing (Feet)	No	No
Y-direction nodal spacing (Feet)	No	No
Number of pumping or injection wells	Yes	N/A
Flow rate of pumping or injection wells (Ft3/sec)	Yes	Yes
Effective porosity	No	No
Longitudinal dispersivity (Feet)	No	No
Transverse dispersivity (Feet)	No	No
X-direction transmissivity (Ft2/sec)	Yes	No
Y-direction transmissivity (Ft2/sec)	Yes	No
Storage coefficient	No	No
Distribution coefficient (cm3/g)	No	No
Aquifer bulk density (g/cm3)	No	No
Half-life of solute (Seconds)	N/A	N/A
Saturated thickness of aquifer (Feet)	Yes	No
Diffuse discharge/recharge (Ft/sec)	Yes	No
Initial water table or piezometric surface elevation (Feet)	Yes	N/A
Initial solute concentration in aquifer (mg/L)	Yes	N/A
Vertical hydraulic conductivity of confining layer (Ft/sec)	Yes	No
Thickness of confining layer (Feet)	Yes	No
Source dimensions (Feet)	Yes	No
Source concentrations (mg/L)	Yes	No
Constant head boundaries (Feet)	Yes	No
No-flow boundaries	Yes	No

Table 6. Input Requirements for the USGS MOC Solute Transport Model.

¹ Does the quantity vary in a horizontal plane?

 2 Does the quantity vary in time?

	Calibration
Parameter	value
Number of columns	20
Number of rows	20
Column width (Feet)	200 / (
Row height (Feet)	200 product
Max. no time steps	30 155 Chines ho
Duration (Years)	30 - 51 57552-
Storage coefficient	0 1/
Porosity	0.2
Longitudinal dispersivity (Feet)	100
Transverse dispersivity (Feet)	. 30
Transmissivity (Feet^2/day)	9.48E-03
Distribution coefficient (cm^3/g)	0 7 1111
Aquifer thickness (Feet)	65 2 i- since - with and
Hydraulic conductivity (cm/sec.)	4.45E-03
Aquifer recharge (In./Yr.)	0.1
Pond 1; Cell 3 leakage rate (Feet/year)	20.5
Pond 7; Cell 2 leakage rate (Feet/year)	12.6 Sale (C.)
Pond 7; Cell 4 leakage rate (Feet/year)	11.0
Pond 11; Cell 5 leakage rate (Feet/year)	14.2
Pond 1; Cell 3 water EC (mmhos/cm)	150 North 17
Pond 7; Cell 2 water EC (mmhos/cm)	75
Pond 7; Cell 4 water EC (mmhos/cm)	40 de la
Pond 11; Cell 5 water EC (mmhos/cm)	120

Table 7. Input Data-USGS MOC Groundwater Flow/Contaminant Transport Model.



Figure 6. Correlation of Observed and Computed EC.



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as quantitatively-precise results. Nevertheless, the modeling results are considered to be representative of future conditions at the site.

Results from the groundwater modeling exercise indicate that the axis of the plume is oriented from the northwest to the southeast along the prevailing groundwater flow direction. The area affected by the plume encompasses the majority of the plant which at one time was occupied by wastewater ponds as well as an area to the southeast of the EPNG eastern property line. The lateral extent of the plume, as predicted by the model, extends to the east beyond Highway 18 for a distance of approximately 1,100 feet. This 1,100-foot distance corresponds with the 5,000 µmhos EC contour (roughly equivalent to a TDS of 3,200 mg/L). These EC and TDS values do not represent "background" conditions. Rather, they approximate the lower range for livestock use. Table 8 illustrates the recommended TDS drinking water values for livestock.

drinking

Table 8. Total Dissolved Solids in Drinking	Water for Livestock.
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Animal Type	TDS (mg/L)
Small Animals	3,000
Poultry	5,000
Other Animals	7,000

Source: Freeze and Cherry, 1979.

7.0 REMEDIATION

Remediation alternatives presented in the Phase 1 report were limited to a pump-and-treat scenario. Limiting remediation to this type of option is based on two factors: the high concentration of salt in the plume and the low levels of organics present. This situation does not warrant *in situ* treatment to deal with the organic constituents. In fact, the low concentrations and the high salinity would ensure that treatment would be costly and largely ineffective. Additionally, the pump-and-treat remedial approach was suggested because it is believed that the New Mexico Oil Conservation Division will require this type of remediation, if remediation is required.

One option which was not suggested in Phase 1, but which may need to be considered, is the "do nothing" option. Although a plume has been documented, and the source of the plume is most certainly from EPNG operations, it is not known what the overall surrounding water quality is like. The Phase 1 effort documented that the water upgradient from the facility is relatively good. However, the area around Jal 4 is clearly an oil and gas producing area and these areas are notorious for impacting groundwater. Therefore, it is possible that although Jal 4 is situated on "good" water, it may be that on a regional scale the groundwater quality has been degraded. If indeed this is the case, OCD may be receptive to a "do nothing" approach. The "do nothing" approach would further be strengthened if EPNG can demonstrate that there are no receptors in a downgradient location.

Since no one can predict the stance to be adopted by OCD, a remedial action plan which calls for the withdrawal and injection of groundwater has been developed. A total of eight pumping configurations were explored to determine the optimum approach. Options investigated ranged from a single pumping well to an entire well field consisting of 17 pumping wells located across the entire plume. Table 9 lists the characteristics of each pump-and-treat option and a qualitative assessment of the effectiveness of each design. Of the eight configurations, three are discussed in the following sections to illustrate the range of pump-and-treat scenarios. [For the purpose of this exercise, the μ mhos/cm concentrations of the groundwater were converted to mmhos/cm (example: 10,000 μ mhos/cm = 10 mmhos/cm.]

In reviewing these options it will be important to note that they will require the installation of wells on property not owned by EPNG. As such, special consideration may be warranted.

ч.	Summary of	Fump-and-11				
	No. Prod.	Wells	Pumpage	Duration	•	Deculte
	Wells (Rale)	(Rale)	(M/U)	(rears)	remarks	Deer
	o	D .	3	0	wells sported in plume not spors.	FUUI
	(10 GPM)			(1990 - 1995)		
	4	9	0	2	Same as #1 with addition of six injection wells	Poor
	(10 GPM)	(6.67 GPM)		(1990 - 1995)	and one additional pumping well. Net pumpage	
					is 0 (soil flushing problem).	
	4	8	0	5	Net pumpage is 0.	Fair
	(10 GPM)	(5 GPM)		(1990 - 1995)		
	4	8	8	5	Same as #3 except injection well pump	Fair
	(10 GPM)	(4 GPM)		(1990 - 1995)	rate is decreased to 4 GPM, yielding a	
					net pumpage of 8 GPM.	
	4	8	8	5	Same as #4 except injection wells are	Excellent. Plume has,
	(10 GPM)	(4 GPM)		(1990 - 1995)	shut in after five years. Pumping wells are	been split, however
					allowed to pump for an additional five years.	and a portion remains
	4	0	40	ں		across Highway 18.
	(10 GPM)			(1995-2000)		
	1	0	20	വ	Only one production well is specified in	Poor
	(20 GPM)			(1990 - 1995)	this option.	
	1	0	20	വ	Same as #6 except duration is increased	Poor
	(20 GPM)			(1990 - 2000)	to 10 years.	
	17	0	85	5	Wells are spotted on 400-foot centers	Fair
	(5 GPM)			(1990 - 1995)	and are located within the 10 mmhos/cm	
					contour.	
	13	0	110	ŋ	Four production wells are shut-in after	Excellent
	(5 & 20 GPM)			(1995 - 2000)	five years. Pump rate of three centerline	
					wells is increased to 20 GPM.	

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7.1 PUMP-AND-TREAT REMEDIAL OPTIONS

As stated previously, three of the eight pump-and-treat remedial options were selected to illustrate the range of alternatives. The following text highlights the main components of these options.

Option #1: Three pumping wells in the plume "hot spots."

This option consisted of locating a pumping well within each of the highest EC concentrations in the plume. Figure 8 illustrates the location of each of the three pumping wells. Based on firsthand knowledge of the aquifer, these wells were pumped at 10 gallons per minute (GPM). It is doubtful that a pumping rate in excess of this value can be sustained for a significant period of time. Net pumpage was 30 GPM.

A simulation duration of five years was chosen. The simulation was initiated at the end of the calibration period, and extended from 1990 to 1995. As is obvious upon examination of Figure 8, there has been some progress toward remediating the plume, but a significant mass of salt remains in the aquifer.

Option #5: Eight injection wells and four production wells

This option consisted of a total of eight injection wells and four pumping wells, all located within the property boundary of Jal 4. Figure 9 shows the location of each well. Each injection well injected water at an EC level of 0 mmhos/cm and at a rate of 4 GPM. Each production well was pumped at 10 GPM, yielding a net withdrawal of groundwater from the aquifer of 8 GPM. This option also spanned the period 1990-1995.

After five years, the injection wells were shut-in, and the recovery wells were allowed to pump for an additional five years (1995-2000) at 10 GPM.

As shown by Figure 9, the portion of the plume on EPNG property has been remediated to below 5 mmhos/cm. But, the portion of the plume that has migrated offsite, located to the east of Highway 18, remains at EC levels as high as 30 mmhos/cm, indicating the need for pump-ing/injection in this area.

Option #8: Well field

This option employs 17 pumping wells spotted throughout the plume. The intent of this option was to determine the maximum effort that would have to be expended to most effectively diminish EC levels of the groundwater beneath Jal 4.

The well field was designed by locating wells on 400-foot centers within the 10 mmhos/cm contour, as defined by the EC distribution at the end of the calibration period. Each well was pumped at 5 GPM for five years (1990-1995). After five years, four production wells were shutin, and the three wells that were located on the centerline of the plume at that time were in-




creased to 20 GPM. The balance of the wells was left to pump at 5 GPM. This segment extended from 1995-2000.

Figure 10 indicates that the highest computed EC contour is 8 mmhos/cm (5,120 mg/L TDS), a value that is below the computed upper WQCC standard of 15.6 mmhos/cm (10,000 mg/L TDS). Thus, Option #8 appears to be the most effective at moderating the groundwater contamination associated with Jal 4.

7.2 PUMP-AND-TREAT REMEDIAL COSTS

To calculate the costs of the three remedial options presented, unit costs were devised for each element. The primary element of the cost estimate is the installation of the wells and oversight of their installation. Disposal costs have not been included; it is assumed that EPNG will be able to use the EPNG injection well that is situated near the northern boundary of Jal 4. Ancillary costs associated with the wells include plumbing between the recovery wells and the disposal well, running electricity to each of the wells, and annual analytical requirements. Also, maintenance costs have been excluded since it is anticipated that EPNG personnel from the Jal Lab will be able to supervise the system. Table 10 presents the estimated costs for the remedial effort. These costs are offered for comparison purposes only. Itemized costs would be required prior to implementing any activities.

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Item	Option #1	Option #5	Option #8
Wells required	3 Pumping wells	4 Pumping wells/ 8 Injection wells	17 Pumping wells
Well installation and materials (3)	\$18,000	\$41,000	\$95,000
Electrical	\$14,250 (1)	\$18,250 (1)	\$45,500 (2)
Plumbing	\$1,200 (6)	\$1,200 (6)	\$3,200 (7)
Annual analytical (4)	\$600	\$800	\$4,800
Consulting costs (5)	\$19,600	\$35,600	\$44,100
Total cost	\$53,650	\$96,850	\$192,600

Table 10.	Estimated	Remedia	1 Costs
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Note 1: Assumes 1,500 feet of wire installed at \$3.50/ft + pump savers.

Note 2: Assumes 7,000 feet of wire installed at \$3.50/ft.

Note 3: Assumes a \$5,000/well installation cost for pumping wells. Assumes a \$2,000/well installation cost for injection wells.

Note 4: Assumes two samples per year for TDS,EC, BETX and total phenols. Two additional samples per year for EC and TDS. Annual cost per pumping well = \$200.

Note 5: Costs associated with the installation of wells and field report at the completion of the project. Groundwater modeling would require additional costs.

Note 6: Assumes 2,000 feet of pipe installed at \$0.60/ft.

Note 7: Assumes 8,000 feet of pipe installed at \$0.60/ft.

From these cost estimates, it is clearly evident that effective remediation of the site will be costly. It is equally evident that remediation will only address a portion of the problem in that,



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although the groundwater quality is improved, it is not returned to background conditions. Also, the remediation will require time to be effective. During the remediation period, there will be a need for routine maintenance and monitoring. It is also conceivable that during the course of the remediation effort the data being collected will suggest that modifications to the system will be needed.

8.0 CONCLUSIONS AND RECOMMENDATION

Conclusions derived from the Phase 2 effort in many respects parallel those offered in the Phase 1 report. The presence of a groundwater contaminant plume whose origin is seemingly tied to the past operation of the wastewater ponds was confirmed. Likewise, the southeasterly groundwater flow direction and the low hydraulic gradient, as presented in Phase 1, were verified.

The waste constituents noted in the groundwater plume during Phase 2 were consistent with Phase 1 findings. Although the analytical list was drastically reduced for the second phase, the constituents noted included BETX, phenols, and elevated levels of salt (as determined by measuring TDS and EC). Interpretation of the Phase 1 and Phase 2 data clearly suggest a source of recharge to the aquifer which contained volatile hydrocarbons, phenolic compounds, naphthenes, and large quantities of salt.

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Physical testing determined the aquifer had a hydraulic conductivity of $4.5 \times 10-3$ cm/sec, a transmissivity of 6,128 GPD/ft, and a storage coefficient of 0.0152. These values are appropriate for the type of aquifer documented at the site. Moreover, these values approximated the values assumed for the modeling effort conducted during Phase 1.

It is our assessment that only two options, or a variation between the two options, will be appropriate. These options are: (a) justify to OCD the "do nothing" approach or, (b) implement a pump-and-treat system. The merits of choosing either approach will focus on salts present in the groundwater, not organics. This position is warranted because the levels of organics are low and the current TDS of the water renders it unusable. Therefore, any remediation that may be required must deal with removal of salts. If the salts are removed, it is reasonable to predict that the organics will be addressed.

It is our recommendation that EPNG explore all aspects of the "do nothing" option prior to instigating additional work at the site. If the pump-and-treat option is ultimately required, our calculations predict that a minimum of 10 years will be required to remove just a portion of the plume. It will be possible to speed up the process by installing higher capacity wells, more wells, or both. Given the pump-and-treat option is based on the assumption that recovered water can be injected near the site, it will be important to determine the capacity of the injection well. Hence, prior to selecting a final well field design, it will be necessary to gain information on the performance of the injection well.

In the event recovery of the groundwater plume is required, and the injection well is deemed unsuitable, it will be necessary to explore options such as treating the water by reverse osmosis

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Melic 2 complete series at plane bound or trucking the water to a different disposal well. In either case, the costs for the project will increase dramatically.

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P. O. BOX 1492 EL PASO, TEXAS 79978 PHONE: 915-541-2600

March 18, 1991

CERTIFIED MAIL: RETURN RECEIPT REQUESTED

Christie Gas Corporation Attn: Mr. Joe Christie Barton Oaks Plaza Two, Suite 515 901 MoPac Expressway South Austin, TX 78746 RECEIVED

MAR 2 5 1991

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OIL CONSERVATION DIVISION

Re: Discharge Plan for EPNG's Jal No. 4 Plant

Dear Mr. Christie:

The New Mexico Oil Conservation Division (OCD) administers through delegation, all New Mexico Water Quality Control Commission (WQCC) regulations pertaining to surface and groundwater at natural gas processing plants.

Section 3-111 of the WQCC regulations states that with respect to the transfer of a discharge plan, "... the transferor shall notify the transferee in writing of the existence of the discharge plan, and shall deliver or send by certified mail to the director a copy of such written notification, together with a certification or other proof that such notification has in fact been received by the transferee. Upon receipt of such notification, the transferee shall have the duty to inquire into all of the provisions and requirements contained in such discharge plan, and the transferee shall be charged with notice of all such provisions and requirements as they appear of record in the divisions's file or files concerning such discharge plan."

Please consider this letter to be written notification of the existence of a discharge plan for the Jal No. 4 Plant. A copy of the discharge plan will be sent to you under separate cover. The current discharge plan for the facility has expired and it will be necessary to submit and gain approval of a new discharge plan prior to beginning operations at the facility.

If you have any questions concerning this matter, please contact me at 915/541-2323.

Sincerely,

lin Bace

Philip L. Baca, P.E. Sr. Compliance Engineer

cc: Mr. William J. LeMay New Mexico Oil Conservation Division P.O. Box 2088 Santa Fe, NM 87504-2088



PLAN SCALE: 1"=1000" OWNERSHIP

LESSEE

SUBDIVISION

51D RICHARDSON CARBON & GASOLINE CO. 51D RICHARDSON CARBON & GASOLINE CO. E. P. N. G. CO.

OWNER

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LAW OFFICES OF

CHRISTIE, BERRY & DUNBAR

1700 NORTH STANTON

EL PASO, TEXAS 79902

915/532-3638

JOE CHRISTIE MARK BERRY EDWARD W. DUNBAR MICHAEL C. CROWLEY ANGELICA J. BARILL

March 6, 1991

901 MOPAC EXPWY, SOUTH SUITE 515 AUSTIN, TEXAS 78746 512/327-9510

JOHN A. YEAGER

Mr. Howard L. Holder El Paso Natural Gas Company P. O. Box 1492 El Paso, Texas 79978

Dear Mr. Holder:

This is to confirm the agreement reached today wherein El Paso Natural Gas Company ("El Paso") promises to sell and Joe Christie or his assignee ("Christie") promises to buy the following real and personal property presently located and owned by El Paso and located approximately 11 miles north of Jal, New Mexico on State Highway 18 (known as the Jal No. 4 Field Plant) and described as follows:

SE/4 SE/4, Section 31, S/2 SW/4, West T & N, R.R.R.O.W., Section 32, T-23-S, R-37-E, Lea County, New Mexico. Also portions of Lots 3 & 4, SW/4 NW/4 and W/2 SW/4 of Section 5, T-24-S, R-37-E, N.M.P.M., lying West of Texas - New Mexico R.O.W.

This contract of sale is subject to the following terms and conditions:

- 1. Excluded from this sale is all property previously sold to the Sid Richardson Company;
- Purchase price to be paid on date of closing is \$100,000.00;
- 3. Closing will be no earlier than March 31, 1991. El Paso agrees to use its best efforts to obtain an extension from the appropriate New Mexico authorities so that the closing date can be extended to April 30, 1991.
- 4. Prior to closing, El Paso will make appropriate personnel and all relevant records available to Christie so that Christie can conduct a due diligence investigation of the property. Such records will include but not be limited to, all records and correspondence from any State or Federal regulatory agency with jurisdiction over environmental matters concerning the property.

Letter to Mr. Howard L. Holder March 6, 1991 Page Two of Two

- 5. If, prior to closing, in the sole opinion of Christie there exists a reason or Christie should not purchase the property, Christie will notify El Paso of such fact. If Christie's objection cannot be resolved by mutual agreement between El Paso and Christie, then Christie may either waive his objections and proceed with the purchase or notify El Paso of his desire to cancel the contract.
- 6. The property is, and will be at closing, free and clear of all liens, claims and encumbrances.
- 7. The personal property and equipment will be sold on a "where is, as is" basis.

Accepted and agreed to this the 6th day of March, 1991 by

Christie, Purchaser Jde

and

El Paso Natural Gas Company by

Howard L. Holder

JC/as

OIL CONSERVE ION DIVISION REDE VED Natural Gas Company FEB 29 AM 9 06

P. O. BOX 1492 EL PASO, TEXAS 79978 PHONE: 915-541-2600

February 26, 1991

New Mexico Oil Conservation Division Attn: Mr. Dave Boyer P.O. Box 2088 Santa Fe, NM 87504

Subject: El Paso Natural Gas Company's (EPNG) Jal No. 4 Plant - Disposal of Nonfriable Transite and Mole Sieve Beads

Dear Mr. Boyer:

Please consider this letter to be a follow-up to our phone conversation of February 25, 1991. During that conversation we discussed EPNG's demolition of the Jal No. 4 "A" gasoline plant. Specifically, we discussed the following items:

- Disposal of Nonfriable Transite: During our conversation it was agreed to that in light of recent NESHAP regulation changes concerning transite, the transite may be disposed of on-site. As indicated to you during our phone conversation, the transite is in the form of building siding and will be wrapped in polyethylene plastic and buried on-site.
- Disposal of Mole Sieve Beads: The beads have been analyzed for hazardous wastes and were found to be free of any hazardous waste. Thus it was agreed to that the beads may be applied to grade or buried in a pit at the facility. The beads will be spread across the surface of the plant facility.

During our phone conversation, you mentioned the status of the old brine pits. Specifically, you reminded me that the brine pits must either be closed or repaired by March 31, 1991. A final decision with respect to EPNG's plan of action with respect to the pits is anticipated shortly.

If you have any questions concerning this matter, please feel free to contact me at 915/541-2323.

Sincerely,

Philip L. Baca, P.E. Sr. Compliance Engineer

PLB:asg

OCD, EPNG Meetin, on Jal#4-9/24/90-1030hrs Participants - Bill Olson - OCP Nozen Anceson - OCID April Buca - EPNG Dave Moya - OCM Don Payne - 15PX16 PB. hander sut maps at - Milw location. - Predicted FC Come. - Orsaynya Constituents detected C (April) ENSR = 1 11,000 7 2 7 3 31000 1,000 EPNO = 1 00072 Oussign, De have prolin Dest location for MW's En bol - the h. K.W. Brown wanted 4 wells along they 18 as shown on 1st figur. Gev. sod to 3 well- along they 18

lignose 1) 3 well, alon, Hwy 18 2) Diezometer adjucent to FXISR#3 observation well for puny test tor OW flow to SE It wells completed below water table up to 17 'lebour Nor MW's will be screened across water table No wells can be observed by Disight across Mothery P.B. To what extent are you responsible for pre 1977 contamination (ie pre-resultion & Wacc) Cont. from all points and new ? O.P. Currently dispose in a injection well Abb Fit have contaminant, in new mills with have to go fontin east. Will evaluate atten reviaring into Arm new wells Do anelyses on ton - Att purgeable. PAH's Alitrate Major Cations / Anions P.B Expect drilling Oct 1950 with report in 6-8 weeks follows drilling



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DRAIN LINE TESTING PROCEDURE

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for

SID RICHARDSON CARBON & GASOLINE CO.

JAL NO. 4 PLANT

LEA COUNTY, NEW MEXICO

January 7, 1991

SUMMARY

This drain line testing plan sets forth the methods and procedures which Sid Richardson Carbon & Gasoline Co. proposes to use to verify the integrity of the underground drain system at the Jal No. 4 Plant.

The purpose of this testing is to ensure that wastewater flowing through this piping system is contained and does not contribute to the degradation of groundwater quality in the general area of Jal No. 4 Plant.

Recordkeeping and reporting have been addressed in the General Instruction section. All charts, worksheets and resulting reports will be retained for a minimum of five years.

Detailed instructions are given for testing each major section of drain line. As each section is tested, all laterals (smaller drains) which flow into the main header will be subjected to the same test pressure. This will assure that all underground piping is tested. Drain Line Testing Procedures for Jal No. 4 Plant

Introduction

The following procedures are arranged to allow testing of various sections of the drain system with the plant in operation.

The test sequence should be arranged so water from one section can be routed into the next section to be tested where possible. This should shorten filling time and provide more economical use of water.

Water used in testing will be raw water from the plant water system. Use of fire hydrants and hoses will be required in some locations to provide sufficient volume and pressure for filling and testing. In most cases, test pressures will be below normal line pressure in plant water mains making use of hydrostatic test pump unnecessary. The higher pressures will require a pump.

The test pressures and duration used in this procedure exceed those specified for drainage and vent systems as set forth in the 1979 ICBO Code, Sections 1004 (A) 1 and 1005. The International Conference of Building Officials (ICBO) Plumbing Code of the Uniform Plumbing Code describe the procedures to be utilized in this testing procedure. The pressures and duration required in the ICBO Code are 4.3 psi and 15 minutes, respectively.

General Instructions

- Before attempting to test any section of drain line, verify the sources of effluent and vapors entering the line. Any line which will contain significant amounts of Hydrogen Sulfide (H2S) will be opened and tested observing all prescribed safety precautions and procedures.
- 2. Line sizes, tap numbers and locations of values are shown on drawing No. J4-D-001, "Drain System". The entire test procedure is directly related to information on this drawing.
- 3. All drain and block valves which are lubricated plug valves, should be lubricated in the closed position to minimize possibility of leakage.
- 4. Before installing expandable plugs, clean the interior portion of the pipe where plug seal will contact pipe wall to assure proper sealing.
- 5. Use new gaskets when installing blind plates in flange unions and tighten flange bolts evenly to prevent tilting of flange faces and leakage.

- 6. Filling a test section should always be from the lowest tap, venting at the higher taps to displace as much air or gas from the line as possible. Air or gas in the line, especially large amounts, may cause instability in pressure readings.
- 7. Test procedures given for each section to be tested are 10 p.s.i. above the maximum recorded pressure for that section of line. Test pressure should be applied only after system pressure is stabilized at some lower pressure.
- 8. After test pressure has been applied and stabilized, system will be isolated and test will last for (1) one hour. This is to be a static pressure test. Introduction of additional pressure will void previous time interval and will require restarting test.
- 9. If a section will not maintain the static test pressure for the required time, provided there is no valve, fitting or flange leakage, this section of drain line will be considered faulty. At this point it may be necessary to further isolate smaller sections of the line or expose the entire line until the leaking portion can be located and replaced or repaired.
 - a. It should be noted that leakage can occur around the plug of a valve unless a sealing type grease is used to lubricate the valve in the closed position.
 - b. Leakage will occur around the seal of an expandable plug unless the inside pipe surfaces are thoroughly cleaned prior to inserting the plug.
 - c. Improper tightening of flange unions or faulty, used, or dirty gasket will cause leakage at the blind plate installations.
 - d. Other points to check for system leakage are: loose screwed fittings and valves, stem packing (or bonnet) leakage on gate or globe valves, worn seating surfaces in ball valves, unseated gate or globe valves, and faulty resilient seats in butterfly valves.
- 10. Test pressures will be recorded on a circular chart which will be retained as a permanent record.
- 11. At the end of testing interval, remove the chart from the recorder before unscrewing the unit from the pressure tap to prevent irrelevant pen markings, ink spillage, or other chart damage.

- 12. Each chart will have the following information recorded on the back:
 - a. Date
 - b. Tap location
 - c. Line Description
 - d. Initials of person changing chart
 - e. Signature of person supervising testing

These charts will be retained at the plant office for reference and inspection as required.

- 13. When the integrity of the drain system, or a section of the system, has been verified, the system, or section, will be returned to normal service.
- 14. All drains will be tested periodically and a written report sent to the West Texas Area Manager with copies to Engineering and the file at the Plant.
- 15. The open drain collection point is open to the atmosphere and will be tested annually by filling with water and gauging any drop in level over a 4 hour period.

Line: 6"/8" Open Drain Line from "A" Compressor Building to Junction with 10"_Open Drain Line.

- Install threaded plug in South Basement drain line in "A" 1) a. Compressor Building;
 - b. Close valves on oil cooling water sidestream filter drain;
 - с. Close valves on jacket water sidestream filter drain.
- 2) a. Install expandable plug in drain from containment apron No. 5;
 - b. Install expandable plug in drain from containment apron No. 11;
 - Install expandable plug in 6" drain from water treater c. backwash sump;
 - Install expandable plug in drain from containment apron No. 9; d.
 - Install expandable plugs in 2" drains in Auxiliary Building. e.
- Install plug in 8" stopple fitting at junction with 10" water 3) a. treater backwash drain line.
 - Open valve at tap No. 14 for venting; b.
 - Using tap F26 at 8" stopple fitting, fill system with water c. until all air/gas is displaced from line.
- 4) Install properly zeroed recorder on tap No. 14 then stabilize system pressure using fill tap F26.
- 5) Raise pressure to 20 psig on system, stabilize, then begin static pressure test as specified in General Instruction, Item 8.
- 6) If static pressure cannot be maintained as specified, refer to General Instruction, Item 9.
- 7) At the end of testing period, chart shall be removed and retained for permanent record and will be identified as indicated in General Instruction, Item 12.
- 8) Upon completion of test:
 - Release test presure; a.
 - Remove expandable and threaded plugs from: **b**.
 - (1) 6" Water treater backwash sump drain;
 - (2) Containment Apron No. 11;
 - (3) Containment Apron No. 5;

 - (4) Containment Apron No. 9;(5) South Basement drain in "A" Compressor Building
 - (6) 2" Drains in Auxiliary Building

Line: 6"/8" Open Drain Line from "A" Compressor Building to Junction 10" Open Drain Line - Cont'd

- c. Position drain valves at oil and jacket cooling water sidestream filters for normal operation.
- d. Remove plug from 8" stopple fitting at junction with 10" water treater backwash line;
 - e. Close and plug all vent and fill taps.
- 9) Proceed to test on 10" water treater backwash line.

Line: 10" Open Drain Line - Section I

- 1) Close valve on 4" floor drain from "A" Compressor Building at junction with 10" open drain line near old "C" Compressor Inlet Regulator Run.
- a. Install 10" expandable plug in drain line in water treater backwash sump;
 - b. Install 10" expandable plug in drain line at open drain collection point;
- 3) a. Install plug in 8" stopple fitting at junction with "C" Compressor Plant open line near corner of block fence.
- 4) a. Open valve at Tap F27 for venting;
 - b. Using Tap F29 at open drain collection point, fill system with water until all air is displaced from the line;
 - c. Close valve at Tap F27.
- 5) Install properly zeroed recorder on Tap F27 then stabilize system pressure.
- 6) Raise pressure to 20 psig on system, stabilize test pressure then begin static pressure test as specified in General Instruction, Item 8.
- 7) If static pressure cannot be maintained as specified, refer to General Instruction, Item 9.
- 8) At the end of testing period, chart shall be removed and retained for permanent record and will be identified as indicated in General Instruction, Item 12.
- 9) Upon completion of test:
 - a. Release test pressure;
 - b. Remove expandable plugs from drain in water treater backwash sump.
 - c. Remove plug from 8" stopple fitting at junction with 10" near block fence corner and secure;
 - d. Open 4" valve in line from Compressor Building Drain;
 - e. Close and plug all vent and fill valves.

Line: 4" Drain from "A" Compressor Building to 10" Line

- 1) a. Close 4" valve at west side of building near jacket water surge tank;
 - b. Close 4" valve at junction with 10" open drain line near "C" Compressor Inlet Regulator Run;
 - c. Close valve on drain from waste heat boiler blowdown drum;
 - d. Close valves on drains from sample coolers.
- 2) a. Open valves on Taps F33 and F36 for venting;
 - b. Using Tap F32 in 4" drain at junction with 10" drain, fill system with water until all air is displaced from the lines;
 - c. Close valves at Taps F33 and F36.
- 3) Install properly zeroed recorder on Tap F32 then stabilize system pressure.
- 4) Raise pressure to 20 psig on system, stabilize test pressure then begin static pressure test as specified in General Instruction, Item 8.
- 5) If static pressure cannot be maintained as specified, refer to General Instruction, Item 9.
- 6) At the end of testing period, chart shall be removed and retained for permanent record and will be identified as indicated in General Instruction, Item 12.
- 7) Upon completion of test:
 - a. Release test pressure;
 - b. Open 4" valve at junction with 10" drain;
 - c. Open valves on waste heat boiler blowdown drum and sample coolers;
 - d. Open 4" valves at west side of building near jacket water surge tank;
 - e. Close and plug all vents and fill valves.

Line: 3" Closed Drain from 66" I.D. Low Pressure System Inlet Scrubber to South Storage Tank (Off-Site)

- 1) a. Close (2) 4" block valves on dump from inlet scrubber;
 - b. Close 4" valve on pressure drain at junction with 3" drain to tank;
 - c. Close 3" valve in line at hydrocarbon storage tanks;
 - d. Lubricate in closed position 2" valve on (2) siphon drains on 24" and 30" headers and (1) valve on manual dump on inlet scrubber.
- 2) a. Open valve on Tap F40 near 3" valve at tanks;
 - b. Open valve on Tap F41 on dump valve piping for venting;
 - c. Using Tap F38 near 4" to 3" junction, fill system with water until all gas/air is displaced from lines;
 - d. Close valves on Taps F40 and F41.
- 3) Install properly zeroed recorder on Tap F38 and stabilize system pressure.
- 4) Raise pressure to 20 psig on system, stabilize test pressure then begin static pressure test as specified in General Instruction, Item 8.
- 5) If static pressure cannot be maintained as specified, refer to General Instruction, Item 9.
- 6) At the end of testing period, chart shall be removed and retained for permanent record and will be identified as indicated in General Instruction, Item 12.
- 7) Upon completion of test:
 - a. Release test pressure;
 - b. Open 3" valve in line at storage tank;
 - c. Open 4" valve at 4" to 3" junction;
 - d. Open (2) 4" valves on dump from inlet scrubber;
 - e. Position 2" siphon drain valves, and 2" manual drain valves for normal operation;
 - f. Close and plug all vents and fill valves.

Line: 4" Closed Drain from "C" Compressor Area to Junction with 3" Line to Off-Site South Storage Tank

- a. Close (2) 2" block valves on dumps from "C" compressor inlet scrubber;
 - b. Close (2) 4" block valves on dump from "A" compressor suction scrubber;
 - c. Close 1" valve on sump pump discharge at the north end of "A" Compressor Building;
 - d. Close 4" valve on closed drain line at junction with 3" line near 66" I.D. Low Pressure inlet scrubber.
- 2) a. Open valve on Tap F37 for venting;
 - b. Open valve on Tap F39 at "A" compressor suction scrubber;
 - c. Using Tap No. 21 at "C" compressor inlet scrubber, fill system with water until all air is displaced from lines;
 - d. Close valves on Taps F37 and F39.
- 3) Install properly zeroed recorder on Tap F37 and stabilize system pressure.
- 4) Raise pressure to.20 psig on system, stabilize test pressure then begin static pressure test as specified in General Instruction, Item 8.
- 5) If static pressure cannot be maintained as specified, refer to General Instruction, Item 9.
- 6) At the end of testing period, chart shall be removed and retained for permanent record and will be identified as indicated in General Instruction, Item 12.
- 7) Upon completion of test:
 - a. Release test pressure;
 - b. Open 4" valve at junction with 3" line near 66" I.D. Low Pressure inlet scrubber;
 - c. Open (2) 2" block valves on dumps from "C" compressor inlet scrubber;
 - d. Open 1" valve on sump pump discharge piping;
 - e. Open block valve on dump from "A" Compressor Plant suction scrubber;
 - f. Close and plug all vents and fill valves.

Line: <u>3"</u> Closed Drain From Valve at Inlet Gas Cleaners (V6 & V6A) to East Field Hydrocarbon Separator North of Plant

- 1) a. Close 3" ball valve on line east of inlet gas cleaners;
 - b. Close valve at inlet of east field hydrocarbon separator north of Plant.
- 2) a. Open valve at Tap F49, on hydrocarbon separator inlet piping, for venting;
 - b. Using Tap F43, at 3" ball valve, fill system with water until all gas is displaced from the line;
 - c. Close valve at Tap F49.
- 3) Install properly zeroed recorder on Tap F49 then stabilize system pressure using Tap F43.
- 4) Raise pressure to 80 psig on system, stabilize, then begin static pressure test as specified in General Instruction, Item 8.
- 5) If static test pressure cannot be maintained as specified, refer to General Instruction, Item 9.
- 6) At the end of testing period, chart shall be removed and retained for permanent record and will be identified as indicated in General Instruction, Item 12.
- 7) Upon completion of test:
 - a. Release test pressure
 - b. Open valve at inlet of east hydrocarbon separator;
 - c. Open 3" ball valve in line, east of inlet gas cleaners;
 - d. Close and plug all vents and fill valves.

Line: 4" Closed Drain to Hydrocarbon Separators and Tanks North of Plant

- a. At south end of "A" compressor suction and discharge headers, lubricate (in the closed position) (5) 2" plug valves on siphon drains;
 - b. At the "A" compressor gas cooling fin-fan, lubricate (4) 2" drain valves on the bottom of the headers: (1) East side and (3) West side;
 - c. Close 2" block valve on dump at 3rd stage suction scrubber "A" compressor;
 - d. Close 2" block valves on dump at 2nd stage suction scrubber "A" compressor;
 - e. Lubricate 2" siphon drain values on north end of 10" 3rd stage discharge header and 12" 3rd stage suction header;
 - f. Lubricate (3) 2" drain valves beneath north end of 16" 1st stage discharge, 16" 2nd stage suction and 12" 2nd stage discharge;
 - g. Close block valve on dump from 3rd stage discharge scrubber;
 - h. Close (2) 1" valves on ESD Valve Operator Volume Tanks;
 - i. Close valve on 1" line from 10" water leg at junction with 4" pressure drain header;
 - j. Install blind plate between 2" check valve and 2" ANSI 150 flange at southeast corner of 10" 2nd stage discharge header at "C" compressor gas cooling fin-fan;
 - k. Install blind plate between 2" check valve and 2" ANSI 150 flange in drain from 18" 1st stage discharge header at the northwest corner of "C" compressor fin-fan;
 - Close 2" block valve on dump from "C" Plant 2nd stage suction scrubber;
 - m. Lubricate 2" valve on siphon drain on 20" inlet gas line at inlet gas cleaners (V6 & V6A);
 - n. Close 3" ball valve (at transition in line size from 4" to 3") located east of inlet gas cleaners.
- 2) a. Open valve on Tap F42 at 3" ball valve, for venting;
 - b. Open valve on Tap F45 at east side of "A" compressor fin-fan;

- c. Open valve on Tap F46 below block valve on dump from 2nd stage scrubber;
- d. Using Tap No. 15, fill system with water until all air/gas is displaced from lines;
- e. Close valves on Taps F42, F45 and F46.
- 3) Install properly zeroed recorder on Tap No. 22 and stabilize system pressure.
- 4) Raise pressure to 80 psig on system, stabilize test pressure then begin static pressure test as specified in General Instruction, Item 8.
- 5) If static pressure cannot be maintained as specified, refer to General Instruction, Item 9.
- 6) At the end of testing period, chart shall be removed and retained for permanent record and will be identified as indicated in General Instruction, Item 12.
- 7) Upon completion of test:
 - a. Release test pressure;
 - b. Open 3" ball valve in line to hydrocarbon separator north of Plant;
 - c. Open 2" block valve on dump from "C" Plant 2nd stage suction scrubber;
 - d. Remove blind plates from lines at check valves at "C" compressor fin-fan;
 - e. Open 1" valve on drain line from 10" water leg at junction with 4" pressure drain header;
 - f. Position (2) 1" valves for normal operation on ESD Operator Volume Tanks;
 - g. Open block valve on dump from 3rd stage discharge scrubber;
 - h. Open 2" block valve on dump at "A" compressor 2nd stage scrubber;
 - i. Open 2" block valve on dump at "A" compressor 3rd stage suction scrubber;
- 8) Close and plug all vents and fill valves.

Line: 2"/4" Closed Drain from Open Drain Collection Point Pump to Field Storage Tanks No. 22 & 33

- 1) a. Close (2) 2" block valves on dumps from inlet gas scrubbers (V6 & V6A) and lubricate.
 - b. Close valves on line at inlet to field Tanks No. 22 & 33.
- 2) a. Open valve on Tap F50, at Field Tank, for venting;
 - b. Disconnect 2" piping at pump discharge and install plug with Tap.
 - c. Using Tap at pump fill system with water until all gas is displaced from line.
- 3) Install properly zeroed recorder on Tap F50 then stabilize system pressure using Tap at pump.
- 4) Raise pressure to 50 psig on system, stabilize, then begin static pressure test as specified in General Instruction, Item 8.
- 5) If static pressure cannot be maintained as specified, refer to General Instruction, Item 9.
- 6) At the end of testing period, chart shall be removed and retained for permanent record and will be identified as indicated in General Instruction, Item 12.
- 7) Upon completion of test:
 - a. Release test pressure;
 - b. Open valve on line at inlet to Field Tank;
 - c. Position block valves on dump from Stop Tank for normal operator;
 - d. Close and plug vents and fill valves.

Martin Water Laboratories, Inc. WATER CONSULTANTS SINCE 1953

BACTERIAL AND CHEMICAL ANALYSES

P. O. BOX 1468 MONAHANS, TEXAS 79756 (915) 943-3234 or 563-1040 709 W. INDIANA MIDLAND, TEXAS 79701 (915) 683-4521

To:	Mr. Chuck Womble	Laboratory No.	19747
	P. O. Box 1311	Sample received	1-2-97
	Jal, NM 88252	Results reported	1-13-97

Company: Sid Richardson Carbon & Gasoline Company County: Lea, NM Field:

Lease: Jal Plant #4

Subject: To make the determinations listed below on water sample from water supply well #16. Sample taken 1-2-97.

		EPA Maximum Contaminant
		Level for Drinking Water
Determination	mg/1	<u>mg/1</u>
	44 44	
Arsenic, as As	<0.01	0.05
Chromium, as Cr	<0.03	0.10
Copper, as Cu	<0.01	1.0
Lead, as Pb	<0.002	0.015
Mercury, as Hg	<0.002	0.002
Benzene	<0.004	0.005
Toluene	<0.004	
Ethyl Benzene	<0.004	
Total Xylenes	<0.004	

Notation: Test methods in compliance with U. S. Environmental Protection Agency Regulations (SW-846; Third Edition -July, 1992).

<u>Remarks</u>: The undersigned certifies the above to be true and correct to the best of his knowledge and belief.

Waylan C. Martin, M.A.

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Martin	Water	Laborator	ies. Inc.

P. O. BOX 1468
MONAHANS, TEXAS 79756
PH. 943-3234 OR 563-1040

709 W. INDIANA MIDLAND, TEXAS 79701 PHONE 683-4521

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By Waylan C. Martin, M.A.

Martin Water Laboratories, Inc. WATER CONSULTANTS SINCE 1953 BACTERIAL AND CHEMICAL ANALYSES

709 W. INDIANA MIDLAND, TEXAS 79701 PHONE 683-4521

To: Mr. Larry Copeland 201 Main Street Fort Worth, TX 76102

Laboratory No. 1091262 AA1016 Sample received 10-24-91 Results reported 11-4-91

Company:	Sid Richardson	Carbon &	Gasoline	Company
County:	Lea, NM			
Field:				
Lease:	Jal Plant #4		•	

Subject:

2

P.O. BOX 1468 MONAHANS, TEXAS 79756

PH. 943-3234 or 563-1040

To make the determinations listed below on water sample from water supply well #16. Sample taken 10-24-91 by Tom Elrod, Martin Water Laboratories, Inc.

		EPA Maximum Contaminant
D		Level for Drinking Water
Determination	<u>mg/1</u>	<u>mg/1</u>
Arsenic, as As	<0.01	0.05
Chromium, as Cr (Total)	<0.03	0.05
Copper, as Cu	<0.01	0.05
Lead, as Pb	<0.01	0.05
Mercury, as Hg	<0.002	0.002
Benzene	<0.005	0.005
Toluene	<0.005	s an qu is s
Ethyl Benzene	<0.005	a a a fair
Total Xylenes	<0.005.7	t d a i sete

NOTATION: Sampling procedure and test methods in compliance with U.S. Environmental Protection Agency Regulations (SW-846; Third Edition - Nov. 1986).

Remarks: The undersigned certifies the above to be true and correct to the best of his knowledge and belief.



W. Leagu whe
W. Reagan White, B.S.

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Martin Water Laboratories, Inc.

709 W. INDIANA MIDLAND, TEXAS 79701 PHONE 683-4521

RESULT OF WA	TER ANALYSES	PHONE 003-4521
TO: Mr. Larry Copeland 201 Main Street, Fort Worth, TX 76102	LABORATORY NO SAMPLE RECEIVED RESULTS REPORTED	1091261 10-24-91 11-4-91
COMPANY Sid Richardson Carbon & Gasoline LE	EASEJal Plant #4	
SECTION BLOCK SURVEY COUNTY	, Lea STATE	= <u>NM</u>
SOURCE OF SAMPLE AND DATE TAKEN:	well #16. 10-24-91	
NO. 2 Maximum contents for drinking water	as recommended by the	e Texas Dept. of Health.
NO. 3		

NO. 4 __

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P. O. BOX 1468

MONAHANS, TEXAS 79756 PH. 943-3234 OR 563-1040

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REMARKS: _______ Sample taken by Tom Elrod, Martin Water Laboratories, Inc.

CHEMICAL A	ND PHYSICAL P	ROPERTIES		
	NO. 1	NO. 2	NO. 3	NO. 4
Specific Gravity at 60° F.				
pH When Sampled				
pH When Received	7.19			
Bicarbonate as HCO3	215			
SURGENERAXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX	0			
Undersaturation as CaCO3				
Total Hardness as CaCO3				
Calcium as Ca				
Magnesium as Mg				
Sodium and/or Potassium	44			
Sulface as SO4	51	300		
Chloride as Cl	23	300		
Iron as Fe	0.04	0.3		
Barium as Ba		•		
Turbidity, Electric				
Color as Pt				
Total Solids, Calculated				
Temperature °F.				
Carbon Dioxide, Calculated				
Dissolved Oxygen,				
Hydrogen Sulfide				
Resistivity, ohms/m at 77° F.				
Suspended Oil				
Filtrable Solids as mg/j				
Volume Filtered, ml				
Nitrate, as N	0.8	10.0		
Potassium, as K	4			
Total Dissolved Solids @ 180°C.	331	1,000		
Results Res	oorted As Milligrams F	Per Liter		
Additional Determinations And Remarks The undersi	gned certifie	es the above	to be true a	and correct
to the best of his knowledge and bel	ief.			
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	N.			
orm No. 3		10. 27.	0:55	6 Ve
	By	<u></u>		the second
		W. Reagan	White, B.S.	

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<u>,</u>* •
MATERIALS AT JAL #4 - COMPRESSION FACILITY

s azostatu - S Air Ambitrol FEB 2 1 287 Methanol Calgons LCS-20T CENTRONIC CONTRACTOR CELOCIA - LILLION - LI Crude Oil Gasoline (Unleaded) Chevron Hydraulic Fluid Aviation "A" H₂S K & W Copper Coat Natural Gas (Sweet) Natural Gas (Sour) Field Gas (Unprocessed) Marvel Mysterial Oil Varsol 1 WD-40 Fire Extinguishing Angent Mobil DTE Heavy Oil Mobil ALMO 527 Oil Citgo Pacemaker 10-35 - Need Mobil DTE Heavy Medium - Need Rarus 427 Oil - Need Snoop **ZEP 45 Produced Water** Sum-Clean Soap Propane Diesel

	BIG THREE IN P. O HOUSTO	NDUSTRIES, IN 9. 80x 3047 N, TEXAS 77253		
BIG)	I-GENERA	L INFORMATION	MATERI	AL SAFETY
	PRODUCT NAME		DATA	SHEET
	EMERGENCY TELE	EPHONE NO.		
	(713) 868-0202	2		
MANUFACTURERS NAME	TRADE NAME AND	SYNONYMS		
Big Three Industries, Inc.	AIR (Atmospheric	c Air) (Breathing Air) (Co	mpressed Air)	
	CHEMICAL NAME	AND SYNONYMS		
	Air			
ISSUE DATE	PRODUCT ID. NO.	FORMULA	CHEMICAL FAMILY	CAS NUMBER
APRIL 1, 1984	UN-1002	-		026 635 885

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	II — HAZAR	RDOUS INGREDIEN	πs. /	, į		· • ·
HAZA	RDOUS MIXTU	RES OF LIQUIDS	AND GASES	0/0	TLV	
· · ·			Oxygen Nitrogen Argon	20.9 78.0 .1		-
Air supplied by Big Three Industries is thetic air made of a mixture of oxyger	compressed atmosp and nitrogen.	pheric air which has been	filtered and dryed, it is not syn-			

	III - PHYSICAL DATA	68 (X-11)	
DILING POINT	SPECIFIC GRAV	TY (Air = 1)	······································
³⁷ -317.8°F (-194.3°C) @ 1 ATM	1.0 at 70°F (21.	1°C) and 1 ATM	
VAPOR PRESSURE	PERCENT, VOLA	TILE BY VOLUME (0/0)	
N/A	N/A		
DENSITY AL 70°F (21.1°C) and 1 ATA	A EVAPORATION R	ATE	
0.07493 lb/cu ft	N/A		
SOLUBILITY IN WATER	MATERIAL AT N	NORMAL CONDITION	
2.92 SCC/100CC H2O @ 32"F (0"C		SOL 1D	XXX GAB
EXPANSION RATIO (LIQUIU TO GAS)			
N/A (Gas)			
APPEARANCE AND ODOR			······································
Colorless, Odorless Gas			

FLASH POINT (METH	OD USED)		FLAMMABI	LITY LIMITS	IN AIR (0/0 BY	VOL)
N/A	CLOSED CUP	OPEN CUP	LOWER	N/A	UPPER	N/A
EXTINGUISHING MED	A					
Use media appropriate	e for surrounding area.					
	-					
SPECIAL FIRE FIGH	TING PROCEDURES	· · · · · · · · · · · · · · · · · · ·				
None						
UNUSUAL FIRE AND	EXPLOSION HAZARD					
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secure cylinders when in use. Keep valve protection cap in place when cylinder not in use.					y i a tr
	secure cylinders when in use. Keel	p valve protection cap in	place when cylinder not in	i u35.	



Dow U.S.A. The Dow Chemical Company Material Safery Data Sheet 1 Midland, Michigan 48674 Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400 Product Code: 07666 Page: 1 Product Name: AMBITROL (R) FL 50 COOLANT Effective Date: 01/22/91 Date Printed: 06/11/92 MSDS:000584 1. INGREDIENTS: (% w/w, unless otherwise noted) Ethylene Glycol CAS# 000107-21-1 47-558 CAS# 000111-46-6 Diethylene Glycol <3% CAS# 007732-18-5 Water <50% CAS# 007758-11-4 Dipotassium phosphate This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made bvailable as provided in this standard. 2. PHYSICAL DATA: BOILING POINT: 229F, 109C VAP. PRESS: Approx. 2.5 mmHg @ 200 VAP. DENSITY: Not applicable SOL. IN WATER: Completely miscible SP. GRAVITY: 1.084 @ 60/60F, 16C APPEARANCE: Red liquid. 000R: Information not available. 3. FIRE AND EXPLOSION HAZARD DATA: FLASH POINT: None METHOD USED: PMCC FLAMMABLE LIMITS LFL: Not applicable. UFL: Not applicable. EXTINGUISHING MEDIA: Water fog, carbon dioxide, dry chemical. FIRE & EXPLOSION HAZARDS: After 50% of the initial volume has evaporated, the residual solution will burn at temperatures above 290F when exposed to an ignition source.

FIRE-FIGHTING EQUIPMENT: Wear positive-pressure, self-contained breathing apparatus.

4. REACTIVITY DATA:

(Continued on page 2, over) (R) Indicates a Trademark of The Dow Chemical Company

* An Operating Unit of The Dow Chemical Company

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Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400 Product Code: 07666 Page: 2

Product Name: AMBITROL (R) FL 50 COOLANT

Effective Date: 01/22/91 Date Printed: 06/11/92

MSDS:000584

4. REACTIVITY DATA: (CONTINUED)

STABILITY: (CONDITIONS TO AVOID) Not considered to be a problem under normal storage conditions.

INCOMPATIBILITY: (SPECIFIC MATERIALS TO AVOID) Oxidizing material

HAZARDOUS DECOMPOSITION PRODUCTS: After water has volatilized, burning will produce carbon monoxide, carbon dioxide, and water.

HAZARDOUS POLYMERIZATION: Will not occur.

5. ENVIRONMENTAL AND DISPOSAL INFORMATION:

ACTION TO TAKE FOR SPILLS/LEAKS: Small spills: Cover with absorbent material, soak up and sweep into drums for disposal. Large spills: Dike around spill and pump into suitable containers for disposal or reprocessing.

DISPOSAL METHOD: Burn in approved incinerator in accordance with local, state, and federal regulations.

6. HEALTH HAZARD DATA:

EYE: Essentially nonirritating to eyes. Vapors or mists may irritate eyes.

SKIN CONTACT: Prolonged or repeated exposure not likely to cause significant skin irritation. May cause more severe response if skin is abraded (scratched or cut).

SK!N ABSORPTION: A single prolonged exposure is not likely to result in the material being absorbed through skin in harmful amounts. The dermal LD50 has not been determined. Repeated skin exposure to large quantities may result in absorption of harmful amounts.

INGESTION: Excessive exposure may cause central nervous system effects, cardiopulmonary effects (metabolic acidosis), and kidney failure. Amounts ingested incidental to industrial, handling are not likely to cause injury; however, ingestion of larger amounts could cause serious injury, even death. The oral LD50 for rats is 8200 mg/kg. Single oral dose toxicity is expected to be moderate to humans even though tests with animals show a lower degree of toxicity.

(Continued on page 3) (R) Indicates a Trademark of The Dow Chemical Company



Material Safety Data Sheet 1 The Dow Chemical Company Midland, Michigan 48674 Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400 Product Code: 07666 Page: 1 Product Name: AMBITROL (R) FL 50 COOLANT Effective Date: 01/22/91 Date Printed: 06/11/92 1. INGREDIENTS: (% w/w, unless otherwise noted)

Dow U.S.A.

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Ethylene Glycol	CAS# 000107-21-1	47-55%
Diethylene Glycol	CAS# 000111-46-6	<3*
Water	CAS# 007732-18-5	<502
Dipotassium phosphate	CAS# 007758-11-4	<5%

This document is prepared pursuant to the OSHA Hazard Communication Standard (29 CFR 1910.1200). In addition, other substances not 'Hazardous' per this OSHA Standard may be listed. Where proprietary ingredient shows, the identity may be made available as provided in this standard.

2. PHYSICAL DATA:

BOILING POINT: 229F, 109C VAP. PRESS: Approx. 2.5 mmHg @ 20C VAP. DENSITY: Not applicable SOL. IN WATER: Completely miscible SP. GRAVITY: 1.084 @ 60/60F, 16C APPEARANCE: Red liquid. BODOR: Information not available.

3. FIRE AND EXPLOSION HAZARD DATA:

FLASH POINT: None METHOD USED: PMCC

FLAMMABLE LIMITS LFL: Not applicable. UFL: Not applicable.

EXTINGUISHING "MEDIA: Water fog, carbon dioxide, dry chemical.

FIRE & EXPLOSION HAZARDS: After 50% of the initial volume has evaporated, the residual solution will burn at temperatures above 290F when exposed to an ignition source.

FIRE-FIGHTING EQUIPMENT: Wear positive-pressure, self-contained breathing apparatus.

Printed on Recycled and Recyclable Paper

4. REACTIVITY DATA:

(Continued on page 2 , over) (R) Indicates a Trademark of The Dow Chemical Company

Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400

nduct Code: 07666

Product Name: AMBITROL (R) FL 50 COOLANT

Effective Date: 01/22/91 Date Printed: 06/11/92

MSDS:000584

Page: 3

6. HEALTH HAZARD DATA: (CONTINUED)

INHALATION: At room temperature, exposures to vapors are minimal due to low vapor pressure. If heated or sprayed as an aerosol, concentrations may be attained that are sufficient to cause irritation and other effects.

SYSTEMIC & OTHER EFFECTS: Excessive exposure may cause irritation to upper: respiratory tract. Observations in animals include formation of bladder stones after repeated oral doses of diethylene glycol. Observations in animals include kidney and liver effects and deposition of calcium salts in various tissues after long-term dietary intake of ethylene glycol. Based on data from long-term animal studies, diethylene glycol is not believed to pose a carcinogenic risk to man. Ethylene glycol did not cause cancer in long-term animal studies. Based on animal studies. ingestion of very large amounts of ethylene glycol appears to be the major and possibly only route of exposure to produce birth defects. Exposures by inhalat on (tested nose-only in animals to prevent ingestion) or skin contact, the primary routes of occupational exposure, had minimal or essentially no effect on the fetus. Birth defects are unlikely from exposure to diethylene glycol. Exposures having no adverse effects on the mother should have no effect on the fetus. Diethylene glycol has not interfered with reproduction in animal studies. In studies on rats, ethylene glycol has been shown not to interfere with reproduction. In studies on mice, ingestion of ethylene glycol in large amounts caused a small decrease in the number of litters/pair, live pups/litter, and in live pup weight. Results of in vitro (test tube) mutagenicity tests have been negative.

7. FIRST AID:

EYES: Irrigate immediately with water for at least 5 minutes.

SKIN: Wash off in flowing water or shower.

INGESTION: If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything to an unconscious person.

INHALATION: Remove to fresh air if effects occur. Consult a physician.

NOTE TO PHYSICIAN: Consult standard literature. Supportive care. Treatment based on judgment of the physician in response to

(Continued on page 4, over) (R) Indicates a Trademark of The Dow Chemical Company

Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400 Product Code: 07666 Page: 4

Product Name: AMBITROL (R) FL 50 COOLANT

Effective Date: 01/22/91 Date Printed: 06/11/92

MSDS:000584

7. FIRST AID: (CONTINUED)

reactions of the patient. In the treatment of intoxication by ethylene glycol, the use of ethanol, hemodialysis and intravenous fluids to control acidosis should be considered. N. Eng. J. Med. 304:21 1981. If burn is present, treat as any thermal burn, after decontamination.

8. HANDLING PRECAUTIONS:

- EXPOSURE GUIDELINE(S): Ethylene glycol: ACGIH TLV and OSHA_PEL are 50 ppm Ceiling. Diethylene glycol: AIHA WEEL is 50 ppm. total; 10 mg/m3, aerosol only.
- VENTILATION: Good general ventilation should be sufficient for most conditions. Local exhaust ventilation may be necessary for some operations.
- RESPIRATORY PROTECTION: Atmospheric levels should be maintained below the exposure guideline. When respiratory protection is required for certain operations, use an approved air-purifying respirator.
- SKIN PROTECTION: Use impervious gloves when prolonged or frequently repeated contact could occur.
- EYE PROTECTION: Use safety glasses. If vapor exposure causes eye discomfort, use a full-face respirator.

9. ADDITIONAL INFORMATION:

SPECIAL PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Avoid skin and eye contact. Avoid ingestion. Avoid breathing vapors or mists.

Trace quantities of ethylene oxide (E0) may be present in this product. While these trace quantities could accumulate in headspace areas of storage and transport vessels, they are not expected to create a condition which will result in E0 concentrations greater than 0.5 ppm (8 hour TWA) in the breathing zones of the workplace for appropriate applications. OSHA has established a permissible exposure limit of 1.0 ppm 8 hr TWA for E0. (Code of Federal Regulations Part 1910.1047 of Title 29)

MSDS STATUS: Revised section 8.

For information regarding state/provincial and federal regulations see The Regulatory Information Section. (R) Indicates a trademark of The Dow Chemical Company

Dow Chemical U.S.A.* Midland, MI 48674 Emergency Phone: 517-636-4400 Product Code: 07666 Page: R-1

Product Name: AMBITROL (R) FL 50 COOLANT

Effective Date: 01/22/91 Date Printed: 06/11/92 MSDS:000584

REGULATORY INFORMATION: (Not meant to be all-inclusive--selected regulations represented.)

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied, is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal. state or provincial, and local laws and regulations. See MSD Sheet for health and safety information.

U.S. REGULATIONS

SARA 313 INFORMATION: This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372:

CHEMICAL NAME	CAS NUMBER	CONCE	NTRATION	I

ETHYLENE GLYCOL	000107-21-1	47	-55	\$

SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title 111) and is considered, under applicable definitions, to meet the following categories:

An immediate health hazard A delayed health hazard

(R) Indicates a Trademark of The Dow Chemical Company The Information Herein Is Given In Good Faith, But No Warranty, Express Or Implied, Is Made. Consult The Dow Chemical Company For Further Information.

Maillactrodi males ao representationa, er warmaties, etc ceptus er langtied, ef merchantability, filaens for a particular purpose with resport to the Information et forth herrin er to the product to which the Information refera. Accordingly, Maillactrodi will not be respondible for demages resetting from an of or reflacers most this laformation.	Multinct.rodt, Inc., Science Products Division, P.O. Box M., Paris, KY 43061.	SECTION 3 Reactivity Data	Stability:	Stable woder ordinary conditions of use and storage.	Hazardous Decomposition Producte:	Carbon oxides and formatikelyde may form when heated to i. i decomposition.		Harardous Polymerization: This subtance does not polymerize.		locompatibilities	Strong coding agents such as altrates, perchlorates or sulfuric acid. Will attack some forms of plastics, rubber, and coatings.	May react with metallic aluminium and generate hydrogen gas.	SECTION 4 Lenk/Solil Dimonal Information a con-	Ventilate area of leak or spill. Remove all sources of ignition. Clean-up personnel require protective clothing and	respiratory protection from vapors. Contain and recover liquid when possible. Collect as hazardous waste and atomize in a saitable RCRA arcmed combustion chamber or aband with	wermiculite, dry mand, earth or similar material for disposal as herardous waste is a RCRA approved facility. Do not flush	to sever. Reportable Quantity (RQ)(CWA/CERCLA) : 5000 fbe.	Easure compliance with local, state and federal regulations.		A brance statements for the statement of	The second state of the se		METHYL ALCOHOL	
Mallinckrodt provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. Individuals receiving this information must exercise their independent judgment in determining its appropriateness for a particular purpose.		SECTION 1 Parakal Data	Appearance: Clear, colories liquid.	Odor: Characteristic odor. Solubilitive: Miarzbie with water.	Boiling Point 64.5°C (148°P)	Mething Polatt -95-C (-144'F)	Specific Gravity: 0.8 Varee Prantie (Atra1): 11	Vepor Pressure (mm He): 97 at 20°C (65°P)	Beportion Rate: (BuAc=1): 5.9	SECTION 2. Fire and Explosion Information	Fire: Beamable Backmint 1117 (1978) (00)	Autoignition temperature: 3557 (7579). Planmable limita. in air, 55 by volume:	ki = 67, wi = 36.	Exploaton: Abne flath mist vanceir ainteres are embries within	fammable limits acted above. Noderate explosion hazard and dangerous fire herard when exposed to heat, sparts or flames.	Fire Extinguishing Media: Water sonr. dar chemint alcohol form, or carbon dioxide.	Special fatormation: In the event of a fur, wear full protective clothing and	NIOSH-approved self-contained breathing apparatus with [sulfaction operated in the pressure demand or other positive pressure mode. Use water near to blanket fire, cool fire	exposed containers, and to fluch non-ignited spills or vapors every from fire. Vapors can flow along surfaces to distant	ignicos source and these pectars and the source of the sou	名向計加に行	NFPA Ratinae: Health: 1 Plammability 3 Reactivity 0		
Malinckrodt Material Safety Data	Emergency Phone Numbers 314-982-5000	. METHYL ALCOHOL	PRODUCT IDENTIFICATION:	Synonyme Wood alcobol; methanol; carbinol	Pormula CAS No. 6736-1	Motorstar Weight: 22.04	Chambal Formula: CH3OH	Readows lagradiants None.	PBFCALTIONA BV MBASI IBFS		RUDDED FOR STATE REVELOFED RUDDED FORMULES FLADABLE		Avoid breathing veport.	Kaep container closed. Use with adequate wetliation. Wash therewithy after handling.		BMERGENCY/FIRST AID	the eff cases call a physician immediately. If availoared, induce yomiting immediately by giving two glasses of water and stirting a second se	person. If inheled, remove to fresh sir. If not breathing, give artificial respiration. If breathing is difficult, give carges. In	case of context, immediately fluch atta or eyes with pleaty of weiter for at least 15 minutes. 	DOTTIGERS Claims Friemmable Liquid CL2	adian and Line at an and the second at the s		Effective Date: 05-01-86 Supersedes 10-18-85	



(Elfortive Date: 01-86 Supersedes 10-18-85		METHYL ALCOHOL
SECTION S Health Harred Information	B. FIRSTAID	Ventilation System:
AN HAROSUREV HEALATH & REPECTS	Inhaistics:	A system of local and/or general enhant is recommended to heep employee exposures below the Alrborne Exposure Limits. Local
	Remove to fresh air. If not breathing give artificial recolution. If thesthins is difficult over correct. Call a	erdaust vestilation is generally preferred because it can control the controlment of the controlment of its review presenting
A start interes to the second membrases. Toals effects exerted	physician.	dispersion of it has the gradent work area. Please refer to the
"apos servous system, particularly the optic serve. Once absorbed I hato the body, it is very stowly slimitated. Symptones of	lagestion:	AOGIH document, "Industrial Ventilation, A Manual of Recommended Practices", most recest edition, for details.
overspower may include headache, drowinces, naues, vomiting. Nerred vision, biladaese, coma, and death. A perron may get	glasses of water and sticking finger down throat. Never give anything by more than an accounting corrections	Personal Respirators: (NIOSH Approved)
better bet then worse again up to 30 kours later.	kennediately.	II UP 11. W EXCOUNT, WELL & SUPPLIED BUT INTERCENCE required, airlined hood, or self-contained breathing apparatus.
Tothe Symposic partial inheritor. Can introdue and case Nictore Used find done 100.125 millions.	Sida Exponent	Sitia Protection: Rubber or acoprese giores and additional protection including
Bila Cantact	ocicities and when for a man 12 minutes. Un mouth attention if initiation develops or pemints.	impervious boots, aproa, or coveralis, as acceded in areas of unaversal exponents.
Mothyl skohol is a defining agent and may crue shin to become dry and conclude's Shin absorption can correr symptoms may puelled inhaintion exponent.	Eye Exposure: Weah eyes with pleaty of water for at least 15 minutes, Ething lower and upper syclids occasionally. Gat modical attention	Eye Protection: Use chemical safety goggies. Contact lenses should not be worn when working with this material. Maintain eye wash fountain
Rys Contacts Inform, Continued exposure may cause sys instone.	imercheady. C. TOXICTTY DATA (RTBCS 1982)	and quict-drench facilities in work area. SECTION 7 Storage and Special Information
Chrack Exposure		Protect against physical damage. Outside or detached
Martad largetiment of vision and enlargement of the liver has been reported. Repeated or prolonged exposure may cause skin initiation.	Orth fai LLOX 5040 EV.45 348 15000. Jugg/44 Aquatic touchy neing TLa 96 Over 1,000. Nutation data cited. Reproductive effects data cited.	storage is preferred. Inside storage should be in a standard flammable liquids storage room or cabinet. Separate from onidizing materials. Storage and use areas should be No Smoking areas.
Aggrowation of Pro-existing Conditions: Persons with pro-existing skin disorders or syn problems or	SECTION 6 Occupational Control Measures Airborae Emonary Maitre	Spart-proof rools and explosion-proof equipment abouid be used in the storage and handling area.
inguest area of codery reaccos pay of more successed to the Lifect of the arbitrarce.	-OSHA Permistible Exposure Limit (PEL): 200 ppm (TWA)	
	-ACGIH Threshold Limit Value (TLV):	
	200 ppm (TWA) (abin) 220 ppm (STBL) (abin) .	
RODICITDESCIENCE		
06-1-2-1-2-1-1-2-1-2-1-2-1-2-1-2-1-2-1-2-	• • •	
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MATERIAL SAFETY DATA SHEET RECEIVES



Calgon Corporation P.O. Box 1346 Pittsburgh, PA 15230-1346

APR 0 7 1994

JAL #3 FLANI



24 Hour Emergency Telephone-(412)777-8000

Section 1. PRODUCT IDENTIFICATION

PRODUCT NAME: LCS-20

CHEMICAL DESCRIPTION: Aqueous alkaline solution PRODUCT CLASS: Water treatment MSDS CODE: 0559-06-11-92

Section 2. HAZARDOUS INGREDIENTS AND EXPOSURE LIMITS

Chemical Name	CAS <u>Number</u>	% by <u>Weight</u>	OSHA PEL	ACGIH TLV
Sodium nitrite	7632-00-0	15	None established	None established
Sodium tetraborate pentahydrate	12179-04-3	4.	TWA 10 mg/m ³	TWA 1 mg/m ³
Sodium hydroxide	1310-73-2	~ 1	Ceiling 2 mg/m ³	Ceiling 2 mg/m ³

Section 3. HAZARDS IDENTIFICATION

***************** **EMERGENCY OVERVIEW** ***************

DANGER! May cause severe eye and skin damage. May be harmful if swallowed or if mist inhaled. May cause respiratory tract irritation. Nitrites may react with organic amines in the body to form carcinogenic nitrosamines.

PRIMARY ROUTES OF ENTRY: Eye and skin contact, ingestion, inhalation of mist

TARGET ORGANS: Blood, eyes, skin, mucous membranes

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Individuals with pre-existing diseases of the cardiovascular system and bone marrow may have increased susceptibility to the toxic effects of excessive exposure to nitrites.



MSDS Code: 0559-06-11-92 Issue Date: 2/9/94

Page 1 - 🖉 **Continued on Page 2**

POTENTIAL HEALTH EFFECTS:

EYE CONTACT: This product may cause irreversible eye damage upon contact depending on the length of exposure, solution concentration and first aid measures.

SKIN CONTACT: This product may produce severe irritation upon contact with the skin. If not removed promptly, burns may result. Sodium nitrite and sodium tetraborate pentahydrate may be absorbed through damaged skin in amounts that may produce systemic toxicity similar to that produced by ingestion, if the area of exposure and amount absorbed are large. No allergic skin reaction is expected.

INGESTION: Ingestion of this product may cause severe irritation or burns of the mucous membranes of the mouth, throat, esophagus and stomach. This product would be considered to be toxic by ingestion because as little as one gram of sodium nitrite may be fatal to humans. Ingestion of large amounts may cause nausea, vomiting, headaches, cyanosis (bluish skin resulting from reduced oxygen-carrying capacity of the blood due to methemoglobin production), weakness, shortness of breath, a marked fall in blood pressure, collapse, convulsions, coma, and possibly death. Nitrites have been shown to convert in the stomachs of lab animals to potentially carcinogenic nitrosamines.

INHALATION: Product mist may irritate the respiratory tract, if inhaled. Large amounts may cause systemic effects, as nitrites and borates are readily absorbed by lung tissue.

SUBCHRONIC, CHRONIC:

No applicable information was found concerning any potential health effects resulting from subchronic or chronic exposure to the product.

Repeated small doses of nitrites cause a fall in blood pressure, rapid pulse, headache, and visual disturbances. Nitrites have been implicated in an increased incidence of cancer. They may react with organic amines in the body to form carcinogenic nitrosamines. Repeated or prolonged exposure to nitrites may cause methemoglobinemia (decreased oxygen-carrying capacity of the blood). Pregnant women should minimize exposure to nitrites since the developing fetus may be adversely affected by the nitrite-induced methemoglobinemia.

Chronic absorption of small amounts of tetraborates causes mild gastroenteritis and dermatitis. Neither type of systemic poisoning has been reported to occur occupationally.

CARCINOGENICITY: NTP: *No ingredients listed in this section* IARC: *No ingredients listed in this section*

OSHA:

"No ingredients listed in this section"

Section 4. FIRST AID MEASURES

EYE CONTACT: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Seek medical aid immediately.

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SKIN CONTACT:	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Seek medical aid immediately. Wash clothing before reuse.
INGESTION:	If swallowed, do NOT induce vomiting. Give large quantities of water. Seek medical aid immediately. Never give anything by mouth to an unconscious person.

INHALATION: If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Seek medical aid.

Section 5. FIRE-FIGHTING MEASURES

FLASH POINT: > 200 °F This product is not flammable or combustible. If all the water in the product is allowed to evaporate, however, it should be noted that sodium nitrite is a strong oxidizer.

LOWER FLAMMABLE LIMIT: Not available UPPER FLAMMABLE LIMIT: Not available

AUTO-IGNITION TEMPERATURE: Not available

EXTINGUISHING MEDIA: Use extinguishing media appropriate for the surrounding fire.

FIRE-FIGHTING INSTRUCTIONS: Exercise caution when fighting any chemical fire. A self-contained breathing apparatus and protective clothing are essential.

FIRE & EXPLOSION HAZARDS: Product emits toxic gases under fire conditions.

DECOMPOSITION PRODUCTS: Oxides of nitrogen, disodium oxide

NFPA RATINGS: Health = 3 Flammability = 0 Reactivity = 0 Special Hazard = None

Hazard rating scale: 0 = Minimal 1 = Slight 2 = Moderate 3 = Serious 4 = Severe

Section 6. ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED: Wearing appropriate personal protective equipment, contain spill, collect onto non-combustible absorbent like sand or earth and place into suitable container. Keep combustibles (wood, paper, oil, etc.) away from spilled material. Prevent entry into sewers and waterways.

Section 7. HANDLING AND STORAGE

HANDLING: Do not get in eyes, on skin or clothing. Avoid breathing mist. Use with adequate ventilation. Wash thoroughly after handling. Keep container closed when not in use.

STORAGE: Do not store near combustible materials. Product must be maintained at 38°F or higher. Protect from low temperatures.

MSDS Code: 0559-06-11-92 Issue Date: 2/9/94 (1991)

Section 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

PERSONAL PROTECTIVE EQUIPMENT:

EYE/FACE PROTECTION: Chemical splash goggles and face shield SKIN PROTECTION: Chemical resistant gloves and protective clothing RESPIRATORY PROTECTION: If airborne concentrations exceed published exposure limits, use a NIOSH

approved respirator in accordance with OSHA respiratory protection requirements (29 CFR 1910.134).

pH: ~ 12

ENGINEERING CONTROLS: Use local exhaust ventilation where mist or spray may be generated.

WORK PRACTICES: Eye wash station and safety shower should be accessible in the immediate area of use.

Section 9. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT: Not available

VAPOR PRESSURE: Similar to water

VAPOR DENSITY (air = 1): Similar to water

% VOLATILE BY WEIGHT: ~ 78

GHT: ~ 78 FREEZING POINT: Not available

APPEARANCE AND ODOR: Clear, yellow liquid.

Section 10. STABILITY AND REACTIVITY

CHEMICAL STABILITY: Stable

HAZARDOUS POLYMERIZATION: Will not occur

SOLUBILITY IN WATER: Complete

SPECIFIC GRAVITY: 1.16 @ 25 °C

CONDITIONS TO AVOID: Keep from contact with clothing and other combustible materials. Protect from low temperatures.

INCOMPATIBILITY: Strong reducers, acids, amines

DECOMPOSITION PRODUCTS: Oxides of nitrogen, disodium oxide

Section 11. TOXICOLOGICAL INFORMATION

ON PRODUCT:

No information available on the formulated product.





ON INGREDIENTS:

<u>Chemical Name</u> Sodium nitrite Sodium tetraborate pentahydrate Sodium hydroxide Oral LD₅₀ (rat) 85 mg/kg 3.2 - 3.4 g/kg 140-340 mg/kg Dermal LD₅₀ (rabbit) Not available > 2 g/kg 1350 mg/kg Inhalation LC₅₀ (rat) 5500 ug/m³ Not available Not available

Section 12. ECOLOGICAL INFORMATION

ON PRODUCT:

Aquatic toxicity data: 48 hr LC₅₀ (Daphnia magna): 560 ppm 96 hr LC₅₀ (fathead minnow): 940 ppm 48 hr LC₅₀ (mysid shrimp): 284 ppm 7-day NOEC (mysid shrimp): 50 ppm 7-day LOEC (mysid shrimp): 100 ppm 96 hr LC₅₀ (sheepshead minnow): 5400 ppm 7-day NOEC (sheepshead minnow): 2500 ppm 7-day LOEC (sheepshead minnow): 5000 ppm

Section 13. DISPOSAL CONSIDERATIONS

RCRA STATUS: If the pH is greater than or equal to 12.5, discarded product would be considered a RCRA Hazardous Waste based on the characteristic of corrosivity. The EPA Hazardous Waste Number would be D002.

DISPOSAL: Dispose of in accordance with local, state and federal regulations. Prevent entry into sewers or waterways.

Section 14. TRANSPORT INFORMATION

DOT CLASSIFICATION:

MSDS Code: 0559-06-11-92

Issue Date: 2/9/94

Class/Division: 6.1 (RQ at beginning of Proper Shipping Name if shipped in container > 667 lb) Proper Shipping Name: Poisonous liquid, n.o.s. (contains Sodium nitrite) Label: Keep away from food. Packing Group: III ID Number: UN 2810

Section 15. REGULATORY INFORMATION

OSHA Hazard Communication Status: Hazardous

TSCA: The ingredients of this product are listed on the Toxic Substances Control Act (TSCA) Chemical Substances Inventory. (Sodium tetraborate pentahydrate is not on the TSCA Inventory, but its anhydrous form is listed under CAS# 1330-43-4.)





CERCLA reportable quantity of EPA hazardous substances in product:

Chemical Name		<u>RO</u>	· · · · · · · · · · · · · · · · · · ·	
Sodium hydroxide		- 100 lb		
Product RQ: 667 lb	(Notif	y EPA of product spill	s exceeding this amo	unt.)
RA TITLE III:			- · ·	· · · ·
Section 302 Extremely Haz	tardous Substance			. Sta
<u>Chemical Name</u> *No ingredients listed in	this section*	CAS #	RO	<u>TPO</u>
Section 311 and 312 Healt	h and Physical H	azards:		
Immediate [yes]	Delayed [yes]	Fir e [no]	Pressure 🙀 [no]	Reactivity [no]
Section 313 Toxic Chemic	als:			•
Chemical Name		CAS	<u>% by</u>	<u>Weight</u>
No ingredients listed ir	n this section			· · · · · ·

Section 16. OTHER INFORMATION

HMIS RATINGS: Health = 3° Flammability = 0 Reactivity = 0 Personal Protective Equipment = X (to be specified by user depending on use conditions)

"There are potential chronic health effects to consider.

Hazard rating scale: 0= Minimal 1= Slight 2= Moderate 3= Serious 4= Severe

MSDS REVISION SUMMARY: Reason for reissue: Update to new format.

While this information and recommendations set forth herein are believed to be accurate as of the date hereof, CALGON CORPORATION MAKES NO WARRANTY WITH RESPECT HERETO AND DISCLAIMS ALL LIABILITY FROM RELIANCE THEREON.

PREPARED BY: P.J. Maloney



Material Safety Data Sheet



Prepared According to the OSHA Hazard Communication Standard (29 CFR 1910.1200). (Formerly Called MATERIAL INFORMATION BULLETIN)

Crude 011

DANGER !

HARMFUL OR FATAL IF SNALLOWED

VAPOR HARNFUL

vessels.

SOME CRUDE OILS MAY EMIT HYDROGEN SULFIDE (H2S) PROLONGED OR REPEATED SKIE CONTACT MAY BE HARMFUL FLAMABLE

TYPICAL COMPOSITION

Petroleum crude oils(CAS 8002-05-9) are naturally-occuring complex mixtures of hydrocarbons containing variable proportions of paraffins, naphthenes and aromatics and the following:

Small amounts of organic compounds containing sulfur (trace to 8%), nitrogen and oxygen. Trace quantities of heavy metal such as nickel, vanadium and lead. Hydrogen sulfide gas (H2S) may be present in some crude oils and may collect in the headspace of enclosed

EXPOSURE STANDARD

No Federal OSHA exposure standard or ACGIH TLV has been established for this material. Continued on page 3.

PHYSIOLOGICAL & HEALTH EFFECTS

May cause eye irritation.

EMERGENCY & FIRST ADD PROCEDURES

contaminated clothing.

Eyes

Flush eyes immediately with fresh water for at least 15 minutes while holding the eyelids open. If irritation persists, see a doctor.

Remove contaminated clothing. Wash skin

thoroughly with soap and water. See a

doctor if irritation occurs. Launder

If respiratory irritation or any signs or

symptoms as described in this MSDS occur, move the person to fresh air. If any of

these effects continue, see a doctor.

Skin

Inhalation

to

in

See

Expected to cause no more than minor skin irritation, but prolonged or frequently repeated skin contact may be harmful. See Additional Health Data.

and Crude oil may contain irritating highly toxic hydrogen sulfide gas. Breathing the vapor may be irritaing to the respiratory tract and can cause central narvous system effects. See Additional Health Data.

May be toxic by ingestion. Note Physician: Ingestion of this product or subsequent vomiting can result

aspiration of light hydrocarbon liquid can cause pneumonitis.

Ingestion If swallowed, give water or milk. DO NOT make person vomit except on advice of medical personnel. If advice cannot be obtained, take person and container to nearest emergency treatment center.



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Additional Health Data.

Chevron Environmental Health Center, Inc., P.O. Box 4054, Richmond, CA \$4804-0054 Emergency Phase Number (415) 233-3737

X-IRC021 07-65

No. 2493 Rev. 2 01/17/86

Material Safety Data Sheet

Cruda 011

ADDITIONAL HEALTH DATA

Signs and symptoms of central nervous system effects may include one or more of the following: headache, dizziness, loss of appetite, weakness and loss of coordination. Affected persons usually experience complete recovery when removed from the exposure area.

Hydrogen sulfide (H₂S), which may be liberated from crude petroleum, is toxic. Because of the rapid occurrence of olfactory fatigue and the likelihood that the odor of crude oil will mask the odor of H₂S, odor is an unreliable indicator of its presence. Ingestion of large quantities of crude oil may result in toxicity due to the formation of H₂S. Signs and symptoms resulting from overexposure to H₂S include respiratory irritation, headaches, dizziness, nausea, gastrointestinal disturbances, coughing, a sensation of dryness and pain in the nose, throat and chest, confusion and unconsciousness. H₂S concentrations of 1000-2000 ppm may be immediately hazardous to life; death has occurred following exposures to 600 ppm.

Some crude oils may contain benzene which can accumulate in the headspace of enclosed vessels. Repeated or prolonged breathing of benzene vapors has been associated with the development of chromosomal damage in experimental animals and various blood diseases humans ranging from aplastic anemia to leukemia (a form of cancer). All of these dise can be fatal. Petroleum crude oils may also contain varying amounts of polynuclear aromatic hydrocarbons which have been shown to cause skin cancer after prolonged and frequent contact with the skin of test animals. Various crude oils have also been shown to cause skin cancer in laboratory animals under similar exposure conditions. While brief or intermittent skin contact or breathing of crude oil vapor is not expected to cause cancer in human beings, we strongly recommend that good hygiene practices and the precautions outlined in this bulletin be followed when handling crude oil.

The Federal OSHA exposure standard for hydrogen sulfide (H₂5) is 20 ppm (a ceiling value). It may be exceeded (up to 50 ppm) for 10 minutes in any 8-hour period in which no other measurable exposure occurs. The λ CGIH (1985-86) TLV is 10 ppm (8-hour time weighted average).

SPECIAL PRECAUTIONS

Wash before eating, smoking or drinking.

DO NOT USE OR STORE near flame, sparks or hot surfaces. USE ONLY IN WELL VENTILATED AREA. Keep container closed.



3

SPECIAL PROTECTIVE INFORMATION

Eye Protection: Do not get in eyes. Eye contact can be avoided by wearing chemical safety goggles.

Skin Protection: Avoid prolonged or frequently repeated skin contact with this material. Skin contact can be minimized by wearing impervious protective clothing including gloves.

special Respiratory Protection: No protection 15 · normally respiratory if However, required. operating conditions create high airborne concentrations, the use of an approved respirator is recommended. Note: If any of the applicable H₂S exposure standards are likely to be exceeded, only supplied air respiratory protection can be used.

Ventilation: No special ventilation is usually necessary. However, if operating conditions create high airborne concentrations of this material, special ventilation may be needed.

Comment: Toxic quantities of hydrogen sulfide (H₂S) may be present in storage tanks and bulk transport vessels which contain or have contained oil. fuel Persons opening or entering these compartments should first determine if H₂S present. See Special Protective is Information. As an indicator 10 H₂S concentration, the rotten eggs odor is unreliable because it may be masked by other odors. Therefore DO NOT ATTEMPT RESCUE WITHOUT WEARING APPROVED SUPPLIED-AIR OR self contained breathing equipment.

FIRE PROTECTION

Flash Point: <15-93+°C Autoignition Temp.: NDA Flammability Limits: NDA Extinguishing Media: CO2, Dry Chemical, Foam, Water Fog. Do not use water spray or a direct stream of water. Special Fire Fighting Procedures: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment, including self-contained breathing See Hazardous Decomposition apparatus. Read the entire MSDS. Products.

SPECIAL PRECAUTIONS See following pages ENVIRONMENTAL PROTECTION

Environmental Impact: This material is considered to be a water pollutant and releases of this product should be prevented from contaminating soil and water and from entering drainage and sever systems.

Precautions if Material is Released or Spilled: Eliminate all open flame in vicinity of spill or released vapor. Stop the source of the leak or release. Clean up releases as soon as possible, observing precautions in Special Protective Information. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate, remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

Naste Disposal Methods: Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

REACTIVITY DATA

Stability (Thermal, Light, etc.): Stable Incompatibility (Materials to Avoid): May react with strong oxidizing materials. Bazardous Decomposition Products: Normal combustion forms carbon dioxide and water vapor and may produce oxides of nitrogen and sulfur; incomplete combustion can produce carbon monoxide. Bazardous Polymerization: Will not occur.

PHYSICAL PROPERTIES

Solubility: Insoluble in water. Soluble in hydrocarbon solvents. Appearance (Color, Odor, etc.): Amber to black viscous liquid with mild pungent to sulfurous odor. Boiling Point: <100-1000+°F Melting Point: NDA Specific Gravity: 0.75-1.02 Vapor Pressure: 0-16 psia Vapor Density (Air=1): NDA Percent Volatile (Volume %): 5-40 Evaporation: NDA Viscosity: 100--100+ SUS @ 100°F

NDA = No Data Available

The above information is based on data of which we are oware and is believed to be correct as of the data hereof. Since the information commined herein may be applied under conditions beyond our control and with which we may be unfamiliar and since data made evaluable subsequent to the data hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon the condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose. No. 2493

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9.0 ENVIRONMENTAL DATA

Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA)

Section 313 - Toxic Chemicals

This product is not known to contain any components in concentrations above *de minimis* levels that are listed as toxic chemicals in 40 CFR Part 372 pursuant to the requirements of Section 313 of SARA.

Section 311/312 - Hazard Categorics

This product may meet one or more of the criteria for the hazard categories defined in 40 CFR Part 370 as established by Sections 311 and 312 of SARA as indicated below:

Immediate (Acute) Health Hazard	No	Sudden Release of Pressure Hazard	No
Delayed (Chronic) Health Hazard	No	Reactive Hazard	No
Fire Hazard	No	••	

Section 302 - Extremely Hazardous Substances

This product is not known to contain any components in concentrations greater than one percent that are listed as Extremely Hazardous Substances in 40 CFR Part 355 pursuant to the requirements of Section 302(a) of SARA.

Clean Water Act (CWA)

Under the CWA, discharges of crude oil and petroleum products to surface water without proper Federal and State permits must be reported immediately to the National Response Center at (800) 424-8802.

Comprehensive Environmental Response, Compensation, & Liability Act (CERCLA) Section 102 Hazardous Substances

As defined by CERCLA, the term "hazardous substance" does not include petroleum, including crude oil or any fraction thereof which is not otherwise specifically listed or designated as a hazardous substance.

New Jersey Worker and Community Right-to-Know Act

Petroleum Oil.

California Proposition 65 (The Safe Drinking Water and Toxics Enforcement Act)

This material contains components that are known to the State of California to be:

Carcinogenic: <u>No</u> Teratogenic: <u>No</u>

Federal Regulations:

Reported in TSCA Inventory as:		Product	Components
CITGO Gas Engine Oils, SUS 30-399	1		x



10.0 LABELING

NOT	<u>E</u>
	This product has been determined not to be a
	physical or a health hazard as defined by the
	OSHA Hazard Communication Standard.
	Avoid prolonged skin contact with used motor oil.
	Continuous contact has caused skin cancer in
•	laboratory animals. After draining oil, wash skin
	thoroughly with soap and water. Launder
	contaminated clothing before reuse.

11.0 REFINED PETROLEUM OILS

The products listed on page one of this MSDS contains one or more of the following base oils.

<u>Chemical / Common Name</u>	<u>CAS #</u>
Solvent Refined Light Paraffinic Distillate	64741-89-5
Solvent Refined Heavy Paraffinic Distillate	64741-88-4
Solvent Dewaxed Heavy Paraffinic Distillate	64742-65-0
Hydrotreated Light Paraffinic Distillate	64742-55-8
Hydrotreated Neutral Lubricating Oil	72623-87-1
Hydrotreated High Viscosity Neutral Lubricating Oil	72623-85-9

ALL STATEMENTS, INFORMATION, AND DATA PROVIDED IN THIS MATERIAL SAFETY DATA SHEET ARE BELIEVED TO BE ACCURATE AND RELIABLE, BUT ARE PRESENTED WITHOUT GUARANTEE, REPRESENTATION, WARRANTY, OR RESPONSIBILITY OF ANY KIND, EXPRESSED OR IMPLIED. ANY AND ALL REPRESENTATIONS AND/OR WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE SPECIFICALLY DISCLAIMED. USERS SHOULD MAKE THEIR OWN INVESTIGATIONS TO DETERMINE THE SUITABILITY OF THE INFORMATION OR PRODUCTS FOR THEIR PARTICULAR PURPOSE. NOTHING CONTAINED HEREIN IS INTENDED AS PERMISSION, INDUCEMENT OR RECOMMENDATION TO VIOLATE ANY LAWS OR TO PRACTICE ANY INVENTION COVERED BY EXISTING PATENTS, COPYRIGHTS OR INVENTIONS.

Mcbil

006202-00 Page 1 of 4

n seren en s MCBIL DIL CORPORATION MAIERIAL SAFETY DATA BULLETIN . . . REVISED: 12/30/92 MOBIL RARUS 427 AGBIL OIL CORP. 24-HOUR EMERGENCY (CALL COLLECT): SUPPLIER: 22 CHEMICAL NAMES AND SYNONYMS: CHEMITREC: PET. HYDROCARBONS AND ADDITION (800) 424-9300 USE OR DESCRIPTION: PRODUCT AND MSDS INFORMATION: COMPRESSOR OIL (800) 662-4525 *********** II. TYPICAL CHEMICAL AND PHYSICAL PROPERTIES ********** · · · , ODOR: Nild PH: NA APPEARANCE: Amber Liquid VIECOSITY AT 40 C, CS: 102.0 VIECOSITY AT 100 C, CS: 11.3 FLASH POINT F(C): > 450(232) (ASTN D-92) NELTING POINT F(C): NAPOUR FOINT F(C): 20(-7)BOILING POINT F(C): > 600(316)VOC: < 5:00(Wt. X): 0.367 lbs/gal</td>RELATIVE DENSITY. 15/4 C: 0.88SOLUBILITY IN WATER: NegligibleVAROP BEFENDER: VAROP BEFENDE: VAROP BEF VAPOR PRESSURE-me Ha 20C: < .1 NA-Not Applicable NE-Not Established D-Decomposes FOR FURTHER INFORMATION, CONTACT YOUR LOCAL MARKETING OFFICE. None SEE SECTIONS XII AND XIII FOR REGULATORY AND FURTHER COMPOSITIONAL DATA. --- INCLUDES AGGRAVATED MEDICAL CONDITIONS. IF ESTABLISHED ----THRESHOLD LIMIT VALUE: 5.00 mg/m3 Suggested for Oil Hist EFFECTS OF OVEREXPOSURE: Not expected to be a problem. --- FOR PRIMARY ROUTES OF ENTRY ----EYE CONTACT: Flush thoroughly with water. If irritation persists, call a physician. SKIN CONTACT: Mash contact areas with soap and water. INHALATION: Not expected to be a problem. INGESTION: Not expected to be a problem. However, if greater than 1/2 liter(pint) ingested, immediately give 1 to 2 glasses of water and call s physician, hospital emergency room or poison control center for assistance. Do not induce vomiting or give anything by wouth to an unconscious person.

HOBIL RARUS 427

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FLASH POINT F(C) : > 450(232) (ASTH D-92) FLANKABLE LIMITS. LEL: .61 UEL: 7.01 and the second EXTINGUISHING MEDIA: Carbon diomide, foam, any chemical and water fog. SPECIAL FIRE FIGHTING PROCEDURES: Water or foam may cause frothing. Use water to keep fire exposed containers cool. Water spray may be used to flush spalls away from exposure. For fares in enclosed the second areas, firefighters must use self-contained breathing apperatus. Prevent sumoff from fire control or dilution from entering streams, severs, or drinking water supply. UNUSUAL FIRE AND EXPLOSION HALARDS: None. NFPA HAZARD ID: Health: 0, Flammability: 1, Reactivity: 0 PARAMERENERABBEREARDER VII. REACTIVITY DATA APPRESEREARDERE STABILITY (Thermal. Light, etc.); Stable CONDITIONS TO AVOID: Extreme heat. INCOMPATIBILITY (Materials to Avoid): Strong exidizers. HAZARDOUS DECOMPOSITION PRODUCTS: Carbon monoxide. HAZARDOUS POLYMERIZATION: Will not occur. ENVIRONMENTAL IMPACT: Report spills as required to appropriate authorities. U. S. Coast Guard regulations require immediate reporting of spills that could reach any waterway including intermittent dry creeks. Report spill to Coast Guard toll free number (800) 424-8802. In case of accident or road spill notify CHEMTREC (800) 424-9300. PROCEDURES IF MATERIAL IS RELEASED OR SPILLED: Adsorb on fire retardant treated sawdust, distonsceous earth, etc. Shovel up and dispose of at an appropriate waste disposal facility in accordance with current applicable laws and regulations, and product characteristics at time of disposal. WASTE MANAGEMENT: Product is suitable for burning in an enclosed. controlled burner for fuel value or disposal by supervised incineration. Such burning may be limited pursuant to the Resource Conservation and Recovery Act. In addition, the product is suitable for processing by an approved recycling facility or can be disposed of at any government approved waste disposal facility. Use of these methods is subject to user compliance with applicable laws and regulations and consideration of product characteristics. at time of disposal. EYE PROTECTION: No special equipment required. SKIN PROTECTION: No special equipment required. However, good personal hygione practices should always be followed. RESPIRATORY PROTECTION: No special requirements under ordinary conditions of use and with adequate ventilation. VENTILATION: No appecial requirements under ordinary conditions of use and with adequate ventilation. ********************** X. SPECIAL PRECAUTIONS "********************** HANDLING: This material is not intended for use in air compressors for breathing applications.

MOBIL RARUS 427

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---ACUTE TOXICOLOGY---

URAL TOXICITY (RAIS): Slightly toxic --- Saged on testing of similar products and/or the components.

DERMAL TOXICITY (RABBITS): Slightly toxic ---Based on testing of similar products and/or the components.

INHALATION TOXICITY (RATS): Not applicable ---Harmful concentrations of mists and/or vepors are unlikely to be encountered through any customary or reasonably foreseeable handling, use, or misuse of this product.

EYE IRRITATION (RABBITS): Expected to be non-irritating. ---Based on testing of similar products and/or the components.

SKIN IRRITATION (RABBITS): Expected to be non-irritating. ---Based on testing of similar products and/or the components. ---SUBCHRONIC TOXICOLOGY (SUMMARY)---

Severely solvent refined and severely hydrotreated mineral base oils have been tested at Mobil Environmental and Health Sciences Laboratory by dermal application to rate 5 days/week for 90 days at doses significantly higher than those expected during normal industrial exposure. Extensive evaluations including microscopic examination of internal organs and clinical chemistry of body fluids, showed no adverse effects.

---CHRONIC TOXICOLOGY (SUMMARY)---

The base oils in this product are severely solvent refined and/or severely hydrotrested. Chronic mouse skin painting studies of similar oils showed no evidence of carcinogenic effects.

GOVERNMENTAL INVENTORY STATUS: All components registered in accordance with TSCA.

Transport Information:

DOT:

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Shipping Name: Not applicable Hezard Class: Not applicable

US OSHA HAZARD COMMUNICATION STANDARD: Product assessed in accordance with OSHA 29 CFR 1910.1200 and determined not to be hezardous.

RCRA INFORMATION: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which sre listed hazardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrosivity, or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

U.S. Superfund Amendments and Reauthorization Act (SARA) Title III: This product contains no "EXTREMELY HAZARDOUS SUBSTANCES".

SARA (311/312 - FORMERLY 302) REPORTABLE MAZARD CATEGORIES: None

This product contains no chamicals reportable under SARA (313) toxic release program.

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MOBIL RABUS 427

THE FOLLOWING PRODUCT INGREDIENTS ARE CITED ON THE LISTS BELOW:

CHEMICAL NAME CAS NUMBER LIST CITATIONS

--- REGULATORY LISTS SEARCHED ---1 = ACGIH ALL 6 = IARC 1 11 = TSCA 4 17 = CA P65 22 = MI 293 2 = ACGIH A1 7 = IARC 2A 12 = TSCA 5a2 18 = CA RTK 23 = MN RTK 3 = ACGIH A2 8 = IARC 2B 13 = TSCA 5a2 18 = CA RTK 24 = NJ RTK 4 = NTF CARC 9 = OSHA CARC 14 = TSCA 6 20 = IL RTK 25 = PA RTK 5 = NTF SUS 10 = OSHA 2 15 = TSCA 12b 21 = LA RTK 26 = RI RTK 16 = WHMIS CARC = CARCINOGEN; SUS = SUSPECTED CARCINOGEN

NOTE: HOBIL PRODUCTS ARE NOT FORMULATED TO CONTAIN PCBS.

ALKYL ANIDES

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< 3.00 NJT 800967-5095P

FOR MOBIL USE ONLY: NHC: 1* 1" NA 0* 0*, MPPEC: A. PPEC: A. US92-554 APPROVE CCODE: 3 10/08/92 REQ: US - MARKETING

INFORMATION GIVEN HEREIN IS OFFERED IN GOOD FAITH AS ACCURATE, BUT WITHOUT GUARANTEE. CONDITIONS OF USE AND SUITABILITY OF THE PRODUCT FOR PARTICULAR USES ARE BEYOND OUR CONTROL; ALL RISKS OF USE OF THE PRODUCT ARE THEREFORE ASSUMED BY THE USER AND WE EXPRESSLY DISCLAIM ALL MARRANTIES OF EVERY KIND AND NATURE, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE IN RESPECT TO THE USE OR SUITABILITY OF THE PHODUCT. NOTHING IS INTENDED AS A RECOMMENDATION FOR USES WHICH INFRINGE VALLD PATENTS OR AS EXTENDING LICENSE UNDER VALID PATENTS. APPROPRIATE WARNINGS AND SAFE MANDLING PROCEDURES SHOULD BE PROVIDED TO HANDLERS AND USERS.

PREPARED BY: NOBIL OIL CORPORATION

ENVIRONMENTAL HEALTH AND SAFETY DEPARTMENT, PRINCETON, NJ FOR FURTHER INFORMATION. CONTACT:

MOBIL OIL CORPORATION, PRODUCT PORMULATION AND QUALITY CONTROL 3225 GALLOWS ROAD, FAIRFAX, VA 22037 (800) 227-0707 X3265





600163 PAGE 1 OF 5

MOBIL JIL CORPORATION MATERIAL SAFETY DATA BULLETIN

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. **REVISED: 01/12/89** ARGURNUNTARRANNAR MOBIL DIE OIL HEAVY MEDIUM SUPPLIER:HEALTH EMERGENCY TELEPHONE:MOBIL OIL CORP.(212) 883-4411CHEMICAL MAMES AND SYNONYMS:TRANSPORT EMERGENCY TELEPHONE:PET. HYDRCCARBONS AND ADDITIVES(800) 424-9300 (CHEMTREC)USE CR DESCRIPTION:PRODUCT TECHNICAL INFORMATION: STEAM TURBINE OIL (800) 662-4525 APPEARANCE: ASTM 2.5 LIQUID ODOR: MILD PH: NA VISCOSITY AT 100 F, SUS: 334.7 AT 40 C, CS: 64.6 VISCOSITY AT 210 F, SUS: 54.5 AT 100 C, CS: 8.4 FLASH POINT F(C): > 400(204) (ASTH D-92) MELTING POINT F(C): NA POUR POINT F(C): 20(-7)**BOILING POINT F(C): > 600(316)** RELATIVE DENSITY, 15/4 C: 0.877 SOLUBILITY IN WATER: NEGLIGIBLE VAPOR PRESSURE-MN HG 20C: < .1 "NA-NOT APPLICABLE NE-NOT ESTABLISHED D-DECOMPOSES FOR FURTHER INFORMATION, CONTACT YOUR LOCAL MARKETING OFFICE. WT PCT EXPOSURE LIMITS SOURCES (APPROX) MG/M3 PPM (AND NOTES) POTENTIALLY HAZARDOUS INGREDIENTS: NONE OTHER INGREDIENTS: REFINED MINERAL OILS >95 ADDITIVES AND/CR OTHER INGREDS. < 5 SEE SECTION XII FOR COMPONENT REGULATORY INFORMATION. SOURCES: A=ACGIH-TLV, A=SUGGESTED-TLV, M=MOBIL, O=OSHA, S=SUPPLIER NOTE: LIMITS SHOWN FOR GUIDANCE ONLY. FOLLOW APPLICABLE REGULATIONS. --- INCLUDES AGGRAVATED MEDICAL CONDITIONS. IF ESTABLISHED ---THRESHOLD LIMIT VALUE: 5.00 MG/M3 SUGGESTED FOR OIL MIST EFFECTS OF OVEREXPOSURE: SLIGHT SKIN IRRITATION. ERADERED V. EMERGENCY AND FIRST AID PROCEDURES --- FOR PRIMARY ROUTES OF ENTRY ---EYE CONTACT: FLUSH WITH WATER. SKIN CONTACT: WASH CONTACT AREAS WITH SOAP AND WATER. INHALATION: NOT EXPECTED TO BE A PROBLEM. INGESTION: NOT EXPECTED TO BE A PROBLEM. HOWEVER, IF GREATER THAN 1/2 LITER (PINT) INGESTED, IMMEDIATELY GIVE 1 TO 2 GLASSES OF WATER AND CALL & PHYSICIAN, HOSPITAL EMERGENCY ROOM OR POISON CONTROL CENTER FOR ASSISTANCE. DO NOT INDUCE VOMITING OR GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

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THERE AND EXPLOSION HAZARD DATA ARTER AND SAPARA FLASH POINT F(C: > 400(204) (ASTH D-92) FLAMMABLE LIMITS. LEL: .6 UEL: 7.0 and the second of the EXTINGUISHING MEDIA: CARBON DICKIDE, FOAM, DRY CHEMICAL AND WATER FOG. SPECIAL FIRE FIGHTING PROCEDURES: WATER OR FOAH MAY CAUSE FROTHING. USE WATER TO KEEP FIRE EXPOSED CONTAINERS COOL. WATER SPRAY MAY BE USED TO FLUSH SPILLS AWAY FROM EXPOSURE. FOR FIRES IN ENCLOSED AREAS, FIREFIGHTERS MUST USE SELF-CONTAINED BREATHING APPARATUS. PREVENT RUNOFF FRCM FIRE CONTROL OR DILUTION FROM ENTERING STREAMS OR DRINKING WATER SUPPLY. UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE MFPA HAZARD ID: HEALTH: 0, FLAMMABILITY: 1, REACTIVITY: 0 STABILITY (THERMAL, LIGHT. ETC.): STABLE CONDITIONS TO AVOID: EXTREME HEAT INCOMPATIBILITY (MATERIALS TO AVOID): STRONG OXIDIZERS HAZARDOUS DECOMPOSITION PRODUCTS: CARBON MONOXIDE. HAZARDOUS POLYMERIZATION: WILL NOT OCCUR unthutwinderennentster VIII. SPILL OR LEAK PROCEDURE ******************* ENVIRONMENTAL IMPACT: REPORT SPILLS AS REQUIRED TO APPROPRIATE AUTHORITIES. U. S. COAST GUARD REGULATIONS REQUIRE IMMEDIATE REPORTING OF SPILLS THAT COULD REACH ANY WATERWAY INCLUDING INTERMITTENT DRY CREEKS. REPORT SPILL TO COAST GUARD TOLL FREE NUMBER 800-424-8802. PROCEDURES IF MATERIAL IS RELEASED OR SPILLED: ADSORB ON FIRE RETARDANT TREATED SAWDUST. DIATOMACECUS EARTH, ETC. SHOVEL UP AND DISPOSE OF AT AN APPROPRIATE WASTE DISPOSAL FACILITY IN ACCORDANCE WITH CURRENT APPLICABLE LAWS AND REGULATIONS, AND PRODUCT CHARACTERISTICS AT TIME OF DISPOSAL. WASTE MANAGEMENT: PRODUCT IS SUITABLE FOR BURNING IN AN ENCLOSED, CONTROLLED BURNER FCR FUEL VALUE OR DISPOSAL BY SUPERVISED INCINERATION. SUCH BURNING MAY BE LIMITED PURSUANT TO THE RESOURCE CONSERVATION AND RECOVERY ACT. IN ADDITION, THE PRODUCT IS SUITABLE FOR PROCESSING BY AN APPROVED RECYCLING FACILITY OR CAN BE DISPOSED OF AT ANY GOVERNMENT APPROVED WASTE DISPOSAL FACILITY. USE OF THESE METHODS IS SUBJECT TO USER COMPLIANCE WITH APPLICABLE LAWS AND REGULATIONS AND CONSIDERATION OF PRODUCT CHARACTERISTICS AT TIME OF DISPOSAL. EYE PROTECTION: NO SPECIAL EQUIPMENT REQUIRED. SKIN PROTECTION: NO SPECIAL EQUIPMENT REQUIRED. HOWEVER, GOOD PERSONAL

HYGIENE PRACTICES SHOULD ALWAYS BE FOLLOWED. RESPIRATORY PROTECTION: NO SPECIAL REQUIREMENTS UNDER ORDINARY

CONDITIONS OF USE AND WITH ADEQUATE VENTILATION.

VENTILATION: NO SPECIAL REQUIREMENTS UNDER ORDINARY CONDITIONS OF USE AND WITH ADEQUATE VENTILATION.

NO SPECIAL PRECAUTIONS REQUIRED.

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---ACUTE TOXICOLOGY---

ORAL TOXICITY (RATS): LDSC: > 5 G/KG SLIGHTLY TOXIC (ESTIMATED) ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

DERMAL TOXICITY (RABBITS): LD50: > 2 G/KG SLIGHTLY TOXIC (ESTIMATED) ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

INHALATION TOXICITY (RATS) : NOT APPLICABLE --- HARMFUL CONCENTRATIONS OF MISTS AND/CR VAPORS ARE UNLIKELY TO BE ENCOUNTERED THROUGH ANY CUSTOMARY OR REASONABLY FORESEEABLE HANDLING, USE, OR MISUSE OF THIS PRODUCT.

EYE IRRITATION (RABBITS): EXPECTED TO BE NON-IRRITATING. --- BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

SKIN IRRITATION (RABBITS): MAY CAUSE SLIGHT IRRITATION ON PROLONGED OR REPEATED CONTACT. --- SASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

---SUBCHRONIC TOXICOLOGY (SUMMARY) ---

SEVERELY SOLVENT REFINED AND SEVERELY HYDROTREATED HINERAL BASE OILS HAVE BEEN TESTED AT MOBIL ENVIRONMENTAL AND HEALTH SCIENCES LABCRATORY BY DERMAL APPLICATION TO RATS 5 DAYS/WEEK FOR 90 DAYS AT DOSES SIGNIFICANTLY HIGHER THAN THOSE EXPECTED DURING NORMAL INDUSTRIAL EXPOSURE. EXTENSIVE EVALUATIONS INCLUDING MICROSCOPIC EXAMINATION OF INTERNAL ORGANS AND CLINICAL CHEMISTRY OF BODY FLUIDS, SHOWED NO ADVERSE EFFECTS.

---CHRONIC TOXICOLOGY (SUMMARY) ---

THE SASE OILS IN THIS PRODUCT ARE SEVERELY SOLVENT REFINED AND/OR SEVERELY HYDROTREATED. TWO YEAR MOUSE SKIN PAINTING STUDIES OF SIMILAR GILS SHOWED NO EVIDENCE OF CARCINOGENIC EFFECTS.



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INFORMATION GIVEN HEREIN IS OFFERED IN GOOD FAITH AS ACCURATE, BUT WITHOUT GUARANTEE. CONDITIONS OF USE AND SUITABILITY OF THE PRODUCT FOR PARTICULAR USES ARE BEYOND OUR CONTROL; ALL RISKS OF USE OF THE PRODUCT ARE THEREFORE ASSUMED BY THE USER AND WE <u>EXPRESSLY DISCLAIM ALL</u> <u>WARRANTIES OF EVERY KIND AND NATURE, INCLUDING WARRANTIES OF</u> <u>MERCHANTABILITY AND FIINESS FOR A PARTICULAR PURPOSE IN RESPECT TO THE</u> <u>USE OR SUITABILITY OF THE PRODUCT.</u> NOTHING IS INTENDED AS A RECOMMENDATION FOR USES WHICH INFRINGE VALID PATENTS OR AS EXTENDING LICENSE UNDER VALID PATENTS. APPROPRIATE WARNINGS AND SAFE HANDLING PROCEDURES SHOULD BE PROVIDED TO HANDLERS AND USERS.

PREPARED BY: MOBIL OIL CORPORATION ENVIRONMENTAL AFFAIRS AND TOXICOLOGY DEPARTMENT, PRINCETON, NJ FOR FURTHER INFORMATION, CONTACT: HOBIL OIL CORPORATION, PRODUCT FORMULATION AND QUALITY CONTROL

3225 GALLOWS ROAD, FAIRFAX, VA 22037 (703) 849-3265

MOBIL DIE DIL HEAVY MEDIUM

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FOR MOBIL USE ONLY: (FILL NO: RL1286C2**02) MCN: . MHC: 1* 1* NA 0* 1*, MPPEC: A, PPEC: A, USB8-477 APPROVE 09/12/88

Shell	/ 1-63)	MSDS N	UMBER 51,260	-3 PAGE
SECTION 1	NAME		24 HOUR EME	RGENCY ASSISTA
PRODUCT Super Reg	ular - Unleaded Ga	asoline	SHELL 713-47	J-9461
HEMICAL / N Petrol		· ·	CHEMTREC 800-42	4-9300 Lud HEALTI
SYNONYMS			HAZARD RATI	
	on			
SHELL CODE 04350	C.A.S. NUMBER	ure.	MODERATE HIGH	EXTREME Supervision
SECTION II		IGREDIENT	<u>S</u> TC	
Super Regular - Un	leaded Gasoline	100 N	ot Determined	•
A complex combinat	ion of hydro-		•••	
Carbons largely C-	vy chrough C-12.		•	
0.5% to 2.5%. May	contain up to			·
10% of various oxy	genated hydro-	.		
carbons, such as a	liphatic			
alcohols and ether	s. Also			· · .
contains small amo	ounts of other		••••••	
additives which all sidered to be have	re not con-			
concentrations us	ed.			
SECTION III	HEALT	H INFORM	ATION	
Inhalation: WARNI	NG. Minimize breat	hing va	pors. Repeated o	r prolonged e
sures to high con	centration of vapo	or may C	ause pulmonary i	rritation, he
ache, dizziness,	nausea, incoordina	ltion, 1	oss of conscious	ness or even
Ingestion: Harmfu	l or fatal if swal	llowed r	esulting in naus	ea, vomiting,
diarrhea and rest	lessness. Aspirati	ion of v	omitus and/or ga	soline may le
to severe lung da	mage and even deat	ch.		
Skin Contact: Pro	longed and repeate	ed liqui	d contact can ca	use defatting
and drying of the	skin resulting in	n skin i	rritation and de	ermatitis.
Some components o	f gasoline may be	absorbe	d through the sl	tin. 👘
NOTE. (1) Th has	haan remarked the		a inhalation a	
unleaded motor ga	soline, which was	fully v	aporized, has n	Josure to an Coduced kidner
and liver cancers	in some laborato:	ry rođen	ts. The studies	5 Were sponsol
by the American P	etroleum Institut	e. The	API test materia	al used was
blended to repres	ent a typical unl	eaded mo	tor gasoline.	Shell unleaded
gasoline has not	been evaluated in	this ty	pe of animal te	st. (2) Repea
tissues causing b	e exposure may problem and abnormalities	cauce in s and po	JULY OI THE DIO ssibly lenkemia	DU-IOFMING : however
exposures to such	high levels are	not like	ly to be encound	tered in gaso
	low benzene conte	nt.		
vapor due to the				
SECTION IV	OCCUPATION	AL EXPOSI	JRE LIMITS	

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eli 97003				MSDS NUMBER 51 P	,260-3 AGE 2 OF 4
CTION V	EME	RGENCY AND FIL	RST AID PROC	EDURES	Section of the
HALATION:	Remove vic	tim to fresh	air and p	covide oxygen if bre	athing
	LS difficu	Lt. Give art	ificial re	spiration if not bre	athing.
	Get medica	L accention.		··· • • ·	- A - A - A - A - A - A - A - A - A - A
IN CONTACT:	Flush with	water while	removing	contaminated clothin	a and
	shoes. Fol	low by washi	ng with so	ap and water. Do not	reuso
	Clothing c	r shoes unti	l cleaned.	If irritation pers	ists
	get medica	l attention.		poi	2003,
	- •				
E CONTACT:	Flush with	water for l	5 minutes	while holding eyelid	s open.
	Get medica	l attention.	1.		
GESTION:	Do not ind	luce vomiting	. If vomi	ting occurs spontane	ously,
	keep head	below hips t	o prevent	aspiration of liquid	linto
	the lungs:	. Get medica	l attentio	n. *	
	UV01011			- the backback	
ore ro THE P	RISICIAN:	ir more than	2.0 ml pe	r kg nas deen ingest	ed and
ision. Veer	NUL UCCUFFE	eu, emesis sn haad halow ha	DE TO DE IN	ant seniration 74	uper-
vmptoms such	as juce of	f dad roflov Hi	.ra to prev . convileia	TS OF UNCONSCIOUS II	
ccur before	emesis. an	stric lavade	using a cu	ffed endotracheal +	ibe
hould be con	sidered.				
ECTION VI		PHYSICA	LDATA		
	0-425	MELTING POINT	PN.A.	PRESSURE 7-	14.5 PSI
Ar	prox.	ļ	<u> </u>	(mmHg) (Re	eid)
PECIFIC		W MOLATILE DY	•	VAPOR	
	72-0.76	VOLUME	F 100	DENSITY 7 3.1	5 (
w120-11	<u> </u>		<u>(at 415</u>	• F) (AH= 1)	
OLUBILITY IN		EVAPORATION RAT			
WATER V NE	saraibie .	(BUTYL ACETATE	1) * N • A •	N.A. = NOT AVA	liable
PEARANCE AND ODOR					
lear to light	t amber col	or: clear and	d bright 14	guid. Characterist	ic
etroleum-hyd	cocarbon od	Or.			
SECTION VII		FIRE AND EXPLO	SION HAZAR	S	•
SH POINT AND METHO	DUSED		FLAMMABLE LIMIT	SI% VOLUME IN AIR	UPPER
O'F Tag Clo	<u>sed Tester</u>		L	1.3	7.6
INGUISHING MEDIA					
se water fog	, foam, dry	chemical or	CO2. Do 1	not use a directestr	eam of
ter. Produ	Ct will flo	at and can b	<u>e reignite</u>	<u>on surface of wate</u>	r
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anger. Extr	emely Flamm	able. Clear	fire area	of unprotected pers	onnel
ng isolate.	JO NOT ent	er confined	rire space	without full bunker	gear
nernarud a p	Service bie	ssure NIOSH	approved s	eli-contained breath	ing
pparatus. C	OOT IILG GX	posed contai	ners with	water.	
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•	SION HAZARDS			······································	
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USUAL FIRE AND EXPLO apors are he ground aw NOT weld, tuations re	avier than ay from the heat or dri quire drill	handling si 11 On or nea ing, only tr	r containe ained emer	r. However, if emer gency personnel show	gency 1d drill.

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Small spills: Take up with an absorbent material such as sand or clay and dispose as above. WASTE DISPOSAL Recovered product should be recycled. Waste generated during cleanup which is discarded as a solid waste should be disposed of at a facility approved under RCRA regulations for hazardous waste (See Sec. XIII). ENVIRONMENTAL HAZARDS This product is an "oil" under the Clean Water Act. KEEP OUT OF	ADDITIONAL USE EXP tions. SPILL OR LEA DANGER! equipme Large S Wear ap leak is suppres pump to as clay non-lea	PROTECTIVE MEASUR PROTECTIVE MEASUR PROTECTIVE MEASUR PROCEDURES EXTREMELY ENT MUST DE Spills: Iso Spills: Iso Spill:	ES of ventilat FLAMMABLE grounded olate haza respirator o so; dike cloud; co alvage ves other suit iners for	VIRONMENTA E. Elimin to prevent rd area; d and prote and conta ntain run- sels. Soa able mater proper dis	hing. equired t <u>L PROTECT</u> hate all sparkin leny entr ective cl ain. Wat off. Re ak up res rial; pla sposal.	ON ignition s g. y to unnec othing. S er fog may move with idue with ce in D.O. Flush area	vapor c sources cessary Shut off y be us vacuum an abso .T. aut	Concentra- Concentra- Handling personnel. f source of eful in trucks or orbent such horized water only if
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Shell MATERIAL SAFETY DATA SHEET MSDS NUMBER \$ 51,260-3 PAGE 4 OF 4	
SECTION XI DANGER! EXTREMELY FLAMMABLE. Avoid heat, sparks, open flames, including - lot lights, and strong oxidizing agents. Use explosion-proof ventilation prevent vapor accumulation. All handling equipment must be grounded to prevent sparking. Harmful or fatal if swallowed. Do not siphon gasoline by mouth.	Þ
FOR USE AS A MOTOR FUEL ONLY. Do not use as a cleaning solvent or for other non-motor fuel uses.	
Wash with soap and water before eating, drinking, smoking or using toilet facilities. Launder contaminated clothing before reuse. Under normal working conditions at service stations, a respirator is not warranted. If a major spill occurs, get upwind and notify local emergency personnel. Remember explosion and fire is the most immediate danger.	
SECTION XII TRANSPORTATION REQUIREMENTS	
DEPARTMENT X FLAMMABLE LIQUID COMBUSTIBLE LIQUID OXIDIZING MATERIAL NON-FLAMMABLE OF FLAMMABLE SOLID POISON.CLASS A CORROSIVE MATERIAL NOT HAZARDOUS BY CLASSIFICATION FLAMMABLE GAS POISON.CLASS B IRRITATING MATERIAL OTHER-Specify below	
D.O.T. PROPER SHIPPING NAME Gasoline Other requirements	
D.O.T. I.D. # UN1203, Guide No. 27	
SECTION XIIIOTHER REGULATORY CONTROLSEPA.FDA.OSHA.USDA.CPSC.**C.EPA - Resource Conservation and Recovery Act (RCRA) Regulations As produced, this material is a product and not a waste. If discarded or intended to be discarded as is, it is a liquid ignitable hazardous waste as defined in RCRA (40 CFR 261.21). The EPA hazardous waste number is DOOL. Free liquid ignitable wastes are banned from disposal by landfilling bulk or in containers. Product recovery and recycling are recommended where possible.EPA - Clean Water Act (CWA) This product is classified as an oil under Section 311 of the Clean Water Act. Spills entering (a) surface waters or (b) any watercourses or sewers	
entering/leading to surface waters that cause a sheen <u>MUST</u> be reported to the National Response Center, 800-424-8802.	
The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regard- ing the accuracy of these data or the results to be obtained from the use thereof. Vendor assumes no responsibility for injury to vendee or third , s proximately caused by the material if reasonable safety pedures are not adhered to as stipulated in the data sheet. BE SAFE READ OUR PRODUCT SAFETY INFORMATION AND PASS IT ON	
CMS 247707

Dear Customer: This Bulletin contains important environmental, health and toxicology information for your employees who recently ordered this -product. Please make sure this information is given to them. If you reself this product, this Bulletin should be given to the Buver. This Form may be reproduced without permission.

Chevron U.S.A. Inc.

Material Information Bulletin

(Approved - "Essentially Similar" to Form OSHA 20, Material Safety Data Sheet)

CHEVRON AVIATION HYDRAULIC FLUID A

DANGER!

HARMFUL OR FATAL IF SWALLOWED MAY CAUSE SKIN IRRITATION COMBUSTIBLE KEEP OUT OF REACH OF CHILDREN

TYPICAL COMPOSITION

Hydrocarbon base oils	84.0%
Additive	15.5%
Tricresylphosphate*	0.5%

*Contains less than 0.1% ortho isomer.

EXPOSURE STANDARD

The suggested Threshold Limit Value is 5 mg/m^3 (milligrams of material per cubic meter of air) for a daily 8-hour exposure. This is the OSHA exposure standard and the Threshold Limit Value for mineral oil mists.

PHYSIOLOGICAL & HEALTH EFFECTS

EMERGENCY & FIRST AID PROCEDURES

Eyes

Expected to cause no more than minor eye irritation. Application into the eyes of rabbits produced slight membrane irritation.

This material is a primary skin irritant. Application onto the skin of rabbits produced severe erythema and edema. See Additional Health Data.

Not expected to be acutely toxic by inhalation but inhalation of oil mists at levels above the exposure standard can cause respiratory irritation or discomfort. Wash eyes with fresh water for at least 15 minutes. If irritation continues, see a doctor.

Skin

Wash skin thoroughly with soap and water. See a doctor if any of the signs and symptoms described in this bulletin develop or if any skin irritation occurs. Launder contaminated clothing.

Inhalation

If respiratory irritation or discomfort occur when breathing the dust or mist, move the person to fresh air. If irritation or discomfort continue or if any other signs or symptoms occur, see a doctor.

If swallowed, DO NOT make person vomit.

Call a doctor immediately.

Ingestion

Not expected to be acutely toxic by ingestion. The acute oral LD_{50} (rat) was greater than 5 g/kg. Note to Physician: Ingestion of this product or subsequent vomiting can result in aspiration of light hydrocarbon liquid which can cause pneumonitis.

Chevron Environmental Health Center/P.O. Box 1272, Richmond, CA 94802 Emergency Phone Number (415) 233-3737

Page 1 of 3

CRR-6745(A)(10M-9-79) Printed in U.S.A.

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ADDITIONAL HEALTH DATA

Not expected to be toxic by skin absorption. The acute dermal LD_{50} for rabbits was greater than 5 g/kg.

SPECIAL PROTECTIVE INFORMATION

Eye Protection: No special eye protection is necessary.

Skin Protection: Avoid contact with skin or clothing. Skin contact can be minimized by wearing impervious protective clothing including rubber gloves.

Respiratory Protection: If operating conditions create airborne concentrations which exceed the exposure standard, the use of an approved respirator is recommended.

Ventilation: Use this material only in well ventilated areas.

Other: If skin contact can occur, washing s facilities for skin should be available nearby.

FIRE PROTECTION

Liquid evaporates and forms vapor (fumes) which can catch fire and burn with explosive violence. Invisible vapor spreads easily and can be set on fire by many sources such as pilot lights, welding equipment, and electrical motors and switches. Fire hazard is greater as liquid temperature rises above $85^{\circ}F$.

Flash Point: (P-M) 80^oC (Min.) Autoignition Temp.: NDA Flammability Limits: NDA

Extinguishing Media: CO₂, Dry Chemical, Foam, Water Spray.

Special Fire Fighting Procedures: For fires involving this material, do not enter any enclosed or confined fire space without proper protective equipment. This may include self-contained breathing apparatus to protect against the hazardous effects of normal products of combustion or oxygen deficiency. Read the entire bulletin.

SPECIAL PRECAUTIONS

See Page 3.

A- A

ENVIRONMENTAL PROTECTION

Environmental Impact: This material is not expected to present any environmental problems other than those associated with oil spills.

Precautions if Material is Released or Spilled: Eliminate all open flames in vicinity of spill or released vapor. Clean up spills as soon as possible, observing precautions in Special Protective Information. Absorb large spills with absorbent clay, diatomaceous earth, or other suitable material. A fire or vapor hazard may exist since these cleanup materials will only absorb liquid; they will not absorb vapor.

Waste Disposal Methods: Place contaminated materials in disposable containers and bury in an approved dumping area.

REACTIVITY DATA

Stability (Thermal, Light, etc.): Stable.

Incompatibility (Materials to Avoid): May react with strong oxidizing materials.

Hazardous Decomposition Products: Normal combustion forms carbon dioxide and water vapor; incomplete combustion can produce carbon monoxide.

Hazardous Polymerization: Will not occur.

PHYSICAL PROPERTIES

Solubility: Miscible in hydrocarbons; insoluble in water.

Appearance (Color, Odor, etc.): Clear red liquid.

Boiling Point: NDA Melting Point: n/a Specific Gravity: 0.85 Vapor Pressure (mm Hg & Temp.): NDA Vapor Density (Air = 1): NDA Percent Volatile (Volume %): NDA Evaporation (= 1): NDA Pour Point: -60°C (Max.) Viscosity: 14 cSt @ 40°C

n/a = Not Applicable NDA = No Data Available



The above information is based on data of which we are aware and is believed to be correct as of the data hereof. Since the information contained herein may be applied under conditions beyond our control and with which we may be unfamiliar and since data made available subsequent to the data hereof may suggest modifications of the information, we do not assume any responsibility for the results of its use. This information is furnished upon the condition that the person receiving it shall make his own determination of the suitability of the material for his particular purpose.



SUPPLEMENT

Material Information Bulletin

CHEVRON Aviation Hydraulic Fluid A

CMS 247707

SPECIAL PRECAUTIONS

3

READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.

Contains Petroleum Distillate. DO NOT USE OR STORE near flame, sparks or hot surfaces. USE ONLY IN WELL VENTILATED AREA. Keep container closed. DO NOT weld, heat or drill container. Replace cap or bung. Emptied container still contains hazardous or explosive vapor or liquid.

CAUTION! Do not use pressure to empty drum or explosion may result.

CORFORATE REJEAR	CH & DEVELOPMEN	T <u>2</u>		HYDROGE	N SULF
SCHENECT	ADY. N. Y. 12305		S.	• •	
Phone: (518) 385-4085	DIAL COM: 8*235-40	85 INFOR	MATION	Data lu	1. 1070
					19 1975
SECTION I. MATERIAL II	DENTIFICATION				
DESCRIPTION: A flammable to under its own vapor press from decomposition of sul OTHER DESIGNATIONS: Sulfur MANUFACTURER: Available for Industrial Gas Div., Mat	coxic gas, usually su sure. It is also a b lfur containing organ retted Hydrogen, H ₂ S, rom several producers neson Gas Products, a	pplied as a y-product of ic material. CAS# 007 78 , including A nd Union Carl	Liquid in certain 3 064 Air Produ pide Corp	steel cor chemical p cts & Chem ., Linde D	itainer process micals, Div.
SECTION II. INGREDIEN	TS AND HAZARDS	. •	x	HAZA	RD DA
Hydrogen Sulfide			>98	Ceiling 1	evel 2
Impurities can includ	· · · · · · · · · · · · · · · · · · ·	of .	r	or 30 p	ng/m3
CH ₂ SH. CO ₂ . CS ₂ . CO	S. and SO ₂ .	OT A A TA		U.man · T-	- boloti
*Current OSHA acceptable co	eiling concentration.	Also		LCLO 60)0 ppm/
50 ppm exposure is allow	ed for 10 minutes if	no other	,	Rat Tobs	lation
measurable exposure occur	rs during the day. A	CGIH (1978)		LC ₅₀ 71	L3 ppm/
8-hr TWA is 10 ppm with a	a 15 ppm STEL. NIOSH	(1977)	6		
recommended that workplace	ce exposure be limite	d to 15 mg/m			
or 10 ppm (10 minute sam)	pling) and that contin	nuous monito	ring taber	•	
	ocential exposure is		irguer.		
SECTION III. PHYSICAL	DATA		·		
Vapor density (Air=1) Water solubility, 1 atm, V At 0 C	1.2 ol.gas/Vol.H ₂ O: 4.4 2.6	Molecular w	eight		
Appearance & Odor: A color tions; odor detectable a in a few minutes; odor s	less gas with an offe bove 0.03 ppm, and o sensation lost immedi	nsive odor (ffensive at a ately at >200	rotten eg Ibout 3 pp) ppm.	gs) at low om. Olfac	tory fa
SECTION IV. FIRE AND	EXPLOSION DATA	_		LC	DWERL
Flash Point and Method	Autoignition Temp.	Flammabilit	y Limits	In Air	4 2
Gaseous above -60 C	500 F (260 C)	VOTUME	<u>^</u>		
Extinguish fire by stopping	g flow of gas. Use a	water spray	TO COOL W.	rrie-expo	
lainers and to protect t Hydrogen sulfide cas can f	low along surfaces for	r considerab	 le distan	ces. read	h a dis
ignition source and flas	h back. A dangerous	fire hazard:	a modera	te explos	sion ha
Firefighters must use eye irritating to moist skin ing cylinders.	protection and self- a. In a fire situati	contained bre on possible b	athing ap nazard fro	paratus. om explodi	H ₂ S can ng or
SECTION V. REACTIVITY	DATA				
This is a stable material	when properly stored , it is a highly fla	in cylinders mmable, acidi ide or other	at room c gas; it oxidizing	temperatu can be dan agents. lime or b	re. I ngerous Much l arium (
not polymerize. However active with strong nitri can be generated on reac (especially in the prese the oxidation of an air- dioxide when burned in a	c acid, sodium perox tion with alkaline m nce of mercurous or hydrogen sulfide mix excess air or sulfur	aterials such nickel oxide) ture. Hydrog when burned w	. Copper sen sulfid vith exce	powder c le produce ss H2S.	an cata s sulfi

- · · ·			•	Νο 62
			· · · · · · · · · · · · · · · · · · ·	NU 32
SECTION VI	HEALTH HAZARD	INFORMATION .	TLV 10 pp	m (See Sect. II)
above 20 ppm is immediate 300-500 ppm pain in the a few minute involvement occur after moval to fre is corrosive ye or Skin Co Get prompt n inhalation: (use good jud mediately! gen contain help prompt)	and increases with ly paralyzed on exp can result in head respiratory tract is exposure above 60 in addition to irr: a few breaths at 10 sh air and restorate to skin and eyes; <u>ontact</u> : Flush affer dedical help for eye (<u>Warning</u> ! Because igment to minimize Restore breathing ing 5% CO ₂) if brea by!	h concentration as posure at 200 ppm ache, dizziness, s (followed later by 00 ppm can be dang itancy and edema. 000-2000 ppm, foll 1 of breathing is it also causes co cted area well wite e contact. (See of the hazards of their own persona with an oxygen re thing is difficul	nd exposure time . Less than hal staggering gait, y bronchitis & p gerous, with inc Paralysis of t lowed by collaps not rapidly acc old burns. th running water ophthalmologist high H ₂ S levels 1 risk.) Remove sucitator or adm t. Keep warm ar	. The sense of sme f hour exposure at nausea, and drynes ulmonary edema). E reasing systemic & he breathing center e and quick death i omplished. Liquid FIRST AID: for at least 15 mi if possible.) , would-be rescuers victim to fresh ai inister oxygen (or ad at rest. Get med
SECTION VI	I. SPILL, LEAK,	, AND DISPOSAL	PROCEDURES	
Notify safety area at 50 p Those who an minor leaks (yellow prece possible. cylinder can Disposal - Was collected was controlled of State f lac	personnel immediat ppm. Supply explos re involved in "cle with bubble format cipitate with H ₂ S). Seal faulty cylinde <u>nnot</u> be shipped). ste material or con ith an alkaline scr conditions with a s	ely if leakageor r ion-proof ventila an-up" must use f ion from soap sol Isolate and sto rs if possible an itents of leaky co rubber to form a s crubber to remove disposal & for b	elease of H ₂ S is tion. Remove al ull protective g ution coating or p leakage. Prev d return to manu- ntainers which o ulfide, or the g SO ₂ from the ei and ling sulfided	suspected. Evacua l sources of igniti gear (Sect. VIII). D with CdCl ₂ solutio vent escape of gas w ifacturer (a leaking cannot be sealed car gas can be burned ur ffluent. Follow Fec s or sulfires from s
SECTION VI	II. SPECIAL PRO	DTECTION INFORM		, or surrices from a
Provide engin Enclosure of than 100 fp the environ for H ₂ S use breathing e emergency.) ing may be Use gloves an be needed t	eering controls to f the process is re m face velocity can ment will likely be , must be available quipment should be Eye protection i needed. d safety goggles wh o prevent contact b	keep worker expose commended. An ex a be used. (Scrub e required.) Self e for nonroutine a stored in areas n ts needed! At hig men working with H with HoS or soluti	ure to H ₂ S at a plosion-proof ex- bing of exhaust -contained breas not emergency us tot likely to be the concentration 1 ₂ S. Additional cons of H ₂ S. dep	s low a level as fea thaust hood with gre air before discharg thing equipment, app e. (Extra self-cont contaminated in an s full protective cl protective clothing ending on the work (
ditions. Eye wash sta	tions must be readi	ily available to a	ireas of handlin	g and use.
· 			·····	·
SECTION IX	SPECIAL PRECA	AUTIONS AND COM	IMENTS	
Follow good p have fusibl resistant a ignition, a equipment u Where H ₂ S is Do <u>not</u> depe Use trained Provide pre-m	ractice in handling e safety plugs whi rea (outside or det way from oxidizing sed with H ₂ S to red regularly used or p ind on sense of smel workers in pairs. lacement and regula	g cylinders of this ich melt above 163 tached storage pr agents, and out of iuce possibility s present, install of il. Train workers ar (≤ 3-year) medi	Is flammable gas F. Store in construction referred) away for direct sunlig static spark ini continuous monit in hazards, sa cal exams to	under pressure. Cy Jol, well-ventilated rom sources of heat ht. Ground lines and tiated fire or exploit oring system with a fe practices, first workers with emphasized
· · · · · · · · · · · · · · · · · · ·	rvous system. & res	spiratory system.	APPROVALC, MIS,	l. m. n. in
On eyes, ne DATA SOURCE(S) CODE: <u>1-9, 11, 1</u>	<u>19, 23, 24</u>	APPROVALS: CRD	
OD EYES, DE DATA SOURCE(S Judgments es to it necessarily purch been teken in th) CODE: 1-9, 11, 1 to outschillty of information horoin for ser's responsibility. Therefore, either preparation of such information. G	U. 19, 23, 24 purchaser's purposes are high reasonable care has beneral Electric Company	Industrial Hygie and Safety	ine Oghfatt

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Required under USDL	Safe	ty and Hea	Ith Regulations for Ship Repairing,		
Shipbuilding, an	d Sh	ipbreaking	(29 CFR 1915, 1916, 1917)	•	
		SECTI	ON 1 .		
ANUFACTURER'S NAME			EMERGENCY TELEPHONE	NO.	-
K & W Products ADDRESS (Number, Sireel, City, State, and ZIP Could	e) -		213 693-8228		·
8319 S. Allport Ave., Se CHEMICAL NAME AND SYNONYMS	int	<u>a Fe S</u>	DINOS, Ca. 90670		`
Gasket compound, antizse	<u>iz</u>	e	FORMULA	k • • (Comp
Kesin, Rubber, Petro che	emi	cal			
SECTION	11	HAZAR	DOUS INGREDIENTS		
PAINTS, PRESERVATIVES, & SOLVENTS	*		ALLOYS AND METALLIC COATINGS	×	TLV (Units
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE	<i>.</i>		METALLIC COATINGS		
SOLVENTS *Hexane		· •••	FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVESRESINS, anti-óxidan	c s		OTHERS		
OTHERS Tackifiers		-		1	
HAZARDOUS MIXTURES	6 OF	OTHER LIC	DUIDS, SOLIDS, OR GASES	*	TLV (Unit
		•			
			iz in a		1
		•			1
SEC		DN 111 - 1			
BOILING POINT (°F.)			SPECIFIC GRAVITY (H20+1)		.78
VAPOR PRESSURE (mm Hg.)			BY VOLUME (%)		80
VAPOR DENSITY (AIR=1)		• :	(
SOLUBILITY IN WATER		none	•		
APPEARANCE AND ODOR COPPER CO	lor	ed sus	pension, viscous, hexane s	olve	ent (
SECTION IV	· Fl	RE AND	EXPLOSION HAZARD DATA		
FLASH POINT (Method und)			FLAMMABLE LIMITS		Uel
EXTINGUISHING MEDIA			chemical extinguisher		
SPECIAL FIRE FIGHTING PROCEDURES	lir	1e			
UNUSUAL FIRE AND EXPLOSION HAZARD	5		•		
					•

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·	SECTION	IV HEA	LIH HAZARD DATA	• • • •
HRESHOLD LIMIT VALU	E	· ·	The second secon	
FFECTS OF OVEREXPOSI		μ		
ane as for you	ACTIE SOLVEN	ICS. AV	010 contact, use aden	<u>uare ventilati</u>
S HOE IMATE,		SWallow		· • · · · · · · · · · · · · · · · · · ·
-Obvsician im	and procedures	omovo o	arous to forch at-	iting. Lall
espiration if	needed. Flus	h with	copious amounts of ru	nninn water
f. contact with	skin after	removal	with kerosene. Then	wash with
arm water and	soap			
	0.5.0.71			•
	SECT		EACTIVITY DATA .	· ·
TABILITY	TABLE	CONDITIO	NS TO AVOID	•
STA		Fire	or flame	· · · · ·
NCOMPATABILITY (Maie	rials to avoid)	L		
AZARDOUS DECOMPOS	TION PRODUCTS		······································	مهر .
				• •
AZARDOUS	MAY OCCUR	· .	CONDITIONS TO AVOID	• •
OLYMERIZATION	WILL NOT OCCUR	×		
	· ·			· ·
				· ·
· · ·	SECTION V	'II - SPILL	OR LEAK PROCEDURES	
STEPS TO BE TAKEN IN	CASE MATERIAL IS R	ELEASED OR	SPILLED REMOVE with ker	osene solvant,
Under Ventlig	LIUN ONLY.	AVOID L	re, tlame, or spark-	

paste Disposal Method Discard in open ventilation area only, or bury,

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ESPIRATORY PRO	TECTION (Specify type)		AL.	
ENTILATION	LOCAL EXHAUST	· ·	SPECIAL	· · ·
	MECHANICAL (General)	•••	OTHER	•
PROTECTIVE GLOV	/ES	EVE PROTECTION	N	
THER PROTECTI	VE EQUIPMENT	ilsted ases	· ·	

SECTION IX - SPECIAL PRECAUTIONS PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING NO Special precuations. Other than adequate ventilation. Avoid contact with body, avoid inhaling, OTHER PRECAUTIONS Avoid heat, flame and sparks

Form OSHA

Rev. May 72

PAGE (2)

Material Safety Data Sheet To comply with OSHA's Hazard Communication Standard, CFR 1910.1200.

	Page 1 of 2
DENTITY (As Used on Label and List) Natural Gas	Note: Blank spaces are not permitted. If any item is not applicable, or no information is available, the space must be marked to indicate that.
SECTION I	CAS # See Haz Comp. Sec II
Manufacturer's Name Parker & Parsley Dev. Co.	Emergency Telephone Number (916) 563-8432
Address 303 W. Wall, Midland, Texas 79701	Telephone Number for Information (915) 563-8432
	Date Prepared June 30, 1994
SECTION IL - Hazardous Ingredients/Identity	Information

Hazardous Components (Specific Chemical Identity)			ACUM	Other Limits Recommended	%(Optional)
Methane (CAS 74-82-8)	88%			· · · · · · · · · · · · · · · · · · ·	
Fihane (CAS 74-84-0)	7%	NDA	NDA		
mane (CAS 74-98-6)	2.5%			· · · · · · · · · · · · · · · · · · ·	
CAS 106-97-8)	.5%				
Larogen (CAS 7727-37-9)	1.6%				
Carbon Dioxide (CAS 124-38-9)	.5%				

Hydrogen sulfide gas (H₂S) may be present in some natural gas streams and may accumulate in low lying areas or areas with poor air circulation at toxic levels.

SECTION III - Physical/Chemical Characteristics *NDA - No Data Available, N/A - Not Applicable

Boiling Point	Spec	ific Gravity (H ₂ O =	1)			
162°C		See Gas Density				
Vapor Pressure 760 mm Hg @ -162°C Vapor Density (AIR = 1) NDA		Melting Point -184°C				
		oration Rate	NDA			
Solubility in Water Soluble in petroleum hydroc	arbons. Slightly soluble in	alcohol and ether; only	slightly soluble	in water.		
Appearance and Odor An odorless, colorless, tastel WARNING: DO NOT DEPEN SECTION IV - Fire and Explo	iess ges. (If H ₂ S is present i ID ON SENSE OF SMELL sion Hazard Data	n low concentrations, ti TO DETECT THE PRESE	nere will be a str NCE OF H ₂ S.	ong rotten egg odor)		
Flash Point (Method Used) <-162°C	Autoignition Temp 482° - 632°C	. % Volatility	4%	UEL 15%		
stinguishing Media	r cooling.					
Special Fire Fighting Procedu For fires involving this meterial, do including self-contained breathing a surgen deficiency. Read the entire	ures net enter any enclosed e pperatus to protect agains MSDE.	r confined fire space w t the hexardous effects	ithout proper p of nermal produ	rotective equipment acts of combustien e		

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CTION IV (Cont'd) - Fire and Explosion Hazard Data

Unusual Fire and Explosion Hazards

Natural gas presents an extreme fire hazard. Gas forms mixtures with air which can become explode violently on contact with any source of ignition. DO NOT USE OR STORE near flame, sparks or hot surfaces. USE ONLY IN WELL VENTILATED AREA. Keep container closed.

SECTION V - Reactivity Data

Stability (Thermal, Light, etc.): Stable incompatibility (Material to Avoid): Explosive with air, oxygen, chlorine, bromine pentafluoride, chlorine dioxide, and other oxygen and halogen sources.

Hazardous Decomposition Products: Normal combustion forms carbon dioxide and water vapor; incomplete combustion can produce carbon monoxide.

Hazardous Polymerization: Will not occur.

SECTION VI - Physiological & Health Effects

Not expected to cause eye irritation. Not expected to be irritating to the skin. Breathing high concentrations of natural gas may produce asphysia by displacement of room air. Not expected to be an ingestion problem. Signs and symptoms which proceed asphysia may include rapid respiration, loss of mental alterness and coordination.

dizziness, nauses and vomiting. Continued exposure may result in prostration, convuisions, come and death.

Emergency First Aid Procedures

Eyes: Flush eyes immediately with fresh water for at least 15 minutes while holding the eyelids open. If irritation persists, see a doctor,

Skin: Not Applicable

Inhalation: If there are signs or symptoms as described in this MSDS due to breathing this material, move the person to fresh air. If breathing has stopped, spply artificial respiration. Call medical personnel.

Ingestion: Since this material is not expected to be an ingestion problem, no first aid procedures are required.

ECTION VII - Environmental Protection

Environmental Impact: NDA

Precautions if Material is Released or Spilled: Eliminate all sources of ignition in vicinity of released gas. Stop gas flow. Provide adequate ventilation to assure there is no significant displacement of oxygen in the room air. Otherwise, evacuate the area and do not allow anyone to return until it is safe to do so.

Waste Disposal Methods: N/A 24 28

SECTION VIII - Protective Information/Control Measures

Eye Protection: No special eye protection is necessary.

Skin Protection: No special skin protection is necessary.

Respiratory Protection: No special respiratory protection is normally required. However, if operating conditions create high airborne concentrations, the use of an approved respirator is recommended. NOTE: If any of the applicable H2S exposure standards are likely to be exceeded, only supplied air respiratory protection can be used.

Ventilation: No special ventilation is usually necessary. However, if operating conditions create high airborne concentrations of this material, special ventilation may be needed."

Comment: Toxic quantities of hydrogen sulfide (H₂S) may be present in gas streams and vessels which contain or have contained natural gas. Persons opening or entering these departments should first determine if H₂S is present. As an indicator of H₂S concentration, the rotten egg odor is unreliable because the sense of smell is lost after limited exposure to hydrogen sulfide gas. Therefore DO NOT ATTEMPT RESCUE WITHOUT WEARING APPROVED SUPPLIED-AIR OR self-contained breathing equipment.

Special Precautions

READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.

Page 3 of 3

The insterial safety data sheet and the information It contains is offered to you in good faith as accurate. We have obtained imation contained in this data sheet from sources outside this company, which we believe to be generally reliable including, but not limited to, other Material Safety Data Sheets. No warranty, express or implied of merchantability, fitness for a particular purpose or otherwise is made. We believe this information to be correct but cannot guarantee its accuracy or completeness. Health and safety precautions in this data sheet may not be adequate for all individuals and/or situations. It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. No statement made in this data sheet shall be construed as permission or a recommendation for the use of any product or material in any manner that might present a hazard to personnel, damage the environment or violate laws or regulatory standards. No warranty is made, either express or implied, and Parker & Parsley Petroleum Company and its subsidiaries shall not be liable for any incidental or consequential damages arising directly or indirectly in connection with the purchase, use, storage or handling of this product.

MATERIAL SAFETY DATA SHEET

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NFPA*

Trade Name:	Sour Natural Gas	Health	0	Extremely Hazardous
Synonyma:	Poison Gas	Fire	. 4	Very Flammable
· `	Acid Gas	Reactivity	.0.:	Stable
CAC Dea Mai	Minture			

CAS Reg. No.: Mixture

Assignment based on our evaluation.

Hazard Data

Simple asphyxiant

I. GENERIC COMPOSITION/INGREDIENTS

Typically >90%

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Material

Methane (CH₄) CAS Reg. No. 74-82-8

Hydrogen Sulfide (H₂S) CAS Reg. No. 7783-06-4

Boiling Point: 760 mmHg

°C (°F) --161 (--258)

Variable 0-400,000 ppm in air Inhalation: Immediately dangerous to life and health above 300 ppm; possible eye, nose and throat irritations above 10 ppm.

II. PHYSICAL DATA

Melting Point: NA

Vapor Pressure: Gas (mmHg, @ 25°C)

<u>Solubility in H2O</u>: Nil (% by Wt.)

Evaporation Rate: Gas (Butyl Acetate=1)

<u>Vapor Density</u>: <1.0(Air = 1)

Specific Gravity

 $(H_2 0 = 1) NA$

<u>Volatiles</u>: Gas (% by Vol.)

<u>Appearance and Odor</u>: Colorless gas. Presence of hydrogen sulfide causes rotten egg odor. Sense of smell may diminish after exposure for short period.

> ND = No Data NA = Not Applicable Revised: 12/15/89

III. FIRE AND EXPLOSION DATA

Elash Point: =>-40(=>-40)[°C (°F)]

Autoignition Temperature: >260 (>500) [°C (°F)]

and a sub-

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Flammable Limits in Air: Lower: <u>~3.0</u> Upper: <u>~12.5</u> (% by Vol.)

Extinguishing Media: Stop flow - CO₂, dry chemical, foam.

Special Fire Fighting Procedure: Stop flow

Unusual Fire or Explosion Hazard: May form explosive mixtures in air.

IV. HEALTH HAZARD INFORMATION

Toxicity Summary: Moderately toxic: gases are simple asphyxiants and/or anesthetic. Ingestion of >1 oz. of liquids may be harmful or fatal.

Listed as Carcinogen or Potential Carcinogen by:

Benzene	<u>NTPARC</u> Yes Category 1	<u>OSHA</u> Yes

Acute Exposure Symptoms:

Inhalation:	Concentrations of vapors above 1% may cause anesthesia, nausea, vomiting, or lung irritation. Condensate may
	contain H ₂ S, and exposure above 300 ppm is immediately dangerous to life or health.
Skin Contact:	Contact with compressed material may cause freezing burns, drving, cracking (dermatitis).
Skin Absorption:	No probable hazard.
Eye Contact:	Irritating
Ingestion:	Ingestion of liquid portion (at room temperature) may cause burning of mouth.

Chronic Effects: Prolonged, repeated dermal contact may cause drying, cracking or dermatitis. OSHA has concluded benzene can cause leukemia in humans and has established a TWA of 1 ppm, and STEL of 5 ppm,. Prolonged, repeated exposure may have leukemogenic effects if air concentrations of 1 ppm is exceeded.

First Aid:

Remove to fresh air. Respiratory support if necessary. Seek Inhalation: medical aid. Wash with soap and water. Skin: Flush with large volumes of water. Seek medical aid. Eves: Ingestion: Do not induce vomiting. Seek medical aid.

Notes to Physician: - High aspiration risk. For large amounts, careful gastric lavage.

- Eructation and gastroenteritis may be complications.

- Aspiration may cause chemical pneumonitis or lipoid pneumonia.

> ND = No Data NA = Not Applicable Revised: 12/15/89

V. REACTIVITY DATA

Conditions Contributing to Instability: None

Incompatibility: Strong Oxidants

Hazardous Decomposition Products (thermal unless otherwise specified): CO. CO₂, SO₂

Conditions Contributing to Hazardous Polymerization: None

VI. SPILL OR LEAK PROCEDURES

Follow accepted industry practices and/or local, state and federal regulations. Check before handling.

VII. SPECIAL PROTECTION INFORMATION

Hazardous Components OSHA TWA OSHA STEL

Hydrogen Sulfide 10 ppm 15 ppm

<u>Ventilation Requirements</u>: Maintain below Lower Flammable Limit. Maintain adequate oxygen concentrations to support life. Above TWA use NIOSHapproved pressure-demand respiratory equipment.

Specific Personal Protective Equipment:

Respiratory:

Eves:

Use NIOSH-approved pressure-demand respiratory protection above TWA. Safety goggles if handling pressurized material. Not required.

Gloves: Not re Other Clothing or Equipment: None

VIII. SPECIAL PRECAUTIONS

Precautionary Statements: None

Storage: Flammable, poison gas.

The suggestions and data provided herewith are based upon tests and information which we believe to be reliable. However, we make no guarantee with respect thereto and assume no liability resulting from the use thereof. Users should make their own investigations to determine the suitability of the information or products for their particular purpose. Furthermore, nothing contained therein is intended as permission, inducement or recommendation to violate any laws or to practice any invention covered by existing patents.

> ND = No Data NA = Not Applicable Revised: 12/15/89

Additional Precautions:

The information below is given to call attention to the issue of "Naturally Occurring Radioactive Materials." Although Radon-222 levels which may be in the product represented by this MSDS do not present any direct Radon exposure hazard. customers should be aware of the potential for Radon daughter buildup within their processing systems, whatever the source of their product streams. Radon-222 is a naturally occurring radioactive gas which can be a contaminant in natural gas. During processing, Radon tends to concentrate in liquefied petroleum gas streams and in product streams having similar boiling point range. Industry experience has shown that this product may contain small amounts of Radon-222 and its radioactive "daughters". The actual concentration of Radon-222 and radioactive daughters in the delivered product is dependent on the geographical source of the natural gas and storage time prior to delivery. Process equipment, e.g. lines, filters, pumps and reaction units, may accumulate radioactive daughters and emit gamma radiation during operation. A potential external radiation hazard exists at or near any pipe. valve, or vessel containing a Radon-enriched stream, or containing internal deposits of radioactive material due to the transmission of gamma radiation through its wall. Field studies reported in the literature and conducted by company personnel at selected sites have not shown any conditions that subject workers to cumulative exposures in excess of general population limits. Equipment emitting gamma radiation should be presumed to be internally contaminated with alpha-emitting decay products which may be a hazard if inhaled or ingested. Before maintenance operations that require the opening of contaminated process equipment begin, the flow of gas should be stopped for four hours to allow the gamma radiation to drop to background levels. Protective equipment such as coveralls, gloves, and respirators (NIOSH/MSHA-approved for high efficiency filtration of particulates and radionuclides, or supplied-air) should be worn by personnel entering a vessel or working on contaminated process equipment to prevent skin contamination, ingestion or inhalation of any residues containing alpha radiation. Airborne contamination ma be minimized by handling scale and/or contaminated materials in a wet state.





NA = Not Applicable Revised: 12/15/89

Date Issued: 12-08-95 Supersedes: 07-05-95



. . MATERIAL SAFETY DATA SHEET NOTE: Read and understand Material Safety Date Sneet before handling or disposing of product. 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION ~ MATERIAL IDENTITY 17 Z - 1 Product Code and Name: **08081 NATURAL GASOLINE** Chemical Name and/or Family or Description: Natural Gasoline Manufacturer's Name and Address: TEXACO REFINING AND MARKETING. INC. P.D. Box 7812 Universal City, CA 91608 Telephone Numbers: Transportation Emergency-Company : (914) 831-3400 CHEMTREC : (8001 424-9300 : 19141 831-3400 Healtr Emergency -Company General MSDS Assistance (914) 838-7204 : (914) £36-7336 Technical Information -fuels -Chemical : (512) 459-6543 -Lubricant/: (800) 782-7852 Antifreezes -Additives : (713) 235-6278 -Solvents : (800) 876-3738 2. COMPOSITION/INFORMATION ON INGREDIENTS THE CRITERIA FOR LISTING COMPONENTS IN THE COMPOSITION SECTION IS AS FOLLOWS: CARCINDGENE ARE LISTED WHEN PRESENT AT C.1.1 OF GREATER. COMPONENTS WHICH ARE OTHERWISE HAZARDOUS ACCORCING TO OSHA ARE LISTED WHEN PRESENT AT 1.0 % OF GREATER; NON-HAZARDOUS COMPONENTS ARE LISTED AT 3.0 % OR GREATER. THIS IS NOT INTENDED TO BE A COMPLETE COMPOSITIONAL DISCLOSURE. REFER TO SECTION 14 FOR APPLICABLE STATES' RIGHT TO KNOW AND OTHER REGULATORY INFORMATION Product and/or Component(s) Carcinogenic According to: IARC NTP OTHER NONE OSHA X Y Composition: (Sequence Number and Chemical Name) CAS Number Sec Cremical Name Range in % 01 * Natural gasoline 8006-61-9 100.00 PRODUCT IS HAZARDOUS ACCORDING TO OSHA (1910, 1200). . COMPONENT IS HAZARDOUS ACCORDING TO CSHA Exposure Limits referenced by Sequence Number in the Composition Section Seq. Limit 01 300 ppm TWA-OSHA 500 01 ppm STEL-OSHA ppm TWA-ACGIH 01 300 01 500 ppm STEL-ACGIH 3. HAZARD IDENTIFICATION . EMERGENCY OVERVIEW Appearance: Water white liquid Door: Hydrocarbon odor PAGE: N.D. - NOT DETERMINED N.A. - NOT APPLICABLE N.T. - NOT TESTED

- GREATER THAN

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- LESS THAN "

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PRODUCT CODE: 08061 NAME: NATURAL GASOLINE

Date Issued: 12-08-95 Supersedes: 07-05-95



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3. HAZARE IDENTIFICATION (CONT)

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		· · · · · ·		12
	WADNING STATEMENT			
DANGER 1	EXTREMELY FLAMMABLE LIQUID AND V	APOR	.	• •
	VAPOR MAY CAUSE FLASH FIRE			
	HARMFUL IF INHALED			
	ASPIRATION HAZARD IF SWALLOWED -	22		
	CAN ENTER LUNGS AND CAUSE DAMAGE	• • • • •		
TTENTION !	POSSIBLE CANCER HAZARD - MAY CAU	SE CANCER BASED ON ANIMAL		
			• • • •	
	HMIS	NFPA		
Health: Flammability: 4	Reactivity: O Health: Special : - Flammabil	1 Reactivity: O ity: 4 Special : -		
OTENTIAL HEALTH	EFFECTS			
Primary Route	of Exposure: X X X		·	
EFFECTS OF OVERES	POSURE	and the second	- -	
Acute:				
May cause min	mel irritation. experienced as t	emporary discomfort		
		• – •		
Skin: Enjef contact	may cause slight innitation . De	alanad contact as with		
clothing wette comfort, seen	as local redness and swelling.	severe irritation and dis-	· · · · · · · ·	
D				
Uther than the term) adverse effects, Deig	e potential skin irritation effec effects are not expected from br , and Section it for information	rts noted above, acute (short rief skin contact; see other . regarding potential long		
term erterts.				÷
Prolonged. wi absorption of	pespread. or repeated skin contact potentially harmful amounts of r	ct may result in the material.		1
Inhalation: Vapors or mis	t may cause irritation of the not	se and throat.		
Inhelation ma disorientatio or confined s or repeated o harmful amoun	Y Cause dizziness, drowsiness, en n. headache. nausea, and vomiting paces, unconsciousness and asphy verexposure may result in the ab is of material.	uphoria, loss of coordination, g. Ir poorly ventilated areas xiation may result. Prolonged sorption of potentially	· ·	
Investion	•		4	
If more than and diarrhea resulting in	several mouthfuls are swallowed, may occur. Aspiration may occur lung damage.	abdominal discomfort, nausea during swallowing or vomitin	2	
· Sensitization	Properties:		·	
Unknown.				
Chronic: Repeated skir	contact may cause a persistent	irritation or dermatitis.		
Medical Condi Because of 11 an existing (ions Aggravated by Exposure: s irritating properties, repeate dermatitis (skin condition).	e skin contact may aggravate	• • • • • • • • •	
Other Remarks None				
4. FIRST AID MEA	SURES		-	
			-	
Eyes: Flush eves with	plenty of water for several mir	nutes. Get medical	•	
attention if e				
attention if e				:

PRODUCT CODE: 08061 NAME: NATURAL GASOLINE

Date Issued: 12-08-95 Supersedes: 07-05-95

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4. FIRST AID MEASURES (CONT)

Skin:

Wash skin with plenty of soap and water until all traces of material are removed. Remove and clean contaminated clothing (See Other Instructions). Destroy non-resistant footwear. Get medical attention if skin irritation persists or contact has been prolonged.

Ingestion:

If person is conscious and can swallow, give two glasses of water (16 oz.) but do not induce vomiting. If vomiting occurs, give fluids again. Have medical personnel determine if evacuation of stomach or induction of vomiting is necessary. Do not give anything by mouth to an unconscious or convulsing person.

Inhalation:

If inhaled, remove to fresh air. If not breathing, clear person's airway and give artificial respiration. If breathing is difficult, qualified medical personnel may administer oxygen. Get medical attention immediately.

Other Instructions:

Remove and dry-clean or launder clothing soaked or soiled with this material before reuse. Dry clearing of contaminated clothing may be more effective than normal laundering. Inform individuals responsible for cleaning of potential hazards associated with handling contaminated clothing.

Aspiration of this product during induced emesis may result in severe lung injury. If evacuation of stomach is necessary, use method least likely to cause aspiration, such as gastric lavage after endotracheal intubation. Contact a Poison Center for additional treatment information.

5. FIRE-FIGHTING MEASURES

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Ignition Temperature - AIT (degrees F):
Not applicatle
Flash Point (degrees F):
< 20 (PMCC)
Flammable Limits (%):
Lower: 1
Upper: 6
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Recommended Fire Extinguishing Agents And Special Procedures: Fight fire from protected location or maximum possible distance. Use dry chemical, foam, carbon dioride, or water spray. Use water spray to cool fire-exposed containers.

Unusual or Explosive Hazards:

Danger! Extremely flammable materials may release vapors that travel long distances, ignite, and flash back. Containers may explode in a fire. Do not expose to heat, sparks, flame, static, or other sources of ignition. When handling, use non-sparking tool, ground and bond all containers.

Explosive air-vapor mixtures may form.

Extinguishing Media Which Must Not Be Used: Not determined.

Special Protective Equipment for Firefighters: Wear full protective clothing and positive pressure breathing apparatus.

PRODUCT CODE: 08081 NAME: NATURAL GASOLINE

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6. ACCIDENTAL RELEASE MEASURES (Transportation Spills; CHENTRES (800)424-9300)

Procedures in Case of Accidental Release, Breakage or Leakage: Eliminate all ignition sources including internal combustion engines and power tools. Ventilate area. Barricade the immediate hazard area. Stay upwind and warn of possible downwind explosion hazard. Avoid breathing vapor. Avoid contact with skin, eyes, or clothing. Pressure demand air supplied respirators should always be worn when the airborne concentration of the contaminant or oxygen is unknown. Otherwise, wear respiratory protection and other personal protective equipment as appropriate for the potential exposure hazard. Contain spill if possible. Remove with inert absorbent. Prevent entry into sewers and waterways.

7. HANDLING AND STORAGE

Precautions to be Taken in Handling:

Use spark-proof tools. Material may be at elevated temperatures and/or pressures. Exercise care when opening bleeders and sampling ports.

Storage:

Ground and bond shipping container, transfer line, and receiving container. Keep away from heat, sparks, flame, and other sources of ignition.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Protective Equipment (Type)

Eve/Face Protection: Safety plasses. chemical type goggies, or face snield recommended to prevent eve contact.

Skin Protection:

Gloves resistant to petroleum distillates are recommended to minimize skin contact. The most effective plove materials are Nitrile rubber, Teflon. or Viton for prolonged contact with gasoline. Protective clothing such as , coversils or boots should be also be worn where contact with product is likely. Launder or dry clean soiled clothes.

Respiratory Protection:

Airborne concentrations should be kept to lowest levels possible. If vapor, mist or dust is generated and the occupational exposure limit of the product, or any component of the product. is exceeded, use appropriate NIDSH or MSH4 approved air purifying or air supplied respirator after determining the airborne concentration of the contaminant. Air supplied respirators should always be worn when airborne concentration of the contaminant or oxygen content is unknown.

Ventilation:

Use explosion-proof equipment to maintain adequate ventilation to meet occupational exposure limits, if applicable (see below), prevent accumulation of explosive air-gas mixtures, and avoid significant oxygen displacement. Oxygen levels should be at least 19.5% in confined spaces or other work areas (OSHA value).

Exposure Limit for Total Product: None established for product. For gasoline: OSH4 PEL-TWA 300 ppm; STEL 500 ppm. ACGIH TLV-TWA 300 ppm; STEL 500 ppm. TEXACO TLV-TWA 100 ppm.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Water white liquid Odor: Hydrocarbon odor Boiling Point (degrees F): Not applicable. Melting/Freezing point (degrees F): Not applicable.

PAGE: N.A. - NOT APPLICABLE N.D. - NOT DETERMINED - GREATER THAN - LESS THAN >

N.T. - NOT TESTED



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DUCT CODE: 08081 E: NATURAL GASOLINE			Date Issued: Supersedes:	12-08-95 07-05-95	
PHYSICAL AND CHEMICAL	PROPERTIES (CON	T)			
ecific Gravity (water: Not determined.	=1):			•	•
i of undiluted product Not applicable.	:		•	مراجع مراجع مراجع	· ·
Nor Pressure:					
Iscosity: Not determined.					
JC Content: Not determined.				·	
apor Density (zir=1): Not applicable.					
olubility in Water (%) Not applicable.	:				
ther None		•			
STABILITY AND REACT					
Products Evolved When Toric levels of carbo ketones.	Subjected to Hea n monoride, carb	i <mark>t or Combustio</mark> Son dioxide, ir	n: ritating aldenyd	des and	
Products Evolved When Toxic levels of carbo ketones. Hazardous Polymerizati	Subjected to Hea n monoxide, carb ons: DO NOT OCCU	it or Combustio וסח מוסצומפ, ור IR	n: ritating aldenvo	des and	
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Products Evolved When Toxic levels of carbo ketones lazardous Polymerizati 1. TOXICOLOGICAL INFOR TOXICOLOGICAL INFORMAT Median Lethal Dose Oral: LD5C Believed to be Inhalation: Not determined. Dermal: LD50 Believed to be Irritation Index. Est	Subjected to Hea n monoxide, carb ons: DO NOT OCCU MATION ION(ANIMAL TOXIC > 5.00 g/kg (ra > 2.00 g/kg (ra imation of Irri	at) practically	n: ritating aldenvo non-toxic ally non-toxic	des and	•
Products Evolved When Toxic levels of carbo ketones dazardous Polymerizati 1. TOXICOLOGICAL INFOR TOXICOLOGICAL INFORMAT Median Lethal Dose Oral: LD5C Believeo to be Inhalation: Not determined. Dermal: LD50 Believed to be Irritation Index, Est Skin: (Buehler) .50 - 3.0 Eves:	Subjected to Hea n monovide, carb ons: DO NOT OCCU MATION IDN(ANIMAL TOXIC > 5.00 g/kg (ra thation of Irrit 00 /8.0 (rabbit)	it or Combustio con dioxide, in R CITY DATA) at) practically abbit) practica tation (Species slightly innin	n: ritating aldenvo non-toxic ally non-toxic ally non-toxic	des and	•
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PRODUCT CODE: 08081 NAME: NATURAL GASOLINE

Date Issued: 12-08-95 Supersedes: 07-05-95

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12. DISPOSAL CONSIDERATIONS

Waste Disposal Methods

This product (as presently constituted) has the RCR4 characteristics of ignitability, and, if discarded in its present form, would have the hazardous waste number of DOO1. Under RCR4, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCR4 criteria for hazardous waste. This is because product uses, transformations, mixtures, processes, etc. may change the classification to non-hazardous, or hazardous for reasons other than, or in addition to ignitability.

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Remarks

Do not allow to enter drains or sewers. Can cause explosion.

13. TRANSPORT INFORMATION,

DT: Proper Shipping Nergy						
Gasoline						
Hazard Class:					•	
Not applicable						
Identification Number: UN1203						
Packing Group: Il	• .				•	
Label Required:					•	
Flammable liquid		·				
	÷.,					
(MDG:						
Proper Shipping Name:						
Not evaluated						
1001						
Proper Shipping Name:						4
Not evaluated					•	4
		•	•			
TDG:						
Proper Shipping Name:						
Not evaluated						
Section 302/304 Extremely Hazardous Substi <u>Seq. Chemical Name</u> None Section 302/304 Extremely Hazardous Substi <u>Seq TP0 RQ</u> None Section 311 Hazardous Categorization: Acute Chronic Fire Pressure Rei <u>X X</u> _	ANCES <u>CAS Nu</u> ANCES (CONT) ACTIVE N/A	mber - F	<u>ange in %</u>	-		
Section 302/304 Extremely Hazardous Substi <u>Seq. Chemical Name</u> None Section 302/304 Extremely Hazardous Substi <u>Seq TPO RQ</u> None Section 311 Hazardous Categorization: Acute Chronic Fire Pressure Rei X X Section 313 Toxic Chemical	Ances (CONT) Ances (CONT) Active N/A	imber F	ange in %	-	·	
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PRODUCT	CODE :	08061	
NAME: NA	TURAL	GASOLINE	

Date Issued: 12-08-95 Supersedes: 07-05-95

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14. REGULATORY INFORMATION (CONT)

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California Proposition 65: The following detectable components of this p or belong to classes of substances, known to	product are substances. the State of California	•	
to cause cancer and/or reproductive toxicity Chemical Name	CAS Number		
None			
States Right-to-know Regulations: Chemical Name	State_Right-to-know	·	
Natural gasoline	CT.FL,IL,MA,NJ,RI	17 t -	
State list: CT (Connecticut), FL (Florida), I LA (Louisiana), MA (Massachusetts PA (Pennsylvania), RI (Rhode Isla	L (Illinois), MI (Michigan),), NJ (New Jersey), nd)	: •	
International Regulations:			
WHMIS Classification: Not determined			•
Canada Inventory Status: This product, or its components, are listed Canadian Domestic Substance List (DSL).	d on or are exempt from the		
EINECS Inventory Status: This product, on its components, are 'ister European Inventory of Existing Chemical Sub List of Notified Chemical Substances (ELIN	d on or ane exempt from the Distances (EINECS) or the European CS).		
Australia Inventory Status: This product, or its components, are liste Australian Inventory of Chemical Substance	d on or are exempt from the 5 (AICS).		
dapan Inventory Status: Not determined.			
15. ENVIRONMENTAL INFORMATION			
Aquatic Toxicity: Not determined.			
Mobility: Not determined.			
Persistence and Biodegradability: Not determined.			
Potential to Bioaccumulate: Not determined.			
Remarks: None			
16. OTHER INFORMATION	,		
Texaco recommends that all exposures to th strictly adhering to recommended occupation any potential adverse health effects.	is product be minimized by nal controls procedures to avoid	•	
THE INFORMATION CONTAINED HEREIN IS BELIEVE INDEPENDENTLY OF ANY SALE OF THE PRODUCT FO AS PART OF TEXACO'S PRODUCT SAFETY PROGRAM. PERFORMANCE INFORMATION CONCERNING THE PROD IMPLIED WARRANTY OF MERCHANTAEILITY OR FITN MADE WITH RESPECT TO THE PRODUCT OR THE INF SHEETS ARE AVAILABLE FOR ALL TEXACO PRODUCT	D TO BE ACCURATE. IT IS PROVIDED R PURPOSE OF HAZARD COMMUNICATION IT IS NOT INTENDED TO CONSTITUTE UCT. NO EXPRESS WARRANTY. OR ESS FOR A PARTICULAR PURPOSE IS ORMATION CONTAINED HEREIN. DATA S. YOU ARE URGED TO OBTAIN DATA		

PRODUCT CODE: 08081 NAME: NATURAL GASOLINE Date Issued: 12-08-95 Supersedes: 07-05-95

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16. OTHER INFORMATION (CONT)

TO DETERMINE APPLICABILITY OR EFFECT OF ANY LAW OR REGULATION WITH RESPECT TO The product. User should consult his legal advisor or the appropriate GOVERNMENT AGENCY. TEXACO DOES NOT UNDERTAKE TO FURNISH ADVICE ON SUCH MATTERS.

Since the last mailing for this customer code, the following sections have been revised: 7,11,14,16,17.

Date: 12-08-95 Revised, Supersedes: 07-05-95 New <u>X</u> . Date printed: 05-22-96

Inquiries regarding MSDS ,should be directed to: Texaco Inc. Manager, Product Safety F.C. Box 509 Beacon, N.Y. 12508

PLEASE SEE NEXT PAGE FOR PRODUCT LABEL

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N.T. - NOT TESTED

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PRODUCT CODE: 08061 NAME: NATURAL GASOLINE Date Issued: 12-08-95 Supersedes: 07-05-95



17. PRODUCT LABEL

Label Date: 12-08-95

REAL AND UNDERSTANC MATERIAL SAFETY DATA SHEET BEFORE HANDLING OR DISPOSING OF PRODUCT THIS LABEL COMPLIES WITH THE REQUIREMENTS OF THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200) FOR USE IN THE WORKPLACE. THIS LABEL IS NOT INTENDED TO BE USED WITH PACKAGING INTENDED FOR SALE TO CONSUMERS AND MAY NOT CONFORM WITH THE REQUIREMENTS OF THE CONSUMER PRODUCT SAFETY ACT OR OTHER RELATED REGULATORY REQUIREMENTS.

 WARNING STATEMENT

 DANGER !
 EXTREMELY FLAMMAELE LIQUID AND VAPOR

 VAPOR MAY CAUSE FLASH FIRE

 HARMFUL IF INHALED

 MAY CAUSE DIZZINESS AND DROWSINESS

 ASPIRATION HAZARD IF SWALLOWED

 CAN ENTER LUNGS AND CAUSE DAMAGE

 ATTENTION !
 POSSIBLE CANCER HAZARD - MAY CAUSE CANCER BASED ON ANIMAL

PRECAUTIONARY MEASURES

-Keen away from heat. sparks or flame. -Use only with adeouate ventilation. -Avoid breatning vacor, mist, or gas. -Avoid contact with eves, skin, and clothing. -Keep container closed. -Wash thoroughly after handling. FIRST AID Eve Contact:

Flush eves with Dienty of water for several minutes. Get medical attention if eye irritation bersists

Skin Contact:

Wash skin with plenty of soap and water until all traces of material are removed. Remove and clear contaminated clothing (See Other Instructions) Destroy non-resistant footwear. Get medical attention if skir inhitation Densists or contact has been prolonged. Indestion:

If person is conscious and can swallow, give two glasses of water (16 or.) but do not induce vomiting. If vomiting occurs, give fluids again. Have medical personnel determine if evacuation of stomach or induction of vomiting is necessary. Do not give anything by mouth to an unconscious or convulsing person. Inhalation:

If inhaled, remove to fresh air. If not preathing, clear person's arrway and give artificial respiration. If breathing is difficult, qualified medical personnel may administer oxygen. Get medical attention immediately.

Note to Physician:

Aspiration of this product during induced emesis may result in severe lung injury. If evacuation of stomach is necessary, use method least likely to cause aspiration, such as gastric lavage after endotracheal intubation. Contact a Poison Center for additional treatment information. FIRE

In case of fire, use water $spra_Y$, dry chemical, foam or carbon dioxide. Water may be ineffective on flames. Use water $spra_Y$ to keep containers cool and protect personnel attempting to stop the leak.

Chemical Name		CAS	Number	Range in	<u>%</u>
• Natural gasoli	ne	٤	3006-61-9	100.00	ł
PRODUCT IS HAZARDOU - Component is Haza	S ACCORDING TO OSHA RDOUS ACCORDING TO	(1910.1200). DSH4.			
Pennsylvania_S None	pecial Hazardous Su	ibstance(s) CAS	Number	<u>Range ir</u>	<u>%</u>
н	MIS		NFPA		
Health: 1	Reactivity: 0	Health: 1	Reactiv	1111:0	
Flammability: 4	Special : -	Flammability: 4	Special	: -	
•	PAGE :	9			
N.D NOT DETERMINE	D N.A NOT	APPLICABLE	N.T NOT	TESTED	
< - LESS THAN	> - GRE/	ATER THAN			

PRODUCT CODE: 08081 NAME: NATURAL GASOLINE Date Issued: 12-08-95 Supersedes: 07-05-95

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17. PRODUCT LABEL (CONT)

Label Date: 12-08-95

Transportation DDT: Proper Shipping Name: Gasoline Hazard Class: Not applicable Identification Number: UN1203 Packing Group: II Label Required:

Flammable liquid

CAUTION: Misuse of empty containers can be hazardous. Empty containers can be hazardous if used to store toxic, flammable, or reactive materials. Cutting or weiding of empty containers might cause fire, explosion or toxic fumes from residues. Do not pressurize or expose to open flame or heat. Keep container closed and drum bungs in place.

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Manufacturer's Name and Address TEXACC REFINING AND MARKETING, INC P.C. Box 7812 Universal City, CA 91608

TRANSPORTATION EMERGENCY	Company: CHEMTREC	(914) 831-3400 (803) 424-9303	
HEATTH EMERGENCY	Company	(914) 831-3400	



Oryx Energy Company **Material Safety Data Sheet**

Oryx Energy Company

Page: 1 of 3 Revision Date: 10/18/91 Supersedes: 08/23/89

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PO Box 2880 Dallas, TX 75221-2880 Emergency Phone Humber: (214) 357-1082

SECTION 1 IDENTIFICATION

Product Name: . . . FIELD SALES CAS' (UMPROCESSED) Aliphatic and Aromatic Hydrocarbon Hixture Chemical Family: . CAS Registry #: . . 8006-14-2 DOT Number: . . . UN 1971

CHENICAL SYNONYMS OR ALIASES NATURAL GAS NETHANE LEASE GAS

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WELL HEAD GAS

SECTION 2 NAZAROOUS INGREDIENTS

	Gas V				
	Lower	Upper	OSHA	ACGIH	OSHA
Components	<u> </u>	Lage	PEL	TLV	Ceiling
METHANE	60.00	95.00	KA	Asphyxiant	NA
ETKANE	3.00	15.00	- NA	Asphyxiant	NA
PROPANE	2.00	10.00	1000 ppm	Asphyxiant	· NA
ISOBUTANE	0.00	5.00	NA	NA	NA
N-BUTANE	0.00	10.00	800 ppm	800 ppm	ЖА
PENTANE	0.00	3.00	600 ppm	600 ppm	HA
HEXANE	0.00	2.00	50 ppm	50 ppm	NA
ISOHEXANE	0.00	2.00	500 ppm	500 ppm	NA
REPTANES-OCTANES (C7-C8)	0.00	3.00	NA	NA	KA
NYDROGEN SULFIDE	0.00	20.00	10 ppm	- 10 ppm	20 ppm
CARBON DIOXIDE	0.00	10.00	10,000 ppm	5000 ppm	. NA
NITROGEN	0.00	10.00	NA	Asphyxiant	NA
BENZENE	0.00	0.50	1 ppm	10 ppm	N

(Prop	SECTION 3 PHTSICAL DATA rties vary widely. Values given are typical.)
Boiling Point	-200 °F · pH Information NA
Specific Gravity (H ₂ O=1) NA	Evaporation Rate (Ethyl ether=1) Gas
Vapor Pressure	Appearance Colorless gas
Solubility in Water 0.4% B	000F Natural gas odor (unless 0 °C non-odorized)

SECTION 4 FIRE AND	EXPLOSICIE NAZARO DATA	
(Properties vary widely.	Values given are typical.)	
Flash Point Flammable Gas	NFPA CLASS	HAZARD RATING
Autoignition Temp 900 to 1170 *F	HEALTH 1	0 - Least 3 - High
Lower Explosive Limit (LEL) . 3.8% by volume	FIRE 4	1 - Slight 4 - Extreme
Upper Explosive Limit (UEL) . 17.0% by volume	REACTIVITY 0	2 - Noderate
Spec. Hazard None	OTHER O	

FIRE AND EXPLOSION HAZARDS Flammable gas.

EXTINGUISHING MEDIA

Dry chemical powder. Carbon dioxide.

FIRE FIGHTING INSTRUCTIONS

Shut off source. Allow fire to burn itself out if no risk to surroundings, otherwise use extinguishing media. Cool exposed containers with water spray. Wear self-contained breathing apparatus when fire fighting in confined space. This material may contain H₂S, a poisonous gas. Taxic sulfur diaxide is produced from burning hydrogen sulfide. Refer to DOT Emergency Response Guidebook for first response information.



Oryx Energy Company

Material Safety Data Sheet

Product Name: FIELD SALES GAS (UNPROCESSED)

Page: 2 of 3 Supersedes: 08/23/89

SECTION S NEALTH NAZARD INFORMATION

ROUTES OF EXPOSURE AND EFFECTS

(INHALATION) Excessive exposure may cause central nervous system effects, dizziness, loss of balance and coordination, unconsciousness, come, respiratory failure and death.

DANGER! Benzene has been shown to cause blood and bone marrow disorders, such as cancer and leukemia by the International Agency for Research on Cancer (IARC), the National Toxicology Program (NTP), and the Occupational Safety and Health Administration (OSNA).

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DANGER! Hydrogen sulfide vapors may accumulate in confined spaces or areas of limited circulation. Concentration may be immediately dangerous to life and health (IDLH) on a single exposure.

(SKIN) . . . Not determined/No data.

(EYE) . . . No eye effect expected.

(INGESTION) . Cannot reasonably be ingested.

FIRST AID

(INHALATION) Move person to fresh air. If not breathing, give artificial respiration, obtain medical assistance.

(SK1N) . . . None normally required.

(EYE) . . . None normally required.

(INGESTION) . None normally required. Small amounts which accidentally enter mouth should be rinsed out until taste of it is gone.

STABILITY: Stable

SECTION & REACTIVITY

HAZARDOUS POLYMERIZATION: NO

Incompetible Materials: Strong exidizers Mazardous Decomposition Products: Combustion produces carbon monoxide and asphyxiants, and toxic sulfur dioxide if N₂S is present.

SECTION 7 SPILL OR LEAK PROCEDURES

CLEANUP PROCEDURES

Prevent ignition; stop leak; ventilate area. Use water sprey to disperse vepors. Keep upwind of leak. Evacuate until gas has dispersed. Enter only with appropriate protective equipment. (See Section 8)

WASTE DISPOSAL METHOD

Vent to atmosphere until vapors are dispersed. Waste product or contaminated material will be considered hazardous if flash point is less than 140°F requiring disposal at an approved hazardous waste facility.

Oryx Energy Company

Page: 3 of 3 Supersedes: 08/23/89

SECTION 8 SPECIAL PROTECTION INFORMATION

VENTILATION

Use only with adequate ventilation. Ventilate as needed to comply with acceptable exposure limit. (See Section 2)

PROTECTIVE EQUIPMENT

(EYE) . . . None normally needed.

(GLOVES) . . None normally needed.

(RESPIRATOR) Concentration-in-air determines protection needed. Use only NIOSH certified respiratory protection.

(OTHER) . . . None normally needed.

SECTION 9 SPECIAL PRECAUTIONS

STORAGE AND HANDLING CONDITIONS Keep away from heat, sparks, and flame. Keep equipment and piping free of leaks and enclosures well ventilated. Consult NFPA and OSNA standards. Closed system required for handling. Gas is lighter than air and may accumulate in unventilated roof areas.

DANGERI This product may contain benzene, a known carcinogen. Observe all protective measures to avoid excessive exposure.

DANGER! This product may contain hydrogen sulfide, a poisonous gas. Observe all protective measures to avoid excessive exposure.

SECTION 10 PRECAUTIONARY LABEL

This product may be "OFFSPEC" for one or more reasons which must be determined by the purchaser. Hydrogen sulfide, a poisonous gas, may be present at concentrations which are immediately dangerous to life in field sales gas. Routine chemical assay for hydrogen sulfide is highly recommended to determine proper precautions and safeguards. Consult contract or other documentation. This gas is highly flammable and is lighter than air. Gas may travel considerable distances to a source of ignition and flames may flash back. Consult appropriate NFPA codes before handling. Refer to U.S. Dept. of Transportation regulations for transportation and placarding requirements. State and local codes may apply to use and handling of this material.

DANGERI This product may contain benzene, a known carcinogen. Observe all protective measures to avoid excessive exposure.

DANGERI This product may contain hydrogen sulfide, a poisonous gas. Observe all protective measures to avoid excessive exposure.

Disclaimer of Liability

The information in this MSDS was obtained from sources which we believe are reliable. HOWEVER, THE INFORMATION IS PROVIDED WITHOUT ANY WARRANTY, EXPRESS OR IMPLIED, REGARDING ITS CORRECTNESS.

The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE MANDLING, STORAGE, USE OR DISPOSAL OF THE PRODUCT.

This MSDS was propered for and is to be used only for this product. If the product is used as a component in another product, this MSDS information may not be applicable.



- Form Approved Budget Bureau No. 44-R1347 Approval Expires April 30, 1971

U.S. DEPARTMENT OF LABOR

Form No. LSB-005-4 May 1963

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WORKPLACE STANDARDS ADMINISTRATION

Bureau of Labor Slandards

MATERIAL SAFETY DATA SHEET

		SEC1			
MANUFACTURER'S NAME Marvel Oil Company In	ю.		EMERGENCY TELEPHON	ε ΝΟ.]()	•
ADDRESS (Number, Sirect, City, State, and ZII 331 N. Main St., Port C	hester	, N.Y.	10573		
CHEMICAL NAME AND SYNONYMS Not applicable			Marvel Mystery Oi	R	
CHEMICAL Petroleum Hydrocar	bon		FORMULATURE of Petroleum Pro	ducts	
SEC		HAZAF	DOUS INGREDIENTS		
PAINTS, PRESERVATIVES, & SOLVENT	s 🛪	TLY (Units)	· ALLOYS AND METALLIC COATINGS	x	TLV (Unit
PIGMENTS			BASE METAL		
CATALYST			ALLOYS.		
VEHICLE		••	METALLIC COATINGS		
SOLVENTS	30		FILLER METAL PLUS COATING OR CORE FLUX	1	
ADDITIVES			OTHERS		
OTHERS					
	URESOFO		WIDS, SOLIDS, OR GASES	×	TLY
					
	SECTIC	DN I	PHYSICAL DATA		
BOILING POINT (F.)	•	313	SPECIFIC GRAVITY (H20=1)		.9
VAPOR PRESSURE (mm Ho.)	2 H	mm. 9. @ 68	PERCENT VOLATILE		
VAPOR DENSITY (AIR=1)			EVAPORATION RATE		
SOLUBILITY IN WATER	ne	gligibl			
APPEARANCE AND ODOR					
	•			·	
FLASH POINT (Method used)	IV FIR	E AND E	EXPLOSION HAZARD DATA		
	F				
Water spray - foam d	ry chei	mical ·	- CO ₂		
SPECIAL FIRE FIGHTING PROCEDURES					
SPECIAL FIRE FIGHTING PROCEDURES	•				
SPECIAL FIRE FIGHTING PROCEDURES NOTE UNUSUAL FIRE AND EXPLOSION MAZAROS	Do not s	store c	or mix with strong oxidants.	•	· . ·

HRESHOLD LIMIT	VALUE			
FFECTS OF OVERE	XPOSURE Mile	l irritat		kin and even
			1011 (0 3	kii alu eyes.
MERGENCY AND F	IRST AID PROCEDURES	ano of a	lin oon	to op work with a line in the
		ase of s	in ever	flush with close water.
· ·		heidee	in eyes	nush with clear water until irritation
	Sl استد به مدرد دو محمد محمد	IDSIGES.	۔	
		SECTI		REACTIVITY DATA
TABILITY	LINSTAN C		CONDITION	NS TO AVOID
	STARIE			
	(Materials to avoid)			
	MPOSITION PRODUCTS			
		-		•
AZARDOUS	MAY OCCU		<u> </u>	
ULTMERIZATION	WILL NOT	OCCUR		
TEPS TO BE TAKE	Recover free	ECTION V S RELEASED	VII SPILI OR SPILLED	L OR LEAK PROCEDURES
VASTE DISPUSAL	Recover free Method Incines	ECTION V S RELEASED liquid.	VII SPILI OR SPILLED Add ab	Sorbent to spill area.
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WASTE DISPUSAL	Recover free METHOD Incines SECTI	ECTION V s receased liquid. rate abs ON VIII	VII SPILI OR SPILLED Add ab forbed m SPECIAL ally not	L OR LEAK PROCEDURES sorbent to spill area. naterial under safe conditions. PROTECTION INFORMATION needed.
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Information on this form is furnished solely for the purpose of compliance with the Occupational Safety and Health Act of 1970 and shall not be used for any other purpose. Use or dissemination of all or any part of this information for any other purpose may result in a violation of law or constitute founds for legal action.

SECTION 1	
NANUFACTURER'S NAME Shell Oil Company	EMERGENCY TELEPHONE NO. 713-473-9461
ADDRESS (NUMBER, STREET, CITY, STATE, AND ZIP CODE) P. O. Box 2463, One Shell Plaza, Houston, TX 77001	
CHEMICAL NAME AND SYNONYMS Lubricating Oil	Shell TELLUSC 011 58
CHEMICAL FAMILY FORMULA FORMULA	Code 65211

SECTION II		INGREDIE	ENTS -	- <u>-</u> `		
	Nppr	DX.	L	^D so	LCSO	
COMPOSITION			ORAL	DERMAL	CONCENTRATION	HOURS
Petroleum Hydrocarbons	99	Rat	>5 g/kg			
		Rabbit		>2 g/ kg		
Zinc Dithiophosphate	0.9					
Polymethacrylate	0.3					
•						
This for	raula	cion cal	ls for spe	cial precaut	ions.	
	•	SEE A	TTACHED PA	<u>st</u>	•	
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SECTION III	1	PHYSIC	AL DATA	
BOILING POINT (F)		N.A.	SPECIFIC GRAVITY (H20 = 1)	0.88
VAPOR PRESSURE (mmHg)		N.A.	PERCENT VOLATILE BY VOLUME (%)	N.A.
VAPOR DENSITY (AIR = 1)		N.A.	EVAPORATION RATE	N.A.
SOLUBILITY IN WATER	Ins	olubl	e	
APPEARANCE AND ODOR	Light colored	l oil.	Slight odor.	

SECTION IV	FIRE	AND E	EXPLOSION HA	ZARD DATA			
FLASH POINT (METHOD USE	D)			FLAMMABLE LIMIT	5	LEL	UEL.
410°F PMCC			•	N.A.		-	
EXTINGUISHING MEDIA Dry chemical type	preferred.					•	
SPECIAL FIRE FIGHTING PRONO	OCEDURES		•	· ·			
•.		•		•			
UNUSUAL FIRE AND EXPLO	SION HAZARDS ther unidenti	fied	orvenates	car be formed	during	conhusti	07

يرد ومستقدات منصفاتها الجمعيسي متهودتهم			
uloyiga v	HEALTH HAZARD DATA	,	٦
THRESHOLD MANT	Galicianed. Oil mi.z - 5 ug/m ³ .		1
EFFECTS OF OVAR Pulmonary in	Timing possible. Defatting action on skin. Prolonged	or repeated contast	-
may cause s:	in ilsorders such as dermatitis, folliculitis, oil acne	or even skin ca:	1
EMENGENCY AND Eyes-Iluso y	FILT AND PROCEDURES Least 15 minutes. Skin-remove oil by w	iping or applying	Ì
waterless ha	and cleaner, followed by washing with soap & water. Remo	ve all contaminat	64
clothing. In	ngestion-induce vomiting if conscious & consult medical	personnel.	٦

SECTION VI	· · ·	· ·			REACT		ATA	• " • • •		
STABILITY	UNSTA	NBLE		CONDI	TIONS TO	AVOID	Mist	formation	1.	
	. STABL	.E	x				· .		· · · ·	
INCOMPATIBILI	TY (MATE	TIALS TO	VOID)							
HAZARDOUS DE	COMPOSIT	ION PROD	UCTS .	· .		······		*** -	1012/04	•
HAZARDOUS		MAY OCC	:UR	a	· ·	CONDI	TIONST	O AVOID		· ····································
POLYMERIZATI	014	WILL NO	r occur	н н	x		•		······	
				· · · · · · · ·	k		-			······································

SECTION VII

SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Absorb with clay, diatomaceous earth, or other inert material.

WAS'TE DISPOSAL METHOD Controlled burning in compliance with local regulations or bury in approved landfill.

SECTION VIII

SPECIAL PROTECTION INFORMATION

NIOSH approve	d respirator to avoid exposure to t	not vapor or mist.
VENTILATION	LOCAL EXHAUST As required if mist is being gener	rated. SPECIAL
	MECHANICAL (GENERAL)	OTHER
PROTECTIVE GLOVE	⁵ 011 resistant (rubber)	EVE PROTECTION GOGGLES 11 OLL 15 DEING sprayed or splashed.
OTHER PROTECTIVE Appropriate C	EQUIPMENT lothing to avoid skin contact.	

SECTION IX

SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Avoid breathing oil mist & vapors. Avoid skin contact. Airborne mist should be kept

substantially below the nuisance TLV for oil mist.

OTHER PRECAUTIONS Launder contaminated clothing before using. Discard leather goods when contaminated. ;-

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Wash before eating or smoking.

Shell Oil Company Product Safety & Compliance

011 & Chamical Products

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EXON CHEMICAL	
VARSOL 1 SOLVENT	PAGE: 1 DATE PREPARED: MAY 12. 1992 NO.: 92890627
SECTION A PRODUCT IDENTIFICATION	& EMERGENCY INFORMATION
PRODUCT NAME: VARSOL 1 Solvent	ምር አይገር እንዲሰባል እና ምርጉ ላይ የድግሞ በመዋር በርስ እና እና የ አር ምር ዲ. መስ እና በ የተሰለ የድግሞ በርስ አር የሚያስት የሚያስት የ አር ምር ዲ. መስ እና በ የተሰለ የ
CHEMICAL NAME: Not Applicable: Blend	CAS 8052-41-3
CHEMICAL FAMILY: Petroleum Hydrocarbon	
PRODUCT DESCRIPTION: Clear colorless liquid with a petroleum	odor.
EMERGENCY TELEPHONE NUMBERS: EXXON CHENT	CHENICAL AMERICAS 713-870-6000 REC 800-424-9300
SECTION 2 HAZARDOUS ING	REDIENT INFORMATION
The composition of this mixture may be propri- medical emergency, compositional information This product is hazardous as defined in 29 (compositional information: <u>COMPONENT</u> Stroleum hydrocarbons ,toddard Solvent Trimethylbenzene	ietary information. In the event of a will be provided to a physician or nurse. FR1910.1200, based on the following <u>OSHA HAZARD</u> Combustible OSHA PEL: ACGIH TLV OSHA PEL: ACGIH TLV
For additional information	n see Section 3.
SECTION 3 HEALTH INFORM	ATION & PROTECTION
NATURE OF H	AZARD
Slightly irritating but does not injure SKIN CONTACT:	eye tissue,
Low order of toxicity. Skin contact may aggravate an existing	dermatitis condition.
INHALATION: Hign vapor/aerosol concentrations (great are irritating to the eyes and the resp dizziness, anesthesia, drowsiness, uncon nervous system effects, including death INGESTION:	ater than approximately 1000 ppm) piratory tract, may cause headaches, phscipusness, and other central h.
Small amounts of this product aspirated ingestion or vomiting may cause mild to progressing to death. Minimal toxicity.	d into the respiratory system during severe pulmonary injury, possibly

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MATERIAL SAFETY DATA

ecter and ELICH CHENICAL AMERICAS, B Division of EXICH CHENICAL CO ELION CHUICAL AMERICAS. 0.0. BET 3372. HEATTHI, TELLE FROM Division of ELION CHUICAL COMPANY, A Bivision of ELION COMPANYION TEXAS TTOO

DATE PREPARED: MAY 12. VARSOL .1 SOLVENT 1991 -92890627

EYE CONTACT: Flush eyes with large amounts of water until irritation sub

irritation subsides irritation persists, get medical attention. •

SKIN CONTACT:

6.y.,

Flush with large amounts of water; use soap if available. Remove grossly contaminated clothing, including shoes, and launder before a da da 🖉 reuse.

INHALATION:

-Using proper respiratory protection. Immediately remove the affected victim from exposure. Administer artificial respiration if breathing

is stopped. Keep at rest, Call for prompt medical attention. 20 INGESTION:

If svallowed, DO NOT induce vomiting. Keep at rest. Get promptymedical attention.

- ACUTE TOXICITY DATA IS AVAILABLE UPON REQUEST.

WORKPLACE EXPOSURE LIMITS

OSHA REGULATION 29CFR1910, 1000 REQUIRES THE FOLLOWING PERMISSIBLE **EXPOSURE LIMITS:**

A TWA of 100 ppm (525 mg/m3) for Stoddard Solvent.

A TWA of 25 ppm (125 mg/m3) for Trimethyl Benzene.

THE ACGIH RECOMMENDS THE FOLLOWING THRESHOLD LIMIT VALUES:

a TWA of 100 ppm (525 mg/m3) for Stoddard Solvent.

a TWA of 25 ppm (123 mg/m3) for Trimetnyl Benzene.

EXXON RECOMMENDS THE FOLLOWING OCCUPATIONAL EXPOSURE LIMITS: 100 ppm total hydrocarbon based on composition.

PRECAUTIONS

SPECIAL PRECAUTIONS:

Health studies have shown that many petroleum hydrocarbons pose potential human health risks which may vary from person to person. As a precaution, exposure to liquids, vapors, mists or fumes should be minimized?

PERSONAL PROTECTION:

For open systems where contact is likely, wear safety glasses with side shields, long sleeves, and chemical resistant gloves. where contact may occur, wear safety glasses with side shields. Where concentrations in air may exceed the limits given in this Section and engineering, work practice or other means of exposure reduction are not adequate, NIDSH/MSHA approved respirators may be necessary to prevent overexposure by inhalation.

VENTILATION:

The use of local exhaust ventilation is recommended to control process emissions near the source. Laboratory samples should be stored and nandled in a lab hood. Provide mechanical ventilation of confined spaces. See respiratory protection recommendations.

	SEP-22-1992 69:31 FROM BOOM CHEN CO - INT MKTG TO 2005 10 10 10 10 10 10 10 10 10 10 10 10 10	
EX	ON MATERIAL SAFETY DATA SHEET	•
CHE	MICAL BITTON CHEMICAL AMERICAS. P.O. GOR SETT. HOUSTON, TELAS FROD + A BITTAION OF EXTON CHEMICAL COMPANY, & DISTANCE OF EXTON CORPORATION	. •
-	VARSOL 1 SOLVENT	• • •
i	SECTION A FIRE & EXPLOSION HAZARD	
	FLASHPOINT: 100 Deg F. METHOD: TCC NOTE: Minimum FLAMMABLE LIMITS: LEL: 2.1 UEL: 13.3 0 77 Deg F NOTE: Approximate AUTOIGNITION TEMPERATURE: 490 Deg F. NOTE: Approximate	
	GENERAL HAZARD: Combustible Liquid. can form combustible mixtures at temperatures at -or above the flashpoint.	
	Static Discharge, material can accumulate static charges which can cause an incendiary electrical discharge. "Empty" containers retain product residue (liquid and/or vapor) and can be dangerous. DD NOT PRESSURIZE, CUT, WELD, BRAZE, SOLDER, DRILL, GRIND, OR EXPOSE SUCH CONTAINERS TO HEAT, FLAME, SPARKS, STATIC ELECTRICITY, OR OTHER SOURCES OF IGNITION; THEY MAY EXPLODE AND CAUSE INJURY OR DEATH. Empty drums should be completely drained, properly bunged and promptly re- turned to a drum reconditioner, or properly disposed of.	
	FIRE FIGHTING: Use water spray to cool fire exposed surfaces and to protect personnel. Isolate "fuel" supply from fire. Use foam, dry chemical, or water spray to extinguish fire. Avoid spraying water directly into storage containers due to danger of bollover.	
-	or vapor may settle in low areas or travel some distance along the ground or surface to ignition sources where they may ignite or explode.	
	HAZARDOUS COMBUSTION PRODUCTS: No unusual	
_	SECTION 5 SPILL CONTROL PROCEDURE	
	LAND SPILL: Eliminate sources of ignition. Prevent additional discharge of material. if possible to do so without hazard. For small spills implement cleanup procedures: for large spills implement cleanup procedures and, if in public area, keep public away and advise authorities. Also, if this product is subject to GERCLA reporting (see Section 7) notify the National Response Center. Prevent liquid from entering severs, watercourses, or low areas. Contain spilled liquid with sand or earth. Do not use combustible materials such as sawdust. Recover by pumping (use an explosion proof or hand pump) or with a	

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Consult an expert on disposal, of recovered material and ensure conformity to local disposal regulations.

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r	•		and some at the	DI TITI DI ANT	
	VARSOL 1 SOLVE	NT .		PAGE: DATE PREP NO. 1	ARED: MAY 12, 199
-	WATER SPILL: Remove from surf by local author suitable dispers Consult an exper conformity to lo	ace by skimm ties and env lants may be ton disposa ocal disposal	ing or with suitat ironmental agencie used in non-confir of recovered man regulations.	ale adsorbents. I as, sinking and/or hed waters. tarial and ensure	f allowed
-			SECTION 6 NO	TES	•
	HAZARD RATING SYST	ENS:	la analand in.	•	
	National Paint	h is for peop L Coatings As	sociation's (NPCA)	
	Hazardous M National fire P	aterials Iden	tification System octation (NFPA 70	(HMIS)	
	Identificat	ion of the Fi	re Hazards of Mat	ertate	алт
	N	PCA-HMIS	NFPA 704	KEY	•
	HEALTH FLAMMABILITY	······································	1 · · · · · · · · · · · · · · · · · · ·	4 = Seve 3 = Seri	re . Que
	REACTIVITY	ō	Ō	2 - Mode 1 - Slig	rate ht
				0 - Mini	mal
(SECTION	7 REGULATOR	Y INFORMATION	
•		· •			
	DEPARTMENT OF TRAN	SPORTATION	(DOT):	•	
•	Petroleum Naphi	tha UN 1255		•	
	Combustible Lic	auld ES. Cooburt (ble Liquid	,	
	DOT IDENTIFICA	TION NUMBER	: UN 1255		
	NAME: Naph	tha, petroleu '			
	FLASHPOINT: 10	D Deg F. METH	OD: TCC NOTE: M	1n imum	
				a UVCB (Unknown.	Variable
	TSCA: This product is 1 Composition or Bi	isted on the ological) Che	TSCA Inventory as mical at CAS Regi	stry Number 8052-	
•	TSCA: This product is 1 Composition or Bi CERCLA: If this product 1 under the require and Liability Act if there may be o	isted on the ological) Che s accidentall ments of the (CERCLA). h ther local re	TSCA Inventory as mical at CAS Regi ' y spilled, it is Comprehensive Env le recommend you c sporting requireme	stry Number 8052- not subject to an ironmental Respon contact local auth onts.	y special report se. Compensation orities to determ
	TSCA: This product is 1 Composition or Bi CERCLA: If this product 1 under the require and Liability Act if there may be o SARA TITLE III: Under the provisi and Reauthorizati categories: Delayor Mealem	isted on the ological) Che s accidentall ments of the (CERCLA). M ther local re ons of Title on Act. this	TSCA Inventory as mical at CAS Regi y spilled. It is Comprehensive Envie recommend you d porting requireme III. Sections 311 product is classi	stry Number 8052- not subject to an ironmental Respon iontact local auth nts. /312 of the Super fied into the fol	y special reports se. Compensation orities to deterr fund Amendments lowing hazard
	TSCA: This product is 1 Composition or Bi CERCLA: If this product i under the require and Liability Act if there may be o SARA TITLE III: Under the provisi and Reauthorizati categories: Delayed Health, This product cont COMPONE	isted on the ological) Che s accidentall ments of the (CERCLA). h ther local re ons of Title on Act, this fire. tains the fol	TSCA Inventory as mical at CAS Regi y spilled. It is Comprehensive Envie recommend you d porting requireme III. Sections 311 product is classi lowing Section 312	stry Number 8052- not subject to an ironmental Respon contact local auth nts. /312 of the Super fied into the fol 3 Reportable Ingre CAS ND	y special reports se. Compensation, orities to detern fund Amendments lowing hazard dients: MAXIMUM'%

		SAFEIY DAT		
	Exten Chebical AN A Division of Eilen C	ERICAS. P.O. BOR 2973, HOUST	AL TELLS TTOP	
VARSOL 1	SOLVENT	ال المراجع المحالية (1994 - 1994	PAGE: 5 DATE PREPARED: NAY NO. SHEARED: NAY	2, 1992)627 + ÷
S	ECTION 8 TYPICAL	PHYSICAL & CHEN	ICAL PROPERTIES %	235
SPECIFIC GRA 0.80 at 60 Solubility 1	VITY: IN WATER, WT. 2 AT "F	VAPOR PRESS 2 at 68 Appr : Viscosity D	URE, muld at F: sximate F LIQUID, CST AT 'F	
SP. GRAV. OF	F VAPOR, at 1 atm (A)	In=1): FREEZING/ME	LTING POINT, 'F:	
EVAPORATION Less than 0.1	RATE, n-Bu Acetate=1 	I: BOILING POI 315 to 394	NT, *F:	
•	SECTION	N 9 REACTIVITY	DATA	
STABILITY: Stable		HAZARDOUS P Will not occ	OLYMERIZATION:	:
Not Applicab	TO AVOID INSTABILITY: 1e	:		
Halogens, mo	iten sulfur, strong axid	Bizing agents.	•	
None		5: .		
None	SECTION 1	O STORAGE AND I	ANDLING	
ELECTROSTAT	SECTION 1 TIC ACCUNULATION HAZA per grounding procedure IPERATURE, F:	S: O STORAGE AND I RD: LOADING/UN	ANDLING	•F:
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		-40.	Fire 2 Re Health 20 Speci
	IAL SAFE	ry data sh	EET NFPA
I. PRODUCT IDENTIFICManufacturer:WD-40Address:1061 CuP.O. BoSan Die92138-9	Company dahy Place (92110) x 80607 ego, California 021	Telephone: Emergency Only: Information: Chemical Name: Trade Name:	1 (800) 424-9300 (CHEMTREC) (619) 275-1400 Organic Mixture WD-40 Aerosol
II. HAZARDOUS INGRI	DIENTS		
Chemical Name Aliphatic Petroleum Distillat A-70 Hydrocarbon Propellar Petroleum Base Oil Non-hazardous Ingredients	CAS Numbe es 8052-41-3 nt 68476-85-7 64742-65-0	er % 50 25 > 15 < 10	Exposure Limit ACGIH/OSHA 100 ppm (PEL) 1000 ppm (PEL) 5 mg/M ³ (TWA)
III. PHYSICAL DATA			
Boiling Point: Vapor Density (air = 1): Solubility in Water: Specific Gravity ($H_20 = 1$): Percent Volatile (volume):	NA Greater than 1 Insoluble .710 @ 70°F 80%	Evaporation Rat Vapor Pressure: Appearance: Odor:	e: Not determined 55±5 PSI @ 70°F Light amber Characteristic odor
IV. FIRE AND EXPLOS	510N		
Flash Point: Flammable Limits: Extinguishing Media: Special Fire Fighting Proce Unusual Fire and Explosio	NA to a (propel CO ₂ , E edures: None n Hazards: Consid Safety	aerosol cans llant portion) [Lel] 1.8% [Uel] 9. Dry Chemical, Foam lered "extremely flammable" un Commission regulations.	5% der Consumer Product
V. HEALTH HAZARD	/ ROUTE(S) OF ENTRY	1	
Threshold Limit Value Aliphatic Petroleum Disti Symptoms of Overexpos Inhalation (Breathing): Skin Contact: Eye Contact: Ingestion (Swallowed):	llates (Stoddard solvent) low ure May cause anesthesia, hea May cause drying of skin a May cause irritation, tearing May cause irritation, nause	vest TLV (ACGIH 100 ppm.) dache, dizziness, nausea and und or irritation. g and redness. a, vomiting and diarrhea.	upper respiratory irritation.
First Aid Emergency Pro Ingestion (Swallowed): Eye Contact: Skin Contact: Inhalation (Breathing):	Cedures Do not induce vomiting, se Immediately flush eyes with Wash with soap and water. Remove to fresh air. Give a oxygen.	ek medical attention. • n large amounts of water for 15 artificial respiration if necessary.	minutes. If breathing is difficult, giv
DANGER! Aspiration Hazard:	If swallowed can enter lung vomiting. Call Physician im	gs and may cause chemical pri Imediately.	eumonitis. Do not induce
Suspected Cancer Agen Yes NoX	t The components in this	mixture have been found to be	noncarcinogenic

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I.

VI. REACTIVITY DATA

Stability:	Stable X_	Unstable
Conditions to avoid:	NA	
Incompatability:	Strong oxidizing materials	
Hazardous decomposition products:	Thermal decomposition may	yield carbon monoxide
· · · · ·	and/or carbon dioxide.	· · · · · · · · · · · · · · · · · · ·
Hazardous polymerization:	May occur	Will not occur X

VII. SPILL OR LEAK PROCEDURES

Spill Response Procedures

Spill unlikely from aerosol cans. Leaking cans should be placed in plastic bag or open pail until pressure has dissipated.

Waste Disposal Method

Empty aerosol cans should not be punctured or incinerated; bury in land fill. Liquid should be incinerated or buried in land fill. Dispose of in accordance with local, state and federal regulations.

VIII. SPECIAL HANDLING INFORMATION

Ventilation:	Sufficient to keep solvent vapor less than TLV.
Respiratory Protection:	Advised when concentrations exceed TLV.
Protective Gloves:	Advised to prevent possible skin irritation.
Eye Protection:	Approved eye protection to safeguard against potential eye contact,
	irritation or injury.
Other Protective Equipment:	None required.

IX. SPECIAL PRECAUTIONS

Keep from sources of ignition, do not take internally. Avoid excessive inhalation of spray particles. Do not puncture, incinerate or store container above 120°F. Keep from children.

X. TRANSPORTATION DATA

Domestic Surface		
Description:	Consumer Commodity	
Hazard Class:	OHM-D	
IU NO.:	NONE Consumer Commediate (ORM D)	
Laber Mequired:	Consumer Commodity (CHM-D)	
Domestic Air	•	
Description:	Consumer Commodity (Flammable Gas-Aero	osol products)
Hazard Class:	ORM-D	· · · · · · · · · · · · · · · · · · ·
ID No:	NONE	· · · ·
Label Required:	Consumer Commodity (ORM-D-AIR)	• r• •
	Ailes NULLS TITLE	E. Technical Director

SIGNATURE: <u>R. Mile</u>	s · · · · · · · · · · · · · · · · · · ·	TITLE:	Technical Director	
REVISION DATE:	March 1990	SUPERSEDES:	January 1989	<u></u>
NA = Not applicable	NDA = No data available	< =	E Less than	> = More than

We believe the statements, technical information and recommendations contained herein are reliable. However, the data is provided without warranty, expressed or implied. It is the users responsibility both to determine-safe conditions for use of this product and assume toss, damage or expense, direct or consequential, arising from its use. Before using product, read label. MSDS-A

MATERIAL	SAFETY	DATA	SHEET
	347611	~~·~	SHEEL

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romochlorodilluoromethane F2CIBR - INGREDIENTS ROOUS MOREDIENTS A Generation II (chemical and co hisrodifluoromethane A MOREDIENTE TIL (chemical and common name) - PHYSICAL AND CHI C. Negligible		Greater than 99 Greater than 99 N/A RACTERISTICS Specke Orany (H2OC Evidentian H Recomme Recomme Recomme Recomme Recomme	CAS No CAS No 353-59-3 CAS CAS CAS N/A (Fire and Ex) 9 183 ***********************************	ACGH TLV ACGH TLV Not listed Not	Acue baschy Data dur nat LCLO 32 pph/15 M se temory Ceta 17.5 p3.1 mgu 270 °F
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C. Vibor 100 Density (Ar - Negligible	• 4 57	Soecie Gravay (HyOo Evaporation H (Bunyi access Reactioniy on Water	1 1A3 ¹⁰ 945 at roor Unreactive	Pressure (mm m temperature	J75 psi mu @70 *F
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Negligible	- • 57	Reactivity on Weber	Unreactive		
Negligible		••••••••••••••••••••••••••••••••••••••	Unreactive		
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bloriess, sweet odor					
to Flammation Limits	······	Entropymeter	· · · · · · · · · · · · · · · · · · ·	Auto-Ignacon	
	NA		NA		NA
THIS IS AN EXTI	INGUISHING AG	ENT. Use weter	to cool fire-expo	sed cylinders or	other
containers Self-co	intend benathi	ng apparatus wit	h luii tacepiece	and protective c	lathing
when re-entering	unventilated fire	areas where pro	duct has been	used.	
Containers are equi	pped with press	ure and tempera	ture relief devic	es	
but rupture may oci	cur under fire co	onditions and tox	ic decompositio	n by-products ma	ty be
tormed if used in fu	ires over 900 °F.				
<u> </u>					
- PHYSICAL HAZAR	IDS				
une O Carattera					
· Distant Decompo	oses under fire c	conditions above	900 °F.		
Active metals, such	h as aluminum a	ind magnesium,	and fires of met	al hydrides	
Thermai decor	mposition; BCF	begins decompo		Ures above 900	4F to give
free haligens, i	nalogen acida, a ave a sharp imu	and small amoun tung odor. They (ts of carbonyl h Life dangerous #	wen in tow	4
uy-products his	L and in sufficie	nt concentrations	. can result in p	personal enjury or	Geeth.
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WE NO COLVER & Area			as compressed	under pressuret	s up to 200 psi
	Active metals, such Active metals, such Preside Preside Preside Mar Cool Content Mar Cool Conten	Active metals, such as aluminum e Active metals, such as aluminum e Thermai decomposition; BCF free haligens, halogen acide, by-products have a sharp imit concentrations, and in sufficie We had Occur 6 to Area N/A	Conditions Decomposes under fire conditions above Active metals, such as aluminum and magnesium, Active metals, such as aluminum and magnesium, Thermal decomposition; BCF begins decomposition; Thermal decomposition; BCF begins decomposition;	Constant Decomposes under fire conditions above 900 °F. Active metals, such as aluminum and magnessum, and fires of metal Active metals, such as aluminum and magnessum, and fires of metal Thermal decomposition; BCF begins decomposing at temperative free haligens, halogen acide, and small amounts of carbonyl h by-products have a sharp imiting odor. They are dangerous e concentrations, and in sufficient concentrations, can result in to ther cock of a Area N/A used in Ansul extinguishers or cylinders. Haton 1211 is a gas compressed	Conditions Decomposes under fire conditions above 900 °F. Active metals, such as aluminum and magnesium, and fires of metal hydrides Thermail decomposition; BCF begins decomposing at temperatures above 900 free haligens, halogen acids, and small amounts of carbonyl halides. These by-products have a sharp irmsting odor. They are dangerous even in low concentrations, and in sufficient concentrations, can result in personal every of We had occor 6 is Area. NIA used in Ansul extinguishers or cylinders. Halon 1211 is a gas compressed under pressure

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eight hour t	ance dust limit	of 15 mg/M ³ or AC iverage	GIH Nuisance	dust value of 10	mg/M ³ for u	10
Convert			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
m Contact	misting for a s	hort period of time				
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Treat a	is a mineral du	st irmant to the re	spiratory tract		,	
Not an	expected rout	e of entry		···		
maname Ac maname Ch	the stream Tra	nsient cough, short	mess of breath			
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eacel Cananans General	7		· · · · · · · · · · · · · · · · · · ·		· · · · ·	
	Reactive a	ifwey				
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ECTION 6 - EME	ERGENCY AN	ID FIRST AID PI	ROCEDURES			
ye Canada Flush	with large amo	uins of witer: if w		seet Medical an		a
An Carles						
Wash	with soap and	water: if initiation p	xersists; seek M			24 1 7
				COLLI BUCHION		
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N/A - Not Applicable

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NDA - No Data Available



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722-3196-985

Answer ANSUL FIRE PROTECTION. WORMALD U.S., INC Address One Stanton Street. Marnette, WI 54143-2542 Frequence By: Seferty and Health Department SECTION 1 — IDENTITY SECTION 1 — IDENTITY Common new Synamyma; Maton 1301, Freen FE 1301 Chemical Manne: Monobromotinfluoromethane Fermus. CBF51 SECTION 2 — INGREDIENTS MAT 4 — NALARDOUS MOREDIENTS MAT 4 — NALARDOUS MOREDIENTS MAT 4 — NALARDOUS MOREDIENTS MAT 5 — OTHER BIGREDIENTS Monobromotinfluoromethane Frequent Mathematics and seminan nemetics Monobromotinfluoromethane SECTION 3 — PHYSICAL AND CHEMICAL CHARACTERIST Board None SECTION 3 — PHYSICAL AND CHEMICAL CHARACTERIST Board None None None Monobromoting Street Code None SECTION 3 — PHYSICAL AND CHEMICAL CHARACTERIST Mono Coloriess gas, event code Frequent Association Monoe Coloriess gas, event code Frequent Resulting Monoe Containers are equipp d with pressure and Mathe SECTION 4 — PHYSICAL HAZARDS SECTION 4 — PHYSICAL HAZARDS Season free None Season free free conditions and factor are Vision free model free conditions and factor are Vision free free conditions and factor are free conditions aborticity Mathematical Academical Academical Academical Academical Academical Academical Academ		Сла на. Сла на.	(715) 735-7411 Same June 1, 1986 5-63-8 logenated Metha ACGH 1LV 1,000 ppm	Acres base shi (rat) 211.2 mg
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Hazardous Decomposition frequence: Thermal decomposition at temperatures ab bromides. These by-products have a sharp		00 °F lorming i ing adoc They	nydrogen fluonde are dangerous	and hyd
even in low concentrations, and in sufficient National Man Discourse Constants	ove 90 imilati	Centrations CBA	result in person	al injury c
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NOTE: As used in Anish excitiguishers or cylinders, match 1301 is	iove 90 Irritati nt conc	COURT APPROV		
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ECTION 5	- HEALTH HAZARDS	
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	May be mildly urnating	
	Trast As a mineral dust imment to the resourceding tract	
- Contraction		
	Not an expected route of entry.	
, moterne	Oversidesure: Transient cough, shortness of breath	
interior Deste appeare	Choose fibrosis of the king	
Anders Condition	ni Gereraty	
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Nemical Latest	se Carcinigen - Neichel Tescollingy Tes C I.A.A.C. Ves C Program No C - Menogramo Ne C	OSHA. Yes C. No D
· .		-
SECTION 6	- EMERGENCY AND FIRST AID PROCEDURES	+
ive Centeri		
	Flush with large amounts of water if irritation persists, seek Medical attention	*1
ian Contact	Wash with soan and water of prototon nervets, seek Markoli attantion	
-		* 819A
<u> </u>	Remove victim to tresh air. Seek Medical attention if discomfort continues	1919
	H patient is conscious, give large amounts of water and induce vomiting. Seek M	edical help
SECTION 7		
Reservery Pres Specify Types		
	Dust mask where dustiness is prevalent, or TLV exceeded. Mechanical filter resp proionged.	pirator if exposure is
Ventaelan	Extension Mechanical	
	Discretionary Recommended	
Gloves.	N/A Process Procommended as mech	Enicel Serner
Claiming or Law	tt initiation occurs, long sleeves and impervious gloves should be worn	
SECTION I	- SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES	
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	Should be stored in original container or Anaul fire extinguisher.	
Other Precavages:		
	CO THAT THE EVENTS	
Mananas a Pana	neme or Senter Sweep up	
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Moving.	Dispose of in compliance with local, state, and federal regulations	2

N/A . Not Applicable

NDA - No Data Available

Forming Editors is recommended in the Color SA

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MATCHIAL SAFETY DATA SHEET

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· · · · · · · · · · · · · · · · · · ·	One Stanton Street Marmette WI 64141.25	5. INC	(1) how	(113) 133-1411	
	One Stanton Street Marinette WI 54141.25		-		
	Internet B.	<u>142</u>	Cale Preserve	Same	
\$ 	Salety and Health Department			June 1 1986	
	ECTION 1 - IDENTITY	•.			
. ç	ammon Name Juses on Massi Trade Name and Symanymbi Purple-K Dry Chemical Extin	ouishing Agent	CAS No N	/A	
5	nemical reme N/A This is a mixture		Channesi Family Mizt		
7	STRAS	•			
	SECTION 2 - INGREDIENTS	····			
7	ART & - HAZARDOUS INGREDIENTS	• •			
	hinters Hazaroous Companients) (chemical and common nemotal)	•	CAS No	ACGINITLY Acute Tes	1C47 0
. ~~	Muscovite Mics	Less than 5	12001-26-2	20 mppct* NDA	
	Magnesium Aluminum Silicate	Less than 10	8031-18-3	10 mg/M ³ NDA	<u> </u>
	*Million particles per cubic foot		·	•	
			CAS NO	Acute Texase Of	
··					
	Potassium Bicarbonate	Greater than 90	289-14	1-16 NDA	
	Methyl Hydrogen Polysiloxane	Less than 1	63148	-57-2 NDA	
· ·	Purple Pignient	Less than 05	68308	-41-8 NDA	
	Red Pigment	Less than 05	1103-	38-4 NDA	
	Boang Pant N/A Percent Vosine Vapor	Sanche Gravey (HgO = 1) Eveneration Main	N/A	Vapor Prosouro (nun Hg) Ni	VA.
	by Volume (%) N/A Denaty (Ar = 1). N/A	(+ 1) Anacimente en	N/A		
	n Water Slight	Water	N/A	·····	
	and Oder Violet colored powder, no characteristic odo	· · · ·			
	Flash Flammadie Limits Peart None al Air 46 by Valume N/A	Languanas Mada N/	A	Temperate N/A	
	SOODAL FUE	UNG AGENT			
·		AND AGENT	·		
	· ·			<u> </u>	
	Unutual Fire and				
	Explosion Hazarda None				
		·		•	_
			<u> </u>	-	
• ,	SECTION 4 - PHYSICAL HAZARDS				
	Stablery: Unitable C Conditions				
·					
	(Materials is Arrest) Strong acids, NaK alloy and NH4+	12PO4			<u></u>
	Helprove	. <u> </u>			
	Polymentalien We net Occur & to Avend N/A				

	Instant 1000 ppm is the OSHA PEL and the ACGIH TLV
	The effects of exposure to Halon 1301 should disappear quickly upon removal from exposure 1. Can rais presier than 800.000 ppm / w/w/4 hr
** •*** · ·	Eye Coned
••••••	San Carson. Evaboration of liourd from the skin can produce chilking sensetions. Frostibile can occur.
ء مدينة	Vapor is heavier than air and can cause suffocation by reducing oxygen available for breathing Breathing very high concentrations of vapor can cause lightheadedness, giddness, shortness of breath, and may lead to narcosis, cardiac irregularities, unconsciousness or even dealth
	Ingestion is not likely to occur since this material is gas at room temperature.
	Symptotic Active Dizzmess, impaired coordination, reduced mental acuity, and cardiac effects can occur. Unconsciousness or even death in high concentrations with longer accostrates.
• •	Vencer Contention of the second secon
•	Cronical Lates as Carbridgen
¥	SECTION 6 - EMERGENCY AND FIRST AID PROCEDURES
· · ·	Eve Center. Immediately flush eyes with plenty of water for at least 15 minutes while holding lids open."
	European Const. Wash the material off the skin with copious amounts of soap and water for at least 15 minutes.
	Remove victim to tresh air. If cough or other respiratory symptoms occur, consult medical personnel. If not breathing, one artificial respiration, preferably mouth-to-mouth, if breathing is
•	difficult, give oxygen. Consult Medical personnel
· ·	NOTE TO PHYSICIAN: Product is an appryximit and can induce cardiac muscle sensitization to circulating epinephnne-like compounds. Do NOT give adrenalin or similar sympathomimetic drugs. Do NOT allow within to exercise until 24 hours following specific exposures. Freeze burns of mucosal tissue can develop following specific exposures.
•	NOTE TO PHYSICIAN: Product is an asphysiant and can induce cardiac muscle sensitization to circulating epinephine-like compounds. Do NOT give adrenalin or similar sympathomimetic drugs. Do NOT allow within to exercise until 24 hours following specific exposures. Freeze burns of mucosal tissue can develop following specific exposures. SECTION 7 — SPECIAL PROTECTION INFORMATION
	NOTE TO PHYSICIAN: Product is an appryxiant and can induce cardiac muscle sensitization to circulating epinephnne-like compounds. Do NOT give adrenallin or similar sympathomimetic drugs. Do NOT allow victim to exercise until 24 hours following specific exposures. Freeze burns of mucosal tissue can develop following specific exposures. SECTION 7 — SPECIAL PROTECTION INFORMATION Previous Previous (Sectory Previous) Not normally necessary if controls are adequate. For high concentrations exceeding 10%, or if exposure is protonged, use positive pressure air-supplied respirator
-	NOTE TO PHYSICIAN: Product is an asphysiant and can induce cardiac muscle sensitization to circulating epinephnne-like compounds. Do NOT give adrenalin or similar sympathomimetic drugs Do NOT allow witcm to eserces until 24 hours tollowing specific exposures. Freeze burns of mucosal tissue can develop following specific exposures. SECTION 7 — SPECIAL PROTECTION INFORMATION Requestery freeze terminet protonged, use positive pressure air-supplied respirator Venation terminet drugs Recommended terminet are supplied respirator to control as protonged, use positive pressure air-supplied respirator Venation to control as see may collect. may collect.
-	NOTE TO PHYSICIAN: Product is an asphysiant and can induce cardiac muscle sensitization to circulating epinephnne-like compounds. Do NOT give adrenalin or similar sympathomimetic drugs Do NOT allow wortim to exercise unit 24 hours following specific exposures. Freeze burns of mucosal liasue can develop following specific exposures. SECTION 7 - SPECIAL PROTECTION INFORMATION Provide in a serie as unit of the provide series protect series of the provide series of the p
-	NOTE TO PHYSICIAN: Product is an asphysiant and can induce cardiac muscle sensitization to circulating epinephnne-like compounds. Do NOT give adrenalin or similar sympathomimetic drugs Do NOT allow wortim to exercise unit 24 hours bollowing specific exposures. Freeze burns of mucosal liasue can develop following specific exposures. SECTION 7 - SPECIAL PROTECTION INFORMATION Mot normally necessary if controls are adequate. For high concentrations exceeding 10%, or if exposure is protonged, use positive pressure air-supplied respirator. Version Lace Mot normally necessary if controls are adequate. For high concentrations exceeding 10%, or if exposure is protonged, use positive pressure air-supplied respirator. Version Mot normally necessary if controls are adequate. For high concentrations exceeding 10%, or if exposure is protonged, use positive pressure air-supplied respirator. Version Lace Mechanical geometric is positive pressure air-supplied respirator. Version Description of the pressure air-supplied respirator. Version Description of the pressure air-supplied respirator. Version Description Description Descripting air-supplied respirator.
-	NOTE TO PHYSICIAN: Product is an asphysiant and can induce cardiac muscle sensitization to circulating epinephnne-like compounds. Do NOT give adrenalin or similar sympathomimetic drugs Do NOT allow writin to eserces until 24 hours boliowing specific exposures. Freeze burns of mucosal lissue can develop following specific exposures. SECTION 7 — SPECIAL PROTECTION INFORMATION Mot normally necessary if controls are adequate. For high concentrations esceeding 10%, or if espositive to protonged, use positive pressure au-ouplied respirator. Version Level Recommended for motors are adequate. For high concentrations esceeding 10%, or if espositive to protonged, use positive pressure au-ouplied respirator. Version Level Recommended for motors where vapors may collect. Prescow Plastic If working with field to control allow areas or indoors where vapors may collect. Prescow Plastic If working with field to product. Section & Plastic I working with field or poduct. Erver field to possible. Over Prescow Eve wash and safely showers are good safety practice in work areas when working with figure or outloots. Section & — SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES
-	NOTE TO PHYSICIAN: Product is an asphysiant and can induce cardiac muscle sensitization to circulating epinephnne-like compounds. Do NOT give adrenalin or similar sympathomimetic drugs Do NOT allow writin to estercas until 24 hours bilowing specific exposures. Freeze burns of mucosal liasue can develop following specific exposures. SECTION 7 — SPECIAL PROTECTION INFORMATION Mot normally necessary if controls are adequate. For high concentrations esceeding 10%, or if exposure is prolonged, use positive pressure air-supplied respirator. Vervices Not normally necessary if controls are adequate. For high concentrations esceeding 10%, or if exposure is prolonged, use positive pressure air-supplied respirator. Vervices Recommended thomation grows where vapors may collect. Processor Plastic II Processor Erver Chemical. Erver Processor Chemical goggies recommended form a possible. Over Anaccer Ever wash and safely showers are good safety practice in work areas when working with level product. SECTION 8 - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES Processor grows are as a liquiched compressed gas in OOT approved pressure vessets away from high temperatures. If cylinder is not connected to a system, it must be safety capped to preserve addition and proved pressure vessets away from high temperatures.
-	NOTE TO PHYSICIAN: Product is an asphysiant and can induce cardiac muscle sensitization to circulating epinephnne-like compounds. Do NOT give adrenalin or similar sympathomimetic drugs Do NOT allow writin to eserces until 24 hours boliowing specific exposures. Freeze burns of mucosal lissue can develop following specific exposures. SECTION 7 — SPECIAL PROTECTION INFORMATION Mot normally necessary if controls are adequate. For high concentrations esceeding 10%, or if esposure to protonged, use positive pressure at-applied respirator. Version Level Recommended for micros are adequate. For high concentrations esceeding 10%, or if espositive to protonged, use positive pressure at-applied respirator. Version Level Recommended formed. Becommended for micros where vapors may collect. Prescent agentical. Prescent Plastic II work and asle y showers are good safety practice in work areas when working with liqueled product. SECTION 8 — SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES Prescent agents a diquided compressed gas in DOT approved pressure vessets away from high temperatures. If cylinder an of openciat to a system, it must be safety capped to protect agents ectuation of valve end release of agent. Over frameway or Beinger. Note encompatibility information in Section 4.
-	NOTE TO PHYSICIAN: Product is an asphysiant and can induce cardiac muscle sensitization to circulating epinephnne-like compounds. Do NOT give adrenalin or similar sympathomimetic drugs Do NOT allow writin to esterces until 24 hours bilowing specific exposures. Freeze burns of mucosal lisaue can develop following specific exposures. SECTION 7 — SPECIAL PROTECTION INFORMATION Recommended for the specific exposures. SECTION 7 — SPECIAL PROTECTION INFORMATION Recommended for the specific exposures. Mot normally necessary if controls are adequate. For high concentrations esceeding 10%, or if esposure is protonged, use positive pressure an-supplied respector. Verseeiner: Section Plastic II Mot normally necessary if controls are adequate. For high concentrations esceeding 10%, or if esposure is protonged, use positive pressure an-supplied respector. Verseeiner: Section Plastic II Mecommended for the specific expositive pressure are supplied respector. Operations where vapors may collect. Protocom Section B - SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES Operation of valve end release of egent. Operat

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	Nonvectoret 6	505 200		ALO 416 IN	A second second	Energency Telephone he		
	Aderess	L PINE PHU	ECTION. WORM	ALD U.S. INC	· · · · · · · · · · · · · · · · · · ·	Owner -	((15) 7357	····
	-					Cana		
	One :	Stanton Stree	I. Mannette, WI 5	4143-2542		Date Property	Same	
	Salety	and Health	Department	• • •	•		June 1, 19	86
· · ·	SECTION 1 - IC	ENTITY			•			
	 Common Name wood e (Rase Name and Symm 	n (2001) Ying) - Dira	- Eithe B. Das Cha	-		CAS No.:		
•	Chemical			MICEI EXINGU	sning Agem	Chemical	<u> </u>	
	Nome N/A	This is a mu				Family Mutte	971	
	Formula:					• •	-	
	N/A							
	SECTION 2 - II	NGREDIENT	5					
	PART A - MAZARDOU	S MGALDIENTS	,					
·	Principal Plazarabus Co		NCAI and Common nam		~	CAS No	ACOM TLY	Acuse Torrery Data
• • •	Muscovite T	alc	<u> </u>	L	ess than 5	1318-94-1	20 mppcf*	NDA
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	PART B - OTHER MG	ALDIENTE			······			
•••	Over Companients) (C					CAS No	Ao	W Incor Dea
						· · · ·	0	al LD50 (ral)
	Sodium Bic	arbonate		Great	er than 95	144-55	<u>a 42</u>	20 mg/kg
	Magnesium	Stearate			ess then 1	557-04	0 NI	DA .
				`			0	al LDSO (ral)
	Blue Prome	nt (Mostaperr	n Bluet	Le	ss Iban 05		4-864	100 mg/kg
							· .	
	Part N/A			. (· •	N/A		
	Part N/A Percent Valuese By Valuese (%)				veperation Asia	<u>N/A</u>		
·	Part N/A Parcare Valuese by Valuese (%) Balvbery	N/A	inter the - T N/A		vegereien Aus • 1)	N/A		
• . :	Park N/A Parcent Valance by Valance (%) Bourberty in Velatr: Sil	N/A C	har in the state of the state o		veperelan Aue + 1) Neachvey et Near	N/A N/A Unreactive		
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· . ·	Funt N/A Percent Vesane by Vasare by Vasare to Water: Si Appeorance end Oder: Blue C Flaan Port: None Exception Fire	Via N/A Dight Dioned powde Farmage (m of Arth by Va	nane N/A	ic odor	Entropyration Adults = 1) Noter Nator Entropyration Media Nd	N/A N/A Unreactive	Addreption	N/A
· . ·	Part N/A Process Vesare by Vasure (%) Bautosny to Vesar: Si Approvince and Oder: Blue (* Flaan Port None Special Fre Figheng Procedure:	N/A Di bight oloned powde fammase Let g Art to by to N/A	n no characteristi n no characteristi n N/A N/A TMIS IS AN EXTII		Entropuenten Nate	N/A N/A Unreactive	Anterior	N/A
· . ·	April N/A Aproving Neuroso By Valante (%) Bautomy In Valant: Si Approvince and Color: Blue (* Fulan Port: None Epercel Fre Fighter Procedures:	N/A Di bight oloned powde fammase Lin e Art to by to N/A 1	NA NO Characteristic NA NA THIS IS AN EXTII	ic odor NGUISMING J	Entropuenten Maine • 1) Nacconvery en Entropuenten Maine Nácos Nác	N/A N/A Unreactive	Anterior	
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•	Peri N/A Percent Vesere by Usere by Usere Solution and Odd: Blue C Fuent Perce Perce Perce Special Fire Fighting Procedure: Universit SECTION 4	NIA DA	NA NO Characteristi NA Mana N/A THIS IS AN EXTIN HAZARDS N/A MA Rds. Ne K alloy ar		E dinguaner Mass E dinguaner Mosa NA MGENT	N/A N/A Unreactive A		N/A
·	Peri N/A Percent Vesere by teams (%) Sourcest Vesere by teams (%) Sourcest (%) Fisher (%	NIA DA	NA NO Characteristi NA THIS IS AN EXTIN HAZARDS N/A tds. Ne K alloy ar		Estinguarten Aase	N/A N/A Unreactive A		N/A
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• . •	Peri N/A Percent Vesere by Vesere (e) Sourcent vesere by Vesere (e) Sourcent end Oder: Blue () fuent from None Source Pro Formy Procedure: Universe For any Explanan recently Universit For any Explanan recently Universit For any Explanan recently Constraint for any Constraint for an	NIA DA Ight otored powde fammase Lu Fammase Lu Fammase Lu NIA T NIA T NIA T Physical Physical D Conserve Physical Strong eco Nar Coc	NA HAZARDS NA KA KA KA KA KA KA KA KA KA K		Estinguarter Masor Nascrivery en Masor Ndear Ndeа Ndeаr Ndeа Ndeа Ndeа Ndeа Ndeа Ndeаr Ndeаr Ndeаr Ndeаr Ndeаr Ndeа Ndeа Ndeа Ndeа Ndeа Ndeа Ndeа Ndeа	N/A N/A Unreactive A		N/A
•	Peri N/A Percent Vesere by Vesere (e) Sources (e) Sour	NIA DA Ight Dolored powde Fammase Long Fammase LONG FA	NA HAZARDS NA Concore Concore N/A		Estinguarter Auto	N/A N/A Unreactive A		N/A
·	Peri N/A Percent Vesare by Vesare (e) Sources (e) Sour	NIA DA Ight Dolored powde Fammase Lor F Art to by Va NIA T NONE PHYSICAL Concentra PHYSICAL Concentra D boxes Strong sco We And Conce	NA HAZARDS NA Concore Concore N/A		Estinguarden Aaso	N/A N/A Unreactive A		N/A
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NC	ine listed in ACGIH o	OSHA						<u>.</u>
under di Fund	The effects of expo	sure lo Halon 1213	abould de		Annekis m	non temovel	from exor	
Eye Contact		-				-		
ten Course	The liquid form of t	his material can pr	oduce chill	ing sens	ations an	d discomfort		
	Evaporation of liquit	concentrations are i id from the skin car	unickety 10 (n produce (be abso chilling s	ensetion:	ugh the siun 1. Skin injury	in man. I does not	result.
Inheisien	Exposures to conce	Intrations of this m	aterial abo	ve 4% (r tonger	than one (1)	minute	
	can cause toxic aid	le effects.						· · ·
ingestien .			his material					
Signa and	A0.40							-
• • • • • • • • •		4% concentration a	COORDINAT	l one mi	hute. Unc	al acuny, an	IS OF EVEN	death
x	<u> </u>	in heavier concents	ations with	longer	xposures).		
Chranic Overesponderer	Liokoowa							
Mencal Corena	ne Generally							
	Cardiac	problems						1
	~					•		
Chemical Lates	as Carcinogen	Netional Terrotrogy Pregram:	Yes C He D	1 A Me	A C	Tes C NegD	OSMA	Yes O NegO
							•	
SECTION A		AND FIRST AID	PROCED	URES				
						• • ••••••••••••••••••••••••••••••••••		
ETE CONACE	findediately flush in ff redness, dching	eyes with plenty of or a burning sense	water for a	il ieast i Ios, dei	5 minute Medical A	s while hold ittention.	ing has op	en.
San Central	Wash the material	of the skin with co		unts of		water for at	least 15 (minutes, if rednes
	Itching, or burning	occurs, get Medici	al attention					· · · · ·
malaugn .	- Remove victim to	iresh air. If cough (or other rea	piratory	symptom	S OCCUT CO	Bull Mede	cal personnel.
· · · ·	difficult one or or	ve erunciel respire	lion, preier		111.10-000	oun, a presu	MIQ 4	
	CHUCCHI, A.A. ONLA	en, consult medice	i personne	H.			-	
4-00114A	If patient is consci	ous, give 1 or 2 git	l personne Lases ol wi	i. erm weti	r to drint	and get Me	oici' atte	nuon.
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Mobil

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MUBIL OIL COMPORATION MATERIAL SAFETY DATA BULLETIM

RUVISED: 12/3C/92 aturnaryanunuaryanunuary 1. PRODUCT IDENTIFICATION Sunny Sunny Sunny Sunny HUBIL DTE OIL HEAVY SUPPLIER: 24-HOUR EMERGRENCY (CALL COLLECT) : MOBIL OIL CORP. (609) 737-4411 CHEMICAL NAMES AND SYNONYMS: CHEMTREC: PET. HYDROCARBONS AND ADDITIVES (800) 424-9300 US' OR DESCRIPTION: PRODUCT AND MSDS INFORMATION: STEAM TURBINE OIL (800) 662-4525 REFERENCE II. TYPICAL CHEMICAL AND PHYSICAL PROPERTIES AUAARAWHEARAN

APPEARANCE: Amber Liquid ODOR: Nild PH: NA VISCOSITY AT 40 C. CS: > 90.0 VISCOSITY AT 100 C. CS: 11.4 FLASH POINT F(C): > 410(210) (ASTH D-92) MELTING POINT F(C): > 410(210) (ASTH D-92) MELTING POINT F(C): > 600(316) VOC: < 3.00(Wt. 2); 0.22 lbs/gal RELATIVE DENSITY. 15/4 C: 0.881 SOLUBILITY IN WATER: Negligible VAPOR PRESSURE-mm Hg 20C: < .1 NA=Not Applicable NE=Not Satablished D=Decomposes

FOR FURTHER INFORMATION'. CONTACT YOUR LOCAL MARKETING OFFICE.

ANT ANT ANT III. POTENTIALLY HAZARDOUS INGREDIENTS ATAAAAAAAAAAAA

None

SEE SECTIONS XII AND XIII FOR REGULATORY AND FURTHER COMPOSITIONAL DATA.

--- INCLUDES AGGRAVATED NEDICAL CONDITIONS, IF ESTABLISHED ----THRESHOLD LIMIT VALUE: 5.00 mg/m3 Suggested for Oil Nist

EFFECTS OF OVEREXPOSURE: Slight skin irritation,

ADDINGSON AND FIRST AID PROCEDURES ADDINGSON A

EYE CONTACT: Flush thoroughly with water. If irritation persists, call a physician.

SKIN CONTACT: Wash contact areas with somp and water.

INHALATION: Not expected to be a problem.

INCESTION: Not expected to be a problem. However, if greater than 1/2 liter(pint) ingested, immediately give 1 to 2 glasses of water and call a physician, hospital emergency room or poison control center for assistance. Do not induce vomiting or give enything by mouth to an unconscious person.

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TO:HOBS

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"IAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	XI. TOXICOLOGICAL DATA	********	*****
ORAL TOXICITY (RATS): S products and/or the	lightly toxic Based (components.	on testing of	\$imilar
DERMAL TOXICITY (RABBITS similar products an	i); Slightly toxic	esed on testi	ng of

INHALATION TOXICITY (RATS): Not applicable --- Harmful concentrations of mists and/or vapors are unlikely to be encountered through any customary or reasonably foreseeable handling, use, or misuse of this product.

EYE IRAITATION (RABBITS): Expected to be non-irritating. ---Based on testing of similar products and/or the components.

SKIN (RRITATION (RABBITS); May cause slight irritation on prolonged or repeated contact. --- Based on testing of similar products and/or the components.

--- SUBCHRONIC TOXICOLOGY (SUMMARY) ---

Severely solvent refined and severely hydrotreated mineral base oils have been tested at Hobil Environmental and Health Sciences Laboratory by dermal application to rats 5 days/week for 90 days at doses significantly higher than those expected during normal industrial exposure. Extensive evaluations including microscopic examination of internal organs and elinical chemistry of body fluids, showed no adverse effects. ---CHRONIC TOXICOLOGY (SUMMARY) ---

The base oils in this product are severely solvent refined and/or severely hydrotreated. Chronic mouse skin painting studies of similar oils showed no evidence of curcinogenic effects.

GOVERNMENTAL INVENTORY STATUS: All components registered in accordance with TSCA. Transport Information:

DOT:

Shipping Name: Not applicable Hazard Class: Not applicable

- US OSHA HAZARD COMMUNICATION STANDARD: Freduct assessed in accordance with OSHA 29 CFR 1910.1200 and determined not to be hazardous.
- RCRA INFORMATION: The unused product, in our opinion, is not specifically listed by the EPA as a hazardous waste (40 CFR, Part 261D), nor is it formulated to contain materials which are listed hezardous wastes. It does not exhibit the hazardous characteristics of ignitability, corrosivity, or reactivity and is not formulated with contaminants as determined by the Toxicity Characteristic Leaching Procedure (TCLP). However, used product may be regulated.

U.S. Superfund Amendments and Reauthorization Act (SARA) Title III: This product contains no "EXTREMELY HAZARDOUS SUBSTANCES".

SARA (311/312 - FORMERLY 302) REPORTABLE HAZARD CATEGORIES: None

This product contains no chemicals reportable under SARA (313) toxic release program.

and the second THE FOLLOWING PRODUCT INGREDIENTS ARE CITED ON THE LISTS BELOW: CHEMICAL NAME CAS NUMBER LIST CITATIONS PHOSPHORODITHOIC ACID, 0,0-DI C1-68649-42-3 22 14-ALKYL ESTERS. ZINC SALTS (2:1) (ZDDP) (.037) --- REGULATORY LISTS SEARCHED ---1 = ACGIH ALL 6 - IARC 1 11 - TSCA 4 17 - CA P65 22 - H1 293 2 - ACGIH AL 7 =. 1ARC 2A 12 - TSCA 582 18 - CA RTK 23 - MN RTK 3 = ACGIH A28 4 FARC 28 13 - TSCA 5. 19 - FL RTK 24 - NJ RTK 4 = NTP CARC 9 - OSHA CARC 14 - TSCA 6 20 - IL RTK 25 - PA RTK 5 = NTP SUS 10 = OSHA Z 15 - TSCA 125 21 - LA RTK 26 - A1 RTK 16 - WHMIS CARC - CARCINOGEN: SUS = SUSPECTED CARCINOGEN NOTE; HOBIL PRODUCTS ARE NOT FORMULATED TO CONTAIN PCBS. INGREDIENT DESCRIPTION PERCENT CAS NUMBER CONTAINS THE FOLLOWING BASE OILS: ▶ 95.00 DISTILLATES (PETROLEUM), HYDROTREATED 64742-54-7 HEAVY PARAFFINIC PHOSPHORIC ACID, TRIS (HETHYLPHENYL) 0.05 1330-78-5 ESTER FOR MOBIL USE ONLY: MHC: 1" 1" NA 0" 1", MPPEC: A, PPEC: , US92-629 APPROVE CCODE: 3 10/08/92 REQ: US - MARKETING INFORMATION GIVEN HEREIN IS OFFERED IN GOOD FAITH AS ACCURATE, BUT WITHOUT GUARANTEE. CONDITIONS OF USE AND SUITABILITY OF THE PRODUCT FOR PARTICULAR USES ARE BEYOND OUR CONTROL: ALL RISKS OF USE OF THE PRODUCT ARE THEREFORE ASSUMED BY THE USER AND WE EXPRESSLY DISCLAIN ALL WARRANTIES OF EVERY KIND AND NATURE, INCLUDING WARRANTIES OF HERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE IN RESPECT TO THE USE OR SUITABILITY OF THE PRODUCT. NOTHING IS INTENDED AS A RECOMMENDATION FOR USES WHICH INFRINGE VALID PATENTS OR AS EXTENDING LICENSE UNDER VALID FATENTS. APPROPRIATE WARNINGS AND SAFE HANDLING PROCEDURES SHOULD BE PROVIDED TO HANDLERS AND USERS. ******* PREPARED BY: MOBIL OIL CORPORATION ENVIRONMENTAL HEALTH AND SAFETY DEPARTMENT, PRINCETON, NJ FOR FURTHER INFORMATION. CONTACT: MOBIL OIL CORPORATION, PRODUCT FORMULATION AND QUALITY CONTROL 3225 GALLOWS ROAD, FAIRFAX, VA 22037 (800) 227-0707 X3265

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603191-00 PAGE 1 OF 5 MOBIL OIL CORPORATION MATERIAL SAFETY DATA BULLETIN . **REVISED: 12/08/89** אההאמואאאאאאאהההההמאאאאא I. PRODUCT IDENTIFICATION אהאממאאההההמאמאאאאא MOBIL ALMO 527 HEALTH EMERGENCY TELEPHONE: SUPPLIER: (609) 737-4411 MOBIL OIL CORP. **IRANSPORT EMERGENCY TELEPHONE:** CHEMICAL NAMES AND SYNONYMS: (800) 424-9300 (CHEMTREC) PET. HYDROCARBONS AND ADDITIVES PRODUCT TECHNICAL INFORMATION: USE OR DESCRIPTION: (800) 662-4525 ROCK DRILL LUBRICANT WYRREST AND PHYSICAL PROPERTIES AND PHYSICAL PROPERTIES APPEARANCE: ASTM 5.0 LIQUID ODOR: MILD PH: NA VISCOSITY AT 100 F, SUS: 549.6 AT 40 C, CS: 105.0 VISCOSITY AT 210 F, SUS: 65.0 AT 100 C, CS: 11.2 FLASH POINT F(C): > 390(199) (ASTM D-92) POUR POINT F(C): -20(-29)MELTING POINT F(C): NA BOILING POINT F(C): > 600(316) RELATIVE DENSITY. 15/4 C: 0.894 . SOLUBILITY IN WATER: NEGLIGIBLE VAPOR PRESSURE-MM HG 20C: < .1 NA-NOT APPLICABLE NE-NOT ESTABLISHED D-DECOMPOSES FOR FURTHER INFORMATION, CONTACT YOUR LOCAL MARKETING OFFICE. WT PCT _ EXPOSURE LIMITS SOURCES (APPROX) MG/M3 PPM (AND NOTES) POTENTIALLY HAZARDOUS INGREDIENTS: NONE OTHER INGREDIENTS: >95 REFINED MINERAL OILS ADDITIVES AND/OR OTHER INGREDS. < 5 SEE SECTION XII FOR COMPONENT REGULATORY INFORMATION. SOURCES: A=ACGIH-TLV. A*=SUGGESTED-TLV, M=MOBIL, O=OSHA, S=SUPPLIER NOTE: LIMITS SHOWN FOR GUIDANCE ONLY. FOLLOW APPLICABLE REGULATIONS. --- INCLUDES AGGRAVATED MEDICAL CONDITIONS, IF ESTABLISHED ---THRESHOLD LIMIT VALUE: 5.00 MG/M3 (SOURCES: A,M,O) FOR OIL MIST EFFECTS OF OVEREXPOSURE: SLIGHT EYE IRRITATION. SLIGHT SKIN IRRITATION. ************** V. EMERGENCY AND FIRST AID PROCEDURES ********************* --- FOR PRIMARY ROUTES OF ENTRY ---EYE CONTACT: FLUSH WITH WATER. SKIN CONTACT: WASH CONTACT AREAS WITH SOAP AND WATER. INHALATION: NOT EXPECTED TO BE A PROBLEM. INGESTION: NOT EXPECTED TO BE A PROBLEM. HOWEVER, IF GREATER THAN 1/2 LITER (PINT) INGESTED, IMMEDIATELY GIVE 1 TO 2 GLASSES OF WATER AND CALL & PHYSICIAN, HOSPITAL EMERGENCY ROOM OR POISON CONTROL CENTER FOR ASSISTANCE. DO NOT INDUCE VOMITING OR GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

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603191-00. PAGE 2 OF 5 MOBIL ALMO 527 FLASH POINT F(C): > 390(199) (ASTH D-92) UEL: 7.0 FLAMMABLE LIMITS. LEL: .6 EXTINGUISHING MEDIA: CARBON DIOXIDE, FOAM, DRY CHEMICAL AND WATER FOG. SPECIAL FIRE FIGHTING PROCEDURES: WATER OR FOAM MAY CAUSE FROTHING. USE WATER TO KEEP FIRE EXPOSED CONTAINERS COOL. WATER SPRAY MAY BE USED TO FLUSH SPILLS AWAY FROM EXPOSURE. FOR FIRES IN ENCLOSED AREAS, FIREFIGHTERS MUST USE SELF-CONTAINED BREATHING APPARATUS. PREVENT RUNOFF, FROM FIRE CONTROL OR DILUTION FROM ENTERING STREAMS OR DRINKING WATER SUPPLY. UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE NFPA HAZARD ID: HEALTH: O. FLAMMABILITY: 1. REACTIVITY: O STABILITY (THERMAL, LIGHT, ETC.); STABLE CONDITIONS TO AVOID: EXTREME HEAT INCOMPATIBILITY (MATERIALS TO AVOID): STRONG OXIDIZERS HAZARDOUS DECOMPOSITION PRODUCTS: CARBON MONOXIDE. HAZARDOUS POLYMERIZATION: WILL NOT OCCUR ENVIRONMENTAL IMPACT: REPORT SPILLS AS REQUIRED TO APPROPRIATE AUTHORITIES. U. S. COAST GUARD REGULATIONS REQUIRE IMMEDIATE REPORTING OF SPILLS THAT COULD REACH ANY WATERWAY INCLUDING INTERMITTENT DRY CREEKS. REPORT SPILL TO COAST GUARD TOLL FREE NUMBER 800-424-8802. PROCEDURES IF MATERIAL IS RELEASED OR SPILLED: ADSORB ON FIRE RETARDANT TREATED SAWDUST. DIAIOMACEOUS EARTH. ETC. SHOVEL UP AND DISPOSE OF AT AN APPROPRIATE WASTE DISPOSAL FACILITY IN ACCORDANCE WITH CURRENT APPLICABLE LAWS AND REGULATIONS, AND PRODUCT CHARACTERISTICS AT TIME OF DISPOSAL. WASTE MANAGEMENT: PRODUCT IS SUITABLE FOR BURNING IN AN ENCLOSED. CONTROLLED SURNER FOR FUEL VALUE OR DISPOSAL BY SUPERVISED INCINERATION. SUCH BURNING MAY BE LIMITED PURSUANT TO THE RESOURCE CONSERVATION AND RECOVERY ACT. IN ADDITION, THE PRODUCT IS SUITABLE FOR PROCESSING BY AN APPROVED RECYCLING FACILITY OR CAN BE DISPOSED OF AT ANY GOVERNMENT APPROVED WASTE DISPOSAL FACILITY. USE OF THESE METHODS IS SUBJECT TO USER COMPLIANCE WITH APPLICABLE LAWS AND REGULATIONS AND CONSIDERATION OF PRODUCT CHARACTERISTICS AT TIME OF DISPOSAL. EYE PROTECTION: NORMAL INDUSTRIAL EYE PROTECTION PRACTICES SHOULD BE EMPLOYED.

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SKIN PROTECTION: NO SPECIAL EQUIPMENT REQUIRED. HOWEVER, GOOD PERSONAL HYGIENE PRACTICES SHOULD ALWAYS BE FOLLOWED.

RESPIRATORY PROTECTION: NO SPECIAL REQUIREMENTS UNDER ORDINARY CONDITIONS OF USE AND WITH ADEQUATE VENTILATION.

VENTILATION: NO SPECIAL REQUIREMENTS UNDER JRDINARY CONDITIONS OF USE AND WITH ADEQUATE VENTILATION.

ununfations unitation and the X. SPECIAL PRECAUTIONS unitation and a second MATERIALS MUST BE LABELED AS: SEE APPENDIX FOR PRECAUTIONARY LABEL. FL-388

MOBIL ALMO 527

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ORAL TOXICITY (RATS): LD50: > 5 G/KG SLIGHTLY TOXIC(ESTIMATED) ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

DERMAL TOXICITY (RABBITS): LD50: > 2 G/KG \$LIGHTLY TOXIC(ESTIMATED) ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

INHALATION TOXICITY (RATS): LC50: >1 MG/L FOR 4 HRS.0/10 RATS DIED AT THIS DOSAGE LEVEL. NONTOXIC(ESTIMATED) ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

EYE IRRITATION (RABBITS): MAY CAUSE SLIGHT IRRITATION. ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

SKIN IRRITATION (RABBITS): MAY CAUSE SLIGHT IRRITATION ON PROLONGED OR REPEATED CONTACT. ---BASED ON TESTING OF SIMILAR PRODUCTS AND/OR THE COMPONENTS.

CTHER ACUTE TOXICITY DATA: ****THIS MIXTURE OR A SIMILAR MIXTURE DID NOT RESULT IN ANY FATALITIES TO RATS AT CONCENTRATIONS (SEE INHALATION TOXICITY ABOVE) SUBSTANTIALLY HIGHER THAN THE 5 MG/M3 TLV SUGGESTED FOR OIL MISTS.

---SUBCHRONIC TOXICOLOGY (SUMMARY)---

SEVERELY SOLVENT REFINED AND SEVERELY HYDROTREATED MINERAL BASE OILS HAVE BEEN TESTED AT MOBIL ENVIRONMENTAL AND HEALTH SCIENCES LABORATORY BY DERMAL APPLICATION TO RATS 5 DAYS/WEEK FOR 90 DAYS AT DOSES SIGNIFICANTLY HIGHER THAN THOSE EXPECTED DURING NORMAL INDUSTRIAL EXPOSURE. EXTENSIVE EVALUATIONS INCLUDING MICROSCOPIC EXAMINATION OF INTERNAL ORGANS AND CLINICAL CHEMISTRY OF BODY FLUIDS, SHOWED NO ADVERSE EFFECTS.

---CHRONIC TOXICOLOGY (SUMMARY)---

THE BASE OILS IN THIS PRODUCT ARE SEVERELY SOLVENT REFINED AND/CR SEVERELY HYDROTREATED. TWO YEAR MOUSE SKIN PAINTING STUDIES OF SIMILAR OILS SHOWED NO EVIDENCE OF CARCINOGENIC EFFECTS.

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GOVERNMENTAL INVENTORY STATUS: ALL COMPONENTS REGISTERED IN ACCORDANCE WITH TSCA.

D.O.T. SHIPPING NAME: NOT APPLICABLE

D. J. T. HAZARD CLASS: NOT APPLICABLE

- US OSHA HAZARD COMMUNICATION STANDARD: THIS PRODUCT MAY BE USED IN CERTAIN APPLICATIONS WHERE MISTING CAN OCCUR. ACCORDING TO OSHA 29 CFR 1910.1200, CERTAIN MINERAL OIL MISTS MAY BE CONSIDERED HAZARDOUS IF THE WORKPLACE AIRBORNE CONCENTRATION EXCEEDS 5 MG/M3 (ACGIH TLV).
- RCRA INFORMATION: THE UNUSED PRODUCT, IN OUR OPINION, IS NOT SPECIFICALLY LISTED BY THE EPA AS A HAZARDOUS WASTE (40 CFR, PART 261D): DOES NOT EXHIBIT THE HAZARDOUS CHARACTERISTICS OF IGNITABILITY. CORROSIVITY, OR REACTIVITY, AND IS NOT FORMULATED WITH THE METALS CITED IN THE EP TOXICITY IEST. HOWEVER, USED PRODUCT MAY BE REGULATED.
- THIS PRODUCT HAS BEEN USDA APPROVED UNDER THE FOLLOWING CATEGORY: H2 -LUBRICANTS WITH NO FOOD CONTACT

U.S. SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) TITLE III: THIS PRODUCT CONTAINS NO "EXTREMELY HAZARDOUS SUBSTANCES".

SARA (302) REPORTABLE HAZARD CATEGORIES: NONE

THIS PRODUCT CONTAINS NO CHEMICALS REPORTABLE UNDER SARA (313) TOXIC RELEASE PROGRAM.

THE FOLLOWING PRODUCT INGREDIENTS ARE CITED ON THE LISTS BELOW:

CHEMICAL NAME	CAS NUMBER	LIST CITATIONS
(OIL MIST)		1,2,10,11
ZINC (ELEMENTAL ANALYSIS) (0.07%)	7440-66-6	15
CHLORINE (ELEMENTAL ANALYSIS)	7782-50-5	15
.34%)		

--- KEY TO LIST CITATIONS ---

1 - OSHA Z, 2 = ACGIH, 3 - IARC, 4 - NTP, 5 - NCI, 6 = EPA CARC, 7 = NFPA 49, 8 = NFPA 325H, 9 = DOT HHT, 10 - CA RTK, 11 = IL RTK, 12 - MA RTK, 13 = MN RTK, 14 - NJ RTK, 15 - MI 293, 16 = FL RTK, 17 = PA RTK, 18 = CA P65.

--- NTP, IARC, AND OSHA INCLUDE CARCINOGENIC LISTINGS ---

NOTE: MOBIL PRODUCTS ARE NOT FORMULATED TO CONTAIN PCBS.

INFORMATION GIVEN HEREIN IS OFFERED IN GOOD FAITH AS ACCURATE, BUT WITHOUT GUARANTEE. CONDITIONS OF USE AND SUITABILITY OF THE PRODUCT FOR PARTICULAR USES ARE BEYOND OUR CONTROL; ALL RISKS OF USE OF THE PRODUCT ARE THEREFORE ASSUMED BY THE USER AND WE <u>EXPRESSLY</u> <u>DISCLAIM</u> <u>ALL</u> <u>WARRANTIES OF EVERY KIND AND NATURE. INCLUDING WARRANTIES OF</u> <u>MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE IN RESPECT TO THE</u> <u>USE OR SUITABILITY OF THE PRODUCT</u>. NOTHING IS INTENDED AS A <u>RECOMMENDATION FOR USES WHICH INFRINGE VALID PATENTS OR AS EXTENDING</u> LICENSE UNDER VALID PATENTS. APPROPRIATE WARNINGS AND SAFE HANDLING PROCEDURES SHOULD BE PROVIDED TO HANDLERS AND USERS.

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PREPARED BY: MOBIL OIL CORPORATION ENVIRONMENTAL AFFAIRS AND TOXICOLOGY DEPARTMENT, PRINCETON, NJ

FOR FURTHER INFORMATION, CONTACT: MOBIL OIL CORPORATION, PRODUCT FORMULATION AND QUALITY CONTROL 3225 GALLOWS ROAD, FAIRFAX, VA 22037 (703) 849-3265

FOR MOBIL USE ONLY: (FILL NO: RL92515DEM 014) MCN: , MHC: 1* 1* 0* 1* 1*. MPPEC: A. PPEC: A. US89-540 APPROVE 11/22/89

CAUTION

WHEN USE CONDITIONS ARE LIKELY TO RESULT (EXCESSIVE MISTING (GREATER THEN 5 MG/M3), PROVIDE ADEQUATE LOCAL VENTILATION OR RESPIRATORY PROTECTION.

ATTENTION

EMPTY CONTAINERS MAY CONTAIN PRODUCT RESIDUE, INCLUDING FLAMMABLE OR EXPLOSIVE VAPORS. DO NOT CUT, PUNCTURE OR WELD ON OR NEAR CONTAINER. ALL LABEL WARNINGS AND PRECAUTIONS MUST BE OBSERVED UNTIL THE CONTAINER HAS BEEN THOROUGHLY CLEANED OR DESTROYED.

REFER TO PRODUCT MATERIAL SAFETY DATA BULLETIN FOR FURTHER SAFETY AND HEALIH INFORMATION.

MOBIL OIL CORPORATION, NEW YORK, N.Y. 10017-5666 FL-388(3/85)

D.O.T. SHIPPING NAME: NOT APPLICABLE D.O.T. HAZARD CLASS: NOT APPLICABLE

Material Safety Data Sheet

SNUUP

September 1991

RPRODUCTIDENTIFICATION

PRODUCT NAME: SNOOP

MANUFACTURER Nupro Company

4800 East 345th Street

Telephone: (216) 931-7100

Emergency Telephones (216) 981-7100

Willoughby, Ohio 44094

Chemtreci (800) 424-9300

PRODUCT USE: Snoop is a liquid lank delector which is to be used on external surfaces only. Operating temperatures aro botwoon +27" [" and 200" P (-3"C anil +93"C).

ILINGREDIENTE

SNOOP does not contain any chemicals that meet the definition of Hazardous Chemical as defined in 29 CFR 1910.1200 or chemicals listed on the SARA Title III 313 list. SNOOP does not contain any "controlled products" as defined by Canada's Workplace Hazardous Materials Information System (WI IMIS). All ingredients are on the TSCA Inventory.

INGREDIENTS	СЛВИ	Wt %	PBL	LC SO	LD 50
Domineralized Water	7732-18-5	>90	none	none	none -

III HEALS SUFAZARD INFORMATION

The following information is based on technical data available on the surfactant. Snoop is unlikely to cause any ill efforts; however, like any chemical, Snoop may be slightly irritating to some individuals.

- ROUTES OF ENTRY: Skin Contact: Yos Inhalation: No
- Skin Absorption: No Ingostion: Yes
- Eye Contact: Yes

EFFECTS OF EXPOSURE

ACUTE: May be sightly irritating to eyes and skin or if ingusted.	CHRONIC: Nonu Known
SENSITIZATION TO PRODUCT: None Known	SYNI:RGISTIC PRODUCTS: None Known
REPRODUCTIVE TOXICITY: Nong Known	MUTAGENICITY: None Known
TERATOGENICITY: None Known	

CARCINOGENICITY, None of the ingrodients of SNCOP are listed as carcinogens by NTP, IARC, or OSHA. MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: None Known

IV. FIRST AID BROCEDURES

EYES: Rinee with water for 15 minutes, sock medical attention if irritation develops.

SKIN: Rinse with water. If irritation develops, seek medical attention.

INGESTION: Unlikely to cause ill effects if ingested. If distress develops, seek medical attention. INHALATION: Unlikely to be inhaled. However, if person is affected by vapors, remove to fresh air, seek medical attention.

V. PHYSICAL CHARACTERISTICS

BOILING POINT: 212" F/100" C FREEZING POINT: <32* F (0* C) EVAPORATION RATE: Not Applicable SPECIFIC GRAVITY: 1.0 APPEARANCE AND ODOR: Colorless, adorless liquid **ODOR THRESHOLD:** Not Determined

VAPOR PRESSURI(mm Hg): Not Applicable VAPOR DENSITY(air=1); Not Applicable pHi 7.0 **SOLUBILITY IN WATER: Complete** % VOLATILE (BY VOLUME): Not Determined

WINFLIRE-AND EXPLOSION INFORMATION WAS

FLAMMABLE No

FLASH POINTI None

ATINGUISHING MEDIA: None SPECIAL FIRE MGHTING PROCEDURES: Nong UNUSUAL FIRE AND EXPLOSION HAZARDS: Nong FLAMMABILITY LIMITS IN AIR UEL None LEL None

AUTOIGNITION TEMPERATURE None

SENSITIVITY TO IMPACTI None

SENSITIVITY TO STATIC DISCHARGE: None known

VII REACTIVITY INFORMATION

CHEMICAL STABILITY: Stable Stable Stable Stable Stable Stable Stability Stable Stable

INCOMPATIBILITY (materials to avoid): Oxidizing agents CONDITIONS TO AVOID: None

VIII: SPILL LEAKAND DISPOSAL PROCEDURES

SFILL OR LEAKS: Treat as a water spill, snak up liquid with absorbent material or rinse down drain. DISPOBAL METHOD: Discarded product is not hazardous waste as defined in 40 CFR 261. Can be rinsed down the drain.

CONTAINER DISPOSAL: Empty containers are not hazardous waste. Dispose of in a responsible manner. SPECIAL HANDLING/STORAGE REQUIREMENTS: Slore between 45° F and 85° F (7° C to 29° C).

UX SPECIAL PROTECTION INFORMATION

Under normal conditions Snoop does not require use of any special protection equipment. The following are suggested based on general chemical exposure.

NTILATION General ventilation acceptable.

RESPIRATORY PROTECTION: None Required

SKIN PROTECTION: Suggest rubber or Impervious glaves.

EVE PROTECTION: Suggest safety glasses with side shields, or gogeles.

OTHER PROTECTIVE EQUIPMENT, Nane Needed

PERSCINAL HYGIENE: As with any chemical, practice youd personal hygione during and after use.

X MINANSPORTATION AND LABELING INFORMATION

DOT SHIFFING NAME: None Required

DOT HAZARD CLASSI Nono

DOT LABELI None Required

HMIS LABEL

HEALTH 1 PLAMMABILITY 0 REACTIVITY 0 PIPE See Section IX

TEREPARATION INFORMATION

P. _ARED BY: Regulated Materials Dep iriment APPROVED BY: J.F. Sarakuitts

Director, Industrial Rela ions

	MATERIAL SAFETY DATA SHEE AND SAFE HANDLING AND DISPOSAL INFORMATION	Г
CLEAN ACROSS AMERICA AND THROUGHOUT THE WORLD	07/01/95 ISSUE DATE: 12/20/94	
ZEP MANUFACTURIN REGENVED P.O. BOX 2015 ATLANTA, GEORGIA 30301	SUPERSEDES: ZEP 45 PRODUCT NO.: 0174 Aerosol Lubric	
JUL 1 0 1995	SECTION I - EMERGENCY CONTACTS TELEPHONE:	
JAL #3 PLANT	(404) 352-1680 BE I WEEN 8:00 AM - 5:00 PM (EST) MEDICAL EMERGENCY: (404) 435-2973 NON-OFFICE HOURS. WEEKENDS	,
SID RICHARDSON CARBON & GAS CO (320) 3 M NORTH AND 1 M EAST OF JAL JAL. NM 88252	(404) 432-2873 AND HOLIDAYS, PLEASE CALL YOUR (404) 424-4789 LOCAL POISON CONTROL (404) 319-6151 (404) (404) 242-3561 Control	
	TRANSPORTATION EMERGENCY: (404) 922-0923 CHEMTREC:	
	1-800-424-9300 TOLL-FREE - ALL CALLS RECORDED DISTRICT OF COLUMBIA: (202) 483-7616 ALL CALLS RECORDED	
SECTION II -	HAZARDOUS INGREDIENTS	
ESIGNATIONS TRICHLOROETHYLENE "acetylene trichloride; 1-chloro-2.2-dichloroet PARAFFIN OIL " blend of heavy and light naphthenic petroleum disti	۲LV EFFECTS ۲۵ (PPM) (SEE REVERSE) PR hylene: CAS# 79-01-6: RTECS# KX4550000 50 IRR CNS 40 litate: CAS# 64742-52-5: and CAS# 64742-53-6. NO IRR 15	IN IOD. I-50
RTECS # NONE, OSHA PEL-NØ, ACGIH OIL MIST LIMIT = 5mg/m3 " MINERAL SEAL OIL " (mineral oil); petrolatum; CAS # 64741-44-2	2, RTECS / PY8030000; ACGIH/OSHA OIL MIST N/A IRR 5	-15
PROPRIETARY BLENDED SALTS OF OXYGENATED AND SULFONA RTECS ↓ -NONE, OSHA/ACGIH OIL MIST LIMIT = 5 mg/m3	ATED HYDROCARBONS ~ CAS # PROPRIETARY, N/D IRR 5	-10
BLEND OF (AMYL ACETATE: CAS# 628-63-7; RTECS# AJ1925000 RTECS# NS9800000] & [2-METHYL BUTYL ACETATE: CAS# 624 -4 628-63-7)] (3-METHYL BUTYL ACETATE: CAS# 123-92-2, 100 CBL IRR 5- 41-9; RTECS# NONE] = OSHA PEL-100 ppm for	-10
2-ETHYL HEXYL ALCOHOL 2-ethyl-1-hexanol, ethylhexanol, CAS# Identities chemicals listed under SARA-Section 313 for release reporting	104-76-7. RTECS # MP0350000. OSHA PEL N/D N/D IRR CBL 5	-10
Jule Effects of Overevoceure		
→ Lite Effects of Overexposure: nhalation of vapor can produce central nervous system depression, cl unconsciousness and death, in extreme cases. Exposure to high concentr yees and upper respiratory tract. Severe eve exposure to liquid can cause introduction of solvent to the lungs, as in aspiration of vomitus fluids, ma cardiac conditions. Inhalation of aerosol mist may produce chemical pneum Chronic Effects of Overexposure: Repeated or prolonged contact by inhalation or skin absorption may produ numbness in the extremities, blurred vision or confusion. Skin, which is dermatitis. None of the ingredients are listed as carcinogens by IARC, NTP	haracterized by dizziness, headache, nausea, cardiac and/or respiratory depression, stu- rations of vepor by direct contact or inhalation can be writating to mucous membranes, suc- reversible eve damage. Skin contact may cause a burning sensation and reddening of the ay cause chemical pneumonia. Exposure to this product may aggravate existing respiratory nonia. Use liver or kidney damage or damage to the central nervous system, characterized by tinglin is defatted by repeated exposure to solvents, is more susceptible to irritation, infection, P, or OSHA.	upor. th as skin r and ng or , and
✓ Ute Effects of Overexposure: inhalation of vepor can produce central nervous system depression, ci inconsciousness and death, in extreme cases. Exposure to high concentr eyes and upper respiratory tract. Severe eye exposure to liquid can cause introduction of solvent to the lungs, as in aspiration of vomitus fluids, ma cardiac conditions. Inhalation of aerosol mist may produce chemical pneur Chronic Effects of Overexposure: Repeated or prolonged contact by inhalation or skin absorption may produ numbress in the extremities, blurred vision or contusion. Skin, which is dermatitis. None of the ingredients are listed as carcinogens by IARC, NTP Est'd PEL/TLV: Not established HMIS Codes: HEALTH 2,FLAM. 1;REACT. 1,PERS. PROTECT. X,CHRON	haracterized by dizziness, headache, nausea, cardiac and/or respiratory depression, stu- rations of vapor by direct contact or inhalation can be writating to mucous membranes, suc- reversible eve damage. Skin contact may cause a burning sensation and reddening of the sy cause chemical pneumonia. Exposure to this product may aggravate existing respiratory nonia uce liver or kidney damage or damage to the central nervous system, characterized by tinglin is defatted by repeated exposure to solvents, is more susceptible to irritation, infection, Primary Routes of Entry: Inh, Skin. VIC HAZ, YES	upor. th as skin r and ng or , and
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ZEP MANUFACTU	HING CUMPAN	SECTION VIL- REACTIVITY DATA	DATA SHEET PAGE 2
Stability: Incompatibility (avoid): Polymerization:	Stable Heat, open flame, spark, Will not occur	and oxidizing agents.	
Hazardous Decomposition:	Hydrogen chloride, phoso	ene, and chlorine gas	
Steps to be Taken in Case M. Observe salety precautions in s Zep-O-Zorb), and placed in a su Waste Disposal Method: Product is consumed in use. Do	SEC aterial is Released or Sp ections 4 & 9 during spill itable container for dispose not crush, puncture or inc	TION VIII - SPILL AND DISPOSAL PROCEDURES illed: clean-up. Large spills are unlikely due to packaging. Spill il. Wash area thoroughly with a detergent solution and rin cinerate spent containers. Large numbers of aerosol conta	may be absorbed on an inert absorbent material (se well with water.
in most states total hazardous a agencies for the proper disposal RCRA Hazardous Waste Num	waste quantities less than method in your area. bers: N/A-DISPOSE OF A	220 lbs per month may allow disposal in a chemical or in CCORDING TO STATE/LOCAL GUIDELINES	dustrial waste landfill. Consult local, state and federal
······································	· · · · · · · · · · · · ·	SECTION IX - SPECIAL PRECAUTIONS	
Precautions to be Taken Wh Do not store at temperatures a with skin. Keep product out of a of children.	en Handling and Storing bove 120F. or in direct su eyes. Vapors are heavier th): nlight. Do not puncture or incinerate container. Do not b an air and will accumulate at low points. Ventilation shou	reathe spray mists or vapors. Avoid prolonged contact Id include floor level exhausting. Keep out of the reach
		SECTION X - TRANSPORTATION DATA	
DOT PROPER SHIPPING NAM DOT Hazard Class: ORM-D DOT I.D. Number: N/A EPA TSCA Chemical Invento EPA CWA 40CFR Part 117 su	IE Small sizes one gallo ny: ALL INGREDIENTS AR bstance (RQ in a single	n or less may be shipped as ORM-D: CONSUMER CO DOT Label/Placard: ORM-D E LISTED container) : TRICHLOROETHYLENE - 100 #	MMODITY.
•		NOTICE	11:
Ihank you for your interest in, an Zep Manutacturing co. is pleased supplying this Material Safety Dat. Manufacturing is concerned for yo products can be used safety with ment and proper handling practi- instructions and the MSDS. Befor be sure to read the complete labo Data Sheet. As a further word of caution, Z serious accidents have resulte "emptied" containers. "Empty" (liquid and/or vapor) and can be surize, cut. weld, braze, solder, of containers to heat, flame, or othe may explode or develop harmful ' injury or death. Clean empty co. with water or an appropriate a must be sent to a drum recondition <u>TERMS AND ABBREVIATIONS BY SECTION 11: HAZARDOUS INGREE CAR: Carcinogen - A chemical Ital ooy Program (NTP), the internati- ion cancer (IARC) or OSHA es a concer causing agent. CAS #: Chemical Abstract Serv universally accepted numbering stances. CAR: Combustible - At tempera 200°F chemical gives off enough of ignition is present as tested wi CNS: Central Nervous System de lity of the brain and spinal cord. COR: Corrosive - Causes irreve tissue (e.g. burns). DESIGNATIONS. Chemical and co ingredients. EXPOSURE LIMITS. The time wi borne concentration at which m without any expected adverse of clude ACGIH TLV's, and OSHA P limits). ACGIH: American Conference Hygienists. CELLING: The concentration ft in the workplace during any pin OSHA Occupational Safety an PEL: Permissible Exposure Lin average exposure values, ef normal 8-hour day and a 40-ht</u>	nd use of, Zep products. To be of service to you by a Sheet for your files. Zep fur health and salety. Zep proper protective equip- ces consistent with label e using any Zep product, at and the Material Salety ep wishes to advise that d from the misuse of containers retain residue dangerous. DO NOT pres- trill, grind or expose such ir sources of ignition; they wapors and possibly cause intainers by triple rinsing solvent. Empty containers mer before reuse. <u>SUSED IN THE MSDS</u> : <u>SUSED IN THE MSDS</u> : <u>SUSE</u>	lor a continuous 15-minute exposure period TV: Threshold Limit Value - A set of time weighted aver- age exposure limits, established by the ACGIH, for a normal 8-hour day and a 40-hour work week. "EE Flammable - At temperatures under 100°F, chemical gives oft enough vapor to ignite if a source of ignition is present as tested with a closed cup tester. MAZARDOUS INGREDIENTS: Chemical substances deter- mined to be potential health or physical hazard by the criteria established in the OSHA Hazard Communication Standard - 29 CFR 1910.1200 MTX: Highly toxic - the probable lethal dose for 70 kg (150 tb) man and may be approximated as less than 6 teaspoons (2 tablespoons). MAR: tritiant - Causes reversible effects in living tissues (e.g. inflammation) - primarily skin and eyes. N/A: Not Applicable - Category is not appropriate for this product. N/D: Not Determined - insufficient information for a deter- mination for this item. ATECS #: Registry of Toxic Effects of Chemical Substances - an unreviewed listing of published toxicology data on chemical substances. SARA: Superlund Amendments and Reauthorization Act - Section 313 designates chemicals for possible reporting for the Toxics Release inventory. SEN: Sensitizer - Causes allergic reaction after repeated exposure. TOX: Toxic - The probable lethal dose for a 70 kg (150 lb.) man is one ounce (2 tablespoons) or more. SECTION III: HEALTH HAZARD DATA ACUTE EFFECT: An diverse effect on the human body from a single exposure with symptoms developing almost imme- diately after exposure or within a relatively short time. EXFORMIC EFFECT: Adverse effect that are most likely to occur from repeated exposure over a long period of time. ESTD PEL/TLV: This estimated, time-weighted average, ex- posure limit, developed by using a formula provided by the ACGIH, perians to airborne concentrations from the prod- uct as a whole. This value should serve as guide for provid- ing stem developed by the National Paint and Coating Association for estima	Ine skin. SECTION IV: SPECIAL PROTECTION INFORMATION Where respiratory protection is recommended, use only MSHA and NIOSH approved respirators and dust masks MSHA. Mine Salety and Health Administration NIOSH: National Institute for Occupational Safety and Health. SECTION V: PHYSICAL DATA EVAPORATION RATE: It refers to the rate of change from the inquid state to the vapor state at ambient temperature and pressure in comparison to a given substance (e.g. water). PK: A value representing the acidity or atkalmity of an equeous solution (Acidic pH = 1; Neutral pH = 7, Aikalmine pH = 14) PERCENT VOLATILE: The percentage of the product (liquid or solid) that will evaporate at 212°F and ambient pressure SUBULTY IN WATER: A description of the ability of the product to dissolve in water. SECTION VII: REACTIVITY DATA MAZARDOUS DECOMPOSITION: Breakdown products ext, ed to be produced upon product decomposition or line. INCOMPATIBILITY: Material contact and conditions to avoid to prevent hazardous reactions. POLYMERIZATION: Indicates the tendency of the product 1 spontaneously and dangerously decompose. SECTION VII: SPLL AND DISPOSAL PROCEDURES RCRA WASTE NOS: RCRA (Resource Conservation and Ric covery Act) waste codes (40 CFR 261) applicable to th disposai of spilled or unusable product from the origin container. SECTION X: TRANSPORTATION DATA RCRA waSTE NOS: RCRA (Resource Conservation and Ric covery Act) waste codes (40 CFR 261) applicable to the disposai of spilled to the ground and <u>can enter</u> inventory maintained by the EPA. <u>DISCLAIMER</u> All statements, technical substances to appear on a inventory maintained by the EPA. All statements, technical substances to appear on a inventory maintained by the EPA. All statements is excent to a variable scientific tests data which we believe to be reliable The accuracy a completeness of isch data are not warranted or guar- teed We cannot anticipate all conditions under which of in manulacturers in combination with our products of oil
limits. (S) SNIN: Skin contact with a overall exposure. STEL: Short Term Exposure Li	substance can contribute to mit- Maximum concentration	swallowing of material. INH: Inhalation - A primary route of exposure througi breathing of vapors. SKIN: A primary route of exposure through contact with	camage resulting from the improper use or handling of products, from incompatible product combinations, or f the failure to follow instructions, warnings, and advisorie h the product's label and Material Safety Data Sheet.
(NOTICE MEVISED 8/91)			

Material Safety Data Sheet and Material Safety Data To comply with OSHA's Hazard Communication Standard, CFR 1910.1200.

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S. S. Bern

Page 1 of 3
CAS # 7783-06-4 Hydrogen Sulfide
Emergency Telephone Number (915) 563-8432
Telephone Number for Information (915) 683-4768
Date Prepared August 1, 1994
naterial, specific physical properties cannot be given.
w/H ₂ S OSHA ACGIH Other Limits %(Optional Present PEL TLV Recommended STEL
10 PPM 10 PPM 15 PPM NDA
Specific Gravity ($H_2O = 1$) NDA
Melting Point N/A
Evaporation Rate (Butyl Acetate = 1) NDA
ydrogen sulfide. (If H_2S is present in low concentrations, there will EPEND ON SENSE OF SMELL TO DETECT THE PRESENCE OF H_S.
Data

Special Fire Fighting Procedures

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not enter any enclosed or confined space without proper protective equipment, including self-contained breathing pparatus. Read the entire MSDS.

Page 2 of 3

Unusual Fire and Explosion Hazards

Due to extremely variable composition of the material, specific information cannot be given. Surface burning could occur i = re is sufficient oily top layer or H₂S concentration and a source of ignition. When H₂S is burned the formation of sulfur divide will occur.

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SECTION V - Reactivity Data:

Stability (Thermal, Light, etc.): Stable Incompatibility (Materials to Avoid): Avoid contact with strong oxidizing materials. Hazardous Decomposition Products: Hydrogen sulfide gas may be given off. Hazardous Polymerization: Will not occur.

SECTION VI - Physiological & Health Effects

Eye: No significant irritation expected.

Skin: None required.

Inhalation: Vapors containing hydrogen sulfide may accumulate during storage or transport in the vapor space of storage tanks and vessels.

Ingestion: Expected to be slightly toxic.

Emergency First Aid Procedures

Eyes: Flush eyes with plenty of water.

Skin: Flush with water and wash with soap.

Inhalation: If worker is overcome, rescuer must wear self-contained breathing apparatus to remove worker from contaminated area. Give artificial repiration if not breathing. Give 100% oxygen if breathing is difficult. Get immediate medical attention.

Ingestion: If swallowed, induce vomiting. Get medical attention. NOTE TO PHYSICIAN: Depending upon the degree of overexposure, hydrogen sulfide (H₂S) poisoning results in impairment of cellular oxidative phosphorylation producing neurotoxicity, metabolic acidosis and cardiovascular damage. Administration of 100% oxygen and supportive care constitute the preferred treatment for hydrogen sulfide (H₂S) poisoning. Some clinicians choose to induce methemoglobin formation by administering sodium nitrite to patients with severe symptoms of H₂S toxicity and who are not rapidly improving with supportive care. This is based on: (a) a mechanism of toxicity for sulfide similar to that for cyanide, (b) binding of sulfide to methemoglobin, and (c) demonstration of an antidotal effect of methemoglobin in animals. Other is include this treatment is of no benefit and some believe it may even be harmful. There are some anecdotal reports is not humans studies demonstrating that hyperbaric oxygen is more effective than 100% oxygen at atmospheric pressure

Some physicians use hyperbaric oxygen to treat comptose patients who are not rapidly improving.

SECTION VII - Environmental Protection

Environmental Impact: This material is considered to be a water pollutant and releases of this product should be prevented from contaminating soil and water and from entering drainage and sewer systems.

Precautions if Material is Roleased or Spilled: Eliminate all open flame in vicinity of spill or released vapor. Stop the source of the leak or release. Clean up releases as soon as possible, observing precautions in Special Protective Information. Contain liquid to prevent further contamination of soil, surface water or groundwater. Clean up small spills using appropriate techniques such as sorbent materials or pumping. Where feasible and appropriate remove contaminated soil. Follow prescribed procedures for reporting and responding to larger releases.

Waste Disposal Methods: Place contaminated materials in disposable containers and dispose of in a manner consistent with applicable regulations. Contact local environmental or health authorities for approved disposal of this material.

SECTION VIII - Protective Information/Control Measures

Eye Protective Information: None required; however, use of safety glasses is good industrial practice.

Skin Protection: Not required.

Respiratory Protection: If operating conditions cause high vapor concentration or TLV is exceeded, use supplied-air respirator approved by NIOSH/MSHA.

Ventilation: No special ventilation is usually necessary. However, if operating conditions create high concentrations of H₂S, special ventilation will be needed.

Comment: Toxic quantities of hydrogen sulfide (H_2S) may be present in storage tanks and bulk transport vessels. Persons opening or entering these departments should first determine if H_2S is present. As an indicator of H_2S concentration, the rotten eggs odor is unreliable because it may be masked by other odors. Therefore DO NOT ATTEMPT WORK/RESCUE WITHOUT WEARING APPROVED SUPPLIED-AIR OR SELF CONTAINED BREATHING EQUIPMENT.

Special Precautions

Hydrogen sulfide (H₂S) gas may accumulate in storage tanks and bulk transport compartments containing produced water. olonged breathing (greater than 15 minutes) of concentrations of H₂S around 15 ppm is prohibited by law: levels of 25 to 600 ppm will result in fluid in the lungs, and possibly death and concentrations around 1,000 ppm will caus, unconsciousness and death in a short period of time. Since the sense of smell rapidly becomes insensitive to this toxic, colorless gas, odor cannot be relied upon as an indicator of concentration of the gas. Always exercise caution when working around closed containers of produced water.



Page 3 of 3

SECTION IX - Regulatory Information DOT Shipping Name: Water T Hazard Class/Division: None

If H₂S is present additional placards are required.

DOT Shipping Name: Hydrogen Sulfide DOT Hazard Class/Division: 2.3 DOT Identification Number: UN1053

This material safety data sheet and the information it contains is offered to you in good faith as accurate. We have obtained information contained in this data sheet from sources outside this company, which we believe to be generally reliable including, but not limited to, other Material Safety Data Sheets. We make no express or implied warranties nor do we warrant the products as to their merchantability or fitness for a particular purpose. We believe this information to be correct but cannot guarantee its accuracy or completeness. Health and safety precautions in this data sheet may not be adequate for all individuals and/or situations. It is the user's obligation to evaluate and use this product safely and to comply with all applicable laws and regulations. No statement made in this data sheet shall be construed as permission or a recommendation for the use of any product or material in any manner that might present a hazard to personnel, damage the environment or violate laws or regulatory standards. No warranty is made, either express or implied, and Parker & Parsley Petroleum Company and its subsidiaries shall not be liable for any incidental or consequential damages arising directly or indirectly in connection with the purchase, use, storage or handling of this product.

		·	(903) 534-8021
ATE: 02/21/96	REV	/ISED: 02/21/96	SUPERSEDES: 04/11/95
I. PRODUCT IDENT	IFICATION	· · · · · · · · · · · · · · · · · · ·	
forde Name:	17 - C	SUM-CI FAN	
Thief Constituent		TEA Dodecybenzen	e Sulfonate
datardous Ingradients/Of		2 - Butcocythanol (OSHA PEL - 25 nom) (ACGIH TI - 25 nor
Carcinogenic Ingredients/	OSHANTP/ARC: SARA THA 3 Section 31	None 3: 2-Burgoographanol	
			· · · · · · · · · · · · · · · · · · ·
I. WARNING STATE	MENIS		·····
None			
III. PHYSICAL AND	CHEMICAL DATA		
Appearance and Odor:	Clear green mobile li	lquid with distinct odor	•
Specific Gravity:	1.05		
Boiling Point:	212°F	Evaporation Rate:	1.5
Vapor Pressure:	24 mm Hg.	Solubility in Water:	100%
рH	11 - 11.5		
IV. FIRE PROTECT	ION	······································	
	••		
riash Point:	None		
Exunguishing Media:	N/A		·
Special Hirelighting Proc	edure: None		
V. REACTIVITY D	ATA		
Thermal Stability:	Stab		
Materials to Avoid:	Acid	ds	
Hazardous Polymerizar	ion: Will		
Hazardous Decomposi	tion Products: Nor	ne	
VI. HEALTH HAZ			
	WILLING	· · · · · · · · · · · · · · · · ·	
Exposure Limits:	Skin - TLV 50 ppm)	_
· Effects of Overexposu	re: Dry skin, stings eye	es. Harmful if swallowed	d.
VII. PHYSIOLOGIC	AL EFFECTS SUMMA	ARY	
ACUTE:			
Eyes:	Irritant to	o eyes.	
Skin:	Will dry	skin in concentrated form	ns
Respirator	y System: Not De	termined (Avoid breathin	ng mist)
	e of rats by inhalation to	2-BE caused hemolysis,	hemoglobinuria (blood in the urine) and a
CHRONIC: Exposure	t. Other species, includir	ng man, were less sensitiv	ve or more resistant to hemolysis. The hem
CHRONIC: Exposure increase in liver weight		and not considered to be	e relevant to human health. Inhalation exp
CHRONIC: Exposure increase in liver weight effect in rats was tran	sitory and/or reversible a		DOM hus share were as alloss at 100 DD
CHRONIC: Exposur increase in liver weight effect in rats was tran of pregnant rabbits ca	isitory and/or reversible : used some lethality to th	he dam and fetus at 200 i	rent, but diele were no elects at IVV PP
CHRONIC: Exposun increase in liver weight effect in rats was tran of pregnant rabbits ca below. Inhalation exp	isitory and/or reversible i used some lethality to th losure to pregnant rats c	he dam and fetus at 200 i caused irritancy to the da	ums and related fetotoxicity at 200 and 100
CHRONIC: Exposun increase in liver weight effect in rats was tran of pregnant rabbits ca below. Inhalation exp but there were no eff	isitory and/or reversible : used some lethality to th losure to pregnant rats c lects at 50 PPM and belo	he dam and fetus az 200 i caused irritancy to the da ow. 2-BE did not cause i	ums and related fetotoxicity at 200 and 100 birth defects in either study.
CHRONIC: Exposun increase in liver weight effect in rats was tran of pregnant rabbits ca below. Inhalation exp but there were no eff	isitory and/or reversible isitory and/or reversible isitory to pregnant rate c lects at 50 PPM and belo	he dam and fetus at 200 f caused irritancy to the da ow. 2-BE did not cause f	birth defects in either study.
CHRONIC: Exposun increase in liver weigh effect in rats was tran of pregnant rabbits ca below. Inhalation exp but there were no eff	isitory and/or reversible issued some lethality to th iosure to pregnant rate c lects at 50 PPM and belo	he dam and fetus at 200 caused irritancy to the da ow. 2-BE did not cause I	birth defects in either study.
CHRONIC: Exposun increase in liver weigh effect in rats was tran of pregnant rabbits ca below. Inhalation exp but there were no eff	isitory and/or reversible issed some lethality to th iosure to pregnant rate c lects at 50 PPM and belo	te dam and fetus at 200 f caused irritancy to the da ow. 2-BE did not cause f	birth defects in either study.

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SUMMIT OIL COMPANY

VIII. PRECAUTIONS FOR SAFE HANDLING

For general personal hygiene, wash hands thoroughly after handling material. Avoid contact with skin and eyes. Keep from freezing. If frozen, thaw and agents before use.

IX. PROTECTION AND CONTROL MEASURES

Protective Equipment: Rubber gloves, splash goggles and eye wash. Respiratory Protection: None Ventilation: N/A

X. EMERGENCY AND FIRST AID PROCEDURES

Eye Contact:	Flush with water. If irritation persists, get medical attention.
Skin Contact:	Wash with soap and water.
Inhalation:	Remove to fresh air and if burning persists, call physician.
ingestion:	Take one or two glasses of water and induce vomiting. Call a physician

XI. NOTES									
	HAZARD RATING INFORMATION								
	NPCAMMIS	NFF	<u>`</u> <u>A</u>	KEY			•	a porte de la composición de	
Health	l i	1		4 = Severe	•	•			
Fire	0	. 0		3 🖛 Serious	•	l = Slight		•	
Reactivity	0	- Tr. 0		2 = Moderate		0 = Minimal			
Personal Protection	on B					• •			

XII. SPILL AND DISPOSAL PROCEDURES

<u>Environmental Impact</u>: Report spills as required to appropriate authorities. U. S. Coast Guard regulations require immediate reporting of spills that could reach any waterway including intermittent dry creaks. Report spill to Coast Guard Toll Free Number (800) 424-8802. In case of accident or road spill, notify Chemtrec (800) 424-9300.

<u>Procedures if Material is Released or Spilled</u>: Rinze with copious quantities of water to dilute. Sodium carbonate or calcium carbonate may be used to soak up liquid.

Wasto Management: Material is considered non-hazardous and blodegradable as received. Spent material may be disposed of according to Federal, State and Local regulations in sewer system with water flush.

Toxic Substance Inventory Control Act: All components are included on the TSCA Inventory and are in compliance with the TSCA.

FOR ADDITIONAL INFORMATION CONTACT:

SUMMIT OIL COMPANY P. O. Box 131359 Tyler, Texas 75713 (903) 534-8021

INFORMATION GIVEN HEREIN IS OFFERED IN GOOD FAITH AS ACCURATE, BUT WITHOUT GUARANTEE. CONDITIONS OF USE AND SUITABILITY OF THE PRODUCT FOR PARTICULAR USES ARE BEYOND OUR CONTROL; ALL RISKS OF USE OF THE PRODUCT ARE THEREFORE ASSUMED BY THE USER AND WE EXPRESSLY DISCLAIM ALL WARRANTIES OF EVERY KIND AND NATURE, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE IN RESPECT TO THE USE OR SUITABILITY OF THE PRODUCT. NOTHING IS INTENDED AS A RECOMMENDATION FOR USES WHICH INFRINGE VALID PATENTS OR AS EXTENDING LICENSE UNDER VALID PATENTS. APPROPRIATE WARNINGS AND SAFE HANDLING PROCEDURES SHOULD BE PROVIDED TO HANDLERS AND USERS.

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NOTE: Read and un	derstand Materia	1 Safety Dat	a Sheet befor	e handling	or -	• · · · · ·
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	AND COMPANY TOP	NTIFICATION				F 1 1
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ATERIAL IDENTITY				-		
60001 PROPANE	ame:					
Chemical Name and/	or Family or Des	scription:				
Aliphatic Hydroca	rbon	·				
Nervératuran/a Ner						
TEXACO NA	TURAL GAS PLANT	s .		· · ·		
AND LIQUI	DS DIVISION	-				•
P.O. Box	1650					
Tulsa, Ok	(74102-1650					
Talephone M	Jumbors'					
Transport	tation Emergency	-Company	(914) 831-34	00	· • .	
		CHEMTREC	(800) 424-93	00		
Health Er	nergency	-Company :	(914) 831-34	00		
General I	NSDS Assistance	-500) =	(914) 838-72	04		•
rechinca	I Information	-Chemical :	(512) 459-65	43		
		-Lubricant/:	(800) 782-78	52	•	
		Antifreezes				
		-Additives :	(713) 235-62 (800) 876-33	278		
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PRODUCT CODE: 60001 Date Issued: 10-16-95 NAME: PROPANE Supersedes: 07-05-95 .4 3. HAZARD IDENTIFICATION (CONT) ۰. . . HMIS NFPA ··· Health: Reactivity: 0 Health: Reactivity: O 1 1 Flammability: 4 Special : -Flammability: 4 -----Special POTENTIAL HEALTH EFFECTS EYE SKIN INHALATION INGESTION Primary Route of Exposure: X X X **EFFECTS OF OVEREXPOSURE** Acute: • . -Eves: Eye contact with liquid product or gas under pressure can cause frostbite (cold burns). Skin: Brief contact is not irritating. Product is a gas - not expected to be absorbed through the skin. Skin contact with liquid product can cause frostbite (cold burns). 1. 5.1 Inhalation: Gas may be irritating and cause discomfort in nose and throat, nasal discharge, and coughing. Prolonged overexposure may cause difficulty breathing. Inhalation may cause dizziness, drowsiness, euphoria, loss of coordination, disorientation, headache, nausea, and vomiting. In poorly ventilated areas or confined spaces, unconsciousness and asphyxiation may result. ·. · Ingestion: Product is a gas - not expected to cause toxic effects due to ingestion. This material is a gas. Gas or liquid under pressure may cause frostbite (cold burns). Sensitization Properties: Unknown. Chronic: No adverse effects have been documented in humans as a result of chronic exposure. Section 11 may contain applicable animal data. Medical Conditions Aggravated by Exposure: There is no evidence that this product aggravates an existing medical condition. Other Remarks: If purchased for consumer use, contains or may release alkyl mercaptans (e.g., methyl mercaptan, ethyl mercaptan). Mercaptan concentrations above permissible concentrations can cause headache, dizziness, nausea, vomiting, and diarrhea. At concentrations above 400 ppm, respiratory paralysis, causing unconsciousness and death can occur. 4. FIRST AID MEASURES Eves: Flush eyes with plenty of water for several minutes. Get medical attention if eye irritation persists. Skin: Wash skin with plenty of soap and water for several minutes. Get medical attention if skin irritation develops or persists. In case of cold burn, immediately place affected area in warm water (105 F) and keep at this temperature until circulation returns. Get medical attention. If clothing becomes wetted, drench individual with water and remove contaiminated clothing if possible. Slowly warm affected area of skin. PAGE: N.T. - NOT TESTED > - GREATER THAN - LESS THAN

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4. FIRST AID MEASURES (CONT)

Ingestion:

No emergency care anticipated. This material is a gas at standard temperature and pressure.

Inhalation:

If inhaled, remove to fresh air. If not breathing, clear person's airway and give artificial respiration. If breathing is difficult, qualified medical personnel may administer oxygen. Get medical attention immediately.

Other Instructions:

Overexposure to this material may sensitize the heart to catecholamineinduced arrhythmias. Do not administer catecholamines to overexposed individuals. Contact a Poison Control Center for further treatment information.

This material is an asphysiant which may have anesthetic properties at high concentrations. If present in sufficient concentrations to reduce the oxygen level below 18% in inhaled air, rapid respiration, mental dullness, incoordination, poor judgement, nausea, and unconsciousness may result. Oxygen deficiency may occur without warning in areas where this gas may displace air.

NOTE TO EMERGENCY RESPONDERS: The odor of mercaptans such as methyl mercaptan or ethyl mercaptan is offensive and similar to rotten eggs. The presence of odors is not a reliable warning signal. DO NOT use odor to estimate the amount of mercaptan vapors present.

5. FIRE-FIGHTING MEASURES

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Ignition Temperature - AIT (degrees F):

874

Flash Point (degrees F):

-156

Flammable Limits (%):

Lower: 2.3

Upper: 9.5
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Recommended Fire Extinguishing Agents And Special Procedures:

Fight fire from protected location or maximum possible distance. Stop flow of gas before attempting to extinguish flames. Use water spray to cool fire-exposed containers and to protect persons attempting to stop the flow of gas. Use flooding quantities of water as fog or spary. Use dry chemical or carbon dioxide to extinguish flames.

Unusual or Explosive Hazards:

Dangeri Readily forms explosive air-vapor mixtures; may release explosive vapors that travel, be ignited at remote locations, and flash back. Containers may explode in fire. Do not expose to heat, sparks, flame, static, or other sources of ignition. When handling, use non-sparking tool, ground and bond all containers.

Special Protective Equipment for Firefighters: Wear full protective clothing and positive pressure breathing apparatus.

6. ACCIDENTAL RELEASE MEASURES (Transportation Spills: CHEMTREC (800)424-9300)

Procedures in Case of Accidental Release, Breakage or Leakage: Eliminate all ignition sources including internal combustion engines and power tools. Ventilate area. Keep people away. Stay upwind and warn of possible downwind explosion hazard. Avoid breathing vapor. Avoid contact with eyes, skin, or clothing. Pressure demand air supplied respirators should always be worn when the airborne concentration of the contaminant or oxygen is unknown. Otherwise, wear respiratory protection and other personal protective equipment as appropriate for the potential exposure hazard.



If more than 2.000.000 pounds of product is spilled, then report spill according to SARA 304 and/or CERCLA 102(a) requirements, unless product qualifies for the petroleum exemption (CERCLA Section 101(14)). PAGE: 3_____

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7. HANDLING AND STORAGE

Precautions to be Taken in

Handling:

Use spark-proof tools. Material may be at elevated temperatures and/or pressures. Exercise care when opening bleeders and sampling ports.

Storage:

Ground and bond shipping container, transfer line, and receiving container. Keep away from heat, sparks, flame, and other sources of ignition.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Protective Equipment (Type)

Eye/Face Protection:

Safety glasses, chemical type goggles, or face shield recommended to prevent eye contact.

Skin Protection:

Protective clothing such as coveralls or lab coats should be worn. Launder or dry-clean when soiled. Gloves and boots resistant to chemicals and petroleum distillates required. Insulated gloves also required if contact with liquid-cooled product or equipment is expected.

Respiratory Protection:

Airborne concentrations should be kept to lowest levels possible. If vapor, mist or dust is generated and the occupational exposure limit of the product, or any component of the product, is exceeded, use appropriate NIOSH or MSHA approved air purifying or air supplied respirator after determining the airborne concentration of the contaminant. Air supplied respirators should always be worn when airborne concentration of the contaminant or oxygen content is unknown.

Ventilation:

Use explosion-proof equipment to maintain adequate ventilation to meet occupational exposure limits, if applicable (see below), prevent accumulation of explosive air-gas mixtures, and avoid significant oxygen displacement. Oxygen levels should be at least 19.5% in confined spaces or other work areas (OSHA value).

Exposure Limit for Total Product: Propane: OSHA PEL-TWA 1000 ppm,

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:							
Gas							
Udor:							
If odorized will have	rotten	egg odor	- otherwise	e, odo	r 1 855		
Boiling Point (degrees -44	F):						
Melting/Freezing point -306	(degree	SF):					
Specific Gravity (water .5074	·=1):						
pH of undiluted product Not applicable.	::						
Vapor Pressure: 7600 mmHg at 80.6							
Viscosity:							
Not applicable.							
VOC Content: Not determined.					۰.		
Vapor Density (air=1): 1.5			•				
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9. PHYSICAL AND CHEMICAL PROPERTIES (CONT)

Solubility in Water (%):

Other: None

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10. STABILITY AND REACTIVITY

This Material Reacts Violently With: (If Others is checked below, see comments for details) Air Water Heat Strong Oxidizers Others None of These X X ______X Comments:

None

Products Evolved When Subjected to Heat or Combustion: Toxic levels of carbon monoxide, carbon dioxide, irritating aldehydes and ketones.

Hazardous Polymerizations: DO NOT OCCUR

11. TOXICOLOGICAL INFORMATION

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TOXICOLOGICAL INFORMATION (ANIMAL TOXICITY DATA)
 Median Lethal Dose
  Oral:
   Not applicable; material is a gas.
  Inhalation:
   Not determined.
  Dermal:
 Not applicable; material is a gas.
Irritation Index, Estimation of Irritation (Species)
  Skin:
   (Draize) Believed to be < .50 / 8.0 (rabbit) no appreciable effect
  Eves:
   (Draize) Believed to be < 15.00 / 110 (rabbit) no appreciable effect
  Sensitization:
   Not determined.
 Other:
  None
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12. DISPOSAL CONSIDERATIONS

Waste Disposal Methods

This product (as presently constituted) has the RCRA characteristics of ignitability, and, if discarded in its present form, would have the hazardous waste number of DOO1. Under RCRA, it is the responsibility of the user of the product to determine, at the time of disposal, whether the product meets RCRA criteria for hazardous waste. This is because product uses, transformations, mixtures, processes, etc. may change the classification to non-hazardous, or hazardous for reasons other than, or in addition to ignitability.

Remarks

Do not allow to enter drains or sewers. Can cause explosion.

13. TRANSPORT INFORMATION

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Transportation
 DOT:
  Proper Shipping Name:
   Propane
  Hazard Class:
   2.1
  Identification Number: UN 1978
  Packing Group:
  Label Required:
   Flammable gas
                                PAGE:
                            N.A. - NOT APPLICABLE
N.D. - NOT DETERMINED
                                                         N.T. - NOT TESTED
     - LESS THAN
                                  - GREATER THAN
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13. TRANSPORT INFORMATION (CONT)

This product contains a DOT Hazardous Substance or Substances, listed in Section 14 of the MSDS. If the product's shipping container holds 2,000,000 lbs, then the DDT information must be accompanied at least with RQ notation, or, an otherwise 'Not Regulated' product will be classified as Environmentally Hazardous (solid/liquid) N.O.S., Class 9. unless the product qualifies for the petroleum exemption (49 CFR 171.8). IMDG: Proper Shipping Name: Not evaluated TCAO: Proper Shipping Name: Not evaluated TDG: Proper Shipping Name: Not evaluated 14. REGULATORY INFORMATION Federal Regulations: SARA Title III: Section 302/304 Extremely Hazardous Substances Seq. Chemical Name CAS Number Range in Methyl mercaptan (if odorized - 50 ppm max) 01 74-93-1 0.005 Section 302/304 Extremely Hazardous Substances (CONT) Seq. TPQ RQ 500 100 01 Section 311 Hazardous Categorization: Chronic Fire Acute Pressure Reactive N/A X X X Section 313 Toxic Chemical Chemical Name CAS Number Concentration None CERCLA 102(a)/DOT Hazardous Substances: (+ indicates DOT Hazardous Substance) T4-93-1 0 007 Seq. Chemical Name CAS Number Methyl mercaptan (if odorized - 50 ppm max) 01+ CERCLA/DOT Hazardous Substances (Sequence Numbers and RQ's): Seq. RQ 01+100 TSCA Inventory Status: This product is listed on the Toxic Substance Control Act (TSCA) Chemical Substance Inventory. , i. . Other: None. State Regulations: California Proposition 85: The following detectable components of this product are substances. or belong to classes of substances, known to the State of California to cause cancer and/or reproductive toxicity. Chemical Name CAS Number None States Right-to-know Regulations: Chemical_Name State Right-to-know Propane IL.MA.NJ.PA.RI State list: CT (Connecticut), FL (Florida), IL (Illinois), MI (Michigan), LA (Louisiana), MA (Massachusetts), NJ (New Jersey), PA (Pennsylvania), RI (Rhode Island) _____ N.D. - NOT DETERMINED N PAGE: N.A. - NOT APPLICABLE N.T. - NOT TESTED - GREATER THAN

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14. REGULATORY INFORMATION (CONT)

International Regulations: Export Notification (TSCA-12b): This product may be subject to export notification under TSCA section 12(b); contains: Methyl mercaptan (if odorized - 50 ppm max)

WHMIS Classification: Class A: Compressed gas Class B, Div 1: Flammable gas

Canada Inventory Status: All components are listed on the Canadian Domestic Substance List (DSL).

EINECS Inventory Status: All components are listed on the European Inventory of Existing Chemical Substances (EINECS).

Australia Inventory Status: N.D.

Japan Inventory Status: N.D.

15. ENVIRONMENTAL INFORMATION

Aquatic Toxicity: Not determined.

Mobility: Not applicable

Persistence and Biodegradability: Not applicable.



Potential to Bioaccumulate: Not applicable.

Remarks: None

16. OTHER INFORMATION

Dispose of as a vapor, venting at a safe location, keeping gas below explosive limit (LEL).

The information below is given to call attention to the issue of "naturally occurring radioactive materials". Although radon-222 levels in this product do not present any direct radon exposure, customers should be aware of the potential of radon daughter product buildup within their processing streams whatever the source of their product streams. Radon-222 is a naturally occurring radioactive gas which can be a contaminant in natural gas. During subsequent processing, radon tends to be concentrated in the liquified petroleum gas stream and in product streams having a similar boiling point range. Industry experience has shown that this product may contain small amounts of radon-222 and its radioactive decay products, called radon "daughters". The actual concentration of Radon-222 and radioactive daughters in the process equipment (IE lines, filters, pumps and reactor units) may accumulate significant levels of radioactive daughters and show a gamma radiation reading during operation. A potential external radiation hazard exists at or near any pipe, valve or vessel containing a radon-enriched stream or containing internal deposits of radioactive material, due to the transmission of gamma radiation through its wall.

Field studies in the literature and conducted by company personnel at selected sites, have not shown any conditions that subject workers to cumulative exposures in excess of general population limits. Equipment emitting gamma radiation should be presumed to be internally contaminated with alpha-emitting decay products which may be a hazard if inhaled or ingested. During maintenance operations that require the opening of contaminated process equipment, the flow of gas should be stopped and a four hour delay enforced to allow the gamma radiation to drop to back-

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16. OTHER INFORMATION (CONT)

ground levels. Protective equipment E.G. coveralls, gloves and respirator (NIOSH/MSHA approved for high efficiency particulates and radionuclides, or supplied air) should be worn by personnel entering a vessel or the second working on contaminated process equipment to prevent skin contamination, ingestion or inhalation of any residue containing alpha radiation. Airborne contamination may be minimized by handling scale and/or contaminated materials in a wet state.

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NFPA NO. 58 REQUIRES ODORIZATION OF PROPANE SOLD FOR GENERAL CONSUMER USE. ODORIZATION PROVIDES A METHOD OF DETECTION IN THE EVENT OF A LEAK. COMMON ODORANTS INCLUDE ETHYL MERCAPTAN AND THIOPANE.

A BRIEF SUMMARY OF THE SAFETY INFORMATION REGARDING THE ODORANT IS PROVIDED HERE. FOR MORE DETAILED INFORMATION, PLEASE REFER TO THE REFERENCE SECTION. DD NOT RELY ON ODOR TO WARN OF PRESENCE OF GAS. IT IS IMPORTANT TO NOTE THAT NO ODDRANT IS EFFECTIVE 100% OF THE TIME UNDER ALL CONDITIONS. THE EFFECTIVENESS OF THE ODDRANT CAN BE REDUCED BY EXPOSURE TO SMALL AMOUNTS OF OXYGEN, MOISTURE, RUST OR SCALE. IN ADDITION, THE ODDRANT MAY BE ABSORBED BY SOIL, NEW TANK SURFACES, NEW PIPING, OR CERTAIN BUILDING MATERIALS SUCH AS MASONRY. WHENEVER AN EMPTY TANK IS FILLED, IT MUST BE COMPLETELY PURGED IN ACCORDANCE WITH NPGA BULLETIN 133-89 TO REMOVE AIR AND WATER. THE INTEGRITY OF UNDERGROUND PIPES SHOULD BE CHECKED PERIODICALLY. IF PROPANE LEAKS FROM AN UNDERGROUND PIPE, THE SOIL MAY ABSORD THE ODDRANT AS THE GAS MIGRATES TO THE SURFACE, WHICH COULD LEAVE THE GAS UNDETECTED BY SMELL. IF A PROPANE SYSTEM HAS NOT BEEN USED FOR AN EXTENDED PERIOD, IT SHOULD BE THOROUGHLY CHECKED BEFORE CONTINUING USE.

CERTAIN PHYSICAL CIRCUMSTANCES SUCH AS COLDS, ALLERGIES, SMOKING, ALCOHOL. AGE OR STRONG COMPETING ODORS MAY AFFECT A PERSON'S ABILITY TO SMELL ANY ODOR. IN ADDITION, AS WITH ANY ODOR, CONTINUED EXPOSURE TO PROPANE ODORANT CAN REDUCE A PERSON'S ABILITY TO DETECT THE ODDRANT. REFERENCES

NPGA BULLETIN NO. 133-80 "PURGING NEW CONTAINERS" NFPA BULLETIN NO. 58, "STORAGE AND HANDLING OF LIQUIFIED PETROLEUM GAS"

THE INFORMATION CONTAINED HEREIN IS BELIEVED TO BE ACCURATE. IT IS PROVIDED Independently of any sale of the product for purpose of hazard communication AS PART OF TEXACO'S PRODUCT SAFETY PROGRAM. IT IS NOT INTENDED TO CONSTITUTE PERFORMANCE INFORMATION CONCERNING THE PRODUCT. NO EXPRESS WARRANTY, OR IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS MADE WITH RESPECT TO THE PRODUCT OR THE INFORMATION CONTAINED HEREIN. DATA SHEETS ARE AVAILABLE FOR ALL TEXACO PRODUCTS. YOU ARE URGED TO OBTAIN DATA SHEETS FOR ALL TEXACO PRODUCTS YOU BUY, PROCESS, USE OR DISTRIBUTE AND YOU ARE ENCOURAGED AND REQUESTED TO ADVISE THOSE WHO MAY COME IN CONTACT WITH SUCH PRODUCTS OF THE INFORMATION CONTAINED HEREIN.

TO DETERMINE APPLICABILITY OR EFFECT OF ANY LAW OR REGULATION WITH RESPECT TO THE PRODUCT, USER SHOULD CONSULT HIS LEGAL ADVISOR OR THE APPROPRIATE GOVERNMENT AGENCY. TEXACO DOES NOT UNDERTAKE TO FURNISH ADVICE ON SUCH MATTERS.

Since the last mailing for this customer code, the following sections have been revised: 3,4,14,16,17.

Date:	10-16-95	_	New	- <u>X</u>	Revised,	Supersedes:	<u>07-05-95</u>
Date p	printed:	10-25-95					

Inquiries regarding MSDS should be directed to: Texaco inc. Manager, Product Safety P.O. Box 509 Beacon, N.Y. 12508

>

PLEASE SEE NEXT PAGE FOR PRODUCT LABEL
PRODUCT CODE: 80001 NAME: PROPANE

Date Issued: 10-16-95 Supersedes: 07-05-95



17. PRODUCT LABEL

READ AND UNDERSTAND MATERIAL SAFETY DATA SHEET BEFORE HANDLING OR DISPOSING OF PRODUCT. THIS LABEL COMPLIES WITH THE REQUIREMENTS OF THE OSHA HAZARD COMMUNICATION STANDARD (29 CFR 1910.1200) FOR USE IN THE WORKPLACE. THIS LABEL IS NOT INTENDED TO BE USED WITH PACKAGING INTENDED FOR SALE TO CONSUMERS AND MAY NOT CONFORM WITH THE REQUIREMENTS OF THE CONSUMER PRODUCT SAFETY ACT OR OTHER RELATED REGULATORY REQUIREMENTS.

60001 PROPANE

DANGER 1

WARNING STATEMENT FLAMMABLE GAS - MAY CAUSE FLASH FIRE DELAYED EVAPORATION FROM CONTAMINATED CLOTHING MAY BE A FIRE HAZARD LIQUID MAY CAUSE FROSTBITE MAY CAUSE DIZZINESS AND DROWSINESS GAS REDUCES OXYGEN AVAILABLE FOR BREATHING GAS MAY ACCUMULATE IN CONFINED SPACES AND CAUSE SUFFOCATION MAY CAUSE RESPIRATORY TRACT IRRITATION

PRECAUTIONARY MEASURES

-Keep away from heat, sparks or flame.

- -Use only with adequate ventilation.
- -This gas deadens sense of smell. Do not depend on odor to detect presence of gas.
- -Do not enter storage areas or confined spaces unless ' adequately ventilated.
- -Use supplied air respiratory protection for cleaning large
- spills or upon entry into tanks, vessels, or other confined spaces.
- -Avoid breathing vapor, mist, or gas.
- -Rescue procedures should be attempted ONLY after notifying others of emergency and ONLY if appropriate personal equipment is available.
- -Wear insulated gloves if contact with liquid cooled equipment is expected.
- -Keep container closed.
- -Workers should wash exposed skin several times daily with soap and water.

FIRST AID

Eve Contact:

Flush eyes with plenty of water for several minutes. Get medical attention if eye irritation persists. Skin Contact:

Wash skin with plenty of soap and water for several minutes. Get medical attention if skin irritation develops or persists.

In case of cold burn, immediately place affected area in warm water (105 F) and keep at this temperature until circulation returns. Get medical attention.

If clothing becomes wetted, drench individual with water and remove contaiminated clothing if possible. Slowly warm affected area of skin. Indestion:

No emergency care anticipated. This material is a gas at standard temperature and pressure.

Inhalation:

If inhaled, remove to fresh air. If not breathing, clear person's airway and give artificial respiration. If breathing is difficult, qualified medical personnel may administer oxygen. Get medical attention immediately.

Note to Physician:

Overexposure to this material may sensitize the heart to catecholamineinduced arrhythmias. Do not administer catecholamines to overexposed individuals. Contact a Poison Control Center for further treatment information.

This material is an asphyxiant which may have anesthetic properties at high concentrations. If present in sufficient concentrations to reduce the oxygen level below 18% in inhaled air, rapid respiration, mental duliness, incoordination, poor judgement, nausea, and unconsciousness may result. Dxygen deficiency may occur without warning in areas where this gas may displace air.



N.D. - NOT DETERMINED - LESS THAN •

PAGE: 9

N.A. - NOT APPLICABLE > - GREATER THAN

PRODUCT CODE: 80001 NAME: PROPANE

Date Issued: 10-16-95 Supersedes: 07-05-95

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17. PRODUCT LABEL (CONT)

FIRE In case of fire, use dry chemical or carbon dioxide to extinguish flames. Use water spray to keep containers cool and protect personnel attempting to stop the flow of gas.

If more than 2,000,000 pounds of product is spilled, then report spill according to SARA 304 and/or CERCLA 102(a) requirements, unless product qualifies for the petroleum exemption (CERCLA Section 101(14)).

<u>Chemical Name</u> This product may be odorized. The odorant content may vary from 0-50 ppm; common odorants include mercaptans and thiopane. * Propane 74-98-6 100.00

PRODUCT IS HAZARDOUS ACCORDING TO OSHA (1910.1200). • COMPONENT IS HAZARDOUS ACCORDING TO OSHA.

Pennsylvania Specia	Hazardous	Substance(s)	CAS Number	Range in %
None				

	HM	IS		NFF	PA	
Health:	1	Reactivity: 'O	Health:	1	Reactivity: O	
Flammability:	4	Special : -	Flammability:	4.	Special : -	

Transportation DOT: Proper Shipping Name: Propane Hazard Class: 2.1 Identification Number: UN 1978 Packing Group: Label Required:

Flammable gas

This product contains a DOT Hazardous Substance or Substances, listed in Section 14 of the MSDS. If the product's shipping container holds at least 2,000,000 lbs, then the DOT information must be accompanied with RQ notation, or, an otherwise 'Not Regulated' product will be classified as Environmentally Hazardous (solid/liquid) N.O.S., Class 9, unless the product qualifies for the petroleum exemption (49 CFR 171.8).

CAUTION: Misuse of empty containers can be hazardous. Empty containers can be hazardous if used to store toxic, flammable, or reactive materials. Cutting or welding of empty containers might cause fire, explosion or toxic fumes from residues. Do not pressurize or expose to open flame or heat. Keep container closed and drum bungs in place.

Manufacturer's Name and Address: TEXACO NATURAL GAS PLANTS AND LIQUIDS DIVISION P.O. Box 1650 Tulsa, OK 74102-1650

TRANSPORTATION EMERGENCY	Company: CHEMTREC:	(914) 831-3400 (800) 424-9300
HEALTH EMERGENCY	Company:	(914) 831-3400



MATERIAL SAFETY DATA SHEET

CORPORATE RESEARCH & DEVELOPMENT

SCHENECTADY, N. Y. 12305



470

NO.

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DIESEL FUEL OIL NO. 2-D

Date October 1981

SECTION I. MATERIAL IDENTIFICATION MATERIAL NAME: DIESEL FUEL OIL NO. 2-D DESCRIPTION: Mixture of petroleum hydrocarbons; a distillate oil of low sulfur content OTHER DESIGNATIONS: ASTM D975, CAS # 068 476 346 MANUFACTURER: Available from many suppliers X HAZARD DATA SECTION II, INGREDIENTS AND HAZARDS Diesel Fuel Oil No. 2-D B-hr TWA 5mg/m³* Complex mixture of paraffinic, olefinic, naphthenic >95 (mineral oil mist) and aromatic hydrocarbons** <0.5 Sulfur content Benzene*** <100 ppm *Current OSHA standard and ACGIH (1981) TLV **Diesel fuels tend to be low in aromatics and high in paraffinics. A min. Cetane No. of 40 is required (ASTM D613). ***A low benzene level reduces carcinogenic risk. Fuel oils can be exempted under the benzene standard (29 CFR 1910, 1028) SECTION III, PHYSICAL DATA boiling point range, deg F, ----- Ca 340-675 Specific gravity (H_0-1) ---- <0.86 Solubility in water ----- negligible Cloud point (wax), deg C --- Ca O Viscosity at 40 C, cSt ---- 1.9-4.1 Appearance and Odor: Clear, bright liquid with a mild petroleum odor. LOWER UPPER SECTION IV. FIRE AND EXPLOSION DATA Flash Point and Method Autoignition Temp. Flammability Limits In Air 125F min (PM) 0.6 >500F % by volume 7.5 Extinguishing Media: Dry chemical, carbon dioxide, foam, water spray. Use a water spray to cool fire exposed containers. Use a smothering technique for extinguishing fire of this combustible liquid. Do not use a forced water stream directly on oil fire as this will only scatter the fire. Material is a OSHA Class II combustible liquid. Firefighters should wear self-contained breathing apparatus and full protective clothing. SECTION V. REACTIVITY DATA This is a stable material in closed containers at foon temperature under normal storage and handling conditions. It does not undergo hadardous polymerization. Incompatible with strong oxidizing agents; heat for greatly increases fire hazard. Thermal -oxidative degradution may yield various hydrocarbons and hydrocarbon derivatives (partial oxidation products), CO, and (31 and SO2.

GENERAL 🌑 ELECTRIC

Copyright . - 1980 By General Electric Company

NO. 470

SECTION VI. HEALTH HAZARD INFORMATION Inhalation of excessive concentrations of vapor of ratory passages and can cause the following sym vomiting, and loss of coordination. Prolonged of tation of the hair follicles and block the sebs acne pimples and spots, usually on the arms and vent this). Chemical pneumonitis may result when ingestion of FIRST AID: Eye Contact: Flush thoroughly with running wath Skin Contact: Remove contaminated clothing. Wij affected area well with soap and water. Inhalation: Remove to fresh air. Restore and/ Ingestion: Do not induce vomiting. Seek medical assistance for further treatment, o	TLV 5 mg/m ³ (mist) (See Sect II) or mist can be irritating to the respi- optoms: headache, dizziness, nausea, or repeated skin contact may cause irri- nceous glands. This produces a rash of a legs. (Good personal hygiene will pre- ccurs and oil is aspirated in the lungs. er for 15 min. including under cyelids. pe excess oil off with a dry cloth. Wash or support breathing as required.					
SECTION VII. SPILL, LEAK, AND DISPOSAL	PROCEDURES					
Notify safety personnel of leaks or spills. Remo Provide adequate ventilation. Clean-up personnel liquid contact and vapor or mist inhalation. C be contained by using absorbants, such as rags carbon, and sand. Clean up spills promptly to <u>DISPOSAL</u> : May be disposed of by a licensed waste cincration or burial in an approved landfill. Follow Federal, State and Local regulations. Re	ve sources of heat or ignition. to use protection against contain spill by diking. Small spills can straw, polyurethane foam, activated reduce fire or vapor hazards. disposal company, or by controlled in-					
SECTION VIII. "SPECIAL PROTECTION INFOR	MATION					
Provide adequate ventilation where operating conditions (heating or spraying) may create excessive vapors or mists. Use explosion-proof equipment. Provide approved respiratory apparatus for nonroutine or emergency use. Use an approved filter & vapor respirator when vapor/mist concentrations are high. Wear protective rubber gloves and chemical safety glasses where contact with liquid or high mist conc. may occur. Additional suitable protective clothing may be required depending on working conditions. An eye- wash fountain and washing facilities to be readily available near handling and use areas. Launder soiled or contaminated clothing before reuse (at least weekly laundering of work clothes is recommended).						
SECTION IX. SPECIAL PRECAUTIONS AND CO	MMENTS					
Store in closed containers in a cool, dry, well open flame, heat, strong oxidizing agents, and physical damage. Use non sparking tools and of Prevent static electric sparks. Avoid prolonged skin contact and breathing of of No smoking in areas of use. Follow good hygien: Do not wear oil contaminated clothing. Do not posed skin areas several times a day with so material. DOT Classification: COMBUSTIBLE DATA SOURCE(S) CODE: 1,6,7,12	-ventilated area away from sources of i ignition. Protect containers from explosion-proof electrical equipment. vapors or mists. ic practice in the use of this material. t put oily rags into pockets. Wash ex- ap and warm water when working with this ITOUIN APPROVALS: MIS Industrial Hygiene					
opsindo no marrantes, maños no opresantes, canona ericita Canapaly opsindo no marrantes, maños no opresantestano end ocumos no respansibility os to tio activitary ar quitability al auto tulamentan for application to purchaser's autonical purposos or for concequences of its use.	and Safety Sm 10-12-81 MEDICAL REVIEW: 21 October 1981					

🖞 GENERAL 🍪 ELECTRIC



CITGO Petroleum Corporation P. O. Box 3758 Tulsa, OK 74102

Material Safety Data Sheet

Generic Name: Generic Code:

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CITGO Gas Engine Oils, SUS 450-2000 GE-Sla

An and Alling and

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Date: January 25, 1996

THIS GENERIC MSDS COVERS THE FOLLOWING CITGO PRODUCTS

•	<u>Trade Name</u>	Commodity Code Number	
	CITGO Pacemaker GEO 315	32-004	
	CITGO Pacemaker GEO 340	32-003	
	CITGO Pacemaker GEO 1015	32-210	
	CITGO Pacemaker GEO 1020	32-212	
	CITGO Pacemaker GEO 1035	32-032	
	CITGO Pacemaker GEO 1215	32-037	
	CITGO Pacemaker GEO 1230	32-035	
	CITGO Pacemaker GEO 1240	32-036	
·	CITGO Pacemaker GEO Special	32-054	
•	CITGO Pacemaker GEO 715	32-033	
	CITGO Pacemaker GEO 740	32-034	
	CITGO Pacemaker GEO 1615	32-047	
	CITGO Pacemaker GEO 1630	32-045	
	CITGO Pacemaker GEO 1640	32-046	
	CITGO Pacemaker GEO 815	32-026	
	CITGO Pacemaker GEO 830	32-027	
	CITGO Pacemaker GEO 840	32-028	
	CITGO Pacemaker GEO 935	32-030	
Synonyms:	Lubricating Oil		(010) 405 5022
CAS No.:	Mixture (Refer to Section 1)	Technical Contact: Medical Emergency:	(918) 495-5933 (918) 495-4700
CITGO Index No.	: 1954	CHEMTREC Emergency:	(800) 424-9300

MATERIAL HAZARD EVALUATION

Health Precautions:	Protect exposed skin from repeated or prolonged exposur			
Safety Precautions:	Do not store	material in open or un	marked containers.	
HMIS Rating ^t	Health: Q	Flammability: 1	Reactivity: 0	

NE-Not Established ND-No Data NA-Not Applicable CITGO Gas Engine Oils SUS 450-2000 (GE-S1a, January 25, 1996 CIN No.: 1954) Page 1 of 8

Hazard Rating: least-0, slight-1, moderate-2, high-3, extreme-4. 1 CITGO assigned these values based upon an evaluation conducted pursuant to NPCA guidelines.

1.0 GENERIC COMPOSITION / COMPONENTS

Components	CAS#	%	Hazard Data	
Refined Petroleum Oil(s)	Refer to Section 11	> 70	Oral LD50 (rat): Dermal & Eye:	> 5 g/kg Mild irritant.
Anti-oxidant, Dispersant (May include Zinc Dialkyldithiophosphate)	Mixture	< 20	Dermal Irritation: Eye Irritation:	Mild irritant Irritant
VI Improver	Mixture	<15	Dermal & Eye:	Mild irritant.
Pour Point Depressant	Mixture	<1	Dermal & Eye:	Mild irritant.
Antifoam	Mixture	<.0.1	Dermal & Eye:	Mild irritant.

2.0 PHYSICAL DATA

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PHYSICAL HAZARD CLASSIFICATION (Per 29 CFR Part 1910.1200)

Combustible	No	Flammable	No	Руторногіс	No
Compressed Gas	No	Organic Peroxide	No	Reactivity	No
Explosive	No	Oxidizer	No	Stable	Yes

Boiling Point, 760 mmHg, °C (°F): Specific Gravity (60//60 °F) (H₂O = 1): Vapor Density (Air = 1): % Volatiles by Volume: Melting Point, °C (°F): Vapor Pressure, mmHg (25°C): Solubility in H₂O: Evaporation Rate (Butyl Acctate = 1): pH of Undiluted Product: Appearance and Odor: ~361 - 466 (~ 682 - 870) ~ 0.87 - 0.89 > 1 Negligible NA < 1 x 10⁻⁵ to ~ 4 x 10⁵ Negligible < 1 NA Light to dark amber liquid, slight petroleum odor.

3.0 FIRE AND EXPLOSION DATA

Flash Point, OC, °C(°F) Flash Point, CC, °C (°F) Fire Point, OC °C(°F) NFPA Rating² Flammable Limits (% by volume in air) Extinguishing Media Special Fire Fighting Procedure Unusual Fire or Explosion Hazard 213 - 286 (415 - 547) 170 - 232 (338 - 450) 238 - 314 (460 - 597) Health: 0 Flammability: 1 Reactivity: 0 Lower: ND Upper: ND CO₂, dry chemical, foam, water fog None. Water may cause frothing

Use of an asterisk (*) indicates that the material may present chronic health effects. ²Hazard Rating: least-0; slight-1; moderate-2; high-3; extreme-4. CITGO assigned these values based upon an evaluation conducted pursuant to NFPA guidelines.

NA-Not Applicable ND-No Data CITCO Cas Saning Oile SUS (50 2000 (GE-Stationary 25, 1996) CIN No. (1954)

NE-Not Established Page 7 of 8

4.0 REACTIVITY DATA

Stability:

Conditions Contributing to Instability: Incompatibility: Hazardous Decomposition Products: (thermal, unless otherwise specified): Conditions Contributing to Hazardous Polymerization: Stable.

Excessive heat. Strong oxidants, strong acids, caustics CO₂, (CO under incomplete combustion) Trace oxides of phosphorus, sulfur and zinc

Hazardous polymerization is not expected to occur.

5.0 SPILL, LEAK AND DISPOSAL PROCEDURES

Procedure if Material is Spilled:

- Remove all ignition sources.
- Isolate the area of the spill and restrict access to persons wearing protective clothing.
- Ventilate area of release, as necessary, to disperse vapors and mists.
- Small Spills: Absorb released material with non-combustible absorbent. Place into containers for later disposal. (See Waste Disposal section below.)
- Large Spills: Evacuate area in the event of significant spills. Evaluate exposure potential. Potential exposure may require the use of positive pressure self-contained breathing apparatus. Use protective clothing. Contain spill in temporary dikes to avoid product migration and to assist in recovery. Do not allow material to escape into sewers, ground water, drainage ditches or surface waters.
- Administer appropriate first aid.
- Report releases as required to the appropriate Federal, State and local authorities.

Waste Disposal:

- It is the responsibility of the user to determine if the material is a hazardous waste at the time of disposal.
- Determine compliance status with all applicable requirements prior to disposal.
- Contact the RCRA/Superfund Hotline at (800) 424-9346 or your regional US EPA office for guidance concerning case specific disposal issues.

Protective Measures During Repair and Maintenance of Contaminated Equipment:

- Refer to Section 7.0 Special Protection Information.
- Drain and purge equipment, as necessary, to remove material residues.
- Use impervious gloves constructed of nitrile rubber and protective work clothing if direct contact is anticipated.
- Eliminate heat and ignition sources.
- Wash exposed skin thoroughly with soap and water.
- Remove contaminated clothing. Launder before reuse.
- Keep unnecessary persons from hazard area.



6.0 HEALTH HAZARD DATA

Health Hazard Classification (Per 29 CFR Part 1910.1200)

Carcinogen	No	Corrosive		No
Animal Carcinogen	No	Irritant		No
Suspect Carcinogen	No	Sensitizer		No
Mutagen	No	Teratogen		No
Highly Toxic	No	Target Organ		No
Toxic	No		· · ·	

Carcinogen or Potential Carcinogen:

Product/Component	CAS No.	Conc. (%)	NTP	IARC	OSHA	Other
CITGO Gas Engine Oils, SUS 450-2000	Mixture	100	No	No	No	No
SUS 450-2000						

Toxicity Summary: The approximate lethal oral dose of this material for a 150 lb. human adult is one quart.

Major Route of Entry: Inhalation of incidental mists or vapors and dermal contact with liquid.

Acute Exposure Symptoms:

Inhalation:	Over exposure to mists or fumes at elevated temperatures cause drowsiness, dizziness, headache, nausea, lung irritation or chemical pneumonitis.
Dermal Contact:	Mild irritant.
Eye Contact:	Mild to moderate irritant.
Ingestion:	The Saybolt viscosity of this material is 450 to 2000 SUS at 100°F. There is slight risk of aspiration of vomitus into the lungs. Ingestion of large quantities may result in gastrointestinal discomfort, diarrhea, and headache. Small doses may produce irritation and diarrhea.
Injection:	Subcutaneous or intramuscular injection may cause irritation, crythema, edema.

Chronic Exposure Symptoms:

Prolonged and/or frequent contact may cause drying, cracking (dermatitis) or folliculitis.

Other Special Effects:

None expected.

HAULING / DISPOSAL CONTRACTORS SID RICHARDSON GASOLINE CO. JAL # 4 COMPRESSION FACILITY

Company Name

<u>Service</u>

Engine waste oil recycle

Industrial Services Corporation 2112 E. 48^{th.} PO Box 2812 Lubbock, TX, 79408 (806) 747-6219

Chaparral Services, Inc. PO Drawer 1769 West Texas Avenue Eunice, NM 88231 (505) 397-3044

X-L Transportation 113 N. 3 ^{rd.} Jal, NM 88252 (505) 395-2010

Sundance Services, Inc. East of Eunice Eunice, NM 88231 (505) 394-2511 Brine water

Field liquids

Facility washdown water

FFB 2 1 (967

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P. O. BOX 1492 EL PASO, TEXAS 79978 PHONE: 915-541-2600

June 5, 1990	June	5,	1990
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Sid Richardson Carbon & Gasoline Co. Attn: Mr. E. F. Gunn 201 Main St. Ft. Worth, TX 76102

Jun 7 1990

RECH

OIL CONSERVATION DIVIEION

CERTIFIED MAIL: RETURN RECEIPT REQUESTED

Re: Discharge Plan for the Jal No. 4 Plant.

Dear Mr. Gunn:

EI Paso Natural Gas Company

Attached please find the drawings referenced in my correspondence dated May 25, 1990. The drawings were inadvertently left out of the mailing package.

Please feel free to call me at 915/541-2323 if you have any questions concerning this matter.

Sincerely,

Philip L. Baca, P.E?

Sr. Compliance Engineer

PLB:dac

c: Mr. William J. LeMay New Mexico Oil Conservation Division P.O. Box 2088 Santa Fe, NM 87504-2088



P. O. BOX 1492 EL PASO, TEXAS 79978 PHONE: 915-541-2600

May 25, 1990

Sid Richardson Carbon & Gasoline Co. Attn: Mr. E. F. Gunn 201 Main St. Ft. Worth, TX 76102

CERTIFIED MAIL: RETURN RECEIPT REQUESTED

Re: Discharge Plan for the Jal No. 4 Plant.

Dear Mr. Gunn:

The New Mexico Oil Conservation Division (OCD) administers through delegation, all New Mexico Water Quality Control Commission (WQCC) regulations pertaining to surface and groundwater at natural gas processing plants.

Section 3-111 of the WQCC regulations states that with respect to the transfer of a discharge plan, "... the transferor shall notify the transferee in writing of the existence of the discharge plan, and shall deliver or send by certified mail to the director a copy of such written notification, together with a certification or other proof that such notification has in fact been received by the transferee. Upon receipt of such notification, the transferee shall have the duty to inquire into all of the provisions and requirements contained in such discharge plan, and the transferee shall be charged with notice of all such provisions and requirements as they appear of record in the divisions's file or files concerning such discharge plan."

Please consider this letter to be written notification of the existence of a discharge plan for the Jal No. 4 Plant. Because only a portion of the plant has been sold to Sid Richardson Carbon & Gasoline Company (see attached illustration and aerial photograph), Sid Richardson Carbon and Gasoline Company will only be responsible for compliance with those areas that apply to the company's ownership. A copy of the discharge plan will be sent to you under separate cover. If you have any questions concerning this matter, please feel free to contact me at 915/541-2323.

Sincerely,

Philip L. Baca, P.E.

Philip L. Baca, P.E. Sr. Compliance Engineer

PLB:dac

bc: K. E. Beasley J. C. Bridges L. J. Meyer J. Midkiff D. R. Payne J. R. Weaver File: 5004 (W/W)

c: Mr. William J. LeMay New Mexico Oil Conservation Division P.O. Box 2088 Santa Fe, NM 87504-2088

STATE OF NEW MEXICO OIL CONSERVATION MEMORANDUM OF MEETING OR CONVERSATION Time Date Personal Telephone 11:30pm Originating Party Other Parties Boyer Paun Compliance CC Gun 1Chart son iect Discussion Pauna & Grenn 11 73 C/ SR a nor T/ au 1120 The an Q Agreements usions or len A Ca T Distribution Signed EPNG Jal 4 Roges Amberson. * EPNG may sell brine operation to another party later.



MEMORANDUM OF MEETING OR CONVERSATION

Time 1: 30000 Date Personal 8/15/89 Telephone Originating Party Other Parties NG 12 01 DNG Subject tion Such 2nt Discussion EPNG mvesting 1A,P andila i siel U) \mathbf{C} 201 Conclusions Agreements or M VIEWills Signed/ Distribution WHER! M ism well onsite. 0 Jal #4 Sile

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	e stere Winter Can Can Carrey	Ficld Notes SAMPLE LOCATION	20,5-30' black duy Sluch C 30-35' light glor, Live 500 in , dry sludge(?) 35'-38' black , dry 8 hudse 28' 63 Mithre 501 - Unable to use sold Srow belo	22'-35' dry black studge 35'-57' watere scil	Jerkywhite, EMG, same pand # 19 was only a low spot not pit or pand. B"- 121 s/udy =	11'-16' light yellow-gray with slight sultur octor 16'-32' Notrue sril	11-40 dark, dry slorge - hydrozailan Odor 40'-54 gry- Alaik fine grain with hydraufur odor Dirhasy dividened section sail sail cannot by	541-57 were beel, my llack malined 581-64 gref, my hard material, hard book 641-67, 5054 material, gracker, hydrocalarco	104 - 120' BAPCK Suis gen sound , henry hydrie Actor Shapped at 120' due to hole SANding in.	due are griet correducte. Third number is dept
(Person Taking Sampl	TEST PARAMETERS	EP Tox Mchals Total " PCB PH Phenols	//	1	//	11			vac just low Spots down. down.
	PLANT JAL 4	SAMPLE DESCRIPTION (Soil, Water, Sludge, etc	Sludge, Poul# - W. end	poudt 1 cast end	poul #19 - watthe soll	Pend#2 +	Koud#3		A	ny while pend # 17418 . cookdipates + 1947 then
\langle		SAMPLE ID	4-11.9-15.7-22	4-119-517-941-4	4-125-145-23	E-902-+121-+	4-10.4-20.7-20	Stant ASV Berthaver	Centrated	NOTES: Cere Lung to yer ow MAP read
1 		DATE	4/85	1	11		M	11	=	FIELD AC

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38-40 ' very five gray-tru sand - very slight odon 10'-17' Dack , dry , hydrocarded oder 17'-39' taw , wat ve , , , o havel on minie like other 1- 40 light colored shadpe up plender on anne abr? Give texture untive - slight sulfur ador my, sive grain sand like materi 3-40' NA live w/ planolic or anne like oden from driel cectings at typ of hale) phanolic on 20-14 Strue AS Abouc 10-55-56 have to gook + 5000 (Sangle tallen 0'- 20 vour tan (red tan soile, phenelicle) 28'-60' grey black drymintenial (Native soil?) Person Taking Sample Ray Russel + Steve Winterlows hydrengrey & Siver texture Uderth 60'-65 hard met gang, then enclose such is grey & red brokin 65'-100 grey writing, sive grain gand like ArDEAR boy DODY SAMPLE LOCAPION Field Notes 29-38' lighter icalliche Bill Native or BACKSIN bluck , wet sludge annie like odon. hearing hu 0-2 NATIVE , 6ACES.17 0-10 8-28 0-8 pc B phenels TEST PARAMETERS 6" , wether at bottom, lesder on take had distined order and ally to touch. EPTOX Metals Total " 7 い 7 1 $\overline{}$ -FIELD NOTES: A 5/4/89 Hole # 4-86-21.1-100 should about (Soil, Water, Sludge, etc) SAMPLE DESCRIPTION Sludge, Poud#3 PLANT JAL 4 H # PNOD ŕ 4-8-9-276-20 pond # 7 Pond#8 Poul#8 4-8.6-21.1-100 4 4-9.8-23.2-20 E1-1/1-1-7-8-+ 4-2-242-6 4-5.2-23,2-55 4-418-23.2-44 4-8.9-27.6-4 4-6.7-21.5-11 4-6.7-21.5-39 SAMPLE ID Canfined 5/3/87 DATE 5/3 5/2 6/3 5/3

 (\mathcal{D})



Southwest Laboratory of Oklahoma

1700 W. Albany, Suite C / Broken Arrow, OK 74012 / (918) 251-2858

June 16, 1989

John C. Bridges EL PASO NATURAL GAS COMPANY Post Office Box 1492 El Paso, Texas 79978

Dear Mr. Bridges:

Enclosed are the analytical results for your sample received in our laboratory on May 12, 1989.

It is SOUTHWEST LABORATORY OF OKLAHOMA's policy to try and insure the accuracy of all data generated by this lab. Due to a discrepancy between the split sample results of this data, it was withheld until the problem was resolved. A copy of our letter to TEXACO is included for your review. We hope this delay has not been too much of an inconvenience.

If, in your review, you should have any questions or require additional information, please call.

Sincerely,

SOUTHWEST LABORATORY OF OKLAHOMA, INC.

fat W. Halkis

Robert W. Harris Laboratory Manager



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SOUTHWEST LABORATORY OF OK AHOMA, INC. 1700 W. Albany • Suite "C" • Broken Arrow, Oklahoma 1912 • 918-251-2858

CLIENT: EL PASO NATURAL GAS COMPANY REPORT: G1489 POST OFFICE BOX 1492 EL PASO, TEXAS 79978 DATE: 05-31-89 ATTN: JOHN C. BRIDGES 1 SAMPLE MATRIX: SOIL SWLO # 26429 : (DATE SUBMITTED: 05-12-89 SAMPLE ID: 4-10.4-20.7-118-B

PARAMETER	DET. LIMIT	UNIT	RESULTS	DATE ANALYZED	METHOD REFERENCE
TOTAL PETROLEUM HYDROCARBONS TOTAL PHENOLICS pH (@ 25° C)	5.0 1.0 NA	mg∕Kg mg∕Kg S.U.	4,860 2.0 10.4	05-20-89 05-25-89 05-15-89	SM 503E SM 510C SM 423
EP TOXICITY METALS					
ARSENIC BARIUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM SILVER	0.035 0.03 0.005 0.005 0.02 0.02 0.05 0.03 0.01	mg/L mg/L mg/L mg/L mg/L mg/L mg/L	ND 0.15 ND ND ND ND ND ND	05-21-89 05-21-89 05-21-89 05-21-89 05-21-89 05-21-89 05-21-89 05-21-89	SW 6010 SW 6010 SW 6010 SW 6010 SW 6010 SW 6010 SW 6010 SW 6010
ARSENIC BARIUM CADMIUM CHROMIUM LEAD MERCURY SELENIUM SILVER	7.0 4.0 1.0 4.0 0.1 6.0 2.0	mg/Kg mg/Kg mg/Kg mg/Kg mg/Kg mg/Kg mg/Kg	ND 8.0 ND 1.5 ND ND ND ND	05-19-89 05-19-89 05-19-89 05-19-89 05-19-89 05-23-89 05-19-89 05-19-89	SW 6010 SW 6010 SW 6010 SW 6010 SW 6010 SW 7471 SW 6010 SW 6010

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ND = NONE DETECTED SM = STANDARD METHODS, 16TH EDITION SW = EPA METHOD REFERENCES, "SW846"

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SOUTHWEST LABORATORY OF OKLAHOMA, INC. 1700 W. Albury • Suite "C" • Broken Arrow, Oklahoma 12 • 918-251-2858

CLIENT: EL PASO NATURAL GAS COMPANY POST OFFICE BOX 1492 EL PASO, TEXAS 79978 ATTN: JOHN C. BRIDGES

REPORT: G1489.2

DATE: 05-31-89

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SAMPLE MATRIX: SOIL SWLO # 26429 DATE SUBMITTED: 05-12-89 DATE ANALYZED : 05-15-89 METHOD REFERENCE: SW846-8240, EPA METHODOLOGY SAMPLE ID: 4-10.4-20.7-118-B

RESULTS REPORTED IN ug/Kg OR Parts Per Billion (PPB)

	DET.				DET.		
VOLATILES	LIMIT	RESUL	<u>.TS</u>	VOLATILES	LIMIT	RESUL	TS
CHLOROMETHANE	10	ND		1,1,2,2-TETRACHLOROETHANE	5	ND	
BROMOMETHANE	10	ND		1,2-DICHLOROPROPANE	5	ND	
VINYL CHLORIDE	10	ND		TRANS-1,3-DICHLOROFROPENE	5	ND	
CHLOROETHANE	10	ND		TRICHLOROETHENE	5	ND	
METHYLENE CHLORIDE	5	21	В	DIBROMOCHLOROMETHANE	5	ND	
ACETONE	10	50		1,1,2-TRICHLOROETHANE	5	ND	
CARBON DISULFIDE	5	ND		BENZENE	5	ND	
1,1-DICHLOROETHENE	5	ND		CIS-1,3-DICHLOROPROPENE	5	ND	
1,1-DICHLOROETHANE	5	ND		2-CHLOROETHYLVINYLETHER	10	ND	
TRANS-1,2-DICHLOROETHENE	5	ND		BROMOFORM	5	ND	
CHLOROFORM	5	2	JB	2-HEXANONE	10	ND	
1,2-DICHLOROETHANE	5	ND		4-METHYL-2-PENTANONE	10	ND	
2-BUTANONE	10	ND		TETRACHLOROETHENE	5	ND	
1,1,1-TRICHLOROETHANE	5	ND		TOLUENE	5	5	
CARBON TETRACHLORIDE	5	ND		CHLOROBENZENE	5	ND	
VINYL ACETATE	10	ND		ETHYLBENZENE	5	2	J
BROMODICHLOROMETHANE	5	ND		STYRENE	5	ND	
				TOTAL XYLENES	5	8	

QA/QC SURROGATE RECOVERIES

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TOLUENE-d8 (81-117) 109% BROMOFLUOROBENZENE (74-121) 83% 1,2-DICHLOROETHANE (70-121) 102%

ND = NONE DETECTED

J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION

B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS

SOUTHWEST LABORATORY OF OKLAHOMA, INC. 1700 W. Alberg • Suite "C" • Broken Arrow, Oklahoma 12 • 918-251-2858

EL PASO NATURAL GAS COMPANY	REPORT: G1489.3
FUSI UFFILE BUX 1492 FL FARD TEYAR 78878	DATE: 05-31-89
ATTN: JOHN C. BRIDGES	DATE: 03-31-07
SAMPLE MATRIX: SOIL	DATE SUBMITTED: 05-12-89
SWLD # 26429	DATE EXTRACTED: 05-12-89
METHOD REF.: SW846-8270, EFA METHODOLOGY	DATE ANALYZED : 05-18-89

METHOD REF.: SW846-8270, EFA METHODOLOGY SAMPLE ID: 4-10.4-20.7-118-B

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DA	TE SUBMITTED	: 05-
DA	TE EXTRACTED	: 05-
DA	TE ANALYZED	: 05-3

SEMIVOLATILES	DET. LIMIT	RESUL (ug/K	TS g)	SEMIVOLATILES	DET. LIMIT	RESULTŚ (ug/Kg)
N-NITROSODIMETHYLAMINE	3300	ND		ACENAPHTHENE	3300	ND
PHENOL	3300	ND		2.4-DINITROPHENOL	16000	ND
ANILINE	3300	ND		4-NITROPHENOL	16000	ND
BIS(2-CHLOROETHYL)ETHER	3300	ND		DIBENZOFURAN	3300	930 J
2-CHLOROPHENOL	3300	ND		2,4-DINITROTOLUENE	3300	ND
1.3-DICHLOROBENZENE	3300	ND		2,6-DINITROTOLUENE	3300	ND
1.4-DICHLOROBENZENE	3300	ND		DIETHYLFHTHALATE	3300	ND
BENZYL ALCOHOL	3300	ND		4-CHLOROPHENYL-PHENYLETHER	3300	ND
1,2-DICHLOROBENZENE	3300	ND		FLUORENE	3300	ND
2-METHYLFHENOL	3300	ND		4-NITROANILINE	16000	ND
BIS(2-CHLOROISOPROPYL)ETHER	3300	ND		4,6-DINITRO 2-METHYLPHENOL	16000	ND
4-METHYLFHENOL	3300	ND		N-NITROSODIFHENYLAMINE(1)	3300	ND
N-NITROSO-DI-n-PROPYLAMINE	3300	ND		4-BROMOFHENYL-FHENYLETHER	3300	ND
HEXACHLOROETHANE	3300	ND		HEXACHLOROBENZENE	3300	ND
NITROBENZENE	3300	ND		PENTACHLOROPHENOL	3300	ND
ISOFHORONE	3300	ND		FHENANTHRENE	3300	ND
2-NITROPHENOL	3300	ND		ANTHRACENE	3300	ND
2,4-DIMETHYLPHENOL	3300	ND		DI-N-BUTYLFHTHALATE	3300	ND
BENZOIC ACID	16000	ND		FLUORANTHENE	3300	ND
BIS(2-CHLOROETHOXY)METHANE	3300	ND		BENZIDINE	26000	ND
2,4-DICHLOROPHENOL	3300	ND		FYRENE	3300	ND
1,2,4-TRICHLOROBENZENE	3300	ND		BUTYLBENZYLPHTHALATE	3300	ND
NAPHTHALENE	3300	ND		3,3-DICHLOROBENZIDINE	6600	ND
4-CHLOROANILINE	3300	ND		BENZO(A)ANTHRACENE	3300	ND
HEXACHLOROBUTADIENE	3300	ND		BIS(2-ETHYLHEXYL)FHTHALATE	3300	ND
4-CHLORO-3-METHYLFHENOL	3300	ND		CHRYSENE	3300	ND
2-METHYLNAFHTHALENE	3300	2178	J	DI-N-OCTYL PHTHALATE	3300	ND
HEXACHLOROCYCLOPENTADIENE	3300	ND		BENZO(B)FLUORANTHENE	3300	ND
2,4,6-TRICHLOROPHENOL	3300	ND		BENZO(K)FLUORANTHENE	3300	ND
2,4,5-TRICHLOROPHENOL	16000	ND		BENZO(A)PYRENE	3300	ND
2-CHLORONAPHTHALENE	3300	ND		INDEND(1,2,3-CD)PYRENE	3300	ND
2-NITROANILINE	16000	ND		DIBENZ(A,H)ANTHRACENE	3300	ND
DIMETHYLPHTHALATE	3300	ND		BENZO(G,H,I)FERYLENE	3300	ND
ACENAPHTHYLENE	3300	ND				
3-NITROANILINE	16000	ND				

QA/QC SURROGATE RECOVERIES

NITROBENZENE-0	15(23-120)	53%	2-FLUOROBIPHENY	L(30-115)	97%	TERPHENYL-d14	(18-137)	102%
FHENOL-d5	(24 - 113)	37%	2-FLUOROFHENOL	(25-121)	72%	2,4,6-TRIBROMOPHENOL	(19-122)	82%

ND Analyte was not detected

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- Estimated quantitation: Concentration below limit of quantitation J
- B Analyte detected in blank as well as sample
- * Surrogate recovery outside of QC limits

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CLIENT: EL PASO NATURAL GAS COMPANY REPORT: G1489.4 POST OFFICE BOX 1492 EL PASO, TEXAS 79978 DATE: 05-31-89 ATTN: JOHN C. BRIDGES 1 SAMPLE MATRIX: SOIL SWLD # 26429 DATE SUBMITTED: 05-12-89 DATE EXTRACTED: 05-12-89 DATE ANALYZED : 05-18-89 METHOD REFERENCE: SW846-8080, EFA METHODOLOGY SAMPLE ID: 4-10.4-20.7-118-B

RESULTS REPORTED IN ug/Kg OR Parts Fer Billion (FFB)

PCB'S

AROCHLOR 1016 AROCHLOR 1221 AROCHLOR 1232 AROCHLOR 1242 AROCHLOR 1248 AROCHLOR 1254 AROCHLOR 1260

DETECTION LIMIT

RESULTS

800	ND
800	ND
1600	ND
1600	ND

QA/QC SURROGATE RECOVERY

DIBUTYLCHLORENDATE 103% (ADVISORY QC LIMITS: 24%-150%)

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ND = NONE DETECTED

- J = ESTIMATED VALUE: CONCENTRATION BELOW LIMIT OF QUANTITATION
- B = ANALYTE DETECTED IN BLANK AS WELL AS SAMPLE

* = SURROGATE RECOVERY OUTSIDE OF QC LIMITS







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EL PASO NATURAL GAS JAL NO. 4 DATA ANALYSIS FROM MONITORING WELLS

SAMPLE #	EP-01-A	EP-02-A	REPLICATE EP-02-B	EP-03-A
CHLORIDES	9700PPM	M900PPM	8500PPM	285PPM
ACETONE	24	81	80	23
CARBON DISULFIDE	BDL	22	24	BDL
2-BUTANONE (MEK)	BDL	29	30	BDL
BIS (2 ETHYLHEXYL) PHTHALATES	BDL	BDL	BDL	22
DI-N-BUYTL PHTHALATES	BDL	BDL	5.9	BDL
2,4 DIMETHYL PHENOL	16	7.5J	9.5J	BDL
METHYL NAPHTHALENE	6.0J	BDL	BDL	BDL
PENTACHLOROPHENOL	BDL	BDL	7.6	BDL
PCB	ND	ND	ND	ND
Toc		Sppm		
ALL FIGURES IN UG/L OR I	PPB	-	J = ESTIMATES	

BDL = BELOW DETECTION LIMIT'S

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