GW - 221

GENERAL CORRESPONDENCE

YEAR(S): 2007-1995

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

BILL RICHARDSON
Governor
Joanna Prukop
Cabinet Secretary

Mark E. Fesmire, P.E.
Director
Oil Conservation Division

April 9, 2007

Morris D. Young
President
Envirotech, Inc.
5796 U.S. Highway 64
Farmington, New Mexico 87401

RE: Discharge Plan Permit (GW-221) Renewal
Envirotech, Inc. Main Office and Maintenance Yard

Dear Mr. Young:

Pursuant to Water Quality Control Commission (WQCC) Regulations 20.6.2.3000 - 20.6.2.3114 NMAC, the Oil Conservation Division (OCD) hereby approves the discharge permit for the Envirotech, Inc. (owner/operator) Envirotech, Inc. Main Office and Maintenance Yard located in the NE/4 of the NW/4 of Section 27, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico, under the conditions specified in the enclosed **Attachment To The Discharge Permit**. Enclosed are two copies of the conditions of approval. **Please sign and return one copy to the New Mexico Oil Conservation Division (OCD) Santa Fe Office within 30 working days of receipt of this letter including permit fees.**

Please be advised that approval of this permit does not relieve the owner/operator of responsibility should operations result in pollution of surface water, ground water or the environment. Nor does approval of the permit relieve the owner/operator of its responsibility to comply with any other applicable governmental authority's rules and regulations.

If you have any questions, please contact Edward J. Hansen of my staff at (505-476-3489) or E-mail edwardj.hansen@state.nm.us. On behalf of the staff of the OCD, I wish to thank you and your staff for your cooperation during this discharge permit review.

Sincerely,

Wayne Price
Environmental Bureau Chief

LWP/ejh
Attachments-1
xc: OCD District Office

ATTACHMENT TO THE DISCHARGE PERMIT RENEWAL
Envirotech, Inc. Main Office and Maintenance Yard (GW221)
DISCHARGE PERMIT APPROVAL CONDITIONS
April 9, 2007

Please remit a check for $1700.00 made payable to Water Quality Management Fund:

Water Quality Management Fund
c/o: Oil Conservation Division
1220 S. Saint Francis Drive
Santa Fe, New Mexico 87505

1. **Payment of Discharge Plan Fees:** All discharge permits are subject to WQCC Regulations. Every billable facility that submits a discharge permit application will be assessed a filing fee of $100.00, plus a renewal flat fee (*see* WQCC Regulation 20.6.2.3114 NMAC). The Oil Conservation Division ("OCD") has received the required $100.00 filing fee. However, the owner/operator still owes the required $1700.00 renewal permit fee for an oil and gas service company.

2. **Permit Expiration, Renewal Conditions and Penalties:** Pursuant to WQCC Regulation 20.6.2.3109.H.4 NMAC, this permit is valid for a period of five years. **The permit will expire on November 16, 2010** and an application for renewal should be submitted no later than 120 days before that expiration date. Pursuant to WQCC Regulation 20.6.2.3106.F NMAC, if a discharger submits a discharge permit renewal application at least 120 days before the discharge permit expires and is in compliance with the approved permit, then the existing discharge permit will not expire until the application for renewal has been approved or disapproved. ***Expired permits are a violation of the Water Quality Act {Chapter 74, Article 6, NMSA1978} and civil penalties may be assessed accordingly.***

3. **Permit Terms and Conditions:** Pursuant to WQCC Regulation 20.6.2.3104 NMAC, when a permit has been issued, the owner/operator must ensure that all discharges shall be consistent with the terms and conditions of the permit. In addition, all facilities shall abide by the applicable rules and regulations administered by the OCD pursuant to the Oil and Gas Act, NMSA 1978, Sections 70-2-1 through 70-2-38.

4. **Owner/Operator Commitments:** The owner/operator shall abide by all commitments submitted in its January 5, 2007, discharge permit renewal application, including attachments and subsequent amendments and these conditions for approval. Permit applications that reference previously approved plans on file with the division shall be incorporated in this permit and the owner/operator shall abide by all previous commitments of such plans and these conditions for approval.

5. **Modifications:** WQCC Regulation 20.6.2.3107.C, and 20.6.2.3109 NMAC addresses possible future modifications of a permit. The owner/operator (discharger) shall notify the OCD of any facility expansion, production increase or process modification that would result in any significant modification in the discharge of water contaminants. The Division Director may require a permit modification if any water quality standard specified at 20.6.2.3103 NMAC is being or will be exceeded, or if a toxic pollutant as defined in WQCC Regulation 20.6.2.7 NMAC is present in ground water at any place of withdrawal for present or reasonably foreseeable future use, or that the Water Quality Standards for Interstate and Intrastate streams as specified in 20.6.4 NMAC are being or may be violated in surface water in New Mexico.

6. **Waste Disposal and Storage:** The owner/operator shall dispose of all wastes at an OCD-approved facility. Only oil field RCRA-exempt wastes may be disposed of by injection in a Class II well. RCRA non-hazardous, non-exempt oil field wastes may be disposed of at an OCD-approved facility upon proper waste determination pursuant to 40 CFR Part 261. Any waste stream that is not listed in the discharge permit application must be approved by the OCD on a case-by-case basis.

A. **OCD Rule 712 Waste:** Pursuant to OCD Rule 712 (19.15.9.712 NMAC) disposal of certain non-domestic waste without notification to the OCD is allowed at NMED permitted solid waste facilities if the waste stream has been identified in the discharge permit and existing process knowledge of the waste stream does not change.

B. **Waste Storage:** The owner/operator shall store all waste in an impermeable bermed area, except waste generated during emergency response operations for up to 72 hours. All waste storage areas shall be identified in the discharge permit application. Any waste storage area not identified in the permit shall be approved on a case-by-case basis only. The owner/operator shall not store oil field waste on-site for more than 180 days unless approved by the OCD.

7. **Drum Storage:** The owner/operator must store all drums, including empty drums, containing materials other than fresh water on an impermeable pad with curbing. The owner/operator must store empty drums on their sides with the bungs in place and lined up on a horizontal plane. The owner/operator must store chemicals in other containers, such as tote tanks, sacks, or buckets on an impermeable pad with curbing.

8. **Process, Maintenance and Yard Areas:** The owner/operator shall either pave and curb or have some type of spill collection device incorporated into the design at all process, maintenance, and yard areas which show evidence that water contaminants from releases, leaks and spills have reached the ground surface.

9. Above Ground Tanks: The owner/operator shall ensure that all aboveground tanks have impermeable secondary containment (e.g., liners and berms), which will contain a volume of at least one-third greater than the total volume of the largest tank or all interconnected tanks. The owner/operator shall retrofit all existing tanks before discharge permit renewal. Tanks that contain fresh water or fluids that are gases at atmospheric temperature and pressure are exempt from this condition.

10. Labeling: The owner/operator shall clearly label all tanks, drums, and containers to identify their contents and other emergency notification information. The owner/operator may use a tank code numbering system, which is incorporated into their emergency response plans.

11. Below-Grade Tanks/Sumps and Pits/Ponds.

A. All below-grade tanks and sumps must be approved by the OCD prior to installation and must incorporate secondary containment with leak detection into the design. The owner/operator shall retrofit all existing systems without secondary containment and leak detection before discharge permit renewal. All existing below-grade tanks and sumps without secondary containment and leak detection must be tested annually or as specified herein. Systems that have secondary containment with leak detection shall have a monthly inspection of the leak detection system to determine if the primary containment is leaking. Small sumps or depressions in secondary containment systems used to facilitate fluid removal are exempt from these requirements if fluids are removed within 72 hours.

B. All pits and ponds, including modifications and retrofits, shall be designed by a certified registered professional engineer and approved by the OCD prior to installation. In general, all pits or ponds shall have approved hydrologic and geologic reports, location, foundation, liners, and secondary containment with leak detection, monitoring and closure plans. All pits or ponds shall be designed, constructed and operated so as to contain liquids and solids in a manner that will protect fresh water, public health, safety and the environment for the foreseeable future. The owner/operator shall retrofit all existing systems without secondary containment and leak detection before discharge permit renewal.

C. The owner/operator shall ensure that all exposed pits, including lined pits and open top tanks (8 feet in diameter or larger) shall be fenced, screened, netted, or otherwise rendered non-hazardous to wildlife, including migratory birds.

D. The owner/operator shall maintain the results of tests and inspections at the facility covered by this discharge permit and available for OCD inspection. The owner/operator shall report the discovery of any system which is found to be leaking or has lost integrity to the OCD within 15 days. The owner/operator may propose various methods for testing such as pressure testing to 3 pounds per square inch greater than normal operating pressure and/or visual inspection of cleaned tanks and/or sumps, or other OCD-approved methods. The owner/operator shall notify the OCD at least 72 hours prior to all testing.

12. Underground Process/Wastewater Lines:

A. The owner/operator shall test all underground process/wastewater pipelines at least once every five (5) years to demonstrate their mechanical integrity, except lines containing fresh water or fluids that are gases at atmospheric temperature and pressure. Pressure rated pipe shall be tested by pressuring up to one and one-half times the normal operating pressure, if possible, or for atmospheric drain systems, to 3 pounds per square inch greater than normal operating pressure, and pressure held for a minimum of 30 minutes with no more than a 1% loss/gain in pressure. The owner/operator may use other methods for testing if approved by the OCD.

B. The owner/operator shall maintain underground process and wastewater pipeline schematic diagrams or plans showing all drains, vents, risers, valves, underground piping, pipe type, rating, size, and approximate location. All new underground piping must be approved by the OCD prior to installation. The owner/operator shall report any leaks or loss of integrity to the OCD within 15 days of discovery. The owner/operator shall maintain the results of all tests at the facility covered by this discharge permit and they shall be available for OCD inspection. The owner/operator shall notify the OCD at least 72 hours prior to all testing.

13. Class V Wells: The owner/operator shall close all Class V wells (e.g., septic systems, leach fields, dry wells, etc.) that inject non-hazardous industrial wastes or a mixture of industrial wastes and domestic wastes unless it can be demonstrated that ground water will not be impacted in the reasonably foreseeable future. Leach fields and other wastewater disposal systems at OCD-regulated facilities that inject non-hazardous fluid into or above an underground source of drinking water are considered Class V injection wells under the EPA UIC program. Class V wells that inject domestic waste only, must be permitted by the New Mexico Environment Department (NMED).

14. Housekeeping: The owner/operator shall inspect all systems designed for spill collection/prevention and leak detection at least monthly to ensure proper operation and to prevent over topping or system failure. All spill collection and/or secondary containment devices shall be emptied of fluids within 72 hours of discovery. The owner/operator shall maintain all records at the facility and available for OCD inspection.

15. Spill Reporting: The owner/operator shall report all unauthorized discharges, spills, leaks and releases and conduct corrective action pursuant to WQCC Regulation 20.5.12.1203 NMAC and OCD Rule 116 (19.15.3.116 NMAC). The owner/operator shall notify both the OCD District Office and the Santa Fe Office within 24 hours and file a written report within 15 days.

16. OCD Inspections: The OCD may place additional requirements on the facility and modify the permit conditions based on OCD inspections.

17. Storm Water: The owner/operator shall implement and maintain run-on and runoff plans and controls. The owner/operator shall not discharge any water contaminant that exceeds the WQCC standards specified in 20.6.2.3101 NMAC or 20.6.4 NMAC (Water Quality Standards for Interstate and Intrastate Streams) including any oil sheen in any stormwater run-off. The owner/operator shall notify the OCD within 24 hours of discovery of any releases and shall take immediate corrective action(s) to stop the discharge.

18. Unauthorized Discharges: The owner/operator shall not allow or cause water pollution, discharge or release of any water contaminant that exceeds the WQCC standards listed in 20.6.2.3101 NMAC or 20.6.4 NMAC (Water Quality Standards for Interstate and Intrastate Streams) unless specifically listed in the permit application and approved herein. ***An unauthorized discharge is a violation of this permit.***

19. Vadose Zone and Water Pollution: The owner/operator shall address any contamination through the discharge permit process or pursuant to WQCC 20.6.2.4000-.4116 NMAC (Prevention and Abatement of Water Pollution). The OCD may require the owner/operator to modify its permit for investigation, remediation, abatement, and monitoring requirements for any vadose zone or water pollution. Failure to perform any required investigation, remediation, abatement and submit subsequent reports will be a violation of the permit.

20. Additional Site Specific Conditions: N/A

21. Transfer of Discharge Permit (WQCC 20.6.2.3111) Prior to any transfer of ownership, control, or possession (whether by lease, conveyance or otherwise) of a facility with a discharge permit, the transfer or shall notify the transferee in writing of the existence of the discharge permit, and shall deliver or send by certified mail to the department 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 permit, and the transferee shall be charged with notice of all such provisions and requirements as they appear of record in the department's file or files concerning such discharge permit. The transferee (new owner/operator) shall sign and return an original copy of these permit conditions and provide a written commitment to comply with the terms and conditions of the previously approved discharge permit.

22. Closure: The owner/operator shall notify the OCD when operations of the facility are to be discontinued for a period in excess of six months. Prior to closure of the facility, the operator shall submit a closure plan for approval. Closure and waste disposal shall be in accordance with the statutes, rules and regulations in effect at the time of closure.

23. Certification: Envirotech, Inc., (Owner/Operator), by the officer whose signature appears below, accepts this permit and agrees to comply with all submitted commitments, including these terms and conditions contained here. **Owner/Operator** further acknowledges that the OCD may, for good cause shown, as necessary to protect fresh water, public health, safety, and the environment, change the conditions and requirements of this permit administratively.

Conditions accepted by: "I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment."

_____
Company Name-print name above

_____
Company Representative- print name

_____
Company Representative- signature

Title_____

Date:_____

THE DAILY TIMES
FARMINGTON, NEW MEXICO
THE FOUR CORNERS INFORMATION LEADER

PO Box 450 Farmington, NM 87499

Date: 03/12/07

NM ENERGY, MINERALS & NATURA

NM ENERGY, MINERALS & NA
1220 SOUTH ST. FRANCIS DR.
SANTA FE, NM 87505
(505) 476-3400

Ad#	Publication	Class	Start	Stop	Times	AS/400 Acct
1000627697	FARMINGTO	0152 - Legal Notices	03/09/2007	03/09/2007	1	780352
1000627697	FARMINGTO	0152 - Legal Notices	03/09/2007	03/09/2007	1	780352

Total Cost:	$194.89
Payment:	$0.00
Balance Due:	$194.89

TEXT:

NOTICE OF PUBLICATIONSTATE OF NEW MEXICOENERGY, MINERALS AND NAT

O.K. to pay
Edmund H. Kendrick
3-27-07

Please include Ad number on your payment.

AFFIDAVIT OF PUBLICATION

Ad No. 54762

STATE OF NEW MEXICO
County of San Juan:

ROBIN ALLISON, being duly sworn says: That she is the CLASSIFIED MANAGER of THE DAILY TIMES, a daily newspaper of general circulation published in English at Farmington, said county and state, and that the hereto attached Legal Notice was published in a regular and entire issue of the said DAILY TIMES, a daily newspaper duly qualified for the purpose within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico for publication and appeared in the Internet at The Daily Times web site on the following day(s):

Friday, March 09, 2007

And the cost of the publication is $194.89

ON 3/20/07 ROBIN ALLISON appeared before me, whom I know personally to be the person who signed the above document.

My Commission Expires November 17, 2008

COPY OF PUBLICATION

NOTICE OF PUBLICATION

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

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations (20.6.2.3106 NMAC), the following discharge permit renewal application has been submitted to the Director of the New Mexico Oil Conservation Division ("NMOCD"), 1220 S. Saint Francis Drive, Santa Fe, New Mexico 87505, Telephone (505) 476-3440:

(GW221) Envirotech, Inc., Morris D. Young, President, 5796 U. S. Hwy 64, Farmington, New Mexico 87401, has submitted a renewal application for the previously approved discharge plan (GW 221) for the office and shop facilities located in the NE ¼ of the NW ¼ of Section 27, Township 29 N, Range 12 W, NMPM, San Juan County, New Mexico, approximately 0.5 miles east of the intersection of County Road 550 and Highway 64, Farmington, New Mexico. Approximately 520 gallons of non-hazardous liquid and solid lab waste, approximately 1,000 gallons of used oil, and approximately 165 used oil filters are generated annually, which are collected and temporarily stored in containment vessels prior to being transported and disposed of at an NMOCD approved facility. In case of a spill, leak, or accidental discharge an Emergency Response plan is in place, if this plan is not followed then ground water of concern is approximately 60 feet below ground surface and has a total dissolved solids concentration of approximately 500 mg/L. This discharge plan outlines the procedures that are to be taken when handling/storing/disposing of waste generated from daily operations in order to avoid contamination of fresh water.

(GW228) CIP, Incorporated, Carl I. Padilla, 51 Road 5570, Farmington, New Mexico 87401, has submitted a renewal application for the previously approved discharge plan (GW 228) for their CIP, Inc. shop and yard located in the East ½ NW ¼ SE ¼ of Section 10, Township 29 N, Range 12 W and a portion of NE ¼ SE ¼ of Section 10, Township 29 N, Range 12 W, NMPM, Farmington, San Juan County, New Mexico. Approximately 250 gallons of oil & grease, 1,200-2,400 gallons of water for steam washing, sewage, office waste, and scrap metal are generated on site annually, which are collected and temporarily stored in containment vessels prior to being transported and disposed of at an NMOCD approved facility. In case of a spill, leak, or accidental discharge an Emergency Response plan is in place, if this plan is not followed then groundwater of concern is approximately 100 feet below ground surface and has a total dissolved solids concentration of approximately 1,000 mg/L. This discharge plan outlines the procedures that are to be taken when handling/storing/disposing of waste generated from daily operations in order to avoid contamination of fresh water.

The NMOCD has determined that the application is administratively complete and has prepared a draft permit. The NMOCD will accept comments and statements of interest regarding this application and will create a facility-specific mailing list for persons who wish to receive future notices. Persons interested in obtaining further information, submitting comments or requesting to be on a facility-specific mailing list for future notices may contact the Environmental Bureau Chief of the Oil Conservation Division at the address given above. The administrative completeness determination and draft permit may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday through Friday, or may also be viewed at the NMOCD web site http://www.emnrd.state.nm.us/ocd/. Persons interested in obtaining a copy of the application and draft permit may contact the NMOCD at the address given above. Prior to ruling on any proposed discharge permit or major modification, the Director shall allow a period of at least thirty (30) days after the date of publication of this notice, during which interested persons may submit comments or request that NMOCD hold a public hearing. Requests for a public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines that there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed permit based on information available, including all comments received. If a public hearing is held, the director will approve or disapprove the proposed permit based on information in the permit application and information submitted at the hearing.

Para obtener más información sobre esta solicitud en espan?ol, sirvase comunicarse por favor: New Mexico Energy, Minerals and Natural Resources Department (Depto. Del Energia, Minerals y Recursos Naturales de Nuevo México), Oil Conservation Division (Depto. Conservacion Del Petróleo), 1220 South St. Francis Drive, Santa Fe, New México (Contacto: Dorothy Phillips, 505-476-3461)

GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 7th day of March, 2007.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
SEAL Mark Fesmire, Director

Legal No. 54762, published in The Daily Times, Farmington, New Mexico on Friday, March 09, 2007

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Revised June 10, 2003

Submit Original
Plus 1 Copy
to Santa Fe
1 Copy to Appropriate
District Office

DISCHARGE PLAN APPLICATION FOR SERVICE COMPANIES,GAS PLANTS, REFINERIES, COMPRESSOR, GEOTHERMAL FACILITES AND CRUDE OIL PUMP STATIONS

2007 JAN 5 PM 1 02

(Refer to the OCD Guidelines for assistance in completing the application)

☐ New ☒ Renewal ☐ Modification

1. Type: Oilfield Service Company
2. Operator: Envirotech, Inc.

   Address: 5796 U.S. Hwy 64, Farmington, NM 87401

   Contact Person: Morris D. Young Phone: (505) 632-0615

3. Location: NE /4 NW /4 Section 27 Township 29N Range 12W
   Submit large scale topographic map showing exact location.
4. Attach the name, telephone number and address of the landowner of the facility site.
5. Attach the description of the facility with a diagram indicating location of fences, pits, dikes and tanks on the facility.
6. Attach a description of all materials stored or used at the facility.
7. Attach a description of present sources of effluent and waste solids. Average quality and daily volume of waste water must be included.
8. Attach a description of current liquid and solid waste collection/treatment/disposal procedures.
9. Attach a description of proposed modifications to existing collection/treatment/disposal systems.
10. Attach a routine inspection and maintenance plan to ensure permit compliance.
11. Attach a contingency plan for reporting and clean-up of spills or releases.
12. Attach geological/hydrological information for the facility. Depth to and quality of ground water must be included.
13. Attach a facility closure plan, and other information as is necessary to demonstrate compliance with any other OCD rules, regulations and/or orders.

14. CERTIFICATION I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

Name: Morris D. Young Title: President

Signature: Morris D. Young Date: December 29, 2006

E-mail Address: myoung@envirotech-inc.com

NOTICE OF PUBLICATION

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

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(GW221) Envirotech, Inc., Morris D. Young, President, 5796 U. S. Hwy 64, Farmington, New Mexico 87401, has submitted a renewal application for the previously approved discharge plan (GW 221) for the office and shop facilities located in the NE1/4 of the NW1/4 of Section 27, Township 29 N, Range 12 W, NMPM, San Juan County, New Mexico, approximately 0.5 miles east of the intersection of County Road 550 and Highway 64, Farmington, New Mexico. Approximately 520 gallons of non-hazardous liquid and solid lab waste, approximately 1,000 gallons of used oil, and approximately 165 used oil filters are generated annually, which are collected and temporarily stored in containment vessels prior to being transported and disposed of at an NMOCD approved facility. In case of a spill, leak, or accidental discharge an Emergency Response plan is in place, if this plan is not followed then groundwater of concern is approximately 60 feet below ground surface and has a total dissolved solids concentration of approximately 500 mg/L. This discharge plan outlines the procedures that are to be taken when handling/storing/disposing of waste generated from daily operations in order to avoid contamination of fresh water.

(GW228) CIP, Incorporated, Carl I. Padilla, 51 Road 5570, Farmington, New Mexico 87401, has submitted a renewal application for the previously approved discharge plan (GW 228) for their CIP, Inc. shop and yard located in the East1/2 NW1/4 SE1/4 of Section 10, Township 29 N, Range 12 W and a portion of NE1/4 SE1/4 of Section 10, Township 29 N, Range 12 W, NMPM, Farmington, San Juan County, New Mexico. Approximately 250 gallons of oil & grease, 1,200-2,400 gallons of water for steam washing, sewage, office waste, and scrap metal are generated on site annually, which are collected and temporarily stored in containment vessels prior to being transported and disposed of at an NMOCD approved facility. In case of a spill, leak, or accidental discharge an Emergency Response plan is in place, if this plan is not followed then groundwater of concern is approximately 100 feet below ground surface and has a total dissolved solids concentration of approximately 1,000 mg/L. This discharge plan outlines the procedures that are to be taken when handling/storing/disposing of waste generated from daily operations in order to avoid contamination of fresh water.

The NMOCD has determined that the application is administratively complete and has prepared a draft permit. The NMOCD will accept comments and statements of interest regarding this application and will create a facility-specific mailing list for persons who wish to receive future notices. Persons interested in obtaining further information, submitting comments or requesting to be on a facility-specific mailing list for future notices may contact the Environmental Bureau Chief of the Oil Conservation Division at the address given above. The administrative completeness determination and draft permit may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday through Friday, or may also be viewed at the NMOCD web site http://www.emnrd.state.nm.us/ocd/. Persons interested in obtaining a copy of the application and draft permit may contact the NMOCD at the address given above. Prior to ruling on any proposed discharge permit or major modification, the Director shall allow a period of at least thirty (30) days after the date of publication of this notice, during which interested persons may submit comments or request that NMOCD hold a public hearing. Requests for a public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines that there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed permit based on information available, including all comments received. If a public hearing is held, the director will approve or disapprove the proposed permit based on information in the permit application and information submitted at the hearing.

Para obtener más información sobre esta solicitud en espanol, sirvase comunicarse por favor: New Mexico Energy, Minerals and Natural Resources Department (Depto. Del Energia, Minerals y Recursos Naturales de Nuevo México), Oil Conservation Division (Depto. Conservacio´n Del Petróleo), 1220 South St. Francis Drive, Santa Fe, New México (Contacto: Dorothy Phillips, 505-476-3461)

GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 7th day of March, 2007.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

S E A L

Mark Fesmire, Director

Legal #80530
Pub. March 12, 2007

THE SANTA FE
NEW MEXICAN
Founded 1849

NM EMNRD OIL CONSERV
ATTN: Edward Hansen
1220 S ST FRANCIS DR
SANTA FE NM 87505

ALTERNATE ACCOUNT: 56689
AD NUMBER: 00205793 ACCOUNT: 00002212
LEGAL NO: 80530 P.O. #: 52100-3956
411 LINES 1 TIME(S) a 230.16
AFFIDAVIT: 6.00
TAX: 18.01
TOTAL: 254.17

AFFIDAVIT OF PUBLICATION

STATE OF NEW MEXICO
COUNTY OF SANTA FE

I, R. Lara, being first duly sworn declare and say that I am Legal Advertising Representative of THE SANTA FE NEW MEXICAN, a daily newspaper published in the English language, and having a general circulation in the Counties of Santa Fe and Los Alamos, State of New Mexico and being a newspaper duly qualified to publish legal notices and advertisements under the provisions of Chapter 167 on Session Laws of 1937; that the publication # 80530 a copy of which is hereto attached was published in said newspaper 1 day(s) between 03/12/2007 and 03/12/2007 and that the notice was published in the newspaper proper and not in any supplement; the first date of publication being on the 12nd day of March, 2007 and that the undersigned has personal knowledge of the matter and things set forth in this affidavit.

2007 MAR 15 PM 3 40

/S/ R. Lara
LEGAL ADVERTISEMENT REPRESENTATIVE

Subscribed and sworn to before me on this 12nd day of March, 2007

Notary Laura E. Harding

Commission Expires: 11/23/07

OK to pay
Edward Hansen
3-20-07

11/23/07

ENVIROTECH INC.

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

March 8, 2007

2007 MAR 9 AM 11 22

Mr. Edward J. Hansen, Hydrologist
State of New Mexico Oil Conservation Bureau
1220 South Saint Francis Drive
Santa Fe, NM 87505

Phone (505) 476-3489
Fax (505) 476-3462

RE: Discharge Permit Application Public Notice
Envirotech, Inc.

Dear Mr. Hansen:

Attached please find the Affidavit of Publication for the Public Notice for Envirotech, Inc. as required. The Public Notice was published in both Spanish and English as seen in the attached documents. Also attached is a copy of the certified mail receipts as requested for the owners of the properties where our lab facility and shop are located.

Please feel free to contact me if you have further questions. We anticipate receiving the permit after NMOCD approval and publication of your notices in newspapers.

Thank you,
Envirotech, Inc.

Morris D. Young
President
myoung@envirotech-inc.com

Attachment

MDY/aep/LF/GW221-shop/noticeapproval3-8-07.doc

AFFIDAVIT OF PUBLICATION

Ad No. 54673

STATE OF NEW MEXICO
County of San Juan:

ROBIN ALLISON, being duly sworn says: That she is the CLASSIFIED MANAGER of THE DAILY TIMES, a daily newspaper of general circulation published in English at Farmington, said county and state, and that the hereto attached Legal Notice was published in a regular and entire issue of the said DAILY TIMES, a daily newspaper duly qualified for the purpose within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico for publication and appeared in the Internet at The Daily Times web site on the following day(s):

Thursday February 22, 2007

And the cost of the publication is $131.62

Robin Allison

ON 2/28/07 ROBIN ALLISON appeared before me, whom I know personally to be the person who signed the above document.

Wynell Corey

My Commission Expires November 17, 2008

COPY OF PUBLICATION

PUBLIC NOTICE

Envirotech, Inc. Morris d. Young, President, 5796 U.S. Hwy 64, Farmington, NM 87401, has submitted a renewal application for the previously approved discharge plan ((GW-221) for the office and shop facilities located in the NE/4 of the NW/4 of Section 27, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico, approximately .5 miles east of the intersection of County Road 550 and Highway 64, Farmington, NM.

Envirotech Lab Facility: On-site disposal does not occur, with the exception of domestic sewage to a septic system and leach field. Distance to ground water is more then 60 feet. Total dissolved solids average for groundwater is less than 500 mg/L. Approximately 520 gallons of non-hazardous liquid and solid lab waste is generated annually. Non-hazardous wastes are tested by RCRA approved analysis prior to appropriate disposal. Wastes shown by analysis to be hazardous, are shipped off-site biannually to a licensed hazardous waste incinerator. All materials are stored in 55 gallon containers in lined containment.

Envirotech Maintenance Yard: Onsite disposal of wastes does not occur at this site with the exception of domestic sewage to a septic system and leach field. Distance to ground water is more than 60 feet. Total dissolved solids for groundwater are less than 500 mg/L. Approximately 1,000 gallons of used oil is generated at this site. The used oil is collected for recycling. Approximately 165 used oil filters are generated at this site annually, that are collected and temporarily stored in containment vessels. Used oil filters are drained and stored in containment vessels until they are collected by a waste management service for disposal in a local landfill.

All other waste stream materials are stored in drums and tanks within bermed containment. Spills from these containers are not expected to impact surface or ground water. Soils contaminated from oil/fuel leaks on equipment are collected, subject to TCLP and RCRA characterization annually. Collected, sampled soils are placed on Envirotech's Soil Remediation Facility, Landfarm #2 upon approval by NMOCD.

The discharge plan addresses how lab and maintenance product wastes will be properly handled, stored and disposed of, including how spills, leaks and other accidental discharges to the surface will be managed in order to protect fresh water. Any interested person may obtain information, submit comments of request to be placed on a facility specific mailing list for future notices by contacting Edward J Hansen at the New Mexico OCD at 1220 South St. Francis Drive, Santa Fe, New Mexico 87505, Telephone (505) 476-3489. The OCD will accept comments and statements of interest regarding the renewal and will create a facility-specific mailing list for persons who wish to receive future notices.

Legal No. 54673, published in The Daily Times, Farmington, New Mexico, on Thursday, February 22, 2007

AFFIDAVIT OF PUBLICATION

Ad No. 54679

STATE OF NEW MEXICO
County of San Juan:

ROBIN ALLISON, being duly sworn says: That she is the CLASSIFIED MANAGER of THE DAILY TIMES, a daily newspaper of general circulation published in English at Farmington, said county and state, and that the hereto attached Legal Notice was published in a regular and entire issue of the said DAILY TIMES, a daily newspaper duly qualified for the purpose within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico for publication and appeared in the Internet at The Daily Times web site on the following day(s):

Thursday February 22, 2007

And the cost of the publication is $140.17

Robin Allison

ON 2/28/07 ROBIN ALLISON appeared before me, whom I know personally to be the person who signed the above document.

Wynell Corey

My Commission Expires November 17, 2008

COPY OF PUBLICATION

NOTA PUBLICA

Envirotech, Inc. Morris D. Young, Presidente, 5796 US HWY 64, Farmington, NM 87401, se ha sometido una aplicación de la renovación para el plan previamente aprobado de la descarga (GW-221) para las facilidades de la oficina y la tienda localizo en el NE/4 del NW/4 de la Seccion 27, Municipio 29 al norte, la Gama 12 al oeste, NMPM, San Condado de Juan, Nuevo México, aproximadamente .5 millas al este del cruce del Camino de Condado 550 y la Carretera 64, Farmington, NM.

Envirotech Facilidad del laboratorio: En la disposición del sitio no ocurre, a excepcion del agua residual domestico a un sistema séptica y lixivia campo. La distancia para moler agua es mas de 60 pies. Total se disolvió los solidos promedian para el agua subterránea es menos de 500 mg/L. Aproximadamente 520 galones de liquido no peligroso y desecho solido de laboratorio son engendrados anualmente. Los desechos no peligrosos son probados por RCRA aprobo en análisis antes de la disposición apropiada. Los desechos mostrados por el análisis para ser peligrosos, son mandados el sitio semestralmente a un quemador de basura peligroso licenciado del desccho. Todas materias son almacenadas en 55 contenedores de galones en forro la contención.

Envirotech Yarda de la Conservación: En la disposición del sitio de desechos no ocurre en este sitio a excepcion del agua residual domestico a un sistema séptica y lixivia campo. La distancia para moler agua es mas de 60 pies. Total se disolvió los solidos para el agua subterránea son menos de 500 mg/L. Aproximadamente 1,000 galones del petroleo utilizado son engendrados en este sitio. El petroleo utllizado es reunido para reciclar. Aproximadamente 165 filtros de aceite utilizados son engendrados en este sitio anualmente, eso es reunido y es almacenado temporalmente en naves de contención. Los filtros de aceite utilizados son desaguados y son almacenados en naves de contención hasta que ellos sean reunidos por un servicio del tratamiento de desechos para la disposición en un vertedero local. Todas las otras materias de la corriente del desecho son almacenadas en tambores y tanques dentro de la contención de bermed. Rocia do estos contenedores no son esperados impresionar agua de superficie ni suelo. Las tierras contaminaron del petroleo/escapes do anualmente. Completo, probo tierras son colocadas en la Facilidad del Refuerzo de Tierra de Envirotech, Landfarm #2 sobre la aprobación por NMOCD. El plan de la descarga dirige como laboratorio y desechos de producto de conservación seran manejados apropiadamente, seran almacenados y seran desechos de, inclusive como rocia los comentarios o el pedido para ser colocado en una facilidad lista de envio especifica para notas futures contactando a Eduardo J. Hansen en el Nuevo México OCD en 1220 S. del sur. Francis Maneja, Santa Fe, Nuevo México 87505, el Telefono (505) 476-3489. El OCD aceptara los comentarios y las declaraciones del interes con respecto a la renovación y creara una facilidad lista de envio specifica para personas que desea recibir notas futures.

Legal No. 54679, published in The Daily Times, Farmington, New Mexico on Thursday, February 22, 2007

SENDER: COMPLETE THIS SECTION

- ☑ Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- ☐ Print your name and address on the reverse so that we can return the card to you.
- ☑ Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

RAY PADILLA
1809 E. MAIN
FARMINGTON, NM
87401

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X Raylene Garcia ☐ Agent ☑ Addressee

B. Received by (Printed Name) RAYLENE GARCIA C. Date of Delivery 3/6/07

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☑ Certified Mail ☐ Express Mail
☐ Registered ☑ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7004 2890 0004 1772 1158

PS Form 3811, August 2001 Domestic Return Receipt 102595-02-M-1540

SENDER: COMPLETE THIS SECTION

- ■ Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- ■ Print your name and address on the reverse so that we can return the card to you.
- ■ Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Jerry Clayton
501 Airport Dr
Farmington NM 87401

COMPLETE THIS SECTION ON DELIVERY

A. Signature
X ☐ Agent ☐ Addressee

B. Received by (Printed Name) C. Date of Delivery

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☐ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? (Extra Fee) ☐ Yes

2. Article Number (Transfer from service label) 7004 2890 0004 1772 1141

PS Form 3811, August 2001 Domestic Return Receipt 102595-02-M-1

Hansen, Edward J., EMNRD

From: Hansen, Edward J., EMNRD

Sent: Tuesday, March 06, 2007 1:36 PM

To: Thompson, Bruce C., DGF; Shendo, Benny, DIA; 'ddapr@nmda.nmsu.edu'; 'Linda_Rundell@nm.blm.gov'; 'sthompson@ago.state.nm.us'; 'r@rthicksconsult.com'; 'sricdon@earthlink.net'; 'nmparks@state.nm.us'; Dantonio, John, OSE; 'seligman@nmoga.org'; Martinez, Elysia, NMENV; 'lwa@lwasf.com'; 'lazarus@glorietageo.com'; Stone, Marissa, NMENV; 'ron.dutton@xcelenergy.com'; 'cgarcia@fs.fed.us'; 'jbarnett@barnettwater.com'; Bearzi, James, NMENV; 'mschulz@theitgroup.com'; 'bsg@garbhall.com'; 'jcc_crb@pacbell.net'; Olson, Bill, NMENV; 'claudette.horn@pnm.com'; 'ekendrick@montand.com'; 'ken@crihobbs.com'

Subject: GW221 and GW228: Public Notice for Renewal of Discharge Permit

Attachments: GW221 GW228 PermitNotice3_7_2007.pdf

Hansen, Edward J., EMNRD

From: Hansen, Edward J., EMNRD
Sent: Tuesday, March 06, 2007 1:41 PM
To: 'legals@sfnewmexican.com'
Subject: GW221 and GW228 Public Notice - New Mexican
Attachments: GW221 GW228 PermitNotice3_7_2007.DOC

Dear Ramona:

Please publish the attached notice(s) once in the classified-legal notice section of the newspaper. PO # is 52100-0000003956 Account # 56689 (account # included for Santa Fe paper only). Please mail an affidavit of proof of publication for the notice. Please contact me if you have questions. Thank you.
The Oil Conservation Division (OCD) appreciates the ad placement services that you provide to our agency. In order to streamline the review and approval process for newspaper ad invoices, the OCD requests that you send the original invoice with an original affidavit of proof of posting directly to the OCD requestor (contact info. usually at the bottom of e-mails or letters). This will help the proper OCD staff person responsible for the ad placement to promptly receive invoices from newspaper companies and quickly approve invoices for payment.

The OCD appreciates your cooperation and we look forward to working with you in the future. Please contact me if you have questions or need further assistance in this matter.

Edward J. Hansen
Oil Conservation Division
EMNRD
1220 S. St. Francis Dr.
Santa Fe, New Mexico 87505

505-476-3489

Hansen, Edward J., EMNRD

From: Hansen, Edward J., EMNRD
Sent: Tuesday, March 06, 2007 1:41 PM
To: 'legals@daily-times.com'
Subject: GW221 and GW228 Public Notice - Farmington Daily Times
Attachments: GW221 GW228 PermitNotice3_7_2007.DOC

Dear Sir or Madam:

Please publish the attached notice(s) once in the classified-legal notice section of the newspaper. PO # is 52100-0000000131. Please mail an affidavit of proof of publication for the notice. Please contact me if you have questions. Thank you.
The Oil Conservation Division (OCD) appreciates the ad placement services that you provide to our agency. In order to streamline the review and approval process for newspaper ad invoices, the OCD requests that you send the original invoice with an original affidavit of proof of posting directly to the OCD requestor (contact info. usually at the bottom of e-mails or letters). This will help the proper OCD staff person responsible for the ad placement to promptly receive invoices from newspaper companies and quickly approve invoices for payment.

The OCD appreciates your cooperation and we look forward to working with you in the future. Please contact me if you have questions or need further assistance in this matter.

Edward J. Hansen
Oil Conservation Division
EMNRD
1220 S. St. Francis Dr.
Santa Fe, New Mexico 87505

505-476-3489

NOTICE OF PUBLICATION

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

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations (20.6.2.3106 NMAC), the following discharge permit renewal application has been submitted to the Director of the New Mexico Oil Conservation Division ("NMOCD"), 1220 S. Saint Francis Drive, Santa Fe, New Mexico 87505, Telephone (505) 476-3440:

(GW221) Envirotech, Inc., Morris D. Young, President, 5796 U. S. Hwy 64, Farmington, New Mexico 87401, has submitted a renewal application for the previously approved discharge plan (GW 221) for the office and shop facilities located in the NE ¼ of the NW ¼ of Section 27, Township 29 N, Range 12 W, NMPM, San Juan County, New Mexico, approximately 0.5 miles east of the intersection of County Road 550 and Highway 64, Farmington, New Mexico. Approximately 520 gallons of non-hazardous liquid and solid lab waste, approximately 1,000 gallons of used oil, and approximately 165 used oil filters are generated annually, which are collected and temporarily stored in containment vessels prior to being transported and disposed of at an NMOCD approved facility. In case of a spill, leak, or accidental discharge an Emergency Response plan is in place, if this plan is not followed then groundwater of concern is approximately 60 feet below ground surface and has a total dissolved solids concentration of approximately 500 mg/L. This discharge plan outlines the procedures that are to be taken when handling/storing/disposing of waste generated from daily operations in order to avoid contamination of fresh water.

(GW228) CIP, Incorporated, Carl I. Padilla, 51 Road 5570, Farmington, New Mexico 87401, has submitted a renewal application for the previously approved discharge plan (GW 228) for their CIP, Inc. shop and yard located in the East ½ NW ¼ SE ¼ of Section 10, Township 29 N, Range 12 W and a portion of NE ¼ SE ¼ of Section 10, Township 29 N, Range 12 W, NMPM, Farmington, San Juan County, New Mexico. Approximately 250 gallons of oil & grease, 1,200-2,400 gallons of water for steam washing, sewage, office waste, and scrap metal are generated on site annually, which are collected and temporarily stored in containment vessels prior to being transported and disposed of at an NMOCD approved facility. In case of a spill, leak, or accidental discharge an Emergency Response plan is in place, if this plan is not followed then groundwater of concern is approximately 100 feet below ground surface and has a total dissolved solids concentration of approximately 1,000 mg/L. This discharge plan outlines the procedures that are to be taken when handling/storing/disposing of waste generated from daily operations in order to avoid contamination of fresh water.

The NMOCD has determined that the application is administratively complete and has prepared a draft permit. The NMOCD will accept comments and statements of interest regarding this application and will create a facility-specific mailing list for persons who wish to receive future notices. Persons interested in obtaining further information, submitting comments or requesting to be on a facility-specific mailing list for future notices may contact the Environmental Bureau Chief of the Oil Conservation Division at the address given above. The administrative completeness determination and draft permit may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday through Friday, or may also be viewed at the NMOCD web site http://www.emnrd.state.nm.us/ocd/. Persons interested in obtaining a copy of the application and draft permit may contact the NMOCD at the address given above. Prior to ruling on any proposed discharge permit or major modification, the Director shall allow a period of at least thirty (30) days after the date of publication of this notice, during which interested persons may submit comments or request that NMOCD hold a public hearing. Requests for a public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines that there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed permit based on information available,

including all comments received. If a public hearing is held, the director will approve or disapprove the proposed permit based on information in the permit application and information submitted at the hearing.

Para obtener más información sobre esta solicitud en español, sirvase comunicarse por favor: New Mexico Energy, Minerals and Natural Resources Department (Depto. Del Energia, Minerals y Recursos Naturales de Nuevo México), Oil Conservation Division (Depto. Conservacio´n Del Petróleo), 1220 South St. Francis Drive, Santa Fe, New México (Contacto: Dorothy Phillips, 505-476-3461)

GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 7th day of March, 2007.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

S E A L

Mark Fesmire, Director

Hansen, Edward J., EMNRD

From: Hansen, Edward J., EMNRD
Sent: Tuesday, March 06, 2007 1:39 PM
To: Stone, Ben, EMNRD
Subject: GW221 Draft Permit Posting on the OCD website
Attachments: GW221_AdminComp_TechIncompLetter.pdf; GW221 PermitNotice3_7_2007.pdf; GW221 Discharge Plan draft approval_3_7_07.pdf

Ben,
Please post these three documents on the OCD website
Thank you.

NOTICE OF PUBLICATION

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

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations (20.6.2.3106 NMAC), the following discharge permit renewal application has been submitted to the Director of the New Mexico Oil Conservation Division ("NMOCD"), 1220 S. Saint Francis Drive, Santa Fe, New Mexico 87505, Telephone (505) 476-3440:

(GW221) Envirotech, Inc., Morris D. Young, President, 5796 U. S. Hwy 64, Farmington, New Mexico 87401, has submitted a renewal application for the previously approved discharge plan (GW 221) for the office and shop facilities located in the NE ¼ of the NW ¼ of Section 27, Township 29 N, Range 12 W, NMPM, San Juan County, New Mexico, approximately 0.5 miles east of the intersection of County Road 550 and Highway 64, Farmington, New Mexico. Approximately 520 gallons of non-hazardous liquid and solid lab waste, approximately 1,000 gallons of used oil, and approximately 165 used oil filters are generated annually, which are collected and temporarily stored in containment vessels prior to being transported and disposed of at an NMOCD approved facility. In case of a spill, leak, or accidental discharge an Emergency Response plan is in place, if this plan is not followed then groundwater of concern is approximately 60 feet below ground surface and has a total dissolved solids concentration of approximately 500 mg/L. This discharge plan outlines the procedures that are to be taken when handling/storing/disposing of waste generated from daily operations in order to avoid contamination of fresh water.

The NMOCD has determined that the application is administratively complete and has prepared a draft permit. The NMOCD will accept comments and statements of interest regarding this application and will create a facility-specific mailing list for persons who wish to receive future notices. Persons interested in obtaining further information, submitting comments or requesting to be on a facility-specific mailing list for future notices may contact the Environmental Bureau Chief of the Oil Conservation Division at the address given above. The administrative completeness determination and draft permit may be viewed at the above address between 8:00 a.m. and 4:00 p.m., Monday through Friday, or may also be viewed at the NMOCD web site http://www.emnrd.state.nm.us/ocd/. Persons interested in obtaining a copy of the application and draft permit may contact the NMOCD at the address given above. Prior to ruling on any proposed discharge permit or major modification, the Director shall allow a period of at least thirty (30) days after the date of publication of this notice, during which interested persons may submit comments or request that NMOCD hold a public hearing. Requests for a public hearing shall set forth the reasons why a hearing should be held. A hearing will be held if the Director determines that there is significant public interest.

If no public hearing is held, the Director will approve or disapprove the proposed permit based on information available, including all comments received. If a public hearing is held, the director will approve or disapprove the proposed permit based on information in the permit application and information submitted at the hearing.

Para obtener más información sobre esta solicitud en español, sirvase comunicarse por favor: New Mexico Energy, Minerals and Natural Resources Department (Depto. Del Energia, Minerals y Recursos Naturales de Nuevo México), Oil Conservation Division (Depto. Conservacio´n Del Petróleo), 1220 South St. Francis Drive, Santa Fe, New México (Contacto: Dorothy Phillips, 505-476-3461)

GIVEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on this 7th day of March, 2007.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

S E A L

Mark Fesmire, Director

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

BILL RICHARDSON
Governor
Joanna Prukop
Cabinet Secretary

Mark E. Fesmire, P.E.
Director
Oil Conservation Division

March 7, 2007

Morris D. Young
President
Envirotech, Inc.
5796 U.S. Highway 64
Farmington, New Mexico 87401

RE: Discharge Plan Permit (GW-221) Renewal DRAFT
Envirotech, Inc. Main Office and Maintenance Yard

Dear Mr. Young:

Pursuant to Water Quality Control Commission (WQCC) Regulations 20.6.2.3000 - 20.6.2.3114 NMAC, the Oil Conservation Division (OCD) hereby approves the discharge permit for the Envirotech, Inc. (owner/operator) Envirotech, Inc. Main Office and Maintenance Yard located in the NE/4 of the NW/4 of Section 27, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico, under the conditions specified in the enclosed **Attachment To The Discharge Permit**. Enclosed are two copies of the conditions of approval. **Please sign and return one copy to the New Mexico Oil Conservation Division (OCD) Santa Fe Office within 30 working days of receipt of this letter including permit fees.**

Please be advised that approval of this permit does not relieve the owner/operator of responsibility should operations result in pollution of surface water, ground water or the environment. Nor does approval of the permit relieve the owner/operator of its responsibility to comply with any other applicable governmental authority's rules and regulations.

If you have any questions, please contact Edward J. Hansen of my staff at (505-476-3489) or E-mail edwardj.hansen@state.nm.us. On behalf of the staff of the OCD, I wish to thank you and your staff for your cooperation during this discharge permit review.

Sincerely,

Wayne Price
Environmental Bureau Chief

LWP/ejh
Attachments-1
xc: OCD District Office

ATTACHMENT TO THE DISCHARGE PERMIT RENEWAL
Envirotech, Inc. Main Office and Maintenance Yard (GW221)
DISCHARGE PERMIT APPROVAL CONDITIONS
March 7, 2007

Please remit a check for $1700.00 made payable to Water Quality Management Fund:

Water Quality Management Fund
C/o: Oil Conservation Division
1220 S. Saint Francis Drive
Santa Fe, New Mexico 87505

1. **Payment of Discharge Plan Fees:** All discharge permits are subject to WQCC Regulations. Every billable facility that submits a discharge permit application will be assessed a filing fee of $100.00, plus a renewal flat fee (*see* WQCC Regulation 20.6.2.3114 NMAC). The Oil Conservation Division ("OCD") has received the required $100.00 filing fee. However, the owner/operator still owes the required $1700.00 renewal permit fee for an oil and gas service company.

2. **Permit Expiration, Renewal Conditions and Penalties:** Pursuant to WQCC Regulation 20.6.2.3109.H.4 NMAC, this permit is valid for a period of five years. **The permit will expire on November 16, 2010** and an application for renewal should be submitted no later than 120 days before that expiration date. Pursuant to WQCC Regulation 20.6.2.3106.F NMAC, if a discharger submits a discharge permit renewal application at least 120 days before the discharge permit expires and is in compliance with the approved permit, then the existing discharge permit will not expire until the application for renewal has been approved or disapproved. ***Expired permits are a violation of the Water Quality Act {Chapter 74, Article 6, NMSA1978} and civil penalties may be assessed accordingly.***

3. **Permit Terms and Conditions:** Pursuant to WQCC Regulation 20.6.2.3104 NMAC, when a permit has been issued, the owner/operator must ensure that all discharges shall be consistent with the terms and conditions of the permit. In addition, all facilities shall abide by the applicable rules and regulations administered by the OCD pursuant to the Oil and Gas Act, NMSA 1978, Sections 70-2-1 through 70-2-38.

4. **Owner/Operator Commitments:** The owner/operator shall abide by all commitments submitted in its January 5, 2007, discharge permit renewal application, including attachments and subsequent amendments and these conditions for approval. Permit applications that reference previously approved plans on file with the division shall be incorporated in this permit and the owner/operator shall abide by all previous commitments of such plans and these conditions for approval.

5. Modifications: WQCC Regulation 20.6.2.3107.C, and 20.6.2.3109 NMAC addresses possible future modifications of a permit. The owner/operator (discharger) shall notify the OCD of any facility expansion, production increase or process modification that would result in any significant modification in the discharge of water contaminants. The Division Director may require a permit modification if any water quality standard specified at 20.6.2.3103 NMAC is being or will be exceeded, or if a toxic pollutant as defined in WQCC Regulation 20.6.2.7 NMAC is present in ground water at any place of withdrawal for present or reasonably foreseeable future use, or that the Water Quality Standards for Interstate and Intrastate streams as specified in 20.6.4 NMAC are being or may be violated in surface water in New Mexico.

6. Waste Disposal and Storage: The owner/operator shall dispose of all wastes at an OCD-approved facility. Only oil field RCRA-exempt wastes may be disposed of by injection in a Class II well. RCRA non-hazardous, non-exempt oil field wastes may be disposed of at an OCD-approved facility upon proper waste determination pursuant to 40 CFR Part 261. Any waste stream that is not listed in the discharge permit application must be approved by the OCD on a case-by-case basis.

A. OCD Rule 712 Waste: Pursuant to OCD Rule 712 (19.15.9.712 NMAC) disposal of certain non-domestic waste without notification to the OCD is allowed at NMED permitted solid waste facilities if the waste stream has been identified in the discharge permit and existing process knowledge of the waste stream does not change.

B. Waste Storage: The owner/operator shall store all waste in an impermeable bermed area, except waste generated during emergency response operations for up to 72 hours. All waste storage areas shall be identified in the discharge permit application. Any waste storage area not identified in the permit shall be approved on a case-by-case basis only. The owner/operator shall not store oil field waste on-site for more than 180 days unless approved by the OCD.

7. **Drum Storage:** The owner/operator must store all drums, including empty drums, containing materials other than fresh water on an impermeable pad with curbing. The owner/operator must store empty drums on their sides with the bungs in place and lined up on a horizontal plane. The owner/operator must store chemicals in other containers, such as tote tanks, sacks, or buckets on an impermeable pad with curbing.

8. Process, Maintenance and Yard Areas: The owner/operator shall either pave and curb or have some type of spill collection device incorporated into the design at all process, maintenance, and yard areas which show evidence that water contaminants from releases, leaks and spills have reached the ground surface.

9. Above Ground Tanks: The owner/operator shall ensure that all aboveground tanks have impermeable secondary containment (e.g., liners and berms), which will contain a volume of at least one-third greater than the total volume of the largest tank or all interconnected tanks. The owner/operator shall retrofit all existing tanks before discharge permit renewal. Tanks that contain fresh water or fluids that are gases at atmospheric temperature and pressure are exempt from this condition.

10. Labeling: The owner/operator shall clearly label all tanks, drums, and containers to identify their contents and other emergency notification information. The owner/operator may use a tank code numbering system, which is incorporated into their emergency response plans.

11. Below-Grade Tanks/Sumps and Pits/Ponds.

A. All below-grade tanks and sumps must be approved by the OCD prior to installation and must incorporate secondary containment with leak detection into the design. The owner/operator shall retrofit all existing systems without secondary containment and leak detection before discharge permit renewal. All existing below-grade tanks and sumps without secondary containment and leak detection must be tested annually or as specified herein. Systems that have secondary containment with leak detection shall have a monthly inspection of the leak detection system to determine if the primary containment is leaking. Small sumps or depressions in secondary containment systems used to facilitate fluid removal are exempt from these requirements if fluids are removed within 72 hours.

B. All pits and ponds, including modifications and retrofits, shall be designed by a certified registered professional engineer and approved by the OCD prior to installation. In general, all pits or ponds shall have approved hydrologic and geologic reports, location, foundation, liners, and secondary containment with leak detection, monitoring and closure plans. All pits or ponds shall be designed, constructed and operated so as to contain liquids and solids in a manner that will protect fresh water, public health, safety and the environment for the foreseeable future. The owner/operator shall retrofit all existing systems without secondary containment and leak detection before discharge permit renewal.

C. The owner/operator shall ensure that all exposed pits, including lined pits and open top tanks (8 feet in diameter or larger) shall be fenced, screened, netted, or otherwise rendered non-hazardous to wildlife, including migratory birds.

D. The owner/operator shall maintain the results of tests and inspections at the facility covered by this discharge permit and available for OCD inspection. The owner/operator shall report the discovery of any system which is found to be leaking or has lost integrity to the OCD within 15 days. The owner/operator may propose various methods for testing such as pressure testing to 3 pounds per square inch greater than normal operating pressure and/or visual inspection of cleaned tanks and/or sumps, or other OCD-approved methods. The owner/operator shall notify the OCD at least 72 hours prior to all testing.

12. Underground Process/Wastewater Lines:

A. The owner/operator shall test all underground process/wastewater pipelines at least once every five (5) years to demonstrate their mechanical integrity, except lines containing fresh water or fluids that are gases at atmospheric temperature and pressure. Pressure rated pipe shall be tested by pressuring up to one and one-half times the normal operating pressure, if possible, or for atmospheric drain systems, to 3 pounds per square inch greater than normal operating pressure, and pressure held for a minimum of 30 minutes with no more than a 1% loss/gain in pressure. The owner/operator may use other methods for testing if approved by the OCD.

B. The owner/operator shall maintain underground process and wastewater pipeline schematic diagrams or plans showing all drains, vents, risers, valves, underground piping, pipe type, rating, size, and approximate location. All new underground piping must be approved by the OCD prior to installation. The owner/operator shall report any leaks or loss of integrity to the OCD within 15 days of discovery. The owner/operator shall maintain the results of all tests at the facility covered by this discharge permit and they shall be available for OCD inspection. The owner/operator shall notify the OCD at least 72 hours prior to all testing.

13. Class V Wells: The owner/operator shall close all Class V wells (e.g., septic systems, leach fields, dry wells, etc.) that inject non-hazardous industrial wastes or a mixture of industrial wastes and domestic wastes unless it can be demonstrated that ground water will not be impacted in the reasonably foreseeable future. Leach fields and other wastewater disposal systems at OCD-regulated facilities that inject non-hazardous fluid into or above an underground source of drinking water are considered Class V injection wells under the EPA UIC program. Class V wells that inject domestic waste only, must be permitted by the New Mexico Environment Department (NMED).

14. Housekeeping: The owner/operator shall inspect all systems designed for spill collection/prevention and leak detection at least monthly to ensure proper operation and to prevent over topping or system failure. All spill collection and/or secondary containment devices shall be emptied of fluids within 72 hours of discovery. The owner/operator shall maintain all records at the facility and available for OCD inspection.

15. Spill Reporting: The owner/operator shall report all unauthorized discharges, spills, leaks and releases and conduct corrective action pursuant to WQCC Regulation 20.5.12.1203 NMAC and OCD Rule 116 (19.15.3.116 NMAC). The owner/operator shall notify both the OCD District Office and the Santa Fe Office within 24 hours and file a written report within 15 days.

16. OCD Inspections: The OCD may place additional requirements on the facility and modify the permit conditions based on OCD inspections.

17. Storm Water: The owner/operator shall implement and maintain run-on and runoff plans and controls. The owner/operator shall not discharge any water contaminant that exceeds the WQCC standards specified in 20.6.2.3101 NMAC or 20.6.4 NMAC (Water Quality Standards for Interstate and Intrastate Streams) including any oil sheen in any stormwater run-off. The owner/operator shall notify the OCD within 24 hours of discovery of any releases and shall take immediate corrective action(s) to stop the discharge.

18. Unauthorized Discharges: The owner/operator shall not allow or cause water pollution, discharge or release of any water contaminant that exceeds the WQCC standards listed in 20.6.2.3101 NMAC or 20.6.4 NMAC (Water Quality Standards for Interstate and Intrastate Streams) unless specifically listed in the permit application and approved herein. ***An unauthorized discharge is a violation of this permit.***

19. Vadose Zone and Water Pollution: The owner/operator shall address any contamination through the discharge permit process or pursuant to WQCC 20.6.2.4000-.4116 NMAC (Prevention and Abatement of Water Pollution). The OCD may require the owner/operator to modify its permit for investigation, remediation, abatement, and monitoring requirements for any vadose zone or water pollution. Failure to perform any required investigation, remediation, abatement and submit subsequent reports will be a violation of the permit.

20. Additional Site Specific Conditions: N/A

21. Transfer of Discharge Permit (WQCC 20.6.2.3111) Prior to any transfer of ownership, control, or possession (whether by lease, conveyance or otherwise) of a facility with a discharge permit, the transfer or shall notify the transferee in writing of the existence of the discharge permit, and shall deliver or send by certified mail to the department 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 permit, and the transferee shall be charged with notice of all such provisions and requirements as they appear of record in the department's file or files concerning such discharge permit. The transferee (new owner/operator) shall sign and return an original copy of these permit conditions and provide a written commitment to comply with the terms and conditions of the previously approved discharge permit.

22. Closure: The owner/operator shall notify the OCD when operations of the facility are to be discontinued for a period in excess of six months. Prior to closure of the facility, the operator shall submit a closure plan for approval. Closure and waste disposal shall be in accordance with the statutes, rules and regulations in effect at the time of closure.

23. Certification: Envirotech, Inc., (Owner/Operator), by the officer whose signature appears below, accepts this permit and agrees to comply with all submitted commitments, including these terms and conditions contained here. **Owner/Operator** further acknowledges that the OCD may, for good cause shown, as necessary to protect fresh water, public health, safety, and the environment, change the conditions and requirements of this permit administratively.

Conditions accepted by: "I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information including the possibility of fine and imprisonment."

_____
Company Name-print name above

_____
Company Representative- print name

_____
Company Representative- signature

Title_____

Date:_____

Hansen, Edward J., EMNRD

From: April Pohl [apohl@envirotech-inc.com]
Sent: Wednesday, February 28, 2007 1:42 PM
To: Hansen, Edward J., EMNRD
Cc: Denny Foust; Morris Young
Subject: RE: Letter of February 23 for GW-221
Attachments: ENVIROTECH MAIN OFFICE.doc

Mr. Hansen:

Please see attachment per your request. We had the Public Notice published February 22, 2007. We have not yet received the affidavit of publication from the newspaper. I do have a call in to them asking for the affidavit. Would you like me to send you a copy of the notice as well? I sent out the certified mail notices to seven neighboring landowners but have only received four in return. Would you like the original green return cards or would copies suffice? I have copies of all seven certified mail notices on the envelopes that were sent, would copies of the envelopes sent out but not returned suffice? How long do I wait to see if any more receipts come back? I would like to get this in the mail by Friday so we can get it wrapped up.

April E Pohl
Landfarm Administrator
Envirotech Inc
505-632-0615 office
505-632-1865 fax
505-320-6431 cell

From: Hansen, Edward J., EMNRD [mailto:edwardj.hansen@state.nm.us]
Sent: Tuesday, February 27, 2007 6:31 PM
To: April Pohl
Cc: Price, Wayne, EMNRD
Subject: Letter of February 23 for GW-221

April,
Thanks for sending your revised renewal application - we are almost there: please send me (you can email it) a revised page 2 with the edit of striking the phrase "...per request of NMOCD". The disposal of the lab waste at an out-of-state landfill is not a request of OCD. This is one option that is available to you.
Thank you for your cooperation in this matter.

P.S.: be sure to provide proof of public notice as stated below - let me know if you have any further questions

Edward J. Hansen
Hydrologist
Environmental Bureau
505-476-3489

From: Hansen, Edward J., EMNRD
Sent: Thursday, February 08, 2007 6:12 PM
To: 'April Pohl'
Cc: Price, Wayne, EMNRD
Subject: RE: Letter of January 24 for GW-221

April,

I have received and reviewed your edited Public Notice and edited renewal application for GW221.

The OCD hereby approves your submitted draft version of the Public Notice for translation into Spanish and publication in the specified newspaper in both English and Spanish.
The public notice must be given no later than February 22, 2007. Once the notice has been given, then please submit to the OCD within 15 days of public notice:

1) proof that the notice was published in the newspaper in both English and Spanish (affidavit of publication from the newspaper) and
2) proof that the notice was sent via certified mail to each landowner [signed certified mail receipt (green card) by each landowner – *this is not required if you are the landowner*].

Regarding the edited renewal application, most of the edits are acceptable to the OCD. However, #8 (for the Main Office) All storage on site is in drums or smaller containers must be edited to strike the phrase "...at NMOCD permitted Landfarm #2." The OCD has reviewed your protocol (faxed 1-30-07). The protocol is unacceptable to ensure the proper disposal laboratory waste at Landfarm #2. The disposal of non-hazardous laboratory waste cannot be allowed at the landfarm. In addition, please indicate where the non-hazardous laboratory waste will be disposed (i.e., name address and location of the disposal facility).

Edward J. Hansen
Hydrologist
Environmental Bureau
505-476-3489

From: Hansen, Edward J., EMNRD
Sent: Tuesday, January 30, 2007 12:42 PM
To: 'April Pohl'
Cc: Price, Wayne, EMNRD
Subject: RE: Letter of January 24 for GW-221

April,

I spoke with Wayne regarding the disposal of waste soils from the lab. We are concerned that the waste soils are not only non-hazardous, but also acceptable to be disposed at the landfarm. Therefore, please send me your written protocol for determining that the waste soils or sludges are acceptable to be disposed at the landfarm. Also, the protocol must be for testing of TPH-contaminated soils or sludges only. The protocol must be sent (via FAX or email) by 5:00 p.m. today. If an acceptable protocol cannot be sent today, then other disposal arrangements for the waste soils / sludges must be made.

If you have any further questions regarding this matter, please contact me.

Edward J. Hansen
Hydrologist
Environmental Bureau
505-476-3489 office
505-476-3462 fax

From: April Pohl [mailto:apohl@envirotech-inc.com]
Sent: Tuesday, January 30, 2007 11:13 AM
To: Hansen, Edward J., EMNRD

Subject: Letter of January 24 for GW-221

Dear Mr. Hansen:

In your letter of January 24, 2007 you mentioned laboratory waste is not to go to landfarms in Item #6. However, our lab waste is soil and sludge samples from testing material for acceptance into our landfarm. In essence, our lab waste is material we have been approved to accept into our landfarm by the NMOCD. According to Morris Young, the former administrator of our GW-221, Mr. Roger Anderson, set up this format as we are accepting the remains of our soil as proved non-hazardous by testing. If you have further questions please feel free to contact me either by phone or email.

We are in the process of making the corrections you listed in your letter so we can send out the corrected version for your approval.

Thank you very much,

April E Pohl
Landfarm Administrator
Envirotech Inc
apohl@envirotech-inc.com
505-632-0615 office
505-632-1865 fax
505-320-6431 cell

2-28-07
page replaced
EJ

6. Description of all materials used or stored at the facility:
Hand soap
Paint and paint supplies. Various containers less than 20 gal.
Sulfuric acid liquid. Stored in original plastic, estimated 3.5 liters in lab
Hydrochloric acid liquid. Original glass, estimated 2.5 liters in lab
Nitric acid liquid. Original glass, estimated 2.5 liters in lab
Acetic acid liquid. Original glass, estimated 12.5 liters in lab
Sodium hydroxide liquid. Original plastic, estimated 1 liter in lab
Alconox solid. Original container, estimated 20 lb in lab
Micro-90 liquid. Original plastic, estimated 1 quart in lab
No-Chromix liquid. Original glass, estimated .5 quart in lab
Freon 113 liquid. Original glass, estimated 2 liters in lab
Methylene Chloride liquid. Original glass, estimated 4 liters in lab
Hexane liquid. Original glass, estimated 8 liters in lab
Ispropanol liquid. Original glass, estimated 8 liters in lab
Methanol liquid. Original glass, estimated 16 liters in lab
n-propanol liquid. Original glass, estimated 4 liters in lab
Cyclohexane liquid. Original glass, estimated 4 liters in lab
Toluene liquid. Original glass, estimated 500 ml in lab

7. Lab waste, solid and liquid. Stored in drum w/lid, less than a total of 100 gal in lab and yard.
Soil/water samples containing Methylene Chloride, Freon or Methanol as solvent extraction residue. Various acids used in extraction and analysis from lab samples.

8. All storage on site is in drums or smaller containers. On-site storage is in either original containers (unused products) or in other appropriate containers (used products). Unused laboratory products are stored in the lab in the original containers. Most products are stored in segregated fire-resistant cabinets (not vented) with built-in secondary containment. Lab waste is collected at point of use and stored in containers compatible with waste being stored. When full, lab containers are transferred into drums located in yard.

There are no surface impoundments located on-site. There is no underground process piping. Facility is less than 30 years old. On-site disposal does not occur at this site, with the exception of domestic sewage to septic system and leach field.

Lab solids and liquids are segregated into hazardous and non-hazardous (by listing). Non-hazardous wastes will go for disposal at an appropriate out-of-state landfill per request of NMOCD. Hazardous wastes, if any, are shipped off-site biannually to a licensed hazardous waste incinerator. Different incinerators are used depending on price and availability. Approval from receiving facility is received prior to shipment.

ENVIROTECH INC.
PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

RECEIVED
FEB 27 2007
Oil Conservation Division
1220 S. St. Francis Drive
Santa Fe, NM 87505

February 23, 2007

Mr. Edward J. Hansen, Hydrologist
State of New Mexico Oil Conservation Bureau
1220 South Saint Francis Drive
Santa Fe, NM 87505

Phone (505) 476-3489
Fax (505) 476-3462

RE: Discharge Permit Application – Revised – 2/23/2007
Envirotech, Inc.

Dear Mr. Hansen:

Attached please find a Renewal Discharge Plan Application for Oilfield Service Facilities that has been completed for Envirotech, Inc.

As the two (2) facilities are close in location, both are covered under the same application. However, each location will be submitting information individually. The main office is located at 5796 U.S. Hwy 64 and the shop yard is located at 5726 U.S. Hwy 64, both in Farmington, NM.

ENVIROTECH MAIN OFFICE:

1. Oilfield Service Company

2. Envirotech, Inc.
5796 U.S. Hwy 64, Farmington, NM 87413
Contact person: Morris D. Young; Phone (505) 632-0615

3. NE/4 NW/4 Section 27, Township 29 North, Range 12 West. A 7.5 minute topographic map is attached.

4. Mr. Jerry Clayton is the land owner. Mr. Clayton's address is 501 Airport Drive, Farmington, NM 87401. Phone (505) 326-5571.

5. Site is located approximately 1500 yards east of the intersection of U.S. Hwy 64 and County Road 5500 in Farmington, NM.

   A plat map of the subject property is attached.

   Solid and liquid waste generated from our laboratory is currently stored in labeled drums at the eastern property boundary.

   The facility is fenced and has no pits.

6. Description of all materials used or stored at the facility:
Hand soap
Paint and paint supplies. Various containers less than 20 gal.
Sulfuric acid liquid. Stored in original plastic, estimated 3.5 liters in lab
Hydrochloric acid liquid. Original glass, estimated 2.5 liters in lab
Nitric acid liquid. Original glass, estimated 2.5 liters in lab
Acetic acid liquid. Original glass, estimated 12.5 liters in lab
Sodium hydroxide liquid. Original plastic, estimated 1 liter in lab
Alconox solid. Original container, estimated 20 lb in lab
Micro-90 liquid. Original plastic, estimated 1 quart in lab
No-Chromix liquid. Original glass, estimated .5 quart in lab
Freon 113 liquid. Original glass, estimated 2 liters in lab
Methylene Chloride liquid. Original glass, estimated 4 liters in lab
Hexane liquid. Original glass, estimated 8 liters in lab
Ispropanol liquid. Original glass, estimated 8 liters in lab
Methanol liquid. Original glass, estimated 16 liters in lab
n-propanol liquid. Original glass, estimated 4 liters in lab
Cyclohexane liquid. Original glass, estimated 4 liters in lab
Toluene liquid. Original glass, estimated 500 ml in lab

7. Lab waste, solid and liquid. Stored in drum w/lid, less than a total of 100 gal in lab and yard.
Soil/water samples containing Methylene Chloride, Freon or Methanol as solvent extraction residue. Various acids used in extraction and analysis from lab samples.

8. All storage on site is in drums or smaller containers. On-site storage is in either original containers (unused products) or in other appropriate containers (used products). Unused laboratory products are stored in the lab in the original containers. Most products are stored in segregated fire-resistant cabinets (not vented) with built-in secondary containment. Lab waste is collected at point of use and stored in containers compatible with waste being stored. When full, lab containers are transferred into drums located in yard.

There are no surface impoundments located on-site. There is no underground process piping. Facility is less than 30 years old. On-site disposal does not occur at this site, with the exception of domestic sewage to septic system and leach field.

Lab solids and liquids are segregated into hazardous and non-hazardous (by listing). Non-hazardous wastes will go for disposal at an appropriate out-of-state landfill. Hazardous wastes, if any, are shipped off-site biannually to a licensed hazardous waste incinerator. Different incinerators are used depending on price and availability. Approval from receiving facility is received prior to shipment.

9. There are no proposed modifications to the site at this time.

10. Routine inspection: Lab supplies and waste are tracked closely on a daily basis.

11. Contingency plan for reporting and cleanup of spills: All materials are stored in four (4) 55 gallon containers and spills from these containers are not expected to impact surface or ground water. Storage area is bermed and lined. Containers are inspected on a regular basis to prevent leaks related to corrosion.

    Spillage will be collected and placed into a container for continued storage. NMOCD will not be notified of spills less than reportable quantities.

12. The San Juan River is located approximately 3900 feet south of the site. An unnamed dry wash is located approximately 1900 feet west of the site with a dry wash drainage ditch located approximately 50 feet east of the site. All streams in the vicinity flow to the San Juan River.

    Water well locations are noted on the attached map. There are 61 wells located within a one (1) mile radius of the site. These wells are located according to "Records of Water Wells and Springs prior to 1978", "Records of Water Wells in San Juan County 1978-1983", and "Listings of Point of Diversion for the San Juan Basin in New Mexico 2/7/92".

    Soil types are typically cobble filled sandy loams ranging from silty to clayey sands. Soils are typically moist, loose, non-cohesive, and have high permeability.

    The aquifer below site is not named and is typically poorly graded medium sand with varying amounts of cobble and silt. Depth to bedrock is anticipated in excess of 60 feet below the site. Flooding potential and run-off potential is very minimal; therefore flood protection measures are not required. Due to thorough tracking of lab wastes, impact to either ground water or surface water is not probable.

13. Facility closure plan: Lab testing will cease and waste will not be generated. Any material in containers will be taken to an out-of-state landfill per NMOCD request. Envirotech Soil Remediation Facility currently has an existing Discharge permit, and is not included in this application.

ENVIROTECH MAINTENANCE YARD:

1. Oilfield Service Company

2. Envirotech, Inc.
   5796 U.S. Hwy 64, Farmington, NM 87413
   Contact person: Morris D. Young; Phone (505) 632-0615

3. NE/4 NW/4 Section 27, Township 29 North, Range 12 West. A 7.5 minute topographic map is attached.

4. Mr. Ray Padilla is the land owner. Mr. Padilla's address is 1809 East Main, Farmington, NM 87401. Phone (505) 325-0046.

5. Site is located approximately 100 yards west of the intersection of U.S. Hwy 64 and County Road 5500 in Farmington, NM.

   A plat map of the subject property is attached, including location of the current tank and barrels at the facility.

   The facility is fenced and there is one (1) bermed area enclosing a 4,000 gal double walled convault fuel tank for diesel. The tank is enclosed in a cement containment.

6. Description of material used or stored at the facility:
   Paint and paint supplies. Various containers less than 20 gal stored in shop area.
   Hand soap.
   Diesel, contained in double walled convault, 4000 gal, cement containment.
   Motor oil, less than 50 gal in enclosed metal drum.
   Solid grease for lubrication.

7. Waste solids and effluent:
   Used motor oil, less than 100 gal. Used as fuel, excess is recycled.
   Used filters, less than 6.
   Occasional oil fuel. 1-2 gal.

8. Collection and Disposal:
   All storage on site is in drums or smaller containers. On-site storage is in either original containers (unused products) or in other appropriate containers (used products). Spent acid is stored in original battery until entire battery is picked up by recycler, no formal approval needed.
   Filters are drained while hot, liquid goes into waste drum. Sixteen filters per month are permitted at the landfill.

   Soils contaminated from oil/fuel leaks on equipment are subject to TCLP and RCRA characterization annually. Collected, sampled soils are placed on Envirotech's Soil Remediation Facility, Landfarm #2 upon approval by NMOCD.

   Most storage is inside of the building on the cement floor. There are no floor drains in the work area or storage area.

   This facility is less than 30 years old and there is no underground process.

On-site disposal does not occur at this site, with the exception of domestic sewage to a septic system and leach field.

Off-site disposal is allowed through recyclers. Used motor oil (in excess of 4 drums) is picked up by Mesa Petroleum of Albuquerque, NM. Used lead-acid batteries are sent to Intermountain Batteries, located at 534 East Broadway, Farmington, NM, when new batteries are delivered to the site. Both facilities dispatch their own trucks and personnel to collect material from the Maintenance Yard.

The trash is collected weekly by Waste Management of Four Corners, located at 101 Spruce Street, Farmington, NM, for placement at the San Juan County Landfill. A maximum of four (4) filters per week are permitted for disposal through this method.

9. There are no proposed modifications to the site at this time.

10. The facility will be inspected monthly by management for leaks and spillage. A record of each inspection will be kept at the main office. Any reportable quantities will be reported to the NMOCD.

Monitor wells are not located at this site.

The used oil tank is contained in a lined berm with a fence around the secondary containment.

11. Whereas all material is stored in secondary containment (as a minimum), spillage will be into contained areas. There is not any anticipated threat to surface or groundwater.

Spillage will be collected from its containment and placed into its container (or equivalent) for continued storage. NMOCD will not be notified of spills less than reportable quantities.

All containment is visually inspected from all sides, which makes a leak of quantity easily detectable. A monthly inspection by management and frequent use of the facility by employees ensures leaks are repaired with only minor spillage.

There is not an injection well at this site.

12. The San Juan River is located approximately 3900 feet south of the site. An unnamed dry wash is located approximately 1900 feet east of the site. All streams in the vicinity flow to the San Juan River.

Water well locations are noted on the attached map. There are 61 wells located with in a one (1) mile radius of the site. These wells are located according to "Records of Water Wells and Springs prior to 1978", "Records of Water Wells in San Juan County 1978-1983", and "Listings of Point of Diversion for the San Juan Basin in New Mexico 2/7/92".

Soil types are typically cobble filled sandy loams ranging from silty to clayey sands. Soils are typically moist, loose, non-cohesive, and have high permeability.

The aquifer below site is not named and is typically poorly graded medium sand with varying amounts of cobble and silt. Depth to bedrock is anticipated in excess of 60 feet below the site. Flooding potential and run-off potential is very minimal therefore flood protection measures are not needed. Due to thorough tracking of shop wastes, impact to either ground water or surface water is not probable.

13. Facility closure plan: Shop use will cease and waste will not be generated. All existing waste will be disposed of as specified previously. Envirotech Soil Remediation Facility has a currently existing Discharge permit, and is not included in this application.

Should you need any clarification of our responses, or have any comments, please contact us at (505) 632-0615.

Respectfully Submitted,
ENVIROTECH, INC.

Morris D. Young
President

Hansen, Edward J., EMNRD

From: Hansen, Edward J., EMNRD
Sent: Thursday, February 15, 2007 11:20 AM
To: 'April Pohl'
Subject: RE: Lab waste disposal

April,
I spoke with John Hall (Ground Water Quality Bureau, NMED) regarding the disposal of this waste at the NMED landfarm. He said it would not be allowed at an NMED landfarm because the waste would be considered an "OCD waste". Also, this waste cannot be disposed at a NMED solid waste landfill under OCD Rule 712, but could be disposed at an OCD landfill. Another option for disposal of this laboratory waste would be at the solid waste landfill in Colorado near Durango (assuming that landfill would accept it) or some other out-of-state landfill or landfarm if they can accept it.

Therefore, your discharge permit renewal application must be edited to reflect another disposal option for this laboratory waste (i.e., either an OCD landfill in New Mexico or some out-of-state disposal option). Please submit this edit by Friday, February 23, 2007.

If you have any questions regarding this matter, please contact me.
Thank you.

Edward J. Hansen
Hydrologist
Environmental Bureau
505-476-3489

From: April Pohl [mailto:apohl@envirotech-inc.com]
Sent: Monday, February 12, 2007 8:23 AM
To: Hansen, Edward J., EMNRD
Subject: Lab waste disposal

Good morning Mr. Hansen:

In accordance with your last email asking for disposal arrangements for the non-hazardous lab waste. Envirotech Inc will be accepting the non-hazardous lab waste at our NMED permitted landfarm #3. This will be at:

Envirotech Inc
Landfarm #3
Hilltop, NM

If you have any questions please feel free to call me or email in return.

April E Pohl
Landfarm Administrator
Envirotech Inc
505-632-0615 office
505-632-1865 fax
505-320-6431 cell

Hansen, Edward J., EMNRD

From: Hansen, Edward J., EMNRD
Sent: Thursday, February 08, 2007 6:12 PM
To: 'April Pohl'
Cc: Price, Wayne, EMNRD
Subject: RE: Letter of January 24 for GW-221

April,

I have received and reviewed your edited Public Notice and edited renewal application for GW221.
The OCD hereby approves your submitted draft version of the Public Notice for translation into Spanish and publication in the specified newspaper in both English and Spanish.
The public notice must be given no later than February 22, 2007. Once the notice has been given, then please submit to the OCD within 15 days of public notice:

1) proof that the notice was published in the newspaper in both English and Spanish (affidavit of publication from the newspaper) and
2) proof that the notice was sent via certified mail to each landowner [signed certified mail receipt (green card) by each landowner – *this is not required if you are the landowner*].

Regarding the edited renewal application, most of the edits are acceptable to the OCD. However, #8 (for the Main Office) All storage on site is in drums or smaller containers must be edited to strike the phrase "...at NMOCD permitted Landfarm #2." The OCD has reviewed your protocol (faxed 1-30-07). The protocol is unacceptable to ensure the proper disposal laboratory waste at Landfarm #2. The disposal of non-hazardous laboratory waste cannot be allowed at the landfarm. In addition, please indicate where the non-hazardous laboratory waste will be disposed (i.e., name address and location of the disposal facility).

Edward J. Hansen
Hydrologist
Environmental Bureau
505-476-3489

From: Hansen, Edward J., EMNRD
Sent: Tuesday, January 30, 2007 12:42 PM
To: 'April Pohl'
Cc: Price, Wayne, EMNRD
Subject: RE: Letter of January 24 for GW-221

April,

I spoke with Wayne regarding the disposal of waste soils from the lab. We are concerned that the waste soils are not only non-hazardous, but also acceptable to be disposed at the landfarm. Therefore, please send me your written protocol for determining that the waste soils or sludges are acceptable to be disposed at the landfarm. Also, the protocol must be for testing of TPH-contaminated soils or sludges only. The protocol must be sent (via FAX or email) by 5:00 p.m. today. If an acceptable protocol cannot be sent today, then other disposal arrangements for the waste soils / sludges must be made.

If you have any further questions regarding this matter, please contact me.

Edward J. Hansen

ENVIROTECH INC.

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

2007 FEB 8 AM 11 22

February 6, 2007

Mr. Edward J. Hansen, Hydrologist
State of New Mexico Oil Conservation Bureau
1220 South Saint Francis Drive
Santa Fe, NM 87505

Phone (505) 476-3489
Fax (505) 476-3462

RE: Discharge Permit Application - Revised
Envirotech, Inc.

Dear Mr. Hansen:

Attached please find a Renewal Discharge Plan Application for Oilfield Service Facilities that has been completed for Envirotech, Inc.

As the two (2) facilities are close in location, both are covered under the same application. However, each location will be submitting information individually. The main office is located at 5796 U.S. Hwy 64 and the shop yard is located at 5726 U.S. Hwy 64, both in Farmington, NM.

ENVIROTECH MAIN OFFICE:

1. Oilfield Service Company

2. Envirotech, Inc.
5796 U.S. Hwy 64, Farmington, NM 87413
Contact person: Morris D. Young; Phone (505) 632-0615

3. NE/4 NW/4 Section 27, Township 29 North, Range 12 West. A 7.5 minute topographic map is attached.

4. Mr. Jerry Clayton is the land owner. Mr. Clayton's address is 501 Airport Drive, Farmington, NM 87401. Phone (505) 326-5571.

5. Site is located approximately 1500 yards east of the intersection of U.S. Hwy 64 and County Road 5500 in Farmington, NM.

   A plat map of the subject property is attached.

   Solid and liquid waste generated from our laboratory is currently stored in labeled drums at the eastern property boundary.

   The facility is fenced and has no pits.

6. Description of all materials used or stored at the facility:
Hand soap
Paint and paint supplies. Various containers less than 20 gal.
Sulfuric acid liquid. Stored in original plastic, estimated 3.5 liters in lab
Hydrochloric acid liquid. Original glass, estimated 2.5 liters in lab
Nitric acid liquid. Original glass, estimated 2.5 liters in lab
Acetic acid liquid. Original glass, estimated 12.5 liters in lab
Sodium hydroxide liquid. Original plastic, estimated 1 liter in lab
Alconox solid. Original container, estimated 20 lb in lab
Micro-90 liquid. Original plastic, estimated 1 quart in lab
No-Chromix liquid. Original glass, estimated .5 quart in lab
Freon 113 liquid. Original glass, estimated 2 liters in lab
Methylene Chloride liquid. Original glass, estimated 4 liters in lab
Hexane liquid. Original glass, estimated 8 liters in lab
Ispropanol liquid. Original glass, estimated 8 liters in lab
Methanol liquid. Original glass, estimated 16 liters in lab
n-propanol liquid. Original glass, estimated 4 liters in lab
Cyclohexane liquid. Original glass, estimated 4 liters in lab
Toluene liquid. Original glass, estimated 500 ml in lab

7. Lab waste, solid and liquid. Stored in drum w/ lid, less than a total of 100 gal in lab and yard.
Soil/water samples containing Methylene Chloride, Freon or Methanol as solvent extraction residue. Various acids used in extraction and analysis from lab samples.

8. All storage on site is in drums or smaller containers. On-site storage is in either original containers (unused products) or in other appropriate containers (used products). Unused laboratory products are stored in the lab in the original containers. Most products are stored in segregated fire-resistant cabinets (not vented) with built-in secondary containment. Lab waste is collected at point of use and stored in containers compatible with waste being stored. When full, lab containers are transferred into drums located in yard.

   There are no surface impoundments located on-site. There is no underground process piping. Facility is less than 30 years old. On-site disposal does not occur at this site, with the exception of domestic sewage to septic system and leach field.

   Lab solids and liquids are segregated into hazardous and non-hazardous (by listing). Non-hazardous wastes are subject to RCRA analysis prior to disposal at NMOCD permitted Landfarm #2. Hazardous wastes, if any, are shipped off-site biannually to a licensed hazardous waste incinerator. Different incinerators are used depending on price and availability. Approval from receiving facility is received prior to shipment.
9. There are no proposed modifications to the site at this time.

10. Routine inspection: Lab supplies and waste are tracked closely on a daily basis.

11. Contingency plan for reporting and cleanup of spills: All materials are stored in four (4) 55 gallon containers and spills from these containers are not expected to impact surface or ground water. Storage area is bermed and lined. Containers are inspected on a regular basis to prevent leaks related to corrosion.

    Spillage will be collected and placed into a container for continued storage. NMOCD will not be notified of spills less than reportable quantities.

12. The San Juan River is located approximately 3900 feet south of the site. An unnamed dry wash is located approximately 1900 feet west of the site with a dry wash drainage ditch located approximately 50 feet east of the site. All streams in the vicinity flow to the San Juan River.

    Water well locations are noted on the attached map. There are 61 wells located within a one (1) mile radius of the site. These wells are located according to "Records of Water Wells and Springs prior to 1978", "Records of Water Wells in San Juan County 1978-1983", and "Listings of Point of Diversion for the San Juan Basin in New Mexico 2/7/92".

    Soil types are typically cobble filled sandy loams ranging from silty to clayey sands. Soils are typically moist, loose, non-cohesive, and have high permeability.

    The aquifer below site is not named and is typically poorly graded medium sand with varying amounts of cobble and silt. Depth to bedrock is anticipated in excess of 60 feet below the site. Flooding potential and run-off potential is very minimal; therefore flood protection measures are not required. Due to thorough tracking of lab wastes, impact to either ground water or surface water is not probable.

13. Facility closure plan: Lab testing will cease and waste will not be generated. Any material in containers will be taken to the landfarm and spread after appropriate testing. Envirotech Soil Remediation Facility currently has an existing Discharge permit, and is not included in this application.

ENVIROTECH MAINTENANCE YARD:

1. Oilfield Service Company

2. Envirotech, Inc.
   5796 U.S. Hwy 64, Farmington, NM 87413
   Contact person: Morris D. Young; Phone (505) 632-0615

3. NE/4 NW/4 Section 27, Township 29 North, Range 12 West. A 7.5 minute topographic map is attached.

4. Mr. Ray Padilla is the land owner. Mr. Padilla's address is 1809 East Main, Farmington, NM 87401. Phone (505) 325-0046.

5. Site is located approximately 100 yards west of the intersection of U.S. Hwy 64 and County Road 5500 in Farmington, NM.

   A plat map of the subject property is attached, including location of the current tank and barrels at the facility.

   The facility is fenced and there is one (1) bermed area enclosing a 4,000 gal double walled convault fuel tank for diesel. The tank is enclosed in a cement containment.

6. Description of material used or stored at the facility:
   Paint and paint supplies. Various containers less than 20 gal stored in shop area.
   Hand soap.
   Diesel, contained in double walled convault, 4000 gal, cement containment.
   Motor oil, less than 50 gal in enclosed metal drum.
   Solid grease for lubrication.

7. Waste solids and effluent:
   Used motor oil, less than 100 gal. Used as fuel, excess is recycled.
   Used filters, less than 6.
   Occasional oil fuel. 1-2 gal.

8. Collection and Disposal:
   All storage on site is in drums or smaller containers. On-site storage is in either original containers (unused products) or in other appropriate containers (used products). Spent acid is stored in original battery until entire battery is picked up by recycler, no formal approval needed.
   Filters are drained while hot, liquid goes into waste drum. Sixteen filters per month are permitted at the landfill.

   Soils contaminated from oil/fuel leaks on equipment are subject to TCLP and RCRA characterization annually. Collected, sampled soils are placed on Envirotech's Soil Remediation Facility, Landfarm #2 upon approval by NMOCD.

   Most storage is inside of the building on the cement floor. There are no floor drains in the work area or storage area.

   This facility is less than 30 years old and there is no underground process.

On-site disposal does not occur at this site, with the exception of domestic sewage to a septic system and leach field.

Off-site disposal is allowed through recyclers. Used motor oil (in excess of 4 drums) is picked up by Mesa Petroleum of Albuquerque, NM. Used lead-acid batteries are sent to Intermountain Batteries, located at 534 East Broadway, Farmington, NM, when new batteries are delivered to the site. Both facilities dispatch their own trucks and personnel to collect material from the Maintenance Yard.

The trash is collected weekly by Waste Management of Four Corners, located at 101 Spruce Street, Farmington, NM, for placement at the San Juan County Landfill. A maximum of four (4) filters per week are permitted for disposal through this method.

9. There are no proposed modifications to the site at this time.

10. The facility will be inspected monthly by management for leaks and spillage. A record of each inspection will be kept at the main office. Any reportable quantities will be reported to the NMOCD.

Monitor wells are not located at this site.

The used oil tank is contained in a lined berm with a fence around the secondary containment.

11. Whereas all material is stored in secondary containment (as a minimum), spillage will be into contained areas. There is not any anticipated threat to surface or groundwater.

Spillage will be collected from its containment and placed into its container (or equivalent) for continued storage. NMOCD will not be notified of spills less than reportable quantities.

All containment is visually inspected from all sides, which makes a leak of quantity easily detectable. A monthly inspection by management and frequent use of the facility by employees ensures leaks are repaired with only minor spillage.

There is not an injection well at this site.

12. The San Juan River is located approximately 3900 feet south of the site. An unnamed dry wash is located approximately 1900 feet east of the site. All streams in the vicinity flow to the San Juan River.

Water well locations are noted on the attached map. There are 61 wells located with in a one (1) mile radius of the site. These wells are located according to "Records of Water Wells and Springs prior to 1978", "Records of Water Wells in San Juan County 1978-1983", and "Listings of Point of Diversion for the San Juan Basin in New Mexico 2/7/92".

Soil types are typically cobble filled sandy loams ranging from silty to clayey sands. Soils are typically moist, loose, non-cohesive, and have high permeability.

The aquifer below site is not named and is typically poorly graded medium sand with varying amounts of cobble and silt. Depth to bedrock is anticipated in excess of 60 feet below the site. Flooding potential and run-off potential is very minimal therefore flood protection measures are not needed. Due to thorough tracking of shop wastes, impact to either ground water or surface water is not probable.

13. Facility closure plan: Shop use will cease and waste will not be generated. All existing waste will be disposed of as specified previously. Envirotech Soil Remediation Facility has a currently existing Discharge permit, and is not included in this application.

Should you need any clarification of our responses, or have any comments, please contact us at (505) 632-0615.

Respectfully Submitted,
ENVIROTECH, INC.

Morris D. Young
President

ENVIROTECH INC.

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

February 6, 2007

Mr. Edward J. Hansen, Hydrologist
State of New Mexico Oil Conservation Bureau
1220 South Saint Francis Drive
Santa Fe, NM 87505

Phone (505) 476-3489
Fax (505) 476-3462

RE: Discharge Permit Application Public Notice
Envirotech, Inc.

Dear Mr. Hansen:

Attached please find the corrected Public Notice for Envirotech, Inc. as requested in your email of January 19, 2007.

After you have approved this Public Notice it will be interpreted into Spanish and placed in the Farmington Daily Times of Farmington, New Mexico. The Daily Times is the primary newspaper in our Four Corners area with a circulation of 22,626 as of January 15, 2007. We will also place a notice in the local Post Office in Bloomfield, New Mexico.

Please feel free to contact me if you have further questions. We anticipate receiving your approval.

Thank you,
Envirotech, Inc.

Morris D. Young
President
myoung@envirotech-inc.com

Attachment

MDY/aep/LF/GW221-shop/publicnotice020507.doc

PUBLIC NOTICE

Envirotech, Inc. Morris D. Young, President, 5796 U.S. Hwy 64, Farmington, NM 87401, has submitted a renewal application for the previously approved discharge plan (GW-221) for the office and shop facilities located in the NE/4 of the NW/4 of Section 27, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico, approximately .5 miles east of the intersection of County Road 550 and Highway 64, Farmington, NM.

Envirotech Lab Facility: On-site disposal does not occur, with the exception of domestic sewage to a septic system and leach field. Distance to ground water is more than 60 feet. Total dissolved solids average for groundwater is less than 500 mg/L. Approximately 520 gallons of non-hazardous liquid and solid lab waste is generated annually. Non-hazardous wastes are tested by RCRA approved analysis prior to appropriate disposal. Wastes shown by analysis to be hazardous, are shipped off-site biannually to a licensed hazardous waste incinerator. All materials are stored in 55 gallon containers in lined containment.

Envirotech Maintenance Yard: Onsite disposal of wastes does not occur at this site with the exception of domestic sewage to a septic system and leach field. Distance to ground water is more than 60 feet. Total dissolved solids for groundwater are less than 500 mg/L. Approximately 1,000 gallons of used oil is generated at this site. The used oil is collected for recycling. Approximately 165 used oil filters are generated at this site annually, that are collected and temporarily stored in containment vessels. Used oil filters are drained and stored in containment vessels until they are collected by a waste management service for disposal in a local landfill.

All other waste stream materials are stored in drums and tanks within bermed containment. Spills from these containers are not expected to impact surface or ground water. Soils contaminated from oil/fuel leaks on equipment are collected, subject to TCLP and RCRA characterization annually. Collected, sampled soils are placed on Envirotech's Soil Remediation Facility, Landfarm #2 upon approval by NMOCD.

The discharge plan addresses how lab and maintenance product wastes will be properly handled, stored and disposed of, including how spills, leaks and other accidental discharges to the surface will be managed in order to protect fresh water. Any interested person may obtain information, submit comments or request to be placed on a facility specific mailing list for future notices by contacting Edward J. Hansen at the New Mexico OCD at 1220 South St. Francis Drive, Santa Fe, New Mexico 87505, Telephone (505) 476-3489. The OCD will accept comments and statements of interest regarding the renewal and will create a facility-specific mailing list for persons who wish to receive future notices.

ENVIROTECH, INC.

FACSIMILE TRANSMITTAL SHEET

TO: Edward J. Hansen	FROM: April E Pohl
COMPANY#: NMOCD	DATE: 1/30/2007
FAX NUMBER: 505-476-3462	TOTAL NO. OF PAGES INCLUDING COVER: 2
PHONE NUMBER:	RE: Lab protocol

☐ URGENT ☐ FOR REVIEW ☐ PLEASE COMMENT ☑ PLEASE REPLY ☐ PLEASE RECYCLE

NOTES/COMMENTS:

Mr. Hansen:

Attached please find our protocol as requested in your email of January 30, 2007 1:01p.m. If you have further concerns please call or email as usual. I will be leaving the office at 5:55 p.m. today.

April E Pohl

5796 U.S. HIGHWAY 64
FARMINGTON, NEW MEXICO 87401
PHONE: (505) 632-0615 / FAX: (505) 632-1865

PRE-DISPOSAL PROTOCOL – ENVIROTECH LABORATORY

Most of the analysis at Envirotech Laboratory is on oil-field related wastes. These wastes include chlorides, metals, glycols and hydrocarbons. Oilfield samples are both exempt and non-exempt. A fraction of the samples tested are non-oilfield related hydrocarbon contaminated soils and fluids. Some soils and fluids may contain other industrial chemicals. All of these samples are tested for hazardous levels of contamination. Before disposal at Landfarm #2. A TCLP excluding herbicides and pesticides is run on the waste to test for hazardous constituents.

Protocol: The waste stream from the laboratory containing primarily hydrocarbon contaminated soils and sludges is stored in fifty-five gallon drums in a bermed, lined containment area. Four barrels of waste are normal for an annual accumulation. When four barrels are accumulated, these barrels are composite sampled for a TCLP excluding herbicides and pesticides prior to disposal at Landfarm #2.

P. 01

TRANSACTION REPORT

JAN-30-2007 TUE 04:35 PM

FOR:

RECEIVE

DATE	START	SENDER	RX TIME	PAGES	TYPE	NOTE	M#	DP
JAN-30	04:34 PM		23"	2	RECEIVE	OK		

Hansen, Edward J., EMNRD

From: Hansen, Edward J., EMNRD
Sent: Tuesday, January 30, 2007 12:42 PM
To: 'April Pohl'
Cc: Price, Wayne, EMNRD
Subject: RE: Letter of January 24 for GW-221

April,

I spoke with Wayne regarding the disposal of waste soils from the lab. We are concerned that the waste soils are not only non-hazardous, but also acceptable to be disposed at the landfarm. Therefore, please send me your written protocol for determining that the waste soils or sludges are acceptable to be disposed at the landfarm. Also, the protocol must be for testing of TPH-contaminated soils or sludges only. The protocol must be sent (via FAX or email) by 5:00 p.m. today. If an acceptable protocol cannot be sent today, then other disposal arrangements for the waste soils / sludges must be made.

If you have any further questions regarding this matter, please contact me.

Edward J. Hansen
Hydrologist
Environmental Bureau
505-476-3489 office
505-476-3462 fax

From: April Pohl [mailto:apohl@envirotech-inc.com]
Sent: Tuesday, January 30, 2007 11:13 AM
To: Hansen, Edward J., EMNRD
Subject: Letter of January 24 for GW-221

Dear Mr. Hansen:

In your letter of January 24, 2007 you mentioned laboratory waste is not to go to landfarms in Item #6. However, our lab waste is soil and sludge samples from testing material for acceptance into our landfarm. In essence, our lab waste is material we have been approved to accept into our landfarm by the NMOCD. According to Morris Young, the former administrator of our GW-221, Mr. Roger Anderson, set up this format as we are accepting the remains of our soil as proved non-hazardous by testing. If you have further questions please feel free to contact me either by phone or email.

We are in the process of making the corrections you listed in your letter so we can send out the corrected version for your approval.

Thank you very much,

April E Pohl
Landfarm Administrator
Envirotech Inc
apohl@envirotech-inc.com
505-632-0615 office
505-632-1865 fax
505-320-6431 cell

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

BILL RICHARDSON
Governor
Joanna Prukop
Cabinet Secretary

Mark E. Fesmire, P.E.
Director
Oil Conservation Division

January 25, 2007

Morris D. Young
President
Envirotech, Inc.
5796 U.S. Highway 64
Farmington, New Mexico 87401

RE: Discharge Plan Permit (GW-221) Renewal
Envirotech, Inc. Main Office and Maintenance Yard
San Juan County, New Mexico
Determination of Administratively Complete

Dear Mr. Young:

The New Mexico Oil Conservation Division (OCD) has received the Envirotech, Inc. application, dated December 29, 2006, to renew the discharge permit, GW-221, for the Envirotech, Inc. Main Office and Maintenance Yard located in the NE/4 of the NW/4 of Section 27, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico. The application and filing fee were received on January 5, 2007. The application and a follow-up correspondence, which proposed the newspaper to publish the public notice, provided the required information in order to deem the application "administratively" complete.

Now that the submittal is deemed "administratively" complete, the New Mexico Water Quality Control Commission regulations (WQCC) public notice requirements of 20.6.2.3108 NMAC must be satisfied and demonstrated to the OCD. The OCD recommends a draft version of the public notice be provided for a pre-review prior to publishing in the newspaper, in order to ensure all of the required information is provided prior to translation into Spanish and to prevent the expenditure of additional funds to republish the public notice.

Once your public notice has been approved for translation into Spanish by the OCD, you may then publish the public notice in the specified newspaper. The public notice must be given by February 22, 2007. Once the notice has been given, then please submit to the OCD within 15 days of public notice:

1) proof that the notice was published in the newspaper (affidavit of publication from the newspaper) and
2) proof that the notice was sent via certified mail to each landowner [signed certified mail receipt (green card) by each landowner].

In addition, the review of the application is to determine if any additional information or modifications may be required before consideration for technical approval. The application has been determined to be technically incomplete. Therefore, the OCD requests additional information. All technical issues must be resolved prior to OCD's proposed permit renewal. In order to expedite the review, the OCD recommends that the requested information and modifications be provided within two weeks of receipt of this letter. A list of the required changes, additions, and corrections is provided below:

#6. (for the Main Office) *All storage on site is in drums or smaller containers.*

Please strike the phrase "...at NMOCD permitted Landfarm #2." The disposal of non-hazardous laboratory waste in not allowed at a landfarm. Please indicate where the non-hazardous laboratory waste will be disposed (i.e., name, address and location of the disposal facility).

#11. (for the Main Office) *Contingency plan for reporting and cleanup of spills*

Please indicate the maximum number of 55-gallon containers at the Main Office used for storage of waste materials. Also, please indicate what measures are taken to prevent contamination from surface run-off at the Main Office storage area (e.g., the area is bermed).

#13. (for both the Main Office and the Maintenance Yard) *Facility Closure Plan*

Please indicate what clean up procedures will be followed to closed the facility (e.g, the 55-gallon containers will be removed for appropriate disposal and any soil with apparent contamination will be appropriately disposed).

If you have any questions regarding this matter, please do not hesitate to contact me at (505) 476-3489 or edwardj.hansen@state.nm.us. On behalf of the staff of the OCD, I wish to thank you and your staff for your cooperation during this discharge permit review.

Sincerely,

Edward J. Hansen

Edward J. Hansen
Hydrologist
Environmental Bureau

EJH:ejh

cc: OCD District III Office, Aztec

Hansen, Edward J., EMNRD

From: Hansen, Edward J., EMNRD
Sent: Friday, January 19, 2007 5:13 PM
To: 'April Pohl'
Subject: RE: Public notice letter

April,
I discussed the draft public notice with Wayne and we will need a few edits to the notice before we can approve it. In particular, the phrase: "...prior to disposal at NMOCD permitted Landfarm #2" should be replaced with "...prior to appropriate disposal." We cannot approve the disposal of the laboratory waste at the landfarm; however, contaminated soils from the Maintenance Yard is approvable.
Also, both the depth to groundwater at the facility and the total dissolved solids of the groundwater must be included in the notice. (I believe you had some acceptable language in your notice for the initial discharge permit.)
Let me know if you have any questions.

Edward J. Hansen
505-476-3489

From: April Pohl [mailto:apohl@envirotech-inc.com]
Sent: Friday, January 19, 2007 3:48 PM
To: Hansen, Edward J., EMNRD
Subject: Public notice letter

Dear Mr. Hansen:

Denny Foust says he feels the Public Notice we sent you recently for your approval is not as good as he would like. Mr. Young thinks it is sufficient. Please contact me immediately and tell me what you would like me to do in this case. We can certainly resubmit the Public Notice if it is not what you want. I just want to get it done in a timely fashion.

Thank you,

April E Pohl
Landfarm Administrator
Envirotech Inc
505-632-0615 office
505-320-6431 cell

PUBLIC NOTICE

Envirotech, Inc. Morris D. Young, President, 5796 U.S. Hwy 64, Farmington, NM 87413, has submitted a renewal application for the previously approved discharge plan (GW-221) for the office and shop facilities located in the NE/4 of the NW/4 of Section 27, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico, approximately .5 miles east of the intersection of County Road 550 and Highway 64, Farmington, NM.

Envirotech Lab Facility: On-site disposal does not occur, with the exception of domestic sewage to septic system and leach field. Approximately 520 gallons of non-hazardous liquid and solid lab waste is generated annually. Non-hazardous wastes are tested by RCRA approved analysis prior to disposal at ~~NMOCD permitted Landfarm #2~~ appropriate. Wastes shown by analysis to be hazardous, are shipped off-site biannually to a licensed hazardous waste incinerator. All materials are stored in 55 gallon containers in lined containment.

Envirotech Maintenance Yard: Onsite disposal of wastes does not occur at this site with the exception of domestic sewage to a septic system and leach field. Approximately 1,000 gallons of used oil and 165 used oil filters are generated at this site annually, which are collected and temporarily stored in containment vessels prior to being collected for recycling. Used oil filters are drained and stored in containment vessels until they are collected by the waste management service for disposal in local landfill. All materials are stored in 55 gallon containers and one large bermed area enclosing a double wall fuel tank within cement containment. Spills from these containers are not expected to impact surface or ground water. Soils contaminated from oil/fuel leaks on equipment are collected, subject to TCLP and RCRA characterization annually. Collected, sampled soils are placed on Envirotech's Soil Remediation Facility, Landfarm #2 upon approval by NMOCD.

TDS & DTW

The discharge plan addresses how lab and maintenance product wastes will be properly handled, stored and disposed of, including how spills, leaks and other accidental discharges to the surface will be managed in order to protect fresh water. Any interested person may obtain information, submit comments or request to be placed on a facility specific mailing list for future notices by contacting Edward J. Hansen at the New Mexico OCD at 1220 South St. Francis Drive, Santa Fe, New Mexico 87505, Telephone (505) 476-3489. The OCD will accept comments and statements of interest regarding the renewal and will create a facility-specific mailing list for persons who wish to receive future notices.

ENVIROTECH INC.

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

January 17, 2007

2007 JAN 19 PM 2 05

Mr. Edward J. Hansen, Hydrologist
State of New Mexico Oil Conservation Bureau
1220 South Saint Francis Drive
Santa Fe, NM 87505

Phone (505) 476-3489
Fax (505) 476-3462

RE: Discharge Permit Application Public Notice
Envirotech, Inc.

Dear Mr. Hansen:

Attached please find the Public Notice for Envirotech, Inc. as requested in your letter of January 11, 2007.

After you have approved this Public Notice it will be interpreted into Spanish and placed in the Farmington Daily Times of Farmington, New Mexico. The Daily Times is the primary newspaper in our Four Corners area with a circulation of 22,626 as of January 15, 2007. We will also place a notice in the local Post Office in Bloomfield, New Mexico.

Please feel free to contact me if you have further questions. We anticipate receiving your approval.

Thank you,
Envirotech, Inc.

Morris D. Young
President
myoung@envirotech-inc.com

Attachment

MDY/aep/LF/GW221-shop/publicnotice011707.doc

PUBLIC NOTICE

Envirotech, Inc. Morris D. Young, President, 5796 U.S. Hwy 64, Farmington, NM 87413, has submitted a renewal application for the previously approved discharge plan (GW-221) for the office and shop facilities located in the NE/4 of the NW/4 of Section 27, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico, approximately .5 miles east of the intersection of County Road 550 and Highway 64, Farmington, NM.

Envirotech Lab Facility: On-site disposal does not occur, with the exception of domestic sewage to septic system and leach field. Approximately 520 gallons of non-hazardous liquid and solid lab waste is generated annually. Non-hazardous wastes are tested by RCRA approved analysis prior to disposal at NMOCD permitted Landfarm #2. Wastes shown by analysis to be hazardous, are shipped off-site biannually to a licensed hazardous waste incinerator. All materials are stored in 55 gallon containers in lined containment.

Envirotech Maintenance Yard: Onsite disposal of wastes does not occur at this site with the exception of domestic sewage to a septic system and leach field. Approximately 1,000 gallons of used oil and 165 used oil filters are generated at this site annually, which are collected and temporarily stored in containment vessels prior to being collected for recycling. Used oil filters are drained and stored in containment vessels until they are collected by the waste management service for disposal in local landfill. All materials are stored in 55 gallon containers and one large bermed area enclosing a double wall fuel tank within cement containment. Spills from these containers are not expected to impact surface or ground water. Soils contaminated from oil/fuel leaks on equipment are collected, subject to TCLP and RCRA characterization annually. Collected, sampled soils are placed on Envirotech's Soil Remediation Facility, Landfarm #2 upon approval by NMOCD.

The discharge plan addresses how lab and maintenance product wastes will be properly handled, stored and disposed of, including how spills, leaks and other accidental discharges to the surface will be managed in order to protect fresh water. Any interested person may obtain information, submit comments or request to be placed on a facility specific mailing list for future notices by contacting Edward J. Hansen at the New Mexico OCD at 1220 South St. Francis Drive, Santa Fe, New Mexico 87505, Telephone (505) 476-3489. The OCD will accept comments and statements of interest regarding the renewal and will create a facility-specific mailing list for persons who wish to receive future notices.

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

BILL RICHARDSON
Governor
Joanna Prukop
Cabinet Secretary

Mark E. Fesmire, P.E.
Director
Oil Conservation Division

January 11, 2007

Morris D. Young
Envirotech, Inc.
5796 U.S. Hwy 64
Farmington, New Mexico 87401

RE: Renewal of Discharge Permit, GW221

Dear Mr. Young:

Thank you for your timely submittal of the Renewal Application Form for the renewal of Discharge Permit, GW221. The New Mexico Oil Conservation Division (OCD) has reviewed the application for administrative completeness. The OCD has determined that the application is not complete; and therefore, is requesting additional information.

You must provide information regarding which newspaper will be used for your public notice for OCD approval. Please provide the name of the newspaper and the circulation of the newspaper (i.e., is the newspaper of general circulation in the location of the facility?) that you intend to use for your public notice regarding the renewal of your discharge permit.

The OCD strongly recommends that you submit a draft (see attached example) public notice to the OCD for review prior to publication; thereby, avoiding republication due to possible errors or omissions. The public notice must be given in accordance with Subsection C of 20.6.2.3108 NMAC, including publishing the notice in both English and Spanish. Therefore, please submit a draft notice in English for OCD review. Once the OCD has approved the draft public notice in English, then you must have it translated into Spanish and have it published in both English and Spanish in the OCD approved newspaper.

Below are excerpts from the Rules that indicate the specific information required to be included in the public notice. The required information [F(1) through F(5) below] must be updated to reflect the current operations (e.g., the operational information regarding the reduced laboratory waste generation should be included in addition to any other current practices).

20.6.2.3108 PUBLIC NOTICE AND PARTICIPATION:

F. The notice provided under Subsection B, C and E of 20.6.2.3108 NMAC shall include:

(1) the name and address of the proposed discharger (*as submitted with your Application Form*);

(2) the location of the discharge, including a street address, if available, and sufficient information to locate the facility with respect to surrounding landmarks (*e.g., this could be the distance from a particular intersection*);

(3) a brief description of the activities that produce the discharge described in the application (*please update this information if appropriate*);

(4) a brief description of the expected quality and volume of the discharge (*please update this information if appropriate*);

(5) the depth to and total dissolved solids concentration of the ground water most likely to be affected by the discharge (*please update this information if appropriate*);

(6) the address and phone number within the department by which interested persons may obtain information, submit comments, and request to be placed on a facility-specific mailing list for future notices (*see attached example*); and

(7) a statement that the department will accept comments and statements of interest regarding the application and will create a facility-specific mailing list for persons who wish to receive future notices (*see attached example*).

Please submit the required information within 30 days of receipt of this letter. If you have any questions regarding this matter, please call me at 505-476-3489.

Sincerely,

Edward J. Hansen

Edward J. Hansen
Hydrologist
Environmental Bureau

EJH:ejh

attachment

PUBLIC NOTICE

Enterprise Products Operating, L.P., Shiver J. Nolan, Senior Compliance Administrator, P.O. Box 4324, Houston, Texas 77210-4324, has submitted a renewal application for the previously approved discharge plan (GW-332) for their San Ysidro Pump Station, located in the SE/4 of the NW/4 of Section 19, Township 15 North, Range 2 East, NMPM, Sandoval County, New Mexico, approximately three miles south of San Ysidro, New Mexico. Approximately 1000 gallons of wash-down water, 100 gallons of used oil, 4 used oil filters, 75 used process filters, and 20 empty barrels are generated on site annually, which are collected and temporarily stored in containment vessels prior to transport and disposal at an NMOCD approved facility. Groundwater most likely to be affected by a spill, leak or accidental discharge is at a depth of approximately 30 to 50 feet, with a total dissolved solids concentration of approximately 200 to 2000 mg/l. The discharge plan addresses how oilfield products and waste will be properly handled, stored, and disposed of, including how spills, leaks, and other accidental discharges to the surface will be managed in order to protect fresh water. Any interested person may obtain information, submit comments or request to be placed on a facility specific mailing list for future notices by contacting Edward J. Hansen at the New Mexico OCD at 1220 South St. Francis Drive, Santa Fe, New Mexico 87505, Telephone (505) 476-3489. The OCD will accept comments and statements of interest regarding the renewal and will create a facility-specific mailing list for persons who wish to receive future notices.

District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Avenue, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

Revised June 10, 2003

Submit Original
Plus 1 Copy
to Santa Fe
1 Copy to Appropriate
District Office

DISCHARGE PLAN APPLICATION FOR SERVICE COMPANIES,GAS PLANTS, REFINERIES, COMPRESSOR, GEOTHERMAL FACILITES AND CRUDE OIL PUMP STATIONS

2007 JAN 5 PM 1 02

(Refer to the OCD Guidelines for assistance in completing the application)

☐ New ☒ Renewal ☐ Modification

1. Type: Oilfield Service Company
2. Operator: Envirotech, Inc.

   Address: 5796 U.S. Hwy 64, Farmington, NM 87401

   Contact Person: Morris D. Young Phone: (505) 632-0615
3. Location: NE /4 NW /4 Section 27 Township 29N Range 12W
   Submit large scale topographic map showing exact location.
4. Attach the name, telephone number and address of the landowner of the facility site.
5. Attach the description of the facility with a diagram indicating location of fences, pits, dikes and tanks on the facility.
6. Attach a description of all materials stored or used at the facility.
7. Attach a description of present sources of effluent and waste solids. Average quality and daily volume of waste water must be included.
8. Attach a description of current liquid and solid waste collection/treatment/disposal procedures.
9. Attach a description of proposed modifications to existing collection/treatment/disposal systems.
10. Attach a routine inspection and maintenance plan to ensure permit compliance.
11. Attach a contingency plan for reporting and clean-up of spills or releases.
12. Attach geological/hydrological information for the facility. Depth to and quality of ground water must be included.
13. Attach a facility closure plan, and other information as is necessary to demonstrate compliance with any other OCD rules, regulations and/or orders.
14. CERTIFICATIONI hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

Name: Morris D. Young Title: President

Signature: Morris D Young Date: December 29, 2006

E-mail Address: myoung@envirotech-inc.com

[redacted]

Water Quality Management Fund Renew GW-221

Check Number: 3460

Date: 12/29/2006 Check Amt: $100.00

Tran #	Invoice	Type	Date	Reference	Balance	Discount	Pay Amount
28368	MR82257	Invoice	12/29/06	Renew GW-221	$0.00	$0.00	$100.00

Security features are included. Details on back.

[redacted]

ENVIROTECH INC.
Operating Account
5796 U.S. Hwy 64
FARMINGTON, NM 87401
(505) 632-0615

FIRST FEDERAL BANK
ROSWELL, NM 88201
95-7045/3122

xactly One hundred and no / 100 Dollars

DATE 12/29/2006

AMOUNT $100.00

PAY TO THE ORDER OF

Water Quality Management Fund
1220 S. St. Francis Dr
Albuquerque NM 87505

Renew GW-221

[redacted]

MP

THIS DOCUMENT CONTAINS A COLORED BACKGROUND ON WHITE PAPER. MICRO PRINT IS LOCATED BELOW THIS WARNING BAND.

ENVIROTECH INC.

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

December 28, 2006

Mr. Edward J. Hansen, Hydrologist
State of New Mexico Oil Conservation Bureau
1220 South Saint Francis Drive
Santa Fe, NM 87505

Phone (505) 476-3489
Fax (505) 476-3462

RE: Discharge Permit Application
Envirotech, Inc.

Dear Mr. Hansen:

Attached please find a Renewal Discharge Plan Application for Oilfield Service Facilities that has been completed for Envirotech, Inc.

As the two (2) facilities are close in location, both are covered under the same application. However, each location will be submitting information individually. The main office is located at 5796 U.S. Hwy 64 and the shop yard is located at 5726 U.S. Hwy 64, both in Farmington, NM.

ENVIROTECH MAIN OFFICE:

1. Oilfield Service Company

2. Envirotech, Inc.
5796 U.S. Hwy 64, Farmington, NM 87413
Contact person: Morris D. Young; Phone (505) 632-0615

3. NE/4 NW/4 Section 27, Township 29 North, Range 12 West. A 7.5 minute topographic map is attached.

4. Mr. Jerry Clayton is the land owner. Mr. Clayton's address is 501 Airport Drive, Farmington, NM 87401. Phone (505) 326-5571.

5. Site is located approximately 1500 yards east of the intersection of U.S. Hwy 64 and County Road 5500 in Farmington, NM.

   A plat map of the subject property is attached.

   Solid and liquid waste generated from our laboratory is currently stored in labeled drums at the eastern property boundary.

   The facility is fenced and has no pits.

6. Description of all materials used or stored at the facility:
Hand soap
Paint and paint supplies. Various containers less than 20 gal.
Sulfuric acid liquid. Stored in original plastic, estimated 3.5 liters in lab
Hydrochloric acid liquid. Original glass, estimated 2.5 liters in lab
Nitric acid liquid. Original glass, estimated 2.5 liters in lab
Acetic acid liquid. Original glass, estimated 12.5 liters in lab
Sodium hydroxide liquid. Original plastic, estimated 1 liter in lab
Alconox solid. Original container, estimated 20 lb in lab
Micro-90 liquid. Original plastic, estimated 1 quart in lab
No-Chromix liquid. Original glass, estimated .5 quart in lab
Freon 113 liquid. Original glass, estimated 2 liters in lab
Methylene Chloride liquid. Original glass, estimated 4 liters in lab
Hexane liquid. Original glass, estimated 8 liters in lab
Ispropanol liquid. Original glass, estimated 8 liters in lab
Methanol liquid. Original glass, estimated 16 liters in lab
n-propanol liquid. Original glass, estimated 4 liters in lab
Cyclohexane liquid. Original glass, estimated 4 liters in lab
Toluene liquid. Original glass, estimated 500 ml in lab

7. Lab waste, solid and liquid. Stored in drum w/ lid, less than a total of 100 gal in lab and yard.
Soil/water samples containing Methylene Chloride, Freon or Methanol as solvent extraction residue. Various acids used in extraction and analysis from lab samples.

8. All storage on site is in drums or smaller containers. On-site storage is in either original containers (unused products) or in other appropriate containers (used products). Unused laboratory products are stored in the lab in the original containers. Most products are stored in segregated fire-resistant cabinets (not vented) with built-in secondary containment. Lab waste is collected at point of use and stored in containers compatible with waste being stored. When full, lab containers are transferred into drums located in yard.

   There are no surface impoundments located on-site. There is no underground process piping. Facility is less than 30 years old. On-site disposal does not occur at this site, with the exception of domestic sewage to septic system and leach field.

   Lab solids and liquids are segregated into hazardous and non-hazardous (by listing). Non-hazardous wastes are subject to RCRA analysis prior to disposal at NMOCD permitted Landfarm #2. Hazardous wastes, if any, are shipped off-site biannually to a licensed hazardous waste incinerator. Different incinerators are used depending on price and availability. Approval from receiving facility is received prior to shipment.
9. There are no proposed modifications to the site at this time.

10. Routine inspection: Lab supplies and waste are tracked closely on a daily basis.

11. Contingency plan for reporting and cleanup of spills: All materials are stored in 55 gallon containers and spills from these containers are not expected to impact surface or ground water. Containers are inspected on a regular basis to prevent leaks related to corrosion.

    Spillage will be collected and placed into a container for continued storage. NMOCD will not be notified of spills less than reportable quantities.

12. The San Juan River is located approximately 3900 feet south of the site. An unnamed dry wash is located approximately 1900 feet west of the site with a dry wash drainage ditch located approximately 50 feet east of the site. All streams in the vicinity flow to the San Juan River.

    Water well locations are noted on the attached map. There are 61 wells located within a one (1) mile radius of the site. These wells are located according to "Records of Water Wells and Springs prior to 1978", "Records of Water Wells in San Juan County 1978-1983", and "Listings of Point of Diversion for the San Juan Basin in New Mexico 2/7/92".

    Soil types are typically cobble filled sandy loams ranging from silty to clayey sands. Soils are typically moist, loose, non-cohesive, and have high permeability.

    The aquifer below site is not named and is typically poorly graded medium sand with varying amounts of cobble and silt. Depth to bedrock is anticipated in excess of 60 feet below the site. Flooding potential and run-off potential is very minimal; therefore flood protection measures are not required. Due to thorough tracking of lab wastes, impact to either ground water or surface water is not probable.

13. Facility closure plan: Lab testing will cease and waste will not be generated. Envirotech Soil Remediation Facility currently has an existing Discharge permit, and is not included in this application.

ENVIROTECH MAINTENANCE YARD:

1. Oilfield Service Company

2. Envirotech, Inc.
   5796 U.S. Hwy 64, Farmington, NM 87413
   Contact person: Morris D. Young; Phone (505) 632-0615

3. NE/4 NW/4 Section 27, Township 29 North, Range 12 West. A 7.5 minute topographic map is attached.

4. Mr. Ray Padilla is the land owner. Mr. Padilla's address is 1809 East Main, Farmington, NM 87401. Phone (505) 325-0046.

5. Site is located approximately 100 yards west of the intersection of U.S. Hwy 64 and County Road 5500 in Farmington, NM.

   A plat map of the subject property is attached, including location of the current tank and barrels at the facility.

   The facility is fenced and there is one (1) bermed area enclosing a 4,000 gal double walled convault fuel tank for diesel. The tank is enclosed in a cement containment.

6. Description of material used or stored at the facility:
   Paint and paint supplies. Various containers less than 20 gal stored in shop area.
   Hand soap.
   Diesel, contained in double walled convault, 4000 gal, cement containment.
   Motor oil, less than 50 gal in enclosed metal drum.
   Solid grease for lubrication.

7. Waste solids and effluent:
   Used motor oil, less than 100 gal. Used as fuel, excess is recycled.
   Used filters, less than 6.
   Occasional oil fuel. 1-2 gal.

8. Collection and Disposal:
   All storage on site is in drums or smaller containers. On-site storage is in either original containers (unused products) or in other appropriate containers (used products). Spent acid is stored in original battery until entire battery is picked up by recycler, no formal approval needed.
   Filters are drained while hot, liquid goes into waste drum. Sixteen filters per month are permitted at the landfill.

   Soils contaminated from oil/fuel leaks on equipment are subject to TCLP and RCRA characterization annually. Collected, sampled soils are placed on Envirotech's Soil Remediation Facility, Landfarm #2 upon approval by NMOCD.

   Most storage is inside of the building on the cement floor. There are no floor drains in the work area or storage area.

   This facility is less than 30 years old and there is no underground process.

   On-site disposal does not occur at this site, with the exception of domestic sewage to a septic system and leach field.

Off-site disposal is allowed through recyclers. Used motor oil (in excess of 4 drums) is picked up by Mesa Petroleum of Albuquerque, NM. Used lead-acid batteries are sent to Intermountain Batteries, located at 534 East Broadway, Farmington, NM, when new batteries are delivered to the site. Both facilities dispatch their own trucks and personnel to collect material from the Maintenance Yard.

The trash is collected weekly by Waste Management of Four Corners, located at 101 Spruce Street, Farmington, NM, for placement at the San Juan County Landfill. A maximum of four (4) filters per week are permitted for disposal through this method.

9. There are no proposed modifications to the site at this time.

10. The facility will be inspected monthly by management for leaks and spillage. A record of each inspection will be kept at the main office. Any reportable quantities will be reported to the NMOCD.

Monitor wells are not located at this site.

The used oil tank is contained in a lined berm with a fence around the secondary containment.

11. Whereas all material is stored in secondary containment (as a minimum), spillage will be into contained areas. There is not any anticipated threat to surface or groundwater.

Spillage will be collected from its containment and placed into its container (or equivalent) for continued storage. NMOCD will not be notified of spills less than reportable quantities.

All containment is visually inspected from all sides, which makes a leak of quantity easily detectable. A monthly inspection by management and frequent use of the facility by employees ensures leaks are repaired with only minor spillage.

There is not an injection well at this site.

12. The San Juan River is located approximately 3900 feet south of the site. An unnamed dry wash is located approximately 1900 feet east of the site. All streams in the vicinity flow to the San Juan River.

Water well locations are noted on the attached map. There are 61 wells located with in a one (1) mile radius of the site. These wells are located according to "Records of Water Wells and Springs prior to 1978", "Records of Water Wells in

San Juan County 1978-1983", and "Listings of Point of Diversion for the San Juan Basin in New Mexico 2/7/92".

Soil types are typically cobble filled sandy loams ranging from silty to clayey sands. Soils are typically moist, loose, non-cohesive, and have high permeability.

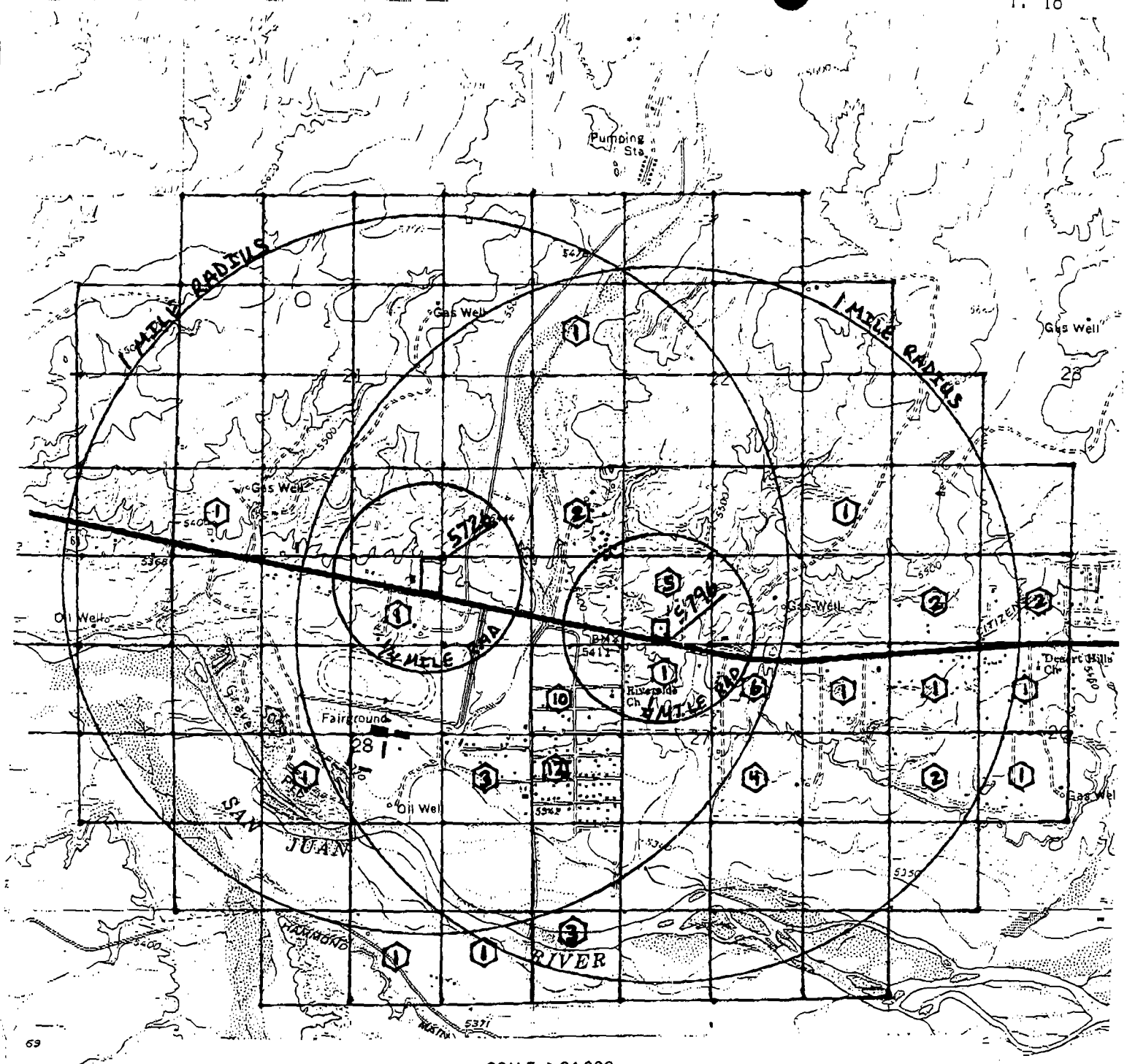
The aquifer below site is not named and is typically poorly graded medium sand with varying amounts of cobble and silt. Depth to bedrock is anticipated in excess of 60 feet below the site. Flooding potential and run-off potential is very minimal therefore flood protection measures are not needed. Due to thorough tracking of shop wastes, impact to either ground water or surface water is not probable.

13. Facility closure plan: Shop use will cease and waste will not be generated. All existing waste will be disposed of as specified previously. Envirotech Soil Remediation Facility has a currently existing Discharge permit, and is not included in this application.

Should you need any clarification of our responses, or have any comments, please contact us at (505) 632-0615.

Respectfully Submitted,
ENVIROTECH, INC.

Morris D. Young
President



SCALE 1:24 000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET
DOTTED LINES REPRESENT 10-FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

NEW MEXICO

QUADRANGLE LOCATION

ROAD CLASSIFICATION

Heavy-duty ——— Light-duty ———

Medium-duty ——— Unimproved dirt - - - - -

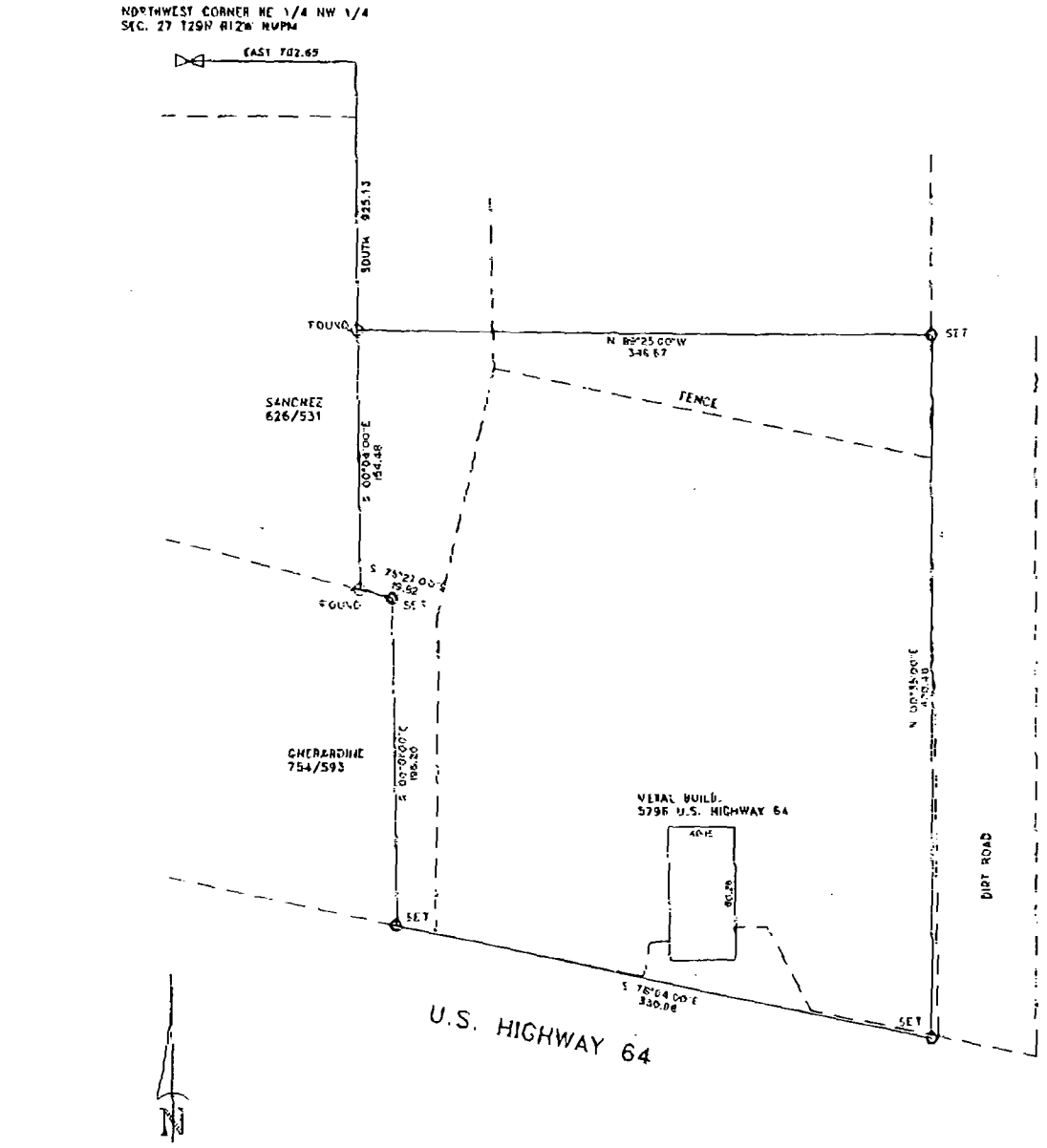
State Route

U. S. Route

HORN CANYON, N. MEX.

N3637.5—W10800/7.5

1965
PHOTOREVISED 1979
DMA 4357 II NE—SERIES V881



PROPERTY SURVEY FOR ENVIROTECH INC. E 1/2 NW 1/4 SEC. 27 T29N R12W NMPM SAN JUAN COUNTY, NEW MEXICO

That part of the East One-Half of the Northwest Quarter (E1/2 NW1/4) of Section 27, in T29N R12W, N.M.P.M., described as follows:

BEGINNING East 702.65 feet and South 925.13 feet from the Northwest Corner of the NE1/4 NW1/4 of said Section 27, being a point on the East line of a tract of land conveyed to Myron Sanchez, et ux by warranty deed recorded in Book 626, Page 531 of the Records of San Juan County, New Mexico;

THENCE: S00°04'E for a distance of 154.48 feet, along the East line of said Sanchez tract to a point on the Northeasterly line of a tract of land conveyed to Joe D Gherardine by warranty deed recorded in Book 754, Page 593 of the Records of San Juan County, New Mexico;
THENCE: S75°27'E for a distance of 19.82 feet, to the northeasterly Corner of said Gherardine tract;
THENCE: S00°00'E for a distance of 196.20 feet, along the east line of said Gherardine tract to a point on the northerly right-of-way line of Highway 64;
THENCE: S78°04'E for a distance of 330.08 feet, along the northerly right-of-way of Highway 64;
THENCE: N00°35'E for a distance of 420.40 feet;
THENCE: N89°25'W for a distance of 346.67 feet to the point of beginning.

I, GEORGE T. WALTERS, A REGISTERED PROFESSIONAL SURVEYOR UNDER THE LAWS OF THE STATE IN WHICH THIS SURVEY WAS PERFORMED, HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM FIELD NOTES OF AN ACTUAL SURVEY MEETING THE MINIMUM REQUIREMENTS OF THE STANDARDS FOR LAND SURVEYS AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT NO ENCROACHMENTS EXIST EXCEPT AS NOTED ABOVE, AND THAT ALL IMPROVEMENTS ARE SHOWN IN THEIR CORRECT LOCATION RELATIVE RECORD BOUNDARIES AS LOCATED BY THIS SURVEY.

DATE

GEORGE T. WALTERS
PROFESSIONAL SURVEYOR # 6159
STATE OF NEW MEXICO

REVISION DATE: 9-22-92

CHENEY - WALTERS - ECHOLS
BREWER ASSOCIATES, INC.
903 W. APACHE, FARMINGTON, NM

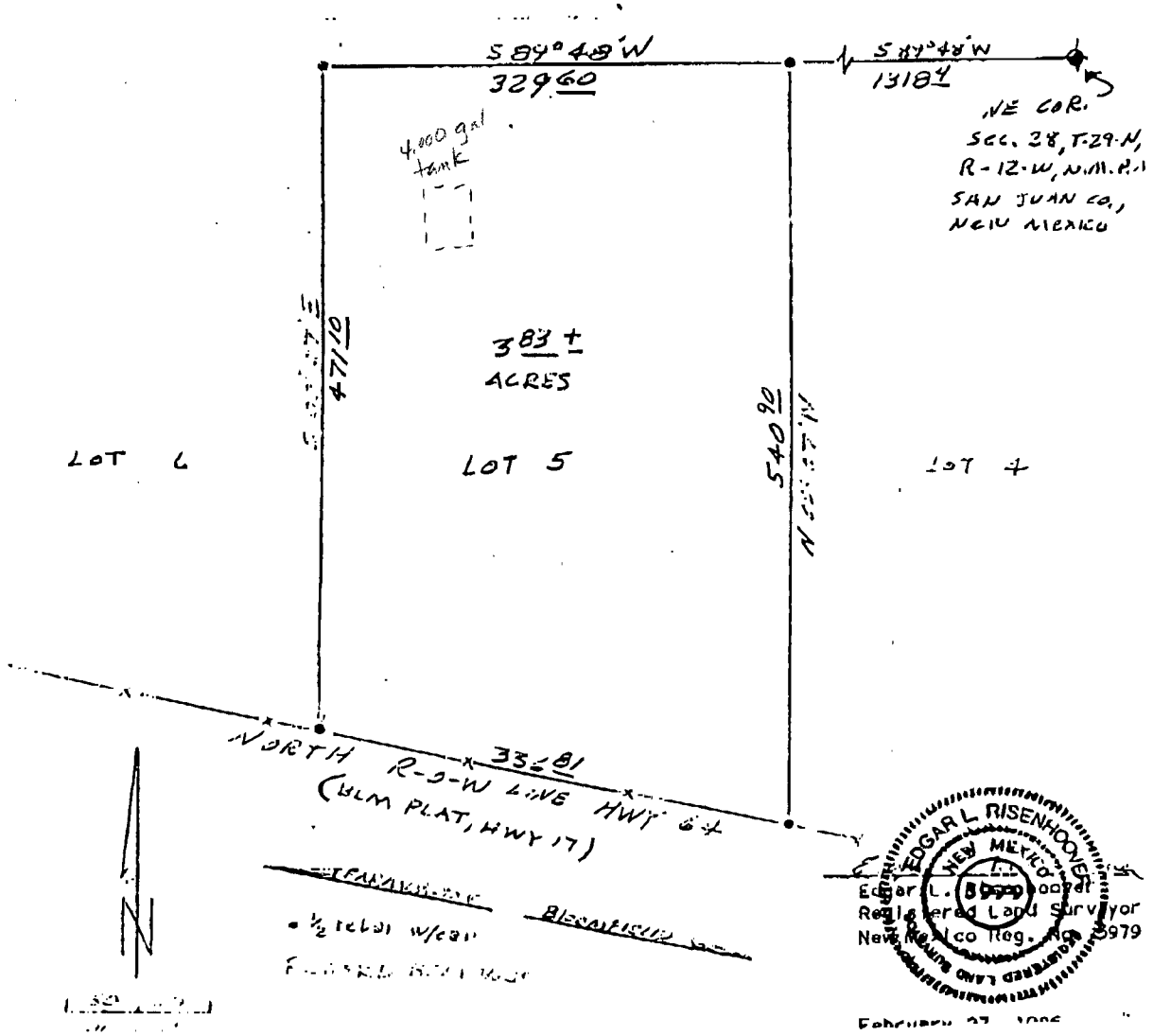
MORTGAGE PLAT? NO	PROPERTY SURVEY? YES	MONUMENTS SET? YES
DRAWN BY: GTW	PARTY CHIEF: GT	APPROVED: GTW
DATE: 9-22-92	DATE OF FIELD SURVEY: 9-21-92	DEED CONFORM
BASIS OF BEARING: WEST P.L.		PROJECT NO. 92533 FILE: 92533

Edgar L. Risenhoover

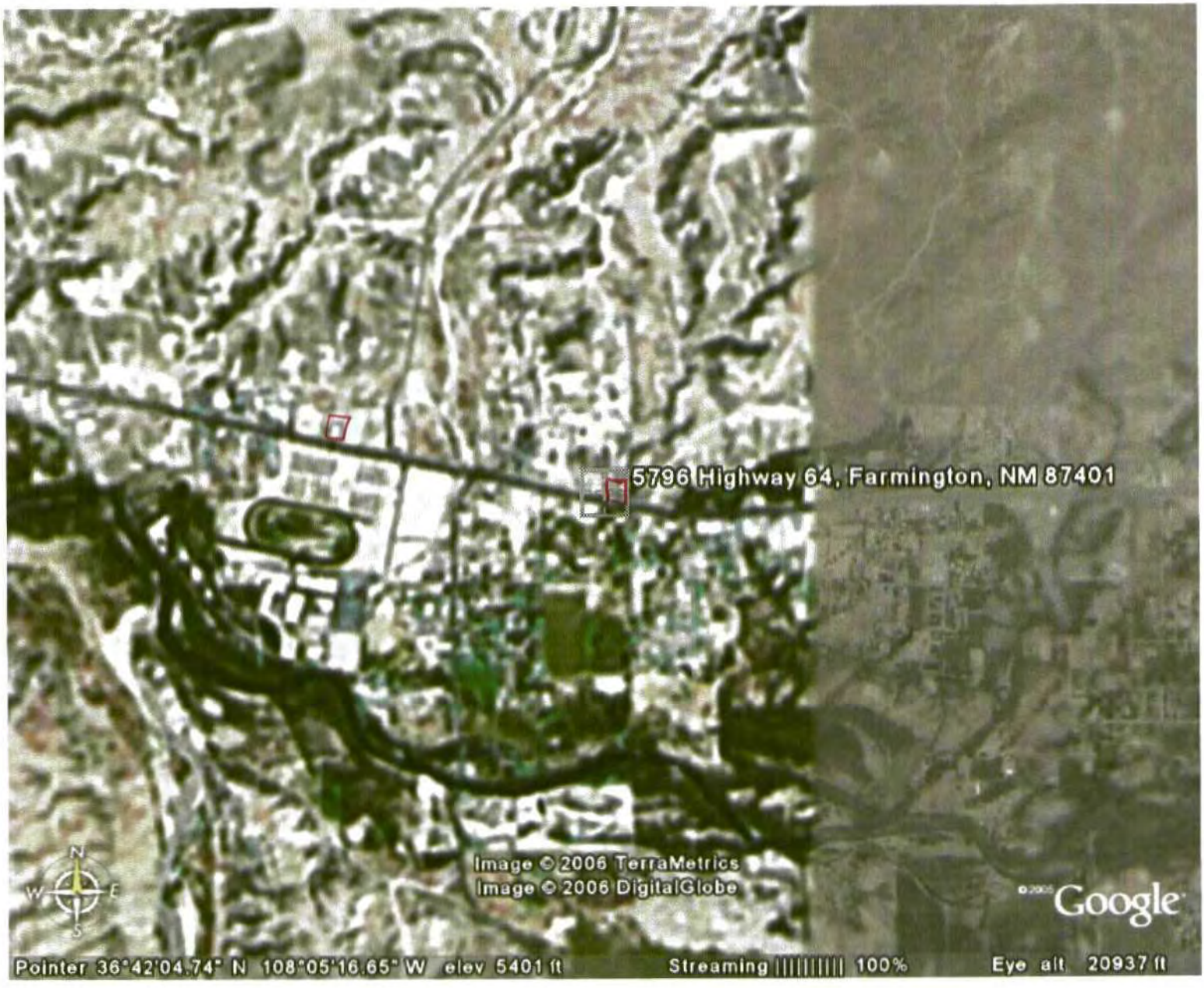
Registered Land Surveyor
New Mexico • Colorado • Arizona
Route 2, Box 105 / 665 County Road 1191
Farmington, New Mexico 87401
Phone (505) 325-3904

PRAX TRUJILLO

Lot 5 of Section 28 in T-29-N, R-12-W, N.M.P.M., San Juan County, New Mexico, same being situated in the NW¼NE¼ of said Section 28, containing 3.83 acres, more or less, and subject to all right-of-ways, easements, restrictions and reservations of record or in existence.



February 27, 1996


5796 Highway 64, Farmington, NM 87401
Image © 2006 TerraMetrics
Image © 2006 DigitalGlobe
©2006 Google
Pointer 36°42'04.74" N 108°05'16.65" W elev 5401 ft
Streaming 100%
Eye alt 20937 ft

Hansen, Edward J., EMNRD

From: Hansen, Edward J., EMNRD
Sent: Wednesday, December 13, 2006 10:44 AM
To: 'apohl@envirotech-inc.com'
Subject: Renewal of Discharge Permit GW221
Attachments: Renewal WQCC Notice Regs.pdf; Discharge Plan App Form.pdf; Guidelines For Discharge Plans.pdf; PN Flow Chart.20.6.2renewal.pdf

Dear Discharge Permit (GW221) Holder:

The Oil Conservation Division's (OCD) records indicate that your discharge plan has expired. New Mexico Water Quality Control Commission regulations (WQCC) Section 3106.F (20.6.2.3106.F NMAC) specifies that if a discharger submits a discharge plan renewal application at least 120 days before the discharge plan expires and is in compliance with the approved plan, then the existing discharge plan will not expire until the application for renewal has been approved or disapproved. You may be operating without a permit. Please submit a permit renewal application with a filing fee (20.6.2.3114 NMAC) of $100.00 by December 31, 2006. Please make all checks payable to the **Water Quality Management Fund** and addressed to the OCD Santa Fe Office. There is also a discharge plan permit fee, based on the type of facility, which OCD will assess after processing your application. An application form and guidance document is attached in order to assist in expediting this process.

In accordance with the public notice requirements (Subsection A of 20.6.2.3108 NMAC) of the newly revised (July 2006) WQCC regulations, "...to be deemed administratively complete, an application shall provide all of the information required by Paragraphs (1) through (5) of Subsection F of 20.6.2.3108 NMAC and shall indicate, for department approval, the proposed locations and newspaper for providing notice required by Paragraphs (1) through (4) of Subsection B or Paragraph (2) of Subsection C of 20.6.2.3108 NMAC." You are required to provide the information specified above in your permit renewal application submittal. Attached are a flow chart and the regulatory language pertaining to the new WQCC public notice requirements for your convenience. After the application is deemed administratively complete, the revised public notice requirements of 20.6.2.3108 NMAC must be satisfactory demonstrated to OCD. OCD will provide public notice pursuant to the revised WQCC notice requirements of 20.6.2.3108 NMAC to determine if there is any public interest.

Please contact me by phone 505-476-3489 or email mailto:edwardj.hansen@state.nm.us if you have any questions regarding this matter.

Sincerely,

Edward J. Hansen
Hydrologist
Environmental Bureau

ACKNOWLEDGEMENT OF RECEIPT OF CHECK/CASH

I hereby acknowledge receipt of check No. [redacted] datad 2-12-02,

or cash received on _____ in the amount of $ 740.00

from Envirotech

for Farmington Service Facility (Facility Name) GW-221.

Submitted by: _____ Date: 2-15-02 (DP No.)

Submitted to ASD by: _____ Date: _____

Received in ASD by: _____ Date: _____

Filing Fee ✓ New Facility ___ Renewal ✓

Modification ___ Other _____ (specify)

Organization Code 521.07 Applicable FY 2001

To be deposited in the Water Quality Management Fund.

Full Payment ✓ or Annual Increment ___

ENVIROTECH INC.
OPERATING ACCOUNT
5796 U.S. HWY 64
FARMINGTON, NM 87401
(505) 632-0615

VECTRA BANK COLORADO, N.A.
2000 E. 20th St.
Farmington, NM 87401

23-315/1020
498

[redacted]

CHECK NO. 9097

Exactly Seven hundred forty and no / 100 Dollars

DATE 2/12/02

AMOUNT $740.00

PAY TO THE ORDER OF

NMED-Water Quality Management
OCD Santa Fe Office
1220 South St Francis Drive
Santa Fe NM 87505
Compliance filing and flat fee

[redacted]

ENVIROTECH INC.

NMED-Water Quality Management — Compliance filing and flat fee — Check [redacted]

Date: 2/12/02 — Check Amt: $740.00

Tran #	Invoice	Type	Date	Reference	Balance	Discount	Pay Amount
2752	011002	Invoice	01/10/02	$50 Filing Fee/690 Flat Fee	$740.00	$0.00	$740.00

NEW MEXICO ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT

GARY E. JOHNSON
Governor
Jennifer A. Salisbury
Cabinet Secretary

Lori Wrotenbery
Director
Oil Conservation Division

January 10, 2002

CERTIFIED MAIL
RETURN RECEIPT NO. 3929 7389

Mr. Morris Young
Envirotech, Inc.
5796 US Highway 64
Farmington, New Mexico 87401

RE: Discharge Plan Fees GW-221
Farmington Service Facility
San Juan County, New Mexico

Dear Mr. Young:

On February 1, 2001, Envirotech, Inc., received, via certified mail, an approval dated January 22, 2001 from the New Mexico Oil Conservation Division (OCD) for discharge plan GW-221. Each discharge plan has a filing fee and a flat fee as described in WQCC Section 3114. The OCD has not as of this date (January 10, 2002) received the filing fee nor the flat fee. The last check submitted by Envirotech, Inc. was dated February 27, 1998 for the final payment of the required flat fee for the discharge plan approved November 16, 1995. The filing fee of $50.00 and the total flat fee amount remaining is $690.00 for discharge plan GW-221.

Envirotech, Inc. will submit the remaining $50.00 filing fee and $690.00 flat fee in full by February 28, 2002 in order to be in compliance with Water Quality Control Commission Regulation 3114.B.6, or the OCD may initiate enforcement actions which may include fines and/or an order to cease all operations at the facility. Please make all checks payable to: **NMED-Water Quality Management** and addressed to the OCD Santa Fe Office.

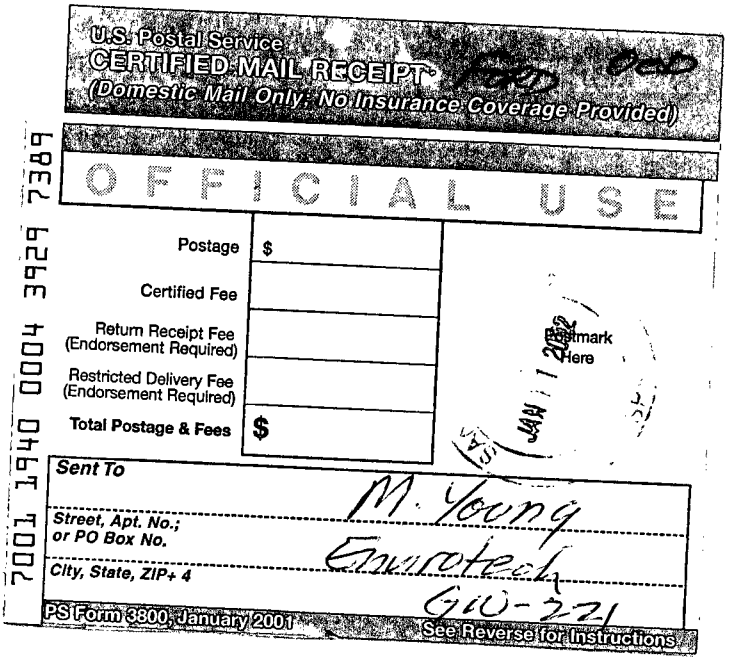
If you have any questions regarding this matter, please contact Mr. Jack Ford at (505) 476-3489.

Sincerely,

Roger Anderson
Environmental Bureau Chief

RCA/wjf

xc: Aztec OCD district office



U.S. Postal Service
CERTIFIED MAIL RECEIPT
(Domestic Mail Only; No Insurance Coverage Provided)

OFFICIAL USE

7001 1940 0004 3929 7389

Postage	$
Certified Fee	
Return Receipt Fee (Endorsement Required)	
Restricted Delivery Fee (Endorsement Required)	
Total Postage & Fees	$

Postmark Here

JAN 11 2002

Sent To: M. Young
Street, Apt. No.; or PO Box No.: Enviroteck
City, State, ZIP+ 4: GW-22

PS Form 3800, January 2001 — See Reverse for Instructions

AFFIDAVIT OF PUBLICATION
Ad No. 43704

STATE OF NEW MEXICO
County of San Juan:

ALETHIA ROTHLISBERGER, being duly sworn says: That she is the Classified Manager of THE DAILY TIMES, a daily newspaper of general circulation published in English at Farmington, said county and state, and that the hereto attached Legal Notice was published in a regular and entire issue of the said DAILY TIMES, a daily newspaper duly qualified for the purpose within the meeting of Chapter 167 of the 1937 Session Laws of the State of New Mexico for publication on the following day(s):

Friday, December 1, 2000

And the cost of the publication is $82.76

Alethia Rothlisberger

ON 12/11/2000 ALETHIA ROTHLISBERGER appeared before me, whom I know personally to be the person who signed the above document.

Nancy L Slade

My Commission Expires April 10, 2004

COPY OF PUBLICATION

18 Legals

NOTICE OF PUBLICATION

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

lotice is hereby given that pursuant to New Mexico Water Quality Control Commission legulations, the following discharge plan renewal application has been submitted to the Director f the Oil Conservation Division, 2040 South Pacheco, Santa Fe, New Mexico 87505, Telephone 505) 827-7131:

GW-221) - Mr. Morris D. Young, ENVIROTECH, INC., 5796 US Highway 64, Farmington, New lexico 87401 has submitted an application for their FARMINGTON OILFIELD SERVICE ENTER located in the NE/4 NW/4 of Section 27, Township 29 North, Range 12 West, San uan County, New Mexico. All effluents generated at this facility are collected in a closed op tank prior to transport off-site to an OCD approved disposal facility. Ground water most kely to be affected in the event of an accidental discharge at the surface is at a depth of pproximately 55 feet with a total dissolved solids concentration of approximately 1000 ng/l. The discharge plan addresses how spills, leaks, and other accidental discharges to ie surface will be managed.

ny interested person may obtain further information from the Oil Conservation Division and may ubmit written comments to the Director of the Oil Conservation Division at the address given bove. The discharge plan application may be viewed at the above address between 8:00 a.m. nd 4:00 p.m., Monday through Friday. Prior to ruling on any proposed discharge plan or its odification, the Director of the Oil Conservation Division shall allow at least thirty (30) days after e date of publication of this notice during which comments may be submitted to him and public earing may be requested by any interested person. Requests for public hearing shall set forth e reasons why a hearing should be held. A hearing will be held if the Director determines there significant public interest.

no public hearing is held, the Director will approve or disapprove the proposed plan based on formation available. If a public hearing is held, the director will approve or disapprove the oposed plan based on information available. If a public hearing is held, the director will approve disapprove the proposed plan based on information in the plan and information submitted at the earing.

VEN under the Seal of New Mexico Oil Conservation Commission at Santa Fe, New Mexico, on is 10th day of May, 2000.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
/s/Roger Cullander
for LORI WROTENBERY, Director

E A L

gal No. 43704, published in The Daily Times, Farmington, New Mexico, Friday, December 1, 00.

P 269 262 709

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PS Form **3800**, April 1995

(GW-221) 35-

THE SANTA FE
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NM OIL CONSERVATION DIVISION
ATTN: DONNA DOMINGUEZ
2040 S. PACHECO ST.
SANTA FE, NM 87505

AD NUMBER: 183373 ACCOUNT: 56689
LEGAL NO: 68479 P.O.#: 00199000278
175 LINES 1 time(s) at $ 77.14
AFFIDAVITS: 5.25
TAX: 5.15
TOTAL: 87.54

NOTICE OF PUBLICATION

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

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations, the following discharge plan renewal application has been submitted to the Director of the Oil Conservation Division, 2040 South Pacheco, Santa Fe, New Mexico 87505, Telephone (505) 827-7131:

(GW-221) - Mr. Morris D. Young ENVIROTECH, INC., 5796 US Highway 64, Farmington, New Mexico 87401 has submitted an application for their FARMINGTON OILFIELD SERVICE CENTER located in the NE/4 NW/4 of Section 27, Township 29 North, Range 12 West, San Juan County, New Mexico. All effluents generated at this facility are collected in a closed top tank prior to transport offsite to an OCD approved disposal facility. Ground water most likely to be affected in the event of an accidental discharge at the surface is at a depth of approximately 55 feet with a total dissolved solids concentration of approximately 1000 mg/l. The discharge plan addresses how spills, leaks, and other accidental discharges to the surface will be managed.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. The discharge plan application may be viewed at the above address between 8:00 a.m. and 4:00 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 a public hearing may be requested by any interested person. Requests for a 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 Conservation Commission at Santa Fe, New Mexico, this 10th day of May, 2000.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
LORI WROTENBERY, Director

Legal #68479
Pub. December 1, 2000

AFFIDAVIT OF PUBLICATION

STATE OF NEW MEXICO
COUNTY OF SANTA FE
I, B Reiner being first duly sworn declare and say that I am Legal Advertising Representative of THE SANTA FE NEW MEXICAN, a daily newspaper published in the English language, and having a general circulation in the Counties of Santa Fe and Los Alamos, State of New Mexico and being a Newspaper duly qualified to publish legal notices and advertisements under the provisions of Chapter 167 on Session Laws of 1937; that the publication #68479 a copy of which is hereto attached was published in said newspaper 1 day(s) between 12/01/2000 and 12/01/2000 and that the notice was published in the newspaper proper and not in any supplement; the first publication being on the 1 day of December, 2000 and that the undersigned has personal knowledge of the matter and things set forth in this affidavit.

/S/ Betsy Reiner
LEGAL ADVERTISEMENT REPRESENTATIVE

Subscribed and sworn to before me on this 30 day of November A.D., 2000

Notary Laura E Harding

Commission Expires 11/23/03

RECEIVED
DEC 4 2000
OIL CONSERVATION DIVISION

ENVIROTECH INC.

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

ENVIROTECH, INC.
5796 U.S. HIGHWAY 64
FARMINGTON, NEW MEXICO 87401
(505) 632-0615

DISCHARGE

PERMIT

APPLICATION

OCTOBER 2000

ENVIROTECH INC.

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

October 16, 2000

Mr. Roger C. Anderson, Chief Environmental Bureau
State of New Mexico Oil Conservation Division
2040 S . Pacheco
Santa Fe, New Mexico 87505

Re: Discharge Permit Application
Envirotech, Inc.

Dear Mr. Anderson:
Attached please find a Renewal Discharge Plan Application for Oilfield Service Facilities that has been completed for Envirotech, Inc.

Based on the close proximity of the two facilities, both will be covered under the same application, although information is provided separately for each individual facility. Envirotech's main office is located at 5796 US Highway 64, Envirotech's maintenance yard is located at 5726 US Highway 64. Both facilities are located in Farmington, New Mexico.

Due to the lack of space on the application for supplemental information, the application information is provided in this letter. For your convenience, a blank application is attached.

Envirotech main Office:

1. Oilfield Service Company

2. Envirotech, Inc.
5796 US Highway 64, Farmington, New Mexico 87401.
Contact Person: Morris Young; phone (505) 632-0615.

3. NE/4 NW/4 Section 27, Township 29 North, Range 12 West. A 7.5 minute topographic map of Horn Canyon Quadrangle is attached.

4. Jerry Clayton is the land owner. Mr. Clayton's address is 710 E. 20th street, Farmington, New Mexico.

5. A plat map of the subject property is attached, including the location of the current of the current tanks and barrels at the facility.

   Solid and liquid waste generated from our laboratory are currently stored in labeled drums located at the eastern property boundary.

   The facility is fenced and has no pits.

6. A part 6 Form is attached

7. A part 7 Form is attached

8. A part 8 Form is attached

8.B.1. All storage on site is in drums, or smaller containers. On-site storage is in either original containers (unused products) or in other appropriate containers (used products). Unused laboratory products are stored inside the lab in the original containers (or equivalent) containers. Most new lab products are subsequently stored in segregated fire-resistant cabinets (not-vented) with built-in secondary containment. Lab waste is stored inside the lab in containers compatible with the waste being stored. When full, lab waste containers are transferred into drums located in the yard.

8.B.2. There are no surface impoundments located on-site.

8.B.3. This facility is less than 25 years old and there is no underground process piping.

8.C.1. On-site disposal does not occur at this site, with the exception of domestic sewage to a septic system and leach field.

8.C.2. Lab solids and liquids are segregated into hazardous and non-hazardous (by listing). Non-hazardous wastes are subject to RCRA analysis prior to shipment to Landfarm # 2. Hazardous wastes are shipped off-site biannually to a licenced hazardous waste incinerator. Different incinerators are used, depending on price and availability. Approval from the receiving facility is received prior to shipment.

Trash is collected weelky by Waste Management of Four Corners, located at 101 Spruce Street, Farmington, New Mexico, for placement at San Juan County Landfill.

9. There are no proposed modifications at this time.

10. There are no surface impoundments located on-site.

11. There are no Aboveground Storage Tanks (AST) or injection wells located at this facility.

12. 12.A.1.The San Juan River is located approximately 3900' south of the site. An unnamed ephemeral stream (dry wash) is located approximately 1900' west of the site. A dry drainage ditch is located approximately 50' east of the site. All streams in the vicinity flow to the San Juan River.

12.A.2.Water well locations are located on the attached map. All water wells are assumed to be for domestic use. There may be up to 61 wells located within a 1 mile radius of the site. These wells are located according to "Records of Water Wells and Springs prior to 1978" "Records of Water Wells in San Juan County 1978-1983" and "Listing of Points of Diversion for the San Juan Basin in New Mexico, 2/7/92".

12.A.3.a. Soil types in area typically consists of cobble filled sandy loams ranging to silty to clayey sands. Soils are typically moist, loose, non-cohesive, and have high permeability.

12.A.3.b. The aquifer below site is not named.

12.A.3.c. The aquifer is a typically poorly graded medium sand with varying amounts of cobble and silt.

12.A.3.d. Depth to bedrock is undetermined, however it is anticipated to in excess of 60' below the site.

12.A.4.a. Flooding potential and run-off potential at the site is very minimal.

12.A.4.b. Flood protection measures at the site are not necessary.

12.B. Due to thorough tracking of lab wastes, impact to either groundwater or surface water is not probable.

13. Envirotech Soil Remediation Facility is currently an existing discharge permit, and is not included in this application.

Envirotech Maintenance Yard:

1. Oilfield Service Company

2. Envirotech, Inc.
5726 US Highway 64, Farmington, NM 87401.
Contact Person: Morris Young; phone (505) 632-0615.

3. NW/4 NE/4 Section 28, Township 29 North, Range 12 West. A 7.5 minute Topographic map of the Horn Canyon Quadrangle is attached.

4. Raymond Padilla is the land owner. Mr. Padilla' address is 446 CR 3000, Aztec, New Mexico 87410

5. A plat map of subject property is attached, including the location of the building the facility is fenced and has no pits.

6. A Part 6 Form is attached

7. A Part 7 Form is attached

8. A Part 8 Form is attached

8.B.1. All storage on-site is inside the building on the concrete floor. Floor drains

are not present in the storage area and work area.

8.B.2. All storage on-site is inside the building on the concrete floor. Floor drains are not present in the storage and in the work area.

8.B.3. This facility is less than 25 years old and there is no underground process piping.

8.C.1. On-site disposal does not occur at this site, with the exception of domestic sewage to a septic system and leach field.

8.C.2. Off-site disposal is allowed through recyclers. Used motor oil (in excess of 4 drums) is pickup by Mesa Petroleum of Albuquerque, New Mexico. Used lead-acid batteries are sent to Intermountain Batteries, located at 534 E. Broadway, Farmington, New Mexico, when new batteries are delivered to the site. Both facilities dispatch their own trucks and personnel to collect material from the Maintenance yard.

Trash is collected weekly by Waste Management of Four Corners, located at 101 Spruce Street, Farmington, New Mexico, for placement at the San Juan County Landfill. A maximum of 4 oil filters per week are permitted for disposal through this method. The approval is attached, which includes both facilities as a combined waste stream.

9. No modifications are anticipated to the outlined operating procedures at this facility.

10. 10.A. The facility will be inspected monthly by management for leaks and spillage. A record of each inspection will be kept at the main office. Any reportable quantities of spillage will be reported to OCD.

10.B. Monitor wells are not located at the site.

10.C. Since all waste streams will be indoors in secondary containment, precipitation and run-off containment will not be constructed.

11. 11.A. Whereas all material is stored in secondary containment (as a minimum), spillage will be into contained areas. There is not any anticipated threat to surface or groundwater.

Spillage will be collected from its containment and placed into its container, (or equivalent) for continued storage. OCD will not be notified of spills less than reportable quantities.

11.B. All containment is visually inspected from all sides, which makes a leak of quantity easily detectable. Monthly inspections by management and frequent use of the facilities by employees ensure that leaks are repaired with only minor spillage.

11.C. There is not an injection well at this site.

12. 12.A.1. The San Juan River is located approximately 3900' south of the site. An unnamed

ephemeral stream (dry wash) is located approximately 1900' west of the site. A dry drainage ditch is located approximately 50' east of the site. All streams in the vicinity flow to the San Juan River.

12.A.2. Water well locations are located on the attached map. All water wells are assumed to be for domestic use. There may be up to 61 wells located within a 1 mile radius of the site. These wells are located according to "Records of Water Wells and Springs prior to 1978" "Records of Water Wells in San Juan County 1978-1983" and "Listing of Points of Diversion for the San Juan Basin in New Mexico, 2/7/92".

12.A.3.a. Soil types in area typically consists of cobble filled sandy loams ranging to silty to clayey sands. Soils are typically moist, loose, non-cohesive, and have high permeability.

12.A.3.b. The aquifer below site is not named.

12.A.3.c. The aquifer is a typically poorly graded medium sand with varying amounts of cobble and silt.

12.A.3.d. Depth to bedrock is undetermined, however it is anticipated to in excess of 60' below the site.

12.A.4.a. Flooding potential and run-off potential at the site is very minimal.

12.A.4.b. Flood protection measures at the site are not necessary.

12.B. Due to thorough tracking of shop wastes, impact to either groundwater or surface water is not probable.

13. Envirotech Soil Remediation Facility is currently an existing discharge permit, and is not included in this application.

Should you need any clarification of our responses, or have any comments, please contact at (505) 632-0615.

Respectfully submitted,
ENVIROTECH, INC.

Morris D. Young
President

District I
1625 N. French Dr., Hobbs, NM 88240
District II
811 South First, Artesia, NM 88210
District III
1000 Rio Brazos Road, Aztec, NM 87410
District IV
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico
Energy Minerals and Natural Resources

Oil Conservation Division
2040 South Pacheco
Santa Fe, NM 87505

Revised March 17, 1999

Submit Original
Plus 1 Copy
to Santa Fe
1 Copy to Appropriate
District Office

DISCHARGE PLAN APPLICATION FOR SERVICE COMPANIES, GAS PLANTS. REFINERIES, COMPRESSOR, AND CRUDE OIL PUMP STATIONS

(Refer to the OCD Guidelines for assistance in completing the application)

☐ New ☐ Renewal ☐ Modification

1. Type: _____

2. Operator: _____

   Address: _____

   Contact Person: _____ Phone: _____

3. Location: _____/4 _____/4 Section _____ Township _____ Range _____
   Submit large scale topographic map showing exact location.

4. Attach the name, telephone number and address of the landowner of the facility site.

5. Attach the description of the facility with a diagram indicating location of fences, pits, dikes and tanks on the facility.

6. Attach a description of all materials stored or used at the facility.

7. Attach a description of present sources of effluent and waste solids. Average quality and daily volume of waste water must be included.

8. Attach a description of current liquid and solid waste collection/treatment/disposal procedures.

9. Attach a description of proposed modifications to existing collection/treatment/disposal systems.

10. Attach a routine inspection and maintenance plan to ensure permit compliance.

11. Attach a contingency plan for reporting and clean-up of spills or releases.

12. Attach geological/hydrological information for the facility. Depth to and quality of ground water must be included.

13. Attach a facility closure plan, and other information as is necessary to demonstrate compliance with any other OCD rules, regulations and/or orders.

14. CERTIFICATION

I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

Name: _____ Title: _____

Signature: _____ Date: _____

5726 Hwy. 64 Farmington, NM SHOP

DISCHARGE PLAN APPLICATION

Oilfield Service Facilities

Part VI. Form (Optional)

Materials Stored or Used at the Facility - For each category of material listed below provide information on the general composition of the material or specific information (including brand names if requested), whether a solid or liquid, type of container, estimated volume stored and location. Submit MSD information for chemicals as requested. Use of this form is oprtional, but the information requested must be provided.

Name	*General Makeup or Specific Brand Name (if requested)*	*Solids(S) or Liquids(L)?*	*Type of Container (tank drum, etc.)*	*Estimated Volume Stored*	*Location (yard, shop, drum storage, etc.)*
1. Drilling Fluids (include general makeup & types special additives [e.g. oil, chrome, etc.])	None				
2. Brines - (KCl, NaCl, etc.)	None				
3. Acids/Caustics (Provide names & MSD sheets)	None				
4. Detergents/Soaps	Hand Soap Only				
5. Solvents & Degreasers (Provide names & MSD sheets)	None				
6. Paraffin Treatment/ Emulsion Breakers (Provide names & MSD sheets)	None				
7. Biocides (Provide names & MSD sheets)	None				
8. Others - (Include other liquids & solids, e.g. cement etc.)	Paint & Paint Supplies	(L)	Various Containers Less Than 1 Gal.	20gal.	Inside Shop

5726 Hwy 64 Farminton, NM SHOP

DISCHARGE PLAN APPLICATION

Oilfield Service Facilities

Part VII. Form (Optional)

Sources and Quantities of Effluent and Waste Solids Generated at the Facility - For each source include types of effluents (e.g. salt water, hydrocarbons, sewage, etc.), estimated quantities in barrels or gallons per month, and types and volumes of major additives (e.g. acids, biocides, detergents, degreasers, etc.). Use of this form is optional, but the information requested must be provided.

Waste Type	General Composition and Source (solvents from small parts cleaning, oil filters from trucks, etc.)	Volume Per Month (bbl or gal)	Major Additives (e.g. degreaser fluids from truck washing, soap in steam cleaners)
1. Truck Wastes (Describe types of original contents trucked [e.g. brine, produced water, drilling fluids, oil wastes, etc])	N/A		
2. Truck, Tank & Drum Washing	N/A		
3. Steam Cleaning of Parts, Equipment, Tanks	N/A		
4. Solvent/Degreaser Use	None		
5. Spent Acids, Caustics, or Completion Fluids (Describe)	Lead-Acid	1-2 Batteries	H_2SO_4

Waste Type	*General Composition and Source (solvents from small parts cleaning, oil filters from trucks, etc.)*	*Volume Per Month (bbl or gal)*	*Major Additives (e. degreaser fluids fro truck washing, soa in steam cleaners)*
6. Waste Slop Oil	N/A		
7. Waste Lubrication and Motor Oils	Used Motor Oil	100 gal. Used as Fuel Excess is Recycled	None
8. Oil Filters	Used Filters	Six	None
9. Solids and Sludges from Tanks (Describe types of materials [e.g. crude oil tank bottoms, sand, etc.])	N/A		
10. Painting Wastes	N/A		
11. Sewage (Indicate if other wastes mixed with sewage; if no commingling, domestic sewage under jurisdiction of the NMEID)	Domestic Only		Hand Soap
12. Other Waste Liquids (Describe in detail)	None		
13. Other Waste Solids (Cement, construction materials, used drums)	Occasional Oil Fuel Leak from Equip. on Soil (Not Reportable Quantities)	1-2 gal.	

5726 Hwy. 64 Farmington, NM SHOP

DISCHARGE PLAN APPLICATION

Oilfield Service Facilities

Part VIII. Form (Optional)

Summary Description of Existing Liquid and Solids Waste Collection and Disposal - For each waste type listed in Part VII, provide summary information about onsite collection and disposal systems. Information on basic construction features, specific descriptions, and wastewater schematics should be provided as required in the Guidelines. The use of this form is optional, but the summary information requested must be provided.

Waste Type	*Tank(T)/ Drum(S)*	*Floor Drain/(F) Sump(S)*	*Pits- Lined(L) or Unlined(U)*	*Onsite Injection Well*	*Leach Field*	*Offsite Disposal*
1. Truck Wastes	N/A					
2. Truck, Tank and Drum Washing	N/A					
3. Stream Cleaning of Parts, Equipment, Tanks	N/A					
4. Solvent/Degreaser Use	N/A					
5. Spent Acids, Caustics, or Completion Fluids	Spent Acid is stored in original battery until recycler picks up Entire battery. No formal approval needed					
6. Waste Slop Oil	N/A					

Waste Type	Tank(T)/ Drum(S)	Floor Drain/(F) Sump(S)	Pits- Lined(L) or Unlined(U)	Onsite Injection Well	Leach Field	Offsite Disposal
7. Waste Lubrication and Motor Oils	N/A					
8. Oil Filters	Hot drained into used motor oil drum					Permitted to dispose of 16/month at landfill for both locations
9. Solids and Sludges from Tanks	N/A					
10. Painting Wastes	N/A					
11. Sewage	Domestic Sewage, floor drain collect and channel into septic tank and leach field.					
12. Other Waste Liquids	N/A					
13. Other Waste Solids	Soils contaminated from oil/fuel leaks on equipment are subject to RCRA Characterization annually. Collected soils are placed at Envirotech's Soil Remediation Facility - Landfarm #2 upon approval by NMOCD.					

DISCHARGE PLAN APPLICATION

Oilfield Service Facilities

Part VI. Form (Optional)

Materials Stored or Used at the Facility - For each category of material listed below provide information on the general composition of the material or specific information (including brand names if requested), whether a solid or liquid, type of container, estimated volume stored and location. Submit MSD information for chemicals as requested. Use of this form is oprtional, but the information requested must be provided.

Name	General Makeup or Specific Brand Name (if requested)	Solids(S) or Liquids(L)?	Type of Container (tank drum, etc.)	Estimated Volume Stored	Location (yard, shop, drum storage, etc.)
1. Drilling Fluids (include general makeup & types special additives [e.g. oil, chrome, etc.])	None				
2. Brines - (KCl, NaCl, etc.)	None				
3. Acids/Caustics (Provide names & MSD sheets)	Sulfuric Acid	(L)	Orig. Plastic	3.5 Liters	Lab
	Hydrochloric Acid	(L)	Orig. Glass	2.5 Liters	Lab
	Nitric Acid	(L)	Orig. Glass	2.5 Liters	Lab
	Acetic Acid	(L)	Orig. Glass	12.5 Liters	Lab
4. Detergents/Soaps	Sodium Hydroxide	(L)	Orig. Plastic	1.0 Liter	Lab
	Alconox	(S)	Orig. Container	20 lbs.	Lab
	Micro-90	(L)	Orig. Plastic	1.0 Quart	Lab
	No-Chromix	(L)	Glass	0.5 Quart	Lab
5. Solvents & Degreasers (Provide names & MSD sheets)	Freon 113	(L)	Orig. Glass	2.0 Liters	Lab
	Methylene Chloride	(L)	Orig. Glass	12 Liters	Lab
	Hexane	(L)	Orig. Glass	8 Liters	Lab
	Isopropanol	(L)	Orig Glass	8 Liters	Lab
	Methanol	(L)	Orig. Glass	16 Liters	Lab
6. Paraffin Treatment/ Emulsion Breakers (Provide names & MSD sheets)	n-Propanol	(L)	Orig. Glass	4 Liters	Lab
	Cyclohexane	(L)	Orig. Glass	4 Liters	Lab
	Toluene	(L)	Orig. Glass	500 ml	Lab
	None				
7. Biocides (Provide names & MSD sheets)	None				
8. Others - (Include other liquids & solids, e.g. cement etc.)	Lab Waste	(S) & (L)	Drum w/Lid	Less Than 100 gal.	Lab & Yard

DISCHARGE PLAN APPLICATION

Oilfield Service Facilities

Part VII. Form (Optional)

Sources and Quantities of Effluent and Waste Solids Generated at the Facility - For each source include types of effluents (e.g. salt water, hydrocarbons, sewage, etc.), estimated quantities in barrels or gallons per month, and types and volumes of major additives (e.g. acids, biocides, detergents, degreasers, etc.). Use of this form is optional, but the information requested must be provided.

Waste Type	*General Composition and Source (solvents from small parts cleaning, oil filters from trucks, etc.)*	*Volume Per Month (bbl or gal)*	*Major Additives (e.g. degreaser fluids from truck washing, soap in steam cleaners)*
1. *Truck Wastes (Describe types of original contents trucked [e.g. brine, produced water, drilling fluids, oil wastes, etc])*	None		
2. *Truck, Tank & Drum Washing*	None		
3. *Steam Cleaning of Parts, Equipment, Tanks*	None		
4. *Solvent/Degreaser Use*	Lab Waste	2-3 Gallons	Soil/water samples containing Methylene Chloride, Freon, or Methanol as solvent fo Extraction minor quantites or containat
5. *Spent Acids, Caustics, or Completion Fluids (Describe)*	Lab Waste	Less Than 1/2 Gallons	Various Acids used in extraction and analysis from lab samples.

Waste Type	*General Composition and Source (solvents from small parts cleaning, oil filters from trucks, etc.)*	*Volume Per Month (bbl or gal)*	*Major Additives (e.g degreaser fluids from truck washing, soap in steam cleaners)*
6. *Waste Slop Oil*	None		
7. *Waste Lubrication and Motor Oils*	None		
8. *Oil Filters*	None		
9. *Solids and Sludges from Tanks (Describe types of materials [e.g. crude oil tank bottoms, sand, etc.])*	None		
10. *Painting Wastes*	None		
11. *Sewage (Indicate if other wastes mixed with sewage; if no commingling, domestic sewage under jurisdiction of the NMEID)*	Domestic Sewage only to septic tank and leach field.		
12. *Other Waste Liquids (Describe in detail)*	Combined solids/liquids make up lab waste listed in 4 and 5 of this section.		
13. *Other Waste Solids (Cement, construction materials, used drums)*	Combined solids/liquids make up lab waste listed in 4 and 5 of this section.		

5796 Hwy. 64 Farmington, NM Main Office

DISCHARGE PLAN APPLICATION

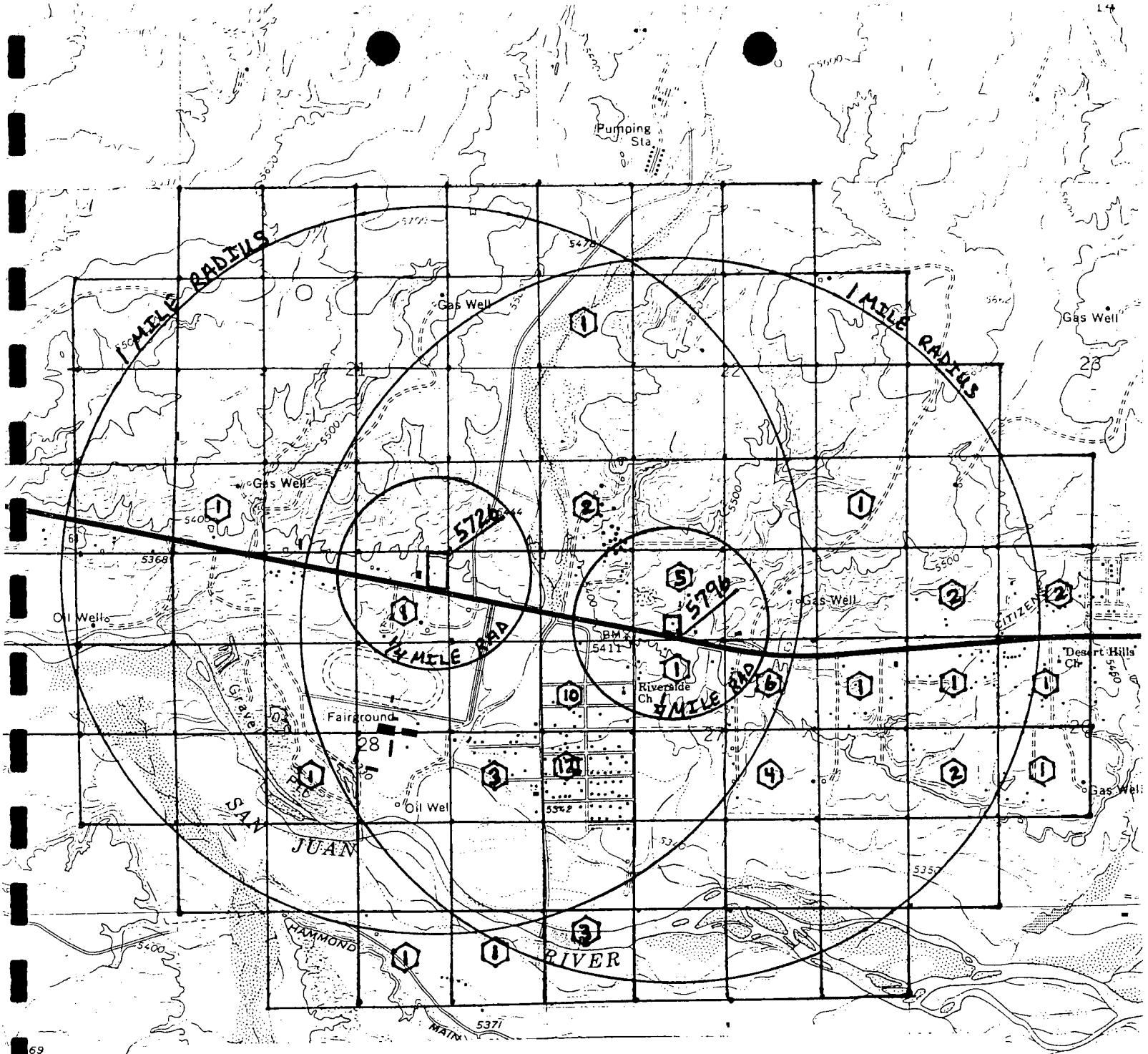
Oilfield Service Facilities

Part VIII. Form (Optional)

Summary Description of Existing Liquid and Solids Waste Collection and Disposal - For each waste type listed in Part VII, provide summary information about onsite collection and disposal systems. Information on basic construction features, specific descriptions, and wastewater schematics should be provided as required in the Guidelines. The use of this form is optional, but the summary information requested must be provided.

Waste Type	*Tank(T)/ Drum(S)*	*Floor Drain/(F) Sump(S)*	*Pits- Lined(L) or Unlined(U)*	*Onsite Injection Well*	*Leach Field*	*Offsite Disposal*
1. *Truck Wastes*	None					
2. *Truck, Tank and Drum Washing*	None					
3. *Stream Cleaning of Parts, Equipment, Tanks*	None					
4. *Solvent/Degreaser Use*	Drums collected at point of use.			No	No	Hazardous Was Facility
5. *Spent Acids, Caustics, or Completion Fluids*	Drums collected at point of use			No	No	Hazardous Waste Facility
6. *Waste Slop Oil*	None					

Waste Type	Tank(T)/ Drum(S)	Floor Drain/(F) Sump(S)	Pits- Lined(L) or Unlined(U)	Onsite Injection Well	Leach Field	Offsite Disposal
7. Waste Lubrication and Motor Oils	None					
8. Oil Filters	None at this site					
9. Solids and Sludges from Tanks	None					
10. Painting Wastes	None					
11. Sewage	Septic Tank/Leach Field	(F)	N/A	-	Yes	No
12. Other Waste Liquids						
13. Other Waste Solids	Combined solids and liquids make up lab waste listed in question 4 and 5 of this section					



SCALE 1:24 000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET
DOTTED LINES REPRESENT 10-FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

NEW MEXICO
QUADRANGLE LOCATION

ROAD CLASSIFICATION

Heavy-duty — Light-duty

Medium-duty — Unimproved dirt

State Route

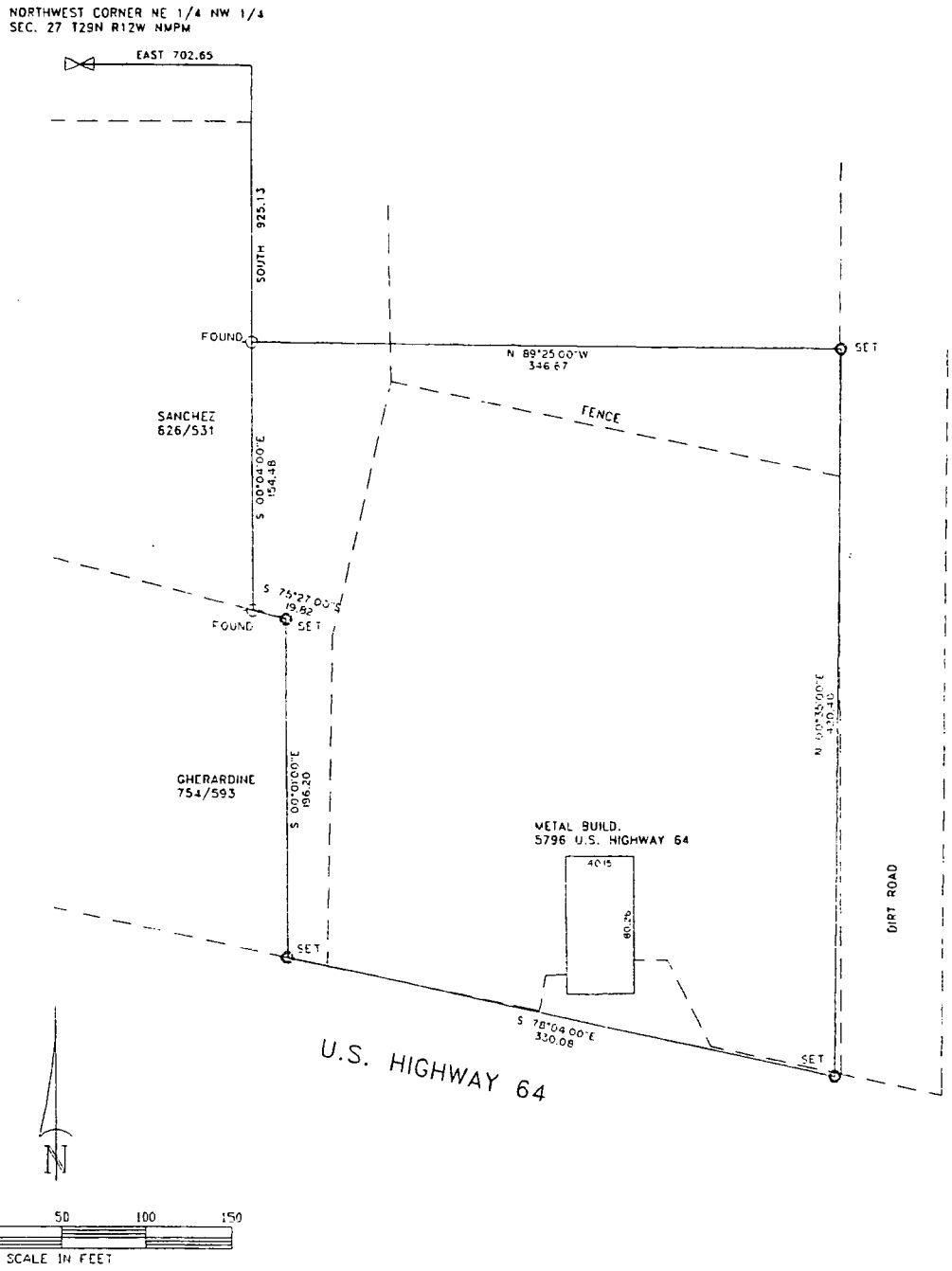
U. S. Route

HORN CANYON, N. MEX.

N3637.5—W10800/7.5

1965
PHOTOREVISED 1979
DMA 4357 II NE—SERIES V881

PROPERTY SURVEY FOR
ENVIROTECH INC.
E 1/2 NW 1/4 SEC. 27 T29N R12W NMPM
SAN JUAN COUNTY, NEW MEXICO



That part of the East One-Half of the Northwest Quarter (E1/2 NW1/4) of Section 27, in T29N R12W, N.M.P.M., described as follows:

BEGINNING East 702.65 feet and South 925.13 feet from the Northwest Corner of the NE1/4 NW1/4 of said Section 27, being a point on the East line of a tract of land conveyed to Myron Sanchez, et ux by warranty deed recorded in Book 826, Page 531 of the Records of San Juan County, New Mexico;

THENCE: S00°04'E for a distance of 154.48 feet, along the East line of said Sanchez tract to a point on the Northeasterly line of a tract of land conveyed to Joe D Gherardine by warranty deed recorded in Book 754, Page 593 of the Records of San Juan County, New Mexico;
THENCE: S75°27'E for a distance of 19.82 feet, to the northeasterly Corner of said Gherardine tract;
THENCE: S00°01'E for a distance of 196.20 feet, along the eat line of said Gherardine tract to a point on the northerly right-of-way line of Highway 64;
THENCE: S78°04'E for a distance of 330.08 feet, along the northerly right-of-way of Highway 64;
THENCE: N00°35'E for a distance of 420.40 feet;
THENCE: N89°25'W for a distance of 346.67 feet to the point of beginning.

I, GEORGE T. WALTERS , A REGISTERED PROFESSIONAL SURVEYOR UNDER THE LAWS OF THE STATE IN WHICH THIS SURVEY WAS PERFORMED, HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM FIELD NOTES OF AN ACTUAL SURVEY MEETING THE MINIMUM REQUIREMENTS OF THE STANDARDS FOR LAND SURVEYS AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT NO ENCROACHMENTS EXIST EXCEPT AS NOTED ABOVE, AND THAT ALL IMPROVEMENTS ARE SHOWN IN THEIR CORRECT LOCATION RELATIVE RECORD BOUNDARIES AS LOCATED BY THIS SURVEY.

DATE

9-22-92
REVISION DATE

GEORGE T. WALTERS
PROFESSIONAL SURVEYOR # 6159
STATE OF NEW MEXICO

CHENEY - WALTERS - ECHOLS
BREWER ASSOCIATES, INC.
909 W. APACHE, FARMINGTON, N.M.

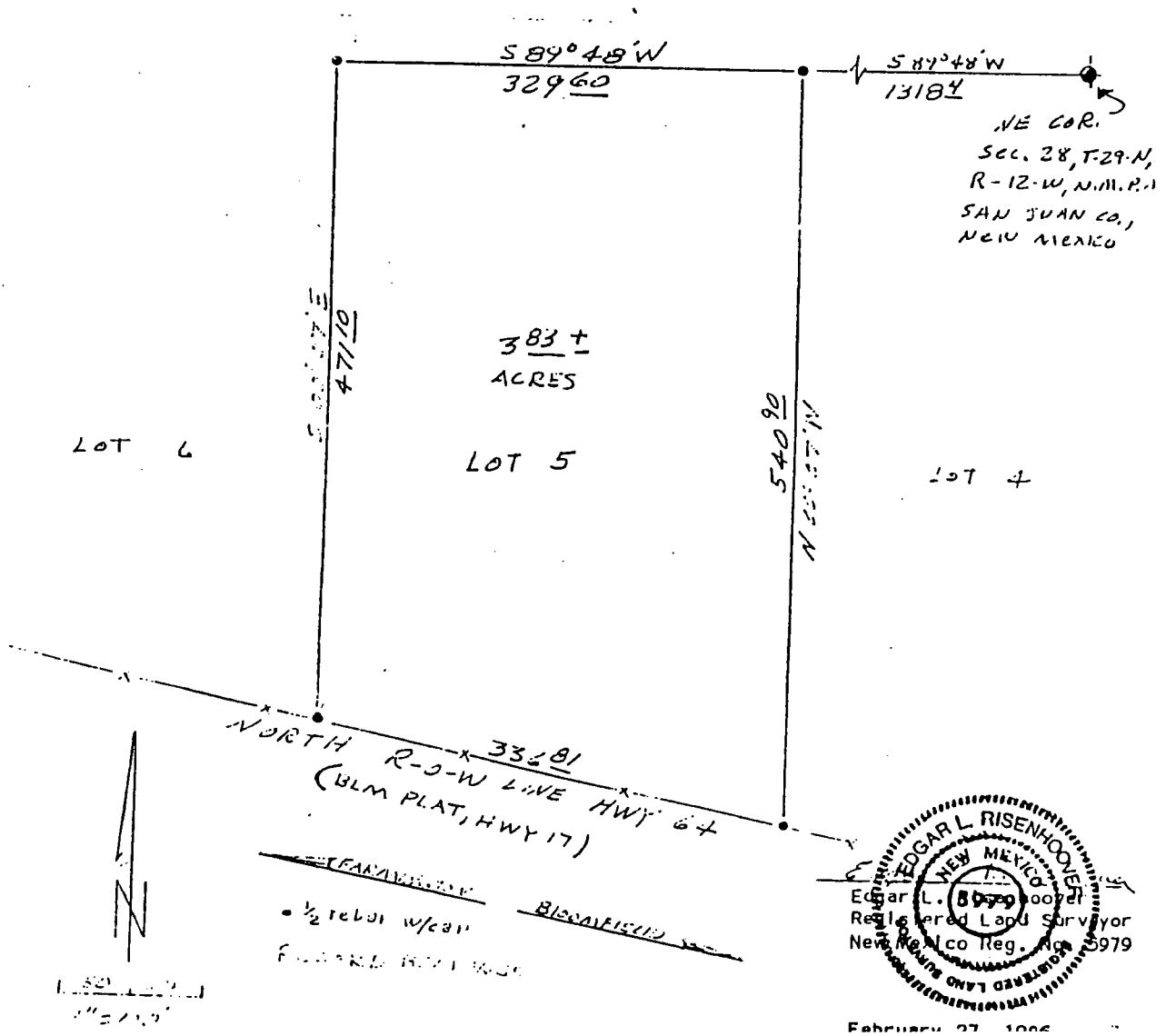
MORTGAGE PLAT? NO	PROPERTY SURVEY? YES	MONUMENTS SET? YES
DRAWN BY: GTW	PARTY CHIEF: GRT	APPROVED: GTW
DATE: 9-22-92	DATE OF FIELD SURVEY: 9-21-92	DEED: GUARDIAN
BASIS OF BEARING: WEST P.L.		PROJECT NO. 92533 FILE: 92533

Edgar L. Risenhoover

Registered Land Surveyor
New Mexico • Colorado • Arizona
Route 2, Box 105 / 665 County Road 1191
Farmington, New Mexico 87401
Phone (505) 325-3904

PRAX TRUJILLO

Lot 5 of Section 28 in T-29-N, R-12-W, N.M.P.M., San Juan County, New Mexico, same being situated in the NW¼NE¼ of said Section 28, containing 3.83 acres, more or less, and subject to all right-of-ways, easements, restrictions and reservations of record or in existance.



EDGAR L. RISENHOOVER
NEW MEXICO
8979
REGISTERED LAND SURVEYOR

Edgar L. Risenhoover
Registered Land Surveyor
New Mexico Reg. No. 8979

February 27, 1996

Waste Management of Four Corners
101 Spruce Street
Farmington, NM 87401
505/327-6284

SERVICE AGREEMENT
NON-HAZARDOUS WASTES

NEW ACCOUNT ☐
MAJOR ACCOUNT
SERVICE INCREASE
SERVICE DECREASE
RATE INCREASE
RATE DECREASE
CANCEL ☐
OTHER Update X

GENERAL CUSTOMER INFORMATION

ACCOUNT NUMBER and SERVICE TYPE

NAME	LOCATION ID	BILLING STATUS
ENVIROTECH		

STREET NUMBER	DIR	STREET NAME	EFFECTIVE DATE
5796		US Hwy 64-3014	4/8/94

CITY	INCORPORATED	COUNTY	STATE/PROVINCE	ZIP/POSTAL CODE	TEMP SERV
Farmington		San Juan			

LOCATION

PHONE	CONTACT	INDUSTRY SEGMENT	ALIAS	UNITS
632-0615	Robert Young			

CREDIT REFERENCE | SECURITY REQUIRED

SERVICE SPECIFICATIONS

SERVICE START/DELIVERY DATE: | SERVICE EFFECTIVE DATE:

QTY	DESCRIPTION/COMMENTS	OWNERSHIP CONT	OWNERSHIP CUST	OWNERSHIP SHAR	WASTE TYPE	SPECIAL WASTE PROFILE NUMBER	SPECIAL WASTE PROFILE EXPIRES	ROUTE ID	FREQ	SERVICE DAYS U	M	T	W	H	F	S	TKT REQ
1	3yd p/u	M							1wk		M						

IT IS A LEGALLY BINDING CONTRACT, AND CONTRACTOR AGREES TO PROVIDE AND CUSTOMER AGREES TO ACCEPT THE SERVICES AND EQUIPMENT AT THE CHARGES AND FREQUENCY INDICATED ON THIS AGREEMENT SUBJECT TO THE TERMS AND CONDITIONS SPECIFIED ON THE REVERSE SIDE.

NAME	PHONE
SAME	
ADDRESS	CONTACT
ADDRESS	MASTER ACCOUNT / RELATED ACCOUNT
STREET NUMBER / DIR / STREET NAME	MAJOR ACCOUNT
CITY / STATE/PROVINCE / ZIP/POSTAL CODE	PURCHASE ORDER NUMBER

SCHEDULE OF CHARGES

DESCRIPTION	TKT	FLAT	RATE
1- 3yd p/u 1x wk p/u		X	67.20

ADDITIONAL INSTRUCTIONS/COMMENTS:

SPECIAL SPECIAL WASTE TYPES AND AMOUNTS: Construction vehicle oil fitters 3-4 wk

TERMS AND CONDITIONS ON REVERSE SIDE AND THE ATTACHED CONTRACTOR'S DEFINITION OF SPECIAL WASTE ARE PART OF THIS AGREEMENT.

CUSTOMER	CONTRACTOR
AUTHORIZED SIGNATURE Robert M Young	REPRESENTATIVE'S SIGNATURE
NAME Robert M Young	
TITLE Environmental Coordinator DATE 4/19/94	G.M. REVIEW

Printed on recycled paper

1-PROPANOL
1-PROPANOL
1-PROPANOL

MATERIAL SAFETY DATA SHEET

FISHER SCIENTIFIC
CHEMICAL DIVISION
1 REAGENT LANE
FAIR LAWN NJ 07410
(201) 796-7100

EMERGENCY NUMBER: (201) 796-7100
CHEMTREC ASSISTANCE: (800) 424-9300

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SUBSTANCE IDENTIFICATION

CAS-NUMBER 71-23-8

SUBSTANCE: **1-PROPANOL**

TRADE NAMES/SYNONYMS:
N-PROPYL ALCOHOL; ETHYL CARBINOL; PROPYL ALCOHOL; PROPANOL; N-PROPANOL; 1-HYDROXYPROPANE; OPTAL; OSMOSOL EXTRA; PROPANOL-1; PROPYLIC ALCOHOL; 1-PROPYL ALCOHOL; STCC 4909267; UN 1274; A-414; A-414-S; BP1130; ACC19780

CHEMICAL FAMILY:
HYDROXYL, ALIPHATIC

MOLECULAR FORMULA: C3-H8-O

MOLECULAR WEIGHT: 60.11

CERCLA RATINGS (SCALE 0-3): HEALTH=3 FIRE=3 REACTIVITY=0 PERSISTENCE=0
NFPA RATINGS (SCALE 0-4): HEALTH=1 FIRE=3 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

COMPONENT: 1-PROPANOL PERCENT: 100
CAS# 71-23-8

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:
N-PROPYL ALCOHOL:
200 PPM (492 MG/M3) OSHA TWA; 250 PPM (614 MG/M3) OSHA STEL
200 PPM (492 MG/M3) ACGIH TWA (SKIN); 250 PPM (614 MG/M3) ACGIH STEL
200 PPM (492 MG/M3) NIOSH RECOMMENDED TWA (SKIN);
250 PPM (614 MG/M3) NIOSH RECOMMENDED STEL

MEASUREMENT METHOD: CHARCOAL TUBE; 2-PROPANOL/CARBON DISULFIDE; GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION; (NIOSH VOL. III # 1401, ALCOHOLS II).

OSHA LIMITS ADOPTED JANUARY 19, 1989 ARE SUBJECT TO THE DECISION OF THE 11TH CIRCUIT COURT OF APPEALS (AFL-CIO V. OSHA) AS OF JULY 7, 1992.

PHYSICAL DATA

DESCRIPTION: COLORLESS, LIQUID, WITH A MILD ALCOHOLIC-LIKE AND SLIGHTLY

STUPEFYING ODOR. BOILING POINT: 207 F (97 C)

MELTING POINT: -195 F (-126 C) SPECIFIC GRAVITY: 0.8053 @ 20 C

VAPOR PRESSURE: 15 MMHG @ 20 C EVAPORATION RATE: (BUTYL ACETATE=1) 1.3

SOLUBILITY IN WATER: SOLUBLE ODOR THRESHOLD: 30 PPM VAPOR DENSITY: 2.1

SOLVENT SOLUBILITY: SOLUBLE IN ETHANOL, ETHYL ETHER, ACETONE, BENZENE

VISCOSITY: 2.256 CP AT 20 C

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
DANGEROUS FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

MODERATE EXPLOSION HAZARD WHEN EXPOSED TO HEAT OR FLAME.

VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL A CONSIDERABLE DISTANCE TO A SOURCE OF IGNITION AND FLASH BACK.

VAPOR-AIR MIXTURES ARE EXPLOSIVE ABOVE FLASH POINT.

FLASH POINT: 74 F (23 C) (CC) UPPER EXPLOSIVE LIMIT: 13.7%

LOWER EXPLOSIVE LIMIT: 2.2% AUTOIGNITION TEMP.: 775 F (412 C)

FLAMMABILITY CLASS(OSHA): IB

FIREFIGHTING MEDIA:
DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR ALCOHOL-RESISTANT FOAM (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR ALCOHOL-RESISTANT FOAM (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

ALCOHOL FOAM
(NFPA 325M, FIRE HAZARD PROPERTIES OF FLAMMABLE LIQUIDS, GASES, AND VOLATILE SOLIDS, 1991).

FIREFIGHTING:
MOVE CONTAINER FROM FIRE AREA IF YOU CAN DO IT WITHOUT RISK. APPLY COOLING WATER TO SIDES OF CONTAINERS THAT ARE EXPOSED TO FLAMES UNTIL WELL AFTER FIRE IS OUT. STAY AWAY FROM ENDS OF TANKS. FOR MASSIVE FIRE IN CARGO AREA, USE UNMANNED HOSE HOLDER OR MONITOR NOZZLES; IF THIS IS IMPOSSIBLE, WITHDRAW FROM AREA AND LET FIRE BURN. WITHDRAW IMMEDIATELY IN CASE OF RISING SOUND FROM VENTING SAFETY DEVICE OR ANY DISCOLORATION OF TANK DUE TO FIRE. ISOLATE FOR 1/2 MILE IN ALL DIRECTIONS IF TANK, RAIL CAR OR TANK TRUCK IS INVOLVED IN FIRE (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5, GUIDE PAGE 26).

EXTINGUISH ONLY IF FLOW CAN BE STOPPED; USE FLOODING AMOUNTS OF WATER AS A FOG, SOLID STREAMS MAY BE INEFFECTIVE. COOL CONTAINERS WITH FLOODING AMOUNTS OF WATER, APPLY FROM AS FAR A DISTANCE AS POSSIBLE. AVOID BREATHING VAPORS, KEEP UPWIND.

WATER MAY BE INEFFECTIVE (NFPA 325M, FIRE HAZARD PROPERTIES OF FLAMMABLE LIQUIDS, GASES, AND VOLATILE SOLIDS, 1991)

TRANSPORTATION DATA

DEPARTMENT OF TRANSPORTATION HAZARD CLASSIFICATION 49-CFR 172.101:
FLAMMABLE LIQUID

DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS 49-CFR 172.101 AND SUBPART E:
FLAMMABLE LIQUID

DEPARTMENT OF TRANSPORTATION PACKAGING REQUIREMENTS: 49-CFR 173.125
EXCEPTIONS: 49-CFR 173.118

FINAL RULE ON HAZARDOUS MATERIALS REGULATIONS (HMR, 49 CFR PARTS 171-180), DOCKET NUMBERS HM-181, HM-181A, HM-181B, HM-181C, HM-181D AND HM-204. EFFECTIVE DATE OCTOBER 1, 1991. HOWEVER, COMPLIANCE WITH THE REGULATIONS IS AUTHORIZED ON AND AFTER JANUARY 1, 1991. (55 FR 52402, 12/21/90)

EXCEPT FOR EXPLOSIVES, INHALATION HAZARDS, AND INFECTIOUS SUBSTANCES, THE EFFECTIVE DATE FOR HAZARD COMMUNICATION REQUIREMENTS IS EXTENDED TO OCTOBER 1, 1993. (56 FR 47158, 09/18/91)

U.S. DEPARTMENT OF TRANSPORTATION SHIPPING NAME-ID NUMBER, 49 CFR 172.101:
N-PROPANOL-UN 1274

U.S. DEPARTMENT OF TRANSPORTATION HAZARD CLASS OR DIVISION, 49 CFR 172.101:
3 - FLAMMABLE LIQUID

U.S. DEPARTMENT OF TRANSPORTATION PACKING GROUP, 49 CFR 172.101:
PG II

U.S. DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS, 49 CFR 172.101 AND SUBPART E:
FLAMMABLE LIQUID

U.S. DEPARTMENT OF TRANSPORTATION PACKAGING AUTHORIZATIONS:
EXCEPTIONS: 49 CFR 173.150
NON-BULK PACKAGING: 49 CFR 173.202
BULK PACKAGING: 49 CFR 173.242

U.S. DEPARTMENT OF TRANSPORTATION QUANTITY LIMITATIONS 49 CFR 172.101:
PASSENGER AIRCRAFT OR RAILCAR: 5 L
CARGO AIRCRAFT ONLY: 60 L

TOXICITY

N-PROPYL ALCOHOL (1-PROPANOL):
IRRITATION DATA: 500 MG OPEN SKIN-RABBIT MILD; 20 MG/24 HOURS SKIN-RABBIT MODERATE; 4 MG OPEN EYE-RABBIT SEVERE; 20 MG/24 HOURS EYE-RABBIT MODERATE.
TOXICITY DATA: 48 GM/M3 INHALATION-MOUSE LC50; 5040 MG/KG SKIN-RABBIT LD50; 5700 MG/KG ORAL-WOMAN LDLO; 1870 MG/KG ORAL-RAT LD50; 6800 MG/KG

ORAL-MOUSE LD50; 3500 MG/KG ORAL-RABBIT LDLO; 3 GM/KG ORAL-DOG LDLO; 4 GM/KG SUBCUTANEOUS-DOG LDLO; 3 GM/KG SUBCUTANEOUS-RABBIT LDLO; 4700 MG/KG SUBCUTANEOUS-MOUSE LD50; 5 MG/KG SUBCUTANEOUS-MAMMAL LDLO; 590 MG/KG INTRAVENOUS-RAT LD50; 697 MG/KG INTRAVENOUS-MOUSE LD50; 483 MG/KG INTRAVENOUS-RABBIT LD50; 4008 MG/KG INTRAVENOUS-CAT LDLO; 2164 MG/KG INTRAPERITONEAL-RAT LD50; 3125 MG/KG INTRAPERITONEAL-MOUSE LD50; 515 MG/KG INTRAPERITONEAL-RABBIT LD50; 1208 MG/KG INTRAPERITONEAL-GUINEA PIG LD50; 2338 MG/KG INTRAPERITONEAL-HAMSTER LD50; 4500 MG/KG UNREPORTED-RABBIT LDLO; MUTAGENIC DATA (RTECS); REPRODUCTIVE EFFECTS DATA (RTECS); TUMORIGENIC DATA (RTECS).
CARCINOGEN STATUS: NONE.
LOCAL EFFECTS: IRRITANT- INHALATION, SKIN, EYE.
ACUTE TOXICITY LEVEL: MODERATELY TOXIC BY INHALATION, INGESTION; SLIGHTLY TOXIC BY DERMAL ABSORPTION.
TARGET EFFECTS: CENTRAL NERVOUS SYSTEM DEPRESSANT.
AT INCREASED RISK FROM EXPOSURE: PERSONS WITH PRE-EXISTING SKIN DISORDERS; IMPAIRED LIVER, RENAL AND/OR PULMONARY FUNCTION.
ADDITIONAL DATA: ALCOHOL MAY ENHANCE THE TOXIC EFFECTS.

HEALTH EFFECTS AND FIRST AID

INHALATION:
N-PROPYL ALCOHOL (1-PROPANOL):
IRRITANT/NARCOTIC. 4000 PPM IMMEDIATELY DANGEROUS TO LIFE OR HEALTH.
ACUTE EXPOSURE- INHALATION OF VAPORS MAY CAUSE MODERATE IRRITATION OF THE UPPER RESPIRATORY TRACT WITH COUGHING AND SHORTNESS OF BREATH. EXPOSURE TO HIGH CONCENTRATIONS MAY CAUSE MILD CENTRAL NERVOUS SYSTEM DEPRESSION WITH DIZZINESS, DROWSINESS, ATAXIA, INCOORDINATION, HEADACHE, STUPOR AND PERSISTENT NAUSEA AND VOMITING, AREFLEXIA, HEMATEMESIS, OLIGURIA FOLLOWED BY DIURESIS, LIVER DAMAGE, DEPRESSED RESPIRATION, PROSTRATION AND UNCONSCIOUSNESS MAY OCCUR. DEATH MAY OCCUR DUE TO RESPIRATORY FAILURE. MICE EXPOSED TO VAPOR AT 3250 PPM FOR 90-120 MINUTES DEVELOPED ATAXIA; DEEP NARCOSIS OCCURRED AFTER 240 MINUTES AT 4100 PPM AND AFTER 60 MINUTES AT 24,500 PPM.
CHRONIC EXPOSURE- REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS.

FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, PERFORM ARTIFICIAL RESPIRATION. KEEP PERSON WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:
N-PROPYL ALCOHOL (1-PROPANOL):
IRRITANT.
ACUTE EXPOSURE- CONTACT MAY CAUSE IRRITATION WITH REDNESS. ANIMAL STUDIES INDICATE SKIN ABSORPTION MAY OCCUR.
CHRONIC EXPOSURE- REPEATED OR PROLONGED EXPOSURE MAY CAUSE DEFATTING OF THE SKIN RESULTING IN DRYING, CRACKING, DERMATITIS AND POSSIBLY CORROSION. IT IS POSSIBLE THAT PERSONS SENSITIVE TO ISOPROPYL ALCOHOL MAY HAVE A CROSS-REACTION WITH N-PROPYL ALCOHOL. APPLICATION OF 38 ML/KG PER DAY TO RABBIT SKIN FOR 30 DAYS OVER A PERIOD OF 6 WEEKS RESULTED IN DEATH OF ONE THIRD OF THE TEST ANIMALS.

FIRST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:
N-PROPYL ALCOHOL (1-PROPANOL):
IRRITANT.
ACUTE EXPOSURE- VAPORS MAY CAUSE TRANSIENT EYE IRRITATION WITH REDNESS AND PAIN. INSTILLATION OF 0.1 ML OF 1-PROPYL ALCOHOL INTO THE CONJUNCTIVAL SAC OF RABBITS PRODUCED MARKED TO SEVERE CONJUNCTIVITIS, IRITIS, CORNEAL OPACITIES AND ULCERATIONS. DELAYED EFFECTS OF PANNUS FORMATION AND KERATACONUS ALSO OCCURRED.
CHRONIC EXPOSURE- REPEATED OR PROLONGED EXPOSURE MAY CAUSE CONJUNCTIVITIS.

FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER OR NORMAL SALINE, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:
N-PROPYL ALCOHOL (1-PROPANOL):
NARCOTIC.
ACUTE EXPOSURE- INGESTION MAY CAUSE GASTROINTESTINAL PAIN, PERSISTENT NAUSEA AND VOMITING, HEMATEMESIS, CRAMPS, DIARRHEA AND DECREASED BLOOD PRESSURE. CENTRAL NERVOUS SYSTEM DEPRESSION MAY OCCUR WITH DROWSINESS, STUPOR, INCOORDINATION, ATAXIA, HEADACHE, DIZZINESS, AREFLEXIA, DEPRESSED RESPIRATION, PROSTRATION AND UNCONSCIOUSNESS, OLIGURIA FOLLOWED BY DIURESIS AND LIVER DAMAGE MAY ALSO OCCUR. ASPIRATION PNEUMONIA IS ALSO A RISK. A HUMAN DEATH HAS BEEN REPORTED AFTER INGESTION OF 400 TO 500 ML. THE PATHOLOGICAL FINDINGS INCLUDED BRAIN AND LUNG EDEMA.
CHRONIC EXPOSURE- PROLONGED TREATMENT OF RATS HAS BEEN REPORTED TO CAUSE SEVERE LIVER INJURY, HYPERPLASIA OF HEMATOPOIETIC TISSUE, MALIGNANT LIVER TUMORS AND LEUKEMIA.

FIRST AID- GASTRIC LAVAGE WITH A PROTECTED AIRWAY MAY BE USEFUL EVEN IF

DELAYED. GIVE ACTIVATED CHARCOAL. IF RESPIRATION IS DEPRESSED, DO NOT ATTEMPT EMESIS; GIVE OXYGEN BY ARTIFICIAL RESPIRATION. MAINTAIN BLOOD PRESSURE. (DREISBACH, HANDBOOK OF POISONING, 11TH ED.)LAVAGE MUST BE ADMINISTERED BY QUALIFIED MEDICAL PERSONNEL.

ANTIDOTE:
NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

REACTIVITY

REACTIVITY:
STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.

INCOMPATIBILITIES:
N-PROPYL ALCOHOL (1-PROPANOL):
ALKALI AND ALKALINE EARTH METALS: REACTS VIOLENTLY, GENERATING HIGHLY FLAMMABLE HYDROGEN GAS.
COATINGS: ATTACKED.
OXIDIZERS (STRONG): POSSIBLE FIRE AND EXPLOSION.
PLASTICS: ATTACKED.
POTASSIUM TERT-BUTOXIDE: VIOLENT IGNITION MAY OCCUR.
RUBBER: ATTACKED.
SEE ALSO ALCOHOLS.

DECOMPOSITION:
THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE TOXIC OXIDES OF CARBON.

POLYMERIZATION:
HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

STORAGE AND DISPOSAL

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE. FOR ASSISTANCE, CONTACT THE DISTRICT DIRECTOR OF THE ENVIRONMENTAL PROTECTION AGENCY.

STORAGE

STORE IN ACCORDANCE WITH 29 CFR 1910.106.

BONDING AND GROUNDING: SUBSTANCES WITH LOW ELECTROCONDUCTIVITY, WHICH MAY BE IGNITED BY ELECTROSTATIC SPARKS, SHOULD BE STORED IN CONTAINERS WHICH MEET THE BONDING AND GROUNDING GUIDELINES SPECIFIED IN NFPA 77-1983, RECOMMENDED PRACTICE ON STATIC ELECTRICITY.

STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

DISPOSAL

DISPOSAL MUST BE IN ACCORDANCE WITH STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE, 40 CFR 262. EPA HAZARDOUS WASTE NUMBER D001.
100 POUND CERCLA SECTION 103 REPORTABLE QUANTITY.

****

CONDITIONS TO AVOID

AVOID CONTACT WITH HEAT, SPARKS, FLAMES, OR OTHER SOURCES OF IGNITION. VAPORS MAY BE EXPLOSIVE AND POISONOUS; DO NOT ALLOW UNNECESSARY PERSONNEL IN AREA. DO NOT OVERHEAT CONTAINERS; CONTAINERS MAY VIOLENTLY RUPTURE AND TRAVEL A CONSIDERABLE DISTANCE IN HEAT OF FIRE.

****

SPILL AND LEAK PROCEDURES

OCCUPATIONAL SPILL:
SHUT OFF IGNITION SOURCES. STOP LEAK IF YOU CAN DO IT WITHOUT RISK. USE WATER SPRAY TO REDUCE VAPORS. FOR SMALL SPILLS, TAKE UP WITH SAND OR OTHER ABSORBENT MATERIAL AND PLACE INTO CONTAINERS FOR LATER DISPOSAL. FOR LARGER SPILLS, DIKE FAR AHEAD OF SPILL FOR LATER DISPOSAL. NO SMOKING, FLAMES OR FLARES IN HAZARD AREA. KEEP UNNECESSARY PEOPLE AWAY; ISOLATE HAZARD AREA AND DENY ENTRY.

PROTECTIVE EQUIPMENT

VENTILATION:
PROVIDE LOCAL EXHAUST OR GENERAL DILUTION VENTILATION TO MEET PUBLISHED EXPOSURE LIMITS. VENTILATION EQUIPMENT MUST BE EXPLOSION-PROOF.

RESPIRATOR:
THE FOLLOWING RESPIRATORS AND MAXIMUM USE CONCENTRATIONS ARE RECOMMENDATIONS BY THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIOSH POCKET GUIDE TO CHEMICAL HAZARDS; NIOSH CRITERIA DOCUMENTS OR BY THE U.S. DEPARTMENT OF LABOR, 29 CFR 1910 SUBPART Z.
THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND

IN THE WORK PLACE, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

N-PROPYL ALCOHOL:

1000 PPM- ANY POWERED AIR-PURIFYING RESPIRATOR WITH ORGANIC VAPOR CARTRIDGE(S).
ANY CHEMICAL CARTRIDGE RESPIRATOR WITH ORGANIC VAPOR CARTRIDGE(S).

2000 PPM- ANY SUPPLIED-AIR RESPIRATOR.
ANY SELF-CONTAINED BREATHING APPARATUS.

4000 PPM- ANY SUPPLIED-AIR RESPIRATOR OPERATED IN A CONTINUOUS FLOW MODE.
ANY SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE.
ANY AIR-PURIFYING FULL FACEPIECE RESPIRATOR (GAS MASK) WITH A CHIN-STYLE OR FRONT- OR BACK-MOUNTED ORGANIC VAPOR CANISTER.
ANY SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE.

ESCAPE- ANY AIR-PURIFYING FULL FACEPIECE RESPIRATOR (GAS MASK) WITH A CHIN-STYLE OR FRONT- OR BACK-MOUNTED ORGANIC VAPOR CANISTER.
ANY APPROPRIATE ESCAPE-TYPE SELF-CONTAINED BREATHING APPARATUS.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ANY SUPPLIED-AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

CLOTHING:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT REPEATED OR PROLONGED SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS SUBSTANCE.

EYE PROTECTION:
EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES AND A FACESHIELD TO PREVENT CONTACT WITH THIS SUBSTANCE.

EMERGENCY WASH FACILITIES:
WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES AND/OR SKIN MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN AND QUICK DRENCH SHOWER WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

AUTHORIZED - FISHER SCIENTIFIC, INC.
CREATION DATE: 12/06/84 REVISION DATE: 12/30/92

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DATE: 07/01/92 ACCT: 146965-01
INDEX: 02921820210 CAT NO: H3031 PO NBR: 921D19

N-HEXANE
N-HEXANE
N-HEXANE

MATERIAL SAFETY DATA SHEET

FISHER SCIENTIFIC
CHEMICAL DIVISION
1 REAGENT LANE
FAIR LAWN NJ 07410
(201) 796-7100

EMERGENCY NUMBER: (201) 796-7100
CHEMTREC ASSISTANCE: (800) 424-9300

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SUBSTANCE IDENTIFICATION

SUBSTANCE: **N-HEXANE** CAS-NUMBER 110-54-3

TRADE NAMES/SYNONYMS:
HEXANE; NCI-C60571; HEXYLHYDRIDE; NORMAL HEXANE; SKELLYSOLVE B; STCC 4908183; UN 1208; H301; C6H14; ACC10950

CHEMICAL FAMILY:
HYDROCARBON, ALIPHATIC

MOLECULAR FORMULA: C-H3-(C-H2)4-C-H3

MOLECULAR WEIGHT: 86.18

CERCLA RATINGS (SCALE 0-3): HEALTH=3 FIRE=3 REACTIVITY=0 PERSISTENCE=1
NFPA RATINGS (SCALE 0-4): HEALTH=1 FIRE=3 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

COMPONENT: N-HEXANE PERCENT: 100.0
CAS# 110-54-3

OTHER CONTAMINANTS: NONE.

EXPOSURE LIMITS:
N-HEXANE:
50 PPM (180 MG/M3) OSHA TWA
50 PPM (180 MG/M3) ACGIH TWA
50 PPM (180 MG/M3) NIOSH RECOMMENDED TWA
50 PPM (180 MG/M3) DFG MAK TWA;
100 PPM (360 MG/M3) DFG MAK 30 MINUTE PEAK, AVERAGE VALUE, 4 TIMES/SHIFT

MEASUREMENT METHOD: CHARCOAL TUBE; CARBON DISULFIDE; GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION; (NIOSH VOL. III # 1500, HYDROCARBONS).

PHYSICAL DATA

DESCRIPTION: CLEAR, COLORLESS MOBILE LIQUID WITH A MILD GASOLINE-LIKE ODOR.

BOILING POINT: 156 F (69 C) MELTING POINT: -139 F (-95 C)

SPECIFIC GRAVITY: 0.6603 VISCOSITY: .32 CPS @ 25 C VOLATILITY: 100%

VAPOR PRESSURE: 124 MMHG @ 20 C EVAPORATION RATE: (BUTYL ACETATE=1) 15.8

PH: NEUTRAL SOLUBILITY IN WATER: 0.014% @ 20 C

ODOR THRESHOLD: 64-244 PPM VAPOR DENSITY: 3.0

SOLVENT SOLUBILITY: SOLUBLE IN ALCOHOL, CHLOROFORM, ETHER, ACETONE, AND OTHER ORGANIC SOLVENTS.

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
DANGEROUS FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL A CONSIDERABLE DISTANCE TO A SOURCE OF IGNITION AND FLASH BACK.

VAPOR-AIR MIXTURES ARE EXPLOSIVE.

DUE TO LOW ELECTROCONDUCTIVITY OF THE SUBSTANCE, FLOW OR AGITATION MAY GENERATE ELECTROSTATIC CHARGES RESULTING IN SPARKS WITH POSSIBLE IGNITION.

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FLASH POINT: -7 F (-22 C) (CC) UPPER EXPLOSIVE LIMIT: 7.5%

LOWER EXPLOSIVE LIMIT: 1.1% AUTOIGNITION TEMP.: 437 F (225 C)

FLAMMABILITY CLASS(OSHA): IB

FIREFIGHTING MEDIA:
DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR REGULAR FOAM
(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR REGULAR FOAM
(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FIREFIGHTING:
MOVE CONTAINER FROM FIRE AREA IF YOU CAN DO IT WITHOUT RISK. APPLY COOLING WATER TO SIDES OF CONTAINERS THAT ARE EXPOSED TO FLAMES UNTIL WELL AFTER FIRE IS OUT. STAY AWAY FROM ENDS OF TANKS. FOR MASSIVE FIRE IN CARGO AREA, USE UNMANNED HOSE HOLDER OR MONITOR NOZZLES; IF THIS IS IMPOSSIBLE, WITHDRAW FROM AREA AND LET FIRE BURN. WITHDRAW IMMEDIATELY IN CASE OF RISING SOUND FROM VENTING SAFETY DEVICE OR ANY DISCOLORATION OF TANK DUE TO FIRE. ISOLATE FOR 1/2 MILE IN ALL DIRECTIONS IF TANK, RAIL CAR OR TANK TRUCK IS INVOLVED IN FIRE (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5, GUIDE PAGE 27).

EXTINGUISH ONLY IF FLOW CAN BE STOPPED; USE WATER IN FLOODING AMOUNTS AS FOG. SOLID STREAMS MAY NOT BE EFFECTIVE. COOL CONTAINERS WITH FLOODING QUANTITIES OF WATER. APPLY FROM AS FAR A DISTANCE AS POSSIBLE. AVOID BREATHING TOXIC VAPORS; KEEP UPWIND. EVACUATE TO A RADIUS OF 1500 FEET FOR UNCONTROLLABLE FIRES. CONSIDER EVACUATION OF DOWNWIND AREA IF MATERIAL IS LEAKING.

WATER MAY BE INEFFECTIVE (NFPA 325M, FIRE HAZARD PROPERTIES OF FLAMMABLE LIQUIDS, GASES, AND VOLATILE SOLIDS, 1991)

TRANSPORTATION DATA

DEPARTMENT OF TRANSPORTATION HAZARD CLASSIFICATION 49 CFR 172.101:
FLAMMABLE LIQUID

DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS 49 CFR 172.101 AND SUBPART E:
FLAMMABLE LIQUID

DEPARTMENT OF TRANSPORTATION PACKAGING REQUIREMENTS: 49 CFR 173.119
EXCEPTIONS: 49 CFR 173.118

FINAL RULE ON HAZARDOUS MATERIALS REGULATIONS (HMR, 49 CFR PARTS 171-180), DOCKET NUMBERS HM-181, HM-181A, HM-181B, HM-181C, HM-181D AND HM-204. EFFECTIVE DATE OCTOBER 1, 1991, HOWEVER, COMPLIANCE WITH THE REGULATIONS IS AUTHORIZED ON AND AFTER JANUARY 1, 1991. (55 FR 52402, 12/21/90)

EXCEPT FOR EXPLOSIVES, INHALATION HAZARDS, AND INFECTIOUS SUBSTANCES, THE EFFECTIVE DATE FOR HAZARD COMMUNICATION REQUIREMENTS IS EXTENDED TO OCTOBER 1, 1993. (56 FR 47158, 10/18/91)

U.S. DEPARTMENT OF TRANSPORTATION SHIPPING NAME-ID NUMBER, 49 CFR 172.101:
HEXANES-UN 1208

U.S. DEPARTMENT OF TRANSPORTATION HAZARD CLASS OR DIVISION, 49 CFR 172.101:
3 - FLAMMABLE LIQUID

U.S. DEPARTMENT OF TRANSPORTATION PACKING GROUP, 49 CFR 172.101:
PG II

U.S. DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS, 49 CFR 172.101 AND SUBPART E:
FLAMMABLE LIQUID

U.S. DEPARTMENT OF TRANSPORTATION PACKAGING AUTHORIZATIONS:
EXCEPTIONS: 49 CFR 173.150
NON-BULK PACKAGING: 49 CFR 173.202
BULK PACKAGING: 49 CFR 173.242

U.S. DEPARTMENT OF TRANSPORTATION QUANTITY LIMITATIONS 49 CFR 172.101:
PASSENGER AIRCRAFT OR RAILCAR: 5 L
CARGO AIRCRAFT ONLY: 60 L

TOXICITY

N-HEXANE:
IRRITATION DATA: 10 MG EYE-RABBIT MILD.
TOXICITY DATA: 190 PPM/8 WEEKS INHALATION-HUMAN TCLO; 120 GM/M3 INHALATION-MOUSE LCLO; 28,710 MG/KG ORAL-RAT LD50; 831 MG/KG INTRAVENOUS-MOUSE LDLO; 132 MG/KG INTRAVENOUS-RABBIT LDLO; 9100 MG/KG INTRAPERITONEAL-RAT LDLO; MUTAGENIC DATA (RTECS); REPRODUCTIVE EFFECTS DATA (RTECS).
CARCINOGEN STATUS: NONE.
LOCAL EFFECTS: IRRITANT- SKIN, EYE.
ACUTE TOXICITY LEVEL: RELATIVELY NON-TOXIC BY INGESTION.
TARGET EFFECTS: CENTRAL NERVOUS SYSTEM DEPRESSANT; NEUROTOXIN.

AT INCREASED RISK FROM EXPOSURE: PERSONS WITH SKIN, PULMONARY, LIVER, OR KIDNEY DISORDERS.
ADDITIONAL DATA: ALCOHOL MAY ENHANCE THE TOXIC EFFECT. A LOW ORDER OF MYOCARDIAL SENSITIZATION TO EPINEPHRINE MAY OCCUR. ACETONE AND METHYL ETHYL KETONE MAY ENHANCE THE TOXIC EFFECTS.

HEALTH EFFECTS AND FIRST AID

INHALATION:
N-HEXANE:
IRRITANT/NARCOTIC/NEUROTOXIN.
5000 PPM IMMEDIATELY DANGEROUS TO LIFE OR HEALTH.
ACUTE EXPOSURE- 880 PPM FOR 15 MINUTES HAS CAUSED UPPER RESPIRATORY TRACT IRRITATION. EXPOSURE TO 1000-5000 PPM MAY PRODUCE HEADACHE, NAUSEA, AND DIZZINESS. OTHER EFFECTS MAY INCLUDE GIDDINESS, COUGHING, NUMBNESS IN THE EXTREMITIES, DIFFICULTY WALKING, DEFECTS OF MEMORY, EXCITEMENT FOLLOWED BY DEPRESSION, AND UNCONSCIOUSNESS. ANESTHESIA OF SHORT DURATION WITHOUT SEQUELA IS POSSIBLE. PULMONARY EDEMA, CARDIAC ARRHYTHMIAS, BRAIN DAMAGE, CARDIAC ARREST AND DEATH MAY RESULT. HIGH CONCENTRATIONS MAY PRODUCE ASPHYXIA. CONVULSIONS HAVE BEEN PRODUCED IN ANIMALS.
CHRONIC EXPOSURE- RESULTS IN AXONAL NEUROPATHY. NEUROPATHY IS OF AN INSIDIOUS BILATERAL, SYMMETRICAL, SENSORIMOTOR, PERIPHERAL NATURE. 100 PPM DAILY MAY PRODUCE CHANGES IN MUSCLE STRENGTH. PROLONGED EXPOSURE MAY CAUSE EFFECTS AS IN ACUTE EXPOSURE AS WELL AS MEMORY LOSS, PROGRESSIVE WEAKNESS, ACHING MUSCLES, SENSORY LOSS IN FEET AND HANDS, CALF CRAMPS, FACIAL NUMBNESS, IMPOTENCE, BLURRED VISION, COLOR VISION ABNORMALITIES, AND PARALYSIS OF MUSCLES USUALLY OF LOWER LIMBS. EXAMINATION REVEALS HYPOACTIVE DEEP KNEE REFLEXES, BILATERAL FOOTDROP, REDUCTION IN NERVE AND SENSITIVE CONDUCTION VELOCITIES, MODIFICATION OF DISTAL LATENCY, DIMINISHING OF SENSORY POTENTIAL, AND NEUROGENIC ATROPHY OF SKELETAL MUSCLE. REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS.

FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, PERFORM ARTIFICIAL RESPIRATION. KEEP PERSON WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:
N-HEXANE:
IRRITANT.
ACUTE EXPOSURE- VAPOR MAY CAUSE IRRITATION WITH REDNESS. 2 ML/KG/4 HOURS ON RABBIT SKIN RESULTED IN ATAXIA AND RESTLESSNESS. AT 5 ML/KG/4 HOURS SOME DEATHS OCCURRED.
CHRONIC EXPOSURE- REPEATED OR PROLONGED CONTACT MAY CAUSE DERMATITIS DUE TO DEFATTING. BLISTER FORMATION, ITCHING, ERYTHEMA, PIGMENTATION AND PAIN HAVE BEEN REPORTED. SKIN EXPOSURES MAY ENHANCE NEUROTOXIC EFFECTS FROM INHALATION EXPOSURE.

FIRST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:
N-HEXANE:
IRRITANT.
ACUTE EXPOSURE- CONTACT MAY CAUSE IRRITATION WITH REDNESS AND PAIN. VAPORS AT 880 PPM FOR 15 MINUTES CAUSED IRRITATION.
CHRONIC EXPOSURE- REPEATED OR PROLONGED CONTACT WITH IRRITANTS MAY CAUSE CONJUNCTIVITIS.

FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER OR NORMAL SALINE, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:
N-HEXANE:
NARCOTIC.
ACUTE EXPOSURE- MAY CAUSE CENTRAL NERVOUS SYSTEM EFFECTS, HEADACHE, NAUSEA, VOMITING, VERTIGO, BRONCHIAL AND GENERAL INTESTINAL IRRITATION WITH ABDOMINAL SWELLING AND PAIN. THE FATAL HUMAN DOSE MAY BE ABOUT 50 GRAMS. MAY VAPORIZE WHEN ASPIRATED INTO THE TRACHEOBRONCHIAL TREE WITH A RESULTANT RAPID DILUTION OF ALVEOLAR AIR AND MARKED FALL IN ITS OXYGEN CONTENT, WITH CONSEQUENT BRAIN DAMAGE OR CARDIAC ARREST.
CHRONIC EXPOSURE- REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS.

FIRST AID- EXTREME CARE MUST BE USED TO PREVENT ASPIRATION. USE GASTRIC LAVAGE WITH ACTIVATED CHARCOAL AND A CUFFED ENDOTRACHEAL TUBE WITHIN 15 MINUTES. IN THE ABSENCE OF DEPRESSION OR CONVULSIONS OR IMPAIRED GAG REFLEX, IPECAC EMESIS CAN BE DONE. WHEN VOMITING BEGINS, KEEP HEAD LOWER THAN HIPS TO PREVENT ASPIRATION. AFTER VOMITING STOPS, GIVE 30-60 MILLILITERS OF FLEET'S PHOSPHO-SODA DILUTED 1:4 IN WATER. MAINTAIN AIRWAY, BLOOD PRESSURE AND RESPIRATION. (DREISBACH, HANDBOOK OF POISONING, 11TH ED.) TREATMENT MUST BE ADMINISTERED BY QUALIFIED MEDICAL PERSONNEL. GET MEDICAL ATTENTION.

ANTIDOTE:
NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

REACTIVITY

REACTIVITY:
STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.

INCOMPATIBILITIES:
N-HEXANE:
CALCIUM HYPOCHLORITE: FIRE AND EXPLOSION HAZARD.
CHLORINE (LIQUID): FIRE AND EXPLOSION HAZARD.
DINITROGEN TETRAOXIDE: POSSIBLE EXPLOSION HAZARD.
OXIDIZERS (STRONG): FIRE AND EXPLOSION HAZARD.
OXYGEN (CONCENTRATED): FIRE AND EXPLOSION HAZARD.
PLASTICS, RUBBER, AND COATINGS: MAY BE ATTACKED.
SODIUM HYPOCHLORITE: FIRE AND EXPLOSION HAZARD.

DECOMPOSITION:
THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE TOXIC OXIDES OF CARBON.

POLYMERIZATION:
HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

STORAGE AND DISPOSAL

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE. FOR ASSISTANCE, CONTACT THE DISTRICT DIRECTOR OF THE ENVIRONMENTAL PROTECTION AGENCY.

STORAGE

STORE IN ACCORDANCE WITH 29 CFR 1910.106.

BONDING AND GROUNDING: SUBSTANCES WITH LOW ELECTROCONDUCTIVITY, WHICH MAY BE IGNITED BY ELECTROSTATIC SPARKS, SHOULD BE STORED IN CONTAINERS WHICH MEET THE BONDING AND GROUNDING GUIDELINES SPECIFIED IN NFPA 77-1983, RECOMMENDED PRACTICE ON STATIC ELECTRICITY.

STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

STORE IN CLOSED CONTAINERS IN WELL-VENTILATED, COOL, DRY, DARK PLACE.

DISPOSAL

DISPOSAL MUST BE IN ACCORDANCE WITH STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE, 40 CFR 262. EPA HAZARDOUS WASTE NUMBER D001.
100 POUND CERCLA SECTION 103 REPORTABLE QUANTITY.

CONDITIONS TO AVOID

AVOID CONTACT WITH HEAT, SPARKS, FLAMES, OR OTHER SOURCES OF IGNITION. VAPORS MAY BE EXPLOSIVE. AVOID OVERHEATING OF CONTAINERS; CONTAINERS MAY VIOLENTLY RUPTURE IN HEAT OF FIRE. AVOID CONTAMINATION OF WATER SOURCES.

SPILL AND LEAK PROCEDURES

OCCUPATIONAL SPILL:
SHUT OFF IGNITION SOURCES. STOP LEAK IF YOU CAN DO IT WITHOUT RISK. USE WATER SPRAY TO REDUCE VAPORS. FOR SMALL SPILLS, TAKE UP WITH SAND OR OTHER ABSORBENT MATERIAL AND PLACE INTO CONTAINERS FOR LATER DISPOSAL. FOR LARGER SPILLS, DIKE FAR AHEAD OF SPILL FOR LATER DISPOSAL. NO SMOKING, FLAMES OR FLARES IN HAZARD AREA. KEEP UNNECESSARY PEOPLE AWAY; ISOLATE HAZARD AREA AND RESTRICT ENTRY.

PROTECTIVE EQUIPMENT

VENTILATION:
PROVIDE LOCAL EXHAUST VENTILATION TO MEET PUBLISHED EXPOSURE LIMITS.
VENTILATION EQUIPMENT MUST BE EXPLOSION-PROOF.

RESPIRATOR:
THE FOLLOWING RESPIRATORS AND MAXIMUM USE CONCENTRATIONS ARE RECOMMENDATIONS BY THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIOSH POCKET GUIDE TO CHEMICAL HAZARDS; NIOSH CRITERIA DOCUMENTS OR BY THE U.S. DEPARTMENT OF LABOR, 29 CFR 1910 SUBPART Z.
THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND IN THE WORK PLACE, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

N-HEXANE:
500 PPM- ANY SUPPLIED-AIR RESPIRATOR.
ANY SELF-CONTAINED BREATHING APPARATUS.

1250 PPM- ANY SUPPLIED-AIR RESPIRATOR OPERATED IN A CONTINUOUS FLOW MODE.

2500 PPM- ANY SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE.
ANY SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE.
ANY SUPPLIED-AIR RESPIRATOR THAT HAS A TIGHT-FITTING FACEPIECE AND IS OPERATED IN A CONTINUOUS-FLOW MODE.

5000 PPM- ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ESCAPE- ANY AIR-PURIFYING FULL FACEPIECE RESPIRATOR (GAS-MASK) WITH A CHIN-STYLE OR FRONT- OR BACK-MOUNTED ORGANIC VAPOR CANISTER.
ANY APPROPRIATE ESCAPE-TYPE SELF-CONTAINED BREATHING APPARATUS.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ANY SUPPLIED-AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

CLOTHING:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT REPEATED OR PROLONGED SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS SUBSTANCE.

EYE PROTECTION:
EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES TO PREVENT EYE CONTACT WITH THIS SUBSTANCE.

EMERGENCY EYE WASH: WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

AUTHORIZED - FISHER SCIENTIFIC, INC.
CREATION DATE: 01/29/85 REVISION DATE: 02/25/92

-ADDITIONAL INFORMATION-

DATE: 07/25/92 ACCT: 146965-01
INDEX: 02922060517 CAT NO: SN70100 PO NBR: 1217

NICKEL REFERENCE STANDARD SOLUTION 1000 PPM NI
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MATERIAL SAFETY DATA SHEET

FISHER SCIENTIFIC
CHEMICAL DIVISION
1 REAGENT LANE
FAIR LAWN NJ 07410
(201) 796-7100

EMERGENCY NUMBER: (201) 796-7100
CHEMTREC ASSISTANCE: (800) 424-9300

SUBSTANCE IDENTIFICATION

SUBSTANCE: **NICKEL REFERENCE STANDARD SOLUTION 1000 PPM NI**

TRADE NAMES/SYNONYMS:
SN70; ACC40127

CHEMICAL FAMILY:
MIXTURE, AQUEOUS

CERCLA RATINGS (SCALE 0-3): HEALTH=3 FIRE=0 REACTIVITY=0 PERSISTENCE=0
NFPA RATINGS (SCALE 0-4): HEALTH=3 FIRE=0 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

COMPONENT: NICKEL NITRATE HEXAHYDRATE PERCENT: 0.5
CAS# 13478-00-7

COMPONENT: NITRIC ACID PERCENT: 2.0
CAS# 7697-37-2

COMPONENT: WATER PERCENT: 97.5

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:
NICKEL, SOLUBLE COMPOUNDS (AS NI):
0.1 MG/M3 OSHA TWA
0.1 MG/M3 ACGIH TWA (NOTICE OF INTENDED CHANGES 1990-1991)
0.015 MG/M3 NIOSH RECOMMENDED TWA

MEASUREMENT METHOD: PARTICULATE FILTER; ACID; INDUCTIVELY COUPLED PLASMA; (NIOSH VOL. III # 7300, ELEMENTS).

SUBJECT TO SARA SECTION 313 ANNUAL TOXIC CHEMICAL RELEASE REPORTING
SUBJECT TO CALIFORNIA PROPOSITION 65 CANCER AND/OR REPRODUCTIVE TOXICITY WARNING AND RELEASE REQUIREMENTS- (OCTOBER 1, 1989) (NICKEL AND CERTAIN NICKEL COMPOUNDS)

NITRIC ACID:
2 PPM (5 MG/M3) OSHA TWA; 4 PPM (10 MG/M3) OSHA STEL
2 PPM (5 MG/M3) ACGIH TWA; 4 PPM (10 MG/M3) ACGIH STEL
2 PPM (5 MG/M3) NIOSH RECOMMENDED TWA;
4 PPM (10 MG/M3) NIOSH RECOMMENDED STEL
10 PPM (25 MG/M3) DFG MAK TWA;
20 PPM (50 MG/M3) DFG MAK 5 MINUTE PEAK, MOMENTARY VALUE, 8 TIMES/SHIFT

MEASUREMENT METHOD: SILICA GEL TUBE; SODIUM BICARBONATE/SODIUM CARBONATE; ION CHROMATOGRAPHY; (NIOSH VOL. III # 7903, INORGANIC ACIDS).

1000 POUNDS SARA SECTION 302 THRESHOLD PLANNING QUANTITY
1000 POUNDS SARA SECTION 304 REPORTABLE QUANTITY
1000 POUNDS CERCLA SECTION 103 REPORTABLE QUANTITY
SUBJECT TO SARA SECTION 313 ANNUAL TOXIC CHEMICAL RELEASE REPORTING

PHYSICAL DATA

DESCRIPTION: BLUISH-GREEN LIQUID. BOILING POINT: >212 F (>100 C)

SPECIFIC GRAVITY: >1.0 VAPOR PRESSURE: 14 MMHG @ 20 C

EVAPORATION RATE: (ETHER = 1) >1 SOLUBILITY IN WATER: COMPLETE

VAPOR DENSITY: 0.7

FIRE AND EXPLOSION DATA

DATE: 07/25/92 ACCT: 146965-01
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FIRE AND EXPLOSION HAZARD:
NEGLIGIBLE FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

FIREFIGHTING MEDIA:
DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR REGULAR FOAM
(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR REGULAR FOAM
(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FIREFIGHTING:
MOVE CONTAINER FROM FIRE AREA IF YOU CAN DO IT WITHOUT RISK. APPLY COOLING WATER TO SIDES OF CONTAINERS THAT ARE EXPOSED TO FLAMES UNTIL WELL AFTER FIRE IS OUT. STAY AWAY FROM ENDS OF TANKS (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5, GUIDE PAGE 60).

EXTINGUISH USING AGENTS INDICATED; DO NOT USE WATER DIRECTLY ON MATERIAL. IF LARGE AMOUNTS OF COMBUSTIBLE MATERIALS ARE INVOLVED, USE WATER SPRAY OR FOG IN FLOODING AMOUNTS. USE WATER SPRAY TO ABSORB CORROSIVE VAPORS. COOL CONTAINERS WITH FLOODING AMOUNTS OF WATER FROM AS FAR A DISTANCE AS POSSIBLE. AVOID BREATHING CORROSIVE VAPORS; KEEP UPWIND.

TRANSPORTATION DATA

DEPARTMENT OF TRANSPORTATION HAZARD CLASSIFICATION 49-CFR 172.101:
CORROSIVE MATERIAL

DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS 49-CFR 172.101 AND SUBPART E:
CORROSIVE

DEPARTMENT OF TRANSPORTATION PACKAGING REQUIREMENTS: 49-CFR 173.245 AND 49-CFR 173.245A
EXCEPTIONS: 49-CFR 173.244

TOXICITY

NICKEL NITRATE:
TOXICITY DATA:
ANHYDROUS: 9 MG/KG INTRAVENOUS-MOUSE LDLO; MUTAGENIC DATA (RTECS); REPRODUCTIVE EFFECTS DATA (RTECS).
HEXAHYDRATE: 1620 MG/KG ORAL-RAT LD50.
CARCINOGEN STATUS: HUMAN SUFFICIENT EVIDENCE, ANIMAL LIMITED EVIDENCE (IARC GROUP-1 FOR NICKEL COMPOUNDS). AN INCREASED INCIDENCE OF LUNG AND NASAL CANCER HAS BEEN REPORTED IN WORKERS IN THE NICKEL REFINING INDUSTRY. THE WORKING GROUP MADE THE OVERALL EVALUATION ON NICKEL COMPOUNDS AS A GROUP ON THE BASIS OF THE COMBINED RESULTS OF EPIDEMIOLOGICAL STUDIES, CARCINOGENICITY STUDIES IN EXPERIMENTAL ANIMALS, AND SEVERAL TYPES OF OTHER RELEVANT DATA, SUPPORTED BY THE UNDERLYING CONCEPT THAT NICKEL COMPOUNDS CAN GENERATE NICKEL IONS AT CRITICAL SITES IN THEIR TARGET CELLS.
LOCAL EFFECTS: IRRITANT- INHALATION, SKIN, EYE.
ACUTE TOXICITY LEVEL: MODERATELY TOXIC BY INGESTION.
TARGET EFFECTS: SENSITIZER- RESPIRATORY, DERMAL. POISONING MAY AFFECT HEMATOLOGIC, HEMATOPOIETIC, IMMUNE AND CENTRAL NERVOUS SYSTEMS AND KIDNEYS.
AT INCREASED RISK FROM EXPOSURE: PERSONS WITH A HISTORY OF ASTHMA, ALLERGIES, IMPAIRED PULMONARY FUNCTION OR KNOWN SENSITIZATION TO NICKEL.
ADDITIONAL DATA: MAY BE EXCRETED IN BREAST MILK. MAY CROSS THE PLACENTA. CROSS SENSITIZATION MAY OCCUR WITH COPPER.*

* MAY BE BASED ON GENERAL INFORMATION ON NICKEL COMPOUNDS.

NITRIC ACID:
TOXICITY DATA:
ANHYDROUS: 49 PPM/4 HOURS INHALATION-RAT LC50 (VAN WATER & ROGERS, INC MSDS); 2500 PPM/1 HOUR INHALATION-RAT LC50 (DUPONT MSDS); 430 MG/KG ORAL-HUMAN LDLO; 50-500 MG/KG ORAL-UNSPECIFIED SPECIES LD50 (DUPONT MSDS); 110 MG/KG UNREPORTED-MAN LDLO; REPRODUCTIVE EFFECTS DATA (RTECS).
MONOHYDRATE: NO DATA AVAILABLE.
TRIHYDRATE: NO DATA AVAILABLE.
CARCINOGEN STATUS: NONE.
LOCAL EFFECTS: CORROSIVE- INHALATION, SKIN, EYES, INGESTION.
ACUTE TOXICITY LEVEL: HIGHLY TOXIC BY INHALATION; TOXIC BY INGESTION.
TARGET EFFECTS: NO DATA AVAILABLE.
AT INCREASED RISK FROM EXPOSURE: PERSONS WITH IMPAIRED PULMONARY FUNCTION, PRE-EXISTING EYE AND SKIN DISORDERS.

HEALTH EFFECTS AND FIRST AID

INHALATION:
NITRIC ACID:
CORROSIVE/HIGHLY TOXIC. 100 PPM IMMEDIATELY DANGEROUS TO LIFE OR HEALTH.
ACUTE EXPOSURE- INHALATION OF ACIDIC SUBSTANCES MAY CAUSE SEVERE RESPIRATORY IRRITATION WITH COUGHING, CHOKING, AND POSSIBLY YELLOWISH BURNS OF THE MUCOUS MEMBRANES. OTHER INITIAL SYMPTOMS MAY INCLUDE DIZZINESS, HEADACHE, NAUSEA, AND WEAKNESS. PULMONARY EDEMA MAY BE IMMEDIATE IN THE MOST SEVERE

EXPOSURES, BUT MORE LIKELY WILL OCCUR AFTER A LATENT PERIOD OF 5-72 HOURS. THE SYMPTOMS MAY INCLUDE TIGHTNESS IN THE CHEST, DYSPNEA, DIZZINESS, FROTHY SPUTUM, AND CYANOSIS. PHYSICAL FINDINGS MAY INCLUDE HYPOTENSION, WEAK, RAPID PULSE, MOIST RALES, AND HEMOCONCENTRATION. IN NON-FATAL CASES, COMPLETE RECOVERY MAY OCCUR WITHIN A FEW DAYS OR WEEKS OR, CONVALESCENCE MAY BE PROLONGED WITH FREQUENT RELAPSES AND CONTINUED DYSPNEA AND OTHER SIGNS AND SYMPTOMS OF PULMONARY INSUFFICIENCY. IN SEVERE EXPOSURES, DEATH DUE TO ANOXIA MAY OCCUR WITHIN A FEW HOURS AFTER ONSET OF THE SYMPTOMS OF PULMONARY EDEMA OR FOLLOWING A RELAPSE.

CHRONIC EXPOSURE- DEPENDING ON THE CONCENTRATION AND DURATION OF EXPOSURE, REPEATED OR PROLONGED EXPOSURE TO AN ACIDIC SUBSTANCE MAY CAUSE EROSION OF THE TEETH, INFLAMMATORY AND ULCERATIVE CHANGES IN THE MOUTH, AND POSSIBLY JAW NECROSIS. BRONCHIAL IRRITATION WITH COUGH AND FREQUENT ATTACKS OF BRONCHIAL PNEUMONIA MAY OCCUR. GASTROINTESTINAL DISTURBANCES ARE ALSO POSSIBLE.

FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, GIVE ARTIFICIAL RESPIRATION. MAINTAIN AIRWAY AND BLOOD PRESSURE AND ADMINISTER OXYGEN IF AVAILABLE. KEEP AFFECTED PERSON WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. ADMINISTRATION OF OXYGEN SHOULD BE PERFORMED BY QUALIFIED PERSONNEL. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:
NITRIC ACID:
CORROSIVE.

ACUTE EXPOSURE- DIRECT CONTACT WITH LIQUID OR VAPOR MAY CAUSE SEVERE PAIN, BURNS AND POSSIBLY YELLOWISH STAINS. BURNS MAY BE DEEP WITH SHARP EDGES AND HEAL SLOWLY WITH SCAR TISSUE FORMATION. DILUTE SOLUTIONS OF NITRIC ACID MAY PRODUCE MILD IRRITATION AND HARDEN THE EPIDERMIS WITHOUT DESTROYING IT. CONCENTRATED ACID SOLUTIONS APPLIED TO OVER 25% OF THE SKIN AREA IN RATS PRODUCED ELEVATED METHEMOGLOBIN AND BLOOD NITRATE LEVELS.

CHRONIC EXPOSURE- EFFECTS DEPEND ON THE CONCENTRATION AND DURATION OF EXPOSURE. REPEATED OR PROLONGED CONTACT WITH ACIDIC SUBSTANCES MAY RESULT IN DERMATITIS OR EFFECTS SIMILAR TO ACUTE EXPOSURE.

FIRST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). IN CASE OF CHEMICAL BURNS, COVER AREA WITH STERILE, DRY DRESSING. BANDAGE SECURELY, BUT NOT TOO TIGHTLY. GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:
NITRIC ACID:
CORROSIVE.

ACUTE EXPOSURE- DIRECT CONTACT WITH ACIDIC SUBSTANCES MAY CAUSE PAIN AND LACRIMATION, PHOTOPHOBIA, AND BURNS, POSSIBLY SEVERE. THE DEGREE OF INJURY DEPENDS ON THE CONCENTRATION AND DURATION OF CONTACT. IN MILD BURNS, THE EPITHELIUM REGENERATES RAPIDLY AND THE EYE RECOVERS COMPLETELY. IN SEVERE CASES, THE EXTENT OF INJURY MAY NOT BE FULLY APPARENT FOR SEVERAL WEEKS. ULTIMATELY, THE WHOLE CORNEA MAY BECOME DEEPLY VASCULARIZED AND OPAQUE RESULTING IN BLINDNESS. IN THE WORST CASES, THE EYE MAY BE TOTALLY DESTROYED. CONCENTRATED NITRIC ACID MAY IMPART A YELLOW COLOR TO THE EYE UPON CONTACT.

CHRONIC EXPOSURE- EFFECTS DEPEND ON THE CONCENTRATION AND DURATION OF EXPOSURE. REPEATED OR PROLONGED EXPOSURE TO ACIDIC SUBSTANCES MAY CAUSE CONJUNCTIVITIS OR EFFECTS AS IN ACUTE EXPOSURE.

FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). CONTINUE IRRIGATING WITH NORMAL SALINE UNTIL THE PH HAS RETURNED TO NORMAL (30-60 MINUTES). COVER WITH STERILE BANDAGES. GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:
NITRIC ACID:
CORROSIVE/TOXIC.

ACUTE EXPOSURE- ACIDIC SUBSTANCES MAY CAUSE CIRCUMORAL BURNS WITH YELLOW DISCOLORATION AND CORROSION OF THE MUCOUS MEMBRANES OF THE MOUTH, THROAT AND ESOPHAGUS. THERE MAY BE IMMEDIATE PAIN AND DIFFICULTY OR INABILITY TO SWALLOW OR SPEAK. EPIGLOTTAL EDEMA MAY RESULT IN RESPIRATORY DISTRESS AND POSSIBLY ASPHYXIA. MARKED THIRST, EPIGASTRIC PAIN, NAUSEA, VOMITING AND DIARRHEA MAY OCCUR. DEPENDING ON THE DEGREE OF ESPOHAGEAL AND GASTRIC CORROSION, THE VOMITUS MAY CONTAIN FRESH OR DARK PRECIPITATED BLOOD AND LARGE SHREDS OF MUCOSA. SHOCK WITH MARKED HYPOTENSION, WEAK, RAPID PULSE, SHALLOW RESPIRATION, AND CLAMMY SKIN MAY OCCUR. CIRCULATORY COLLAPSE MAY ENSUE AND IF UNCORRECTED, LEAD TO RENAL FAILURE. IN SEVERE CASES, GASTRIC, AND TO A LESSER DEGREE, ESOPHAGEAL PERFORATION AND SUBSEQUENT PERITONITIS MAY OCCUR AND BE ACCOMPANIED BY FEVER AND ABDOMINAL RIGIDITY. ESOPHAGEAL, GASTRIC ANC PYLORIC STRICTURE MAY OCCUR WITHIN A FEW WEEKS, BUT MAY BE DELAYED FOR MONTHS OR EVEN YEARS. DEATH MAY RESULT WITHIN A SHORT TIME FROM ASPHYXIA, CIRCULATORY COLLAPSE OR ASPIRATION OF EVEN MINUTE AMOUNTS. LATER DEATH MAY BE DUE TO PERITONITIS, SEVERE NEPHRITIS OR PNEUMONIA. COMA AND CONVULSIONS SOMETIMES OCCUR TERMINALLY.

CHRONIC EXPOSURE- DEPENDING ON THE CONCENTRATION, REPEATED INGESTION OF ACIDIC SUBSTANCES MAY RESULT IN INFLAMMATORY AND ULCERATIVE CHANGES IN THE MUCOUS MEMBRANES OF THE MOUTH AND OTHER EFFECTS AS IN ACUTE INGESTION. REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS.

FIRST AID: TREAT SYMPTOMATICALLY AND SUPPORTIVELY. IF PERSON IS CONSCIOUS AND ABLE TO SWALLOW, GIVE LARGE AMOUNTS OF WATER OR MILK TO DILUTE SUBSTANCE. GET MEDICAL ATTENTION IMMEDIATELY. IF VOMITING OCCURS, KEEP HEAD BELOW HIPS TO HELP PREVENT ASPIRATION.

REACTIVITY

REACTIVITY:
STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.

INCOMPATIBILITIES:
NITRIC ACID:
ACETIC ACID: MAY REACT EXPLOSIVELY.
ACETIC ANHYDRIDE: EXPLOSIVE REACTION BY FRICTION OR IMPACT.
ACETONE: MAY REACT EXPLOSIVELY.
ACETONITRILE: EXPLOSIVE MIXTURE.
4-ACETOXY-3-METHOXYBENZALDEHYDE: EXOTHERMIC REACTION.
ACROLEIN: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
ACRYLONITRILE: EXPLOSIVE REACTION AT 90 C.
ACRYLONITRILE-METHACRYLATE COPOLYMER: INCOMPATIBLE.
ALCOHOLS: POSSIBLE VIOLENT REACTION OR EXPLOSION; FORMATION OF EXPLOSIVE COMPOUND IN THE PRESENCE OF HEAVY METALS.
ALKANETHIOLS: EXOTHERMIC REACTION WITH POSSIBLE IGNITION.
2-ALKOXY-1,3-OITHIA-2-PHOSPHOLANE: IGNITION REACTION.
ALLYL ALCOHOL: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
ALLYL CHLORIDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
AMINES (ALIPHATIC OR AROMATIC): POSSIBLE IGNITION REACTION.
2-AMINOETHANOL: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
2-AMINOTHIAZOLE: EXPLOSIVE REACTION.
AMMONIA (GAS): BURNS IN AN ATMOSPHERE OF NITRIC ACID VAPOR.
AMMONIUM HYDROXIDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
AMMONIUM NITRATE: FORMS EXPLOSIVE MIXTURE.
ANILINE: IGNITES ON CONTACT.
ANILINIUM NITRATE: FORMS EXPLOSIVE SOLUTION.
ANION EXCHANGE RESINS: POSSIBLE VIOLENT EXOTHERMIC REACTION.
ANTIMONY: VIOLENT REACTION.
ARSINE: EXPLOSIVE REACTION.
ARSINE-BORON TRIBROMIDE: VIOLENT OXIDATION.
BASES: REACTS.
BENZENE: EXPLOSIVE REACTION.
BENZIDINE: SPONTANEOUS IGNITION.
BENZONITRILE: POSSIBLE EXPLOSION.
BENZOTHIOPHENE DERIVATIVES: FORMATION OF POSSIBLY EXPLOSIVE COMPOUNDS.
N-BENZYL-N-ETHYLANILINE: VIGOROUS DECOMPOSITION.
1,4-BIS(METHOXYMETHYL)2,3,5,6-TETRAMETHYLBENZENE: GAS EVOLUTION.
BISMUTH: INTENSE EXOTHERMIC REACTION OR EXPLOSION.
1,3-BIS(TRIFLUOROMETHYL)BENZENE: POSSIBLE EXPLOSION.
BORON: VIOLENT REACTION WITH INCANDESCENCE.
BORON DECAHYDRIDE: EXPLOSIVE REACTION.
BORON PHOSPHIDE: IGNITION REACTION.
BROMINE PENTAFLUORIDE: IGNITION REACTION.
N-BUTYL MERCAPTAN: IGNITION REACTION.
N-BUTYRALDEHYDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
CADMIUM PHOSPHIDE: EXPLOSIVE REACTION.
CALCIUM HYPOPHOSPHITE: IGNITION REACTION.
CARBON (PULVERIZED): VIOLENT REACTION.
CELLULOSE: FORMS EASILY COMBUSTIBLE ESTER.
CHLORATES: REACTS.
CHLORINE: INCOMPATIBLE.
CHLORINE TRIFLUORIDE: VIOLENT REACTION.
CHLOROBENZENE: POSSIBLE EXPLOSION.
4-CHLORO-2-NITROANILINE: FORMS EXPLOSIVE COMPOUND.
CHLOROSULFONIC ACID: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
COAL: EXPLOSIVE MIXTURE.
COATINGS: MAY BE ATTACKED.
CRESOL: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
CROTONALDEHYDE: VIOLENT DECOMPOSITION WITH IGNITION.
CUMENE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
CUPRIC NITRIDE: EXPLOSIVE REACTION.
CUPROUS NITRIDE: VIOLENT REACTION.
CYANATES: POSSIBLE EXPLOSIVE REACTION.
CYCLOHEXANONE: VIOLENT REACTION.
CYCLOHEXYLAMINE: FORMS EXPLOSIVE COMPOUND.
CYCLOPENTADIENE: EXPLOSIVE REACTION.
1,2-DIAMINOETHANEBIS(TRIMETHYLGOLD): EXPLOSIVE REACTION.
DIBORANE: SPONTANEOUS IGNITION.
DI-2-BUTOXYETHYL ETHER: VIOLENT DECOMPOSITION REACTION.
2,6-DI-T-BUTYL PHENOL: FORMATION OF EXPLOSIVE COMPOUND.
DICHLOROETHANE: FORMS SHOCK AND HEAT SENSITIVE MIXTURE.
DICHLOROETHYLENE: FORMS EXPLOSIVE COMPOUND.
DICHLOROMETHANE: FORMS EXPLOSIVE SOLUTION.
DICYCLOPENTADIENE: SPONTANEOUS IGNITION.
DIENES: IGNITION REACTION.
DIETHYLAMINO ETHANOL: POSSIBLE EXPLOSION.
DIETHYL ETHER: POSSIBLE EXPLOSION.
3,6-DIHYDRO-1,2,2H-OXAZINE: EXPLOSIVE INTERACTION.
DIISOPROPYL ETHER: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
DIMETHYLAMINOMETHYLFERROCENE: VIOLENT DECOMPOSITION IF HEATED.

DIMETHYL ETHER: FORMS EXPLOSIVE COMPOUND.
DIMETHYL HYDRAZINE: IGNITES ON CONTACT.
DIMETHYL SULFOXIDE + 1,4-DIOXANE: EXPLOSION.
DIMETHYL SULFOXIDE + <14% WATER: EXPLOSIVE REACTION.
DINITROBENZENE: EXPLOSION HAZARD.
DINITROTOLUENE: EXPLOSIVE REACTION.
DIOXANE + PERCHLORIC ACID: POSSIBLE EXPLOSION.
DIPHENYL DISTIBENE: EXPLOSIVE OXIDATION.
DIPHENYL MERCURY + CARBON DISULFIDE: VIOLENT REACTION.
DIPHENYL TIN: IGNITION REACTION.
DISODIUM PHENYL ORTHOPHOSPHATE: VIOLENT EXPLOSION.
DIVINYL ETHER: POSSIBLE IGNITION REACTION.
EPICHLOROHYDRIN: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
ETHANESULFONAMIDE: EXPLOSIVE REACTION.
ETHOXY-ETHYLENE DITHIOPHOSPHATE: IGNITION ON CONTACT.
M-ETHYL ANILINE: IGNITION REACTION.
ETHYLENE DIAMINE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
ETHYLENE GLYCOL: FORMS SHOCK AND HEAT SENSITIVE MIXTURE.
ETHYLENEIMINE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
5-ETHYL-2-METHYL PYRIDINE: EXPLOSIVE REACTION.
ETHYL PHOSPHINE: IGNITION REACTION.
5-ETHYL-2-PICOLINE: FORMS EXPLOSIVE COMPOUNDS.
FERROUS OXIDE (POWDERED): INTENSE EXOTHERMIC REACTION.
FLUORINE: POSSIBLE EXPLOSIVE REACTION.
FORMIC ACID: EXOTHERMIC REACTION WITH RELEASE OF TOXIC GASES.
2-FORMYLAMINO-1-PHENYL-1,3-PROPANEDIOL: POSSIBLE EXPLOSION.
FUEL OIL (BURNING): EXPLOSION.
FULMINATES: REACTS.
FURFURYLIDENE KETONES: IGNITES ON CONTACT.
GERMANIUM: VIOLENT REACTION.
GLYCEROL: POSSIBLE EXPLOSION.
GLYOXAL: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
HEXALITHIUM DISILICIDE: EXPLOSIVE REACTION.
HEXAMETHYLBENZENE: POSSIBLE EXPLOSION.
2,2,4,4,6,6-HEXAMETHYLTRITHIANE: EXPLOSIVE OXIDATION.
HEXENAL: EXPLODES ON HEATING.
HYDRAZINE: VIOLENT REACTION.
HYDRAZOIC ACID: ENERGETIC REACTION.
HYDROGEN IODIDE: IGNITION REACTION.
HYDROGEN PEROXIDE: FORMS UNSTABLE MIXTURE.
HYDROGEN PEROXIDE AND KETONES: FORMS EXPLOSIVE PRODUCTS.
HYDROGEN PEROXIDE AND MERCURIC OXIDE: FORMS EXPLOSIVE COMPOUNDS.
HYDROGEN PEROXIDE AND THIOUREA: FORMS EXPLOSIVE COMPOUNDS.
HYDROGEN SELENIDE: IGNITION REACTION.
HYDROGEN SULFIDE: INCANDESCENT REACTION.
HYDROGEN TELLURIDE: IGNITION AND POSSIBLE EXPLOSIVE REACTION.
INDANE AND SULFURIC ACID: EXPLOSIVE REACTION.
ISOPRENE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
KETONES (CYCLIC): VIOLENT REACTION.
LACTIC ACID + HYDROFLUORIC ACID: EXPLOSIVE REACTION.
LITHIUM: IGNITION REACTION.
LITHIUM SILICIDE: INCANDESCENT REACTION.
MAGNESIUM: EXPLOSIVE REACTION.
MAGNESIUM + 2-NITROANILINE: MAY IGNITE ON CONTACT.
MAGNESIUM PHOSPHIDE: INCANDESCENT REACTION.
MAGNESIUM SILICIDE: VIOLENT REACTION.
MAGNESIUM-TITANIUM ALLOY: FORMS SHOCK AND HEAT SENSITIVE MIXTURE.
MANGANESE (POWDERED): INCANDESCENCE AND POSSIBLE EXPLOSION.
MESITYL OXIDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
MESITYLENE: POSSIBLE EXPLOSIVE REACTION.
METALS: VIOLENT REACTION WITH EXPLOSION OR IGNITION.
METAL ACETYLIDES: VIOLENT OR EXPLOSIVE REACTION.
METAL CARBIDES: VIOLENT OR EXPLOSIVE REACTION.
METAL CYANIDES: EXPLOSIVE REACTIONS.
METAL FERRICYANIDE OR FERROCYANIDE: VIOLENT REACTION.
METAL SALICYLATES: FORMS EXPLOSIVE COMPOUNDS.
METAL THIDCYANATES: POSSIBLE EXPLOSION.
2-METHYLBENZIMIDAZOLE + SULFURIC ACID: POSSIBLE EXPLOSIVE REACTION.
4-METHYLCYCLOHEXANONE: EXPLOSIVE REACTION.
2-METHYL-5-ETHYLPYRIDINE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
METHYL THIOPHENE: IGNITION REACTION.
NEODYMIUM PHOSPHIDE: VIOLENT REACTION.
NICKEL TETRAPHOSPHIDE: IGNITION REACTION.
NITRO AROMATIC HYDROCARBONS: FORMS HIGHLY EXPLOSIVE PRODUCTS.
NITROBENZENE: EXPLOSIVE REACTION, ESPECIALLY IN THE PRESENCE OF WATER.
NITROMETHANE: EXPLOSIVE REACTION.
NITRONAPHTHALENE: EXPLOSION HAZARD.
NON-METAL OXIDES : EXPLOSIVE REACTION.
OLEUM: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
ORGANIC MATERIALS: FIRE AND EXPLOSION HAZARD.
ORGANIC SUBSTANCES AND PERCHLORATES: POSSIBLE EXPLOSION.
ORGANIC SUBSTANCES AND SULFURIC ACID: POSSIBLE EXPLOSION.
PHENYL ACETYLENE + 1,1-DIMETHYLHYDRAZINE: VIOLENT REACTION.
PHENYL ORTHOPHOSPHORIC ACID DISODIUM SALT: FORMS EXPLOSIVE PRODUCTS.
PHOSPHINE + OXYGEN: SPONTANEOUS IGNITION.
PHOSPHONIUM IODIDE: IGNITION REACTION.
PHOSPHORUS (VAPOR): IGNITES WHEN HEATED.
PHOSPHOROUS HALIDES: IGNITION REACTION.
PHOSPHORUS TETRAIODIDE: VIGOROUS REACTION.

PHOSPHORUS TRICHLORIDE: EXPLOSIVE REACTION.
PHTHALIC ACID AND SULFURIC ACID: POSSIBLE EXPLOSIVE REACTION.
PHTHALIC ANHYDRIDE: EXOTHERMIC REACTION AND FORMS EXPLOSIVE PRODUCTS.
PICRATES: REACTS.
PLASTICS: MAY BE ATTACKED.
POLYALKENES: INTENSE REACTION..
POLYDIBROMOSILANES: EXPLOSIVE REACTION.
POLY(ETHYLENE OXIDE) DERIVATIVES: POSSIBLE EXPLOSION.
POLYPROPYLENE: TEMPERATURE AND PRESSURE INCREASE IN A CLOSED CONTAINER.
POLY(SILYLENE): IGNITION.
POLYURETHANE (FOAM): VIGOROUS REACTION.
POTASSIUM HYPOPHOSPHITE: EXPLOSIVE REACTION.
POTASSIUM PHOSPHINATE: EXPLODES ON EVAPORATION.
B-PROPIOLACTONE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
PROPIOPHENONE + SULFURIC ACID: EXOTHERMIC REACTION ABOVE -5 C.
PROPYLENE GLYCOL + HYDROFLUORIC ACID + SILVER NITRATE: EXPLOSIVE MIXTURE.
PROPYLENE OXIDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
PYRIDINE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
PYROCATECHOL: IGNITES ON CONTACT.
REDUCING AGENTS: POSSIBLE EXPLOSIVE OR IGNITION REACTION.
RESORCINOL: POSSIBLE EXPLOSION.
RUBBER: VIGOROUS REACTION, POSSIBLE EXPLOSION.
SELENIUM: VIGOROUS REACTION.
SELENIUM HYDRIDE: IGNITION OR INCANDESCENT REACTION.
SELENIUM IODOPHOSPHIDE: EXPLOSIVE REACTION.
SILICON: VIOLENT REACTION.
SILICONE OIL: POSSIBLE EXPLOSION.
SILVER BUTEN-3-YNIDE: EXPLOSION.
SODIUM: SPONTANEOUS IGNITION.
SODIUM AZIDE: EXOTHERMIC REACTION.
SODIUM HYDROXIDE: TEMPERATURE AND PRESSURE INCREASE IN A CLOSED CONTAINER.
STIBINE: EXPLOSIVE REACTION.
SUCROSE (SOLID): VIGOROUS REACTION.
SULFAMIC ACID: VIOLENT REACTION WITH EVOLUTION OF TOXIC NITROUS OXIDE.
SULFIDES; REACTS.
SULFUR DIOXIDE: EXPLOSIVE REACTION.
SULFUR HALIDES: VIOLENT REACTION.
SULFURIC ACID + GLYCERIDES: EXPLOSIVE REACTION.
SULFURIC ACID + TEREPHTHALIC ACID: VIOLENT REACTION.
SURFACTANTS + PHOSPHORIC ACID: EXPLOSION HAZARD.
TERPENES: SPONTANEOUS IGNITION.
TETRABORANE: EXPLOSIVE REACTION.
TETRABORANE DECAHYDRIDE: EXPLOSIVE REACTION.
TETRAPHOSPHOROUS DIIODOTRISELENIDE: EXPLOSIVE REACTION.
TETRAPHOSPHOROUS IODIDE: IGNITES ON CONTACT.
TETRAPHOSPHOROUS TETRAOXIDE TRISULFIDE: VIOLENT REACTION.
THIOALDEHYDES: VIOLENT REACTION.
THIOKETONES: VIOLENT REACTION.
THIOPHENES: EXPLOSIVE REACTION.
TITANIUM: FORMS SHOCK-SENSITIVE COMPOUND.
TITANIUM ALLOYS: POSSIBLE EXPLOSIVE REACTION.
TITANIUM-MAGNESIUM ALLOY: POSSIBLE EXPLOSION ON IMPACT.
TOLUENE: VIOLENT REACTION.
TOLUIDENE: IGNITION REACTION.
1,3,5-TRIACETYLHEXAHYDRO-1,3,5-TRIAZINE + TRIFLUOROACETIC ANHYDRIDE: EXPLOSIVE REACTION.
TRIAZINE: VIOLENTLY EXPLOSIVE REACTION.
TRICADMIUM DIPHOSPHIDE: EXPLOSIVE REACTION.
TRIETHYLGALLIUM MONOETHYL ETHER COMPLEX: IGNITION REACTION.
TRIMETHYLTRIOXANE: INTENSE REACTION.
TRIS(IODOMERCURI)PHOSPHINE: VIOLENT DECOMPOSITION.
TRITHIOACETONE: EXPLOSIVE REACTION.
TURPENTINE: EXPLOSIVE MIXTURE.
UNSYMMETRICAL DIMETHYL HYDRAZINE: SPONTANEOUS IGNITION.
URANIUM: EXPLOSIVE REACTION.
URANIUM ALLOY: VIOLENT REACTION.
URANIUM DISULFIDE: VIOLENT REACTION.
URANIUM-NEODYMIUM ALLOYS: EXPLOSIVE REACTION.
VINYL ACETATE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
VINYLIDENE CHLORIDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
WOOD: POSSIBLE IGNITION.
P-XYLENE: INTENSE REACTION IN PRESENCE OF SULFURIC ACID.
ZINC: INCANDESCENT REACTION.
ZINC ETHOXIDE: POSSIBLE EXPLOSION.
ZIRCONIUM-URANIUM ALLOYS: EXPLOSIVE REACTION.

DECOMPOSITION:
THERMAL DECOMPOSITION MAY RELEASE ACRID SMOKE AND IRRITATING FUMES.

POLYMERIZATION:
HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

STORAGE AND DISPOSAL

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE. FOR ASSISTANCE, CONTACT THE DISTRICT DIRECTOR OF THE ENVIRONMENTAL PROTECTION AGENCY.

DISPOSAL

DISPOSAL MUST BE IN ACCORDANCE WITH STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE, 40 CFR 262. EPA HAZARDOUS WASTE NUMBER D002.
100 POUND CERCLA SECTION 103 REPORTABLE QUANTITY.

****
CONDITIONS TO AVOID

MAY BURN BUT DOES NOT IGNITE READILY. FLAMMABLE, POISONOUS GASES MAY ACCUMULATE IN TANKS AND HOPPER CARS. MAY IGNITE COMBUSTIBLES (WOOD, PAPER, OIL, ETC.).

****
SPILL AND LEAK PROCEDURES

WATER SPILL:
THE CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 (PROPOSITION 65) PROHIBITS CONTAMINATING ANY KNOWN SOURCE OF ORINKING WATER WITH SUBSTANCES KNOWN TO CAUSE CANCER AND/OR REPRODUCTIVE TOXICITY.

OCCUPATIONAL SPILL:
DO NOT TOUCH SPILLED MATERIAL. STOP LEAK IF YOU CAN DO IT WITHOUT RISK. FOR SMALL SPILLS, TAKE UP WITH SAND OR OTHER ABSORBENT MATERIAL AND PLACE INTO CONTAINERS FOR LATER DISPOSAL. FOR SMALL DRY SPILLS, WITH CLEAN SHOVEL PLACE MATERIAL INTO CLEAN, DRY CONTAINER AND COVER. MOVE CONTAINERS FROM SPILL AREA. FOR LARGER SPILLS, DIKE FAR AHEAD OF SPILL FOR LATER DISPOSAL. KEEP UNNECESSARY PEOPLE AWAY. ISOLATE HAZARD AREA AND DENY ENTRY.

PROTECTIVE EQUIPMENT

VENTILATION:
PROVIDE LOCAL EXHAUST VENTILATION SYSTEM TO MEET PUBLISHED EXPOSURE LIMITS.

RESPIRATOR:
THE FOLLOWING RESPIRATORS ARE RECOMMENDED BASED ON INFORMATION FOUND IN THE PHYSICAL DATA, TOXICITY AND HEALTH EFFECTS SECTIONS. THEY ARE RANKED IN ORDER FROM MINIMUM TO MAXIMUM RESPIRATORY PROTECTION.
THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND IN THE WORK PLACE, MUST BE BASED ON THE SPECIFIC OPERATION, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND MUST BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

ANY CHEMICAL CARTRIDGE RESPIRATOR WITH FULL FACEPIECE.

ANY TYPE 'C' SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE OR WITH A FULL FACEPIECE, HELMET OR HOOD OPERATED IN CONTINUOUS-FLOW MODE.

ANY SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ANY SUPPLIED-AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

CLOTHING:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT ANY POSSIBILITY OF SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS SUBSTANCE.

EYE PROTECTION:
EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES AND A FACESHIELD TO PREVENT CONTACT WITH THIS SUBSTANCE.

EMERGENCY WASH FACILITIES:
WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES AND/OR SKIN MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN AND QUICK DRENCH SHOWER WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

AUTHORIZED - FISHER SCIENTIFIC, INC.
CREATION DATE: 07/10/85 REVISION DATE: 06/04/92

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FREON 113

DATE: 08/31/91 ACCT: 146965-01
INDEX: 02912420177 CAT NO: T1804 PO NBR: VERBAL MIKE 08-30-91 AIR

1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE

MATERIAL SAFETY DATA SHEET

FISHER SCIENTIFIC
CHEMICAL DIVISION
1 REAGENT LANE
FAIR LAWN NJ 07410
(201) 796-7100

EMERGENCY NUMBER: (201) 796-7100
CHEMTREC ASSISTANCE: (800) 424-9300

SUBSTANCE IDENTIFICATION

CAS-NUMBER 76-13-1

SUBSTANCE: **1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE**

TRADE NAMES/SYNONYMS:
REFRIGERANT 113; TTE; UCON 113; FREON 113; FREON 113 TR-T; TRICHLOROTRIFLUOROETHANE; 1,1,2-TRIFLUORO-1,2,2-TRICHLOROETHANE; UCON FLUOROCARBON 113; T180; T178; C2CL3F3; ACC26370

CHEMICAL FAMILY:
HALOGEN COMPOUND, ALIPHATIC

MOLECULAR FORMULA: C2-CL3-F3

MOLECULAR WEIGHT: 187.37

CERCLA RATINGS (SCALE 0-3): HEALTH=1 FIRE=0 REACTIVITY=0 PERSISTENCE=3
NFPA RATINGS (SCALE 0-4): HEALTH=1 FIRE=0 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

COMPONENT: 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE PERCENT: 100
CAS# 76-13-1

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE (FREON TF):
1000 PPM (7670 MG/M3) OSHA TWA; 1250 PPM (9590 M3/M3) OSHA STEL
1000 PPM (7670 MG/M3) ACGIH TWA; 1250 PPM (9590 MG/M3) ACGIH STEL
1000 PPM (7670 MG/M3) NIOSH RECOMMENDED TWA;
1250 PPM (9590 MG/M3) NIOSH RECOMMENDED STEL
500 PPM (3832 MG/M3) DFG MAK TWA;
1000 PPM (7670 MG/M3) DFG MAK 60 MINUTE PEAK, MOMENTARY VALUE, 3 TIMES/SHIFT

MEASUREMENT METHOD: CHARCOAL TUBE; CARBON DISULFIDE; GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION; (NIOSH VOL. III # 1020).

SUBJECT TO SARA SECTION 313 ANNUAL TOXIC CHEMICAL RELEASE REPORTING.

PHYSICAL DATA

DESCRIPTION: COLORLESS LIQUID WITH AN ODOR LIKE AMMONIA AT HIGH CONCENTRATIONS. BOILING POINT: 114.4 F (45.8 C)

MELTING POINT: 55.8 F (13.2 C) SPECIFIC GRAVITY: 1.6 @ 77 F

VAPOR PRESSURE: 284 MM HG @ 20 C EVAPORATION RATE: (ACETONE=1) 0.45

SOLUBILITY IN WATER: 0.028% VAPOR DENSITY: APPROX 6

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
NEGLIGIBLE FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

AUTOIGNITION TEMP.: 1256 F (680 C)

FIREFIGHTING MEDIA:
DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR REGULAR FOAM (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR REGULAR FOAM (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FIREFIGHTING:
MOVE CONTAINER FROM FIRE AREA IF YOU CAN DO IT WITHOUT RISK. DO NOT SCATTER SPILLED MATERIAL WITH HIGH-PRESSURE WATER STREAMS. DIKE FIRE-CONTROL WATER FOR LATER DISPOSAL (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5, GUIDE PAGE 31).

USE AGENTS SUITABLE FOR TYPE OF SURROUNDING FIRE. AVOID BREATHING HAZARDOUS VAPORS, KEEP UPWIND.

TOXICITY

1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE (FREON TF):
IRRITATION DATA: 500 MG OPEN SKIN-RABBIT MILD; 500 MG/24 HOURS SKIN-RABBIT MILD.
TOXICITY DATA: 87,000 PPM/6 HOURS INHALATION-RAT LCL0; 25 PPH/90 SECONDS INHALATION-MOUSE LCL0; 43 GM/KG ORAL-RAT LD50.
CARCINOGEN STATUS: NONE.
ACUTE TOXICITY LEVEL: RELATIVELY NON-TOXIC BY INGESTION.
TARGET EFFECTS: CENTRAL NERVOUS SYSTEM DEPRESSANT; SIMPLE ASPHYXIANT. POISONING MAY ALSO AFFECT THE LIVER AND KIDNEYS.
AT INCREASED RISK FROM EXPOSURE: PERSONS WITH PRE-EXISTING SKIN DISORDERS, IMPAIRED CARDIOVASCULAR FUNCTION, PARTICULARLY CARDIAC ARRYTHMIAS OR IMPAIRED RESPIRATORY FUNCTION.
ADDITIONAL DATA: STIMULANTS SUCH AS EPINEPHRINE MAY INDUCE VENTRICULAR FIBRILLATION.

HEALTH EFFECTS AND FIRST AID

INHALATION:
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE (FREON TF):
NARCOTIC/SIMPLE ASPHYXIANT.
4500 PPM IMMEDIATELY DANGEROUS TO LIFE OR HEALTH.
ACUTE EXPOSURE- MAY CAUSE MILD IRRITATION OF THE MUCOUS MEMBRANES OF THE UPPER RESPIRATORY TRACT. MAY BE ANESTHETIC AND CAUSE CENTRAL NERVOUS SYSTEM DEPRESSION WITH DROWSINESS AND ARRHYTHMIAS. HUMANS EXPOSED TO 2500 TO 4500 PPM FOR 30-100 MINUTES SHOWED SIGNIFICANT IMPAIRMENT OF MANUAL DEXTERITY AND VIGILANCE, LOSS OF CONCENTRATION, SOMNOLENCE AND HEAVINESS IN THE HEAD, WHICH DISAPPEARED 15 MINUTES AFTER THE EXPOSURE ENDED. SIMPLE ASPHYXIATION MAY OCCUR AT HIGH CONCENTRATIONS. OVEREXPOSURE COULD RESULT IN EPINEPHINE SENSITIZATION OF THE HEART AND SUBSEQUENTLY MAY CAUSE SUDDEN DEATH FROM VENTRICULAR FIBRILLATION UNDER PHYSICAL OR EMOTIONAL STRESS. DOGS EXPOSED TO 11,000-13,000 PPM FOR 6 HOURS EXPERIENCED VOMITING, LETHARGY, NERVOUSNESS, AND TREMORS. ALL SYMPTOMS WERE REVERSIBLE WITHIN 15 MINUTES. IN EXPERIMENTAL ANIMALS, VARIABLE DEGREES OF CARDIODYNAMIC EFFECTS THAT INCLUDED TACHYCARDIA, MYOCARDIAL DEPRESSION, AND HYPOTENSION HAVE BEEN REPORTED. PULMONARY EDEMA AND SEVERE VENTRICULAR DYSRHYTHMIA MAY RESULT FROM THE INHALATION OF FREONS.
CHRONIC EXPOSURE- PROLONGED HUMAN EXPOSURES FOR 2 WEEKS AT CONCENTRATIONS OF APPROXIMATELY 500 AND 1000 PPM CAUSED MILD THROAT IRRITATION ON THE FIRST DAY, BUT NO DECREMENT IN PERFORMANCE OF COMPLEX MENTAL TASKS. PATHOLOGIC FINDINGS IN RATS INCLUDED VERY SLIGHT DIFFUSE DEGENERATIVE FATTY INFILTRATION OF THE LIVER. NO CHANGES WERE PRODUCED IN THE OFFSPRING OF PREGNANT RABBITS EXPOSED TO 9 DAILY 2 HOUR EXPOSURES AT LEVELS AS HIGH AS 20,000 PPM.

FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, PERFORM ARTIFICIAL RESPIRATION. KEEP PERSON WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE (FREON TF):
ACUTE EXPOSURE- CONTACT MAY CAUSE IRRITATION.
CHRONIC EXPOSURE- REPEATED OR PROLONGED CONTACT MAY CAUSE DERMATITIS WITH DRYING AND CRACKING. NO EFFECTS WERE NOTED IN RABBITS AFTER 20 WEEKS OF APPLICATION TO UNCOVERED SKIN. HOWEVER, OCCLUDED CONTACT OF 5 GM/KG WITH RABBIT SKIN FOR 5 SUCCESSIVE DAYS RESULTED IN LOCAL NECROSIS AND SLOUGHING PLUS CONSPICUOUS ENLARGEMENT OF LIVER CELLS.

FIRST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE (FREON TF):
ACUTE EXPOSURE- MAY CAUSE IRRITATION. APPLICATION OF 0.1 ML TO RABBIT EYES IS REPORTED TO HAVE PRODUCED ONLY MILD CONJUNCTIVITIS AND MINIMAL CORNEAL DULLNESS AT 24 HOURS. ALL EYES RETURNED TO NORMAL WITHIN 48 HOURS.
CHRONIC EXPOSURE- NO DATA AVAILABLE.

FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER OR NORMAL SALINE, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE (FREON TF):
NARCOTIC.

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ACUTE EXPOSURE- ONE HUMAN ACCIDENTALLY RECEIVED 1 LITER OF 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE IN THE STOMACH WHILE UNDER ANESTHESIA. THIS PRODUCED IMMEDIATE BUT TRANSIENT CYANOSIS. THE INDIVIDUAL SURVIVED AND REPORTED ONLY SEVERE RECTAL IRRITATION AND DIARRHEA FOR 3 DAYS THEREAFTER. IF SUFFICIENT AMOUNTS ARE INGESTED, SYSTEMIC TOXICITY MAY OCCUR AS DETAILED IN ACUTE INHALATION. INGESTION OF HYDROCARBONS IS ASSOCIATED WITH PNEUMONITIS, CENTRAL NERVOUS SYSTEM DEPRESSION AND ARRHYTHMIAS.
CHRONIC EXPOSURE- NO CHANGES WERE PRODUCED IN THE OFFSPRING OF PREGNANT RABBITS EXPOSED ORALLY.

FIRST AID- TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION IMMEDIATELY. IF VOMITING OCCURS, KEEP HEAD LOWER THAN HIPS TO PREVENT ASPIRATION.

ANTIDOTE:
NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

REACTIVITY

REACTIVITY:
STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.

INCOMPATIBILITIES:
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE:
ALKALI METALS: VIOLENT REACTION POSSIBLE.
ALUMINUM (POWDERED): FORMS SHOCK-SENSITIVE MIXTURE.
BARIUM (POWDERED): FORMS EXPLOSIVE MIXTURE.
BERYLLIUM: VIOLENT REACTION POSSIBLE.
CALCIUM: VIOLENT REACTION POSSIBLE.
LITHIUM (POWDERED): FORMS EXPLOSIVE MIXTURE.
MAGNESIUM: VIOLENT REACTION POSSIBLE.
MAGNESIUM ALLOY: DECOMPOSITION POSSIBLE.
PLASTICS, RUBBER, COATINGS: MAY BE ATTACKED.
POTASSIUM: FORMS IGNITABLE COMPOUND.
SAMARIUM: EXPLODES ON FRICTION.
SODIUM: FORMS IGNITABLE COMPOUND.
SODIUM-POTASSIUM ALLOY: VIOLENT EXPLOSION.
TITANIUM (POWDERED): FORMS SHOCK-SENSITIVE MIXTURE.
ZINC: VIOLENT REACTION POSSIBLE.

DECOMPOSITION:
THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE TOXIC AND CORROSIVE FUMES OF CHLORIDES AND FLUORIDES, AND TOXIC OXIDES OF CARBON.

POLYMERIZATION:
HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

STORAGE AND DISPOSAL

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE. FOR ASSISTANCE, CONTACT THE DISTRICT DIRECTOR OF THE ENVIRONMENTAL PROTECTION AGENCY.

STORAGE

STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

KEEP IN A TIGHTLY CLOSED CONTAINER. STORE IN A COOL, DRY, VENTILATED AREA.

****

CONDITIONS TO AVOID

MAY BURN BUT DOES NOT IGNITE READILY. AVOID CONTACT WITH STRONG OXIDIZERS, EXCESSIVE HEAT, SPARKS, OR OPEN FLAME.

****

SPILL AND LEAK PROCEDURES

OCCUPATIONAL SPILL:
STOP LEAK IF YOU CAN DO IT WITHOUT RISK. FOR SMALL SPILLS, TAKE UP WITH SAND OR OTHER ABSORBENT MATERIAL AND PLACE INTO CLEAN, DRY CONTAINERS FOR LATER DISPOSAL. KEEP UNNECESSARY PEOPLE AWAY. ISOLATE HAZARD AREA AND DENY ENTRY.

PROTECTIVE EQUIPMENT

VENTILATION:
PROVIDE GENERAL DILUTION VENTILATION TO MEET PUBLISHED EXPOSURE LIMITS.

RESPIRATOR:
THE FOLLOWING RESPIRATORS AND MAXIMUM USE CONCENTRATIONS ARE RECOMMENDATIONS BY THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIOSH POCKET GUIDE TO CHEMICAL HAZARDS; NIOSH CRITERIA DOCUMENTS OR BY THE U.S. DEPARTMENT OF LABOR, 29 CFR 1910 SUBPART Z.
THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND

IN THE WORK PLACE, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE:

4500 PPM- ANY SUPPLIED-AIR RESPIRATOR.
ANY SELF-CONTAINED BREATHING APPARATUS.

ESCAPE- ANY AIR-PURIFYING FULL FACEPIECE RESPIRATOR (GAS MASK) WITH A CHIN-STYLE OR FRONT OR BACK-MOUNTED ORGANIC VAPOR CANISTER.
ANY APPROPRIATE ESCAPE-TYPE SELF-CONTANINED BREATHING APPARATUS.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ANY SUPPLIED-AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

CLOTHING:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT REPEATED OR PROLONGED SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES:
PROTECTIVE GLOVES ARE NOT REQUIRED BUT RECOMMENDED.

EYE PROTECTION:
EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES AND A FACESHIELD TO PREVENT CONTACT WITH THIS SUBSTANCE.

EMERGENCY WASH FACILITIES:
WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES AND/OR SKIN MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN AND QUICK DRENCH SHOWER WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

AUTHORIZED - FISHER SCIENTIFIC, INC.
CREATION DATE: 01/15/85 REVISION DATE: 05/03/91

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SODIUM HYDROXIDE, SOLUTIONS, 10N AND CO2 ABSORPTION
SODIUM HYDROXIDE, SOLUTIONS, 10N AND CO2 ABSORPTION
SODIUM HYDROXIDE, SOLUTIONS, 10N AND CO2 ABSORPTION

MATERIAL SAFETY DATA SHEET

FISHER SCIENTIFIC
CHEMICAL DIVISION
1 REAGENT LANE
FAIR LAWN NJ 07410
(201) 796-7100

EMERGENCY NUMBER: (201) 796-7100
CHEMTREC ASSISTANCE: (800) 424-9300

SUBSTANCE IDENTIFICATION

CAS-NUMBER 1310-73-2
SUBSTANCE: **SODIUM HYDROXIDE, SOLUTIONS, 10N AND CO2 ABSORPTION**

TRADE NAMES/SYNONYMS:
CAUSTIC SODA SOLUTION; LYE SOLUTION; SODA LYE; SODIUM HYDROXIDE SOLUTION; SODIUM HYDROXIDE LIQUID; WHITE CAUSTIC SOLUTION; SS255; SS267; UN 1824; ACC40175

CERCLA RATINGS (SCALE 0-3): HEALTH=3 FIRE=0 REACTIVITY=1 PERSISTENCE=0
NFPA RATINGS (SCALE 0-4): HEALTH=3 FIRE=0 REACTIVITY=1

COMPONENTS AND CONTAMINANTS

COMPONENT: SODIUM HYDROXIDE PERCENT: 26.7-30.6
CAS# 1310-73-2

COMPONENT: WATER PERCENT: 69.4-73.3

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:
SODIUM HYDROXIDE:
2 mg/m3 OSHA ceiling
2 mg/m3 ACGIH ceiling
2 mg/m3 NIOSH recommended ceiling
2 mg/m3 DFG MAK TWA (total dust);
4 mg/m3 DFG MAK 5 minute peak, momentary value, 8 times/shift

Measurement method: Particulate filter; hydrochloric acid; titration; (NIOSH Vol. III # 7401, Alkaline Dusts).

1000 pounds CERCLA Section 103 Reportable Quantity

OSHA revoked the final rule limits of January 19, 1989 in response to the 11th Circuit Court of Appeals decision (AFL-CIO v. OSHA) effective June 30, 1993. See 29 CFR 1910.1000 (58 FR 35338)

PHYSICAL DATA

DESCRIPTION: Clear liquid. BOILING POINT: 234 F (112 C)

MELTING POINT: 5 F (-15 C) SPECIFIC GRAVITY: 1.3 PH: alkaline

SOLUBILITY IN WATER: complete

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
Negligible fire hazard when exposed to heat or flame.

FIREFIGHTING MEDIA:
Dry chemical, carbon dioxide, water spray or regular foam (1993 Emergency Response Guidebook, RSPA P 5800.6).

For larger fires, use water spray, fog or regular foam (1993 Emergency Response Guidebook, RSPA P 5800.6).

FIREFIGHTING:
Move container from fire area if you can do it without risk. Apply cooling water to sides of containers that are exposed to flames until well after fire is out. Stay away from ends of tanks (1993 Emergency Response Guidebook, RSPA P 5800.6, Guide Page 60).

Use agent suitable for type of fire; use flooding quantities of water as fog, apply from as far a distance as possible. Avoid breathing corrosive vapors, keep upwind.

TRANSPORTATION DATA

U.S. DEPARTMENT OF TRANSPORTATION SHIPPING NAME-ID NUMBER, 49 CFR 172.101:
Sodium hydroxide, solutions-UN 1824

U.S. DEPARTMENT OF TRANSPORTATION HAZARD CLASS OR DIVISION, 49 CFR 172.101:
8 - Corrosive material

U.S. DEPARTMENT OF TRANSPORTATION PACKING GROUP, 49 CFR 172.101:
PG II

U.S. DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS, 49 CFR 172.101 AND SUBPART E:
Corrosive

U.S. DEPARTMENT OF TRANSPORTATION PACKAGING AUTHORIZATIONS:
EXCEPTIONS: 49 CFR 173.154
NON-BULK PACKAGING: 49 CFR 173.202
BULK PACKAGING: 49 CFR 173.242

U.S. DEPARTMENT OF TRANSPORTATION QUANTITY LIMITATIONS 49 CFR 172.101:
PASSENGER AIRCRAFT OR RAILCAR: 1 L
CARGO AIRCRAFT ONLY: 30 L

TOXICITY

SODIUM HYDROXIDE:
IRRITATION DATA: 500 mg/24 hours skin-rabbit severe; 1% eye-rabbit severe; 50 ug/24 hours eye-rabbit severe; 1 mg/24 hours eye-rabbit severe; 400 ug eye-rabbit mild; 1 mg/30 seconds rinsed eye-rabbit severe; 1%/24 hours eye-monkey severe.
TOXICITY DATA: 1350 mg/kg skin-rabbit LD50 (Van Waters & Rogers Inc. MSDS); 500 mg/kg oral-rabbit LDLo; 104-340 mg/kg oral-rat LD50 (Van Waters & Rogers Inc. MSDS); 40 mg/kg intraperitoneal-mouse LD50; mutagenic data (RTECS).
CARCINOGEN STATUS: None.
LOCAL EFFECTS: Corrosive- inhalation, skin, eye, ingestion.
ACUTE TOXICITY LEVEL: Toxic by ingestion; moderately toxic by dermal absorption.
TARGET EFFECTS: No data available.
AT INCREASED RISK FROM EXPOSURE: Persons with pre-existing skin and eye conditions.

HEALTH EFFECTS AND FIRST AID

INHALATION:
SODIUM HYDROXIDE:
CORROSIVE. 250 mg/m3 Immediately Dangerous to Life or Health.
ACUTE EXPOSURE- Effects due to inhalation of dusts or mist may vary from mild irritation of the nose at 2 mg/m3 to severe pneumonitis depending on the severity of exposure. Low concentrations may cause mucous membrane irritation with sore throat, coughing, and dyspnea. Intense exposures may result in destruction of mucous membranes and delayed pulmonary edema or pneumonitis. Shock may occur.
CHRONIC EXPOSURE- Prolonged exposures to high concentrations of dusts or mists may cause discomfort and ulceration of the nasal passages. Repeated exposures of 5000 mg/L were harmless to rats, but 10,000 mg/L led to nervousness, sore eyes, diarrhea and retarded growth. Rats exposed 30 minutes/day to unmeasured concentrations of sodium hydroxide aerosols suffered pulmonary damage after 2-3 months. Death occurred in 2 of 10 rats exposed to an aerosol of 40% aqueous sodium hydroxide for 30 minutes, twice a week for 3 weeks. Histopathological examination showed mostly normal lung tissue with foci of enlarged alveolar septae, emphysema, bronchial ulceration, and enlarged lymph adenoidal tissues. An epidemiologic study of 291 workers chronically exposed to caustic dusts for 30 years or more found no significant increase in mortality in relation to duration or intensity of such exposures.

FIRST AID- Remove from exposure area to fresh air immediately. Perform artificial respiration if necessary. Maintain airway, blood pressure and respiration. Keep warm and at rest. Treat symptomatically and supportively. Get medical attention immediately. Qualified medical personnel should consider administering oxygen.

SKIN CONTACT:
SODIUM HYDROXIDE:
CORROSIVE.
ACUTE EXPOSURE- Upon contact with the skin, damage including redness, cutaneous burns, skin fissures and white eschars may occur without immediate pain. Exposure to solutions as weak as 0.03 N (0.12%) for 1 hour has caused injury to healthy skin. With solutions of 0.4-4%, irritation does not occur until after several hours. Solutions of 25-50% caused no sensation of irritation within 3 minutes in human subjects. Skin biopsies from human subjects having 1 N sodium hydroxide applied to

their arms for 15 to 180 minutes showed progressive changes beginning with dissolution of the cells in the horny layer and progressing through edema to total destruction of the epidermis in 60 minutes. A 5% aqueous solution caused severe necrosis to the skin of rabbits when applied for 4 hours. Alkalies penetrate the skin slowly. The extent of injury depends on the duration of contact. If sodium hydroxide is not removed from the skin, severe burns with deep ulceration may occur. Exposure to the dust or mist may cause multiple small burns and temporary loss of hair. Pathologic findings due to alkalies may include gelatinous, necrotic areas at the site of contact.
CHRONIC EXPOSURE- Effects are dependent upon concentration and duration of exposure. Dermatitis or effects similar to those for acute exposure may occur.

FIRST AID- Remove contaminated clothing and shoes immediately. Wash with soap or mild detergent and large amounts of water until no evidence of chemical remains (at least 15-20 minutes). If burns occur, proceed with the following: Cover affected area securely with sterile, dry, loose-fitting dressing. Treat symptomatically and supportively. Get medical attention immediately.

EYE CONTACT:
SODIUM HYDROXIDE:
CORROSIVE.
ACUTE EXPOSURE- Contact may cause disintegration and sloughing of conjunctival and corneal epithelium, corneal opacification, marked edema and ulceration. After 7 to 13 days either gradual recovery begins or there is progression of ulceration and corneal opacification. Complications of severe eye burns are symblepharon with overgrowth of the cornea by a vascularized membrane, progressive or recurrent corneal ulceration and permanent corneal opacification. Blindness may occur.
CHRONIC EXPOSURE- Effects are dependent upon concentration and duration of exposure. Conjunctivitis or effects similar to those for acute exposure may occur.

FIRST AID- Wash eyes immediately with large amounts of water, occasionally lifting upper and lower lids, until no evidence of chemical remains (at least 15-20 minutes). Continue irrigating with normal saline until the pH has returned to normal (30-60 minutes). Cover with sterile bandages. Get medical attention immediately.

INGESTION:
SODIUM HYDROXIDE:
CORROSIVE/TOXIC.
ACUTE EXPOSURE- The reported lethal dose in rats is 140-340 mg/kg. Ingestion may cause a burning sensation in the mouth, corrosion of the lips, mouth, tongue and pharynx, and severe esophageal and abdominal pain, vomiting of blood and large pieces of mucosa, and bloody diarrhea. Asphyxia can occur from swelling of the throat. Mediastinitis, alkalemia, pallor, weak, slow pulse, cardiovascular collapse, shock, coma and death may occur. Perforation of the alimentary tract and constrictive scarring may result. Esophageal stricture may occur weeks, months, or even years later to make swallowing difficult. The estimated fatal dose in man is 5 grams. Cases of squamous cell carcinoma of the esophagus have occurred with latent periods of 12 to 42 years after ingestion. These cancers were believed to be sequela of tissue destruction and possibly scar formation rather than the result of direct carcinogenic action of sodium hydroxide.
CHRONIC EXPOSURE- Depending on the concentration, repeated ingestion of alkaline substances may result in inflammatory and ulcerative effects on the oral mucous membranes and other effects as with acute ingestion.

FIRST AID- Give large amounts of water or milk immediately. Allow vomiting to occur. Do not perform gastric lavage or induce emesis. Esophagoscopy is the only way to exclude th possibility of corrosion in the upper gastro-intestinal tract; if corrosion is suspected, esophagoscopy should usually be performed within 24 hours. (Dreisbach & Robertson; Handbook of Poisoning; 12th Ed.). Do not give anything by mouth if person is unconscious or otherwise unable to swallow. If vomiting occurs, keep head lower than hips to help prevent aspiration. Maintain airway and respiration. Treat symptomatically and supportively. Get medical attention immediately.

ANTIDOTE:
No specific antidote. Treat symptomatically and supportively.

REACTIVITY

REACTIVITY:
Reacts exothermically with water.

INCOMPATIBILITIES:
SODIUM HYDROXIDE:
ACETALDEHYDE: May result in violent polymerization.
ACETIC ACID: Mixing in closed contalner increases temperature and pressure.
ACETIC ANHYDRIDE: Mixing in a closed container increases temperature and pressure.
ACIDS: May react violently.
ACROLEIN: May result in an extremely violent polymerization.
ACRYLONITRILE: May cause violent polymerization.

ALLYL ALCOHOL + BENZENE SULFONYL CHLORIDE: Possible explosion hazard.
ALLYL CHLORIDE: Hydrolyzes.
ALUMINUM: Vigorous reaction.
ALUMINUM, ARSENIC TRIOXIDE, SODIUM ARSENATE: May generate flammable hydrogen gas.
AMMONIA + SILVER NITRATE: Precipitation of explosive silver nitride may occur.
AMMONIUM SALTS: May react violently evolving ammonia gas.
BENZENE-1,4-DIOL: Exothermic reaction.
N,N'-BIS(TRINITROETHYL)UREA: Formation of explosive compound.
BROMINE: Possible explosion if not stirred continously.
CHLORINE TRIFLUORIDE: May cause violent reaction.
CHLOROFORM + METHYL ALCOHOL: Exothermic reaction.
CHLOROHYDRIN: Mixing in a closed container causes an increase in temperature and pressure.
4-CHLORO-2-METHYLPHENOL: Possible ignition.
CHLORONITROTOLUENES: Possible explosion.
CHLOROPICRIN: May cause violent reaction.
CHLOROSULFONIC ACID: Mixing in a closed container causes an increase in temperature and pressure.
CINNAMALDEHYDE: Exothermic reaction.
COATINGS: May be attacked.
COPPER: Solutions may slowly corrode.
CYANOGEN AZIDE: May form sodium 5-azidotetrazolide, which is explosive if isolated.
2,2-DICHLORO-3,3-DIMETHYLBUTANE: Hazardous reaction.
1,2-DICHLOROETHYLENE: May form spontaneously flammable monochloroacetylene.
DIBORANE AND OCTANAL OXIME: Exothermic reaction.
ETHYLENE CYANOHYDRIN: Mixing in a closed contalner causes an increase in temperature and pressure.
FLAMMABLE LIQUIDS: Fire and explosion hazard.
GLYCOLS: May cause exothermic decomposition with evolution of hydrogen gas.
GLYOXAL: Mixing in a closed container increases temperature and pressure.
HALOGENATED HYDROCARBONS: Violent reaction.
HYDROCHLORIC ACID: Mixing in a closed container causes an increase in temperature and pressure.
HYDROFLUORIC ACID: Mixing in a closed container causes an increase in temperature and pressure.
HYDROQUINONE: Rapid decomposition of hydroquinone with evolution of heat.
IRON: Solutions may slowly corrode.
LEAD: May be attacked; flammable hydrogen gas may be liberated.
LEATHER: May be attacked.
MALEIC ANHYDRIDE: Explosive decomposition.
METALS: Corrodes metals, reacting to form flammable hydrogen gas.
4-METHYL-2-NITROPHENOL: Exothermic reaction.
NITRIC ACID: Mixing in closed contalner increases temperature and pressure.
NITROBENZENE: Possibly explosive reaction upon heating in presence of water.
NITROETHANE: Forms an explosive salt.
NITROMETHANE: Forms an explosive salt.
NITROPARAFFINS: The nitroparaffins, in the presence of water, form dry salts with organic bases. The dry salts are explosive.
NITROPROPANE: Forms an explosive salt.
O-NITROTOLUENE: Possible explosion.
OLEUM: Mixing in a closed container causes an increase in temperature and pressure.
ORGANIC PEROXIDES: Incompatible.
PENTOL (3-METHYL-2-PENTENE-4-YN-1-OL): Possible explosion.
PHOSPHORUS: May form mixed phosphines which may ignite spontaneously in air.
PHOSPHORUS PENTOXIDE: May react violently when heated.
PLASTICS: May be attacked.
B-PROPIOLACTONE: Mixing in a closed container causes an increase in temperature and pressure.
PROPYLENE OXIDE: Ignition or explosion may occur.
RUBBER: May be attacked.
SODIUM TETRAHYDROBORATE: Dry mixtures with sodium hydroxide containing 15-40% of tetrahydroborate liberate hydrogen explosively at 230-270 C.
SULFURIC ACID: Mixing in a closed container causes an increase in temperaure and pressure.
1,2,4,5-TETRACHLOROBENZENE: Violent reaction.
TETRACHLOROBENZENE + METHYL ALCOHOL: Possible explosion.
TETRACHLOROETHYLENE: Possible explosion.
TETRAHYDROFURAN: Serious explosions can occur.
TIN: Evolution of hydrogen gas which may form an explosive mixture.
1,1,1-TRICHLOROETHANOL: Explosion may occur.
TRICHLOROETHYLENE: Formation of explosive mixtures of dichloroacetylene.
TRICHLORONITROMETHANE + METHANOL: May cause violent reaction.
WOOL: May be attacked.
ZINC (DUST): Fire and explosion hazard.
ZIRCONIUM: May cause explosive reaction upon heating.

DECOMPOSITION:
Thermal decomposition may release toxic fumes of sodium oxide.

POLYMERIZATION:
Hazardous polymerization has not been reported to occur under normal temperatures and pressures.

STORAGE AND DISPOSAL

Observe all federal, state and local regulations when storing or disposing of this substance.

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CONDITIONS TO AVOID

Avoid contact with or storage with water, acids, and other incompatibilities. Flammable, poisonous gases may accumulate in tanks and hopper cars.

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SPILL AND LEAK PROCEDURES

SOIL SPILL:
Dig holding area such as lagoon, pond or pit for containment.

Use soil, sand bags, foamed polyurethane, or foamed concrete to dike surface flow.

Use fly ash or cement powder to absorb bulk liquid.

Use vinegar or other dilute acid to neutralize.

WATER SPILL:
Add suitable agent to neutralize spilled material to pH-7.

OCCUPATIONAL SPILL:
Do not touch spilled material. Stop leak if you can do it without risk. For small spills, take up with sand or other absorbent material and place into containers for later disposal. For small dry spills, with clean shovel place material into clean, dry container and cover. Move containers from spill area. For larger spills, dike far ahead of spill for later disposal. Keep unnecessary people away. Isolate hazard area and deny entry.

Reportable Quantity (RQ): 1000 pounds
The Superfund Amendments and Reauthorization Act (SARA) Section 304 requires that a release equal to or greater than the reportable quantity for this substance be immediately reported to the local emergency planning committee and the state emergency response commission (40 CFR 355.40). If the release of this substance is reportable under CERCLA Section 103, the National Response Center must be notified immediately at (800) 424-8802 or (202) 426-2675 in the metropolitan Washington, D.C. area (40 CFR 302.8).

PROTECTIVE EQUIPMENT

VENTILATION:
Provide local exhaust or process enclosure ventilation to meet published exposure limits.

RESPIRATOR:
The following respirators and maximum use concentrations are recommendations by the U.S. Department of Health and Human Services, NIOSH Pocket Guide to Chemical Hazards; NIOSH criteria documents or by the U.S. Department of Labor, 29 CFR 1910 Subpart Z.
The specific respirator selected must be based on contamination levels found in the work place, must not exceed the working limits of the respirator and be jointly approved by the National Institute for Occupational Safety and Health and the Mine Safety and Health Administration (NIOSH-MSHA).

SODIUM HYDROXIDE:

50 mg/m3- Any powered air-purifying respirator with a dust and mist filter.
Any supplied-air respirator operated in a continuous flow mode.

100 mg/m3- Any self-contained breathing apparatus with a full facepiece.
Any supplied-air respirator with a full facepiece.
Any air-purifying full facepiece respirator with a high efficiency particulate filter.

250 mg/m3- Any supplied-air respirator with a full facepiece and operated in a pressure-demand or other positive pressure mode.

Escape- Any air-purifying full facepiece respirator with a high efficiency particulate filter.
Any appropriate escape-type self-contained breathing apparatus.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

CLOTHING:
Employee must wear appropriate protective (impervious) clothing and equipment to prevent any possibility of skin contact with this substance.

GLOVES:
Employee must wear appropriate protective gloves to prevent contact with this substance.

EYE PROTECTION:
Employee must wear splash-proof or dust-resistant safety goggles and a faceshield to prevent contact with this substance.

Emergency wash facilities:
Where there is any possibility that an employee's eyes and/or skin may be exposed to this substance, the employer should provide an eye wash fountain and quick drench shower within the immediate work area for emergency use.

AUTHORIZED - FISHER SCIENTIFIC, INC.
CREATION DATE: 07/19/85 REVISION DATE: 06/30/94

-ADDITIONAL INFORMATION-

ACETIC ACID, GLACIAL
ACETIC ACID, GLACIAL
ACETIC ACID, GLACIAL

MATERIAL SAFETY DATA SHEET

FISHER SCIENTIFIC
CHEMICAL DIVISION
1 REAGENT LANE
FAIR LAWN NJ 07410
(201) 796-7100

EMERGENCY NUMBER: (201) 796-7100
CHEMTREC ASSISTANCE: (800) 424-9300

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SUBSTANCE IDENTIFICATION

SUBSTANCE: **ACETIC ACID, GLACIAL** CAS-NUMBER 64-19-7

TRADE NAMES/SYNONYMS:
ACETIC ACID; GLACIAL ACETIC ACID; ETHANOIC ACID; VINEGAR ACID; ETHYLIC ACID; PYROLIGNEUS ACID; METHANECARBOXYLIC ACID; ACETIC ACID, HPLC GRADE; STCC 4931303; UN 2789; A37; A38; A38C; A38P; A38SI; A38S; A507; A465; A35; A38FP; BP1185; C2H402; ACC00120

CHEMICAL FAMILY:
CARBOXYLIC ACID, ALIPHATIC

MOLECULAR FORMULA: C-H3-C-02-H

MOLECULAR WEIGHT: 60.05

CERCLA RATINGS (SCALE 0-3): HEALTH=2 FIRE=2 REACTIVITY=0 PERSISTENCE=0
NFPA RATINGS (SCALE 0-4): HEALTH=2 FIRE=2 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

COMPONENT: ACETIC ACID
CAS# 64-19-7 PERCENT: 80.0-100.0

COMPONENT: WATER PERCENT: 0-20.0

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:
ACETIC ACID, GLACIAL:
10 PPM (25 MG/M3) OSHA TWA
10 PPM (25 MG/M3) ACGIH TWA; 15 PPM (37 MG/M3) ACGIH STEL
10 PPM (25 MG/M3) NIOSH RECOMMENDED TWA; 15 PPM (37 MG/M3) NIOSH STEL
10 PPM (25 MG/M3) DFG MAK TWA;
20 PPM (50 MG/M3) DFG MAK 5 MINUTE PEAK, MOMENTARY VALUE, 8 TIMES/SHIFT

MEASUREMENT METHOD: CHARCOAL TUBE; FORMIC ACID; GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION; (NIOSH VOL. III # 1603).

5000 POUNDS CERCLA SECTION 103 REPORTABLE QUANTITY

PHYSICAL DATA

DESCRIPTION: CLEAR, COLORLESS LIQUID WITH A STRONG, PUNGENT, CHARACTERISTIC

ODOR OF VINEGAR AND WHEN WELL DILUTED WITH WATER, AN ACID TASTE.

BOILING POINT: 244 F (118 C) MELTING POINT: 62 F (17 C)

SPECIFIC GRAVITY: 1.0492 VAPOR PRESSURE: 11.8 MMHG @ 20 C

EVAPORATION RATE: (BUTYL ACETATE=1) 0.97 PH: 2.4 (1.0 M SOL.)

SOLUBILITY IN WATER: VERY SOLUBLE ODOR THRESHOLD: 1.0 PPM

VAPOR DENSITY: 2.07

SOLVENT SOLUBILITY: SOLUBLE IN ETHANOL, GLYCEROL, ETHER, ACETONE, BENZENE, CARBON TETRACHLORIDE; INSOLUBLE IN CARBON DISULFIDE, CHLOROFORM, DIMETHYL SULFOXIDE

VISCOSITY: 1.22 CPS @ 20 C

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
MODERATE FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

VAPOR-AIR MIXTURES ARE EXPLOSIVE ABOVE FLASH POINT.

VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL A CONSIDERABLE DISTANCE TO A SOURCE OF IGNITION AND FLASH BACK.

FLASH POINT: 103 F (39 C) (CC) UPPER EXPLOSIVE LIMIT: 16.0% @ 92 C

LOWER EXPLOSIVE LIMIT: 4.0% @ 59 C AUTOIGNITION TEMP.: 867 F (464 C)

FLAMMABILITY CLASS(OSHA): II

FIREFIGHTING MEDIA:
DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR REGULAR FOAM
(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR REGULAR FOAM
(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

ALCOHOL FOAM
(NFPA 325M, FIRE HAZARD PROPERTIES OF FLAMMABLE LIQUIDS, GASES, AND VOLATILE SOLIDS, 1991).

FIREFIGHTING:
MOVE CONTAINER FROM FIRE AREA IF YOU CAN DO IT WITHOUT RISK. DO NOT GET WATER INSIDE CONTAINER. APPLY COOLING WATER TO SIDES OF CONTAINERS THAT ARE EXPOSED TO FLAMES UNTIL WELL AFTER FIRE IS OUT. STAY AWAY FROM ENDS OF TANKS. WITHDRAW IMMEDIATELY IN CASE OF RISING SOUND FROM VENTING SAFETY DEVICE OR ANY DISCOLORATION OF TANK DUE TO FIRE. ISOLATE FOR 1/2 MILE IN ALL DIRECTIONS IF TANK, RAIL CAR OR TANK TRUCK IS INVOLVED IN FIRE (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800,5, GUIDE PAGE 29).

USE FLOODING AMOUNTS OF WATER AS A FOG; SOLID STREAMS MAY BE INEFFECTIVE. COOL CONTAINERS WITH FLOODING AMOUNTS OF WATER FROM AS FAR A DISTANCE AS POSSIBLE. USE WATER SPRAY TO ABSORB CORROSIVE VAPORS. AVOID BREATHING CORROSIVE VAPORS; KEEP UPWIND.

FIRE FIGHTING PHASES: USE WATER SPRAY, DRY CHEMICAL, ALCOHOL FOAM, OR CARBON DIOXIDE. USE WATER TO KEEP FIRE-EXPOSED CONTAINERS COOL. IF A LEAK OR SPILL HAS NOT IGNITED, USE WATER SPRAY TO DISPERSE THE VAPORS AND TO PROTECT THE MEN ATTEMPTING TO STOP A LEAK. WATER SPRAY MAY BE USED TO FLUSH SPILLS AWAY FROM EXPOSURES AND TO DILUTE SPILLS TO NONFLAMMABLE MIXTURES (NFPA 49, HAZARDOUS CHEMICALS DATA, 1975).

TRANSPORTATION DATA

DEPARTMENT OF TRANSPORTATION HAZARD CLASSIFICATION 49-CFR 172.101:
CORROSIVE MATERIAL

DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS 49-CFR 172.101 AND SUBPART E:
CORROSIVE

DEPARTMENT OF TRANSPORTATION PACKAGING REQUIREMENTS: 49-CFR 173.245
EXCEPTIONS: 49-CFR 173.244

FINAL RULE ON HAZARDOUS MATERIALS REGULATIONS (HMR, 49 CFR PARTS 171-180), DOCKET NUMBERS HM-181, HM-181A, HM-181B, HM-181C, HM-181D AND HM-204. EFFECTIVE DATE OCTOBER 1, 1991. HOWEVER, COMPLIANCE WITH THE REGULATIONS IS AUTHORIZED ON AND AFTER JANUARY 1, 1991. (55 FR 52402, 12/21/90)

EXCEPT FOR EXPLOSIVES, INHALATION HAZARDS, AND INFECTIOUS SUBSTANCES, THE EFFECTIVE DATE FOR HAZARD COMMUNICATION REQUIREMENTS IS EXTENDED TO OCTOBER 1, 1993. (56 FR 47158, 09/18/91)

U.S. DEPARTMENT OF TRANSPORTATION SHIPPING NAME-ID NUMBER, 49 CFR 172.101:
ACETIC ACID, GLACIAL-UN 2789

U.S. DEPARTMENT OF TRANSPORTATION HAZARD CLASS OR DIVISION, 49 CFR 172.101:
8 - CORROSIVE MATERIAL

U.S. DEPARTMENT OF TRANSPORTATION PACKING GROUP, 49 CFR 172.101:
PG II

U.S. DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS, 49 CFR 172.101 AND SUBPART E:
CORROSIVE

U.S. DEPARTMENT OF TRANSPORTATION PACKAGING AUTHORIZATIONS:
EXCEPTIONS: 49 CFR 173.154
NON-BULK PACKAGING: 49 CFR 173.202
BULK PACKAGING: 49 CFR 173.242

U.S. DEPARTMENT OF TRANSPORTATION QUANTITY LIMITATIONS 49 CFR 172.101:
PASSENGER AIRCRAFT OR RAILCAR: 1 L
CARGO AIRCRAFT ONLY: 30 L

TOXICITY

ACETIC ACID, GLACIAL:
IRRITATION DATA: 50 MG/24 HOURS SKIN-HUMAN MILD: 525 MG OPEN SKIN-RABBIT SEVERE; 50 MG/24 HOURS SKIN-RABBIT MILD; 20 MG/24 HOURS SKIN-RABBIT MODERATE; 50 UG OPEN EYE-RABBIT SEVERE; 5 MG/30 SECONDS RINSED EYE-RABBIT MILD.
TOXICITY DATA: 816 PPM/3 MINUTES INHALATION-HUMAN TCLO; 16,000 PPM/4 HOURS INHALATION-RAT LCLO; 5620 PPM/1 HOUR INHALATION-MOUSE LC50; 1060 MG/KG SKIN-RABBIT LD50; 1470 UG/KG ORAL-HUMAN TDLO; 3310 MG/KG ORAL-RAT LD50; 600 MG/KG ORAL-RABBIT LDLO; 600 MG/KG SUBCUTANEOUS-RABBIT LDLO; 525 MG/KG INTRAVENOUS-MOUSE LD50; 600 MG/KG RECTAL-RABBIT LDLO; 308 MG/KG UNREPORTED-MAN LDLO; *MUTAGENIC DATA (RTECS); REPRODUCTIVE EFFECTS DATA* (RTECS).
CARCINOGEN STATUS: NONE.
LOCAL EFFECTS: CORROSIVE- INHALATION, SKIN, EYE, INGESTION.
ACUTE TOXICITY LEVEL: MODERATELY TOXIC BY INHALATION, DERMAL ABSORPTION, INGESTION.
TARGET EFFECTS: POISONING MAY AFFECT THE LIVER, KIDNEYS, AND CARDIOVASCULAR SYSTEM.
AT INCREASED RISK FROM EXPOSURE: PERSONS WITH A HISTORY OF RESPIRATORY, SKIN OR EYE DISEASE.

HEALTH EFFECTS AND FIRST AID

INHALATION:
ACETIC ACID, GLACIAL:
1000 PPM IMMEDIATELY DANGEROUS TO LIFE OR HEALTH.
CORROSIVE.
ACUTE EXPOSURE- MAY CAUSE SEVERE IRRITATION OF THE RESPIRATORY TRACT. 50 PPM OR MORE IS INTOLERABLE TO MOST PERSONS AND RESULTS IN PHARYNGEAL EDEMA AND CHRONIC BRONCHITIS. OTHER SYMPTOMS MAY INCLUDE COUGHING, DYSPNEA, SHORTNESS OF BREATH, LARYNGITIS, PULMONARY EDEMA, BRONCHOPNEUMONIA AND HYPOTENSION.
CHRONIC EXPOSURE- WORKERS REPEATEDLY EXPOSED TO CONCENTRATIONS UP TO 200 PPM HAVE BEEN FOUND TO SUFFER FROM PALPEBRAL EDEMA WITH HYPERTROPHY OF THE LYMPH NODES, CHRONIC PHARYNGITIS, CHRONIC BRONCHITIS AND IN SOME CASES, ASTHMATIC BRONCHITIS AND TRACES OF EROSION OF THE TEETH. COMPLAINTS OF DIGESTIVE DISORDERS WITH PYROSIS AND CONSTIPATION HAVE ALSO BEEN REPORTED.

FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, GIVE ARTIFICIAL RESPIRATION. MAINTAIN AIRWAY AND BLOOD PRESSURE AND ADMINISTER OXYGEN IF AVAILABLE. KEEP AFFECTED PERSON WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. ADMINISTRATION OF OXYGEN SHOULD BE PERFORMED BY QUALIFIED PERSONNEL. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:
ACETIC ACID, GLACIAL:
CORROSIVE.
ACUTE EXPOSURE- DIRECT CONTACT MAY CAUSE SEVERE IRRITATION WITH PAIN, ERYTHEMA, BLISTERS, BURNS AND SUPERFICIAL DESTRUCTION OF THE SKIN WITH SLOW HEALING. THE SKIN MAY BECOME BLACKENED, HYPERKERATOTIC AND FISSURED. READILY ABSORBED THROUGH THE SKIN.
CHRONIC EXPOSURE- REPEATED AND PROLONGED CONTACT MAY CAUSE DARKENING OF THE SKIN, IRRITATION AND DERMATITIS.

FIRST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). IN CASE OF CHEMICAL BURNS, COVER AREA WITH STERILE, DRY DRESSING. BANDAGE SECURELY, BUT NOT TOO TIGHTLY. GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:
ACETIC ACID, GLACIAL:
CORROSIVE.
ACUTE EXPOSURE- DIRECT CONTACT CAUSES SEVERE IRRITATION, LACRIMATION, CORNEAL EROSION, OPACIFICATION, IRITIS AND POSSIBLY LOSS OF SIGHT IN HUMANS. REGENERATION OF THE EPITHELIUM MAY TAKE MANY MONTHS, BUT CORNEAL ANESTHESIA AND OPACITY WILL USUALLY BE PERMANENT. IN LESS SEVERE CASES, CONJUNCTIVITIS, PHOTOPHOBIA AND HYPEREMIA OF THE CONJUNCTIVA OCCURRED. THE VAPOR AND DILUTE SOLUTIONS MAY CAUSE CONJUNCTIVAL HYPEREMIA AND SOMETIMES INJURY TO THE CORNEAL EPITHELIUM.
CHRONIC EXPOSURE- DEPENDING ON THE CONCENTRATION AND DURATION OF EXPOSURE, EFFECTS SIMILAR TO ACUTE EXPOSURE MAY OCCUR.

FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). CONTINUE IRRIGATING WITH NORMAL SALINE UNTIL THE PH HAS RETURNED TO NORMAL (30-60 MINUTES). COVER WITH STERILE BANDAGES. GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:
ACETIC ACID, GLACIAL:
CORROSIVE.

ACUTE EXPOSURE- IN CASES OF ACCIDENTAL INGESTION, SEVERE ULCERONECROTIC LESIONS OF THE UPPER DIGESTIVE TRACT, STRICTURE OF THE ESOPHAGUS, AND PERFORATION OF THE ESOPHAGUS AND PYLORUS HAVE BEEN OBSERVED WITH HEMATEMESIS, DIARRHEA, SHOCK, HEMOGLOBINURIA FOLLOWED BY ANURIA AND UREMIA. OTHER SYMPTOMS MAY INCLUDE VOMITING, ABDOMINAL SPASMS, THIRST, DIFFICULTY IN SWALLOWING, HYPOTHERMIA, RAPID AND WEAK PULSE, SLOW AND SHALLOW BREATHING, LARYNGITIS, BRONCHITIS, PULMONARY EDEMA, PNEUMONIA, HEMOLYSIS, ALBUMINURIA, HEMATURIA, TWITCHING, CONVULSIONS, CARDIOVASCULAR COLLAPSE, SHOCK AND DEATH. REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS.
CHRONIC EXPOSURE- NO DATA AVAILABLE.

FIRST AID- DO NOT USE GASTRIC LAVAGE OR EMESIS. DILUTE THE ACID IMMEDIATELY BY DRINKING LARGE QUANTITIES OF WATER OR MILK. IF VOMITING PERSISTS, *ADMINISTER* FLUIDS REPEATEDLY. INGESTED ACID MUST BE DILUTED APPROXIMATELY 100 FOLD TO RENDER IT HARMLESS TO TISSUES. MAINTAIN AIRWAY AND TREAT SHOCK (DREISBACH, HANDBOOK OF POISONING, 12TH ED.). GET MEDICAL ATTENTION IMMEDIATELY. IF VOMITING OCCURS, KEEP HEAD BELOW HIPS TO HELP PREVENT ASPIRATION.

ANTIDOTE:
NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

REACTIVITY

REACTIVITY:
STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.

INCOMPATIBILITIES:
ACETIC ACID, GLACIAL:
ACETALDEHYDE: VIOLENT, EXOTHERMIC POLYMERIZATION REACTION.
ACETIC ANHYDRIDE + WATER: VIOLENT, EXOTHERMIC REACTION.
2-AMINOETHANOL: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
AMMONIUM NITRATE: IGNITES ON WARMING, ESPECIALLY IF CONCENTRATED.
5-AZIDOTETRAZOLE: POSSIBLE EXPLOSIVE REACTION.
BASES: EXOTHERMIC REACTION.
BROMINE PENTAFLUORIDE: FIRE AND EXPLOSION HAZARD.
CARBONATES: INCOMPATIBLE.
CHLORINE TRIFLUORIDE: VIOLENT, POSSIBLY EXPLOSIVE REACTION.
CHLOROSULFONIC ACID: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
CHROMIC ACID: EXPLOSIVE REACTION IF NOT KEPT COLD.
CHROMIUM TRIOXIDE: POSSIBLE FIRE AND EXPLOSION HAZARD.
DIALLYL METHYL CARBINOL AND OZONE: EXPLOSIVE REACTION.
ETHYLENE DIAMINE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
ETHYLENEIMINE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
HYDROGEN PEROXIDE: EXOTHERMIC REACTION ON HEATING WITH THE PRODUCTION OF PERACETIC ACID WHICH WILL EXPLODE AT 110 C.
HYDROXIDES: INCOMPATIBLE.
LEAD: CORRODES.
METALS: ATTACKS MOST METALS, INCLUDING ZINC.
NITRIC ACID: EXPLOSIVE REACTION IF NOT KEPT COLD.
NITRIC ACID AND ACETONE: EXPLOSIVE REACTION (DELAYED) IN CLOSED CONTAINER.
OLEUM: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
OXIDIZERS: FIRE AND EXPLOSION HAZARD.
PERCHLORIC ACID: EXPLOSIVE REACTION.
PERMANGANATES: EXPLOSIVE REACTION IF NOT KEPT COLD.
PHOSPHATES: INCOMPATIBLE.
PHOSPHORUS ISOCYANATE: VIOLENT REACTION.
PHOSPHORUS TRICHLORIDE: EXPLOSIVE REACTION.
POTASSIUM HYDROXIDE: VIOLENT REACTION.
POTASSIUM PERMANGANATE: POSSIBLE EXPLOSION IF INADEQUATELY COOLED.
POTASSIUM TERT-BUTOXIDE: IGNITION REACTION.
SODIUM HYDROXIDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
SODIUM PEROXIDE: EXPLOSIVE REACTION IF NOT KEPT COLD.
XYLENE: MAY FORM DETONABLE MIXTURES DURING TERPHTHALIC ACID PRODUCTION, THE PRESENCE OF WATER MAY DECREASE THE HAZARD.

DECOMPOSITION:
THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE TOXIC OXIDES OF CARBON.

POLYMERIZATION:
HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

STORAGE AND DISPOSAL

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE. FOR ASSISTANCE, CONTACT THE DISTRICT DIRECTOR OF THE ENVIRONMENTAL PROTECTION AGENCY.

STORAGE

PROTECT AGAINST PHYSICAL DAMAGE. DETACHED STORAGE IS PREFERRED. SEPARATE FROM OXIDIZING MATERIALS AND AVOID STORAGE NEAR COMBUSTIBLE MATERIALS. KEEP ABOVE ITS FREEZING POINT (62 F) TO AVOID RUPTURE OF CARBOYS AND GLASS CONTAINERS (NFPA 49, HAZARDOUS CHEMICALS DATA, 1975).

BONDING AND GROUNDING: SUBSTANCES WITH LOW ELECTROCONDUCTIVITY, WHICH MAY BE IGNITED BY ELECTROSTATIC SPARKS, SHOULD BE STORED IN CONTAINERS WHICH MEET THE BONDING AND GROUNDING GUIDELINES SPECIFIED IN NFPA 77-1983, RECOMMENDED PRACTICE ON STATIC ELECTRICITY.

STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

STORE IN ACCORDANCE WITH 29 CFR 1910.106.

DISPOSAL

DISPOSAL MUST BE IN ACCORDANCE WITH STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE, 40 CFR 262, EPA HAZARDOUS WASTE NUMBER D002.
100 POUND CERCLA SECTION 103 REPORTABLE QUANTITY.

DISPOSAL MUST BE IN ACCORDANCE WITH STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE, 40 CFR 262, EPA HAZARDOUS WASTE NUMBER D001.
100 POUND CERCLA SECTION 103 REPORTABLE QUANTITY.

****
CONDITIONS TO AVOID

AVOID CONTACT WITH HEAT, SPARKS, FLAMES OR OTHER IGNITION SOURCES. VAPORS MAY BE EXPLOSIVE. MATERIAL IS CORROSIVE; AVOID CONTACT WITH SKIN OR EYES. DO NOT ALLOW CONTAMINATION OF WATER SOURCES.

USUAL SHIPPING CONTAINERS:
GLASS AND POLYETHYLENE CARBOYS AND POLYETHYLENE-LINED DRUMS, TANK BARGES (NFPA 49, HAZARDOUS CHEMICALS DATA, 1975).

****
SPILL AND LEAK PROCEDURES

SOIL SPILL:
DIG A HOLDING AREA SUCH AS A PIT, POND OR LAGOON TO CONTAIN SPILL AND DIKE SURFACE FLOW USING BARRIER OF SOIL, SANDBAGS, FOAMED POLYURETHANE OR FOAMED CONCRETE. ABSORB LIQUID MASS WITH FLY ASH OR CEMENT POWDER.

NEUTRALIZE WITH CAUSTIC SODA (NAOH) OR SODA ASH (NA2CO3)

AIR SPILL:
KNOCK DOWN VAPORS WITH WATER SPRAY. KEEP UPWIND.

WATER USED TO KNOCK DOWN VAPORS MAY BECOME CORROSIVE OR TOXIC AND SHOULD BE CONTAINED PROPERLY FOR LATER DISPOSAL.

WATER SPILL:
NEUTRALIZE WITH CAUSTIC SODA.

OCCUPATIONAL SPILL:
SHUT OFF IGNITION SOURCES. DO NOT TOUCH SPILLED MATERIAL. STOP LEAK IF YOU CAN DO IT WITHOUT RISK. USE WATER SPRAY TO REDUCE VAPORS. DO NOT GET WATER INSIDE CONTAINER. FOR SMALL SPILLS, TAKE UP WITH SAND OR OTHER ABSORBENT MATERIAL AND PLACE INTO CONTAINERS FOR LATER DISPOSAL. FOR LARGER SPILLS, DIKE FAR AHEAD OF SPILL FOR LATER DISPOSAL. NO SMOKING, FLAMES OR FLARES IN HAZARD AREA. KEEP UNNECESSARY PEOPLE AWAY; ISOLATE HAZARD AREA AND DENY ENTRY.

REPORTABLE QUANTITY (RQ): 5000 POUNDS
THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) SECTION 304 REQUIRES THAT A RELEASE EQUAL TO OR GREATER THAN THE REPORTABLE QUANTITY FOR THIS SUBSTANCE BE IMMEDIATELY REPORTED TO THE LOCAL EMERGENCY PLANNING COMMITTEE AND THE STATE EMERGENCY RESPONSE COMMISSION (40 CFR 355.40). IF THE RELEASE OF THIS SUBSTANCE IS REPORTABLE UNDER CERCLA SECTION 103, THE NATIONAL RESPONSE CENTER MUST BE NOTIFIED IMMEDIATELY AT (800) 424-8802 OR (202) 426-2675 IN THE METROPOLITAN WASHINGTON, D.C. AREA (40 CFR 302.6).

PROTECTIVE EQUIPMENT

VENTILATION:
PROVIDE LOCAL EXHAUST VENTILATION TO MEET PUBLISHED EXPOSURE LIMITS. VENTILATION EQUIPMENT MUST BE EXPLOSION-PROOF.

RESPIRATOR:
THE FOLLOWING RESPIRATORS AND MAXIMUM USE CONCENTRATIONS ARE RECOMMENDATIONS BY THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIOSH POCKET GUIDE TO CHEMICAL HAZARDS; NIOSH CRITERIA DOCUMENTS OR BY THE U.S. DEPARTMENT OF LABOR, 29 CFR 1910 SUBPART Z.
THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND IN THE WORK PLACE, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

ACETIC ACID, GLACIAL:
250 PPM- ANY SUPPLIED-AIR RESPIRATOR OPERATED IN CONTINUOUS FLOW MODE.
ANY POWERED AIR-PURIFYING RESPIRATOR WITH ORGANIC VAPOR CARTRIDGE(S).

500 PPM- ANY CHEMICAL CARTRIDGE RESPIRATOR WITH FULL FACEPIECE AND ORGANIC

VAPOR CARTRIDGE(S).
ANY SELF-CONTAINED BREATHING APPARATUS WITH FULL FACEPIECE.
ANY SUPPLIED-AIR RESPIRATOR WITH FULL FACEPIECE.
ANY AIR-PURIFYING FULL FACEPIECE RESPIRATOR (GAS MASK) WITH CHIN-STYLE, FRONT- OR BACK-MOUNTED ORGANIC VAPOR CANISTER.
ANY POWERED AIR-PURIFYING RESPIRATOR WITH A TIGHT-FITTING FACEPIECE AND ORGANIC VAPOR CARTRIDGE(S).

1000 PPM- ANY SUPPLIED-AIR RESPIRATOR WITH FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

ESCAPE- ANY AIR-PURIFYING FULL FACEPIECE RESPIRATOR (GAS MASK) WITH CHIN-STYLE, FRONT- OR BACK-MOUNTED ORGANIC CANISTER.
ANY APPROPRIATE, ESCAPE-TYPE SELF-CONTAINED BREATHING APPARATUS.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ANY SUPPLIED-AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

CLOTHING:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT ANY POSSIBILITY OF SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS SUBSTANCE.

EYE PROTECTION:
EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES AND A FACESHIELD TO PREVENT CONTACT WITH THIS SUBSTANCE.

EMERGENCY WASH FACILITIES:
WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES AND/OR SKIN MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN AND QUICK DRENCH SHOWER WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

AUTHORIZED - FISHER SCIENTIFIC, INC.
CREATION DATE: 09/06/84 REVISION DATE: 06/23/92

-ADDITIONAL INFORMATION-
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NITRIC ACID
NITRIC ACID
NITRIC ACID

MATERIAL SAFETY DATA SHEET

FISHER SCIENTIFIC
CHEMICAL DIVISION
1 REAGENT LANE
FAIR LAWN NJ 07410
(201) 796-7100

EMERGENCY NUMBER: (201) 796-7100
CHEMTREC ASSISTANCE: (800) 424-9300

SUBSTANCE IDENTIFICATION

SUBSTANCE: **NITRIC ACID**

CAS-NUMBER 7697-37-2

TRADE NAMES/SYNONYMS:
AQUA FORTIS; WFNA; RFNA; HYDROGEN NITRATE; AZOTIC ACID; NITRYL HYDROXIDE; NITAL; STCC 4918528; UN 2031; A200; A200C; A200S; A202; A206C; A509; A467; A200SI; A198C; A483; HN03; ACC16550

CHEMICAL FAMILY:
INORGANIC ACID

MOLECULAR FORMULA: H-N-03

MOLECULAR WEIGHT: 63.01

CERCLA RATINGS (SCALE 0-3): HEALTH=3 FIRE=0 REACTIVITY=1 PERSISTENCE=0
NFPA RATINGS (SCALE 0-4): HEALTH=3 FIRE=0 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

COMPONENT: NITRIC ACID PERCENT: 70

COMPONENT: WATER PERCENT: 30

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:
NITRIC ACID:
2 PPM (5 MG/M3) OSHA TWA; 4 PPM (10 MG/M3) OSHA STEL
2 PPM (5 MG/M3) ACGIH TWA; 4 PPM (10 MG/M3) ACGIH STEL
2 PPM (5 MG/M3) NIOSH RECOMMENDED TWA;
4 PPM (10 MG/M3) NIOSH RECOMMENDED STEL
10 PPM (25 MG/M3) DFG MAK TWA;
20 PPM (50 MG/M3) DFG MAK 5 MINUTE PEAK, MOMENTARY VALUE, 8 TIMES/SHIFT

MEASUREMENT METHOD: SILICA GEL TUBE; SODIUM BICARBONATE/SODIUM CARBONATE; ION CHROMATOGRAPHY; (NIOSH VOL. III # 7903, INORGANIC ACIDS).

1000 POUNDS SARA SECTION 302 THRESHOLD PLANNING QUANTITY
1000 POUNDS SARA SECTION 304 REPORTABLE QUANTITY
1000 POUNDS CERCLA SECTION 103 REPORTABLE QUANTITY
SUBJECT TO SARA SECTION 313 ANNUAL TOXIC CHEMICAL RELEASE REPORTING

PHYSICAL DATA

DESCRIPTION: COLORLESS TO PALE YELLOW LIQUID WITH A SUFFOCATING ODOR.

BOILING POINT: 181 F (83 C) MELTING POINT: -44 F (-42 C)

SPECIFIC GRAVITY: 1.5027 @ 25 C VAPOR PRESSURE: 47.9 MMHG @ 20 C

EVAPORATION RATE: NOT AVAILABLE SOLUBILITY IN WATER: VERY SOLUBLE

VAPOR DENSITY: 3.2

SOLVENT SOLUBILITY: SOLUBLE IN ETHER.

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
NEGLIGIBLE FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

OXIDIZER: OXIDIZERS DECOMPOSE, ESPECIALLY WHEN HEATED, TO YIELD OXYGEN OR OTHER GASES WHICH WILL INCREASE THE BURNING RATE OF COMBUSTIBLE MATTER.

CONTACT WITH EASILY OXIDIZABLE, ORGANIC, OR OTHER COMBUSTIBLE MATERIALS MAY RESULT IN IGNITION, VIOLENT COMBUSTION OR EXPLOSION.

FIREFIGHTING MEDIA:
WATER, DRY CHEMICAL OR SODA ASH
(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FOR LARGER FIRES, FLOOD AREA WITH WATER FROM A DISTANCE
(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FIREFIGHTING:
MOVE CONTAINER FROM FIRE AREA IF YOU CAN DO IT WITHOUT RISK. APPLY COOLING WATER TO SIDES OF CONTAINERS THAT ARE EXPOSED TO FLAMES UNTIL WELL AFTER FIRE IS OUT. STAY AWAY FROM ENDS OF TANKS. FOR MASSIVE FIRE IN CARGO AREA, USE UNMANNED HOSE HOLDER OR MONITOR NOZZLES; IF THIS IS IMPOSSIBLE, WITHDRAW FROM AREA AND LET FIRE BURN (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5, GUIDE PAGE 44).

USE FLOODING AMOUNTS OF WATER AS FOG. COOL CONTAINERS WITH FLOODING AMOUNTS OF WATER, APPLY FROM AS FAR A DISTANCE AS POSSIBLE. AVOID BREATHING CORROSIVE VAPORS, KEEP UPWIND. CONSIDER EVACUATION OF DOWNWIND AREA IF MATERIAL IS LEAKING.

TRANSPORTATION DATA

DEPARTMENT OF TRANSPORTATION HAZARD CLASSIFICATION 49 CFR 172.101:
OXIDIZER

DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS 49 CFR 172.101 AND SUBPART E:
OXIDIZER AND CORROSIVE

DEPARTMENT OF TRANSPORTATION PACKAGING REQUIREMENTS: 49 CFR 173.268
EXCEPTIONS: NONE

FINAL RULE ON HAZARDOUS MATERIALS REGULATIONS (HMR, 49 CFR PARTS 171-180), DOCKET NUMBERS HM-181, HM-181A, HM-181B, HM-181C, HM-181D AND HM-204. EFFECTIVE DATE OCTOBER 1, 1991. HOWEVER, COMPLIANCE WITH THE REGULATIONS IS AUTHORIZED ON AND AFTER JANUARY 1, 1991. (55 FR 52402, 12/21/90)

EXCEPT FOR EXPLOSIVES, INHALATION HAZARDS, AND INFECTIOUS SUBSTANCES, THE EFFECTIVE DATE FOR HAZARD COMMUNICATION REQUIREMENTS IS EXTENDED TO OCTOBER 1, 1993. (56 FR 47158, 10/18/91)

U.S. DEPARTMENT OF TRANSPORTATION SHIPPING NAME-ID NUMBER, 49 CFR 172.101:
NITRIC ACID-UN 2031

U.S. DEPARTMENT OF TRANSPORTATION HAZARD CLASS OR DIVISION, 49 CFR 172.101:
8 - CORROSIVE MATERIAL

U.S. DEPARTMENT OF TRANSPORTATION PACKING GROUP, 49 CFR 172.101:
PG I

U.S. DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS, 49 CFR 172.101 AND SUBPART E:
CORROSIVE

U.S. DEPARTMENT OF TRANSPORTATION PACKAGING AUTHORIZATIONS:
EXCEPTIONS: NONE
NON-BULK PACKAGING: 49 CFR 173.158
BULK PACKAGING: 49 CFR 173.243

U.S. DEPARTMENT OF TRANSPORTATION QUANTITY LIMITATIONS 49 CFR 172.101:
PASSENGER AIRCRAFT OR RAILCAR: FORBIDDEN
CARGO AIRCRAFT ONLY: 2.5 L

TOXICITY

NITRIC ACID:
TOXICITY DATA:
ANHYDROUS: 49 PPM/4 HOURS INHALATION-RAT LC50 (VAN WATER & ROGERS, INC MSDS); 2500 PPM/1 HOUR INHALATION-RAT LC50 (DUPONT MSDS); 430 MG/KG ORAL-HUMAN LDLO; 50-500 MG/KG ORAL-UNSPECIFIED SPECIES LD50 (DUPONT MSDS); 110 MG/KG UNREPORTED-MAN LDLO; REPRODUCTIVE EFFECTS DATA (RTECS).
MONOHYDRATE: NO DATA AVAILABLE.
TRIHYDRATE: NO DATA AVAILABLE.
CARCINOGEN STATUS: NONE.
LOCAL EFFECTS: CORROSIVE- INHALATION, SKIN, EYES, INGESTION.
ACUTE TOXICITY LEVEL: HIGHLY TOXIC BY INHALATION; TOXIC BY INGESTION.
TARGET EFFECTS: NO DATA AVAILABLE.
AT INCREASED RISK FROM EXPOSURE: PERSONS WITH IMPAIRED PULMONARY FUNCTION, PRE-EXISTING EYE AND SKIN DISORDERS.

HEALTH EFFECTS AND FIRST AID

INHALATION:
NITRIC ACID:
CORROSIVE/HIGHLY TOXIC. 100 PPM IMMEDIATELY DANGEROUS TO LIFE OR HEALTH.
ACUTE EXPOSURE- INHALATION OF ACIDIC SUBSTANCES MAY CAUSE SEVERE RESPIRATORY IRRITATION WITH COUGHING, CHOKING, AND POSSIBLY YELLOWISH BURNS OF THE MUCOUS MEMBRANES. OTHER INITIAL SYMPTOMS MAY INCLUDE DIZZINESS, HEADACHE, NAUSEA, AND WEAKNESS. PULMONARY EDEMA MAY BE IMMEDIATE IN THE MOST SEVERE EXPOSURES, BUT MORE LIKELY WILL OCCUR AFTER A LATENT PERIOD OF 5-72 HOURS. THE SYMPTOMS MAY INCLUDE TIGHTNESS IN THE CHEST, DYSPNEA, DIZZINESS, FROTHY SPUTUM, AND CYANOSIS. PHYSICAL FINDINGS MAY INCLUDE HYPOTENSION, WEAK, RAPID PULSE, MOIST RALES, AND HEMOCONCENTRATION. IN NON-FATAL CASES, COMPLETE RECOVERY MAY OCCUR WITHIN A FEW DAYS OR WEEKS OR, CONVALESCENCE MAY BE PROLONGED WITH FREQUENT RELAPSES AND CONTINUED DYSPNEA AND OTHER SIGNS AND SYMPTOMS OF PULMONARY INSUFFICIENCY. IN SEVERE EXPOSURES, DEATH DUE TO ANOXIA MAY OCCUR WITHIN A FEW HOURS AFTER ONSET OF THE SYMPTOMS OF PULMONARY EDEMA OR FOLLOWING A RELAPSE.
CHRONIC EXPOSURE- DEPENDING ON THE CONCENTRATION AND DURATION OF EXPOSURE, REPEATED OR PROLONGED EXPOSURE TO AN ACIDIC SUBSTANCE MAY CAUSE EROSION OF THE TEETH, INFLAMMATORY AND ULCERATIVE CHANGES IN THE MOUTH, AND POSSIBLY JAW NECROSIS. BRONCHIAL IRRITATION WITH COUGH AND FREQUENT ATTACKS OF BRONCHIAL PNEUMONIA MAY OCCUR. GASTROINTESTINAL DISTURBANCES ARE ALSO POSSIBLE.

FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, GIVE ARTIFICIAL RESPIRATION. MAINTAIN AIRWAY AND BLOOD PRESSURE AND ADMINISTER OXYGEN IF AVAILABLE. KEEP AFFECTED PERSON WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. ADMINISTRATION OF OXYGEN SHOULD BE PERFORMED BY QUALIFIED PERSONNEL. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:
NITRIC ACID:
CORROSIVE.
ACUTE EXPOSURE- DIRECT CONTACT WITH LIQUID OR VAPOR MAY CAUSE SEVERE PAIN, BURNS AND POSSIBLY YELLOWISH STAINS. BURNS MAY BE DEEP WITH SHARP EDGES AND HEAL SLOWLY WITH SCAR TISSUE FORMATION. DILUTE SOLUTIONS OF NITRIC ACID MAY PRODUCE MILD IRRITATION AND HARDEN THE EPIDERMIS WITHOUT DESTROYING IT. CONCENTRATED ACID SOLUTIONS APPLIED TO OVER 25% OF THE SKIN AREA IN RATS PRODUCED ELEVATED METHEMOGLOBIN AND BLOOD NITRATE LEVELS.
CHRONIC EXPOSURE- EFFECTS DEPEND ON THE CONCENTRATION AND DURATION OF EXPOSURE. REPEATED OR PROLONGED CONTACT WITH ACIDIC SUBSTANCES MAY RESULT IN DERMATITIS OR EFFECTS SIMILAR TO ACUTE EXPOSURE.

FIRST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). IN CASE OF CHEMICAL BURNS, COVER AREA WITH STERILE, DRY DRESSING. BANDAGE SECURELY, BUT NOT TOO TIGHTLY. GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:
NITRIC ACID:
CORROSIVE.
ACUTE EXPOSURE- DIRECT CONTACT WITH ACIDIC SUBSTANCES MAY CAUSE PAIN AND LACRIMATION, PHOTOPHOBIA, AND BURNS, POSSIBLY SEVERE. THE DEGREE OF INJURY DEPENDS ON THE CONCENTRATION AND DURATION OF CONTACT. IN MILD BURNS, THE EPITHELIUM REGENERATES RAPIDLY AND THE EYE RECOVERS COMPLETELY. IN SEVERE CASES, THE EXTENT OF INJURY MAY NOT BE FULLY APPARENT FOR SEVERAL WEEKS. ULTIMATELY, THE WHOLE CORNEA MAY BECOME DEEPLY VASCULARIZED AND OPAQUE RESULTING IN BLINDNESS. IN THE WORST CASES, THE EYE MAY BE TOTALLY DESTROYED. CONCENTRATED NITRIC ACID MAY IMPART A YELLOW COLOR TO THE EYE UPON CONTACT.
CHRONIC EXPOSURE- EFFECTS DEPEND ON THE CONCENTRATION AND DURATION OF EXPOSURE. REPEATED OR PROLONGED EXPOSURE TO ACIDIC SUBSTANCES MAY CAUSE CONJUNCTIVITIS OR EFFECTS AS IN ACUTE EXPOSURE.

FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). CONTINUE IRRIGATING WITH NORMAL SALINE UNTIL THE PH HAS RETURNED TO NORMAL (30-60 MINUTES). COVER WITH STERILE BANDAGES. GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:
NITRIC ACID:
CORROSIVE/TOXIC.
ACUTE EXPOSURE- ACIDIC SUBSTANCES MAY CAUSE CIRCUMORAL BURNS WITH YELLOW DISCOLORATION AND CORROSION OF THE MUCOUS MEMBRANES OF THE MOUTH, THROAT AND ESOPHAGUS. THERE MAY BE IMMEDIATE PAIN AND DIFFICULTY OR INABILITY TO SWALLOW OR SPEAK. EPIGLOTTAL EDEMA MAY RESULT IN RESPIRATORY DISTRESS AND POSSIBLY ASPHYXIA. MARKED THIRST, EPIGASTRIC PAIN, NAUSEA, VOMITING AND DIARRHEA MAY OCCUR. DEPENDING ON THE DEGREE OF ESPOHAGEAL AND GASTRIC CORROSION, THE VOMITUS MAY CONTAIN FRESH OR DARK PRECIPITATED BLOOD AND LARGE SHREDS OF MUCOSA. SHOCK WITH MARKED HYPOTENSION, WEAK, RAPID PULSE, SHALLOW RESPIRATION, AND CLAMMY SKIN MAY OCCUR. CIRCULATORY COLLAPSE MAY ENSUE AND IF UNCORRECTED, LEAD TO RENAL FAILURE. IN SEVERE CASES, GASTRIC, AND TO A LESSER DEGREE, ESOPHAGEAL PERFORATION AND SUBSEQUENT PERITONITIS MAY OCCUR AND BE ACCOMPANIED BY FEVER AND ABDOMINAL RIGIDITY. ESOPHAGEAL, GASTRIC ANC PYLORIC STRICTURE MAY OCCUR WITHIN A FEW WEEKS, BUT MAY BE

DELAYED FOR MONTHS OR EVEN YEARS. DEATH MAY RESULT WITHIN A SHORT TIME FROM ASPHYXIA, CIRCULATORY COLLAPSE OR ASPIRATION OF EVEN MINUTE AMOUNTS. LATER DEATH MAY BE DUE TO PERITONITIS, SEVERE NEPHRITIS OR PNEUMONIA. COMA AND CONVULSIONS SOMETIMES OCCUR TERMINALLY.
CHRONIC EXPOSURE- DEPENDING ON THE CONCENTRATION, REPEATED INGESTION OF ACIDIC SUBSTANCES MAY RESULT IN INFLAMMATORY AND ULCERATIVE CHANGES IN THE MUCOUS MEMBRANES OF THE MOUTH AND OTHER EFFECTS AS IN ACUTE INGESTION. REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS.

FIRST AID- DO NOT USE GASTRIC LAVAGE OR EMESIS. DILUTE THE ACID IMMEDIATELY BY DRINKING LARGE QUANTITIES OF WATER OR MILK. IF VOMITING PERSISTS, ADMINISTER FLUIDS REPEATEDLY. INGESTED ACID MUST BE DILUTED APPROXIMATELY 10 FOLD TO RENDER IT HARMLESS TO TISSUES. MAINTAIN AIRWAY AND TREAT SHOCK (DREISBACH, HANDBOOK OF POISONING, 12TH ED.). GET MEDICAL ATTENTION IMMEDIATELY. IF VOMITING OCCURS, KEEP HEAD BELOW HIPS TO HELP PREVENT ASPIRATION.

ANTIDOTE:
NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

REACTIVITY

REACTIVITY:
REACTS EXOTHERMICALLY WITH WATER.

INCOMPATIBILITIES:
NITRIC ACID:
ACETIC ACID: MAY REACT EXPLOSIVELY.
ACETIC ANHYDRIDE: EXPLOSIVE REACTION BY FRICTION OR IMPACT.
ACETONE: MAY REACT EXPLOSIVELY.
ACETONITRILE: EXPLOSIVE MIXTURE.
4-ACETOXY-3-METHOXYBENZALDEHYDE: EXOTHERMIC REACTION.
ACROLEIN: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
ACRYLONITRILE: EXPLOSIVE REACTION AT 90 C.
ACRYLONITRILE-METHACRYLATE COPOLYMER: INCOMPATIBLE.
ALCOHOLS: POSSIBLE VIOLENT REACTION OR EXPLOSION; FORMATION OF EXPLOSIVE COMPOUND IN THE PRESENCE OF HEAVY METALS.
ALKANETHIOLS: EXOTHERMIC REACTION WITH POSSIBLE IGNITION.
2-ALKOXY-1,3-DITHIA-2-PHOSPHOLANE: IGNITION REACTION.
ALLYL ALCOHOL: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
ALLYL CHLORIDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
AMINES (ALIPHATIC OR AROMATIC): POSSIBLE IGNITION REACTION.
2-AMINOETHANOL: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
2-AMINOTHIAZOLE: EXPLOSIVE REACTION.
AMMONIA (GAS): BURNS IN AN ATMOSPHERE OF NITRIC ACID VAPOR.
AMMONIUM HYDROXIDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
AMMONIUM NITRATE: FORMS EXPLOSIVE MIXTURE.
ANILINE: IGNITES ON CONTACT.
ANILINIUM NITRATE: FORMS EXPLOSIVE SOLUTION.
ANION EXCHANGE RESINS: POSSIBLE VIOLENT EXOTHERMIC REACTION.
ANTIMONY: VIOLENT REACTION.
ARSINE: EXPLOSIVE REACTION.
ARSINE-BORON TRIBROMIDE: VIOLENT OXIDATION.
BASES: REACTS.
BENZENE: EXPLOSIVE REACTION.
BENZIDINE: SPONTANEOUS IGNITION.
BENZONITRILE: POSSIBLE EXPLOSION.
BENZOTHIOPHENE DERIVATIVES: FORMATION OF POSSIBLY EXPLOSIVE COMPOUNDS.
N-BENZYL-N-ETHYLANILINE: VIGOROUS DECOMPOSITION.
1,4-BIS(METHOXYMETHYL)2,3,5,6-TETRAMETHYLBENZENE: GAS EVOLUTION.
BISMUTH: INTENSE EXOTHERMIC REACTION OR EXPLOSION.
1,3-BIS(TRIFLUOROMETHYL)BENZENE: POSSIBLE EXPLOSION.
BORON: VIOLENT REACTION WITH INCANDESCENCE.
BORON DECAHYDRIDE: EXPLOSIVE REACTION.
BORON PHOSPHIDE: IGNITION REACTION.
BROMINE PENTAFLUORIDE: IGNITION REACTION.
N-BUTYL MERCAPTAN: IGNITION REACTION.
N-BUTYRALDEHYDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
CADMIUM PHOSPHIDE: EXPLOSIVE REACTION.
CALCIUM HYPOPHOSPHITE: IGNITION REACTION.
CARBON (PULVERIZED): VIOLENT REACTION.
CELLULOSE: FORMS EASILY COMBUSTIBLE ESTER.
CHLORATES: REACTS.
CHLORINE: INCOMPATIBLE.
CHLORINE TRIFLUORIDE: VIOLENT REACTION.
CHLOROBENZENE: POSSIBLE EXPLOSION.
4-CHLORO-2-NITROANILINE: FORMS EXPLOSIVE COMPOUND.
CHLOROSULFONIC ACID: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
COAL: EXPLOSIVE MIXTURE.
COATINGS: MAY BE ATTACKED.
CRESOL: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
CROTONALDEHYDE: VIOLENT DECOMPOSITION WITH IGNITION.
CUMENE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
CUPRIC NITRIDE: EXPLOSIVE REACTION.
CUPROUS NITRIDE: VIOLENT REACTION.
CYANATES: POSSIBLE EXPLOSIVE REACTION.
CYCLOHEXANONE: VIOLENT REACTION.
CYCLOHEXYLAMINE: FORMS EXPLOSIVE COMPOUND.
CYCLOPENTADIENE: EXPLOSIVE REACTION.

1,2-DIAMINOETHANEBIS(TRIMETHYLGOLD): EXPLOSIVE REACTION.
DIBORANE: SPONTANEOUS IGNITION.
DI-2-BUTOXYETHYL ETHER: VIOLENT DECOMPOSITION REACTION.
2,6-DI-T-BUTYL PHENOL: FORMATION OF EXPLOSIVE COMPOUND.
DICHLOROETHANE: FORMS SHOCK AND HEAT SENSITIVE MIXTURE.
DICHLOROETHYLENE: FORMS EXPLOSIVE COMPOUND.
DICHLOROMETHANE: FORMS EXPLOSIVE SOLUTION.
DICYCLOPENTADIENE: SPONTANEOUS IGNITION.
DIENES: IGNITION REACTION.
DIETHYLAMINO ETHANOL: POSSIBLE EXPLOSION.
DIETHYL ETHER: POSSIBLE EXPLOSION.
3,6-DIHYDRO-1,2,2H-OXAZINE: EXPLOSIVE INTERACTION.
DIISOPROPYL ETHER: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
DIMETHYLAMINOMETHYLFERROCENE: VIOLENT DECOMPOSITION IF HEATED.
DIMETHYL ETHER: FORMS EXPLOSIVE COMPOUND.
DIMETHYL HYDRAZINE: IGNITES ON CONTACT.
DIMETHYL SULFOXIDE + 1,4-DIOXANE: EXPLOSION.
DIMETHYL SULFOXIDE + <14% WATER: EXPLOSIVE REACTION.
DINITROBENZENE: EXPLOSION HAZARD.
DINITROTOLUENE: EXPLOSIVE REACTION.
DIOXANE + PERCHLORIC ACID: POSSIBLE EXPLOSION.
DIPHENYL DISTIBENE: EXPLOSIVE OXIDATION.
DIPHENYL MERCURY + CARBON DISULFIDE: VIOLENT REACTION.
DIPHENYL TIN: IGNITION REACTION.
DISODIUM PHENYL ORTHOPHOSPHATE: VIOLENT EXPLOSION.
DIVINYL ETHER: POSSIBLE IGNITION REACTION.
EPICHLOROHYDRIN: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
ETHANESULFONAMIDE: EXPLOSIVE REACTION.
ETHOXY-ETHYLENE DITHIOPHOSPHATE: IGNITION ON CONTACT.
M-ETHYL ANILINE: IGNITION REACTION.
ETHYLENE DIAMINE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
ETHYLENE GLYCOL: FORMS SHOCK AND HEAT SENSITIVE MIXTURE.
ETHYLENEIMINE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
5-ETHYL-2-METHYL PYRIDINE: EXPLOSIVE REACTION.
ETHYL PHOSPHINE: IGNITION REACTION.
5-ETHYL-2-PICOLINE: FORMS EXPLOSIVE COMPOUNDS.
FERROUS OXIDE (POWDERED): INTENSE EXOTHERMIC REACTION.
FLUORINE: POSSIBLE EXPLOSIVE REACTION.
FORMIC ACID: EXOTHERMIC REACTION WITH RELEASE OF TOXIC GASES.
2-FORMYLAMINO-1-PHENYL-1,3-PROPANEDIOL: POSSIBLE EXPLOSION.
FUEL OIL (BURNING): EXPLOSION.
FULMINATES: REACTS.
FURFURYLIDENE KETONES: IGNITES ON CONTACT.
GERMANIUM: VIOLENT REACTION.
GLYCEROL: POSSIBLE EXPLOSION.
GLYOXAL: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
HEXALITHIUM DISILICIDE: EXPLOSIVE REACTION.
HEXAMETHYLBENZENE: POSSIBLE EXPLOSION.
2,2,4,4,6,6-HEXAMETHYLTRITHIANE: EXPLOSIVE OXIDATION.
HEXENAL: EXPLODES ON HEATING.
HYDRAZINE: VIOLENT REACTION.
HYDRAZOIC ACID: ENERGETIC REACTION.
HYDROGEN IODIDE: IGNITION REACTION.
HYDROGEN PEROXIDE: FORMS UNSTABLE MIXTURE.
HYDROGEN PEROXIDE AND KETONES: FORMS EXPLOSIVE PRODUCTS.
HYDROGEN PEROXIDE AND MERCURIC OXIDE: FORMS EXPLOSIVE COMPOUNDS.
HYDROGEN PEROXIDE AND THIOUREA: FORMS EXPLOSIVE COMPOUNDS.
HYDROGEN SELENIDE: IGNITION REACTION.
HYDROGEN SULFIDE: INCANDESCENT REACTION.
HYDROGEN TELLURIDE: IGNITION AND POSSIBLE EXPLOSIVE REACTION.
INDANE AND SULFURIC ACID: EXPLOSIVE REACTION.
ISOPRENE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
KETONES (CYCLIC): VIOLENT REACTION.
LACTIC ACID + HYDROFLUORIC ACID: EXPLOSIVE REACTION.
LITHIUM: IGNITION REACTION.
LITHIUM SILICIDE: INCANDESCENT REACTION.
MAGNESIUM: EXPLOSIVE REACTION.
MAGNESIUM + 2-NITROANILINE: MAY IGNITE ON CONTACT.
MAGNESIUM PHOSPHIDE: INCANDESCENT REACTION.
MAGNESIUM SILICIDE: VIOLENT REACTION.
MAGNESIUM-TITANIUM ALLOY: FORMS SHOCK AND HEAT SENSITIVE MIXTURE.
MANGANESE (POWDERED): INCANDESCENCE AND POSSIBLE EXPLOSION.
MESITYL OXIDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
MESITYLENE: POSSIBLE EXPLOSIVE REACTION.
METALS: VIOLENT REACTION WITH EXPLOSION OR IGNITION.
METAL ACETYLIDES: VIOLENT OR EXPLOSIVE REACTION.
METAL CARBIDES: VIOLENT OR EXPLOSIVE REACTION.
METAL CYANIDES: EXPLOSIVE REACTIONS.
METAL FERRICYANIDE OR FERROCYANIDE: VIOLENT REACTION.
METAL SALICYLATES: FORMS EXPLOSIVE COMPOUNDS.
METAL THIOCYANATES: POSSIBLE EXPLOSION.
2-METHYLBENZIMIDAZOLE + SULFURIC ACID: POSSIBLE EXPLOSIVE REACTION.
4-METHYLCYCLOHEXANONE: EXPLOSIVE REACTION.
2-METHYL-5-ETHYLPYRIDINE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
METHYL THIOPHENE: IGNITION REACTION.
NEODYMIUM PHOSPHIDE: VIOLENT REACTION.
NICKEL TETRAPHOSPHIDE: IGNITION REACTION.
NITRO AROMATIC HYDROCARBONS: FORMS HIGHLY EXPLOSIVE PRODUCTS.
NITROBENZENE: EXPLOSIVE REACTION, ESPECIALLY IN THE PRESENCE OF WATER.

NITROMETHANE: EXPLOSIVE REACTION.
NITRONAPHTHALENE: EXPLOSION HAZARD.
NON-METAL OXIDES : EXPLOSIVE REACTION.
OLEUM: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
ORGANIC MATERIALS: FIRE AND EXPLOSION HAZARD.
ORGANIC SUBSTANCES AND PERCHLORATES: POSSIBLE EXPLOSION.
ORGANIC SUBSTANCES AND SULFURIC ACID: POSSIBLE EXPLOSION.
PHENYL ACETYLENE + 1,1-DIMETHYLHYDRAZINE: VIOLENT REACTION.
PHENYL ORTHOPHOSPHORIC ACID DISODIUM SALT: FORMS EXPLOSIVE PRODUCTS.
PHOSPHINE + OXYGEN: SPONTANEOUS IGNITION.
PHOSPHONIUM IODIDE: IGNITION REACTION.
PHOSPHORUS (VAPOR): IGNITES WHEN HEATED.
PHOSPHOROUS HALIDES: IGNITION REACTION.
PHOSPHORUS TETRAIODIDE: VIGOROUS REACTION.
PHOSPHORUS TRICHLORIDE: EXPLOSIVE REACTION.
PHTHALIC ACID AND SULFURIC ACID: POSSIBLE EXPLOSIVE REACTION.
PHTHALIC ANHYDRIDE: EXOTHERMIC REACTION AND FORMS EXPLOSIVE PRODUCTS.
PICRATES: REACTS.
PLASTICS: MAY BE ATTACKED.
POLYALKENES: INTENSE REACTION..
POLYDIBROMOSILANES: EXPLOSIVE REACTION.
POLY(ETHYLENE OXIDE) DERIVATIVES: POSSIBLE EXPLOSION.
POLYPROPYLENE: TEMPERATURE AND PRESSURE INCREASE IN A CLOSED CONTAINER.
POLY(SILYLENE): IGNITION.
POLYURETHANE (FOAM): VIGOROUS REACTION.
POTASSIUM HYPOPHOSPHITE: EXPLOSIVE REACTION.
POTASSIUM PHOSPHINATE: EXPLODES ON EVAPORATION.
B-PROPIOLACTONE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
PROPIOPHENONE + SULFURIC ACID: EXOTHERMIC REACTION ABOVE -5 C.
PROPYLENE GLYCOL + HYDROFLUORIC ACID + SILVER NITRATE: EXPLOSIVE MIXTURE.
PROPYLENE OXIDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
PYRIDINE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
PYROCATECHOL: IGNITES ON CONTACT.
REDUCING AGENTS: POSSIBLE EXPLOSIVE OR IGNITION REACTION.
RESORCINOL: POSSIBLE EXPLOSION.
RUBBER: VIGOROUS REACTION, POSSIBLE EXPLOSION.
SELENIUM: VIGOROUS REACTION.
SELENIUM HYDRIDE: IGNITION OR INCANDESCENT REACTION.
SELENIUM IODOPHOSPHIDE: EXPLOSIVE REACTION.
SILICON: VIOLENT REACTION.
SILICONE OIL: POSSIBLE EXPLOSION.
SILVER BUTEN-3-YNIDE: EXPLOSION.
SODIUM: SPONTANEOUS IGNITION.
SODIUM AZIDE: EXOTHERMIC REACTION.
SODIUM HYDROXIDE: TEMPERATURE AND PRESSURE INCREASE IN A CLOSED CONTAINER.
STIBINE: EXPLOSIVE REACTION.
SUCROSE (SOLID): VIGOROUS REACTION.
SULFAMIC ACID: VIOLENT REACTION WITH EVOLUTION OF TOXIC NITROUS OXIDE.
SULFIDES: REACTS.
SULFUR DIOXIDE: EXPLOSIVE REACTION.
SULFUR HALIDES: VIOLENT REACTION.
SULFURIC ACID + GLYCERIDES: EXPLOSIVE REACTION.
SULFURIC ACID + TEREPHTHALIC ACID: VIOLENT REACTION.
SURFACTANTS + PHOSPHORIC ACID: EXPLOSION HAZARD.
TERPENES: SPONTANEOUS IGNITION.
TETRABORANE: EXPLOSIVE REACTION.
TETRABORANE DECAHYDRIDE: EXPLOSIVE REACTION.
TETRAPHOSPHOROUS DIIODOTRISELENIDE: EXPLOSIVE REACTION.
TETRAPHOSPHOROUS IODIDE: IGNITES ON CONTACT.
TETRAPHOSPHOROUS TETRAOXIDE TRISULFIDE: VIOLENT REACTION.
THIOALDEHYDES: VIOLENT REACTION.
THIOKETONES: VIOLENT REACTION.
THIOPHENES: EXPLOSIVE REACTION.
TITANIUM: FORMS SHOCK-SENSITIVE COMPOUND.
TITANIUM ALLOYS: POSSIBLE EXPLOSIVE REACTION.
TITANIUM-MAGNESIUM ALLOY: POSSIBLE EXPLOSION ON IMPACT.
TOLUENE: VIOLENT REACTION.
TOLUIDENE: IGNITION REACTION.
1,3,5-TRIACETYLHEXAHYDRO-1,3,5-TRIAZINE + TRIFLUOROACETIC ANHYDRIDE: EXPLOSIVE REACTION.
TRIAZINE: VIOLENTLY EXPLOSIVE REACTION.
TRICADMIUM DIPHOSPHIDE: EXPLOSIVE REACTION.
TRIETHYLGALLIUM MONOETHYL ETHER COMPLEX: IGNITION REACTION.
TRIMETHYLTRIOXANE: INTENSE REACTION.
TRIS(IODOMERCURI)PHOSPHINE: VIOLENT DECOMPOSITION.
TRITHIOACETONE: EXPLOSIVE REACTION.
TURPENTINE: EXPLOSIVE MIXTURE.
UNSYMMETRICAL DIMETHYL HYDRAZINE: SPONTANEOUS IGNITION.
URANIUM: EXPLOSIVE REACTION.
URANIUM ALLOY: VIOLENT REACTION.
URANIUM DISULFIDE: VIOLENT REACTION.
URANIUM-NEODYMIUM ALLOYS: EXPLOSIVE REACTION.
VINYL ACETATE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
VINYLIDENE CHLORIDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
WOOD: POSSIBLE IGNITION.
P-XYLENE: INTENSE REACTION IN PRESENCE OF SULFURIC ACID.
ZINC: INCANDESCENT REACTION.
ZINC ETHOXIDE: POSSIBLE EXPLOSION.
ZIRCONIUM-URANIUM ALLOYS: EXPLOSIVE REACTION.

DECOMPOSITION:
THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE TOXIC OXIDES OF NITROGEN.

POLYMERIZATION:
HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

STORAGE AND DISPOSAL

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE. FOR ASSISTANCE, CONTACT THE DISTRICT DIRECTOR OF THE ENVIRONMENTAL PROTECTION AGENCY.

STORAGE

PROTECT AGAINST PHYSICAL DAMAGE. SEPARATE FROM METALLIC POWDERS, CARBIDES, HYOROGEN SULFIDE, TURPENTINE, ORGANIC ACIDS, AND ALL COMBUSTIBLE, ORGANIC OR OTHER READILY OXIDIZABLE MATERIALS. PROVIDE GOOD VENTILATION AND AVOID DIRECT SUNLIGHT (NFPA 49, HAZARDOUS CHEMICALS DATA, 1975).

STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

THRESHOLD PLANNING QUANTITY (TPQ):
THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) SECTION 302 REQUIRES THAT EACH FACILITY WHERE ANY EXTREMELY HAZARDOUS SUBSTANCE IS PRESENT IN A QUANTITY EQUAL TO OR GREATER THAN THE TPQ ESTABLISHED FOR THAT SUBSTANCE NOTIFY THE STATE EMERGENCY RESPONSE COMMISSION FOR THE STATE IN WHICH IT IS LOCATED. SECTION 303 OF SARA REQUIRES THESE FACILITIES TO PARTICIPATE IN LOCAL EMERGENCY RESPONSE PLANNING (40 CFR 355.30).

DISPOSAL

DISPOSAL MUST BE IN ACCORDANCE WITH STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE, 40 CFR 262. EPA HAZARDOUS WASTE NUMBER D002.
100 POUND CERCLA SECTION 103 REPORTABLE QUANTITY.

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CONDITIONS TO AVOID

MAY IGNITE OTHER COMBUSTIBLE MATERIALS (WOOD, PAPER, OIL, ETC.). REACTS VIOLENTLY WITH WATER AND FUELS. FLAMMABLE, POISONOUS GASES MAY ACCUMULATE IN TANKS AND HOPPER CARS. RUNOFF TO SEWER MAY CREATE FIRE OR EXPLOSION HAZARD.

CONSULT NFPA PUBLICATION 43A, STORAGE OF LIQUID AND SOLID OXIDIZING MATERIALS, FOR STORAGE REQUIREMENTS.

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SPILL AND LEAK PROCEDURES

SOIL SPILL:
DIG A HOLDING AREA SUCH AS A PIT, POND OR LAGOON TO CONTAIN SPILL AND DIKE SURFACE FLOW USING BARRIER OF SOIL, SANDBAGS, FOAMED POLYURETHANE OR FOAMED CONCRETE. ABSORB LIQUID MASS WITH FLY ASH OR CEMENT POWDER.

NEUTRALIZE SPILL WITH SLAKED LIME, SODIUM BICARBONATE OR CRUSHED LIMESTONE.

AIR SPILL:
APPLY WATER SPRAY TO KNOCK DOWN AND REDUCE VAPORS. KNOCK-DOWN WATER IS CORROSIVE AND TOXIC AND SHOULD BE DIKED FOR CONTAINMENT AND LATER DISPOSAL.

WATER SPILL:
ADD SUITABLE AGENT TO NEUTRALIZE SPILLED MATERIAL TO PH-7.

OCCUPATIONAL SPILL:
KEEP COMBUSTIBLES (WOOD, PAPER, OIL, ETC.) AWAY FROM SPILLED MATERIAL. DO NOT TOUCH SPILLED MATERIAL. STOP LEAK IF YOU CAN DO IT WITHOUT RISK. USE WATER SPRAY TO REDUCE VAPORS. DO NOT GET WATER INSIDE CONTAINER. FOR SMALL SPILLS, FLUSH AREA WITH FLOODING AMOUNTS OF WATER. FOR LARGER SPILLS, DIKE FAR AHEAD OF SPILL FOR LATER DISPOSAL. KEEP UNNECESSARY PEOPLE AWAY. ISOLATE HAZARD AREA AND DENY ENTRY. VENTILATE CLOSED SPACES BEFORE ENTERING.

REPORTABLE QUANTITY (RQ): 1000 POUNDS
THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) SECTION 304 REQUIRES THAT A RELEASE EQUAL TO OR GREATER THAN THE REPORTABLE QUANTITY FOR THIS SUBSTANCE BE IMMEDIATELY REPORTED TO THE LOCAL EMERGENCY PLANNING COMMITTEE AND THE STATE EMERGENCY RESPONSE COMMISSION (40 CFR 355.40). IF THE RELEASE OF THIS SUBSTANCE IS REPORTABLE UNDER CERCLA SECTION 103, THE NATIONAL RESPONSE CENTER MUST BE NOTIFIED IMMEDIATELY AT (800) 424-8802 OR (202) 426-2675 IN THE METROPOLITAN WASHINGTON, D.C. AREA (40 CFR 302.6).

PROTECTIVE EQUIPMENT

VENTILATION:
PROCESS ENCLOSURE RECOMMENDED TO MEET PUBLISHED EXPOSURE LIMITS.

RESPIRATOR:
THE FOLLOWING RESPIRATORS AND MAXIMUM USE CONCENTRATIONS ARE RECOMMENDATIONS BY THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIOSH POCKET GUIDE TO CHEMICAL HAZARDS; NIOSH CRITERIA DOCUMENTS OR BY THE U.S. DEPARTMENT OF LABOR, 29 CFR 1910 SUBPART Z.
THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND IN THE WORK PLACE, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

NITRIC ACID:

50 PPM- ANY SUPPLIED-AIR RESPIRATOR OPERATED IN A CONTINUOUS-FLOW MODE.

100 PPM- ANY SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE.
ANY SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE.
ANY AIR-PURIFYING, FULL-FACEPIECE RESPIRATOR (GAS MASK) WITH A CHIN-STYLE, FRONT- OR BACK-MOUNTED CANISTER PROVIDING PROTECTION AGAINST NITRIC ACID.*
ANY CHEMICAL CARTRIDGE RESPIRATOR WITH A FULL FACEPIECE AND CARTRIDGE(S) PROVIDING PROTECTION AGAINST NITRIC ACID.*

ESCAPE- ANY AIR-PURIFYING, FULL-FACEPIECE RESPIRATOR (GAS MASK) WITH A CHIN-STYLE, FRONT- OR BACK-MOUNTED CANISTER PROVIDING PROTECTION AGAINST NITRIC ACID.*
ANY APPROPRIATE ESCAPE-TYPE, SELF-CONTAINED BREATHING APPARATUS.

* ONLY NONOXIDIZABLE SORBENTS ARE ALLOWED (NOT CHARCOAL).

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ANY SUPPLIED-AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

CLOTHING:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT ANY POSSIBILITY OF SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS SUBSTANCE.

EYE PROTECTION:
EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES AND A FACESHIELD TO PREVENT CONTACT WITH THIS SUBSTANCE.

EMERGENCY WASH FACILITIES:
WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES AND/OR SKIN MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN AND QUICK DRENCH SHOWER WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

AUTHORIZED - FISHER SCIENTIFIC, INC.
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-ADDITIONAL INFORMATION-

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INDEX: 02912330409 CAT NO: A144500 PO NBR: N/A

HYDROCHLORIC ACID, CONCENTRATED (36-37%)
HYDROCHLORIC ACID, CONCENTRATED (36-37%)
HYDROCHLORIC ACID, CONCENTRATED (36-37%)

MATERIAL SAFETY DATA SHEET

FISHER SCIENTIFIC
CHEMICAL DIVISION
1 REAGENT LANE
FAIR LAWN NJ 07410
(201) 796-7100

EMERGENCY NUMBER: (201) 796-7100
CHEMTREC ASSISTANCE: (800) 424-9300

SUBSTANCE IDENTIFICATION

CAS-NUMBER 7647-01-0

SUBSTANCE: **HYDROCHLORIC ACID, CONCENTRATED (36-37%)**

TRADE NAMES/SYNONYMS:
CHLOROHYDRIC ACID; HYDROCHLORIDE; MURIATIC ACID; SPIRITS OF SALT; HYDROCHLORIC ACID, CONCENTRATED; HYDROGEN CHLORIDE, 23 EB; UN 1789; A142; A144; A508; A466; A481; ACC11155

CHEMICAL FAMILY:
INORGANIC ACID

MOLECULAR FORMULA: H-CL

MOLECULAR WEIGHT: 36.46

CERCLA RATINGS (SCALE 0-3): HEALTH=3 FIRE=0 REACTIVITY=1 PERSISTENCE=0
NFPA RATINGS (SCALE 0-4): HEALTH=3 FIRE=0 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

COMPONENT: HYDROGEN CHLORIDE PERCENT: 35.0-38.0
CAS# 7647-01-0

COMPONENT: WATER PERCENT: 62.0-65.0

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:
HYDROGEN CHLORIDE (HYDROCHLORIC ACID):
5 PPM (7.6 MG/M3) OSHA CEILING
5 PPM (7.6 MG/M3) ACGIH CEILING
5 PPM (7.6 MG/M3) NIOSH RECOMMENDED CEILING
5 PPM (7.6 MG/M3) DFG MAK TWA;
10 PPM (15.2 MG/M3) DFG MAK 5 MINUTE PEAK, MOMENTARY VALUE, 8 TIMES/SHIFT

MEASUREMENT METHOD: SILICA GEL TUBE; SODIUM BICARBONATE/SODIUM CARBONATE; ION CHROMATOGRAPHY; (NIOSH VOL. III # 7903, INORGANIC ACIDS).

500 POUNDS SARA SECTION 302 THRESHOLD PLANNING QUANTITY (GAS)
5000 POUND SARA SECTION 304 REPORTABLE QUANTITY (GAS)
5000 POUNDS CERCLA SECTION 103 REPORTABLE QUANTITY (LIQUID)
SUBJECT TO SARA SECTION 313 ANNUAL TOXIC CHEMICAL RELEASE REPORTING

PHYSICAL DATA

DESCRIPTION: COLORLESS OR SLIGHTLY YELLOW FUMING LIQUID WITH A PUNGENT

ODOR. BOILING POINT: 384 F (196 C) SPECIFIC GRAVITY: 1.2

VAPOR PRESSURE: NOT AVAILABLE PH: 1.1 (0.1 N)

SOLUBILITY IN WATER: SOLUBLE VAPOR DENSITY: 1.3

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
NEGLIGIBLE FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

FIREFIGHTING MEDIA:
DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR REGULAR FOAM
(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR REGULAR FOAM

(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FIREFIGHTING:
MOVE CONTAINER FROM FIRE AREA IF YOU CAN DO IT WITHOUT RISK. APPLY COOLING WATER TO SIDES OF CONTAINERS THAT ARE EXPOSED TO FLAMES UNTIL WELL AFTER FIRE IS OUT. STAY AWAY FROM ENDS OF TANKS (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5, GUIDE PAGE 60).

EXTINGUISH USING AGENTS SUITABLE FOR TYPE OF FIRE. USE FLOODING AMOUNTS OF WATER AS FOG. COOL CONTAINERS WITH FLOODING AMOUNTS OF WATER, APPLY FROM AS FAR A DISTANCE AS POSSIBLE. AVOID BREATHING CORROSIVE VAPORS, KEEP UPWIND.

TRANSPORTATION DATA

DEPARTMENT OF TRANSPORTATION HAZARD CLASSIFICATION 49 CFR 172.101:
CORROSIVE MATERIAL

DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS 49 CFR 172.101 AND SUBPART E:
CORROSIVE

DEPARTMENT OF TRANSPORTATION PACKAGING REQUIREMENTS: 49 CFR 173.263
EXCEPTIONS: 49 CFR 173.244

TOXICITY

HYDROGEN CHLORIDE (HYDROCHLORIC ACID):
IRRITATION DATA:
ANHYDROUS: 100 MG RINSED EYE-RABBIT MILD.
HYDROCHLORIC ACID: 5 MG/30 SECONDS RINSED EYE-RABBIT MILD.
TOXICITY DATA:
HYDROGEN CHLORIDE (ANHYDROUS GAS): 4701 PPM/30 MINUTES INHALATION-RAT LC50; 2644 PPM/30 MINUTES INHALATION-MOUSE LC50.
MONOHYDRATE: NO DATA AVAILABLE.
DIHYDRATE: NO DATA AVAILABLE.
TRIHYDRATE: NO DATA AVAILABLE.
HEXAHYDRATE: NO DATA AVAILABLE.
HYDROGEN CHLORIDE (AEROSOL): 5666 PPM/30 MINUTES INHALATION-RAT LC50; 2142 PPM/30 MINUTES INHALATION-MOUSE LC50.
HYDROCHLORIC ACID: 1300 PPM/30 MINUTES INHALATION-HUMAN LCLO; 3000 PPM/5 MINUTES INHALATION-HUMAN LCLO; 81 MG/KG UNREPORTED MAN LDLO; 3124 PPM/1 HOUR INHALATION-RAT LC50; 1108 PPM/1 HOUR INHALATION-MOUSE LC50; 1449 MG/KG INTRAPERITONEAL-MOUSE LD50; 900 MG/KG ORAL-RABBIT LD50; 4416 PPM/30 MINUTES INHALATION-RABBIT LCLO; 4416 PPM/30 MINUTES INHALATION-GUINEA PIG LCLO; 1000 MG/M3/2 HOURS INHALATION-MAMMAL LCLO; MUTAGENIC DATA (RTECS); REPRODUCTIVE EFFECTS DATA (RTECS).
CARCINOGEN STATUS: NONE.
LOCAL EFFECTS: CORROSIVE- INHALATION, SKIN, EYE AND INGESTION.
ACUTE TOXICITY LEVEL: MODERATELY TOXIC BY INHALATION, INGESTION.
TARGET EFFECTS: NO DATA AVAILABLE.

HEALTH EFFECTS AND FIRST AID

INHALATION:
HYDROGEN CHLORIDE (HYDROCHLORIC ACID):
CORROSIVE. 100 PPM IMMEDIATELY DANGEROUS TO LIFE OR HEALTH.
ACUTE EXPOSURE- INHALATION OF GAS OR FUMES AT LEVELS OF 5-35 PPM MAY CAUSE IRRITATION AND BURNING OF THE THROAT, COUGHING AND CHOKING; 50-100 PPM MAY BE BARELY TOLERABLE FOR 1 HOUR. HIGH LEVELS MAY CAUSE INFLAMMATION AND OCCASIONALLY ULCERATION OF THE NOSE, THROAT OR LARYNX, BRONCHITIS, PNEUMONIA, PALPITATIONS AND HEADACHE. HIGHER CONCENTRATIONS MAY CAUSE NECROSIS OF THE TRACHEAL AND BRONCHIAL EPITHELIUM, NASOSEPTAL PERFORATION, ATELECTASIS, EMPHYSEMA, DAMAGE TO PULMONARY BLOOD VESSELS AND LESIONS OF THE LIVER AND OTHER ORGANS. DEATH MAY BE DUE TO LARYNGEAL SPASM, BRONCHOPNEUMONIA OR PULMONARY EDEMA. 1300-2000 PPM MAY BE DANGEROUS, EVEN ON BRIEF EXPOSURES. REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS.
CHRONIC EXPOSURE- REPEATED OR PROLONGED EXPOSURE MAY CAUSE EROSION AND DISCOLORATION OF EXPOSED TEETH, CHRONIC BRONCHITIS AND GASTRITIS.

FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, GIVE ARTIFICIAL RESPIRATION. MAINTAIN AIRWAY AND BLOOD PRESSURE AND ADMINISTER OXYGEN IF AVAILABLE. KEEP AFFECTED PERSON AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. ADMINISTRATION OF GEN SHOULD BE PERFORMED BY QUALIFIED PERSONNEL. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:
HYDROGEN CHLORIDE (HYDROCHLORIC ACID):
CORROSIVE.
ACUTE EXPOSURE- CONTACT MAY CAUSE SEVERE IRRITATION, INFLAMMATION, ULCERATION, NECROSIS AND CHEMICAL BURNS. SHOCK SYMPTOMS MAY DEVELOP INCLUDING RAPID PULSE, SWEATING AND COLLAPSE. PHOTOSENSITIZATION REACTIONS MAY OCCUR IN PERSONS PREVIOUSLY EXPOSED. CONTACT WITH A COMPRESSED GAS MAY CAUSE FROSTBITE.
CHRONIC EXPOSURE- REPEATED OR PROLONGED CONTACT WITH VAPORS OR DILUTE

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SOLUTIONS MAY CAUSE DERMATITIS. PHOTOSENSITIZATION MAY OCCUR.

FIRST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). IN CASE OF CHEMICAL BURNS, COVER AREA WITH STERILE, DRY DRESSING. BANDAGE SECURELY, BUT NOT TOO TIGHTLY. GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:
HYDROGEN CHLORIDE (HYDROCHLORIC ACID):
CORROSIVE.
ACUTE EXPOSURE- CONTACT MAY CAUSE SEVERE IRRITATION, CONJUNCTIVITIS, CORNEAL NECROSIS AND BURNS WITH IMPAIRMENT OR PERMANENT LOSS OF VISION. A DROP OF HYDROCHLORIC ACID SPLASHED IN THE EYE AND IMMEDIATELY WASHED OUT HAS PRODUCED A WHITE COAGULATION OF THE CORNEAL AND CONJUNCTIVAL EPITHELIUM. ANIMALS EXPOSED TO VAPOR CONCENTRATIONS OF 1350 PPM FOR ONE AND A HALF HOURS SHOWED CLOUDING OF THE CORNEA AND 300 PPM FOR 6 HOURS SHOWED SLIGHT EROSION OF THE CORNEAL EPITHELIUM. CONTACT WITH A COMPRESSED GAS MAY CAUSE FROSTBITE.
CHRONIC EXPOSURE- ANIMALS EXPOSED TO VAPOR AT 100 PPM FOR 6 HOURS DAILY FOR 50 DAYS SHOWED ONLY SLIGHT UNREST AND IRRITATION OF THE EYES, BUT NO OCULAR INJURY. EFFECTS ARE DEPENDENT UPON CONCENTRATION AND DURATION OF EXPOSURE. CONJUNCTIVITIS OR EFFECTS SIMILAR TO THOSE FOR ACUTE EXPOSURE MAY OCCUR.

FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). CONTINUE IRRIGATING WITH NORMAL SALINE UNTIL THE PH HAS RETURNED TO NORMAL (30-60 MINUTES). COVER WITH STERILE BANDAGES. GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:
HYDROGEN CHLORIDE (HYDROCHLORIC ACID):
CORROSIVE.
ACUTE EXPOSURE- INGESTION OF THE ACID MAY CAUSE BURNS OF THE MOUTH, THROAT, ESOPHAGUS AND STOMACH WITH CONSEQUENT PAIN, UNEASINESS, NAUSEA, SALIVATION, VOMITING, DIARRHEA, CHILLS, SHOCK AND INTENSE THIRST. NEPHRITIS, FEVER AND PERFORATION OF THE INTESTINAL TRACT, AND CIRCULATORY COLLAPSE MAY OCCUR. DEATH MAY BE DUE TO ESOPHAGEAL OR GASTRIC NECROSIS.
CHRONIC EXPOSURE- NO DATA AVAILABLE.

FIRST AID- DO NOT USE GASTRIC LAVAGE OR EMESIS. DILUTE THE ACID IMMEDIATELY BY DRINKING LARGE QUANTITIES OF WATER OR MILK. IF VOMITING PERSISTS, ADMINISTER FLUIDS REPEATEDLY. INGESTED ACID MUST BE DILUTED APPROXIMATELY 100 FOLD TO RENDER IT HARMLESS TO TISSUES. MAINTAIN AIRWAY AND TREAT SHOCK (DREISBACH, HANDBOOK OF POISONING, 12TH ED.). GET MEDICAL ATTENTION IMMEDIATELY. IF VOMITING OCCURS, KEEP HEAD BELOW HIPS TO HELP PREVENT ASPIRATION.

ANTIDOTE:
NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

REACTIVITY

REACTIVITY:
REACTS EXOTHERMICALLY WITH WATER OR STEAM TO PRODUCE TOXIC AND CORROSIVE FUMES.

INCOMPATIBILITIES:
HYDROGEN CHLORIDE (HYDROCHLORIC ACID):
ACETIC ANHYDRIDE: VIOLENT REACTION.
ALCOHOLIC HYDROGEN CYANIDE: EXPLOSIVE REACTION.
ALUMINUM: EXPLOSION.
ALUMINUM-TITANIUM ALLOYS: IGNITES OR INCANDESCES WHEN HEATED.
2-AMINOETHANOL: VIOLENT REACTION.
AMMONIUM HYDROXIOE: VIOLENT REACTION.
BASES: VIOLENT REACTION.
BRASS: CORRODES.
BRONZE: CORRODES.
CALCIUM CARBIDE: REACTS WITH INCANDESCENCE.
CALCIUM HYPOCHLORITE: IGNITION.
CESIUM ACETYLIDE: IGNITES ON CONTACT.
CHLORINE + DINITROANILINES: VIGOROUS REACTION WITH RELEASE OF FLAMMABLE HYDROGEN GAS FUMES.
CHLOROSULFONIC ACID: VIOLENT REACTION.
1,1-DIFLUOROETHYLENE: EXTREMELY EXOTHERMIC DECOMPOSITION REACTION.
DOWICIL 100: DECOMPOSES.
ETHYLENE DIAMINE: VIOLENT REACTION.
ETHYLENE IMINE: VIOLENT REACTION.
FLUORINE: IGNITES ON CONTACT.
HEXALITHIUM DISILICIDE: INCANDESCES.
IRON: CORRODES WITH EVOLUTION OF FLAMMABLE HYDROGEN GAS.
MAGNESIUM BORIDE: PRODUCES A SPONTANEOUSLY FLAMMABLE GAS.
MERCURIC SULFATE: VIOLENT REACTION AT 125 C.
METAL ACETYLIDES: VIOLENT REACTION.
METALS: SEVERE CORROSION WITH EVOLUTION OF FLAMMABLE HYDROGEN GAS.
OLEUM: VIOLENT REACTION.
OXIDIZERS (STRONG): VIOLENT REACTION.
OXYGEN + PLATINUM: IGNITES ON CONTACT.

PERCHLORIC ACID: VIOLENT REACTION.
PLASTICS, RUBBER, COATINGS: ATTACKS.
POTASSIUM PERMANGANATE: EXPLOSION HAZARD.
BETA-PROPIOLACTONE: VIOLENT REACTION.
PROPYLENE OXIDE: VIOLENT REACTION.
RUBIDIUM ACETYLIDE: IGNITES ON CONTACT.
SILICA (GEL): INCOMPATIBLE.
SODIUM: VIGOROUS OR EXPLOSIVE REACTION.
SULFURIC ACID: EXPLOSIVE REACTION WITH RELEASE OF TOXIC HYDROGEN CHLORIDE GAS.
TETRASELENIUM TETRANITRIDE: EXPLODES ON CONTACT.
VINYL ACETATE: VIOLENT REACTION.

DECOMPOSITION:
THERMAL DECOMPOSITION MAY RELEASE CORROSIVE HYDROGEN CHLORIDE.

POLYMERIZATION:
HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

STORAGE AND DISPOSAL

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE. FOR ASSISTANCE, CONTACT THE DISTRICT DIRECTOR OF THE ENVIRONMENTAL PROTECTION AGENCY.

STORAGE

THRESHOLD PLANNING QUANTITY (TPQ):
THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) SECTION 302 REQUIRES THAT EACH FACILITY WHERE ANY EXTREMELY HAZARDOUS SUBSTANCE IS PRESENT IN A QUANTITY EQUAL TO OR GREATER THAN THE TPQ ESTABLISHED FOR THAT SUBSTANCE NOTIFY THE STATE EMERGENCY RESPONSE COMMISSION FOR THE STATE IN WHICH IT IS LOCATED. SECTION 303 OF SARA REQUIRES THESE FACILITIES TO PARTICIPATE IN LOCAL EMERGENCY RESPONSE PLANNING (40 CFR 355.30).

PROTECT AGAINST PHYSICAL DAMAGE. STORE IN COOL, WELL-VENTILATED PLACE, SEPARATED FROM ALL OXIDIZING MATERIALS (NFPA 49, HAZARDOUS CHEMICALS DATA, 1975).

****

CONDITIONS TO AVOID

MAY BURN BUT DOES NOT IGNITE READILY. FLAMMABLE, POISONOUS GASES MAY ACCUMULATE IN TANKS AND HOPPER CARS. MAY IGNITE COMBUSTIBLES (WOOD, PAPER, OIL, ETC.).

****

SPILL AND LEAK PROCEDURES

SOIL SPILL:
DIG HOLDING AREA SUCH AS LAGOON, POND OR PIT FOR CONTAINMENT.

DIKE FLOW OF SPILLED MATERIAL USING SOIL OR SANDBAGS OR FOAMED BARRIERS SUCH AS POLYURETHANE OR CONCRETE.

USE CEMENT POWDER OR FLY ASH TO ABSORB LIQUID MASS.

NEUTRALIZE SPILL WITH SLAKED LIME, SODIUM BICARBONATE OR CRUSHED LIMESTONE.

AIR SPILL:
KNOCK DOWN VAPORS WITH WATER SPRAY. KEEP UPWIND.

WATER USED TO KNOCK DOWN VAPORS MAY BECOME CORROSIVE OR TOXIC AND SHOULD BE CONTAINED PROPERLY FOR LATER DISPOSAL.

WATER SPILL:
NEUTRALIZE WITH AGRICULTURAL LIME, SLAKED LIME, CRUSHED LIMESTONE, OR SODIUM BICARBONATE.

OCCUPATIONAL SPILL:
DO NOT TOUCH SPILLED MATERIAL. STOP LEAK IF YOU CAN DO IT WITHOUT RISK. FOR SMALL SPILLS, TAKE UP WITH SAND OR OTHER ABSORBENT MATERIAL AND PLA[illegible] TO CONTAINERS FOR LATER DISPOSAL. FOR SMALL DRY SPILLS, WITH CLEAN SHO[illegible] LACE MATERIAL INTO CLEAN, DRY CONTAINER AND COVER. MOVE CONTAINERS FROM [illegible] AREA. FOR LARGER SPILLS, DIKE FAR AHEAD OF SPILL FOR LATER DISPOSAL. KEEP UNNECESSARY PEOPLE AWAY. ISOLATE HAZARD AREA AND DENY ENTRY.

REPORTABLE QUANTITY (RQ): 5000 POUNDS
THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) SECTION 304 REQUIRES THAT A RELEASE EQUAL TO OR GREATER THAN THE REPORTABLE QUANTITY FOR THIS SUBSTANCE BE IMMEDIATELY REPORTED TO THE LOCAL EMERGENCY PLANNING COMMITTEE AND THE STATE EMERGENCY RESPONSE COMMISSION (40 CFR 355.40). IF THE RELEASE OF THIS SUBSTANCE IS REPORTABLE UNDER CERCLA SECTION 103, THE NATIONAL RESPONSE CENTER MUST BE NOTIFIED IMMEDIATELY AT (800) 424-8802 OR (202) 426-2675 IN THE METROPOLITAN WASHINGTON, D.C. AREA (40 CFR 302.6).

PROTECTIVE EQUIPMENT

VENTILATION:
PROVIDE LOCAL EXHAUST OR PROCESS ENCLOSURE VENTILATION TO MEET PUBLISHED EXPOSURE LIMITS.

RESPIRATOR:
THE FOLLOWING RESPIRATORS ARE RECOMMENDED BASED ON INFORMATION FOUND IN THE PHYSICAL DATA, TOXICITY AND HEALTH EFFECTS SECTIONS. THEY ARE RANKED IN ORDER FROM MINIMUM TO MAXIMUM RESPIRATORY PROTECTION.
THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND IN THE WORK PLACE, MUST BE BASED ON THE SPECIFIC OPERATION, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND MUST BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

HYDROGEN CHLORIDE (HYDROCHLORIC ACID):

50 PPM- ANY SUPPLIED-AIR RESPIRATOR.
ANY SELF-CONTAINED BREATHING APPARATUS.
ANY CHEMICAL CARTRIDGE RESPIRATOR WITH CARTRIDGE(S) PROVIDING PROTECTION AGAINST HYDROCHLORIC ACID.

100 PPM- ANY SUPPLIED-AIR RESPIRATOR OPERATED IN A CONTINUOUS FLOW MODE.
ANY SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE.
ANY SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE.
ANY AIR-PURFIYING, FULL-FACEPIECE RESPIRATOR (GAS MASK) WITH A CHIN-STYLE, FRONT-, OR BACK- MOUNTED CANISTER PROVIDING PROTECTION AGAINST HYDROCHLORIC ACID.
ANY CHEMICAL CARTRIDGE RESPIRATOR WITH A FULL FACEPIECE AND CARTRIDGE(S) PROVIDING PROTECTION AGAINST HYDROCHLORIC ACID.
ANY POWERED, AIR-PURFIYING RESPIRATOR WITH CARTRIDGE(S) PROVIDING PROTECTION AGAINST HYDROCHLORIC ACID.
ESCAPE- ANY AIR-PURIFYING, FULL FACEPIECE RESPIRATOR (GAS MASK) WITH A CHIN-STYLE, FRONT- OR BACK-MOUNTED ACID GAS CANISTER.
ANY APPROPRIATE ESCAPE-TYPE SELF-CONTAINED BREATHING APPARATUS.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ANY SUPPLIED-AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

CLOTHING:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT ANY POSSIBILITY OF SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS SUBSTANCE.

EYE PROTECTION:
EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES AND A FACESHIELD TO PREVENT CONTACT WITH THIS SUBSTANCE.

EMERGENCY WASH FACILITIES:
WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES AND/OR SKIN MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN AND QUICK DRENCH SHOWER WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

AUTHORIZED - FISHER SCIENTIFIC, INC.
CREATION DATE: 04/30/85 REVISION DATE: 07/02/91

-ADDITIONAL INFORMATION-
THIS INFORMATION IS BELIEVED TO BE ACCURATE AND REPRESENTS THE BEST INFORMATION CURRENTLY AVAILABLE TO US. HOWEVER, WE MAKE NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, WITH RESPECT TO SUCH INFORMATION, AND WE ASSUME NO LIABILITY RESULTING FROM ITS USE. USERS SHOULD MAKE THEIR OWN INVESTIGATIONS TO DETERMINE THE SUITABILITY OF THE INFORMATION FOR THEIR PARTICULAR PURPOSES.

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SULFURIC ACID
SULFURIC ACID
SULFURIC ACID

MATERIAL SAFETY DATA SHEET

FISHER SCIENTIFIC
CHEMICAL DIVISION
1 REAGENT LANE
FAIR LAWN NJ 07410
(201) 796-7100

EMERGENCY NUMBER: (201) 796-7100
CHEMTREC ASSISTANCE: (800) 424-9300

SUBSTANCE IDENTIFICATION

CAS-NUMBER 7664-93-9

SUBSTANCE: **SULFURIC ACID**

TRADE NAMES/SYNONYMS:
OIL OF VITRIOL; BOV; DIPPING ACID; VITRIOL BROWN OIL; HYDROGEN SULFATE; NORDHADSEN ACID; DIHYDROGEN SULFATE; SULPHURIC ACID; MATTING ACID; DITHIONIC ACID; STCC4930040; UN 1830; A300; A300C; A300SI; A300S; A298; A510; A468; SOA174; A484; SA17D; SA176; A302; A305; H204S; ACC22350

CHEMICAL FAMILY:
INORGANIC ACID

MOLECULAR FORMULA: H2-S-O4

MOLECULAR WEIGHT: 98.07

CERCLA RATINGS (SCALE 0-3): HEALTH=3 FIRE=0 REACTIVITY=2 PERSISTENCE=0
NFPA RATINGS (SCALE 0-4): HEALTH=3 FIRE=0 REACTIVITY=2

COMPONENTS AND CONTAMINANTS

COMPONENT: SULFURIC ACID PERCENT: 70.0-100.0
CAS# 7664-93-9

COMPONENT: WATER PERCENT: 0-30.0

OTHER CONTAMINANTS: NONE.

EXPOSURE LIMITS:
SULFURIC ACID:
1 MG/M3 OSHA TWA
1 MG/M3 ACGIH TWA; 3 MG/M3 ACGIH STEL
1 MG/M3 NIOSH RECOMMENDED TWA
1 MG/M3 DFG MAK TWA;
2 MG/M3 DFG MAK 5 MINUTE PEAK, MOMENTARY VALUE, 8 TIMES/SHIFT

MEASUREMENT METHOD: SILICA GEL TUBE; SODIUM BICARBONATE/SODIUM CARBONATE; ION CHROMATOGRAPHY; (NIOSH VOL. III # 7903, INORGANIC ACIDS).

1000 POUNDS SARA SECTION 302 THRESHOLD PLANNING QUANTITY
1000 POUNDS SARA SECTION 304 REPORTABLE QUANTITY
1000 POUNDS CERCLA SECTION 103 REPORTABLE QUANTITY
SUBJECT TO SARA SECTION 313 ANNUAL TOXIC CHEMICAL RELEASE REPORTING

PHYSICAL DATA

DESCRIPTION: ODORLESS, CLEAR, COLORLESS, DENSE HYGROSCOPIC OILY LIQUID WITH A MARKED ACID TASTE WHEN PURE. BOILING POINT: 626 F (330 C)

MELTING POINT: 50 F (10 C) SPECIFIC GRAVITY: 1.84

VAPOR PRESSURE: <0.001 @ 20 C PH: <3 SOLUBILITY IN WATER: SOLUBLE

ODOR THRESHOLD: >1 MG/M3 (MIST) VAPOR DENSITY: 3.4

SOLVENT SOLUBILITY: DECOMPOSES IN ALCOHOL.

@ 340 C IT DECOMPOSES INTO SULFUR TRIOXIDE AND WATER

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
NEGLIGIBLE FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

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OXIDIZER: OXIDIZERS DECOMPOSE, ESPECIALLY WHEN HEATED, TO YIELD OXYGEN OR OTHER GASES WHICH WILL INCREASE THE BURNING RATE OF COMBUSTIBLE MATTER. CONTACT WITH EASILY OXIDIZABLE, ORGANIC, OR OTHER COMBUSTIBLE MATERIALS MAY RESULT IN IGNITION, VIOLENT COMBUSTION OR EXPLOSION.

FIREFIGHTING MEDIA:
DRY CHEMICAL OR CARBON DIOXIDE
(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FOR LARGER FIRES, FLOOD AREA WITH WATER FROM A DISTANCE
(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FIREFIGHTING:
DO NOT GET WATER INSIDE CONTAINER. DO NOT GET SOLID STREAM OF WATER ON SPILLED MATERIAL. MOVE CONTAINER FROM FIRE AREA IF YOU CAN DO IT WITHOUT RISK. APPLY COOLING WATER TO SIDES OF CONTAINERS THAT ARE EXPOSED TO FLAMES UNTIL WELL AFTER FIRE IS OUT. STAY AWAY FROM ENDS OF TANKS (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5 GUIDE PAGE 39).

USE AGENT SUITABLE FOR TYPE OF FIRE; USE FLOODING AMOUNTS OF WATER AS A FOG. COOL CONTAINERS WITH FLOODING AMOUNTS OF WATER, APPLY FROM AS FAR A DISTANCE AS POSSIBLE. AVOID BREATHING CORROSIVE VAPORS, KEEP UPWIND.

TRANSPORTATION DATA

DEPARTMENT OF TRANSPORTATION HAZARD CLASSIFICATION 49 CFR 172.101:
CORROSIVE MATERIAL

DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS 49 CFR 172.101 AND SUBPART E:
CORROSIVE

DEPARTMENT OF TRANSPORTATION PACKAGING REQUIREMENTS: 49 CFR 173.272
EXCEPTIONS: 49 CFR 173.244

FINAL RULE ON HAZARDOUS MATERIALS REGULATIONS (HMR, 49 CFR PARTS 171-180), DOCKET NUMBERS HM-181, HM-181A, HM-181B, HM-181C, HM-181D AND HM-204. EFFECTIVE DATE OCTOBER 1, 1991. HOWEVER, COMPLIANCE WITH THE REGULATIONS IS AUTHORIZED ON AND AFTER JANUARY 1, 1991. (55 FR 52402, 12/21/90)

EXCEPT FOR EXPLOSIVES, INHALATION HAZARDS, AND INFECTIOUS SUBSTANCES, THE EFFECTIVE DATE FOR HAZARD COMMUNICATION REQUIREMENTS IS EXTENDED TO OCTOBER 1, 1993. (56 FR 47158, 10/18/91)

U.S. DEPARTMENT OF TRANSPORTATION SHIPPING NAME-ID NUMBER, 49 CFR 172.101:
SULFURIC ACID-UN 1830

U.S. DEPARTMENT OF TRANSPORTATION HAZARD CLASS OR DIVISION, 49 CFR 172.101:
8 - CORROSIVE MATERIAL

U.S. DEPARTMENT OF TRANSPORTATION PACKING GROUP, 49 CFR 172.101:
PG II

U.S. DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS, 49 CFR 172.101 AND SUBPART E:
CORROSIVE

U.S. DEPARTMENT OF TRANSPORTATION PACKAGING AUTHORIZATIONS:
EXCEPTIONS: NONE
NON-BULK PACKAGING: 49 CFR 173.202
BULK PACKAGING: 49 CFR 173.242

U.S. DEPARTMENT OF TRANSPORTATION QUANTITY LIMITATIONS 49 CFR 172.101:
PASSENGER AIRCRAFT OR RAILCAR: 1 L
CARGO AIRCRAFT ONLY: 30 L

TOXICITY

SULFURIC ACID:
IRRITATION DATA: 1380 UG EYE-RABBIT SEVERE; 5 MG/30 SECONDS RINSED EYE-RABBIT SEVERE.
TOXICITY DATA: 3 MG/M3/24 WEEKS INHALATION-HUMAN TCLO; 510 MG/M3/2 HOURS INHALATION-RAT LC50; 320 MG/M3/2 HOURS INHALATION-MOUSE LC50; 18 MG/M3 INHALATION-GUINEA PIG LC50; 2140 MG/KG ORAL-RAT LD50; 135 MG/KG UNREPORTED-MAN LDLO; MUTAGENIC DATA (RTECS); REPRODUCTIVE EFFECTS DATA (RTECS).
CARCINOGEN STATUS: NONE. AN EPIDEMIOLOGICAL STUDY OF WORKERS AT A REFINERY AND CHEMICAL PLANT SUGGESTS AN INCREASED RISK OF LARYNGEAL CANCER FROM EXPOSURE TO HIGH CONCENTRATIONS OF SULFURIC ACID.
LOCAL EFFECTS: CORROSIVE- INHALATION, SKIN, EYE AND INGESTION.
ACUTE TOXICITY LEVEL: HIGHLY TOXIC BY INHALATION; MODERATELY TOXIC BY INGESTION.
TARGET EFFECTS: NO DATA AVAILABLE.

HEALTH EFFECTS AND FIRST AID

INHALATION:
SULFURIC ACID:
CORROSIVE/HIGHLY TOXIC. 80 MG/M3 IMMEDIATELY DANGEROUS TO LIFE OR HEALTH.
ACUTE EXPOSURE- INHALATION OF MISTS MAY CAUSE MUCOUS MEMBRANE IRRITATION PRINCIPALLY AFFECTING THE RESPIRATORY TRACT EPITHELIUM. LOW CONCENTRATIONS, 0.35-5 MG/M3, MAY CAUSE INCREASED PULMONARY AIR FLOW RESISTANCE AND SUBSEQUENT SHALLOWER AND MORE RAPID BREATHING. HOT CONCENTRATED MISTS MAY CAUSE RAPID LOSS OF CONSCIOUSNESS WITH POSSIBLE DAMAGE TO LUNG TISSUE. VAPORS MAY CAUSE NASAL SECRETIONS, SNEEZING, A BURNING OR TICKLING SENSATION IN THE NOSE AND THROAT AND RETROSTERNAL REGION, FOLLOWED BY COUGH, RESPIRATORY DISTRESS, TRACHEOBRONCHITIS, CHEMICAL PNEUMONITIS AND POSSIBLE SPASM OF THE VOCAL CORDS. HIGH CONCENTRATIONS MAY PRODUCE BLOODY NASAL SECRETIONS AND SPUTUM, HEMATEMESIS GASTRITIS, AND PULMONARY EDEMA. A SINGLE OVEREXPOSURE MAY LEAD TO LARYNGEAL, TRACHEOBRONCHIAL AND PULMONARY EDEMA. ONE INDIVIDUAL SPRAYED IN THE FACE WITH SULFURIC ACID LIQUID EXPERIENCED DELAYED SYMPTOMS OF PULMONARY FIBROSIS, RESIDUAL BRONCHITIS, AND PULMONARY EMPHYSEMA. VAPORS FROM DILUTE SOLUTIONS MAY IRRITATE MUCOUS MEMBRANES. THE LETHAL DOSE REPORTED IN RATS IS 510 MG/M3/2 HOURS.
CHRONIC EXPOSURE- REPEATED EXPOSURE TO THE MIST MAY CAUSE INFLAMMATION OF THE UPPER RESPIRATORY TRACT, CHRONIC BRONCHITIS AND ETCHING OF THE DENTAL ENAMEL. THE CENTRAL AND LATERAL INCISORS ARE PRIMARILY AFFECTED. REPEATED EXCESSIVE EXPOSURE OVER LONG PERIODS OF TIME HAVE RESULTED IN BRONCHITIC SYMPTOMS, RHINORRHEA, FREQUENT RESPIRATORY TRACT INFECTIONS, EMPHYSEMA, STOMATITIS AND DIGESTIVE DISTURBANCES. CHRONIC INHALATION MAY CAUSE ALKALINE DEPLETION OF THE BODY PRODUCING AN ACIDOSIS WHICH AFFECTS THE NERVOUS SYSTEM AND PRODUCES AGITATION, HESITANT GAIT AND GENERALIZED WEAKNESS. AN EPIDEMIOLOGICAL STUDY OF WORKERS AT A REFINERY AND CHEMICAL PLANT SUGGESTS AN INCREASED RISK OF LARYNGEAL CANCER FROM EXPOSURE TO HIGH CONCENTRATIONS OF SULFURIC ACID. REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS.

FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, GIVE ARTIFICIAL RESPIRATION. MAINTAIN AIRWAY AND BLOOD PRESSURE AND ADMINISTER OXYGEN IF AVAILABLE. KEEP AFFECTED PERSON WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. ADMINISTRATION OF OXYGEN SHOULD BE PERFORMED BY QUALIFIED PERSONNEL. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:
SULFURIC ACID:
CORROSIVE.
ACUTE EXPOSURE- CONTACT WITH CONCENTRATED SULFURIC ACID MAY CAUSE SEVERE SECOND AND THIRD DEGREE SKIN BURNS WITH NECROSIS DUE TO ITS AFFINITY FOR WATER AND SUBSEQUENT SEVERE DEHYDRATING ACTION, AND ITS EXOTHERMIC REACTION WITH MOISTURE. POSSIBLE CHARRING MAY OCCUR LEADING TO SHOCK AND COLLAPSE DEPENDING ON THE AMOUNT OF TISSUE INVOLVED. THE RESULTING WOUNDS MAY BE LONG IN HEALING AND MAY CAUSE EXTENSIVE SCARRING THAT MAY RESULT IN FUNCTIONAL INHIBITION. CONTACT WITH DILUTE SOLUTIONS MAY CAUSE SKIN IRRITATION.
CHRONIC EXPOSURE- REPEATED CONTACT WITH LOW CONCENTRATIONS MAY CAUSE SKIN DESICCATION AND ULCERATION OF THE HANDS, AND PANARIS OR CHRONIC PURULENT INFLAMMATION AROUND THE NAILS. REPEATED CONTACT WITH DILUTE SOLUTIONS MAY CAUSE DERMATITIS.

FIRST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). IN CASE OF CHEMICAL BURNS, COVER AREA WITH STERILE, DRY DRESSING. BANDAGE SECURELY, BUT NOT TOO TIGHTLY. GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:
SULFURIC ACID:
CORROSIVE.
ACUTE EXPOSURE- EXPOSURE TO THE VAPORS MAY CAUSE A BURNING OR STINGING SENSATION IN THE EYES WITH LACRIMATION, BLURRED VISION AND CONJUNCTIVAL CONGESTION. SPLASHES OF ACID IN THE EYES MAY PRODUCE DEEP CORNEAL ULCERATION, KERATO-CONJUNCTIVITIS AND PALPEBRAL LESIONS WITH SEVERE SEQUELAE. IRREPARABLE CORNEAL DAMAGE AND BLINDNESS AS WELL AS SCARRING OF THE EYELIDS MAY OCCUR. SEVERE SULFURIC ACID EYE BURNS HAVE INCLUDED GLAUCOMA AND CATARACT AS COMPLICATIONS IN THE MOST SEVERE CASES. CONTACT WITH DILUTED ACID MAY PRODUCE MORE TRANSIENT EFFECTS FROM WHICH RECOVERY MAY BE COMPLETE.
CHRONIC EXPOSURE- REPEATED EXPOSURE MAY RESULT IN LACRIMATION AND CHRONIC CONJUNCTIVITIS.

FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). CONTINUE IRRIGATING WITH NORMAL SALINE UNTIL THE PH HAS RETURNED TO NORMAL (30-60 MINUTES). COVER WITH STERILE BANDAGES. GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:
SULFURIC ACID:
CORROSIVE.
ACUTE EXPOSURE- INGESTION MAY CAUSE BURNING PAIN IN THE MOUTH, THROAT, ESOPHAGUS AND ABDOMEN, A SOUR TASTE AND NAUSEA FOLLOWED BY VOMITING

AND DIARRHEA OF CHARRED BLACK STOMACH CONTENTS. DEHYDRATION AND CARBONIZATION OF TISSUE MAY OCCUR WITH ESCHARS ON THE LIPS AND MOUTH. BROWNISH OR YELLOWISH STAINS MAY BE FOUND AROUND THE MOUTH. INTENSE THIRST, DIFFICULT SWALLOWING, ACIDEMIA, STOMATITIS, RAPID AND WEAK PULSE, SHALLOW BREATHING, SHOCK AND POSSIBLE CONVULSIONS AND DEATH MAY OCCUR. ALBUMIN, BLOOD AND CASTS IN URINE, ANURIA, ESOPHAGEAL AND DELAYED GASTRIC STENOSIS HAS BEEN REPORTED. POSSIBLE PERFORATION OF THE GASTROINTESTINAL TRACT MAY RESULT IN PERITONITIS.
CHRONIC EXPOSURE- NO DATA AVAILABLE.

FIRST AID- DO NOT USE GASTRIC LAVAGE OR EMESIS. DILUTE THE ACID IMMEDIATELY BY DRINKING LARGE QUANTITIES OF WATER OR MILK. IF VOMITING PERSISTS, ADMINISTER FLUIDS REPEATEDLY. INGESTED ACID MUST BE DILUTED APPROXIMATELY 100 FOLD TO RENDER IT HARMLESS TO TISSUES. MAINTAIN AIRWAY AND TREAT SHOCK (DREISBACH, HANDBOOK OF POISONING, 12TH ED.). GET MEDICAL ATTENTION IMMEDIATELY. IF VOMITING OCCURS, KEEP HEAD BELOW HIPS TO HELP PREVENT ASPIRATION.

ANTIDOTE:
NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

REACTIVITY

REACTIVITY:
SULFURIC ACID:
VIOLENT EXOTHERMIC REACTION WITH WATER.

INCOMPATIBILITIES:
SULFURIC ACID:
ACETALDEHYDE: VIOLENTLY POLYMERIZED BY CONCENTRATED ACID.
ACETIC ANHYDRIDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
ACETONE + NITRIC ACID: VIOLENT DECOMPOSITION.
ACETONE + POTASSIUM DICHROMATE: IGNITION.
ACETONE CYANHYDRIN: PRESSURE INCREASE WITH POSSIBLE EXPLOSIVE RUPTURE OF VESSEL.
ACETONITRILE: VIOLENT EXOTHERM ON HEATING; SULFUR TRIOXIDE REDUCES INITIATION TEMPERATURE.
ACROLEIN: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
ACRYLONITRILE: VIGOROUS EXOTHERMIC POLYMERIZATION.
ALCOHOL: EXOTHERMIC REACTION AND CONTRACTION OF VOLUME.
ALCOHOLS AND HYDROGEN PEROXIDE: POSSIBLE EXPLOSION.
ALLYL ALCOHOL: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
ALLYL CHLORIDE: VIOLENT POLYMERIZATION.
ALKYL NITRATES: MAY CAUSE VIOLENT REACTION.
2-AMINOETHANOL: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
AMMONIUM HYDROXIDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
AMMONIUM IRON(III) SULFATE DODECAHYDRATE: VIOLENT, EXOTHERMIC REACTION ON HEATING.
AMMONIUM TRIPERCHROMATE: FIRE OR EXPLOSION HAZARD.
ANILINE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
BASES: VIOLENT REACTION.
BENZYL ALCOHOL: MAY DECOMPOSES EXPLOSIVELY AT ABOUT 180 C.
BROMATES + METALS: POSSIBLE IGNITION.
BROMINE PENTAFLUORIDE: VIOLENT REACTION WITH POSSIBLE IGNITION.
TERT-BUTYL-M-XYLENE: VIOLENT EXOTHERMIC REACTION WITHOUT AGITATION.
N-BUTYRALDEHYDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
CARBIDES: HAZARDOUS MIXTURE.
CESIUM ACETYLIDE: IGNITION ON CONTACT.
1-CHLORO-2,3-EPOXYPROPANE: VIOLENT INTERACTION.
4-CHLORONITROBENZENE AND SULFUR TRIOXIDE: POSSIBLE EXPLOSIVE REACTION.
CHLORATES: ALL CHLORATES, WHEN BROUGHT IN CONTACT WITH SULFURIC ACID MAY GIVE OFF EXPLOSIVE CHLORINE DIOXIDE GAS. A VIOLENT EXPLOSION IS USUAL.
CHLORATES + METALS: POSSIBLE IGNITION.
CHLORINE TRIFLUORIDE: VIOLENT REACTION.
CHLOROSULFONIC ACID: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
CHROMATES: FIRE AND EXPLOSION HAZARD.
COATINGS: ATTACKED.
COMBUSTIBLE MATERIALS (FINELY DIVIDED): MAY IGNITE.
COPPER: EVOLUTION OF SULFUR DIOXIDE.
CUPROUS NITRIDE: VIOLENT REACTION.
2-CYANO-4-NITROBENZENEDIAZONIUM HYDROGEN SULFATE: EXOTHERMIC REACTION.
2-CYANO-2-PROPANOL: VIOLENT REACTION WITH INCREASE IN PRESSURE.
CYCLOPENTADIENE: VIOLENT OR EXPLOSIVE REACTION.
CYCLOPENTANONE OXIME: VIOLENT REACTION.
1,3-DIAZIDOBENZENE: IGNITION FOLLOWED BY EXPLOSIVE REACTION.
DIETHYLAMINE: EXOTHERMIC REACTION.
DIISOBUTYLENE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
DIMETHYLBENZYLCARBINOL + HYDROGEN PEROXIDE: EXPLODES.
DIMETHOXYANTHRAQUINONE: EXOTHERMIC REACTION ABOVE 150 C.
4-DIMETHYLAMINOBENZALDEHYDE: EXOTHERMIC REACTION.
2,5-DINITRO-3-METHYLBENZOIC ACID + SODIUM AZIDE: EXPLOSIVE REACTION.
1,5-DINITRONAPHTHALENE + SULFUR: EXOTHERMIC REACTION.
EPICHLOROHYDRIN: VIOLENT REACTION.
ETHOXYLATED NONYLPHENOL: POSSIBLE IGNITION.
ETHANOL + HYDROGEN PEROXIDE: POSSIBLE EXPLOSION.
ETHYLENE CYANOHYDRIN: VIOLENT REACTION.
ETHYLENE DIAMINE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
ETHYLENE GLYCOL: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
ETHYLENIMINE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.

FULMINATES: EXTREMELY HAZARDOUS MIXTURE.
HEXALITHIUM DISILICIDE: INCANDESCENT REACTION.
HYDROCHLORIC ACID: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
HYDROGEN PEROXIDE (>50%): EXPLOSIVE REACTION AFTER EVAPORATION.
HYDROFLUORIC ACID: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
INDANE + NITRIC ACID: POSSIBLE EXPLOSION.
IODINE HEPTAFLUORIDE: THE ACID BECOMES EFFERVESCENT.
IRON: POSSIBLE EXPLOSION DUE TO HYDROGEN GAS FROM THE ACID-METAL REACTION.
ISOPRENE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
LITHIUM SILICIDE: INCANDESCENT REACTION.
MERCURY NITRIDE: EXPLOSION ON CONTACT.
MESITYL OXIDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
METALS: MAY LIBERATE FLAMMABLE HYDROGEN GAS.
METALS (POWDERED): EXTREMELY HAZARDOUS MIXTURE.
METAL ACETYLIDES: IGNITION REACTION.
METAL CHLORATES: VIOLENT EXPLOSION UNLESS PROPERLY COOLED.
METAL PERCHLORATES: FORMATION OF EXPLOSIVE PERCHLORIC ACID.
4-METHYLPYRIDINE: EXOTHERMIC REACTION.
NITRAMIDE: MAY DECOMPOSE EXPLOSIVELY ON CONTACT.
NITRATES: INCOMPATIBLE.
NITRIC ACID + GLYCERIDES: EXPLOSION.
NITRIC ACID + ORGANIC MATERIAL: MAY CAUSE VIOLENT REACTION.
NITRIC ACID + TOLUENE: POSSIBLE VIOLENT REACTION OR EXPLOSION.
NITROARYL BASES AND DERIVATIVES: MAY CAUSE VIOLENT REACTION OR EXPLOSION.
NITROBENZENE: EXOTHERMIC REACTION AT ELEVATED TEMPERATURES.
3-NITROBENZENESULFONIC ACID: EXOTHERMIC REACTION.
NITROMETHANE: FORMATION OF EXPLOSIVE MIXTURE.
N-NITROMETHYLAMINE: EXPLOSIVE DECOMPOSITION.
4-NITROTOLUENE: EXPLOSIVE AT 80 C.
ORGANICS: VIOLENT EXOTHERMIC REACTION.
PENTASILVER TRIHYDROXYDIAMIDOPHOSPHATE: EXPLOSION ON CONTACT.
PERCHLORATES: POSSIBLE EXPLOSION.
PERCHLORIC ACID: FORMATION OF DANGEROUS ANHYDROUS PERCHLORIC ACID.
PERMANGANATES: FORMATION OF PERMANGANIC ACID.
PERMANGANATES + BENZENE: POSSIBLE EXPLOSION.
1-PHENYL-2-METHYL-PROPYL ALCOHOL + HYDROGEN PEROXIDE: POSSIBLE EXPLOSION.
PHOSPHORUS (WHITE OR YELLOW): IGNITION IN CONTACT WITH BOILING ACID.
PHOSPHORUS ISOCYANATE: VIOLENT REACTION.
PHOSPHORUS TRIOXIDE: VIOLENT OXIDATION WITH POSSIBLE IGNITION.
PICRATES: EXTREMELY HAZARDOUS MIXTURE.
PLASTICS: ATTACKED.
POLYSILYLENE: EXPLOSION ON CONTACT.
POTASSIUM: EXPLOSIVE INTERACTION.
POTASSIUM TERT-BUTOXIDE: IGNITION.
POTASSIUM CHLORATE: POSSIBLE FIRE AND EXPLOSION.
POTASSIUM PERMANGANATE: POSSIBLE EXPLOSION IN THE PRESENCE OF MOISTURE.
POTASSIUM PERMANGANATE + POTASSIUM CHLORIDE: VIOLENT EXPLOSION.
PROPIOLACTONE (BETA): TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
PROPYLENE OXIDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
2-PROPYNOL: POSSIBLE EXPLOSION UNLESS ADEQUATELY COOLED.
PYRIDINE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
REDUCING AGENTS: REACTS.
RUBBER: ATTACKED.
RUBIDIUM ACETYLIDE: IGNITION ON CONTACT.
SILVER PERMANGANATE (MOIST): EXPLOSIVE REACTION.
SILVER PEROXOCHROMATE: EXPLOSIVE REACTION.
SODIUM: EXPLOSIVE REACTION WITH AQUEOUS ACID.
SODIUM CARBONATE: VIOLENT REACTION.
SODIUM CHLORATE: POSSIBLE FIRE OR EXPLOSION.
SODIUM HYDROXIDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
SODIUM TETRAHYDROBORATE: VIOLENT, EXOTHERMIC REACTION.
SODIUM THIOCYANATE: VIOLENT EXOTHERMIC WITH EVOLUTION OF CARBONYL SULFIDE.
STEEL: POSSIBLE EXPLOSION DUE TO HYDROGEN GAS FROM THE ACID-METAL REACTION.
STYRENE MONOMER: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
SUCROSE: FORMATION OF CARBON MONOXIDE.
TETRAMETHYLBENZENES: VIOLENT REACTION IN CLOSED CONTAINERS.
1,2,4,5-TETRAZINE: VIOLENT DECOMPOSITION ON CONTACT.
THALLIUM(I) AZIDODITHIOCARBONATE: MAY EXPLODE ON CONTACT.
1,3,5-TRINITROSOHEXAHYDRO-1,3,5-TRIAZINE: EXPLOSIVE DECOMPOSITION ON CONTACT.
VINYL ACETATE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
ZINC CHLORATE: LIKELY TO CAUSE FIRES AND EXPLOSIONS.
ZINC IODIDE: VIOLENT INTERACTION.

DECOMPOSITION:
THERMAL DECOMPOSITION MAY RELEASE TOXIC OXIDES OF SULFUR.

POLYMERIZATION:
HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

STORAGE AND DISPOSAL

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE. FOR ASSISTANCE, CONTACT THE DISTRICT DIRECTOR OF THE ENVIRONMENTAL PROTECTION AGENCY.

STORAGE

STORE IN COOL, DRY, WELL-VENTILATED LOCATION. SEPARATE FROM COMBUSTIBLES AND OTHER REACTIVE MATERIALS. SEPARATE FROM CARBIDES, CHLORATES, FULMINATES, NITRATES, PICRATES, AND POWDERED METALS. (NFPA 49, HAZARDOUS CHEMICALS DATA, 1991).

STORE IN A TIGHTLY CLOSED CONTAINER.

AVOID DIRECT SUNLIGHT.

STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

THRESHOLD PLANNING QUANTITY (TPQ):
THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) SECTION 302 REQUIRES THAT EACH FACILITY WHERE ANY EXTREMELY HAZARDOUS SUBSTANCE IS PRESENT IN A QUANTITY EQUAL TO OR GREATER THAN THE TPQ ESTABLISHED FOR THAT SUBSTANCE NOTIFY THE STATE EMERGENCY RESPONSE COMMISSION FOR THE STATE IN WHICH IT IS LOCATED. SECTION 303 OF SARA REQUIRES THESE FACILITIES TO PARTICIPATE IN LOCAL EMERGENCY RESPONSE PLANNING (40 CFR 355.30).

DISPOSAL

DISPOSAL MUST BE IN ACCORDANCE WITH STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE, 40 CFR 262. EPA HAZARDOUS WASTE NUMBER D002.
100 POUND CERCLA SECTION 103 REPORTABLE QUANTITY.

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CONDITIONS TO AVOID

MAY IGNITE OTHER COMBUSTIBLE MATERIALS (WOOD, PAPER, OIL, ETC.). VIOLENT REACTION WITH WATER. FLAMMABLE, POISONOUS GASES MAY ACCUMULATE IN CONFINED SPACES. RUNOFF TO SEWER MAY CREATE FIRE OR EXPLOSION HAZARD.

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SPILL AND LEAK PROCEDURES

SOIL SPILL:
DIG HOLDING AREA SUCH AS LAGOON, POND OR PIT FOR CONTAINMENT.

DIKE FLOW OF SPILLED MATERIAL USING SOIL OR SANDBAGS OR FOAMED BARRIERS SUCH AS POLYURETHANE OR CONCRETE.

USE CEMENT POWDER OR FLY ASH TO ABSORB LIQUID MASS.

NEUTRALIZE SPILL WITH SLAKED LIME, SODIUM BICARBONATE OR CRUSHED LIMESTONE.

AIR SPILL:
APPLY WATER SPRAY TO KNOCK DOWN AND REDUCE VAPORS. KNOCK-DOWN WATER IS CORROSIVE AND TOXIC AND SHOULD BE DIKED FOR CONTAINMENT AND LATER DISPOSAL.

WATER SPILL:
NEUTRALIZE WITH AGRICULTURAL LIME, SLAKED LIME, CRUSHED LIMESTONE, OR SODIUM BICARBONATE.

OCCUPATIONAL SPILL:
KEEP COMBUSTIBLES (WOOD, PAPER, OIL, ETC.) AWAY FROM SPILLED MATERIAL. DO NOT TOUCH SPILLED MATERIAL. DO NOT GET WATER INSIDE CONTAINER. STOP LEAK IF YOU CAN DO IT WITHOUT RISK. USE WATER SPRAY TO REDUCE VAPORS. DO NOT PUT WATER ON LEAK OR SPILL AREA. CLEAN UP ONLY UNDER THE SUPERVISION OF AN EXPERT. DIKE SPILL FOR LATER DISPOSAL. DO NOT APPLY WATER UNLESS DIRECTED TO DO SO. KEEP UNNECESSARY PEOPLE AWAY. ISOLATE HAZARD AREA AND DENY ENTRY. VENTILATE CLOSED SPACES BEFORE ENTERING.

REPORTABLE QUANTITY (RQ): 1000 POUNDS
THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) SECTION 304 REQUIRES THAT A RELEASE EQUAL TO OR GREATER THAN THE REPORTABLE QUANTITY FOR THIS SUBSTANCE BE IMMEDIATELY REPORTED TO THE LOCAL EMERGENCY PLANNING COMMITTEE AND THE STATE EMERGENCY RESPONSE COMMISSION (40 CFR 355.40). IF THE RELEASE OF THIS SUBSTANCE IS REPORTABLE UNDER CERCLA SECTION 103, THE NATIONAL RESPONSE CENTER MUST BE NOTIFIED IMMEDIATELY AT (800) 424-8802 OR (202) 426-2675 IN THE METROPOLITAN WASHINGTON, D.C. AREA (40 CFR 302.6).

PROTECTIVE EQUIPMENT

VENTILATION:
PROVIDE LOCAL EXHAUST OR PROCESS ENCLOSURE VENTILATION TO MEET PUBLISHED EXPOSURE LIMITS.

RESPIRATOR:
THE FOLLOWING RESPIRATORS AND MAXIMUM USE CONCENTRATIONS ARE RECOMMENDATIONS BY THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIOSH POCKET GUIDE TO CHEMICAL HAZARDS; NIOSH CRITERIA DOCUMENTS OR BY THE U.S. DEPARTMENT OF LABOR, 29 CFR 1910 SUBPART Z.
THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND IN THE WORK PLACE, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

SULFURIC ACID:

25 MG/M3- ANY POWERED AIR-PURIFYING RESPIRATOR WITH AN ACID GAS CARTRIDGE(S) AND HAVING A HIGH-EFFICIENCY PARTICULATE FILTER.
ANY SUPPLIED-AIR RESPIRATOR OPERATED IN A CONTINUOUS FLOW MODE.

50 MG/M3- ANY CHEMICAL CARTRIDGE RESPIRATOR WITH A FULL FACEPIECE AND ACID GAS CARTRIDGE(S) IN COMBINATION WITH A HIGH-EFFICIENCY PARTICULATE FILTER.
ANY SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE.
ANY SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE.
ANY AIR-PURIFYING FULL FACEPIECE RESPIRATOR (GAS MASK) WITH A CHIN-STYLE OR FRONT- OR BACK-MOUNTED ACID GAS CANISTER HAVING A HIGH-EFFICIENCY PARTICULATE FILTER.

80 MG/M3- ANY SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE AND OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

ESCAPE- ANY AIR-PURIFYING FULL FACEPIECE RESPIRATOR (GAS MASK) WITH A CHIN-STYLE OR FRONT- OR BACK-MOUNTED ACID GAS CANISTER HAVING A HIGH-EFFICIENCY PARTICULATE FILTER.
ANY APPROPRIATE ESCAPE-TYPE SELF-CONTAINED BREATHING APPARATUS.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ANY SUPPLIED-AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

CLOTHING:
WEAR APPROPRIATE PROTECTIVE CLOTHING TO AVOID ANY POSSIBILITY OF SKIN CONTACT WITH LIQUIDS CONTAINING MORE THAN 1% SULFURIC ACID. AVOID REPEATED OR PROLONGED SKIN CONTACT WITH LIQUIDS CONTAINING 1% OR LESS SULFURIC ACID.

GLOVES:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS SUBSTANCE.

EYE PROTECTION:
EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES AND A FACESHIELD TO PREVENT CONTACT WITH THIS SUBSTANCE.

EMERGENCY WASH FACILITIES:
WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES AND/OR SKIN MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN AND QUICK DRENCH SHOWER WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

AUTHORIZED - FISHER SCIENTIFIC, INC.
CREATION DATE: 11/28/84 REVISION DATE: 04/17/92

-ADDITIONAL INFORMATION-
THIS INFORMATION IS BELIEVED TO BE ACCURATE AND REPRESENTS THE BEST INFORMATION CURRENTLY AVAILABLE TO US. HOWEVER, WE MAKE NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, WITH RESPECT TO SUCH INFORMATION, AND WE ASSUME NO LIABILITY RESULTING FROM ITS USE. USERS SHOULD MAKE THEIR OWN INVESTIGATIONS TO DETERMINE THE SUITABILITY OF THE INFORMATION FOR THEIR PARTICULAR PURPOSES.

METHANOL
METHANOL
METHANOL

MATERIAL SAFETY DATA SHEET

FISHER SCIENTIFIC
CHEMICAL DIVISION
1 REAGENT LANE
FAIR LAWN NJ 07410
(201) 796-7100

EMERGENCY NUMBER: (201) 796-7100
CHEMTREC ASSISTANCE: (800) 424-9300

SUBSTANCE IDENTIFICATION

SUBSTANCE: **METHANOL** CAS-NUMBER 67-56-1

TRADE NAMES/SYNONYMS:
METHYL ALCOHOL; WOOD ALCOHOL; METHYL HYDROXIDE; CARBINOL; MONOHYDROXYMETHANE; WOOD SPIRIT; WOOD NAPHTHA; METHYLOL; COLONIAL SPIRIT; COLUMBIAN SPIRIT; PYROXYLIC SPIRIT; COULOMATIC (R) CONDITIONER SOLUTION; STANDARD WATER IN METHANOL; STCC 4909230; UN 1230; RCRA U154; A454; A452; A936; A408; A947; A935; BP110S; A412; A411; A433P; SW2;; SC95; A452SK; A408SK; A412P; A434; A412SK; A450; A433S; CH40; ACC14280

CHEMICAL FAMILY:
HYDROXYL, ALIPHATIC

MOLECULAR FORMULA: C-H3-O-H

MOLECULAR WEIGHT: 32.04

CERCLA RATINGS (SCALE 0-3): HEALTH=3 FIRE=3 REACTIVITY=0 PERSISTENCE=0
NFPA RATINGS (SCALE 0-4): HEALTH=1 FIRE=3 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

COMPONENT: METHYL ALCOHOL (METHANOL) PERCENT: 100
CAS# 67-56-1

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:
METHYL ALCOHOL (METHANOL):
200 PPM (262 MG/M3) OSHA TWA (SKIN); 250 PPM (328 MG/M3) OSHA STEL
200 PPM (262 MG/M3) ACGIH TWA (SKIN); 250 PPM (328 MG/M3) ACGIH STEL
200 PPM (262 MG/M3) NIOSH RECOMMENDED TWA (SKIN);
250 PPM (328 MG/M3) NIOSH RECOMMENDED STEL
200 PPM (262 MG/M3) DFG MAK TWA (SKIN);
400 PPM (524 MG/M3) DFG MAK 30 MINUTE PEAK, AVERAGE VALUE, 4 TIMES/SHIFT

MEASUREMENT METHOD: SILICA GEL TUBE; WATER; GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION; (NIOSH VOL. III # 2000, METHANOL).

5000 POUNDS CERCLA SECTION 103 REPORTABLE QUANTITY
SUBJECT TO SARA SECTION 313 ANNUAL TOXIC CHEMICAL RELEASE REPORTING

PHYSICAL DATA

DESCRIPTION: CLEAR, COLORLESS LIQUID WITH A CHARACTERISTIC ALCOHOLIC ODOR.

BOILING POINT: 149 F (65 C) MELTING POINT: -137 F (-94 C)

SPECIFIC GRAVITY: 0.7914 VAPOR PRESSURE: 97.25 MMHG @ 20 C

EVAPORATION RATE: (BUTYL ACETATE=1) 4.6 SOLUBILITY IN WATER: VERY SOLUBLE

ODOR THRESHOLD: 100 PPM VAPOR DENSITY: 1.11

SOLVENT SOLUBILITY: ETHER, BENZENE, ALCOHOL, ACETONE, CHLOROFORM, ETHANOL.

VISCOSITY: 0.59 CPS @ 20 C

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
DANGEROUS FIRE HAZARD WHEN EXPOSED TO HEAT, FLAME, OR OXIDIZERS.

VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL A CONSIDERABLE DISTANCE TO A SOURCE

OF IGNITION AND FLASH BACK.

VAPOR-AIR MIXTURES ARE EXPLOSIVE.

FLASH POINT: 52 F (11 C) (CC) UPPER EXPLOSIVE LIMIT: 36.0%

LOWER EXPLOSIVE LIMIT: 6.0% AUTOIGNITION TEMP.: 725 F (385 C)

FLAMMABILITY CLASS(OSHA): IB

FIREFIGHTING MEDIA:
DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR ALCOHOL-RESISTANT FOAM (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR ALCOHOL-RESISTANT FOAM (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FIREFIGHTING:
MOVE CONTAINER FROM FIRE AREA IF YOU CAN DO IT WITHOUT RISK. DIKE FIRE-CONTROL WATER FOR LATER DISPOSAL; DO NOT SCATTER THE MATERIAL. APPLY COOLING WATER TO SIDES OF CONTAINERS THAT ARE EXPOSED TO FLAMES UNTIL WELL AFTER FIRE IS OUT. STAY AWAY FROM ENDS OF TANKS. WITHDRAW IMMEDIATELY IN CASE OF RISING SOUND FROM VENTING SAFETY DEVICE OR ANY DISCOLORATION OF TANK DUE TO FIRE. ISOLATE FOR 1/2 MILE IN ALL DIRECTIONS IF TANK, RAIL CAR OR TANK TRUCK IS INVOLVED IN FIRE (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5, GUIDE PAGE 28).

EXTINGUISH ONLY IF FLOW CAN BE STOPPED; USE WATER IN FLOODING AMOUNTS AS FOG, SOLID STREAMS MAY NOT BE EFFECTIVE. COOL CONTAINERS WITH FLOODING QUANTITIES OF WATER, APPLY FROM AS FAR A DISTANCE AS POSSIBLE. AVOID BREATHING TOXIC VAPORS, KEEP UPWIND.

TRANSPORTATION DATA

DEPARTMENT OF TRANSPORTATION HAZARD CLASSIFICATION 49 CFR 172.101:
FLAMMABLE LIQUID

DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS 49 CFR 172.101 AND SUBPART E:
FLAMMABLE LIQUID

DEPARTMENT OF TRANSPORTATION PACKAGING REQUIREMENTS: 49 CFR 173.119
EXCEPTIONS: 49 CFR 173.118

FINAL RULE ON HAZARDOUS MATERIALS REGULATIONS (HMR, 49 CFR PARTS 171-180), DOCKET NUMBERS HM-181, HM-181A, HM-181B, HM-181C, HM-181D AND HM-204. EFFECTIVE DATE OCTOBER 1, 1991. HOWEVER, COMPLIANCE WITH THE REGULATIONS IS AUTHORIZED ON AND AFTER JANUARY 1, 1991. (55 FR 52402, 12/21/90)

EXCEPT FOR EXPLOSIVES, INHALATION HAZARDS, AND INFECTIOUS SUBSTANCES, THE EFFECTIVE DATE FOR HAZARD COMMUNICATION REQUIREMENTS IS EXTENDED TO OCTOBER 1, 1993. (56 FR 47158, 10/18/91)

U.S. DEPARTMENT OF TRANSPORTATION SHIPPING NAME-ID NUMBER, 49 CFR 172.101:
METHYL ALCOHOL-UN 1230

U.S. DEPARTMENT OF TRANSPORTATION HAZARD CLASS OR DIVISION, 49 CFR 172.101:
3 - FLAMMABLE LIQUID

U.S. DEPARTMENT OF TRANSPORTATION PACKING GROUP, 49 CFR 172.101:
PG II

U.S. DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS, 49 CFR 172.101 AND SUBPART E:
FLAMMABLE LIQUID, POISON

U.S. DEPARTMENT OF TRANSPORTATION PACKAGING AUTHORIZATIONS:
EXCEPTIONS: NONE
NON-BULK PACKAGING: 49 CFR 173.202
BULK PACKAGING: 49 CFR 173.243

U.S. DEPARTMENT OF TRANSPORTATION QUANTITY LIMITATIONS 49 CFR 172.101:
PASSENGER AIRCRAFT OR RAILCAR: 1 L
CARGO AIRCRAFT ONLY: 60 L

TOXICITY

METHYL ALCOHOL (METHANOL):
IRRITATION DATA: 20 MG/24 HOURS SKIN-RABBIT MODERATE; 40 MG EYE-RABBIT MODERATE; 100 MG/24 HOURS EYE-RABBIT MODERATE.
TOXICITY DATA: 86,000 MG/M3 INHALATION-HUMAN TCLO; 300 PPM INHALATION-HUMAN TCLO; 64,000 PPM/4 HOURS INHALATION-RAT LC50; 1000 PPM INHALATION-MONKEY LCLO; 50 GM/M3/2 HOURS INHALATION-MOUSE LCLO; 44,000 MG/M3/6 HOURS INHALATION-CAT LCLO; 15,800 MG/KG SKIN-RABBIT LD50; 393 MG/KG SKIN-MONKEY LDLO; 428 MG/KG ORAL-HUMAN LDLO; 143 MG/KG ORAL-HUMAN LDLO; 6422 MG/KG ORAL-MAN LDLO; 3429 MG/KG ORAL-MAN TDLO; 4 GM/KG ORAL-WOMAN TDLO; 7 GM/KG ORAL-MONKEY LD50; 5628 MG/KG ORAL-RAT LD50; 7300 MG/KG ORAL-MOUSE LD50; 14,200 MG/KG ORAL-RABBIT LD50; 7500 MG/KG ORAL-DOG LDLO; 9800 MG/KG SUBCUTANEOUS-MOUSE LD50; 2131 MG/KG INTRAVENOUS-RAT LD50; 4710 MG/KG

INTRAVENOUS-MOUSE LD50; 8907 MG/KG INTRAVENOUS-RABBIT LD50; 4641 MG/KG INTRAVENOUS-CAT LDLO; 7529 MG/KG INTRAPERITONEAL-RAT LD50; 10,765 MG/KG INTRAPERITONEAL-MOUSE LD50; 1826 MG/KG INTRAPERITONEAL-RABBIT LD50; 3556 MG/KG INTRAPERITONEAL-GUINEA PIG LD50; 8555 MG/KG INTRAPERITONEAL-HAMSTER LD50; 868 MG/KG UNREPORTED-MAN LDLO; MUTAGENIC DATA (RTECS); REPRODUCTIVE EFFECTS DATA (RTECS).
CARCINOGEN STATUS: NONE.
LOCAL EFFECTS: IRRITANT- SKIN, EYE.
ACUTE TOXICITY LEVEL: SLIGHTLY TOXIC BY INHALATION, DERMAL ABSORPTION, INGESTION.
TARGET EFFECTS: CENTRAL NERVOUS SYSTEM DEPRESSANT; NEUROTOXIN.
AT INCREASED RISK FROM EXPOSURE: PERSONS WITH KIDNEY, EYE OR SKIN DISORDERS.

HEALTH EFFECTS AND FIRST AID

INHALATION:
METHYL ALCOHOL (METHANOL):
NARCOTIC/NEUROTOXIN. 25,000 PPM IMMEDIATELY DANGEROUS TO LIFE OR HEALTH.
ACUTE EXPOSURE- MAY CAUSE IRRITATION OF THE MUCOUS MEMBRANES, COUGHING, OPPRESSION IN THE CHEST, TRACHEITIS, BRONCHITIS, TINNITUS, UNSTEADY GAIT, TWITCHING, COLIC, CONSTIPATION, NYSTAGMUS, AND BLEPHAROSPASM. SYMPTOMS FROM OCCUPATIONAL EXPOSURE INCLUDE PARESTHESIAS, NUMBNESS AND SHOOTING PAINS IN THE HANDS AND FOREARMS. METABOLIC ACIDOSIS, AND EFFECTS ON THE EYES AND CENTRAL NERVOUS SYSTEM MAY OCCUR AS DETAILED IN ACUTE INGESTION.
CHRONIC EXPOSURE- REPEATED OR PROLONGED EXPOSURE MAY CAUSE EFFECTS AS IN ACUTE INGESTION. REPEATED EXPOSURE TO 200-375 PPM CAUSED RECURRENT HEADACHES IN WORKERS. EXPOSURE FOR 4 YEARS TO 1200-8000 PPM RESULTED IN MARKED DIMINUTION OF VISION AND ENLARGEMENT OF THE LIVER IN A WORKMAN. REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS.

FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, PERFORM ARTIFICIAL RESPIRATION. KEEP PERSON WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:
METHYL ALCOHOL (METHANOL):
IRRITANT/NARCOTIC/NEUROTOXIN.
ACUTE EXPOSURE- CONTACT WITH LIQUID MAY CAUSE IRRITATION. SKIN ABSORPTION MAY OCCUR AND CAUSE METABOLIC ACIDOSIS AND EFFECTS ON THE EYES AND CENTRAL NERVOUS SYSTEM AS DETAILED IN ACUTE INGESTION.
CHRONIC EXPOSURE- REPEATED OR PROLONGED CONTACT WITH THE LIQUID MAY CAUSE DEFATTING OF THE SKIN RESULTING IN ERYTHEMA, SCALING, AND ECZEMATOID DERMATITIS. CHRONIC ABSORPTION MAY RESULT METABOLIC ACIDOSIS AND EFFECTS AS DETAILED IN ACUTE INGESTION.

FIRST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:
METHYL ALCOHOL (METHANOL):
IRRITANT.
ACUTE EXPOSURE- VAPORS MAY CAUSE IRRITATION. HIGH CONCENTRATIONS HAVE BEEN REPORTED TO CAUSE VIOLENT INFLAMMATION OF THE CONJUNCTIVA AND EPITHELIAL DEFECTS ON THE CORNEA. MILD IRRITATION MAY OCCUR WITH DILUTE SOLUTIONS; THE UNDILUTED LIQUID HAS PRODUCED MODERATE CORNEAL OPACITY AND CONJUNCTIVAL REDNESS IN RABBITS. APPLICATION OF A DROP OF METHANOL IN RABBIT EYES CAUSED A MILD REVERSIBLE REACTION, GRADED 3 ON A SCALE OF 1-10 AFTER 24 HOURS.
CHRONIC EXPOSURE- REPEATED OR PROLONGED CONTACT MAY CAUSE CONJUNCTIVITIS.

FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER OR NORMAL SALINE, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:
METHYL ALCOHOL (METHANOL):
NARCOTIC/NEUROTOXIN.
ACUTE EXPOSURE- MAY CAUSE MILD AND TRANSIENT INEBRIATION AND SUBSEQUENT DROWSINESS FOLLOWED BY AN ASYMPTOMATIC PERIOD LASTING 8-48 HOURS. FOLLOWING THE DELAY, COUGHING, DYSPNEA, HEADACHE, DULLNESS, WEAKNESS, VERTIGO OR DIZZINESS, NAUSEA, VOMITING, OCCASIONAL DIARRHEA, ANOREXIA, VIOLENT PAIN IN THE BACK, ABDOMEN, AND EXTREMITIES, RESTLESSNESS, APATHY OR DELIUUM, AND RARELY, EXCITEMENT AND MANIA MAY OCCUR. RAPID, SHALLOW RESPIRATION DUE TO METABOLIC ACIDOSIS, COLD AND CLAMMY SKIN, HYPOTENSION, CYANOSIS, OPISTHOTONOS, CONVULSIONS, MILD TACHYCARDIA, CARDIAC DEPRESSION, PERIPHERAL NEURITIS, CEREBRAL AND PULMONARY EDEMA, UNCONSCIOUSNESS, AND COMA ARE POSSIBLE. EFFECTS ON THE EYE MAY INCLUDE OPTIC NEURITIS, BLURRED OR DIMMED VISION, DILATED, UNRESPONSIVE PUPILS, PTOSIS, EYE PAIN, CONCENTRIC CONSTRICTION OF VISUAL FIELDS, DIPLOPIA, CHANGE IN COLOR PERCEPTION, PHOTOPHOBIA, AND OPTIC NERVE ATROPHY. PARTIAL BLINDNESS OR POSSIBLY DELAYED TRANSIENT OR PERMANENT BLINDNESS MAY OCCUR. BILATERAL SENSORINEURAL DEAFNESS HAS BEEN REPORTED IN A SINGLE CASE. LIVER, KIDNEY, HEART, STOMACH, INTESTINAL AND PANCREATIC DAMAGE MAY ALSO OCCUR. DEATH MAY BE DUE TO RESPIRATORY FAILURE OR RARELY FROM CIRCULATORY COLLAPSE. AS LITTLE AS 15 ML HAS CAUSED BLINDNESS; THE USUAL FATAL DOSE IS

60-240 ML. PROLONGED ASTHENIA AND IRREVERSIBLE EFFECTS ON THE NERVOUS SYSTEM INCLUDING DIFFICULTY IN SPEECH, MOTOR DYSFUNCTION WITH RIGIDITY, SPASTICITY, AND HYPOKINESIS HAVE BEEN REPORTED.
CHRONIC EXPOSURE- REPEATED INGESTION MAY CAUSE VISUAL IMPAIRMENT AND BLINDNESS AND OTHER SYSTEMIC EFFECTS AS DETAILED IN ACUTE INGESTION. REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS.

FIRST AID- IF INGESTION OF METHANOL IS DISCOVERED WITHIN 2 HOURS, GIVE SYRUP OF IPECAC. LAVAGE THOROUGHLY WITH 2-4 L OF TAP WATER WITH SODIUM BICARBONATE (20 G/L) ADDED. GET MEDICAL ATTENTION IMMEDIATELY. LAVAGE SHOULD BE PERFORMED BY QUALIFIED MEDICAL PERSONNEL (DREISBACH, HANDBOOK OF POISONING, 12TH ED.).

ANTIDOTE:
THE FOLLOWING ANTIDOTE(S) HAVE BEEN RECOMMENDED. HOWEVER, THE DECISION AS TO WHETHER THE SEVERITY OF POISONING REQUIRES ADMINISTRATION OF ANY ANTIDOTE AND ACTUAL DOSE REQUIRED SHOULD BE MADE BY QUALIFIED MEDICAL PERSONNEL.

METHANOL POISONING:
GIVE ETHANOL, 50% (100 PROOF), 1.5 ML/KG ORALLY INITIALLY, DILUTED TO NOT MORE THAN 5% SOLUTION, FOLLOWED BY 0.5-1.0 ML/KG EVERY 2 HOURS ORALLY OR INTRAVENOUSLY FOR 4 DAYS IN ORDER TO REDUCE METABOLISM OF METHANOL AND TO ALLOW TIME FOR ITS EXCRETION. BLOOD ETHANOL LEVEL SHOULD BE IN THE RANGE OF 1-1.5 MG/ML (DREISBACH, HANDBOOK OF POISONING, 12TH ED.). ANTIDOTE SHOULD BE ADMINISTERED BY QUALIFIED MEDICAL PERSONNEL.

ORAL OR INTRAVENOUS ADMINISTRATION OF 4-METHYLPYRAZOLE INHIBITS ALCOHOL DEHYDROGENASE AND HAS BEEN USED EFFECTIVELY AS AN ANTIDOTE FOR METHANOL OR ETHYLENE GLYCOL POISONING (ELLENHORN AND BARCELOUX, MEDICAL TOXICOLOGY).

REACTIVITY

REACTIVITY:
STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.

INCOMPATIBILITIES:
METHYL ALCOHOL (METHANOL):
ACETYL BROMIDE: VIOLENT REACTION WITH FORMATION OF HYDROGEN BROMIDE.
ALKYLALUMINUM SOLUTIONS: VIOLENT REACTION.
ALUMINUM: CORRODES.
BARIUM PERCHLORATE: DISTILLATION YIELDS HIGHLY EXPLOSIVE ALKYL PERCHLORATE.
BERYLLIUM HYDRIDE: VIOLENT REACTION, EVEN AT -196 C.
BROMINE: VIGOROUSLY EXOTHERMIC REACTION.
CALCIUM CARBIDE: VIOLENT REACTION.
CHLORINE: POSSIBLE IGNITION AND EXPLOSION HAZARD.
CHLOROFORM AND SODIUM HYDROXIDE: EXPLOSIVE REACTION.
CHROMIUM TRIOXIDE (CHROMIC ANHYDRIDE): POSSIBLE IGNITION.
CYANURIC CHLORIDE: VIOLENT REACTION.
DICHLOROMETHANE: POSSIBLE IGNITION AND EXPLOSION.
DIETHYL ZINC: POSSIBLE IGNITION AND EXPLOSION.
HYDROGEN PEROXIDE + WATER: EXPLOSION HAZARD.
IODINE + ETHANOL + MERCURIC OXIDE: EXPLOSION HAZARD.
LEAD: CORRODES.
LEAD PERCHLORATE: EXPLOSION HAZARD.
MAGNESIUM: VIOLENT REACTION.
MAGNESIUM (POWDERED): MIXTURES ARE CAPABLE OF DETONATION.
METALS: INCOMPATIBLE.
NICKEL: POSSIBLE IGNITION IN THE PRESENCE OF NICKEL CATALYST.
NITRIC ACID (CONCENTRATED): MIXTURES OF GREATER THAN 25% ACID MAY DECOMPOSE VIOLENTLY.
OXIDIZERS (STRONG): FIRE AND EXPLOSION HAZARD.
PERCHLORIC ACID: EXPLOSION HAZARD.
PHOSPHOROUS TRIOXIDE: POSSIBLE VIOLENT REACTION AND IGNITION.
PLASTICS, RUBBER, COATINGS: MAY BE ATTACKED.
POTASSIUM: POSSIBLE DANGEROUS REACTION.
POTASSIUM HYDROXIDE + CHLOROFORM: EXOTHERMIC REACTION.
POTASSIUM TERT-BUTOXIDE: FIRE AND EXPLOSION HAZARD.
SODIUM + CHLOROFORM: POSSIBLE EXPLOSION.
SODIUM HYPOCHLORITE: EXPLOSION HAZARD.
SODIUM METHOXIDE + CHLOROFORM: VIOLENT REACTION.
SULFURIC ACID: FIRE AND EXPLOSION HAZARD.
ZINC: EXPLOSION HAZARD.

DECOMPOSITION:
THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE TOXIC OXIDES OF CARBON.

POLYMERIZATION:
HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

STORAGE AND DISPOSAL

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE. FOR ASSISTANCE, CONTACT THE DISTRICT DIRECTOR OF THE ENVIRONMENTAL PROTECTION AGENCY.

STORAGE

STORE IN ACCORDANCE WITH 29 CFR 1910.106.

STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

DISPOSAL

DISPOSAL MUST BE IN ACCORDANCE WITH STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE, 40 CFR 262. EPA HAZARDOUS WASTE NUMBER U154.

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CONDITIONS TO AVOID

AVOID CONTACT WITH HEAT, SPARKS, FLAMES OR OTHER IGNITION SOURCES. VAPORS MAY BE EXPLOSIVE. MATERIAL IS POISONOUS; AVOID INHALATION OF VAPORS OR CONTACT WITH SKIN. DO NOT ALLOW MATERIAL TO CONTAMINATE WATER SOURCES.

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SPILL AND LEAK PROCEDURES

SOIL SPILL:
DIG HOLDING AREA SUCH AS LAGOON, POND OR PIT FOR CONTAINMENT.

DIKE FLOW OF SPILLED MATERIAL USING SOIL OR SANDBAGS OR FOAMED BARRIERS SUCH AS POLYURETHANE OR CONCRETE.

AIR SPILL:
APPLY WATER SPRAY TO KNOCK DOWN VAPORS.

WATER SPILL:
ALLOW SPILLED MATERIAL TO AERATE.

LIMIT SPILL MOTION AND DISPERSION WITH NATURAL BARRIERS OR OIL SPILL CONTROL BOOMS.

USE SUCTION HOSES TO REMOVE TRAPPED SPILL MATERIAL.

OCCUPATIONAL SPILL:
SHUT OFF IGNITION SOURCES. DO NOT TOUCH SPILLED MATERIAL. STOP LEAK IF YOU CAN DO IT WITHOUT RISK. USE WATER SPRAY TO REDUCE VAPORS. FOR SMALL SPILLS, TAKE UP WITH SAND OR OTHER ABSORBENT MATERIAL AND PLACE INTO CONTAINERS FOR LATER DISPOSAL. FOR LARGER SPILLS, DIKE FAR AHEAD OF SPILL FOR LATER DISPOSAL. NO SMOKING, FLAMES OR FLARES IN HAZARD AREA! KEEP UNNECESSARY PEOPLE AWAY; ISOLATE HAZARD AREA AND DENY ENTRY.

REPORTABLE QUANTITY (RQ): 5000 POUNDS
THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) SECTION 304 REQUIRES THAT A RELEASE EQUAL TO OR GREATER THAN THE REPORTABLE QUANTITY FOR THIS SUBSTANCE BE IMMEDIATELY REPORTED TO THE LOCAL EMERGENCY PLANNING COMMITTEE AND THE STATE EMERGENCY RESPONSE COMMISSION (40 CFR 355.40). IF THE RELEASE OF THIS SUBSTANCE IS REPORTABLE UNDER CERCLA SECTION 103, THE NATIONAL RESPONSE CENTER MUST BE NOTIFIED IMMEDIATELY AT (800) 424-8802 OR (202) 426-2675 IN THE METROPOLITAN WASHINGTON, D.C. AREA (40 CFR 302.6).

PROTECTIVE EQUIPMENT

VENTILATION:
PROVIDE GENERAL DILUTION VENTILATION TO MEET PUBLISHED EXPOSURE LIMITS. VENTILATION EQUIPMENT MUST BE EXPLOSION-PROOF.

RESPIRATOR:
THE FOLLOWING RESPIRATORS AND MAXIMUM USE CONCENTRATIONS ARE RECOMMENDATIONS BY THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIOSH POCKET GUIDE TO CHEMICAL HAZARDS; NIOSH CRITERIA DOCUMENTS OR BY THE U.S. DEPARTMENT OF LABOR, 29 CFR 1910 SUBPART Z.
THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND IN THE WORK PLACE, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

METHYL ALCOHOL (METHANOL):

2000 PPM- ANY SUPPLIED-AIR RESPIRATOR.
ANY SELF-CONTAINED BREATHING APPARATUS.

5000 PPM- ANY SUPPLIED-AIR RESPIRATOR OPERATED IN A CONTINUOUS-FLOW MODE.

10,000 PPM- ANY SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE.
ANY SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE.
ANY SUPPLIED-AIR RESPIRATOR THAT HAS A TIGHT-FITTING FACEPIECE AND IS OPERATED IN A CONTINUOUS-FLOW MODE.

25,000 PPM- ANY SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE AND OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

ESCAPE- ANY APPROPRIATE ESCAPE-TYPE, SELF-CONTAINED BREATHING APPARATUS.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ANY SUPPLIED-AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

CLOTHING:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT REPEATED OR PROLONGED SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS SUBSTANCE.

EYE PROTECTION:
EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES TO PREVENT EYE CONTACT WITH THIS SUBSTANCE.

EMERGENCY EYE WASH: WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

AUTHORIZED - FISHER SCIENTIFIC, INC.
CREATION DATE: 09/25/84 REVISION DATE: 02/25/92

-ADDITIONAL INFORMATION-

METHYLENE CHLORIDE
METHYLENE CHLORIDE
METHYLENE CHLORIDE

MATERIAL SAFETY DATA SHEET

FISHER SCIENTIFIC
CHEMICAL DIVISION
1 REAGENT LANE
FAIR LAWN NJ 07410
(201) 796-7100

EMERGENCY NUMBER: (201) 796-7100
CHEMTREC ASSISTANCE: (800) 424-9300

SUBSTANCE IDENTIFICATION

CAS-NUMBER 75-09-2

SUBSTANCE: **METHYLENE CHLORIDE**

TRADE NAMES/SYNONYMS:
METHANE, DICHLORO-; METHYLENE CHLORIDE; METHYLENE DICHLORIDE; METHANE DICHLORIDE; SOLAESTHIN; NARKOTIL; SOLMETHINE; DICHLOROMETHANE; RCRA U080; STCC 4941132; D150; D143; D142; D123; D35; D37; D37S; D37SK; D150SK; D143SK; D151; BP1186; D152; UN 1593; CH2CL2;

CHEMICAL FAMILY:
Halogen compound, aliphatic

MOLECULAR FORMULA: C-H2-CL2

MOLECULAR WEIGHT: 84.93

CERCLA RATINGS (SCALE 0-3): HEALTH=3 FIRE=1 REACTIVITY=0 PERSISTENCE=1
NFPA RATINGS (SCALE 0-4): HEALTH=2 FIRE=1 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

COMPONENT: METHYLENE CHLORIDE PERCENT: 100.0
CAS# 75-09-2

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:
DICHLOROMETHANE (METHYLENE CHLORIDE):
500 ppm OSHA TWA; 1000 ppm OSHA ceiling; 2000 ppm/5 min in 2 hours OSHA peak
50 ppm (174 mg/m3) ACGIH TWA
ACGIH A2- Suspected Human Carcinogen
Lowest feasible limit NIOSH recommended exposure criteria
100 ppm (360 mg/m3) DFG MAK TWA;
500 ppm (1800 mg/m3) DFG MAK 30 minute peak, average value, 2 times/shift

Measurement method: Charcoal tube (2); carbon disulfide; gas chromatography with flame ionization detection; (NIOSH Vol. III # 1005).

1000 pounds CERCLA Section 10[illegible]eportable Quantity
Subject to SARA Section 313 Annual Toxic Chemical Release Reporting
Subject to California Proposition 65 cancer and/or reproductive toxicity warning and release requirements- (April 1, 1988)

PHYSICAL DATA

DESCRIPTION: Clear, colorless liquid with an mild, chloroform-like odor

BOILING POINT: 104 F (40 C) MELTING POINT: -139 F (-95 C)

SPECIFIC GRAVITY: 1.3266 VOLATILITY: 100%

VAPOR PRESSURE: 400 mmHg @ 24 C EVAPORATION RATE: (butyl acetate=1) 27.5

SOLUBILITY IN WATER: 1.32% @ 20 C ODOR THRESHOLD: 25-50 ppm

VAPOR DENSITY: 2.9

SOLVENT SOLUBILITY: Soluble in alcohol, ether, dimethylformamide, phenols, aldehydes, ketones, glacial acetic acid, triethyl phosphate, acetoacetic acid, cyclohexylamine, chlorinated solvents.

VISCOSITY: 0.441 cP @ 20 C

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
Slight fire hazard when exposed to heat or flame.

UPPER EXPLOSIVE LIMIT: 23% LOWER EXPLOSIVE LIMIT: 13%

AUTOIGNITION TEMP.: 1033 F (556 C)

FIREFIGHTING MEDIA:
Dry chemical or carbon dioxide
(1993 Emergency Response Guidebook, RSPA P 5800.6).

For larger fires, use water spray, fog or regular foam
(1993 Emergency Response Guidebook, RSPA P 5800.6).

FIREFIGHTING:
Apply cooling water to sides of containers that are exposed to flames until well after fire is out. Stay away from ends of tanks. Isolate for 1/2 mile in all directions if tank, rail car or tank truck is involved in fire (1993 Emergency Response Guidebook, RSPA P 5800.6, Guide Page 74).

Extinguish using agents suitable for surrounding fire. Use flooding quantities of water to cool affected containers, applying from as far a distance as possible. Avoid breathing hazardous vapors, keep unwind.

TRANSPORTATION DATA

U.S. DEPARTMENT OF TRANSPORTATION SHIPPING NAME-ID NUMBER, 49 CFR 172.101:
Dichloromethane-UN 1593

U.S. DEPARTMENT OF TRANSPORTATION HAZARD CLASS OR DIVISION, 49 CFR 172.101:
6.1 - Poisonous materials

U.S. DEPARTMENT OF TRANSPORTATION PACKING GROUP, 49 CFR 172.101:
PG III

U.S. DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS, 49 CFR 172.101 AND SUBPART E:
Keep away from food

U.S. DEPARTMENT OF TRANSPORTATION PACKAGING AUTHORIZATIONS:
EXCEPTIONS: 49 CFR 173.153
NON-BULK PACKAGING: 49 CFR 173.203
BULK PACKAGING: 49 CFR 173.241

U.S. DEPARTMENT OF TRANSPORTATION QUANTITY LIMITATIONS 49 CFR 172.101:
PASSENGER AIRCRAFT OR RAILCAR: 60 L
CARGO AIRCRAFT ONLY: 220 L

TOXICITY

DICHLOROMETHANE (METHYLENE CHLORIDE):
IRRITATION DATA: 162 mg eye-rabbit moderate; 10 mg eye-rabbit mild; 500 mg/24 hours eye-rabbit mild; 810 mg/24 hours skin-rabbit severe; 100 mg/24 hours skin-rabbit moderate.
TOXICITY DATA: 500 ppm/1 year intermittent inhalation-human TCLo; 500 ppm/8 hours inhalation-human TCLo; 88000 mg/m3/30 minutes inhalation-rat LC50; 552 ppm/6 hours/5 days intermittent inhalation-rat TCLo; 14400 ppm/7 hours inhalation-mouse LC50; 10000 ppm/7 hours inhalation-rabbit LCLo; 5000 ppm/2 hours inhalation-guinea pig LCLo; 14108 ppm/7 hours inhalation-dog LCLo; 43400 mg/m3/4.5 hours inhalation-cat LCLo; 357 mg/kg oral-human LDLo; 1600 mg/kg oral-rat LD50; 1900 mg/kg oral-rabbit LDLo; 3 gm/kg oral-dog LDLo; 6460 mg/kg subcutaneous-mouse LD50; 2700 mg/kg subcutaneous-rabbit LDLo; 200 mg/kg intravenous-dog LDLo; 916 mg/kg intraperitoneal-rat LD50; 437 mg/kg intraperitoneal-mouse LD50; 950 mg/kg intraperitoneal-dog LDLo; 4770 mg/kg unreported-mouse LD50; 13000 ppm/6 hours/19 days intermittent inhalation-rat TCLo; 44 mg/m3/24 hours/96 days continuous inhalation-rat TCLo; 8400 ppm/6 hours/13 weeks intermittent inhalation-rat; 13000 ppm/6 hours/19 days intermittent inhalation-mouse TCLo; 8400 ppm/6 hours/13 weeks intermittent inhalation-mouse TCLo; 39270 mg/kg/17 weeks intermittent skin-rat TDLo; mutagenic data (RTECS); reproductive effects data (RTECS); tumorigenic data (RTECS).
CARCINOGEN STATUS: Anticipated Human Carcinogen (NTP); Human Inadequate Evidence, Animal Sufficient Evidence (IARC Group-2B). Exposure by inhalation increased the incidence of benign and malignant lung and liver tumors in mice of each sex and the incidence or multiplicity of benign mammary tumors in rats of each sex; in male rats, an increased incidence of sarcomas located in the neck was also observed.
LOCAL EFFECTS: Irritant- inhalation, skin, eye
ACUTE TOXICITY LEVEL: Moderately toxic by inhalation and ingestion.
TARGET EFFECTS: Central nervous system depressant; chemical asphyxiant. Poisoning may affect the blood, liver and kidneys.
AT INCREASED RISK FROM EXPOSURE: Persons with skin, liver, kidney, cardiovascular disease or anemia.
ADDITIONAL DATA: Concurrent exposure to other sources of carbon monoxide,

smoking, or physical activity increase the level of carboxyhemogl in the blood resulting in additive effects. Alcohol may enhance the toxic effects. Stimulants such as epinephrine may induce cardiac arrhythmias. One study indicated that chronic exposure may be associated with an increased risk of spontaneous abortion. Dichloromethane crosses the placenta and is excreted in breast milk.

HEALTH EFFECTS AND FIRST AID

INHALATION:
DICHLOROMETHANE (METHYLENE CHLORIDE):
IRRITANT/NARCOTIC/CHEMICAL ASPHYXIANT/CARCINOGEN.

ACUTE EXPOSURE- Human exposure to 100 ppm has resulted in upper respiratory tract irritation; concentrations as low as 200 ppm have produced temporary neurobehavioural effects; 500-1000 ppm for 1-2 hours has caused lightheadedness and elevated carboxyhemoglobin level; 2300 ppm for 30 minutes has caused nausea and narcosis; 5000 ppm has caused headache, fatigue, neurasthenic disorders and digestive disturbances. Other symptoms may include dizziness, tingling, numbness of the extremities, a sensation of heat, a sensation of fullness in the head, drunkenness, stupor, dullness and mental confusion. Massive exposure may cause pharyngeal erosion, pulmonary edema, staggering, hemolysis with gross hematuria, rapid unconsciousness and death. Recovery is generally complete if exposure is terminated before anesthetic death. Exposure to high levels may also cause cardiac arrhythmias.

CHRONIC EXPOSURE- More than 100 workers exposed to levels below 500 ppm have developed health problems including significant upper respiratory irritation, exacerbation of coronary artery disease, and a high incidence of neurotoxicity; increased complaints of chest pains were reported at concentrations of 10 to 35 ppm. Repeated human exposure to 500-3600 ppm has caused signs of toxic encephalopathy with acoustic [illegible] delusions and hallucinations. A case of serious cerebral deterioration was observed in an individual exposed for several years to dichloromethane. In a mortality study of two groups of workers, one exposed to acetone and the other to dichloromethane and acetone, a statistically significant difference in deaths from diseases of the circulatory system and from ischemic heart disease were reported from the dichloromethane and acetone group. In another mortality study of workers exposed to dichloromethane, a significant increase in hypertensive disease and a "suggestive excess" of pancreatic cancer were reported. Liver disease has been reported in workers. In one study, an increase in serum bilirubin was observed in exposed workers, but no other sign of liver injury or hemolysis was reported. Adverse liver effects were observed in several animal species chemically exposed. Testicular [illegible]. Repeated inhalation by rodents prior to and/or during gestation caused fetal skeletal abnormalities and behavioral effects in newborn offspring. Repeated inhalation increased the incidence of benign and malignant lung and liver tumors in mice of each sex and the incidence or multiplicity of benign mammary tumors in rats of each sex; in male rats, an increased incidence of sarcomas located in the neck was also observed.

FIRST AID- Remove from exposure area to fresh air immediately. Perform artificial respiration if necessary. Maintain airway, blood pressure and respiration. Keep warm and at rest. Treat symptomatically and supportively. Get medical attention immediately. Qualified medical personnel should consider administering oxygen.

SKIN CONTACT:
DICHLOROMETHANE (METHYLENE CHLORIDE):
IRRITANT.
ACUTE EXPOSURE- May cause effects ranging from mild irritation to severe pain, paresthesias, and possibly burns, depending on the intensity of contact.
CHRONIC EXPOSURE- Prolonged or repeated contact may cause a dry, scaly and fissured dermatitis due to defatting action of liquid on skin.

FIRST AID- Remove contaminated clothing and shoes immediately. Wash with soap or mild detergent and large amounts of water until no evidence of chemical remains (at least 15-20 minutes). Get medical attention immediately.

EYE CONTACT:
DICHLOROMETHANE (METHYLENE CHLORIDE):
IRRITANT.
ACUTE EXPOSURE- Vapor concentrations above 2000 ppm may cause irritation. Direct contact may cause pain and extreme irritation, but it is not likely to cause serious injury. 10 mg applied to rabbit eyes produced keratitis, iritis, increased corneal thickness, and inflammation of the conjunctiva and eyelids with some effects lasting up to two weeks.
CHRONIC EXPOSURE- Repeated or prolonged exposure to irritants may cause conjunctivitis.

FIRST AID- Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains (at least 15-20 minutes). Get medical attention immediately.

INGESTION:
DICHLOROMETHANE (METHYLENE CHLORIDE):
NARCOTIC/CHEMICAL ASPHYXIANT.
Acute exposure: May cause rapid, then slowed respiration, glottal and pharyngeal edema, intravascular hemolysis with gross hematuria, gastrointestinal ulceration and hemorrhage, and carboxyhemoglobinemia. These symptoms may progress rapidly to unconsciousness and lack of response to painful stimuli. Pharyngeal erosions may disturb the swallowing mechanism resulting in aspiration pneumonia. In addition, symptoms of central nervous system depression may occur followed by convulsions and paresthesia of the extremities. Large doses may cause liver and kidney damage. The estimated lethal dose for an adult is 25 grams.
CHRONIC EXPOSURE- Repeated ingestion by rats and mice resulted in histomorphological changes in the liver.

FIRST AID- Remove by gastric lavage or emesis. Maintain blood pressure and airway. Give oxygen if respiration is depressed. Do not perform gastric lavage or emesis if victim is unconscious. Get medical attention immediately (Dreisbach, Handbook of Poisoning, 12th Ed.). Administration of gastric lavage or oxygen should be performed by qualified medical personnel.

ANTIDOTE:
No specific antidote. Treat symptomatically and supportively.

REACTIVITY

REACTIVITY:
Stable under normal temperatures and pressures.

INCOMPATIBILITIES:
DICHLOROMETHANE (METHYLENE CHLORIDE):
ALKALI METALS: Possible explosive reaction.
ALUMINUM: Violent, uncontrollable reaction above 95 C.
CAUSTICS (STRONG): Vigorous, possibly violent reaction.
COPPER: May corrode at elevated temperatures in the presence of moisture.
DINITROGEN PENTOXIDE: Possible explosion.
DINITROGEN TETROXIDE: Forms shock-sensitive mixture.
IRON: May corrode at elevated temperatures in the presence of moisture.
LITHIUM: Forms shock-sensitive mixture.
MAGNESIUM: Possible explosion.
NICKEL: May corrode at elevated temperatures in the presence of moisture.
NITRIC ACID: Exothermic reaction yielding detonable solution.
OXIDIZERS (STRONG): Fire and explosion hazard.
OXYGEN (LIQUID): Explosive reaction on ignition.
PLASTICS, RUBBER, AND COATINGS: May be attacked.
POTASSIUM: Explosive reaction.
POTASSIUM HYDROXIDE + N-METHYL-N-NITROSO UREA: Possible explosion.
POTASSIUM TERT-BUTOXIDE: Ignition reaction.
SODIUM: Forms shock-sensitive mixture.
SODIUM-POTASSIUM ALLOY: Forms shock-sensitive mixture.
STAINLESS STEEL: May corrode at elevated temperatures in the presence of moisture.
TITANIUM: Possible violent reaction.
ZINC: Possible violent reaction.

DECOMPOSITION:
Thermal decomposition products may include toxic and hazardous phosgene gas, toxic and corrosive fumes of chlorides, and oxides of carbon.

POLYMERIZATION:
Hazardous polymerization has not been reported to occur under normal temperatures and pressures.

STORAGE AND DISPOSAL

Observe all federal, state and local regulations when storing or disposing of this substance.

Storage

Protect against physical damage. Store in cool, dry, well ventilated location, away from any area where the fire hazard may be acute (NFPA 49, Hazardous Chemicals Data, 1975).

Store in a tightly closed container.

Store under nitrogen.

Store away from incompatible substances.

Disposal

Disposal must be in accordance with standards applicable to generators of hazardous waste, 40CFR 262. EPA Hazardous Waste Number U080.

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CONDITIONS TO AVOID

May burn but does not ignite readily. Container may explode in heat of fire.

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SPILL AND LEAK PROCEDURES

SOIL SPILL:
Dig a holding area such as a pit, pond or lagoon to contain spill and dike surface flow using barrier of soil, sandbags, foamed polyurethane or foamed concrete. Absorb liquid mass with fly ash or cement powder.

AIR SPILL:
Apply water spray to knock down vapors.

WATER SPILL:
Trap spilled material at bottom in deep water pockets, excavated holding areas or within sand bag barriers.

Use suction hoses to remove trapped spill material.

The California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) prohibits contaminating any known source of drinking water with substances known to cause cancer and/or reproductive toxicity.

OCCUPATIONAL SPILL:
Shut off ignition sources. Stop leak if you can do it without risk. For small liquid spills, take up with sand, earth or other absorbent material. For larger spills, dike far ahead of spill for later disposal. No smoking, flames or flares in hazard area! Keep unnecessary people away.

Reportable Quantity (RQ): 1000 pounds
The Superfund Amendments and Reauthorization Act (SARA) Section 304 requires that a release equal to or greater than the reportable quantity for this substance be immediately reported to the local emergency planning committee and the state emergency response commission (40 CFR 355.40). If the release of this substance is reportable under CERCLA Section 103, the National Response Center must be notified immediately at (800) 424-8802 or (202) 426-2675 in the metropolitan Washington, D.C. area (40 CFR 302.6).

PROTECTIVE EQUIPMENT

VENTILATION:
Process enclosure recommended to meet published exposure limits.

RESPIRATOR:
The following respirators and maximum use concentrations are recommendations by the U.S. Department of Health and Human Services, NIOSH Pocket Guide to Chemical Hazards; NIOSH criteria documents or by the U.S. Department of

Labor, 29 CFR 1910 Subpart Z.
The specific respirator selected must be based on contamination levels found in the work place, must not exceed the working limits of the respirator and be jointly approved by the National Institute for Occupational Safety and Health and the Mine Safety and Health Administration (NIOSH-MSHA).

DICHLOROMETHANE (METHYLENE CHLORIDE):
At any detectable concentration:

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.
Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

Escape- Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister.
Any appropriate escape-type, self-contained breathing apparatus.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

CLOTHING:
Employee must wear appropriate protective (impervious) clothing and equipment to prevent repeated or prolonged skin contact with this substance.

GLOVES:
Employee must wear appropriate protective gloves to prevent contact with this substance.

EYE PROTECTION:
Employee must wear splash-proof or dust-resistant safety goggles and a faceshield to prevent contact with this substance.

Emergency wash facilities:
Where there is any possibility that an employee's eyes and/or skin may be exposed to this substance, the employer should provide an eye wash fountain and quick drench shower within the immediate work area for emergency use.

AUTHORIZED - FISHER SCIENTIFIC, INC.
CREATION DATE: 09/26/84 REVISION DATE: 12/08/9-

-ADDITIONAL INFORMATION-

J.T.BAKER INC. 222 RED SCHOOL LANE, PHILLIPSBURG, NJ 08865
M A T E R I A L S A F E T Y D A T A S H E E T
24-HOUR EMERGENCY TELEPHONE -- (908) 859-2151
CHEMTREC # (800) 424-9300 -- NATIONAL RESPONSE CENTER # (800) 424-8802

J.T.BAKER INC., 222 RED SCHOOL LANE, PHILLIPSBURG, NJ 08865

SECTION I - PRODUCT IDENTIFICATION

PRODUCT NAME: METHYL ISO-BUTYL KETONE
COMMON SYNONYMS: 4-METHYL-2-PENTANONE; ISOPROPYLACETONE; HEXONE
CHEMICAL FAMILY: KETONES
FORMULA: CH3COCH2CH(CH3)2
FORMULA WT.: 100.16
CAS NO.: 108-10-1
NIOSH/RTECS NO.: SA9275000
PRODUCT USE: LABORATORY REAGENT
PRODUCT CODES: 5384,9212,9320,4855,9322,5384

PRECAUTIONARY LABELING

BAKER SAF-T-DATA* SYSTEM

HEALTH	-	2	MODERATE
FLAMMABILITY	-	3	SEVERE (FLAMMABLE)
REACTIVITY	-	1	SLIGHT
CONTACT	-	1	SLIGHT

LABORATORY PROTECTIVE EQUIPMENT

GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER

U.S. PRECAUTIONARY LABELING

WARNING
FLAMMABLE. CAUSES IRRITATION. HARMFUL IF SWALLOWED OR INHALED.
KEEP AWAY FROM HEAT, SPARKS, FLAME. AVOID CONTACT WITH EYES, SKIN, CLOTHING.
AVOID BREATHING VAPOR. KEEP IN TIGHTLY CLOSED CONTAINER. USE WITH ADEQUATE
VENTILATION. WASH THOROUGHLY AFTER HANDLING. IN CASE OF FIRE, USE ALCOHOL
FOAM, DRY CHEMICAL, CARBON DIOXIDE - WATER MAY BE INEFFECTIVE. FLUSH SPILL
AREA WITH WATER SPRAY.

INTERNATIONAL LABELING

AVOID CONTACT WITH EYES. AFTER CONTACT WITH SKIN, WASH IMMEDIATELY WITH
PLENTY OF WATER. KEEP CONTAINER TIGHTLY CLOSED.

SAF-T-DATA* STORAGE COLOR CODE: RED (FLAMMABLE)

CONTINUED ON PAGE: 2

SECTION II - COMPONENTS

COMPONENT	CAS NO.	WEIGHT %	OSHA/PEL	ACGIH/TLV
METHYL ISO-BUTYL KETONE	108-10-1	90-100	50 PPM	50 PPM

SECTION III - PHYSICAL DATA

BOILING POINT: 116 C (240 F)
(AT 760 MM HG)

VAPOR PRESSURE (MMHG): 15
(20 C)

MELTING POINT: -85 C (-121 F)
(AT 760 MM HG)

VAPOR DENSITY (AIR=1): 3.5

SPECIFIC GRAVITY: 0.79
(H2O=1)

EVAPORATION RATE: 1.6
(BUTYL ACETATE = 1)

SOLUBILITY(H2O): MODERATE (1-10%)

% VOLATILES BY VOLUME: 100
(21 C)

N/A

ODOR THRESHOLD (P.P.M.): N/A

PHYSICAL STATE: LIQUID

COEFFICIENT WATER/OIL DISTRIBUTION: N/A

APPEARANCE & ODOR: COLORLESS LIQUID. PLEASANT ODOR.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (CLOSED CUP): 15 C (60 F)

NFPA 704M RATING: 2-3-0

AUTOIGNITION TEMPERATURE: 448 C (840 F)

FLAMMABLE LIMITS: UPPER - 7.5 % LOWER - 1.4 %

FIRE EXTINQUISHING MEDIA
USE ALCOHOL FOAM, DRY CHEMICAL OR CARBON DIOXIDE. (WATER MAY BE INEFFECTIVE.)

SPECIAL FIRE-FIGHTING PROCEDURES
FIREFIGHTERS SHOULD WEAR PROPER PROTECTIVE EQUIPMENT AND SELF-CONTAINED BREATHING APPARATUS WITH FULL FACEPIECE OPERATED IN POSITIVE PRESSURE MODE. MOVE CONTAINERS FROM FIRE AREA IF IT CAN BE DONE WITHOUT RISK. USE

CONTINUED ON PAGE: 3

SECTION IV - FIRE AND EXPLOSION HAZARD DATA (CONTINUED)

WATER TO KEEP FIRE-EXPOSED CONTAINERS COOL.

UNUSUAL FIRE & EXPLOSION HAZARDS
VAPORS MAY FLOW ALONG SURFACES TO DISTANT IGNITION SOURCES AND FLASH BACK. CLOSED CONTAINERS EXPOSED TO HEAT MAY EXPLODE. CONTACT WITH STRONG OXIDIZERS MAY CAUSE FIRE.

TOXIC GASES PRODUCED
CARBON MONOXIDE, CARBON DIOXIDE

EXPLOSION DATA-SENSITIVITY TO MECHANICAL IMPACT
NONE IDENTIFIED.

EXPLOSION DATA-SENSITIVITY TO STATIC DISCHARGE
NONE IDENTIFIED.

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE (TLV/TWA): 205 MG/M (50 PPM)

SHORT-TERM EXPOSURE LIMIT (STEL): 300 MG/M (75 PPM)

PERMISSIBLE EXPOSURE LIMIT (PEL): 205 MG/M (50 PPM)

TOXICITY OF COMPONENTS

ORAL RAT LD50 FOR METHYL ISO-BUTYL KETONE 2080 MG/KG
INHALATION MOUSE LC50 FOR METHYL ISO-BUTYL KETONE 23 G/M
INTRAPERITONEAL MOUSE LD50 FOR METHYL ISO-BUTYL KETONE 268 MG/KG
CARCINOGENICITY: NTP: NO IARC: NO Z LIST: NO OSHA REG: NO

CARCINOGENICITY
NONE IDENTIFIED.

REPRODUCTIVE EFFECTS
NONE IDENTIFIED.

CONTINUED ON PAGE: 4

SECTION V - HEALTH HAZARD DATA (CONTINUED)

EFFECTS OF OVEREXPOSURE

INHALATION: HEADACHE, NAUSEA, VOMITING, DIZZINESS, DROWSINESS, IRRITATION OF UPPER RESPIRATORY TRACT, UNCONSCIOUSNESS

SKIN CONTACT: IRRITATION, DERMATITIS

EYE CONTACT: IRRITATION

SKIN ABSORPTION: NONE IDENTIFIED

INGESTION: IRRITATION OF MUCOUS MEMBRANES, HEADACHE, NAUSEA, VOMITING, DIZZINESS, GASTROINTESTINAL IRRITATION, CENTRAL NERVOUS SYSTEM DEPRESSION

CHRONIC EFFECTS: KIDNEY DAMAGE, LIVER DAMAGE

TARGET ORGANS
RESPIRATORY SYSTEM, EYES, SKIN, CENTRAL NERVOUS SYSTEM

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE
EYE DISORDERS, SKIN DISORDERS, RESPIRATORY SYSTEM DISEASE

PRIMARY ROUTES OF ENTRY
INHALATION, INGESTION, EYE CONTACT, SKIN CONTACT

EMERGENCY AND FIRST AID PROCEDURES

INGESTION: CALL A PHYSICIAN. IF SWALLOWED, IF CONSCIOUS, GIVE LARGE AMOUNTS OF WATER. INDUCE VOMITING.

INHALATION: IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN.

SKIN CONTACT: IN CASE OF CONTACT, FLUSH SKIN WITH WATER.

EYE CONTACT: IN CASE OF EYE CONTACT, IMMEDIATELY FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES.

SARA/TITLE III HAZARD CATEGORIES AND LISTS

ACUTE: YES CHRONIC: YES FLAMMABILITY: YES PRESSURE: NO REACTIVITY: NO

CONTINUED ON PAGE: 5

SECTION V - HEALTH HAZARD DATA (CONTINUED)

EXTREMELY HAZARDOUS SUBSTANCE: NO
CERCLA HAZARDOUS SUBSTANCE: YES CONTAINS METHYL ISOBUTYL KETONE (RQ = 5000 LBS)
SARA 313 TOXIC CHEMICALS: YES CONTAINS METHYL ISOBUTYL KETONE
GENERIC CLASS: GENERIC CLASS REMOVED FROM CFR: 7/1/91
TSCA INVENTORY: YES

SECTION VI - REACTIVITY DATA

STABILITY: STABLE HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: HEAT, FLAME, OTHER SOURCES OF IGNITION

INCOMPATIBLES: STRONG OXIDIZING AGENTS, STRONG BASES, AMINES AND AMMONIA, STRONG ACIDS

DECOMPOSITION PRODUCTS: CARBON MONOXIDE, CARBON DIOXIDE

SECTION VII - SPILL & DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE
WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. SHUT OFF IGNITION SOURCES; NO FLARES, SMOKING OR FLAMES IN AREA. STOP LEAK IF YOU CAN DO SO WITHOUT RISK. USE WATER SPRAY TO REDUCE VAPORS. TAKE UP WITH SAND OR OTHER NON-COMBUSTIBLE ABSORBENT MATERIAL AND PLACE INTO CONTAINER FOR LATER DISPOSAL. FLUSH AREA WITH WATER.

J. T. BAKER SOLUSORB(R) SOLVENT ADSORBENT IS RECOMMENDED FOR SPILLS OF THIS PRODUCT.

DISPOSAL PROCEDURE
DISPOSE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL ENVIRONMENTAL REGULATIONS.

EPA HAZARDOUS WASTE NUMBER: U161 (TOXIC WASTE)

CONTINUED ON PAGE: 6

SECTION VIII - INDUSTRIAL PROTECTIVE EQUIPMENT

VENTILATION: USE GENERAL OR LOCAL EXHAUST VENTILATION TO MEET TLV REQUIREMENTS.

RESPIRATORY PROTECTION: RESPIRATORY PROTECTION REQUIRED IF AIRBORNE CONCENTRATION EXCEEDS TLV. AT CONCENTRATIONS UP TO 1000 PPM, A CHEMICAL CARTRIDGE RESPIRATOR WITH ORGANIC VAPOR CARTRIDGE IS RECOMMENDED. ABOVE THIS LEVEL, A SELF-CONTAINED BREATHING APPARATUS IS RECOMMENDED.

EYE/SKIN PROTECTION: SAFETY GOGGLES, UNIFORM, APRON, POLYVINYL ALCOHOLGLOVES ARE RECOMMENDED.

SECTION IX - STORAGE AND HANDLING PRECAUTIONS

-T-DATA* STORAGE COLOR CODE: RED (FLAMMABLE)

ORAGE REQUIREMENTS
KEEP CONTAINER TIGHTLY CLOSED. STORE IN A COOL, DRY, WELL-VENTILATED, FLAMMABLE LIQUID STORAGE AREA.

SPECIAL PRECAUTIONS
BOND AND GROUND CONTAINERS WHEN TRANSFERRING LIQUID.

SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION

DOMESTIC (D.O.T.)

ROPER SHIPPING NAME: METHYL ISOBUTYL KETONE
AZARD CLASS: 3
UN/NA: UN1245 PACKAGING GROUP: II
ABELS: FLAMMABLE LIQUID
EGULATORY REFERENCES: 49CFR 172.101

NTERNATIONAL (I.M.O.)

PROPER SHIPPING NAME: METHYL ISOBUTYL KETONE
HAZARD CLASS: 3.2 I.M.O. PAGE: 3257
: UN1245 MARINE POLLUTANTS: NO PACKAGING GROUP: II
JELS: FLAMMABLE LIQUID

CONTINUED ON PAGE: 7

SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION (CONTINUED)

REGULATORY REFERENCES: 49CFR PART 176; IMDG CODE

AIR (I.C.A.O.)

PROPER SHIPPING NAME: METHYL ISOBUTYL KETONE
HAZARD CLASS: 3.2
UN: UN1245 PACKAGING GROUP: II
LABELS: FLAMMABLE LIQUID
REGULATORY REFERENCES: 49CFR PART 175; ICAO=== WE BELIEVE THE TRANSPORTATION DATA AND REFERENCES CONTAINED HEREIN TO BE FACTUAL AND THE OPINION OF QUALIFIED EXPERTS. THE DATA IS MEANT AS A GUIDE TO THE OVERALL CLASSIFICATION OF THE PRODUCT AND IS NOT PACKAGE SIZE SPECIFIC, NOR SHOULD IT BE TAKEN AS A WARRANTY OR REPRESENTATION FOR WHICH THE COMPANY ASSUMES LEGAL RESPONSIBILITY.=== THE INFORMATION IS OFFERED SOLELY FOR YOUR CONSIDERATION, INVESTIGATION, AND VERIFICATION. ANY USE OF THE INFORMATION MUST BE DETERMINED BY THE USER TO BE IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS. SEE SHIPPER REQUIREMENTS 49CFR 171.2, CERTIFICATION 172.204, AND EMPLOYEE TRAINING 49 CFR 173.1(B).

U.S. CUSTOMS HARMONIZATION NUMBER: 29141300006

NOTE: WHEN HANDLING LIQUID PRODUCTS, SECONDARY PROTECTIVE CONTAINERS MUST BE USED FOR CARRYING.
-N/A = NOT APPLICABLE, OR NOT AVAILABLE;
N/E = NOT ESTABLISHED.-
THE INFORMATION IN THIS MATERIAL SAFETY DATA SHEET MEETS THE REQUIREMENTS OF THE UNITED STATES OCCUPATIONAL SAFETY AND HEALTH ACT AND REGULATIONS PROMULGATED THEREUNDER (29 CFR 1910.1200 ET. SEQ.) AND THE CANADIAN WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM. THIS DOCUMENT IS INTENDED ONLY AS A GUIDE TO THE APPROPRIATE PRECAUTIONARY HANDLING OF THE MATERIAL BY A PERSON TRAINED IN, OR SUPERVISED BY A PERSON TRAINED IN, CHEMICAL HANDLING. THE USER IS RESPONSIBLE FOR DETERMINING THE PRECAUTIONS AND DANGERS OF THIS CHEMICAL FOR HIS OR HER PARTICULAR APPLICATION. DEPENDING ON USAGE, PROTECTIVE CLOTHING INCLUDING EYE AND FACE GUARDS AND RESPIRATORS MUST BE USED TO AVOID CONTACT WITH MATERIAL OR BREATHING CHEMICAL VAPORS/FUMES.
EXPOSURE TO THIS PRODUCT MAY HAVE SERIOUS ADVERSE HEALTH EFFECTS. THIS CHEMICAL MAY INTERACT WITH OTHER SUBSTANCES. SINCE THE POTENTIAL USES

CONTINUED ON PAGE: 8

==========

ARE SO VARIED, BAKER CANNOT WARN OF ALL OF THE POTENTIAL DANGERS OF USE OR INTERACTION WITH OTHER CHEMICALS OR MATERIALS. BAKER WARRANTS THAT THE CHEMICAL MEETS THE SPECIFICATIONS SET FORTH ON THE LABEL. BAKER DISCLAIMS ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR PURPOSE.
THE USER SHOULD RECOGNIZE THAT THIS PRODUCT CAN CAUSE SEVERE INJURY AND EVEN DEATH, ESPECIALLY IF IMPROPERLY HANDLED OR THE KNOWN DANGERS OF USE ARE NOT HEEDED. READ ALL PRECAUTIONARY INFORMATION. AS NEW DOCUMENTED GENERAL SAFETY INFORMATION BECOMES AVAILABLE, BAKER WILL PERIODICALLY REVISE THIS MATERIAL SAFETY DATA SHEET.
NOTE: CHEMTREC, CANUTEC, AND NATIONAL RESPONSE CENTER EMERGENCY TELEPHONE NUMBERS ARE TO BE USED ONLY IN THE EVENT OF CHEMICAL EMERGENCIES INVOLVING A SPILL, LEAK, FIRE, EXPOSURE, OR ACCIDENT INVOLVING CHEMICALS. ALL NON-EMERGENCY QUESTIONS SHOULD BE DIRECTED TO CUSTOMER SERVICE (1-800-JTBAKER) FOR ASSISTANCE.

===

APPROVED BY QUALITY ASSURANCE DEPARTMENT.

-- LAST PAGE --
"ISSUED BY VWR 09/24/94"

NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

Jennifer A. Salisbury
CABINET SECRETARY

Oil Conservation Div.
Environmental Bureau
2040 S. Pacheco
Santa Fe, NM 87505

March 15, 2000

CERTIFIED MAIL
RETURN RECEIPT NO. 5050 9429

Mr. Robert Young
Envirotech Inc.
5796 US Highway 64 - 3014
Farmington, New Mexico 87401

RE: Discharge Plan Renewal Notice for Envirotech Inc. Facility

Dear Mr. Young:

Envirotech Inc. has the following discharge plan which expires during the current calendar year.

GW-221 expires 11/16/2000 – Farmington Facility

WQCC 3106.F. If the holder of an approved discharge plan submits an application for discharge plan renewal at least 120 days before the discharge plan expires, and the discharger is not in violation of the approved discharge plan on the date of its expiration, then the existing approved discharge plan for the same activity shall not expire until the application for renewal has been approved or disapproved. A discharge plan continued under this provision remains fully effective and enforceable. An application for discharge plan renewal must include and adequately address all of the information necessary for evaluation of a new discharge plan. Previously submitted materials may be included by reference provided they are current, readily available to the secretary and sufficiently identified to be retrieved. [12-1-95]

The discharge plan renewal application for each of the above facilities is subject to WQCC Regulation 3114. Every billable facility submitting a discharge plan renewal will be assessed a fee equal to the filing fee of $50.00 plus a flat fee equal to one-half of the original flat fee for oil field service company facilities. The $50.00 filing fee is to be submitted with the discharge plan renewal application and is nonrefundable.

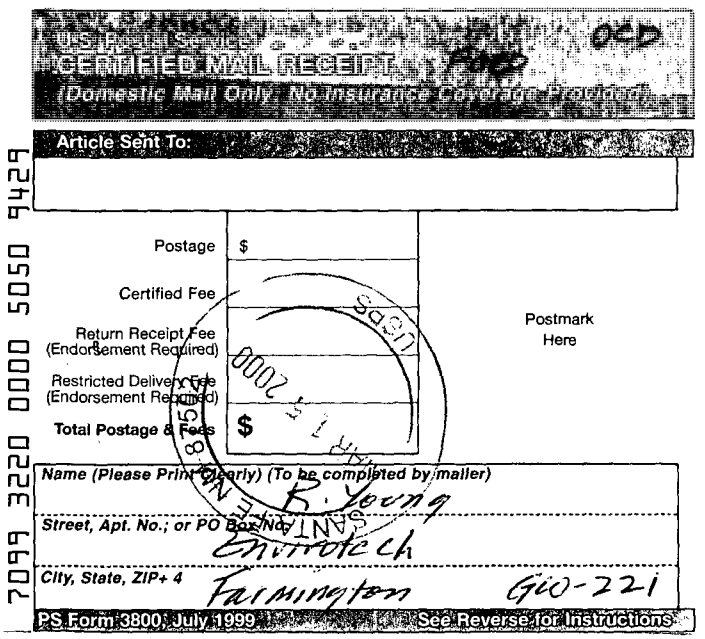
Please make all checks payable to: **NMED-Water Quality Management** and addressed to the OCD Santa Fe Office. Please submit the original discharge plan renewal application and one copy to the OCD Santa Fe Office and one copy to the OCD Aztec District Office. **Note that the completed and signed application form must be submitted with your discharge plan renewal request.** (A copy of the discharge plan application form is enclosed to aid you in preparing the renewal application. A complete copy of the regulations is available on OCD's website at **www.emnrd.state.nm.us/ocd/**).

If the above sited facility no longer has any actual or potential discharges and a discharge plan is not needed, please notify this office. If the Envirotech Inc. has any questions, please do not hesitate to contact me at (505) 827-7152.

Sincerely,

Roger C. Anderson
Oil Conservation Division

cc: OCD Aztec District Office



ENVIROTECH, INC.

Req # 5136
Main yard discharge permit fees

GW - 221

ACKNOWLEDGEMENT OF RECEIPT OF CHECK/CASH

I hereby acknowledge receipt of check No. [redacted] dated 2/27/98

or cash received on _____ in the amount of $ 828.00

from Envirotech

for Main Yard (Facility Name) GW-221 (DP No.)

Submitted by: _____ Date: _____

Submitted to ASD by: RClemens Date: 3/12/98

Received in ASD by: _____ Date: _____

Filing Fee ___ New Facility X Renewal ___

Modification ___ Other _____ (specify)

Organization Code 521.07 Applicable FY 98

To be deposited in the Water Quality Management Fund.

Full Payment ___ or Annual Increment X

3-5-45

[redacted]

ENVIROTECH, INC.
5796 U.S. HWY. 64
FARMINGTON, NM 87401
(505) 632-0615

FIRST NATIONAL BANK OF FARMINGTON
FARMINGTON - AZTEC - BLOOMFIELD - SHIPROCK
FARMINGTON, NM 87401
95-54-1022

PAY Eight Hundred Twenty-Eight and 00/100 Dollars ----------

DATE 2/27/98

AMOUNT $ 828.00

TO THE ORDER OF

NewMexico Oil Conservation Division
2040 South Pacheco Street
Santa Fe, NM 87505

Morris D Young

[redacted]

Security features included. Details on back.

[redacted]

ENVIROTECH, INC.
5796 U.S. HWY. 64
FARMINGTON, NM 87401
(505) 632-0615

FIRST NATIONAL BANK OF FARMINGTON
FARMINGTON - AZTEC - BLOOMFIELD - SHIPROCK
FARMINGTON, NM 87401
95-54-1022

PAY Eight Hundred Twenty-Eight and 00/100 Dollars ----------

TO THE ORDER OF

DATE 2/27/98

AMOUNT $ 828.00

NewMexico Oil Conservation Division
2040 South Pacheco Street
Santa Fe, NM 87505

[redacted] Mavis D Young

[redacted]

ENVIROTECH, INC.

Req # 5136
Main yard discharge permit fees

GW - 221

[redacted]

MAR 6 1998

[redacted]
Conservation Division

[redacted]

NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

February 9, 1998

CERTIFIED MAIL
RETURN RECEIPT NO. Z-357-869-925

Mr. Robert Young
ENVIROTECH INC.
5796 US HWY 64 - 3014
Farmington, New Mexico 87401

RE: Discharge Plan Fees GW-221
ENVIROTECH INC., Farmington Facility
San Juan County, New Mexico

Dear Mr. Young:

In November, 1995, ENVIROTECH INC. received, via certified mail, an approval dated November 16, 1995 from the New Mexico Oil Conservation Division (OCD) for discharge plan GW-221. Each discharge plan has a filing fee and a flat fee as described in WQCC Section 3114 (**see attachment**). Two installment payments ($276.00 each) of the flat fee have been received by the OCD for the Farmington facility discharge plan GW-221. As of this date, February 9, 1998, there is a remaining amount of $828.00. The last installment received by the OCD was December 27, 1996.

KN will submit the remaining $828.00 flat fee in full by March 9, 1998 in order to be in compliance with Water Quality Control Commission Regulation 3114.B.6, or the OCD may initiate enforcement actions which may include fines and/or an order to cease all operations at the facility. Please make all checks payable to: **NMED-Water Quality Management** and addressed to the OCD Santa Fe Office.

If you have any questions regarding this matter, please contact me at (505)-827-7152 or Mr. W. Jack Ford at (505) 827-7156.

Sincerely,

Roger Anderson
Environmental Bureau Chief

RCA/wjf

cc: Mr. Denny Foust - Aztec District OCD office

attachment

Z 357 869 925

US Postal Service

Receipt for Certified Mail

No Insurance Coverage Provided.

Do not use for International Mail *(See reverse)*

Sent to Robert Young	
Street & Number Enviro-tech	
Post Office, State, & ZIP Code Farmington	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date GW-221	

PS Form **3800**, April 1995

NEW MEXICO ENERGY, MINERALS
& NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

March 21, 1997

CERTIFIED MAIL
RETURN RECEIPT NO. P- 288-258-791

Mr. Morris D. Young
ENVIROTECH INC.
5796 U.S. Highway 64-3014
Farmington, NM 87401

RE: Glycol filter disposal-Request Withdrawal
Farmington Facilities
San Juan County, New Mexico

Dear Mr. Young:

The NMOCD **has not** received a response from ENVIROTECH INC. regarding the November 16, 1995 and May 19, 1995 letter's submitted to ENVIROTECH INC from OCD regarding the March 27, 1995 letter that was sent to Mr. Roger Anderson of the OCD regarding the above captioned item. Since the significant amount of time that has lapsed since the November 16, 1995 letter from OCD; **The OCD hereby considers this request withdrawn.**

If you have any questions regarding this matter please feel free to call me at (505)-827-7156 or Roger Anderson at (505)-827-7152.

Sincerely,

Patricio W. Sanchez
Petroleum Engineering Specialist
Environmental Bureau - OCD

c: Denny Foust - Aztec District Environmental Geologist, OCD

P 288 258 791

US Postal Service

Receipt for Certified Mail

No Insurance Coverage Provided.

Do not use for International Mail *(See reverse)*

Sent to Mr. Young - GW-221	
Street & Number REQUEST W/ THDRAWAL.	
Post Office, State, & ZIP Code Filter Burner.	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date	

PS Form **3800**, April 1995

ACKNOWLEDGEMENT OF RECEIPT OF CHECK/CASH

I hereby acknowledge receipt of check No. [redacted] dated 12/27/96,

or cash received on _____ in the amount of $ 276.00

from Enviratech

for Farmington (Facility Name) GW-221 (OP No.)

Submitted by: _____ Date: _____

Submitted to ASD by: R. Chavez Date: 1-24-97

Received in ASD by: _____ Date: _____

Filing Fee ___ New Facility ___ Renewal ___

Modification ___ Other _____ (specify)

Organization Code 521.07 Applicable FY 97

To be deposited in the Water Quality Management Fund.

Full Payment ___ or Annual Increment V

2 of 5

[redacted]

ENVIROTECH, INC.
5796 U.S. HWY. 64-3014
FARMINGTON, NM 87401
(505) 632-0615

FIRST NATIONAL BANK OF FARMINGTON
FARMINGTON - AZTEC - BLOOMFIELD - SHIPROCK
95-54-1022

PAY ***Two Hundred Seventy-Six Dollars and 00/100**********

DATE 12/27/96 AMOUNT $276.00

TO THE ORDER OF

OIL CONSERVATION DIVISION
2040 SOUTH PACHECO
SANTA FE, NM 87505

[redacted] Robert M Byers

Security features included. Details on back.

ATTACHMENT TO DISCHARGE PLAN GW-221 APPROVAL
ENVIROTECH INC. - Farmington
DISCHARGE PLAN REQUIREMENTS

November 16, 1995

$276.00

1. Payment of Discharge Plan Fees: The one thousand three hundred and eighty dollar ($1380) flat fee shall be submitted upon receipt of this approval. The flat fee may be paid in a single payment due at the time of approval, or in equal annual installments over the five (5) year duration of the plan, with the first payment due upon receipt of this approval.

2. Tank Berming: All tanks that contain materials other than fresh water that, if released, could contaminate surface or ground water or the environment will be bermed to contain 1 1/3 times the capacity of the tank or 1 1/3 times the volume of all interconnected tanks.

3. Drum Storage: All drums will be stored on pad and curb type containment.

4. Spills: All spills and/or leaks will be reported to the OCD district office pursuant to WQCC Rule 1-203 and OCD Rule 116. (Phone: 334-6178)

5. Modifications: All proposed modifications that include the construction of any below grade facilities or the excavation and disposal of wastes or contaminated soils will have OCD approval prior to excavation, construction or disposal.

6. Waste Disposal:

   A. All wastes shall be disposed of at an NMOCD approved facility.
   B. Only oilfield exempt wastes can be disposed of down Class II injection wells. Non-exempt oilfield wastes that are non-hazardous by characteristics may be disposed of at an NMOCD approved facility.
   C. All hazardous waste issues will be addressed by NMED Hazardous and Radioactive Materials Bureau.(Phone: (505)-827-1558)

ENVIROTECH, INC.

OIL CONSERVATION DIVISION Check: 7720 12/27/9 Account:

Invoice#.	Inv Date	Inv Amt	Applied	Discount	Cr Memo	Payment
96 PMT 2/5	12/27/96	276.00	276.00			276.00
Check Totals			276.00			276.00

ACKNOWLEDGEMENT OF RECEIPT OF CHECK/CASH

I hereby acknowledge receipt of check No. [redacted] dated 11/22/95

or cash received on 12/18/95 in the amount of $ 276.00

from Envirotech

for Farmington Facility (Facility Name) GW-221 (DP No.)

Submitted by: _____ Date: _____

Submitted to ASD by: [signature] Date: 1/16/96

Received in ASD by: Angela Herrera Date: 1-17-96

Filing Fee ___ New Facility X Renewal ___

Modification ___ Other _____ (specify)

Organization Code 52107 Applicable FY 96

To be deposited in the Water Quality Management Fund.

Full Payment ___ or Annual Increment X

1 of 5

ENVIROTECH, INC.
5796 U.S. HWY. 64-3014
FARMINGTON, NM 87401
(505) 632-0615

CITIZENS BANK
FARMINGTON, NM 87401
95-207-1022

[redacted]

PAY ***Two Hundred Seventy-Six Dollars and 00/100**********

TO THE ORDER OF	DATE	AMOUNT
	11/22/95	$276.00

OIL CONSERVATION DIVISION
2040 SOUTH PACHECO
SANTA FE, NM 87505

Morris D Young

[redacted]

OIL CONSERVAT**ENVIROTECH, INC.** Check: 5158 11/22/9[redacted] Account:

Invoice#	Inv Date	Inv Amt	Applied	Discount	Cr Memo	Payme[redacted]
GW-221 1995	11/22/95	276.00	276.00			276.00
Check Totals			276.00			276.00

Discharge PLAN GW-221

RECEIVED

DEC 1 8 1995

Environmental Bureau
Oil Conservation Division

ENVIROTECH INC.

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

October 26, 1995

Mr. Pat Sanchez
State of New Mexico Oil Conservation Division
2040 S. Pacheco
Santa Fe, New Mexico 87505

Re: Supplemental Information
Discharge Permit Application
Envirotech, Inc.

Dear Mr. Sanchez:

Upon review of our discharge plan application for Envirotech facilities located at 5796 and 5726 US Highway 64, Farmington, New Mexico, the New Mexico Oil Conservation Division (NMOCD) requested additional information to supplement our proposed discharge plan.

The following addresses the items of concern outlined in your September 5, 1995 letter to Envirotech:

Item A: The 10-15 drums of monitor well development water did not originate from an oil field site, but from a leaking underground storage tank site. These drums are anticipated to be removed from our facility within the next 30 days, pending approval of a discharge permit application from the New Mexico Environment Department Groundwater Bureau. Approval is anticipated within the next 10 days.

Item B: Pursuant to NMOCD Rule 116 and WQCC 1-203, all breaks, spills, or leaks of 5 barrels or more of crude oil or condensate, or 100 barrels or more of salt water, or reportable quantities of hydrocarbon waste or residue, strong caustics or acids, gasses or other deleterious chemicals or harmful contaminants or any magnitude which may with reasonable probability endanger human health or result in substantial damage to property will be immediately reported to the Aztec NMOCD office at (505) 334-6178.

Included in this oral report will be:

- The name, address, and telephone number of the person or persons in charge of the facility, as well as of the owner and/or operator of the facility.

- The name and address of the facility.

- The date, time, location, and duration of the discharge.

- The source and cause of the discharge.

- A description of the discharge, including its chemical composition.

- The estimated volume of the discharge, and

- Any actions taken to mitigate immediate damage from the discharge.

Within ten days of the discharge, a written notification will be sent to NMOCD, verifying the prior oral notification and the foregoing items, providing any appropriate additions or corrections to the information contained in the prior oral notification. Any additional reporting pursuant to the referenced rules and regulations will be submitted to the appropriate agency.

Item C: All spills, leaks, and releases will be addressed as outlined in the NMOCD publications "Guidelines for Remediation of Leaks, Spill, and Releases", "New Mexico Oil Field Wastes, Categories and Disposal Methods, Oil and Gas Exploration and Production Wastes", and "EPA Waste Classification, O&G Exploration and Production Wastes". All spills, leaks, or releases that require off-site disposal will be sent to NMOCD approved facilities.

Item D: All potential hazardous waste issues will be addressed by NMED Hazardous Waste and Radioactive Materials Bureau. (505) 827-1558.

Should you need any additional information, please contact us at (505) 632-0615.

Respectfully submitted,
ENVIROTECH, INC.

Robert M. Young
Environmental Biologist

SUPDISC2.LTR

cc: Mr. Denny Foust, NMOCD Aztec, NM office.
File

RMY/rmy

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

MEMORANDUM OF MEETING OR CONVERSATION

☒ Telephone ☐ Personal	Time	Date
	11/13/95	9:30 AM

Originating Party	Other Parties
Pat Sanchez NMOCD	Rob Young Envirotech

Subject: Discharge Plan GW-221 Additional Information.

Discussion: Asked Robert where the Additional Information is that was requested sept. 5, 1995 with a 30 day deadline.

He said he sent the information to Aztec - I told him to look at the letter 2 copies to Santa Fe and one to the District.

Robert said maybe the information may have been sent to Chris Eustice.

Conclusions or Agreements: I will call Denny and ask him where the copies are - Robert will also call Denny.

* Note: On 11-8-95 I called Envirotech and left a message for them to call back - They did not.

Distribution

Signed Patricia W. Sanchez

AFFIDAVIT OF PUBLICATION

No. 35239

STATE OF NEW MEXICO
County of San Juan:

ROBERT LOVETT being duly sworn says: That he is the Classified Manager of THE DAILY TIMES, a daily newspaper of general circulation published in English at Farmington, said county and state, and that the hereto attached Legal Notice was published in a regular and entire issue of the said DAILY TIMES, a daily newspaper duly qualified for the purpose within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico for publication on the following day(s):

Friday, September 1, 1995

and the cost of publication was: $62.29

Robert Lovett

On 9/6/95 ROBERT LOVETT appeared before me, whom I know personally to be the person who signed the above document.

Mary L Smith

My Commission Expires March 21, 1998

COPY OF PUBLICATION

Legals

NOTICE OF PUBLICATION

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

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations, the following discharge plan application has been submitted to the Director of the Oil Conservation Division, 2040 South Pacheco, Santa Fe, New Mexico 87505, Telephone (505) 827-7131:

(GW-221)- ENVIROTECH, Inc., Mr. Morris Young, (505)-632-0615, 5796 U.S. Highway 64-3014, Farmington, NM, 87401 has submitted a Discharge plan application for their Farmington facilities located in the NW/4 NW/4, Section 27, Township 29 North, Range 12 West, and NW/4 NE/4, Section 28, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico. All effuents that may be generated at the facilities will be collected in a closed top tank and transported offsite for disposal at an OCD approved facility; Groundwater most likely to be affected by a spill, leak, or accidental discharge to the surface is at a depth of approximately 55 feet with a total dissolved solids concentration of approximately 1000 mg/L. The discharge plan addresses how spills, leaks, and other accidental discharges to the surface will be managed.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. The discharge plan application may be viewed at the above address between 8:00 a.m. and 4:00 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 24th day of August, 1995.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

/s/ William J. LeMay
SEAL WILLIAM J. LEMAY, Director

Legal No. 35239 published in The Daily Times, Farmington, New Mexico, Friday, September 1, 1995.

This is what OCD SENT them.

NOTICE OF PUBLICATION

STATE OF NEW MEXICO
ENERGY, MINERALS AND 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 24th day of August, 1995.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

S E A L

WILLIAM J. LEMAY, Director

Still have the wrong location

OIL CONSERVATION DIVISION RECEIVED 95 SEP 29 AM 8 52

AFFIDAVIT OF PUBLICATION

No. 35239

STATE OF NEW MEXICO
County of San Juan:

ROBERT LOVETT being duly sworn says: That he is the Classified Manager of THE DAILY TIMES, a daily newspaper of general circulation published in English at Farmington, said county and state, and that the hereto attached Legal Notice was published in a regular and entire issue of the said DAILY TIMES, a daily newspaper duly qualified for the purpose within the meaning of Chapter 167 of the 1937 Session Laws of the State of New Mexico for publication on the following day(s):

Thursday, September 21, 1995.

and the cost of publication was: $61.02

Robert Lovett

On 9/25/95 ROBERT LOVETT appeared before me, whom I know personally to be the person who signed the above document.

Mary G. Snead

My Commission Expires March 21, 1998

COPY OF PUBLICATION

Legals

NOTICE OF PUBLICATION

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

Notice is hereby given that pursuant to New Mexico Water Quality Control Commission Regulations, the following discharge plan application has been submitted to the Director of the Oil Conservation Division, 2040 South Pacheco, Santa Fe, New Mexico 87505, Telephone (505) 827-7131:

(GW-221)- ENVIROTECH, Inc., Mr. Morris Young, (505)-632-0615, 5796 U.S. Highway 64-3014, Farmington, NM, 87401 has submitted a Discharge plan application for their Farmington facilities located in the NW/4 NE/4, Section 28, Township 29 North, Range 12 West, and NW/4 NE/4, Section 28, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico. All effuents that may be generated at the facilities will be collected in a closed top tank and transported offsite for disposal at an OCD approved facility; Groundwater most likely to be affected by a spill, leak, or accidental discharge to the surface is at a depth of approximately 55 feet with a total dissolved solids concentration of approximately 1000 mg/L. The discharge plan addresses how spills, leaks, and other accidental discharges to the surface will be managed.

Any interested person may obtain further information from the Oil Conservation Division and may submit written comments to the Director of the Oil Conservation Division at the address given above. The discharge plan application may be viewed at the above address between 8:00 a.m. and 4:00 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 24th day of August, 1995.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

/s/ William J. LeMay
SEAL WILLIAM J. LEMAY, Director

Legal No. 35239 published in The Daily Times, Farmington, New Mexico, Thursday, September 21, 1995.

6 2

Needs to be republished

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

S E A L

WILLIAM J. LEMAY, Director

NOTICE OF PUBLICATION

STATE OF NEW MEXICO
ENERGY, MINERALS AND 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 24th day of August, 1995.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

WILLIAM J. LEMAY, Director

NO EFFECT FINDING
The described action will have no effect on listed species.
[redacted]
Date SEAL September 22, 1995
Consultation # GWOCD95-1
Approved by
U.S. FISH and WILDLIFE SERVICE
NEW MEXICO ECOLOGICAL SERVICES FIELD OFFICE
ALBUQUERQUE, NEW MEXICO

NOTICE OF PUBLICATION
STATE OF NEW MEXICO
ENERGY, MINERALS AND 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 24th day of August, 1995.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
s/WILLIAM J. LEMAY, Director

Journal: August 31, 1995.

RECEIVED
SEP 1 1995
OIL CONSERVATION DIVISION

STATE OF NEW MEXICO
County of Bernalillo SS

Bill Tafoya being duly sworn declares and says that he is Classified Advertising manager of **The Albuquerque Journal**, and that this newspaper is duly qualified to publish legal notices or advertisements within the meaning of Section 3, Chapter 167, Session Laws of 1937, and that payment therefore has been made of assessed as court cost; that the notice, copy of which is hereto attached, was published in said paper in the regular daily edition, for 1 times, the first publication being of the 31st day of August, 1995, and the subsequent consecutive publications on _____, 1995

Bill Tafoya

Sworn and subscribed to before me, a notary Public in and for the County of Bernalillo and State of New Mexico, this 31st day of, AUG 1995

OFFICIAL SEAL
Megan Garcia
NOTARY PUBLIC
STATE OF NEW MEXICO
My Commission Expires: 5-20-98

PRICE $36.40
Statement to come at end of month.

Megan Garcia

CLA-22-A (R-1/93) ACCOUNT NUMBER C 80932

OIL CONSERVATION DIVISION

September 5, 1995

CERTIFIED MAIL
RETURN RECEIPT NO. Z-765-963-046

Mr. Robert Young
ENVIROTECH INC.
5796 U.S. HWY 64 - 3014
Farmington, NM 87401

RE: Discharge Plan GW-221
ENVIROTECH INC., Farmington facility
San Juan County, New Mexico

Dear Mr. Young:

The NMOCD has received the proposed Envirotech Inc. discharge plan application for the facilities located in NE/4 NW/4, Section 27, and NW/4 NE/4 Section 28, Township 29 North, Range 12 West, NMPM, San Juan County, New Mexico. The NMOCD has prepared and sent out the public notice for the facility as stated in WQCC section 3-108 and has performed a preliminary review of the discharge plan proposed by Envirotech Inc. as signed by Mr. Robert Young on August 21, 1995.

The following comments and request for additional information are based on the review of the Envirotech Inc. application. **Please note that unless otherwise stated, response to all comments shall be received and reviewed by the OCD prior to approval of the discharge plan application.**

Refer to the application package submitted by Envirotech on August 21, 1995 as signed by Mr. Robert Young.

I. Pursuant to WQCC section 3-114 Envirotech Inc. is subject to the $50 (fifty dollar) filing fee and the $1,380 (One Thousand Three Hundred and Eighty Dollar) flat fee. **The $50 filing fee has been received by the NMOCD, the $1,380 flat fee has not.**

II. The review that follows will site specific information from your application that needs to be clarified. Enclosed you will find several attachments which will be mentioned throughout this review. The service company guidelines that were provided to Envirotech Inc. at the inspection will be referenced during this process.

A. ITEM V of the Guidelines - Facility Description

Did the 10 to 15 drums described as monitor well development water come from NMOCD regulated facilities? If so has this water been tested for hazardous characteristics according to 40 CFR part 261? Only NON-hazardous non-exempt waste or exempt wastes may be accepted at NMOCD permitted facilities. Non-exempt waters cannot be disposed of down Class II UIC injection wells.

NOTE: Attachment NO. 1 explains the subtitle C exemption from RCRA for the oil and gas industry.

B. ITEM X. of the guidelines - Inspection, Maintenance and Reporting.

Attachment No. 2 is the NMOCD rule 116 and WQCC 1-203 for spill reporting - include these reporting requirements as part of the discharge plan. In the event of a spill that is reportable according to the above rules - contact the Aztec NMOCD office at 334-6178.

C. ITEM XIII. of the guidelines - Other Compliance Information.

Attachment No. 3 - labelled XIII. A. and XIII. B. , include as part of the discharge plan.

Attachment No. 4 - included only for informational purposes.

D. All potential hazardous waste issues will be addressed by NMED - Hazardous Waste and Radioactive Materials Bureau. (505)-827-1558

Submit the requested information and commitments within 30 days of receipt of this letter. This will expedite the final review of the application and approval of the discharge plan. **Submit the information in three copies - two to Santa Fe, and one copy to Aztec.**

If you have any questions, please feel free to call me at (505)-827-7156.

Sincerely,

Patricio W. Sanchez, Petroleum Engineer

xc: Mr. Denny Foust - Environmental Geologist

Z 765 963 046

Receipt for Certified Mail
No Insurance Coverage Provided
Do not use for International Mail
(See Reverse)

UNITED STATES POSTAL SERVICE

Sent to Mr. Robert Young	
Street and No. ENVIROTECH	
P.O., State and ZIP Code	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, and Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date	

PS Form 3800, March 1993

NOTICE OF PUBLICATION

STATE OF NEW MEXICO
ENERGY, MINERALS AND 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 24th day of August, 1995.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

S E A L

WILLIAM J. LEMAY, Director

ACKNOWLEDGEMENT OF RECEIPT OF CHECK/CASH

I hereby acknowledge receipt of check No. [redacted] dated 8/21/95

or cash received on 8/30/95 in the amount of $ 50.00

from Envirotech

for Farmington Svc Facility (Facility Name) GW-221 (DP No.)

Submitted by: _____ Date: _____

Submitted to ASD by: Roger Anderson Date: 9/1/95

Received in ASD by: Angie Allen Date: 9/1/95

Filing Fee X New Facility _____ Renewal _____

Modification _____ Other _____ (specify)

Organization Code 521.07 Applicable FY 96

To be deposited in the Water Quality Management Fund.

Full Payment _____ or Annual Increment _____

ENVIROTECH, INC.
5796 U.S. HWY. 64-3014
FARMINGTON, NM 87401
(505) 632-0615

CITIZENS BANK
FARMINGTON, NM 87401
95-207-1022

[redacted]

PAY TO THE ORDER OF | DATE | AMOUNT

Fifty Dollars and 00/100*******

08/21/95 $50.00

NMOCD
2040 S. PACHECO ST
SANTA FE, NM 87503

Robert M Young

[redacted]

ENVIROTECH, INC.

NMOCD — Check: 4125 — 08/21/95 — Account:

Invoice#	Inv Date	Inv Amt	Applied	Discount	Cr Memo	Payment
FILING FEE	08/21/95	50.00	50.00			50.00
Check Totals			50.00			50.00

GW221

ENVIROTECH INC.

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

RECEIVED
AUG 24 1995
Environmental Bureau
Oil Conservation Division

August 21, 1995

Mr. Pat Sanchez
State of New Mexico Oil Conservation Division
2040 S. Pacheco
Santa Fe, New Mexico 87505

Re: Supplemental Information
Discharge Permit Application
Envirotech, Inc.

Dear Mr. Sanchez:

Upon review of our discharge plan application for Envirotech facilities located at 5796 and 5726 US Highway 64, Farmington, New Mexico, we concur that some pertinent groundwater information was indeed inadvertently omitted from the application.

Typically, groundwater in our area is found at approximately 55' below the ground surface. Additionally, throughout the Farmington area, TDS ranges are usually less than 2,000 mg/l, and average approximately 1,000 mg/l.

Should you need any additional information, please contact us at (505) 632-0615.

Respectfully submitted,
ENVIROTECH, INC.

Robert M. Young
Environmental Biologist

SUPDISC.LTR

cc: Mr. Denny Foust, NMOCD Aztec, NM office.
File

RMY/rmy

ENVIROTECH - GW-221

MEMORANDUM OF MEETING OR CONVERSATION

X TELEPHONE ___ PERSONAL TIME 10:20 (AM)/PM DATE 8/24/95

ORIGINATING PARTY: Rob Young Envirotech
OTHER PARTIES: Pat SANCHEZ - NMOCD.

SUBJECT: GW-221 Groundwater Depth and TDS (Total Dissolved Solids in mg/l

DISCUSSION: Depth ~ 55'
TDS ≤ 1,000 mg/l } Rob said to use this—
*HE will FAX us a letter with the groundwater depth and TDS information.

CONCLUSIONS/AGREEMENTS: * I can Now Submit the public Notice.

PATRICIO W. SANCHEZ: Patricio W. Sanchez

xc: FILE,

ENVIROTECH INC.

PRACTICAL SOLUTIONS FOR A BETTER TOMORROW

GW-221

August 21, 1995

Mr. William J. LeMay
State of New Mexico Oil Conservation Division
2040 S. Pacheco
Santa Fe, New Mexico 87505

Re: Discharge Permit Application
Envirotech, Inc.

Dear Mr. LeMay:

Attached please find a Discharge Plan Application for Oilfield Service Facilities that has been completed for Envirotech, Inc.

Based on the close proximity of the two facilities, both will be covered under the same application, although information is provided separately for each individual facility. Envirotech's main office is located at 5796 US Highway 64, Envirotech's maintenance yard is located at 5726 US Highway 64. Both facilities are located in Farmington, New Mexico.

Due to lack of space on the application for supplemental information, the application information is provided in this letter. For your convenience, a blank application is attached. Both locations are considered "new applicants".

Envirotech Main Office:

1. Oilfield Service Company

2. Envirotech, Inc.
5796 US Highway 64, Farmington, NM 87401.
Contact Person: Morris or Rob Young; phone (505) 632-0615.

3. NE/4 NW/4 Section 27, Township 29 North, Range 12 West. A 7.5 minute topographic map of the Horn Canyon Quadrangle is attached.

4. Jerry Clayton is the land owner. Mr. Clayton's address is 710 E. 20th Street, Farmington, NM. Envirotech is currently pursuing the possibility of purchasing the property, at which time Envirotech, or Morris Young, will become the property owner.

5. A plat map of the subject property is attached, including the location of the current tanks and barrels at the facility, along with the future location of concrete pad-and-curb

5796 U.S. Highway 64-3014 • Farmington, NM 87401 • Tel 505 • 632 • 0615 • Fax 505 • 632 • 1865

containment that is to be constructed.

The facility currently has a 500 gallon diesel above-ground storage tank (AST) located within a HDPE lined and bermed containment area along the west property boundary.

The facility currently has 10-15 drums of monitor-well development water which are temporarily stored along the eastern property boundary. These drums will be permanently moved off-site for disposal at Envirotech Soil Remediation Facility-Landfarm #3, upon receipt of modifications to our discharge permit for that facility (anticipated within 60 days).

Solid and liquid waste generated from our laboratory are currently stored in labelled drums in the same area as the monitor well development water. These drums will be transferred to the concrete pad-and-curb containment that is to be constructed.

Construction of the new pad-and-curb containment for our 500 gallon diesel AST and laboratory waste is anticipated to be complete by the end of 1995. This containment is anticipated to be constructed in the approximate location of the current AST.

The facility is fenced and has no pits.

6. A Part 6 Form is attached.

7. A Part 7 Form is attached.

8. A Part 8 Form is attached.

8.B.1. All storage on site is in above-ground tanks, drums, or smaller containers. On-site storage is in either original containers (unused products) or in other appropriate containers (used products). The diesel AST is currently located within secondary containment, which will be upgraded with a concrete pad-and-curb system. Unused laboratory products are stored inside the lab in the original (or equivalent) containers. Most new lab products are subsequently stored in segregated fire-resistant cabinets (not-vented) with built-in secondary containment. Lab waste is stored inside the lab in containers compatible with the waste being stored. When full, lab waste containers are transferred into 55-gallon drums located in the yard. These lab waste drums will be placed into the concrete containment when it is constructed.

8.B.2. One surface impoundment is present on the site, and is used for secondary containment of the current 500 gallon diesel AST. Date of construction is unknown. Construction consists of a HDPE liner (unknown thickness) placed on a

square earthen berm set at site grade. Dimensions of the bermed area are approximately 15'x20'x1.5'deep. This containment is capable of containing approximately 3,366 gallons of liquid.

Construction of the concrete pad-and-curb containment will be designed to contain at least 130% of the volume of the largest tank or interconnected tanks. For additional protection, the appropriate thickness HDPE liner (as recommended by manufacturer) will be emplaced below the concrete containment.

8.B.3. This facility is less than 25 years old and there is no underground process piping.

8.C.1. On-site disposal does not occur at this site, with the exception of domestic sewage to a septic system and leach field.

8.C.2. Lab solids and liquids are segregated into hazardous and non-hazardous (by listing). Non-hazardous lab wastes are subjected to RCRA analysis prior to shipment to Landfarm #2. Hazardous wastes are shipped off-site biannually to a licensed hazardous waste incinerator. Different incinerators are used, depending on price and availability. Approval from the receiving facility is received prior to shipment.

Trash is collected weekly by Waste Management of Four Corners, located at 101 Spruce Street, Farmington, New Mexico, for placement at San Juan County Landfill.

9. A new concrete pad-and-curb containment is discussed in 8.B.2.

10. 10.A The facility will be inspected monthly by management for leaks and spillage. Record of each inspection will be kept at the main office. Any reportable quantities spillage will be reported to OCD.

10.B Monitor wells are not located at the site.

10.C Since all waste streams will be in secondary containment, precipitation and run-off containment will not be constructed.

11. 11.A. Whereas all material is stored in secondary containment (as a minimum), spillage will be into contained areas. There is not any anticipated threat to surface or groundwater.

Spillage will be collected from its containment and placed into its container (or equivalent) for continued storage. OCD will not be notified of spills less than reportable quantities.

11.B. All containment is visually inspectable from all sides, which makes a leak of any quantity easily detectable. Monthly inspections by management and frequent use of the facilities

by employees ensure that leaks are repaired with only minor spillage.

11.C. There is not an injection well at this site.

12. 12.A.1. The San Juan River is located approximately 3900' south of the site. An unnamed ephemeral stream (dry wash) is located approximately 1900' west of the site. A dry drainage ditch is located approximately 50' east of the site. All streams in the vicinity flow to the San Juan River.

12.A.2. Water well locations are located on the attached map. All water wells are assumed to be for domestic use. There may be up to 61 wells located within a 1 mile radius of the site. These wells were located according to "Records of Water Wells and Springs prior to 1978", "Records of Water Wells in San Juan County 1978-1983", and "Listing of Points of Diversion for the San Juan Basin in New Mexico, 2/7/92".

12.A.3.a. Soil types in the area typically consist of cobble filled sandy loams ranging to silty and clayey sands. Soils are typically moist, loose, non-cohesive, and have a high permeability.

12.A.3.b. The aquifer below the site is not named.

12.A.3.c. The aquifer is typically a poorly graded medium sand with varying amounts of cobble and silt.

12.A.3.d. Depth to bedrock is undetermined, however, it is anticipated to be in excess of 60' below the site.

12.A.4.a. Flooding potential and run-off potential at the site is very minimal.

12.A.4.b. Flood protection measures at the site are not necessary.

12.B. Due to thorough tracking of lab wastes, and existing and planned containment, impact to either groundwater or surface water is not probable.

13. Envirotech Soil Remediation Facility is currently under an existing discharge permit, and is not included in this application.

Envirotech Maintenance Yard:

1. Oilfield Service Company

2. Envirotech, Inc.
5726 US Highway 64, Farmington, NM 87401.
Contact Person: Morris or Rob Young; phone (505) 632-0615.

3. NW/4 NE/4 Section 28, Township 29 North, Range 12 West. A 7.5 minute topographic map of the Horn Canyon Quadrangle is attached.

4. Morris Young/Envirotech, Inc. is the land owner. Envirotech, Inc. main office address if 5796 US Highway 64, Farmington, NM. Envirotech is currently pursuing the possibility of selling the property, at which time we will withdraw this facility from our discharge permit.

5. A plat map of the subject property is attached, including the location of the building. The facility is fenced and has no pits.

6. A Part 6 Form is attached.

7. A Part 7 Form is attached.

8. A Part 8 Form is attached.

   8.B.1. All storage on site is inside the building on the concrete floor. Floor drains are not present in the storage area and work area.

   8.B.2. All storage on site is inside the building on the concrete floor. Floor drains are not present in the storage area and work area.

   8.B.3. This facility is less than 25 years old and there is no underground process piping.

   8.C.1. On-site disposal does not occur at this site, with the exception of domestic sewage to a septic system and leach field.

   8.C.2. Off-site disposal is allowed through recyclers. Used motor oil (in excess of 4 drums) is sent to D&D Used Oil Recyclers located at 10 Road 5044, Bloomfield, New Mexico. Used lead-acid batteries are sent to Intermountain Batteries, located at 534 E. Broadway, Farmington, New Mexico, when new batteries are delivered to the site. Both facilities dispatch their own trucks and personnel to collect the material from our maintenance yard.

   Trash is collected weekly by Waste Management of Four Corners, located at 101 Spruce Street, Farmington, New Mexico, for placement at San Juan County Landfill. A maximum of 4 oil filters per week are permitted for disposal through this method. The approval is attached, which includes both facilities as a combined waste stream.

9. No modifications are anticipated to the outlined operating procedures at this facility.

10. 10.A The facility will be inspected monthly by management for leaks and spillage. Record of each inspection will be kept at the main office. Any reportable quantities spillage will be reported to OCD.

10.B Monitor wells are not located at the site.

10.C Since all waste streams will be indoors in secondary containment, precipitation and run-off containment will not be constructed.

11. 11.A. Whereas all material is stored in secondary containment (as a minimum), spillage will be into contained areas. There is not any anticipated threat to surface or groundwater.

Spillage will be collected from its containment and placed into its container (or equivalent) for continued storage. OCD will not be notified of spills less than reportable quantities.

11.B. All containment is visually inspectable from all sides, which makes a leak of any quantity easily detectable. Monthly inspections by management and frequent use of the facilities by employees ensure that leaks are repaired with only minor spillage.

11.C. There is not an injection well at this site.

12. 12.A.1. The San Juan River is located approximately 3500' south of the site. An unnamed ephemeral stream (dry wash) is located approximately 1500' east of the site. All streams in the vicinity flow to the San Juan River.

12.A.2. Water well locations are located on the attached map. All water wells are assumed to be for domestic use. There may be up to 49 wells located within a 1 mile radius of the site, with one of the wells listed within 1/4 mile of the property. These wells were located according to "Records of Water Wells and Springs prior to 1978", "Records of Water Wells in San Juan County 1978-1983", and "Listing of Points of Diversion for the San Juan Basin in New Mexico, 2/7/92".

12.A.3.a. Soil types in the area typically consist of cobble filled sandy loams ranging to silty and clayey sands. Soils are typically moist, loose, non-cohesive, and have a high permeability.

12.A.3.b. The aquifer below the site is not named.

12.A.3.c. The aquifer is typically a poorly graded medium sand with varying amounts of cobble and silt.

12.A.3.d. Depth to bedrock is undetermined, however, it is anticipated to be in excess of 60' below the site.

12.A.4.a. Flooding potential and run-off potential at the site is very minimal.

12.A.4.b. Flood protection measures at the site are not necessary.

12.B. Due to indoor storage of all materials, on concrete, impact to either groundwater or surface water is not probable.

13. Envirotech Soil Remediation Facility is currently under an existing discharge permit, and is not included in this application.

Should you need any clarification of our responses, or have any comments, please contact us at (505) 632-0615.

Respectfully submitted,
ENVIROTECH, INC.

Robert M. Young
Environmental Biologist

DCPERMIT.LTR

cc: Mr. Denny Foust, NMOCD Aztec, NM office.
File

RMY/rmy

District I - (505) 393-6161
P. O. Box 1940
Hobbs, NM 88241-1980
District II - (505) 748-1283
811 S. First
Artesia, NM 88211-0719
District III - (505) 334-6178
1000 Rio Brazos Road
Aztec, NM 87410
District IV - (505) 827-7131

State of New Mexico

Energy Minerals and Natural Resources Department
Oil Conservation Division
2040 South Pacheco Street
Santa Fe, New Mexico 87505
(505) 827-7131

Revised 4/18/95

Submit Original
Plus 1 Copy
to Santa Fe
1 Copy to appropriate
District Office

DISCHARGE PLAN APPLICATION FOR OILFIELD SERVICE FACILITIES

(Refer to the OCD Guidelines for assistance in completing the application)

☐ New ☐ Renewal ☐ Modification

1. Type:_____
2. Operator:_____

   Address:_____

   Contact Person:_____ Phone:_____
3. Location:_____/4 _____/4 Section_____ Township_____ Range_____
   Submit large scale typographic map showing exact location.
4. Attach the name and address of the landowner of the facility site.
5. Attach the description of the facility with a diagram indicating location of fences, pits, dikes and tanks on the facility.
6. Attach a description of all materials stored or used at the facility.
7. Attach a description of present sources of effluent and waste solids. Average quality and daily volume of waste water must be included.
8. Attach a description of current liquid and solid waste collection/treatment/disposal procedures.
9. Attach a description of proposed modifications to existing collection/treatment/disposal systems.
10. Attach a routine inspection and maintenance plan to ensure permit compliance.
11. Attach a contringency plan for reporting and clean-up of spills or releases.
12. Attach geological/hydrological evidence demonstrating that disposal of oil field wastes will not adversely impact fresh water. Depth to and quality of ground water must be included.
13. Attach such other information as is necessary to demonstrate compliance with any other OCD rules, regulations and/or orders.
14. CERTIFICATION

I hereby certify that the information submitted with this application is true and correct to the best of my knowledge and belief.

Name:_____ Title:_____

Signature:_____ Date:_____

Envirotech Inc. 5796 US Hwy. 64-3014 Farmington, NM Main Office

DISCHARGE PLAN APPLICATION

Oilfield Service Facilities

Part VI. Form (Optional)

Materials Stored or Used at the Facility - For each category of material listed below provide information on the general composition of the material or specific information (including brand names if requested), whether a solid or liquid, type of container, estimated volume stored and location. Submit MSD information for chemicals as requested. Use of this form is optional, but the information requested must be provided.

Name	General Makeup or Specific Brand Name (if requested)	Solids(S) or Liquids(L)?	Type of Container (tank drum, etc.)	Estimated Volume Stored	Location (yard, shop, drum storage, etc.)
1. Drilling Fluids (include general makeup & types special additives [e.g. oil, chrome, etc.])	NONE				
2. Brines - (KCl, NaCl, etc.)	NONE				
3. Acids/Caustics (Provide names & MSD sheets)	Sulfuric Acid	(L)	Orig. glass	1 gallon	Lab
	Hydrochloric Acid	(L)	Orig. glass	1 gallon	Lab
	Nitric Acid	(L)	Orig. glass	1 gallon	Lab
	Acetic Acid	(L)	Orig. glass	8 gallon	Lab
	Sodium Hydroxide	(s) @ (L)	Orig. cont.	2 lbs.(s)	Lab
4. Detergents/Soaps				1 gallon (L)	Lab
	Alconox	(S)	Orig. container	20 lbs.	Lab
5. Solvents & Degreasers (Provide names & MSD sheets)	Freon 113	3 (L)	Orig. glass	15 gallon	Lab
	Methylene Chloride	(L)	Orig. glass	4 gallon	Lab
	Methyl Isobutylkeytone	(L)	Orig. glass	1 gallon	Lab
	Hexane	(L)	Orig. glass	1 gallon	Lab
	Isopropanol	(L)	Orig. glass	1 gallon	Lab
	Methanol	(L)	Orig. glass	4 gallon	Lab
6. Paraffin Treatment/ Emulsion Breakers (Provide names & MSD sheets)	n-Propanol	(L)	Orig. glass	1 gallon	Lab
	NONE				
7. Biocides (Provide names & MSD sheets)	NONE				
8. Others - (Include other liquids & solids, e.g. cement etc.)	Lab waste	(S) & (L)	drum w/lid	less than 100 gallons	Lab& Yard
	Diesel	(L)	AST	500 gallon	Yard

5796 Hwy [redacted]64-3014 Farmington, NM Offi[redacted]

DISCHARGE PLAN APPLICATION

Oilfield Service Facilities

Part VII. Form (Optional)

Sources and Quantities of Effluent and Waste Solids Generated at the Facility - For each source include types of effluents (e.g. salt water, hydrocarbons, sewage, etc.), estimated quantities in barrels or gallons per month, and types and volumes of major additives (e.g. acids, biocides, detergents, degreasers, etc.). Use of this form is optional, but the information requested must be provided.

Waste Type	General Composition and Source (solvents from small parts cleaning, oil filters from trucks, etc.)	Volume Per Month (bbl or gal)	Major Additives (e.g. degreaser fluids from truck washing, soap in steam cleaners)
1. Truck Wastes (Describe types of original contents trucked [e.g. brine, produced water, drilling fluids, oil wastes, etc])	NONE		
2. Truck, Tank & Drum Washing	NONE		
3. Steam Cleaning of Parts, Equipment, Tanks	NONE		
4. Solvent/Degreaser Use	Lab Waste	2-3 gallons	soil/water lab samples containing Methylene Chloride, Freon113 or Methanol as solvent for extraction minor quantities of contaminates.
5. Spent Acids, Caustics, or Completion Fluids (Describe)	Lab waste	less than 1/2 gal.	Various Acids used in extraction and Analysis from lab samples.

Waste Type	General Composition and Source (solvents from small parts cleaning, oil filters from trucks, etc.)	Volume Per Month (bbl or gal)	Major Additives (e.g. degreaser fluids from truck washing, soap in steam cleaners)
6. Waste Slop Oil	NONE		
7. Waste Lubrication and Motor Oils	NONE		
8. Oil Filters	NONE	4/week combined between 5726 and 5796 location	
9. Solids and Sludges from Tanks (Describe types of materials [e.g. crude oil tank bottoms, sand, etc.])	NONE		
10. Painting Wastes	NONE		
11. Sewage (Indicate if other wastes mixed with sewage; if no commingling, domestic sewage under jurisdiction of the NMED)	Domestic Sewage only to septic tank and leach field		
12. Other Waste Liquids (Describe in detail)	Combined solids/liquids make up lab waste listed in 4 and 5 of this section		
13. Other Waste Solids (Cement, construction materials, used drums)	Combined solids/liquids make up lab waste listed in 4 and 5 of this section.		

DISCHARGE PLAN APPLICATION

Oilfield Service Facilities

Part VIII. Form (Optional)

Summary Description of Existing Liquid and Solids Waste Collection and Disposal - For each waste type listed in Part VII, provide summary information about onsite collection and disposal systems. Information on basic construction features, specific descriptions, and wastewater schematics should be provided as required in the Guidelines. The use of this form is optional, but the summary information requested must be provided.

Waste Type	Tank(T)/ Drum(S)	Floor Drain/(F) Sump(S)	Pits- Lined(L) or Unlined(U)	Onsite Injection Well	Leach Field	Offsite Disposal
1. Truck Wastes	NONE					
2. Truck, Tank and Drum Washing	NONE					
3. Steam Cleaning of Parts, Equipment, Tanks	NONE					
4. Solvent/Degreaser Use	Drums	collected at point of use	N/A	NO	NO	Hazardous waste facility
5. Spent Acids, Caustics, or Completion Fluids	Drums	collected at point of use	N/A	NO	NO	Hazardous waste facility
6. Waste Slop Oil	NONE					

Waste Type	Tank(T)/ Drum(S)	Floor Drain/(F) Sump(S)	Pits- Lined(L) or Unlined(U)	Onsite Injection Well	Leach Field	Offsite Disposal
7. Waste Lubrication and Motor Oils	NONE					
8. Oil Filters	None generated at this site, generated at 5726.					
9. Solids and Sludges from Tanks	NONE					
10. Painting Wastes	NONE					
11. Sewage	Septic Tank/Leach field	(F)	N/A	-	Yes	NO
12. Other Waste Liquids	Combined solids and liquids make up lab waste listed in questions 4 and 5 of this section.					
13. Other Waste Solids						

5726 Hwy. 64 Farmington, NM SHOP

DISCHARGE PLAN APPLICATION

Oilfield Service Facilities

Part VI. Form (Optional)

Materials Stored or Used at the Facility - For each category of material listed below provide information on the general composition of the material or specific information (including brand names if requested), whether a solid or liquid, type of container, estimated volume stored and location. Submit MSD information for chemicals as requested. Use of this form is optional, but the information requested must be provided.

Name	General Makeup or Specific Brand Name (if requested)	Solids(S) or Liquids(L)?	Type of Container (tank drum, etc.)	Estimated Volume Stored	Location (yard, shop, drum storage, etc.)
1. Drilling Fluids (include general makeup & types special additives [e.g. oil, chrome, etc.])	none				
2. Brines - (KCl, NaCl, etc.)	none				
3. Acids/Caustics (Provide names & MSD sheets)	No caustics Battery Acid	(L)	Automotive Batteries	less than 1 gal.	Shop inside
4. Detergents/Soaps	Hand soap only				
5. Solvents & Degreasers (Provide names & MSD sheets)	Stoddard Solvent	(L)	drum	20 gallons	Shop inside
6. Paraffin Treatment/ Emulsion Breakers (Provide names & MSD sheets)	NONE				
7. Biocides (Provide names & MSD sheets)	NONE				
8. Others - (Include other liquids & solids, e.g. cement etc.)	Paint & paint supplies	(L)	various containers less than 1 gal.	20 gal.	Shop inside

5726 Hwy 64 Farmington Shop

DISCHARGE PLAN APPLICATION

Oilfield Service Facilities

Part VII. Form (Optional)

Sources and Quantities of Effluent and Waste Solids Generated at the Facility - For each source include types of effluents (e.g. salt water, hydrocarbons, sewage, etc.), estimated quantities in barrels or gallons per month, and types and volumes of major additives (e.g. acids, biocides, detergents, degreasers, etc.). Use of this form is optional, but the information requested must be provided.

Waste Type	General Composition and Source (solvents from small parts cleaning, oil filters from trucks, etc.)	Volume Per Month (bbl or gal)	Major Additives (e.g. degreaser fluids from truck washing, soap in steam cleaners)
1. Truck Wastes (Describe types of original contents trucked [e.g. brine, produced water, drilling fluids, oil wastes, etc])	N/A	N/A	N/A
2. Truck, Tank & Drum Washing	N/A	N/A	N/A
3. Steam Cleaning of Parts, Equipment, Tanks	N/A	N/A	N/A
4. Solvent/Degreaser Use	Stoddard Solvent Aliphatichydrocarbons Sent to recycler when spent	1 gallon	NONE
5. Spent Acids, Caustics, or Completion Fluids (Describe)	Lead-Acid Batteries	1-2 batteries	H_2SO_4

Waste Type	General Composition and Source (solvents from small parts cleaning, oil filters from trucks, etc.)	Volume Per Month (bbl or gal)	Major Additives (e.g. degreaser fluids from truck washing, soap in steam cleaners)
6. Waste Slop Oil	N/A	N/A	N/A
7. Waste Lubrication and Motor Oils	Used motor oil	20 gal. used as fuel excess is recycled	none
8. Oil Filters	Used Filters	less than 16, sent to landfill	none
9. Solids and Sludges from Tanks (Describe types of materials [e.g. crude oil tank bottoms, sand, etc.])	N/A	N/A	N/A
10. Painting Wastes	N/A	N/A	N/A
11. Sewage (Indicate if other wastes mixed with sewage; if no commingling, domestic sewage under jurisdiction of the NMED)	Domestic Only	?	hand soap
12. Other Waste Liquids (Describe in detail)	NONE	NONE	NONE
13. Other Waste Solids (Cement, construction materials, used drums)	Occasional oil fuel leak from equip. on soil not reportable quantities.	1-2gal. p/month	

SHOP

DISCHARGE PLAN APPLICATION

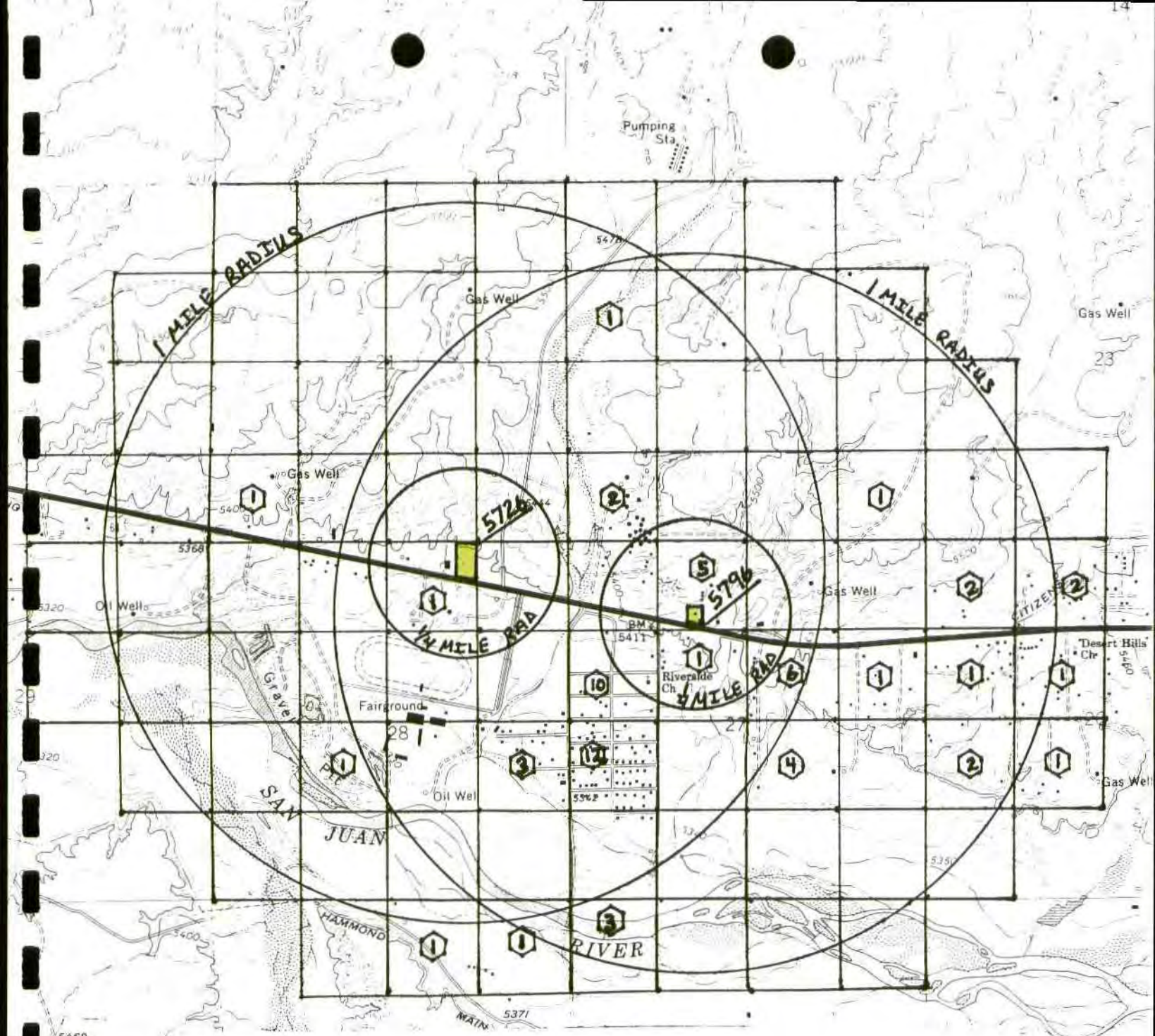
Oilfield Service Facilities

Part VIII. Form (Optional)

Summary Description of Existing Liquid and Solids Waste Collection and Disposal - For each waste type listed in Part VII, provide summary information about onsite collection and disposal systems. Information on basic construction features, specific descriptions, and wastewater schematics should be provided as required in the Guidelines. The use of this form is optional, but the summary information requested must be provided.

Waste Type	Tank(T)/ Drum(S)	Floor Drain/(F) Sump(S)	Pits- Lined(L) or Unlined(U)	Onsite Injection Well	Leach Field	Offsite Disposal
1. Truck Wastes	N/A					
2. Truck, Tank and Drum Washing	N/A					
3. Steam Cleaning of Parts, Equipment, Tanks	N/A					
4. Solvent/Degreaser Use	Recycler draws solvent straight from in-service 20 gal. tank for off-site recycling. No formal approval needed.					
5. Spent Acids, Caustics, or Completion Fluids	Spent Acid is stored in original battery until recycler picks up entire battery. No formal approval needed.					
6. Waste Slop Oil	N/A					

Waste Type	Tank(T)/ Drum(S)	Floor Drain/(F) Sump(S)	Pits- Lined(L) or Unlined(U)	Onsite Injection Well	Leach Field	Offsite Disposal
7. Waste Lubrication and Motor Oils	Steel drum 55 gal.	drain pan then transferred to drum				Used as fuel in our used oil heater. Excess recycled. No approval required
8. Oil Filters	Hot drained into used motor oil drum					Permitted to dispose of 16 p/month at cn[illegible]. landfill. For both locations. Excess used as fuel in heater o[illegible]n
9. Solids and Sludges from Tanks	N/A					
10. Painting Wastes	N/A					
11. Sewage	domestic sewage	floor drain collect and channel into septic tank & leach field.				
12. Other Waste Liquids	N/A					
13. Other Waste Solids	Soils contaminated from oil/fuel leaks on equipment are subject to RCRA characterization annually. Collected soils are placed at Envirotech Soil Remediation Facility - Landfarm #2 upon approval by NMOCD.					



SCALE 1:24 000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 5 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET
DOTTED LINES REPRESENT 10-FOOT CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

QUADRANGLE LOCATION

ROAD CLASSIFICATION

Heavy-duty ——— Light-duty ═══

Medium-duty — — — Unimproved dirt - - - -

State Route

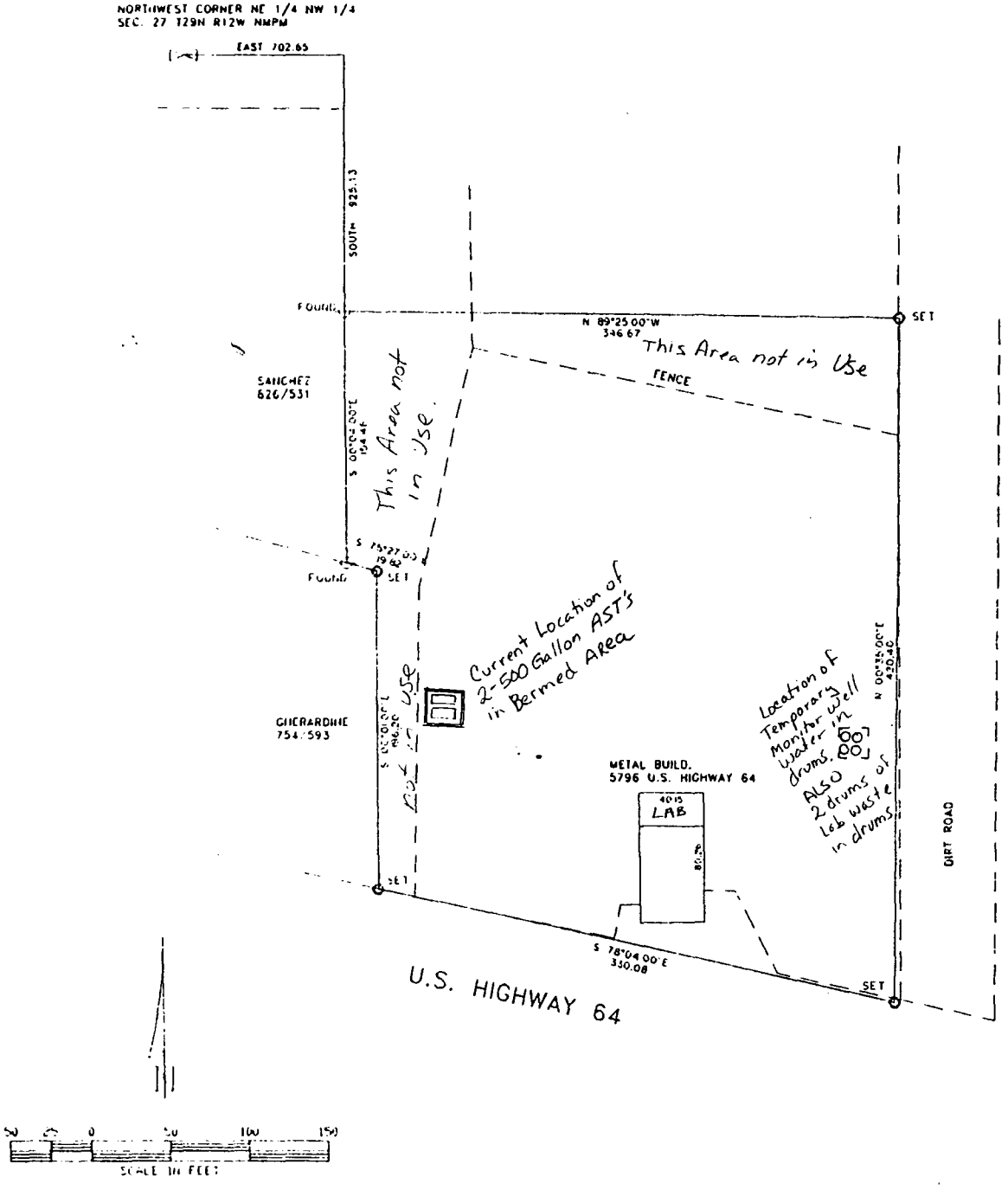
U S Route

HORN CANYON, N. MEX.

N3637.5—W10800/7.5

1965
PHOTOREVISED 1979
DMA 4357 II NE–SERIES V881

PROPERTY SURVEY FOR
ENVIROTECH INC.
E 1/2 NW 1/4 SEC. 27 T29N R12W NMPM
SAN JUAN COUNTY, NEW MEXICO



That part of the East One-Half of the Northwest Quarter (E1/2 NW1/4) of Section 27, in T29N R12W, N.M.P.M., described as follows:

BEGINNING East 702.65 feet and South 925.13 feet from the Northwest Corner of the NE1/4 NW1/4 of said Section 27, being a point on the East line of a tract of land conveyed to Mytex Sanchez, et ux by warranty deed recorded in Book 826, Page 531 of the Records of San Juan County, New Mexico;

THENCE: S00°04'E for a distance of 154.48 feet, along the East line of said Sanchez tract to a point on the Northeasterly line of a tract of land conveyed to Joe D Gherardine by warranty deed recorded in Book 754, Page 593 of the Records of San Juan County, New Mexico;
THENCE: S75°27'E for a distance of 19.82 feet, to the northeasterly Corner of said Gherardine tract;
THENCE: S00°01'E for a distance of 196.20 feet, along the east line of said Gherardine tract to a point on the northerly right-of-way line of Highway 64;
THENCE: S78°04'E for a distance of 330.08 feet, along the northerly right of way of Highway 64;
THENCE: N00°35'E for a distance of 420.40 feet;
THENCE: N89°25'W for a distance of 346.67 feet to the point of beginning

I, GEORGE T. WALTERS, A REGISTERED PROFESSIONAL SURVEYOR UNDER THE LAWS OF THE STATE IN WHICH THIS SURVEY WAS PERFORMED, HEREBY CERTIFY THAT THIS PLAT WAS PREPARED FROM FIELD NOTES OF AN ACTUAL SURVEY MEETING THE MINIMUM REQUIREMENTS OF THE STANDARDS FOR LAND SURVEYS AND IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF, AND THAT NO ENCROACHMENTS EXIST EXCEPT AS NOTED ABOVE AND THAT ALL IMPROVEMENTS ARE SHOWN IN THEIR CORRECT LOCATION RELATIVE RECORD BOUNDARIES AS LOCATED BY THIS SURVEY.

DATE
9-22-92
REVISION DATE

GEORGE T. WALTERS
PROFESSIONAL SURVEYOR # 5439
STATE OF NEW MEXICO

GEORGE T. WALTERS
BREWER & ASSOCIATES, INC.

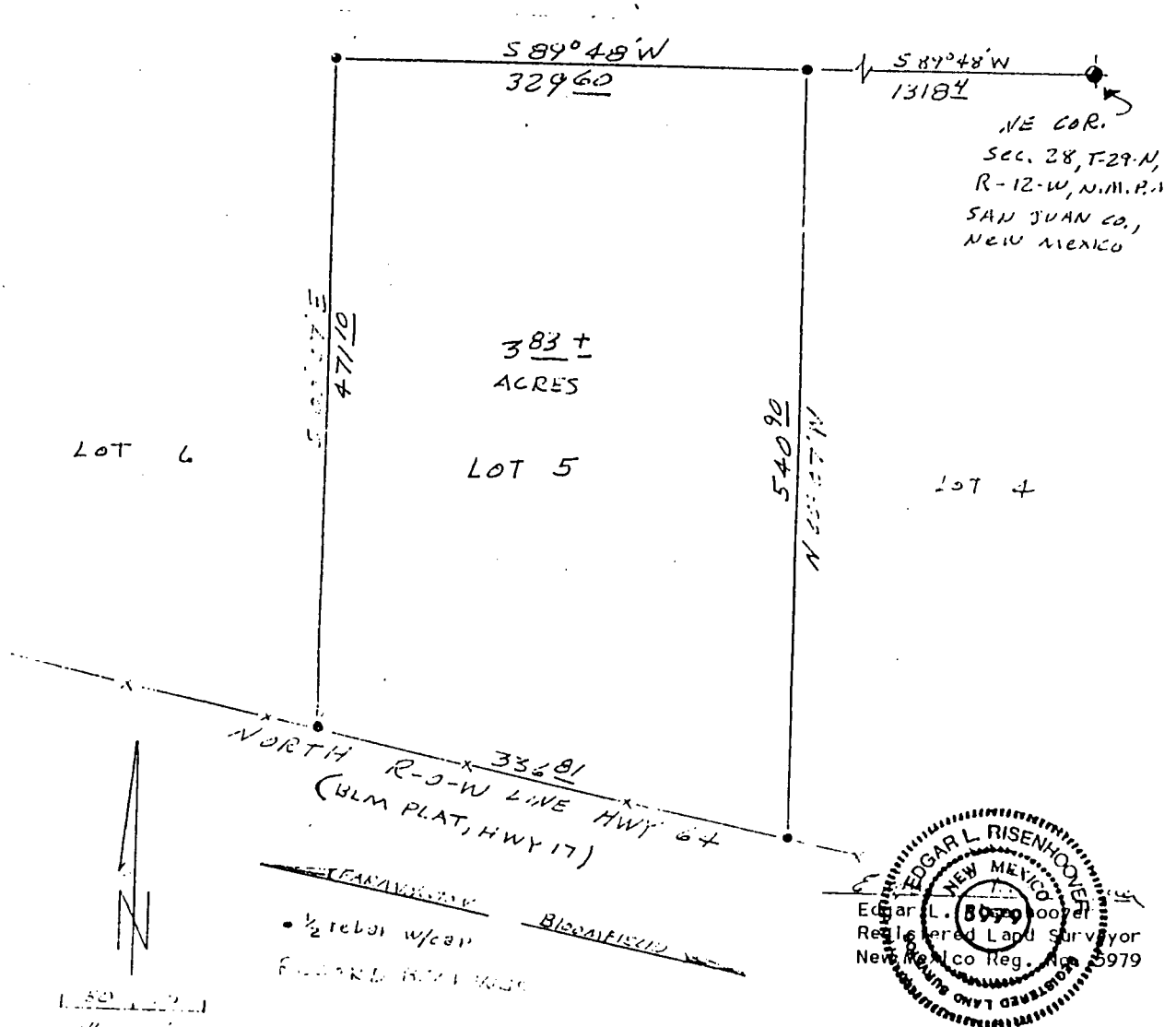
MORTGAGE PLAT? NO	PROPERTY SURVEY? YES	IMPROVEMENTS SET? YES
DRAWN BY: GTW	FIELD CHIEF: CRT	APPROVED: GTW
DATE: 9-22-92	DATE OF FIELD SURVEY: 9-21-92	DEED GUARDIAN
BASIS OF BEARING: WEST P.L.		PROJECT NO. 9251

Edgar L. Risenhoover

Registered Land Surveyor
New Mexico • Colorado • Arizona
Route 2, Box 105 / 605 County Road 1191
Farmington, New Mexico 87401
Phone (505) 325-3904

PRAX TRUJILLO

Lot 5 of Section 28 in T-29-N, R-12-W, N.M.P.M., San Juan County, New Mexico, same being situated in the NW¼NE¼ of said Section 28, containing 3.83 acres, more or less, and subject to all right-of-ways, easements, restrictions and reservations of record or in existance.



EDGAR L. RISENHOOVER
NEW MEXICO
8979
REGISTERED LAND SURVEYOR

Edgar L. Risenhoover
Registered Land Surveyor
New Mexico Reg. No. 8979

February 27, 1986

Waste Management of Four Corners
101 Spruce Street
Farmington, NM 87401
505/327-6284

SERVICE AGREEMENT
NON-HAZARDOUS WASTES

NEW ACCOUNT ☐ | MAJOR ACCOUNT | SERVICE INCREASE | SERVICE DECREASE | RATE INCREASE | RATE DECREASE | CANCEL ☐ | OTHER update ✓

GENERAL CUSTOMER INFORMATION

ACCOUNT NUMBER and SERVICE TYPE

NAME: ENVIROTECH	LOCATION ID	BILLING STATUS	
STREET NUMBER: 5796 DIR:	STREET NAME: US Hwy 64-3014		EFFECTIVE DATE: 4/8/94
CITY: Farmington	INCORPORATED:	COUNTY: San Juan	STATE/PROVINCE: NM ZIP/POSTAL CODE:	TEMP SERV
LOCATION:			
PHONE: 632-0615	CONTACT: Robert Young	INDUSTRY SEGMENT	ALIAS	UNITS:
CREDIT REFERENCE			SECURITY REQUIRED

SERVICE SPECIFICATIONS

SERVICE START/DELIVERY DATE: | SERVICE EFFECTIVE DATE:

QTY	DESCRIPTION/COMMENTS	OWNERSHIP CONT	OWNERSHIP CUST	OWNERSHIP SHAR	WASTE TYPE	SPECIAL WASTE PROFILE NUMBER	SPECIAL WASTE PROFILE EXPIRES	ROUTE ID	FREQ	SERVICE DAYS U	M	T	W	H	F	S	TKT REQ
1	3yd f/l	M						066	wk		M						

THIS IS A LEGALLY BINDING CONTRACT, AND CONTRACTOR AGREES TO PROVIDE AND CUSTOMER AGREES TO ACCEPT THE SERVICES AND EQUIPMENT AT THE CHARGES AND FREQUENCY INDICATED ON THIS AGREEMENT SUBJECT TO THE TERMS AND CONDITIONS SPECIFIED ON THE REVERSE SIDE.

BILLING

NAME		PHONE
ADDRESS: SAME		CONTACT
ADDRESS		MASTER ACCOUNT / RELATED ACCOUNT
STREET NUMBER / DIR / STREET NAME		MAJOR ACCOUNT
CITY / STATE/PROVINCE / ZIP/POSTAL CODE		PURCHASE ORDER NUMBER

SCHEDULE OF CHARGES

DESCRIPTION	TKT	FLAT	RATE
1- 3yd f/l 1x wk P/u		X	67.20

ADDITIONAL INSTRUCTIONS/COMMENTS:

INCIDENTAL SPECIAL WASTE TYPES AND AMOUNTS: Construction ~~&~~ vehicle oil filters 3-4 wk

THE TERMS AND CONDITIONS ON REVERSE SIDE AND THE ATTACHED CONTRACTOR'S DEFINITION OF SPECIAL WASTE ARE PART OF THIS AGREEMENT.

CUSTOMER	CONTRACTOR
AUTHORIZED SIGNATURE: Robert M Young	REPRESENTATIVE'S SIGNATURE:
PRINT NAME: Robert M Young	
TITLE: Environmental Coordinator DATE: 4/8/94	G M REVIEW: SALES DATE: 4/8/94

Printed on recycled paper

DATE: 05/28/92 ACCT: 146965-01
INDEX: 02921490654 CAT NO: A510-212 PO NBR: 627

SULFURIC ACID
SULFURIC ACID
SULFURIC ACID

MATERIAL SAFETY DATA SHEET

FISHER SCIENTIFIC
CHEMICAL DIVISION
1 REAGENT LANE
FAIR LAWN NJ 07410
(201) 796-7100

EMERGENCY NUMBER: (201) 796-7100
CHEMTREC ASSISTANCE: (800) 424-9300

THIS INFORMATION IS BELIEVED TO BE ACCURATE AND REPRESENTS THE BEST INFORMATION CURRENTLY AVAILABLE TO US. HOWEVER, WE MAKE NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, WITH RESPECT TO SUCH INFORMATION, AND WE ASSUME NO LIABILITY RESULTING FROM ITS USE. USERS SHOULD MAKE THEIR OWN INVESTIGATIONS TO DETERMINE THE SUITABILITY OF THE INFORMATION FOR THEIR PARTICULAR PURPOSES.

SUBSTANCE IDENTIFICATION

CAS-NUMBER 7664-93-9

SUBSTANCE: **SULFURIC ACID**

TRADE NAMES/SYNONYMS:
OIL OF VITRIOL; BOV; DIPPING ACID; VITRIOL BROWN OIL; HYDROGEN SULFATE; NORDHADSEN ACID; DIHYDROGEN SULFATE; SULPHURIC ACID; MATTING ACID; DITHIONIC ACID; STCC4930040; UN 1830; A300; A300C; A300SI; A300S; A298; A510; A468; SOA174; A484; SA170; SA176; A302; A305; H2O4S; ACC22350

CHEMICAL FAMILY:
INORGANIC ACID

MOLECULAR FORMULA: H2-S-O4

MOLECULAR WEIGHT: 98.07

CERCLA RATINGS (SCALE 0-3): HEALTH=3 FIRE=0 REACTIVITY=2 PERSISTENCE=0
NFPA RATINGS (SCALE 0-4): HEALTH=3 FIRE=0 REACTIVITY=2

COMPONENTS AND CONTAMINANTS

COMPONENT: SULFURIC ACID PERCENT: 70.0-100.0
CAS# 7664-93-9

COMPONENT: WATER PERCENT: 0-30.0

OTHER CONTAMINANTS: NONE.

EXPOSURE LIMITS:
SULFURIC ACID:
1 MG/M3 OSHA TWA
1 MG/M3 ACGIH TWA; 3 MG/M3 ACGIH STEL
1 MG/M3 NIOSH RECOMMENDED TWA
1 MG/M3 DFG MAK TWA;
2 MG/M3 DFG MAK 5 MINUTE PEAK, MOMENTARY VALUE, 8 TIMES/SHIFT

MEASUREMENT METHOD: SILICA GEL TUBE; SODIUM BICARBONATE/SODIUM CARBONATE; ION CHROMATOGRAPHY; (NIOSH VOL. III # 7903, INORGANIC ACIDS).

1000 POUNDS SARA SECTION 302 THRESHOLD PLANNING QUANTITY
1000 POUNDS SARA SECTION 304 REPORTABLE QUANTITY
1000 POUNDS CERCLA SECTION 103 REPORTABLE QUANTITY
SUBJECT TO SARA SECTION 313 ANNUAL TOXIC CHEMICAL RELEASE REPORTING

PHYSICAL DATA

DESCRIPTION: ODORLESS, CLEAR, COLORLESS, DENSE HYGROSCOPIC OILY LIQUID WITH

A MARKED ACID TASTE WHEN PURE. BOILING POINT: 626 F (330 C)

MELTING POINT: 50 F (10 C) SPECIFIC GRAVITY: 1.84

VAPOR PRESSURE: <0.001 @ 20 C PH: <3 SOLUBILITY IN WATER: SOLUBLE

ODOR THRESHOLD: >1 MG/M3 (MIST) VAPOR DENSITY: 3.4

SOLVENT SOLUBILITY: DECOMPOSES IN ALCOHOL.

@ 340 C IT DECOMPOSES INTO SULFUR TRIOXIDE AND WATER

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
NEGLIGIBLE FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

DATE: 05/28/92 ACCT: 146965-01
INDEX: 02921490654 CAT NO: A510-212 PO NBR: 627

OXIDIZER: OXIDIZERS DECOMPOSE, ESPECIALLY WHEN HEATED, TO YIELD OXYGEN OR OTHER GASES WHICH WILL INCREASE THE BURNING RATE OF COMBUSTIBLE MATTER. CONTACT WITH EASILY OXIDIZABLE, ORGANIC, OR OTHER COMBUSTIBLE MATERIALS MAY RESULT IN IGNITION, VIOLENT COMBUSTION OR EXPLOSION.

FIREFIGHTING MEDIA:
DRY CHEMICAL OR CARBON DIOXIDE
(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FOR LARGER FIRES, FLOOD AREA WITH WATER FROM A DISTANCE
(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FIREFIGHTING:
DO NOT GET WATER INSIDE CONTAINER. DO NOT GET SOLID STREAM OF WATER ON SPILLED MATERIAL. MOVE CONTAINER FROM FIRE AREA IF YOU CAN DO IT WITHOUT RISK. APPLY COOLING WATER TO SIDES OF CONTAINERS THAT ARE EXPOSED TO FLAMES UNTIL WELL AFTER FIRE IS OUT. STAY AWAY FROM ENDS OF TANKS (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5 GUIDE PAGE 39).

USE AGENT SUITABLE FOR TYPE OF FIRE; USE FLOODING AMOUNTS OF WATER AS A FOG. COOL CONTAINERS WITH FLOODING AMOUNTS OF WATER, APPLY FROM AS FAR A DISTANCE AS POSSIBLE. AVOID BREATHING CORROSIVE VAPORS, KEEP UPWIND.

TRANSPORTATION DATA

DEPARTMENT OF TRANSPORTATION HAZARD CLASSIFICATION 49 CFR 172.101:
CORROSIVE MATERIAL

DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS 49 CFR 172.101 AND SUBPART E:
CORROSIVE

DEPARTMENT OF TRANSPORTATION PACKAGING REQUIREMENTS: 49 CFR 173.272
EXCEPTIONS: 49 CFR 173.244

FINAL RULE ON HAZARDOUS MATERIALS REGULATIONS (HMR, 49 CFR PARTS 171-180), DOCKET NUMBERS HM-181, HM-181A, HM-181B, HM-181C, HM-181D AND HM-204. EFFECTIVE DATE OCTOBER 1, 1991. HOWEVER, COMPLIANCE WITH THE REGULATIONS IS AUTHORIZED ON AND AFTER JANUARY 1, 1991. (55 FR 52402, 12/21/90)

EXCEPT FOR EXPLOSIVES, INHALATION HAZARDS, AND INFECTIOUS SUBSTANCES, THE EFFECTIVE DATE FOR HAZARD COMMUNICATION REQUIREMENTS IS EXTENDED TO OCTOBER 1, 1993. (56 FR 47158, 10/18/91)

U.S. DEPARTMENT OF TRANSPORTATION SHIPPING NAME-ID NUMBER, 49 CFR 172.101:
SULFURIC ACID-UN 1830

U.S. DEPARTMENT OF TRANSPORTATION HAZARD CLASS OR DIVISION, 49 CFR 172.101:
8 - CORROSIVE MATERIAL

U.S. DEPARTMENT OF TRANSPORTATION PACKING GROUP, 49 CFR 172.101:
PG II

U.S. DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS, 49 CFR 172.101 AND SUBPART E:
CORROSIVE

U.S. DEPARTMENT OF TRANSPORTATION PACKAGING AUTHORIZATIONS:
EXCEPTIONS: NONE
NON-BULK PACKAGING: 49 CFR 173.202
BULK PACKAGING: 49 CFR 173.242

U.S. DEPARTMENT OF TRANSPORTATION QUANTITY LIMITATIONS 49 CFR 172.101:
PASSENGER AIRCRAFT OR RAILCAR: 1 L
CARGO AIRCRAFT ONLY: 30 L

TOXICITY

SULFURIC ACID:
IRRITATION DATA: 1380 UG EYE-RABBIT SEVERE; 5 MG/30 SECONDS RINSED EYE-RABBIT SEVERE.
TOXICITY DATA: 3 MG/M3/24 WEEKS INHALATION-HUMAN TCLO; 510 MG/M3/2 HOURS INHALATION-RAT LC50; 320 MG/M3/2 HOURS INHALATION-MOUSE LC50; 18 MG/M3 INHALATION-GUINEA PIG LC50; 2140 MG/KG ORAL-RAT LD50; 135 MG/KG UNREPORTED-MAN LDLO; MUTAGENIC DATA (RTECS); REPRODUCTIVE EFFECTS DATA (RTECS).
CARCINOGEN STATUS: NONE. AN EPIDEMIOLOGICAL STUDY OF WORKERS AT A REFINERY AND CHEMICAL PLANT SUGGESTS AN INCREASED RISK OF LARYNGEAL CANCER FROM EXPOSURE TO HIGH CONCENTRATIONS OF SULFURIC ACID.
LOCAL EFFECTS: CORROSIVE- INHALATION, SKIN, EYE AND INGESTION.
ACUTE TOXICITY LEVEL: HIGHLY TOXIC BY INHALATION; MODERATELY TOXIC BY INGESTION.
TARGET EFFECTS: NO DATA AVAILABLE.

HEALTH EFFECTS AND FIRST AID

INHALATION:
SULFURIC ACID:
CORROSIVE/HIGHLY TOXIC. 80 MG/M3 IMMEDIATELY DANGEROUS TO LIFE OR HEALTH.
ACUTE EXPOSURE- INHALATION OF MISTS MAY CAUSE MUCOUS MEMBRANE IRRITATION PRINCIPALLY AFFECTING THE RESPIRATORY TRACT EPITHELIUM. LOW CONCENTRATIONS, 0.35-5 MG/M3, MAY CAUSE INCREASED PULMONARY AIR FLOW RESISTANCE AND SUBSEQUENT SHALLOWER AND MORE RAPID BREATHING. HOT CONCENTRATED MISTS MAY CAUSE RAPID LOSS OF CONSCIOUSNESS WITH POSSIBLE DAMAGE TO LUNG TISSUE. VAPORS MAY CAUSE NASAL SECRETIONS, SNEEZING, A BURNING OR TICKLING SENSATION IN THE NOSE AND THROAT AND RETROSTERNAL REGION, FOLLOWED BY COUGH, RESPIRATORY DISTRESS, TRACHEOBRONCHITIS, CHEMICAL PNEUMONITIS AND POSSIBLE SPASM OF THE VOCAL CORDS. HIGH CONCENTRATIONS MAY PRODUCE BLOODY NASAL SECRETIONS AND SPUTUM, HEMATEMESIS GASTRITIS, AND PULMONARY EDEMA. A SINGLE OVEREXPOSURE MAY LEAD TO LARYNGEAL, TRACHEOBRONCHIAL AND PULMONARY EDEMA. ONE INDIVIDUAL SPRAYED IN THE FACE WITH SULFURIC ACID LIQUID EXPERIENCED DELAYED SYMPTOMS OF PULMONARY FIBROSIS, RESIDUAL BRONCHITIS, AND PULMONARY EMPHYSEMA. VAPORS FROM DILUTE SOLUTIONS MAY IRRITATE MUCOUS MEMBRANES. THE LETHAL DOSE REPORTED IN RATS IS 510 MG/M3/2 HOURS.
CHRONIC EXPOSURE- REPEATED EXPOSURE TO THE MIST MAY CAUSE INFLAMMATION OF THE UPPER RESPIRATORY TRACT, CHRONIC BRONCHITIS AND ETCHING OF THE DENTAL ENAMEL. THE CENTRAL AND LATERAL INCISORS ARE PRIMARILY AFFECTED. REPEATED EXCESSIVE EXPOSURE OVER LONG PERIODS OF TIME HAVE RESULTED IN BRONCHITIC SYMPTOMS, RHINORRHEA, FREQUENT RESPIRATORY TRACT INFECTIONS, EMPHYSEMA, STOMATITIS AND DIGESTIVE DISTURBANCES. CHRONIC INHALATION MAY CAUSE ALKALINE DEPLETION OF THE BODY PRODUCING AN ACIDOSIS WHICH AFFECTS THE NERVOUS SYSTEM AND PRODUCES AGITATION, HESITANT GAIT AND GENERALIZED WEAKNESS. AN EPIDEMIOLOGICAL STUDY OF WORKERS AT A REFINERY AND CHEMICAL PLANT SUGGESTS AN INCREASED RISK OF LARYNGEAL CANCER FROM EXPOSURE TO HIGH CONCENTRATIONS OF SULFURIC ACID. REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS.

FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, GIVE ARTIFICIAL RESPIRATION. MAINTAIN AIRWAY AND BLOOD PRESSURE AND ADMINISTER OXYGEN IF AVAILABLE. KEEP AFFECTED PERSON WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. ADMINISTRATION OF OXYGEN SHOULD BE PERFORMED BY QUALIFIED PERSONNEL. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:
SULFURIC ACID:
CORROSIVE.
ACUTE EXPOSURE- CONTACT WITH CONCENTRATED SULFURIC ACID MAY CAUSE SEVERE SECOND AND THIRD DEGREE SKIN BURNS WITH NECROSIS DUE TO ITS AFFINITY FOR WATER AND SUBSEQUENT SEVERE DEHYDRATING ACTION, AND ITS EXOTHERMIC REACTION WITH MOISTURE. POSSIBLE CHARRING MAY OCCUR LEADING TO SHOCK AND COLLAPSE DEPENDING ON THE AMOUNT OF TISSUE INVOLVED. THE RESULTING WOUNDS MAY BE LONG IN HEALING AND MAY CAUSE EXTENSIVE SCARRING THAT MAY RESULT IN FUNCTIONAL INHIBITION. CONTACT WITH DILUTE SOLUTIONS MAY CAUSE SKIN IRRITATION.
CHRONIC EXPOSURE- REPEATED CONTACT WITH LOW CONCENTRATIONS MAY CAUSE SKIN DESICCATION AND ULCERATION OF THE HANDS, AND PANARIS OR CHRONIC PURULENT INFLAMMATION AROUND THE NAILS. REPEATED CONTACT WITH DILUTE SOLUTIONS MAY CAUSE DERMATITIS.

FIRST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). IN CASE OF CHEMICAL BURNS, COVER AREA WITH STERILE, DRY DRESSING. BANDAGE SECURELY, BUT NOT TOO TIGHTLY. GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:
SULFURIC ACID:
CORROSIVE.
ACUTE EXPOSURE- EXPOSURE TO THE VAPORS MAY CAUSE A BURNING OR STINGING SENSATION IN THE EYES WITH LACRIMATION, BLURRED VISION AND CONJUNCTIVAL CONGESTION. SPLASHES OF ACID IN THE EYES MAY PRODUCE DEEP CORNEAL ULCERATION, KERATO-CONJUNCTIVITIS AND PALPEBRAL LESIONS WITH SEVERE SEQUELAE. IRREPARABLE CORNEAL DAMAGE AND BLINDNESS AS WELL AS SCARRING OF THE EYELIDS MAY OCCUR. SEVERE SULFURIC ACID EYE BURNS HAVE INCLUDED GLAUCOMA AND CATARACT AS COMPLICATIONS IN THE MOST SEVERE CASES. CONTACT WITH DILUTED ACID MAY PRODUCE MORE TRANSIENT EFFECTS FROM WHICH RECOVERY MAY BE COMPLETE.
CHRONIC EXPOSURE- REPEATED EXPOSURE MAY RESULT IN LACRIMATION AND CHRONIC CONJUNCTIVITIS.

FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). CONTINUE IRRIGATING WITH NORMAL SALINE UNTIL THE PH HAS RETURNED TO NORMAL (30-60 MINUTES). COVER WITH STERILE BANDAGES. GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:
SULFURIC ACID:
CORROSIVE.
ACUTE EXPOSURE- INGESTION MAY CAUSE BURNING PAIN IN THE MOUTH, THROAT, ESOPHAGUS AND ABDOMEN, A SOUR TASTE AND NAUSEA FOLLOWED BY VOMITING

AND DIARRHEA OF CHARRED BLACK STOMACH CONTENTS. DEHYDRATION AND CARBONIZATION OF TISSUE MAY OCCUR WITH ESCHARS ON THE LIPS AND MOUTH. BROWNISH OR YELLOWISH STAINS MAY BE FOUND AROUND THE MOUTH, INTENSE THIRST, DIFFICULT SWALLOWING, ACIDEMIA, STOMATITIS, RAPID AND WEAK PULSE, SHALLOW BREATHING, SHOCK AND POSSIBLE CONVULSIONS AND DEATH MAY OCCUR. ALBUMIN, BLOOD AND CASTS IN URINE, ANURIA, ESOPHAGEAL AND DELAYED GASTRIC STENOSIS HAS BEEN REPORTED. POSSIBLE PERFORATION OF THE GASTROINTESTINAL TRACT MAY RESULT IN PERITONITIS.
CHRONIC EXPOSURE- NO DATA AVAILABLE.

FIRST AID- DO NOT USE GASTRIC LAVAGE OR EMESIS. DILUTE THE ACID IMMEDIATELY BY DRINKING LARGE QUANTITIES OF WATER OR MILK. IF VOMITING PERSISTS, ADMINISTER FLUIDS REPEATEDLY. INGESTED ACID MUST BE DILUTED APPROXIMATELY 100 FOLD TO RENDER IT HARMLESS TO TISSUES. MAINTAIN AIRWAY AND TREAT SHOCK (DREISBACH, HANDBOOK OF POISONING, 12TH ED.). GET MEDICAL ATTENTION IMMEDIATELY. IF VOMITING OCCURS, KEEP HEAD BELOW HIPS TO HELP PREVENT ASPIRATION.

ANTIDOTE:
NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

REACTIVITY

REACTIVITY:
SULFURIC ACID:
VIOLENT EXOTHERMIC REACTION WITH WATER.

INCOMPATIBILITIES:
SULFURIC ACID:
ACETALDEHYDE: VIOLENTLY POLYMERIZED BY CONCENTRATED ACID.
ACETIC ANHYDRIDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
ACETONE + NITRIC ACID: VIOLENT DECOMPOSITION.
ACETONE + POTASSIUM DICHROMATE: IGNITION.
ACETONE CYANHYDRIN: PRESSURE INCREASE WITH POSSIBLE EXPLOSIVE RUPTURE OF VESSEL.
ACETONITRILE: VIOLENT EXOTHERM ON HEATING; SULFUR TRIOXIDE REDUCES INITIATION TEMPERATURE.
ACROLEIN: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
ACRYLONITRILE: VIGOROUS EXOTHERMIC POLYMERIZATION.
ALCOHOL: EXOTHERMIC REACTION AND CONTRACTION OF VOLUME.
ALCOHOLS AND HYDROGEN PEROXIDE: POSSIBLE EXPLOSION.
ALLYL ALCOHOL: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
ALLYL CHLORIDE: VIOLENT POLYMERIZATION.
ALKYL NITRATES: MAY CAUSE VIOLENT REACTION.
2-AMINOETHANOL: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
AMMONIUM HYDROXIDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
AMMONIUM IRON(III) SULFATE DODECAHYDRATE: VIOLENT, EXOTHERMIC REACTION ON HEATING.
AMMONIUM TRIPERCHROMATE: FIRE OR EXPLOSION HAZARD.
ANILINE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
BASES: VIOLENT REACTION.
BENZYL ALCOHOL: MAY DECOMPOSES EXPLOSIVELY AT ABOUT 180 C.
BROMATES + METALS: POSSIBLE IGNITION.
BROMINE PENTAFLUORIDE: VIOLENT REACTION WITH POSSIBLE IGNITION.
TERT-BUTYL-M-XYLENE: VIOLENT EXOTHERMIC REACTION WITHOUT AGITATION.
N-BUTYRALDEHYDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
CARBIDES: HAZARDOUS MIXTURE.
CESIUM ACETYLIDE: IGNITION ON CONTACT.
1-CHLORO-2,3-EPOXYPROPANE: VIOLENT INTERACTION.
4-CHLORONITROBENZENE AND SULFUR TRIOXIDE: POSSIBLE EXPLOSIVE REACTION.
CHLORATES: ALL CHLORATES, WHEN BROUGHT IN CONTACT WITH SULFURIC ACID MAY GIVE OFF EXPLOSIVE CHLORINE DIOXIDE GAS. A VIOLENT EXPLOSION IS USUAL.
CHLORATES + METALS: POSSIBLE IGNITION.
CHLORINE TRIFLUORIDE: VIOLENT REACTION.
CHLOROSULFONIC ACID: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
CHROMATES: FIRE AND EXPLOSION HAZARD.
COATINGS: ATTACKED.
COMBUSTIBLE MATERIALS (FINELY DIVIDED): MAY IGNITE.
COPPER: EVOLUTION OF SULFUR DIOXIDE.
CUPROUS NITRIDE: VIOLENT REACTION.
2-CYANO-4-NITROBENZENEDIAZONIUM HYDROGEN SULFATE: EXOTHERMIC REACTION.
2-CYANO-2-PROPANOL: VIOLENT REACTION WITH INCREASE IN PRESSURE.
CYCLOPENTADIENE: VIOLENT OR EXPLOSIVE REACTION.
CYCLOPENTANONE OXIME: VIOLENT REACTION.
1,3-DIAZIDOBENZENE: IGNITION FOLLOWED BY EXPLOSIVE REACTION.
DIETHYLAMINE: EXOTHERMIC REACTION.
DIISOBUTYLENE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
DIMETHYLBENZYLCARBINOL + HYDROGEN PEROXIDE: EXPLODES.
DIMETHOXYANTHRAQUINONE: EXOTHERMIC REACTION ABOVE 150 C.
4-DIMETHYLAMINOBENZALDEHYDE: EXOTHERMIC REACTION.
2,5-DINITRO-3-METHYLBENZOIC ACID + SODIUM AZIDE: EXPLOSIVE REACTION.
1,5-DINITRONAPHTHALENE + SULFUR: EXOTHERMIC REACTION.
EPICHLOROHYDRIN: VIOLENT REACTION.
ETHOXYLATED NONYLPHENOL: POSSIBLE IGNITION.
ETHANOL + HYDROGEN PEROXIDE: POSSIBLE EXPLOSION.
ETHYLENE CYANOHYDRIN: VIOLENT REACTION.
ETHYLENE DIAMINE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
ETHYLENE GLYCOL: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
ETHYLENIMINE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.

FULMINATES: EXTREMELY HAZARDOUS MIXTURE.
HEXALITHIUM DISILICIDE: INCANDESCENT REACTION.
HYDROCHLORIC ACID: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
HYDROGEN PEROXIDE (>50%): EXPLOSIVE REACTION AFTER EVAPORATION.
HYDROFLUORIC ACID: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
INDANE + NITRIC ACID: POSSIBLE EXPLOSION.
IODINE HEPTAFLUORIDE: THE ACID BECOMES EFFERVESCENT.
IRON: POSSIBLE EXPLOSION DUE TO HYDROGEN GAS FROM THE ACID-METAL REACTION.
ISOPRENE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
LITHIUM SILICIDE: INCANDESCENT REACTION.
MERCURY NITRIDE: EXPLOSION ON CONTACT.
MESITYL OXIDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
METALS: MAY LIBERATE FLAMMABLE HYDROGEN GAS.
METALS (POWDERED): EXTREMELY HAZARDOUS MIXTURE.
METAL ACETYLIDES: IGNITION REACTION.
METAL CHLORATES: VIOLENT EXPLOSION UNLESS PROPERLY COOLED.
METAL PERCHLORATES: FORMATION OF EXPLOSIVE PERCHLORIC ACID.
4-METHYLPYRIDINE: EXOTHERMIC REACTION.
NITRAMIDE: MAY DECOMPOSE EXPLOSIVELY ON CONTACT.
NITRATES: INCOMPATIBLE.
NITRIC ACID + GLYCERIDES: EXPLOSION.
NITRIC ACID + ORGANIC MATERIAL: MAY CAUSE VIOLENT REACTION.
NITRIC ACID + TOLUENE: POSSIBLE VIOLENT REACTION OR EXPLOSION.
NITROARYL BASES AND DERIVATIVES: MAY CAUSE VIOLENT REACTION OR EXPLOSION.
NITROBENZENE: EXOTHERMIC REACTION AT ELEVATED TEMPERATURES.
3-NITROBENZENESULFONIC ACID: EXOTHERMIC REACTION.
NITROMETHANE: FORMATION OF EXPLOSIVE MIXTURE.
N-NITROMETHYLAMINE: EXPLOSIVE DECOMPOSITION.
4-NITROTOLUENE: EXPLOSIVE AT 80 C.
ORGANICS: VIOLENT EXOTHERMIC REACTION.
PENTASILVER TRIHYDROXYDIAMIDOPHOSPHATE: EXPLOSION ON CONTACT.
PERCHLORATES: POSSIBLE EXPLOSION.
PERCHLORIC ACID: FORMATION OF DANGEROUS ANHYDROUS PERCHLORIC ACID.
PERMANGANATES: FORMATION OF PERMANGANIC ACID.
PERMANGANATES + BENZENE: POSSIBLE EXPLOSION.
1-PHENYL-2-METHYL-PROPYL ALCOHOL + HYDROGEN PEROXIDE: POSSIBLE EXPLOSION.
PHOSPHORUS (WHITE OR YELLOW): IGNITION IN CONTACT WITH BOILING ACID.
PHOSPHORUS ISOCYANATE: VIOLENT REACTION.
PHOSPHORUS TRIOXIDE: VIOLENT OXIDATION WITH POSSIBLE IGNITION.
PICRATES: EXTREMELY HAZARDOUS MIXTURE.
PLASTICS: ATTACKED.
POLYSILYLENE: EXPLOSION ON CONTACT.
POTASSIUM: EXPLOSIVE INTERACTION.
POTASSIUM TERT-BUTOXIDE: IGNITION.
POTASSIUM CHLORATE: POSSIBLE FIRE AND EXPLOSION.
POTASSIUM PERMANGANATE: POSSIBLE EXPLOSION IN THE PRESENCE OF MOISTURE.
POTASSIUM PERMANGANATE + POTASSIUM CHLORIDE: VIOLENT EXPLOSION.
PROPIOLACTONE (BETA): TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
PROPYLENE OXIDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
3-PROPYNOL: POSSIBLE EXPLOSION UNLESS ADEQUATELY COOLED.
PYRIDINE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
REDUCING AGENTS: REACTS.
RUBBER: ATTACKED.
RUBIDIUM ACETYLIDE: IGNITION ON CONTACT.
SILVER PERMANGANATE (MOIST): EXPLOSIVE REACTION.
SILVER PEROXOCHROMATE: EXPLOSIVE REACTION.
SODIUM: EXPLOSIVE REACTION WITH AQUEOUS ACID.
SODIUM CARBONATE: VIOLENT REACTION.
SODIUM CHLORATE: POSSIBLE FIRE OR EXPLOSION.
SODIUM HYDROXIDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
SODIUM TETRAHYDROBORATE: VIOLENT, EXOTHERMIC REACTION.
SODIUM THIOCYANATE: VIOLENT EXOTHERMIC WITH EVOLUTION OF CARBONYL SULFIDE.
STEEL: POSSIBLE EXPLOSION DUE TO HYDROGEN GAS FROM THE ACID-METAL REACTION.
STYRENE MONOMER: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
SUCROSE: FORMATION OF CARBON MONOXIDE.
TETRAMETHYLBENZENES: VIOLENT REACTION IN CLOSED CONTAINERS.
1,2,4,5-TETRAZINE: VIOLENT DECOMPOSITION ON CONTACT.
THALLIUM(I) AZIDODITHIOCARBONATE: MAY EXPLODE ON CONTACT.
1,3,5-TRINITROSOHEXAHYDRO-1,3,5-TRIAZINE: EXPLOSIVE DECOMPOSITION ON CONTACT.
VINYL ACETATE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
ZINC CHLORATE: LIKELY TO CAUSE FIRES AND EXPLOSIONS.
ZINC IODIDE: VIOLENT INTERACTION.

DECOMPOSITION:
THERMAL DECOMPOSITION MAY RELEASE TOXIC OXIDES OF SULFUR.

POLYMERIZATION:
HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

STORAGE AND DISPOSAL

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE. FOR ASSISTANCE, CONTACT THE DISTRICT DIRECTOR OF THE ENVIRONMENTAL PROTECTION AGENCY.

STORAGE

STORE IN COOL, DRY, WELL-VENTILATED LOCATION. SEPARATE FROM COMBUSTIBLES AND OTHER REACTIVE MATERIALS. SEPARATE FROM CARBIDES, CHLORATES, FULMINATES, NITRATES, PICRATES, AND POWDERED METALS. (NFPA 49, HAZARDOUS CHEMICALS DATA, 1991).

STORE IN A TIGHTLY CLOSED CONTAINER.

AVOID DIRECT SUNLIGHT.

STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

THRESHOLD PLANNING QUANTITY (TPQ):
THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) SECTION 302 REQUIRES THAT EACH FACILITY WHERE ANY EXTREMELY HAZARDOUS SUBSTANCE IS PRESENT IN A QUANTITY EQUAL TO OR GREATER THAN THE TPQ ESTABLISHED FOR THAT SUBSTANCE NOTIFY THE STATE EMERGENCY RESPONSE COMMISSION FOR THE STATE IN WHICH IT IS LOCATED. SECTION 303 OF SARA REQUIRES THESE FACILITIES TO PARTICIPATE IN LOCAL EMERGENCY RESPONSE PLANNING (40 CFR 355.30).

DISPOSAL

DISPOSAL MUST BE IN ACCORDANCE WITH STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE, 40 CFR 262. EPA HAZARDOUS WASTE NUMBER D002.
100 POUND CERCLA SECTION 103 REPORTABLE QUANTITY.

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CONDITIONS TO AVOID

MAY IGNITE OTHER COMBUSTIBLE MATERIALS (WOOD, PAPER, OIL, ETC.). VIOLENT REACTION WITH WATER. FLAMMABLE, POISONOUS GASES MAY ACCUMULATE IN CONFINED SPACES. RUNOFF TO SEWER MAY CREATE FIRE OR EXPLOSION HAZARD.

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SPILL AND LEAK PROCEDURES

SOIL SPILL:
DIG HOLDING AREA SUCH AS LAGOON, POND OR PIT FOR CONTAINMENT.

DIKE FLOW OF SPILLED MATERIAL USING SOIL OR SANDBAGS OR FOAMED BARRIERS SUCH AS POLYURETHANE OR CONCRETE.

USE CEMENT POWDER OR FLY ASH TO ABSORB LIQUID MASS.

NEUTRALIZE SPILL WITH SLAKED LIME, SODIUM BICARBONATE OR CRUSHED LIMESTONE.

AIR SPILL:
APPLY WATER SPRAY TO KNOCK DOWN AND REDUCE VAPORS. KNOCK-DOWN WATER IS CORROSIVE AND TOXIC AND SHOULD BE DIKED FOR CONTAINMENT AND LATER DISPOSAL.

WATER SPILL:
NEUTRALIZE WITH AGRICULTURAL LIME, SLAKED LIME, CRUSHED LIMESTONE, OR SODIUM BICARBONATE.

OCCUPATIONAL SPILL:
KEEP COMBUSTIBLES (WOOD, PAPER, OIL, ETC.) AWAY FROM SPILLED MATERIAL. DO NOT TOUCH SPILLED MATERIAL. DO NOT GET WATER INSIDE CONTAINER. STOP LEAK IF YOU CAN DO IT WITHOUT RISK. USE WATER SPRAY TO REDUCE VAPORS. DO NOT PUT WATER ON LEAK OR SPILL AREA. CLEAN UP ONLY UNDER THE SUPERVISION OF AN EXPERT. DIKE SPILL FOR LATER DISPOSAL. DO NOT APPLY WATER UNLESS DIRECTED TO DO SO. KEEP UNNECESSARY PEOPLE AWAY. ISOLATE HAZARD AREA AND DENY ENTRY. VENTILATE CLOSED SPACES BEFORE ENTERING.

REPORTABLE QUANTITY (RQ): 1000 POUNDS
THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) SECTION 304 REQUIRES THAT A RELEASE EQUAL TO OR GREATER THAN THE REPORTABLE QUANTITY FOR THIS SUBSTANCE BE IMMEDIATELY REPORTED TO THE LOCAL EMERGENCY PLANNING COMMITTEE AND THE STATE EMERGENCY RESPONSE COMMISSION (40 CFR 355.40). IF THE RELEASE OF THIS SUBSTANCE IS REPORTABLE UNDER CERCLA SECTION 103, THE NATIONAL RESPONSE CENTER MUST BE NOTIFIED IMMEDIATELY AT (800) 424-8802 OR (202) 426-2675 IN THE METROPOLITAN WASHINGTON, D.C. AREA (40 CFR 302.6).

PROTECTIVE EQUIPMENT

VENTILATION:
PROVIDE LOCAL EXHAUST OR PROCESS ENCLOSURE VENTILATION TO MEET PUBLISHED EXPOSURE LIMITS.

RESPIRATOR:
THE FOLLOWING RESPIRATORS AND MAXIMUM USE CONCENTRATIONS ARE RECOMMENDATIONS BY THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIOSH POCKET GUIDE TO CHEMICAL HAZARDS; NIOSH CRITERIA DOCUMENTS OR BY THE U.S. DEPARTMENT OF LABOR, 29 CFR 1910 SUBPART Z.
THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND IN THE WORK PLACE, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

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SULFURIC ACID:

25 MG/M3- ANY POWERED AIR-PURIFYING RESPIRATOR WITH AN ACID GAS CARTRIDGE(S) AND HAVING A HIGH-EFFICIENCY PARTICULATE FILTER.
ANY SUPPLIED-AIR RESPIRATOR OPERATED IN A CONTINUOUS FLOW MODE.

50 MG/M3- ANY CHEMICAL CARTRIDGE RESPIRATOR WITH A FULL FACEPIECE AND ACID GAS CARTRIDGE(S) IN COMBINATION WITH A HIGH-EFFICIENCY PARTICULATE FILTER.
ANY SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE.
ANY SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE.
ANY AIR-PURIFYING FULL FACEPIECE RESPIRATOR (GAS MASK) WITH A CHIN-STYLE OR FRONT- OR BACK-MOUNTED ACID GAS CANISTER HAVING A HIGH-EFFICIENCY PARTICULATE FILTER.

80 MG/M3- ANY SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE AND OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

ESCAPE- ANY AIR-PURIFYING FULL FACEPIECE RESPIRATOR (GAS MASK) WITH A CHIN-STYLE OR FRONT- OR BACK-MOUNTED ACID GAS CANISTER HAVING A HIGH-EFFICIENCY PARTICULATE FILTER.
ANY APPROPRIATE ESCAPE-TYPE SELF-CONTAINED BREATHING APPARATUS.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ANY SUPPLIED-AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

CLOTHING:
WEAR APPROPRIATE PROTECTIVE CLOTHING TO AVOID ANY POSSIBILITY OF SKIN CONTACT WITH LIQUIDS CONTAINING MORE THAN 1% SULFURIC ACID. AVOID REPEATED OR PROLONGED SKIN CONTACT WITH LIQUIDS CONTAINING 1% OR LESS SULFURIC ACID.

GLOVES:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS SUBSTANCE.

EYE PROTECTION:
EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES AND A FACESHIELD TO PREVENT CONTACT WITH THIS SUBSTANCE.

EMERGENCY WASH FACILITIES:
WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES AND/OR SKIN MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN AND QUICK DRENCH SHOWER WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

AUTHORIZED - FISHER SCIENTIFIC, INC.
CREATION DATE: 11/28/84 REVISION DATE: 04/17/92

-ADDITIONAL INFORMATION-
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DATE: 10/30/91 ACCT: 146965-01
INDEX: 02912330409 CAT NO: A144500 PO NBR: N/A

HYDROCHLORIC ACID, CONCENTRATED (36-37%)
HYDROCHLORIC ACID, CONCENTRATED (36-37%)
HYDROCHLORIC ACID, CONCENTRATED (36-37%)

MATERIAL SAFETY DATA SHEET

FISHER SCIENTIFIC
CHEMICAL DIVISION
1 REAGENT LANE
FAIR LAWN NJ 07410
(201) 796-7100

EMERGENCY NUMBER: (201) 796-7100
CHEMTREC ASSISTANCE: (800) 424-9300

SUBSTANCE IDENTIFICATION

CAS-NUMBER 7647-01-0

SUBSTANCE: **HYDROCHLORIC ACID, CONCENTRATED (36-37%)**

TRADE NAMES/SYNONYMS:
CHLOROHYDRIC ACID; HYDROCHLORIDE; MURIATIC ACID; SPIRITS OF SALT; HYDROCHLORIC ACID, CONCENTRATED; HYDROGEN CHLORIDE, 23 EB; UN 1789; A142; A144; A508; A466; A481; ACC11155

CHEMICAL FAMILY:
INORGANIC ACID

MOLECULAR FORMULA: H-CL

MOLECULAR WEIGHT: 36.46

CERCLA RATINGS (SCALE 0-3): HEALTH=3 FIRE=0 REACTIVITY=1 PERSISTENCE=0
NFPA RATINGS (SCALE 0-4): HEALTH=3 FIRE=0 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

COMPONENT: HYDROGEN CHLORIDE PERCENT: 35.0-38.0
CAS# 7647-01-0

COMPONENT: WATER PERCENT: 62.0-65.0

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:
HYDROGEN CHLORIDE (HYDROCHLORIC ACID):
5 PPM (7.6 MG/M3) OSHA CEILING
5 PPM (7.6 MG/M3) ACGIH CEILING
5 PPM (7.6 MG/M3) NIOSH RECOMMENDED CEILING
5 PPM (7.6 MG/M3) DFG MAK TWA;
10 PPM (15.2 MG/M3) DFG MAK 5 MINUTE PEAK, MOMENTARY VALUE, 8 TIMES/SHIFT

MEASUREMENT METHOD: SILICA GEL TUBE; SODIUM BICARBONATE/SODIUM CARBONATE; ION CHROMATOGRAPHY; (NIOSH VOL. III # 7903, INORGANIC ACIDS).

500 POUNDS SARA SECTION 302 THRESHOLD PLANNING QUANTITY (GAS)
5000 POUND SARA SECTION 304 REPORTABLE QUANTITY (GAS)
5000 POUNDS CERCLA SECTION 103 REPORTABLE QUANTITY (LIQUID)
SUBJECT TO SARA SECTION 313 ANNUAL TOXIC CHEMICAL RELEASE REPORTING

PHYSICAL DATA

DESCRIPTION: COLORLESS OR SLIGHTLY YELLOW FUMING LIQUID WITH A PUNGENT ODOR. BOILING POINT: 384 F (196 C) SPECIFIC GRAVITY: 1.2

VAPOR PRESSURE: NOT AVAILABLE PH: 1.1 (0.1 N)

SOLUBILITY IN WATER: SOLUBLE VAPOR DENSITY: 1.3

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
NEGLIGIBLE FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

FIREFIGHTING MEDIA:
DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR REGULAR FOAM (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR REGULAR FOAM

DATE: 10/30/91 ACCT: 146965-01
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SOLUTIONS MAY CAUSE DERMATITIS. PHOTOSENSITIZATION MAY OCCUR.

FIRST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). IN CASE OF CHEMICAL BURNS, COVER AREA WITH STERILE, DRY DRESSING. BANDAGE SECURELY, BUT NOT TOO TIGHTLY. GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:
HYDROGEN CHLORIDE (HYDROCHLORIC ACID):
CORROSIVE.
ACUTE EXPOSURE- CONTACT MAY CAUSE SEVERE IRRITATION, CONJUNCTIVITIS, CORNEAL NECROSIS AND BURNS WITH IMPAIRMENT OR PERMANENT LOSS OF VISION. A DROP OF HYDROCHLORIC ACID SPLASHED IN THE EYE AND IMMEDIATELY WASHED OUT HAS PRODUCED A WHITE COAGULATION OF THE CORNEAL AND CONJUNCTIVAL EPITHELIUM. ANIMALS EXPOSED TO VAPOR CONCENTRATIONS OF 1350 PPM FOR ONE AND A HALF HOURS SHOWED CLOUDING OF THE CORNEA AND 300 PPM FOR 6 HOURS SHOWED SLIGHT EROSION OF THE CORNEAL EPITHELIUM. CONTACT WITH A COMPRESSED GAS MAY CAUSE FROSTBITE.
CHRONIC EXPOSURE- ANIMALS EXPOSED TO VAPOR AT 100 PPM FOR 6 HOURS DAILY FOR 50 DAYS SHOWED ONLY SLIGHT UNREST AND IRRITATION OF THE EYES, BUT NO OCULAR INJURY. EFFECTS ARE DEPENDENT UPON CONCENTRATION AND DURATION OF EXPOSURE. CONJUNCTIVITIS OR EFFECTS SIMILAR TO THOSE FOR ACUTE EXPOSURE MAY OCCUR.

FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). CONTINUE IRRIGATING WITH NORMAL SALINE UNTIL THE PH HAS RETURNED TO NORMAL (30-60 MINUTES). COVER WITH STERILE BANDAGES. GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:
HYDROGEN CHLORIDE (HYDROCHLORIC ACID):
CORROSIVE.
ACUTE EXPOSURE- INGESTION OF THE ACID MAY CAUSE BURNS OF THE MOUTH, THROAT, ESOPHAGUS AND STOMACH WITH CONSEQUENT PAIN, UNEASINESS, NAUSEA, SALIVATION, VOMITING, DIARRHEA, CHILLS, SHOCK AND INTENSE THIRST. NEPHRITIS, FEVER AND PERFORATION OF THE INTESTINAL TRACT, AND CIRCULATORY COLLAPSE MAY OCCUR. DEATH MAY BE DUE TO ESOPHAGEAL OR GASTRIC NECROSIS.
CHRONIC EXPOSURE- NO DATA AVAILABLE.

FIRST AID- DO NOT USE GASTRIC LAVAGE OR EMESIS. DILUTE THE ACID IMMEDIATELY BY DRINKING LARGE QUANTITIES OF WATER OR MILK. IF VOMITING PERSISTS, ADMINISTER FLUIDS REPEATEDLY. INGESTED ACID MUST BE DILUTED APPROXIMATELY 100 FOLD TO RENDER IT HARMLESS TO TISSUES. MAINTAIN AIRWAY AND TREAT SHOCK (DREISBACH, HANDBOOK OF POISONING, 12TH ED.). GET MEDICAL ATTENTION IMMEDIATELY. IF VOMITING OCCURS, KEEP HEAD BELOW HIPS TO HELP PREVENT ASPIRATION.

ANTIDOTE:
NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

REACTIVITY

REACTIVITY:
REACTS EXOTHERMICALLY WITH WATER OR STEAM TO PRODUCE TOXIC AND CORROSIVE FUMES.

INCOMPATIBILITIES:
HYDROGEN CHLORIDE (HYDROCHLORIC ACID):
ACETIC ANHYDRIDE: VIOLENT REACTION.
ALCOHOLIC HYDROGEN CYANIDE: EXPLOSIVE REACTION.
ALUMINUM: EXPLOSION.
ALUMINUM-TITANIUM ALLOYS: IGNITES OR INCANDESCES WHEN HEATED.
2-AMINOETHANOL: VIOLENT REACTION.
AMMONIUM HYDROXIDE: VIOLENT REACTION.
BASES: VIOLENT REACTION.
BRASS: CORRODES.
BRONZE: CORRODES.
CALCIUM CARBIDE: REACTS WITH INCANDESCENCE.
CALCIUM HYPOCHLORITE: IGNITION.
CESIUM ACETYLIDE: IGNITES ON CONTACT.
CHLORINE + DINITROANILINES: VIGOROUS REACTION WITH RELEASE OF FLAMMABLE HYDROGEN GAS FUMES.
CHLOROSULFONIC ACID: VIOLENT REACTION.
1,1-DIFLUOROETHYLENE: EXTREMELY EXOTHERMIC DECOMPOSITION REACTION.
DOWICIL 100: DECOMPOSES.
ETHYLENE DIAMINE: VIOLENT REACTION.
ETHYLENE IMINE: VIOLENT REACTION.
FLUORINE: IGNITES ON CONTACT.
HEXALITHIUM DISILICIDE: INCANDESCES.
IRON: CORRODES WITH EVOLUTION OF FLAMMABLE HYDROGEN GAS.
MAGNESIUM BORIDE: PRODUCES A SPONTANEOUSLY FLAMMABLE GAS.
MERCURIC SULFATE: VIOLENT REACTION AT 125 C.
METAL ACETYLIDES: VIOLENT REACTION.
METALS: SEVERE CORROSION WITH EVOLUTION OF FLAMMABLE HYDROGEN GAS.
OLEUM: VIOLENT REACTION.
OXIDIZERS (STRONG): VIOLENT REACTION.
OXYGEN + PLATINUM: IGNITES ON CONTACT.

DATE: 10/30/91 ACCT: 146965-01
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PROTECTIVE EQUIPMENT

VENTILATION:
PROVIDE LOCAL EXHAUST OR PROCESS ENCLOSURE VENTILATION TO MEET PUBLISHED EXPOSURE LIMITS.

RESPIRATOR:
THE FOLLOWING RESPIRATORS ARE RECOMMENDED BASED ON INFORMATION FOUND IN THE PHYSICAL DATA, TOXICITY AND HEALTH EFFECTS SECTIONS. THEY ARE RANKED IN ORDER FROM MINIMUM TO MAXIMUM RESPIRATORY PROTECTION.
THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND IN THE WORK PLACE, MUST BE BASED ON THE SPECIFIC OPERATION, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND MUST BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

HYDROGEN CHLORIDE (HYDROCHLORIC ACID):

50 PPM- ANY SUPPLIED-AIR RESPIRATOR.
ANY SELF-CONTAINED BREATHING APPARATUS.
ANY CHEMICAL CARTRIDGE RESPIRATOR WITH CARTRIDGE(S) PROVIDING PROTECTION AGAINST HYDROCHLORIC ACID.

100 PPM- ANY SUPPLIED-AIR RESPIRATOR OPERATED IN A CONTINUOUS FLOW MODE.
ANY SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE.
ANY SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE.
ANY AIR-PURFIYING, FULL-FACEPIECE RESPIRATOR (GAS MASK) WITH A CHIN-STYLE, FRONT-, OR BACK- MOUNTED CANISTER PROVIDING PROTECTION AGAINST HYDROCHLORIC ACID.
ANY CHEMICAL CARTRIDGE RESPIRATOR WITH A FULL FACEPIECE AND CARTRIDGE(S) PROVIDING PROTECTION AGAINST HYDROCHLORIC ACID.
ANY POWERED, AIR-PURFIYING RESPIRATOR WITH CARTRIDGE(S) PROVIDING PROTECTION AGAINST HYDROCHLORIC ACID.
ESCAPE- ANY AIR-PURIFYING, FULL FACEPIECE RESPIRATOR (GAS MASK) WITH A CHIN-STYLE, FRONT- OR BACK-MOUNTED ACID GAS CANISTER.
ANY APPROPRIATE ESCAPE-TYPE SELF-CONTAINED BREATHING APPARATUS.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ANY SUPPLIED-AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

CLOTHING:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT ANY POSSIBILITY OF SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS SUBSTANCE.

EYE PROTECTION:
EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES AND A FACESHIELD TO PREVENT CONTACT WITH THIS SUBSTANCE.

EMERGENCY WASH FACILITIES:
WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES AND/OR SKIN MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN AND QUICK DRENCH SHOWER WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

AUTHORIZED - FISHER SCIENTIFIC, INC.
CREATION DATE: 04/30/85 REVISION DATE: 07/02/91

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DATE: 10/30/91 ACCT: 146965-01
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SOLUTIONS MAY CAUSE DERMATITIS. PHOTOSENSITIZATION MAY OCCUR.

FIRST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). IN CASE OF CHEMICAL BURNS, COVER AREA WITH STERILE, DRY DRESSING. BANDAGE SECURELY, BUT NOT TOO TIGHTLY. GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:
HYDROGEN CHLORIDE (HYDROCHLORIC ACID):
CORROSIVE.
ACUTE EXPOSURE- CONTACT MAY CAUSE SEVERE IRRITATION, CONJUNCTIVITIS, CORNEAL NECROSIS AND BURNS WITH IMPAIRMENT OR PERMANENT LOSS OF VISION. A DROP OF HYDROCHLORIC ACID SPLASHED IN THE EYE AND IMMEDIATELY WASHED OUT HAS PRODUCED A WHITE COAGULATION OF THE CORNEAL AND CONJUNCTIVAL EPITHELIUM. ANIMALS EXPOSED TO VAPOR CONCENTRATIONS OF 1350 PPM FOR ONE AND A HALF HOURS SHOWED CLOUDING OF THE CORNEA AND 300 PPM FOR 6 HOURS SHOWED SLIGHT EROSION OF THE CORNEAL EPITHELIUM. CONTACT WITH A COMPRESSED GAS MAY CAUSE FROSTBITE.
CHRONIC EXPOSURE- ANIMALS EXPOSED TO VAPOR AT 100 PPM FOR 6 HOURS DAILY FOR 50 DAYS SHOWED ONLY SLIGHT UNREST AND IRRITATION OF THE EYES, BUT NO OCULAR INJURY. EFFECTS ARE DEPENDENT UPON CONCENTRATION AND DURATION OF EXPOSURE. CONJUNCTIVITIS OR EFFECTS SIMILAR TO THOSE FOR ACUTE EXPOSURE MAY OCCUR.

FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). CONTINUE IRRIGATING WITH NORMAL SALINE UNTIL THE PH HAS RETURNED TO NORMAL (30-60 MINUTES). COVER WITH STERILE BANDAGES. GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:
HYDROGEN CHLORIDE (HYDROCHLORIC ACID):
CORROSIVE.
ACUTE EXPOSURE- INGESTION OF THE ACID MAY CAUSE BURNS OF THE MOUTH, THROAT, ESOPHAGUS AND STOMACH WITH CONSEQUENT PAIN, UNEASINESS, NAUSEA, SALIVATION, VOMITING, DIARRHEA, CHILLS, SHOCK AND INTENSE THIRST. NEPHRITIS, FEVER AND PERFORATION OF THE INTESTINAL TRACT, AND CIRCULATORY COLLAPSE MAY OCCUR. DEATH MAY BE DUE TO ESOPHAGEAL OR GASTRIC NECROSIS.
CHRONIC EXPOSURE- NO DATA AVAILABLE.

FIRST AID- DO NOT USE GASTRIC LAVAGE OR EMESIS. DILUTE THE ACID IMMEDIATELY BY DRINKING LARGE QUANTITIES OF WATER OR MILK. IF VOMITING PERSISTS, ADMINISTER FLUIDS REPEATEDLY. INGESTED ACID MUST BE DILUTED APPROXIMATELY 100 FOLD TO RENDER IT HARMLESS TO TISSUES. MAINTAIN AIRWAY AND TREAT SHOCK (DREISBACH, HANDBOOK OF POISONING, 12TH ED.). GET MEDICAL ATTENTION IMMEDIATELY. IF VOMITING OCCURS, KEEP HEAD BELOW HIPS TO HELP PREVENT ASPIRATION.

ANTIDOTE:
NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

REACTIVITY

REACTIVITY:
REACTS EXOTHERMICALLY WITH WATER OR STEAM TO PRODUCE TOXIC AND CORROSIVE FUMES.

INCOMPATIBILITIES:
HYDROGEN CHLORIDE (HYDROCHLORIC ACID):
ACETIC ANHYDRIDE: VIOLENT REACTION.
ALCOHOLIC HYDROGEN CYANIDE: EXPLOSIVE REACTION.
ALUMINUM: EXPLOSION.
ALUMINUM-TITANIUM ALLOYS: IGNITES OR INCANDESCES WHEN HEATED.
2-AMINOETHANOL: VIOLENT REACTION.
AMMONIUM HYDROXIDE: VIOLENT REACTION.
BASES: VIOLENT REACTION.
BRASS: CORRODES.
BRONZE: CORRODES.
CALCIUM CARBIDE: REACTS WITH INCANDESCENCE.
CALCIUM HYPOCHLORITE: IGNITION.
CESIUM ACETYLIDE: IGNITES ON CONTACT.
CHLORINE + DINITROANILINES: VIGOROUS REACTION WITH RELEASE OF FLAMMABLE HYDROGEN GAS FUMES.
CHLOROSULFONIC ACID: VIOLENT REACTION.
1,1-DIFLUOROETHYLENE: EXTREMELY EXOTHERMIC DECOMPOSITION REACTION.
DOWICIL 100: DECOMPOSES.
ETHYLENE DIAMINE: VIOLENT REACTION.
ETHYLENE IMINE: VIOLENT REACTION.
FLUORINE: IGNITES ON CONTACT.
HEXALITHIUM DISILICIDE: INCANDESCES.
IRON: CORRODES WITH EVOLUTION OF FLAMMABLE HYDROGEN GAS.
MAGNESIUM BORIDE: PRODUCES A SPONTANEOUSLY FLAMMABLE GAS.
MERCURIC SULFATE: VIOLENT REACTION AT 125 C.
METAL ACETYLIDES: VIOLENT REACTION.
METALS: SEVERE CORROSION WITH EVOLUTION OF FLAMMABLE HYDROGEN GAS.
OLEUM: VIOLENT REACTION.
OXIDIZERS (STRONG): VIOLENT REACTION.
OXYGEN + PLATINUM: IGNITES ON CONTACT.

DATE: 05/28/92 ACCT: 146965-01
INDEX: 02921490654 CAT NO: A509-212 PO NBR: 627

NITRIC ACID
NITRIC ACID
NITRIC ACID

MATERIAL SAFETY DATA SHEET

FISHER SCIENTIFIC
CHEMICAL DIVISION
1 REAGENT LANE
FAIR LAWN NJ 07410
(201) 796-7100

EMERGENCY NUMBER: (201) 796-7100
CHEMTREC ASSISTANCE: (800) 424-9300

SUBSTANCE IDENTIFICATION

CAS-NUMBER 7697-37-2

SUBSTANCE: **NITRIC ACID**

TRADE NAMES/SYNONYMS:
AQUA FORTIS; WFNA; RFNA; HYDROGEN NITRATE; AZOTIC ACID; NITRYL HYDROXIDE; NITAL; STCC 4918528; UN 2031; A200; A200C; A200S; A202; A206C; A509; A467; A200SI; A198C; A483; HN03; ACC16550

CHEMICAL FAMILY:
INORGANIC ACID

MOLECULAR FORMULA: H-N-03

MOLECULAR WEIGHT: 63.01

CERCLA RATINGS (SCALE 0-3): HEALTH=3 FIRE=0 REACTIVITY=1 PERSISTENCE=0
NFPA RATINGS (SCALE 0-4): HEALTH=3 FIRE=0 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

COMPONENT: NITRIC ACID PERCENT: 70

COMPONENT: WATER PERCENT: 30

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:
NITRIC ACID:
2 PPM (5 MG/M3) OSHA TWA; 4 PPM (10 MG/M3) OSHA STEL
2 PPM (5 MG/M3) ACGIH TWA; 4 PPM (10 MG/M3) ACGIH STEL
2 PPM (5 MG/M3) NIOSH RECOMMENDED TWA;
4 PPM (10 MG/M3) NIOSH RECOMMENDED STEL
10 PPM (25 MG/M3) DFG MAK TWA;
20 PPM (50 MG/M3) DFG MAK 5 MINUTE PEAK, MOMENTARY VALUE, 8 TIMES/SHIFT

MEASUREMENT METHOD: SILICA GEL TUBE; SODIUM BICARBONATE/SODIUM CARBONATE; ION CHROMATOGRAPHY; (NIOSH VOL. III # 7903, INORGANIC ACIDS).

1000 POUNDS SARA SECTION 302 THRESHOLD PLANNING QUANTITY
1000 POUNDS SARA SECTION 304 REPORTABLE QUANTITY
1000 POUNDS CERCLA SECTION 103 REPORTABLE QUANTITY
SUBJECT TO SARA SECTION 313 ANNUAL TOXIC CHEMICAL RELEASE REPORTING

PHYSICAL DATA

DESCRIPTION: COLORLESS TO PALE YELLOW LIQUID WITH A SUFFOCATING ODOR.

BOILING POINT: 181 F (83 C) MELTING POINT: -44 F (-42 C)

SPECIFIC GRAVITY: 1.5027 @ 25 C VAPOR PRESSURE: 47.9 MMHG @ 20 C

EVAPORATION RATE: NOT AVAILABLE SOLUBILITY IN WATER: VERY SOLUBLE

VAPOR DENSITY: 3.2

SOLVENT SOLUBILITY: SOLUBLE IN ETHER.

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
NEGLIGIBLE FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

OXIDIZER: OXIDIZERS DECOMPOSE, ESPECIALLY WHEN HEATED, TO YIELD OXYGEN OR OTHER GASES WHICH WILL INCREASE THE BURNING RATE OF COMBUSTIBLE MATTER.

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CONTACT WITH EASILY OXIDIZABLE, ORGANIC, OR OTHER COMBUSTIBLE MATERIALS MAY RESULT IN IGNITION, VIOLENT COMBUSTION OR EXPLOSION.

FIREFIGHTING MEDIA:
WATER, DRY CHEMICAL OR SODA ASH
(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FOR LARGER FIRES, FLOOD AREA WITH WATER FROM A DISTANCE
(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FIREFIGHTING:
MOVE CONTAINER FROM FIRE AREA IF YOU CAN DO IT WITHOUT RISK. APPLY COOLING WATER TO SIDES OF CONTAINERS THAT ARE EXPOSED TO FLAMES UNTIL WELL AFTER FIRE IS OUT. STAY AWAY FROM ENDS OF TANKS. FOR MASSIVE FIRE IN CARGO AREA, USE UNMANNED HOSE HOLDER OR MONITOR NOZZLES; IF THIS IS IMPOSSIBLE, WITHDRAW FROM AREA AND LET FIRE BURN (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5, GUIDE PAGE 44).

USE FLOODING AMOUNTS OF WATER AS FOG. COOL CONTAINERS WITH FLOODING AMOUNTS OF WATER, APPLY FROM AS FAR A DISTANCE AS POSSIBLE. AVOID BREATHING CORROSIVE VAPORS, KEEP UPWIND; CONSIDER EVACUATION OF DOWNWIND AREA IF MATERIAL IS LEAKING.

TRANSPORTATION DATA

DEPARTMENT OF TRANSPORTATION HAZARD CLASSIFICATION 49 CFR 172.101:
OXIDIZER

DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS 49 CFR 172.101 AND SUBPART E:
OXIDIZER AND CORROSIVE

DEPARTMENT OF TRANSPORTATION PACKAGING REQUIREMENTS: 49 CFR 173.268
EXCEPTIONS: NONE

FINAL RULE ON HAZARDOUS MATERIALS REGULATIONS (HMR, 49 CFR PARTS 171-180), DOCKET NUMBERS HM-181, HM-181A, HM-181B, HM-181C, HM-181D AND HM-204. EFFECTIVE DATE OCTOBER 1, 1991. HOWEVER, COMPLIANCE WITH THE REGULATIONS IS AUTHORIZED ON AND AFTER JANUARY 1, 1991. (55 FR 52402, 12/21/90)

EXCEPT FOR EXPLOSIVES, INHALATION HAZARDS, AND INFECTIOUS SUBSTANCES, THE EFFECTIVE DATE FOR HAZARD COMMUNICATION REQUIREMENTS IS EXTENDED TO OCTOBER 1, 1993. (56 FR 47158, 10/18/91)

U.S. DEPARTMENT OF TRANSPORTATION SHIPPING NAME-ID NUMBER, 49 CFR 172.101:
NITRIC ACID-UN 2031

U.S. DEPARTMENT OF TRANSPORTATION HAZARD CLASS OR DIVISION, 49 CFR 172.101:
8 - CORROSIVE MATERIAL

U.S. DEPARTMENT OF TRANSPORTATION PACKING GROUP, 49 CFR 172.101:
PG I

U.S. DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS, 49 CFR 172.101 AND SUBPART E:
CORROSIVE

U.S. DEPARTMENT OF TRANSPORTATION PACKAGING AUTHORIZATIONS:
EXCEPTIONS: NONE
NON-BULK PACKAGING: 49 CFR 173.158
BULK PACKAGING: 49 CFR 173.243

U.S. DEPARTMENT OF TRANSPORTATION QUANTITY LIMITATIONS 49 CFR 172.101:
PASSENGER AIRCRAFT OR RAILCAR: FORBIDDEN
CARGO AIRCRAFT ONLY: 2.5 L

TOXICITY

NITRIC ACID:
TOXICITY DATA:
ANHYDROUS: 49 PPM/4 HOURS INHALATION-RAT LC50 (VAN WATER & ROGERS, INC MSDS); 2500 PPM/1 HOUR INHALATION-RAT LC50 (DUPONT MSDS); 430 MG/KG ORAL-HUMAN LDLO; 50-500 MG/KG ORAL-UNSPECIFIED SPECIES LD50 (DUPONT MSDS); 110 MG/KG UNREPORTED-MAN LDLO; REPRODUCTIVE EFFECTS DATA (RTECS).
MONOHYDRATE: NO DATA AVAILABLE.
TRIHYDRATE: NO DATA AVAILABLE.
CARCINOGEN STATUS: NONE.
LOCAL EFFECTS: CORROSIVE- INHALATION, SKIN, EYES, INGESTION.
ACUTE TOXICITY LEVEL: HIGHLY TOXIC BY INHALATION; TOXIC BY INGESTION.
TARGET EFFECTS: NO DATA AVAILABLE.
AT INCREASED RISK FROM EXPOSURE: PERSONS WITH IMPAIRED PULMONARY FUNCTION, PRE-EXISTING EYE AND SKIN DISORDERS.

HEALTH EFFECTS AND FIRST AID

INHALATION:
NITRIC ACID:
CORROSIVE/HIGHLY TOXIC. 100 PPM IMMEDIATELY DANGEROUS TO LIFE OR HEALTH.
ACUTE EXPOSURE- INHALATION OF ACIDIC SUBSTANCES MAY CAUSE SEVERE RESPIRATORY IRRITATION WITH COUGHING, CHOKING, AND POSSIBLY YELLOWISH BURNS OF THE MUCOUS MEMBRANES. OTHER INITIAL SYMPTOMS MAY INCLUDE DIZZINESS, HEADACHE, NAUSEA, AND WEAKNESS. PULMONARY EDEMA MAY BE IMMEDIATE IN THE MOST SEVERE EXPOSURES, BUT MORE LIKELY WILL OCCUR AFTER A LATENT PERIOD OF 5-72 HOURS. THE SYMPTOMS MAY INCLUDE TIGHTNESS IN THE CHEST, DYSPNEA, DIZZINESS, FROTHY SPUTUM, AND CYANOSIS. PHYSICAL FINDINGS MAY INCLUDE HYPOTENSION, WEAK, RAPID PULSE, MOIST RALES, AND HEMOCONCENTRATION. IN NON-FATAL CASES, COMPLETE RECOVERY MAY OCCUR WITHIN A FEW DAYS OR WEEKS OR, CONVALESCENCE MAY BE PROLONGED WITH FREQUENT RELAPSES AND CONTINUED DYSPNEA AND OTHER SIGNS AND SYMPTOMS OF PULMONARY INSUFFICIENCY. IN SEVERE EXPOSURES, DEATH DUE TO ANOXIA MAY OCCUR WITHIN A FEW HOURS AFTER ONSET OF THE SYMPTOMS OF PULMONARY EDEMA OR FOLLOWING A RELAPSE.
CHRONIC EXPOSURE- DEPENDING ON THE CONCENTRATION AND DURATION OF EXPOSURE, REPEATED OR PROLONGED EXPOSURE TO AN ACIDIC SUBSTANCE MAY CAUSE EROSION OF THE TEETH, INFLAMMATORY AND ULCERATIVE CHANGES IN THE MOUTH, AND POSSIBLY JAW NECROSIS. BRONCHIAL IRRITATION WITH COUGH AND FREQUENT ATTACKS OF BRONCHIAL PNEUMONIA MAY OCCUR. GASTROINTESTINAL DISTURBANCES ARE ALSO POSSIBLE.

FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, GIVE ARTIFICIAL RESPIRATION. MAINTAIN AIRWAY AND BLOOD PRESSURE AND ADMINISTER OXYGEN IF AVAILABLE. KEEP AFFECTED PERSON WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. ADMINISTRATION OF OXYGEN SHOULD BE PERFORMED BY QUALIFIED PERSONNEL. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:
NITRIC ACID:
CORROSIVE.
ACUTE EXPOSURE- DIRECT CONTACT WITH LIQUID OR VAPOR MAY CAUSE SEVERE PAIN, BURNS AND POSSIBLY YELLOWISH STAINS. BURNS MAY BE DEEP WITH SHARP EDGES AND HEAL SLOWLY WITH SCAR TISSUE FORMATION. DILUTE SOLUTIONS OF NITRIC ACID MAY PRODUCE MILD IRRITATION AND HARDEN THE EPIDERMIS WITHOUT DESTROYING IT. CONCENTRATED ACID SOLUTIONS APPLIED TO OVER 25% OF THE SKIN AREA IN RATS PRODUCED ELEVATED METHEMOGLOBIN AND BLOOD NITRATE LEVELS.
CHRONIC EXPOSURE- EFFECTS DEPEND ON THE CONCENTRATION AND DURATION OF EXPOSURE. REPEATED OR PROLONGED CONTACT WITH ACIDIC SUBSTANCES MAY RESULT IN DERMATITIS OR EFFECTS SIMILAR TO ACUTE EXPOSURE.

FIRST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). IN CASE OF CHEMICAL BURNS, COVER AREA WITH STERILE, DRY DRESSING. BANDAGE SECURELY, BUT NOT TOO TIGHTLY. GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:
NITRIC ACID:
CORROSIVE.
ACUTE EXPOSURE- DIRECT CONTACT WITH ACIDIC SUBSTANCES MAY CAUSE PAIN AND LACRIMATION, PHOTOPHOBIA, AND BURNS, POSSIBLY SEVERE. THE DEGREE OF INJURY DEPENDS ON THE CONCENTRATION AND DURATION OF CONTACT. IN MILD BURNS, THE EPITHELIUM REGENERATES RAPIDLY AND THE EYE RECOVERS COMPLETELY. IN SEVERE CASES, THE EXTENT OF INJURY MAY NOT BE FULLY APPARENT FOR SEVERAL WEEKS. ULTIMATELY, THE WHOLE CORNEA MAY BECOME DEEPLY VASCULARIZED AND OPAQUE RESULTING IN BLINDNESS. IN THE WORST CASES, THE EYE MAY BE TOTALLY DESTROYED. CONCENTRATED NITRIC ACID MAY IMPART A YELLOW COLOR TO THE EYE UPON CONTACT.
CHRONIC EXPOSURE- EFFECTS DEPEND ON THE CONCENTRATION AND DURATION OF EXPOSURE. REPEATED OR PROLONGED EXPOSURE TO ACIDIC SUBSTANCES MAY CAUSE CONJUNCTIVITIS OR EFFECTS AS IN ACUTE EXPOSURE.

FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). CONTINUE IRRIGATING WITH NORMAL SALINE UNTIL THE PH HAS RETURNED TO NORMAL (30-60 MINUTES). COVER WITH STERILE BANDAGES. GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:
NITRIC ACID:
CORROSIVE/TOXIC.
ACUTE EXPOSURE- ACIDIC SUBSTANCES MAY CAUSE CIRCUMORAL BURNS WITH YELLOW DISCOLORATION AND CORROSION OF THE MUCOUS MEMBRANES OF THE MOUTH, THROAT AND ESOPHAGUS. THERE MAY BE IMMEDIATE PAIN AND DIFFICULTY OR INABILITY TO SWALLOW OR SPEAK. EPIGLOTTAL EDEMA MAY RESULT IN RESPIRATORY DISTRESS AND POSSIBLY ASPHYXIA. MARKED THIRST, EPIGASTRIC PAIN, NAUSEA, VOMITING AND DIARRHEA MAY OCCUR. DEPENDING ON THE DEGREE OF ESPOHAGEAL AND GASTRIC CORROSION, THE VOMITUS MAY CONTAIN FRESH OR DARK PRECIPITATED BLOOD AND LARGE SHREDS OF MUCOSA. SHOCK WITH MARKED HYPOTENSION, WEAK, RAPID PULSE, SHALLOW RESPIRATION, AND CLAMMY SKIN MAY OCCUR. CIRCULATORY COLLAPSE MAY ENSUE AND IF UNCORRECTED, LEAD TO RENAL FAILURE. IN SEVERE CASES, GASTRIC, AND TO A LESSER DEGREE, ESOPHAGEAL PERFORATION AND SUBSEQUENT PERITONITIS MAY OCCUR AND BE ACCOMPANIED BY FEVER AND ABDOMINAL RIGIDITY. ESOPHAGEAL, GASTRIC ANC PYLORIC STRICTURE MAY OCCUR WITHIN A FEW WEEKS, BUT MAY BE

DELAYED FOR MONTHS OR EVEN YEARS. DEATH MAY RESULT WITHIN A SHORT TIME FROM ASPHYXIA, CIRCULATORY COLLAPSE OR ASPIRATION OF EVEN MINUTE AMOUNTS. LATER DEATH MAY BE DUE TO PERITONITIS, SEVERE NEPHRITIS OR PNEUMONIA. COMA AND CONVULSIONS SOMETIMES OCCUR TERMINALLY.
CHRONIC EXPOSURE- DEPENDING ON THE CONCENTRATION, REPEATED INGESTION OF ACIDIC SUBSTANCES MAY RESULT IN INFLAMMATORY AND ULCERATIVE CHANGES IN THE MUCOUS MEMBRANES OF THE MOUTH AND OTHER EFFECTS AS IN ACUTE INGESTION. REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS.

FIRST AID- DO NOT USE GASTRIC LAVAGE OR EMESIS. DILUTE THE ACID IMMEDIATELY BY DRINKING LARGE QUANTITIES OF WATER OR MILK. IF VOMITING PERSISTS, ADMINISTER FLUIDS REPEATEDLY. INGESTED ACID MUST BE DILUTED APPROXIMATELY 100 FOLD TO RENDER IT HARMLESS TO TISSUES. MAINTAIN AIRWAY AND TREAT SHOCK (DREISBACH, HANDBOOK OF POISONING, 12TH ED.). GET MEDICAL ATTENTION IMMEDIATELY. IF VOMITING OCCURS, KEEP HEAD BELOW HIPS TO HELP PREVENT ASPIRATION.

ANTIDOTE:
NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

REACTIVITY

REACTIVITY:
REACTS EXOTHERMICALLY WITH WATER.

INCOMPATIBILITIES:
NITRIC ACID:
ACETIC ACID: MAY REACT EXPLOSIVELY.
ACETIC ANHYDRIDE: EXPLOSIVE REACTION BY FRICTION OR IMPACT.
ACETONE: MAY REACT EXPLOSIVELY.
ACETONITRILE: EXPLOSIVE MIXTURE.
4-ACETOXY-3-METHOXYBENZALDEHYDE: EXOTHERMIC REACTION.
ACROLEIN: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
ACRYLONITRILE: EXPLOSIVE REACTION AT 90 C.
ACRYLONITRILE-METHACRYLATE COPOLYMER: INCOMPATIBLE.
ALCOHOLS; POSSIBLE VIOLENT REACTION OR EXPLOSION; FORMATION OF EXPLOSIVE COMPOUND IN THE PRESENCE OF HEAVY METALS.
ALKANETHIOLS: EXOTHERMIC REACTION WITH POSSIBLE IGNITION.
2-ALKOXY-1,3-DITHIA-2-PHOSPHOLANE: IGNITION REACTION.
ALLYL ALCOHOL: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
ALLYL CHLORIDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
AMINES (ALIPHATIC OR AROMATIC): POSSIBLE IGNITION REACTION.
2-AMINOETHANOL: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
2-AMINOTHIAZOLE: EXPLOSIVE REACTION.
AMMONIA (GAS): BURNS IN AN ATMOSPHERE OF NITRIC ACID VAPOR.
AMMONIUM HYDROXIDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
AMMONIUM NITRATE: FORMS EXPLOSIVE MIXTURE.
ANILINE: IGNITES ON CONTACT.
ANILINIUM NITRATE: FORMS EXPLOSIVE SOLUTION.
ANION EXCHANGE RESINS: POSSIBLE VIOLENT EXOTHERMIC REACTION.
ANTIMONY: VIOLENT REACTION.
ARSINE: EXPLOSIVE REACTION.
ARSINE-BORON TRIBROMIDE: VIOLENT OXIDATION.
BASES; REACTS.
BENZENE: EXPLOSIVE REACTION.
BENZIDINE: SPONTANEOUS IGNITION.
BENZONITRILE: POSSIBLE EXPLOSION.
BENZOTHIOPHENE DERIVATIVES: FORMATION OF POSSIBLY EXPLOSIVE COMPOUNDS.
N-BENZYL-N-ETHYLANILINE: VIGOROUS DECOMPOSITION.
1,4-BIS(METHOXYMETHYL)2,3,5,6-TETRAMETHYLBENZENE: GAS EVOLUTION.
BISMUTH: INTENSE EXOTHERMIC REACTION OR EXPLOSION.
1,3-BIS(TRIFLUOROMETHYL)BENZENE: POSSIBLE EXPLOSION.
BORON: VIOLENT REACTION WITH INCANDESCENCE.
BORON DECAHYDRIDE: EXPLOSIVE REACTION.
BORON PHOSPHIDE: IGNITION REACTION.
BROMINE PENTAFLUORIDE: IGNITION REACTION.
N-BUTYL MERCAPTAN: IGNITION REACTION.
N-BUTYRALDEHYDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
CADMIUM PHOSPHIDE: EXPLOSIVE REACTION.
CALCIUM HYPOPHOSPHITE: IGNITION REACTION.
CARBON (PULVERIZED): VIOLENT REACTION.
CELLULOSE: FORMS EASILY COMBUSTIBLE ESTER.
CHLORATES; REACTS.
CHLORINE; INCOMPATIBLE.
CHLORINE TRIFLUORIDE: VIOLENT REACTION.
CHLOROBENZENE: POSSIBLE EXPLOSION.
4-CHLORO-2-NITROANILINE: FORMS EXPLOSIVE COMPOUND.
CHLOROSULFONIC ACID: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
COAL: EXPLOSIVE MIXTURE.
COATINGS: MAY BE ATTACKED.
CRESOL: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
CROTONALDEHYDE: VIOLENT DECOMPOSITION WITH IGNITION.
CUMENE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
CUPRIC NITRIDE: EXPLOSIVE REACTION.
CUPROUS NITRIDE: VIOLENT REACTION.
CYANATES: POSSIBLE EXPLOSIVE REACTION.
CYCLOHEXANONE; VIOLENT REACTION.
CYCLOHEXYLAMINE: FORMS EXPLOSIVE COMPOUND.
CYCLOPENTADIENE: EXPLOSIVE REACTION.

1,2-DIAMINOETHANEBIS(TRIMETHYLGOLD): EXPLOSIVE REACTION.
DIBORANE: SPONTANEOUS IGNITION.
DI-2-BUTOXYETHYL ETHER: VIOLENT DECOMPOSITION REACTION.
2,6-DI-T-BUTYL PHENOL: FORMATION OF EXPLOSIVE COMPOUND.
DICHLOROETHANE: FORMS SHOCK AND HEAT SENSITIVE MIXTURE.
DICHLOROETHYLENE: FORMS EXPLOSIVE COMPOUND.
DICHLOROMETHANE: FORMS EXPLOSIVE SOLUTION.
DICYCLOPENTADIENE: SPONTANEOUS IGNITION.
DIENES: IGNITION REACTION.
DIETHYLAMINO ETHANOL: POSSIBLE EXPLOSION.
DIETHYL ETHER: POSSIBLE EXPLOSION.
3,6-DIHYDRO-1,2,2H-OXAZINE: EXPLOSIVE INTERACTION.
DIISOPROPYL ETHER: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
DIMETHYLAMINOMETHYLFERROCENE: VIOLENT DECOMPOSITION IF HEATED.
DIMETHYL ETHER: FORMS EXPLOSIVE COMPOUND.
DIMETHYL HYDRAZINE: IGNITES ON CONTACT.
DIMETHYL SULFOXIDE + 1,4-DIOXANE: EXPLOSION.
DIMETHYL SULFOXIDE + <14% WATER: EXPLOSIVE REACTION.
DINITROBENZENE: EXPLOSION HAZARD.
DINITROTOLUENE: EXPLOSIVE REACTION.
DIOXANE + PERCHLORIC ACID: POSSIBLE EXPLOSION.
DIPHENYL DISTIBENE: EXPLOSIVE OXIDATION.
DIPHENYL MERCURY + CARBON DISULFIDE: VIOLENT REACTION.
DIPHENYL TIN: IGNITION REACTION.
DISODIUM PHENYL ORTHOPHOSPHATE: VIOLENT EXPLOSION.
DIVINYL ETHER: POSSIBLE IGNITION REACTION.
EPICHLOROHYDRIN: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
ETHANESULFONAMIDE: EXPLOSIVE REACTION.
ETHOXY-ETHYLENE DITHIOPHOSPHATE: IGNITION ON CONTACT.
M-ETHYL ANILINE: IGNITION REACTION.
ETHYLENE DIAMINE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
ETHYLENE GLYCOL: FORMS SHOCK AND HEAT SENSITIVE MIXTURE.
ETHYLENEIMINE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
5-ETHYL-2-METHYL PYRIDINE: EXPLOSIVE REACTION.
ETHYL PHOSPHINE: IGNITION REACTION.
5-ETHYL-2-PICOLINE: FORMS EXPLOSIVE COMPOUNDS.
FERROUS OXIDE (POWDERED): INTENSE EXOTHERMIC REACTION.
FLUORINE: POSSIBLE EXPLOSIVE REACTION.
FORMIC ACID: EXOTHERMIC REACTION WITH RELEASE OF TOXIC GASES.
2-FORMYLAMINO-1-PHENYL-1,3-PROPANEDIOL: POSSIBLE EXPLOSION.
FUEL OIL (BURNING): EXPLOSION.
FULMINATES: REACTS.
FURFURYLIDENE KETONES: IGNITES ON CONTACT.
GERMANIUM: VIOLENT REACTION.
GLYCEROL: POSSIBLE EXPLOSION.
GLYOXAL: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
HEXALITHIUM DISILICIDE: EXPLOSIVE REACTION.
HEXAMETHYLBENZENE: POSSIBLE EXPLOSION.
2,2,4,4,6,6-HEXAMETHYLTRITHIANE: EXPLOSIVE OXIDATION.
HEXENAL: EXPLODES ON HEATING.
HYDRAZINE: VIOLENT REACTION.
HYDRAZOIC ACID: ENERGETIC REACTION.
HYDROGEN IODIDE: IGNITION REACTION.
HYDROGEN PEROXIDE: FORMS UNSTABLE MIXTURE.
HYDROGEN PEROXIDE AND KETONES: FORMS EXPLOSIVE PRODUCTS.
HYDROGEN PEROXIDE AND MERCURIC OXIDE: FORMS EXPLOSIVE COMPOUNDS.
HYDROGEN PEROXIDE AND THIOUREA: FORMS EXPLOSIVE COMPOUNDS.
HYDROGEN SELENIDE: IGNITION REACTION.
HYDROGEN SULFIDE: INCANDESCENT REACTION.
HYDROGEN TELLURIDE: IGNITION AND POSSIBLE EXPLOSIVE REACTION.
INDANE AND SULFURIC ACID: EXPLOSIVE REACTION.
ISOPRENE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
KETONES (CYCLIC): VIOLENT REACTION.
LACTIC ACID + HYDROFLUORIC ACID: EXPLOSIVE REACTION.
LITHIUM: IGNITION REACTION.
LITHIUM SILICIDE: INCANDESCENT REACTION.
MAGNESIUM: EXPLOSIVE REACTION.
MAGNESIUM + 2-NITROANILINE: MAY IGNITE ON CONTACT.
MAGNESIUM PHOSPHIDE: INCANDESCENT REACTION.
MAGNESIUM SILICIDE: VIOLENT REACTION.
MAGNESIUM-TITANIUM ALLOY: FORMS SHOCK AND HEAT SENSITIVE MIXTURE.
MANGANESE (POWDERED): INCANDESCENCE AND POSSIBLE EXPLOSION.
MESITYL OXIDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
MESITYLENE: POSSIBLE EXPLOSIVE REACTION.
METALS: VIOLENT REACTION WITH EXPLOSION OR IGNITION.
METAL ACETYLIDES: VIOLENT OR EXPLOSIVE REACTION.
METAL CARBIDES: VIOLENT OR EXPLOSIVE REACTION.
METAL CYANIDES: EXPLOSIVE REACTIONS.
METAL FERRICYANIDE OR FERROCYANIDE: VIOLENT REACTION.
METAL SALICYLATES: FORMS EXPLOSIVE COMPOUNDS.
METAL THIOCYANATES: POSSIBLE EXPLOSION.
2-METHYLBENZIMIDAZOLE + SULFURIC ACID: POSSIBLE EXPLOSIVE REACTION.
4-METHYLCYCLOHEXANONE: EXPLOSIVE REACTION.
2-METHYL-5-ETHYLPYRIDINE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
METHYL THIOPHENE: IGNITION REACTION.
NEODYMIUM PHOSPHIDE: VIOLENT REACTION.
NICKEL TETRAPHOSPHIDE: IGNITION REACTION.
NITRO AROMATIC HYDROCARBONS: FORMS HIGHLY EXPLOSIVE PRODUCTS.
NITROBENZENE: EXPLOSIVE REACTION, ESPECIALLY IN THE PRESENCE OF WATER.

NITROMETHANE: EXPLOSIVE REACTION.
NITRONAPHTHALENE: EXPLOSION HAZARD.
NON-METAL OXIDES : EXPLOSIVE REACTION.
OLEUM: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
ORGANIC MATERIALS: FIRE AND EXPLOSION HAZARD.
ORGANIC SUBSTANCES AND PERCHLORATES: POSSIBLE EXPLOSION.
ORGANIC SUBSTANCES AND SULFURIC ACID: POSSIBLE EXPLOSION.
PHENYL ACETYLENE + 1,1-DIMETHYLHYDRAZINE: VIOLENT REACTION.
PHENYL ORTHOPHOSPHORIC ACID DISODIUM SALT: FORMS EXPLOSIVE PRODUCTS.
PHOSPHINE + OXYGEN: SPONTANEOUS IGNITION.
PHOSPHONIUM IODIDE: IGNITION REACTION.
PHOSPHORUS (VAPOR): IGNITES WHEN HEATED.
PHOSPHOROUS HALIDES: IGNITION REACTION.
PHOSPHORUS TETRAIODIDE: VIGOROUS REACTION.
PHOSPHORUS TRICHLORIDE: EXPLOSIVE REACTION.
PHTHALIC ACID AND SULFURIC ACID: POSSIBLE EXPLOSIVE REACTION.
PHTHALIC ANHYDRIDE: EXOTHERMIC REACTION AND FORMS EXPLOSIVE PRODUCTS.
PICRATES: REACTS.
PLASTICS: MAY BE ATTACKED.
POLYALKENES: INTENSE REACTION..
POLYDIBROMOSILANES: EXPLOSIVE REACTION.
POLY(ETHYLENE OXIDE) DERIVATIVES: POSSIBLE EXPLOSION.
POLYPROPYLENE: TEMPERATURE AND PRESSURE INCREASE IN A CLOSED CONTAINER.
POLY(SILYLENE): IGNITION.
POLYURETHANE (FOAM): VIGOROUS REACTION.
POTASSIUM HYPOPHOSPHITE: EXPLOSIVE REACTION.
POTASSIUM PHOSPHINATE: EXPLODES ON EVAPORATION.
B-PROPIOLACTONE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
PROPIOPHENONE + SULFURIC ACID: EXOTHERMIC REACTION ABOVE -5 C.
PROPYLENE GLYCOL + HYDROFLUORIC ACID + SILVER NITRATE: EXPLOSIVE MIXTURE.
PROPYLENE OXIDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
PYRIDINE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
PYROCATECHOL: IGNITES ON CONTACT.
REDUCING AGENTS: POSSIBLE EXPLOSIVE OR IGNITION REACTION.
RESORCINOL: POSSIBLE EXPLOSION.
RUBBER: VIGOROUS REACTION, POSSIBLE EXPLOSION.
SELENIUM: VIGOROUS REACTION.
SELENIUM HYDRIDE: IGNITION OR INCANDESCENT REACTION.
SELENIUM IODOPHOSPHIDE: EXPLOSIVE REACTION.
SILICON: VIOLENT REACTION.
SILICONE OIL: POSSIBLE EXPLOSION.
SILVER BUTEN-3-YNIDE: EXPLOSION.
SODIUM: SPONTANEOUS IGNITION.
SODIUM AZIDE: EXOTHERMIC REACTION.
SODIUM HYDROXIDE: TEMPERATURE AND PRESSURE INCREASE IN A CLOSED CONTAINER.
STIBINE: EXPLOSIVE REACTION.
SUCROSE (SOLID): VIGOROUS REACTION.
SULFAMIC ACID: VIOLENT REACTION WITH EVOLUTION OF TOXIC NITROUS OXIDE.
SULFIDES: REACTS.
SULFUR DIOXIDE: EXPLOSIVE REACTION.
SULFUR HALIDES: VIOLENT REACTION.
SULFURIC ACID + GLYCERIDES: EXPLOSIVE REACTION.
SULFURIC ACID + TEREPHTHALIC ACID: VIOLENT REACTION.
SURFACTANTS + PHOSPHORIC ACID: EXPLOSION HAZARD.
TERPENES: SPONTANEOUS IGNITION.
TETRABORANE: EXPLOSIVE REACTION.
TETRABORANE DECAHYDRIDE: EXPLOSIVE REACTION.
TETRAPHOSPHOROUS DIIODOTRISELENIDE: EXPLOSIVE REACTION.
TETRAPHOSPHOROUS IODIDE: IGNITES ON CONTACT.
TETRAPHOSPHOROUS TETRAOXIDE TRISULFIDE: VIOLENT REACTION.
THIOALDEHYDES: VIOLENT REACTION.
THIOKETONES: VIOLENT REACTION.
THIOPHENES: EXPLOSIVE REACTION.
TITANIUM: FORMS SHOCK-SENSITIVE COMPOUND.
TITANIUM ALLOYS: POSSIBLE EXPLOSIVE REACTION.
TITANIUM-MAGNESIUM ALLOY: POSSIBLE EXPLOSION ON IMPACT.
TOLUENE: VIOLENT REACTION.
TOLUIDENE: IGNITION REACTION.
1,3,5-TRIACETYLHEXAHYDRO-1,3,5-TRIAZINE + TRIFLUOROACETIC ANHYDRIDE: EXPLOSIVE REACTION.
TRIAZINE: VIOLENTLY EXPLOSIVE REACTION.
TRICADMIUM DIPHOSPHIDE: EXPLOSIVE REACTION.
TRIETHYLGALLIUM MONOETHYL ETHER COMPLEX: IGNITION REACTION.
TRIMETHYLTRIOXANE: INTENSE REACTION.
TRIS(IODOMERCURI)PHOSPHINE: VIOLENT DECOMPOSITION.
TRITHIOACETONE: EXPLOSIVE REACTION.
TURPENTINE: EXPLOSIVE MIXTURE.
UNSYMMETRICAL DIMETHYL HYDRAZINE: SPONTANEOUS IGNITION.
URANIUM: EXPLOSIVE REACTION.
URANIUM ALLOY: VIOLENT REACTION.
URANIUM DISULFIDE: VIOLENT REACTION.
URANIUM-NEODYMIUM ALLOYS: EXPLOSIVE REACTION.
VINYL ACETATE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
VINYLIDENE CHLORIDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
WOOD: POSSIBLE IGNITION.
P-XYLENE: INTENSE REACTION IN PRESENCE OF SULFURIC ACID.
ZINC: INCANDESCENT REACTION.
ZINC ETHOXIDE: POSSIBLE EXPLOSION.
ZIRCONIUM-URANIUM ALLOYS: EXPLOSIVE REACTION.

DECOMPOSITION:
THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE TOXIC OXIDES OF NITROGEN.

POLYMERIZATION:
HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

STORAGE AND DISPOSAL

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE. FOR ASSISTANCE, CONTACT THE DISTRICT DIRECTOR OF THE ENVIRONMENTAL PROTECTION AGENCY.

STORAGE

PROTECT AGAINST PHYSICAL DAMAGE. SEPARATE FROM METALLIC POWDERS, CARBIDES, HYDROGEN SULFIDE, TURPENTINE, ORGANIC ACIDS, AND ALL COMBUSTIBLE, ORGANIC OR OTHER READILY OXIDIZABLE MATERIALS. PROVIDE GOOD VENTILATION AND AVOID DIRECT SUNLIGHT (NFPA 49, HAZARDOUS CHEMICALS DATA, 1975).

STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

THRESHOLD PLANNING QUANTITY (TPQ):
THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) SECTION 302 REQUIRES THAT EACH FACILITY WHERE ANY EXTREMELY HAZARDOUS SUBSTANCE IS PRESENT IN A QUANTITY EQUAL TO OR GREATER THAN THE TPQ ESTABLISHED FOR THAT SUBSTANCE NOTIFY THE STATE EMERGENCY RESPONSE COMMISSION FOR THE STATE IN WHICH IT IS LOCATED. SECTION 303 OF SARA REQUIRES THESE FACILITIES TO PARTICIPATE IN LOCAL EMERGENCY RESPONSE PLANNING (40 CFR 355.30).

DISPOSAL

DISPOSAL MUST BE IN ACCORDANCE WITH STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE, 40 CFR 262. EPA HAZARDOUS WASTE NUMBER D002.
100 POUND CERCLA SECTION 103 REPORTABLE QUANTITY.

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CONDITIONS TO AVOID

MAY IGNITE OTHER COMBUSTIBLE MATERIALS (WOOD, PAPER, OIL, ETC.). REACTS VIOLENTLY WITH WATER AND FUELS. FLAMMABLE, POISONOUS GASES MAY ACCUMULATE IN TANKS AND HOPPER CARS. RUNOFF TO SEWER MAY CREATE FIRE OR EXPLOSION HAZARD.

CONSULT NFPA PUBLICATION 43A, STORAGE OF LIQUID AND SOLID OXIDIZING MATERIALS, FOR STORAGE REQUIREMENTS.

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SPILL AND LEAK PROCEDURES

SOIL SPILL:
DIG A HOLDING AREA SUCH AS A PIT, POND OR LAGOON TO CONTAIN SPILL AND DIKE SURFACE FLOW USING BARRIER OF SOIL, SANDBAGS, FOAMED POLYURETHANE OR FOAMED CONCRETE. ABSORB LIQUID MASS WITH FLY ASH OR CEMENT POWDER.

NEUTRALIZE SPILL WITH SLAKED LIME, SODIUM BICARBONATE OR CRUSHED LIMESTONE.

AIR SPILL:
APPLY WATER SPRAY TO KNOCK DOWN AND REDUCE VAPORS. KNOCK-DOWN WATER IS CORROSIVE AND TOXIC AND SHOULD BE DIKED FOR CONTAINMENT AND LATER DISPOSAL.

WATER SPILL:
ADD SUITABLE AGENT TO NEUTRALIZE SPILLED MATERIAL TO PH-7.

OCCUPATIONAL SPILL:
KEEP COMBUSTIBLES (WOOD, PAPER, OIL, ETC.) AWAY FROM SPILLED MATERIAL. DO NOT TOUCH SPILLED MATERIAL. STOP LEAK IF YOU CAN DO IT WITHOUT RISK. USE WATER SPRAY TO REDUCE VAPORS. DO NOT GET WATER INSIDE CONTAINER. FOR SMALL SPILLS, FLUSH AREA WITH FLOODING AMOUNTS OF WATER. FOR LARGER SPILLS, DIKE FAR AHEAD OF SPILL FOR LATER DISPOSAL. KEEP UNNECESSARY PEOPLE AWAY. ISOLATE HAZARD AREA AND DENY ENTRY. VENTILATE CLOSED SPACES BEFORE ENTERING.

REPORTABLE QUANTITY (RQ): 1000 POUNDS
THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) SECTION 304 REQUIRES THAT A RELEASE EQUAL TO OR GREATER THAN THE REPORTABLE QUANTITY FOR THIS SUBSTANCE BE IMMEDIATELY REPORTED TO THE LOCAL EMERGENCY PLANNING COMMITTEE AND THE STATE EMERGENCY RESPONSE COMMISSION (40 CFR 355.40). IF THE RELEASE OF THIS SUBSTANCE IS REPORTABLE UNDER CERCLA SECTION 103, THE NATIONAL RESPONSE CENTER MUST BE NOTIFIED IMMEDIATELY AT (800) 424-8802 OR (202) 426-2675 IN THE METROPOLITAN WASHINGTON, D.C. AREA (40 CFR 302.6).

PROTECTIVE EQUIPMENT

VENTILATION:
PROCESS ENCLOSURE RECOMMENDED TO MEET PUBLISHED EXPOSURE LIMITS.

RESPIRATOR:
THE FOLLOWING RESPIRATORS AND MAXIMUM USE CONCENTRATIONS ARE RECOMMENDATIONS BY THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIOSH POCKET GUIDE TO CHEMICAL HAZARDS; NIOSH CRITERIA DOCUMENTS OR BY THE U.S. DEPARTMENT OF LABOR, 29 CFR 1910 SUBPART Z.
THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND IN THE WORK PLACE, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

NITRIC ACID:

50 PPM- ANY SUPPLIED-AIR RESPIRATOR OPERATED IN A CONTINUOUS-FLOW MODE.

100 PPM- ANY SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE.
ANY SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE.
ANY AIR-PURIFYING, FULL-FACEPIECE RESPIRATOR (GAS MASK) WITH A CHIN-STYLE, FRONT- OR BACK-MOUNTED CANISTER PROVIDING PROTECTION AGAINST NITRIC ACID.*
ANY CHEMICAL CARTRIDGE RESPIRATOR WITH A FULL FACEPIECE AND CARTRIDGE(S) PROVIDING PROTECTION AGAINST NITRIC ACID.*

ESCAPE- ANY AIR-PURIFYING, FULL-FACEPIECE RESPIRATOR (GAS MASK) WITH A CHIN-STYLE, FRONT- OR BACK-MOUNTED CANISTER PROVIDING PROTECTION AGAINST NITRIC ACID.*
ANY APPROPRIATE ESCAPE-TYPE, SELF-CONTAINED BREATHING APPARATUS.

* ONLY NONOXIDIZABLE SORBENTS ARE ALLOWED (NOT CHARCOAL).

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ANY SUPPLIED-AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

CLOTHING:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT ANY POSSIBILITY OF SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS SUBSTANCE.

EYE PROTECTION:
EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES AND A FACESHIELD TO PREVENT CONTACT WITH THIS SUBSTANCE.

EMERGENCY WASH FACILITIES:
WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES AND/OR SKIN MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN AND QUICK DRENCH SHOWER WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

AUTHORIZED - FISHER SCIENTIFIC, INC.
CREATION DATE: 12/04/84 REVISION DATE: 02/25/92

DATE: 07/25/92 ACCT: 146965-01
INDEX: 02922060518 CAT NO: A507-500 PO NBR: 1217 AIR

ACETIC ACID, GLACIAL
ACETIC ACID, GLACIAL
ACETIC ACID, GLACIAL

MATERIAL SAFETY DATA SHEET

FISHER SCIENTIFIC
CHEMICAL DIVISION
1 REAGENT LANE
FAIR LAWN NJ 07410
(201) 796-7100

EMERGENCY NUMBER: (201) 796-7100
CHEMTREC ASSISTANCE: (800) 424-9300

SUBSTANCE IDENTIFICATION

CAS-NUMBER 64-19-7

SUBSTANCE: **ACETIC ACID, GLACIAL**

TRADE NAMES/SYNONYMS:
ACETIC ACID; GLACIAL ACETIC ACID; ETHANOIC ACID; VINEGAR ACID; ETHYLIC ACID; PYROLIGNEUS ACID; METHANECARBOXYLIC ACID; ACETIC ACID, HPLC GRADE; STOCK 4931303; UN 2789; A37; A38; A38C; A38P; A38SI; A38S; A507; A465; A35; A38FP; BP1185; C2H402; ACC00120

CHEMICAL FAMILY:
CARBOXYLIC ACID, ALIPHATIC

MOLECULAR FORMULA: C-H3-C-02-H

MOLECULAR WEIGHT: 60.05

CERCLA RATINGS (SCALE 0-3): HEALTH=2 FIRE=2 REACTIVITY=0 PERSISTENCE=0
NFPA RATINGS (SCALE 0-4): HEALTH=2 FIRE=2 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

COMPONENT: ACETIC ACID PERCENT: 80.0-100.0
CAS# 64-19-7

COMPONENT: WATER PERCENT: 0-20.0

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:
ACETIC ACID, GLACIAL:
10 PPM (25 MG/M3) OSHA TWA
10 PPM (25 MG/M3) ACGIH TWA; 15 PPM (37 MG/M3) ACGIH STEL
10 PPM (25 MG/M3) NIOSH RECOMMENDED TWA; 15 PPM (37 MG/M3) NIOSH STEL
10 PPM (25 MG/M3) DFG MAK TWA;
20 PPM (50 MG/M3) DFG MAK 5 MINUTE PEAK, MOMENTARY VALUE, 8 TIMES/SHIFT

MEASUREMENT METHOD: CHARCOAL TUBE; FORMIC ACID; GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION; (NIOSH VOL. III # 1603).

5000 POUNDS CERCLA SECTION 103 REPORTABLE QUANTITY

PHYSICAL DATA

DESCRIPTION: CLEAR, COLORLESS LIQUID WITH A STRONG, PUNGENT, CHARACTERISTIC

ODOR OF VINEGAR AND WHEN WELL DILUTED WITH WATER, AN ACID TASTE.

BOILING POINT: 244 F (118 C) MELTING POINT: 62 F (17 C)

SPECIFIC GRAVITY: 1.0492 VAPOR PRESSURE: 11.8 MMHG @ 20 C

EVAPORATION RATE: (BUTYL ACETATE=1) 0.97 PH: 2.4 (1.0 M SOL.)

SOLUBILITY IN WATER: VERY SOLUBLE ODOR THRESHOLD: 1.0 PPM

VAPOR DENSITY: 2.07

SOLVENT SOLUBILITY: SOLUBLE IN ETHANOL, GLYCEROL, ETHER, ACETONE, BENZENE, CARBON TETRACHLORIDE; INSOLUBLE IN CARBON DISULFIDE, CHLOROFORM, DIMETHYL SULFOXIDE

VISCOSITY: 1.22 CPS @ 20 C

FIRE AND EXPLOSION DATA

DATE: 07/25/92 ACCT: 146965-01
INDEX: 02922060518 CAT NO: A507-500 PO NBR: 1217 AIR

FIRE AND EXPLOSION HAZARD:
MODERATE FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

VAPOR-AIR MIXTURES ARE EXPLOSIVE ABOVE FLASH POINT.

VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL A CONSIDERABLE DISTANCE TO A SOURCE OF IGNITION AND FLASH BACK.

FLASH POINT: 103 F (39 C) (CC) UPPER EXPLOSIVE LIMIT: 16.0% @ 92 C

LOWER EXPLOSIVE LIMIT: 4.0% @ 59 C AUTOIGNITION TEMP.: 867 F (464 C)

FLAMMABILITY CLASS(OSHA): II

FIREFIGHTING MEDIA:
DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR REGULAR FOAM
(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR REGULAR FOAM
(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

ALCOHOL FOAM
(NFPA 325M, FIRE HAZARD PROPERTIES OF FLAMMABLE LIQUIDS, GASES, AND VOLATILE SOLIDS, 1991).

FIREFIGHTING:
MOVE CONTAINER FROM FIRE AREA IF YOU CAN DO IT WITHOUT RISK. DO NOT GET WATER INSIDE CONTAINER. APPLY COOLING WATER TO SIDES OF CONTAINERS THAT ARE EXPOSED TO FLAMES UNTIL WELL AFTER FIRE IS OUT. STAY AWAY FROM ENDS OF TANKS. WITHDRAW IMMEDIATELY IN CASE OF RISING SOUND FROM VENTING SAFETY DEVICE OR ANY DISCOLORATION OF TANK DUE TO FIRE. ISOLATE FOR 1/2 MILE IN ALL DIRECTIONS IF TANK, RAIL CAR OR TANK TRUCK IS INVOLVED IN FIRE (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5, GUIDE PAGE 29).

USE FLOODING AMOUNTS OF WATER AS A FOG; SOLID STREAMS MAY BE INEFFECTIVE. COOL CONTAINERS WITH FLOODING AMOUNTS OF WATER FROM AS FAR A DISTANCE AS POSSIBLE. USE WATER SPRAY TO ABSORB CORROSIVE VAPORS. AVOID BREATHING CORROSIVE VAPORS; KEEP UPWIND.

FIRE FIGHTING PHASES: USE WATER SPRAY, DRY CHEMICAL, ALCOHOL FOAM, OR CARBON DIOXIDE. USE WATER TO KEEP FIRE-EXPOSED CONTAINERS COOL. IF A LEAK OR SPILL HAS NOT IGNITED, USE WATER SPRAY TO DISPERSE THE VAPORS AND TO PROTECT THE MEN ATTEMPTING TO STOP A LEAK. WATER SPRAY MAY BE USED TO FLUSH SPILLS AWAY FROM EXPOSURES AND TO DILUTE SPILLS TO NONFLAMMABLE MIXTURES (NFPA 49, HAZARDOUS CHEMICALS DATA, 1975).

TRANSPORTATION DATA

DEPARTMENT OF TRANSPORTATION HAZARD CLASSIFICATION 49-CFR 172.101:
CORROSIVE MATERIAL

DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS 49-CFR 172.101 AND SUBPART E:
CORROSIVE

DEPARTMENT OF TRANSPORTATION PACKAGING REQUIREMENTS: 49-CFR 173.245
EXCEPTIONS: 49-CFR 173.244

FINAL RULE ON HAZARDOUS MATERIALS REGULATIONS (HMR, 49 CFR PARTS 171-180), DOCKET NUMBERS HM-181, HM-181A, HM-181B, HM-181C, HM-181D AND HM-204. EFFECTIVE DATE OCTOBER 1, 1991. HOWEVER, COMPLIANCE WITH THE REGULATIONS IS AUTHORIZED ON AND AFTER JANUARY 1, 1991. (55 FR 52402, 12/21/90)

EXCEPT FOR EXPLOSIVES, INHALATION HAZARDS, AND INFECTIOUS SUBSTANCES, THE EFFECTIVE DATE FOR HAZARD COMMUNICATION REQUIREMENTS IS EXTENDED TO OCTOBER 1, 1993. (56 FR 47158, 09/18/91)

U.S. DEPARTMENT OF TRANSPORTATION SHIPPING NAME-ID NUMBER, 49 CFR 172.101:
ACETIC ACID, GLACIAL-UN 2789

U.S. DEPARTMENT OF TRANSPORTATION HAZARD CLASS OR DIVISION, 49 CFR 172.101:
8 - CORROSIVE MATERIAL

U.S. DEPARTMENT OF TRANSPORTATION PACKING GROUP, 49 CFR 172.101:
PG II

U.S. DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS, 49 CFR 172.101 AND SUBPART E:
CORROSIVE

U.S. DEPARTMENT OF TRANSPORTATION PACKAGING AUTHORIZATIONS:
EXCEPTIONS: 49 CFR 173.154
NON-BULK PACKAGING: 49 CFR 173.202
BULK PACKAGING: 49 CFR 173.242

U.S. DEPARTMENT OF TRANSPORTATION QUANTITY LIMITATIONS 49 CFR 172.101:
PASSENGER AIRCRAFT OR RAILCAR: 1 L
CARGO AIRCRAFT ONLY: 30 L

TOXICITY

ACETIC ACID, GLACIAL:
IRRITATION DATA: 50 MG/24 HOURS SKIN-HUMAN MILD; 525 MG OPEN SKIN-RABBIT SEVERE; 50 MG/24 HOURS SKIN-RABBIT MILD; 20 MG/24 HOURS SKIN-RABBIT MODERATE; 50 UG OPEN EYE-RABBIT SEVERE; 5 MG/30 SECONDS RINSED EYE-RABBIT MILD.
TOXICITY DATA: 816 PPM/3 MINUTES INHALATION-HUMAN TCLO; 16,000 PPM/4 HOURS INHALATION-RAT LCLO; 5620 PPM/1 HOUR INHALATION-MOUSE LC50; 1060 MG/KG SKIN-RABBIT LD50; 1470 UG/KG ORAL-HUMAN TDLO; 3310 MG/KG ORAL-RAT LD50; 600 MG/KG ORAL-RABBIT LDLO; 600 MG/KG SUBCUTANEOUS-RABBIT LDLO; 525 MG/KG INTRAVENOUS-MOUSE LD50; 600 MG/KG RECTAL-RABBIT LDLO; 308 MG/KG UNREPORTED-MAN LDLO; MUTAGENIC DATA (RTECS); REPRODUCTIVE EFFECTS DATA (RTECS).
CARCINOGEN STATUS: NONE.
LOCAL EFFECTS: CORROSIVE- INHALATION, SKIN, EYE, INGESTION.
ACUTE TOXICITY LEVEL: MODERATELY TOXIC BY INHALATION, DERMAL ABSORPTION, INGESTION.
TARGET EFFECTS: POISONING MAY AFFECT THE LIVER, KIDNEYS, AND CARDIOVASCULAR SYSTEM.
AT INCREASED RISK FROM EXPOSURE: PERSONS WITH A HISTORY OF RESPIRATORY, SKIN OR EYE DISEASE.

HEALTH EFFECTS AND FIRST AID

INHALATION:
ACETIC ACID, GLACIAL:
1000 PPM IMMEDIATELY DANGEROUS TO LIFE OR HEALTH.
CORROSIVE.
ACUTE EXPOSURE- MAY CAUSE SEVERE IRRITATION OF THE RESPIRATORY TRACT. 50 PPM OR MORE IS INTOLERABLE TO MOST PERSONS AND RESULTS IN PHARYNGEAL EDEMA AND CHRONIC BRONCHITIS. OTHER SYMPTOMS MAY INCLUDE COUGHING, DYSPNEA, SHORTNESS OF BREATH, LARYNGITIS, PULMONARY EDEMA, BRONCHOPNEUMONIA AND HYPOTENSION.
CHRONIC EXPOSURE- WORKERS REPEATEDLY EXPOSED TO CONCENTRATIONS UP TO 200 PPM HAVE BEEN FOUND TO SUFFER FROM PALPEBRAL EDEMA WITH HYPERTROPHY OF THE LYMPH NODES, CHRONIC PHARYNGITIS, CHRONIC BRONCHITIS AND IN SOME CASES, ASTHMATIC BRONCHITIS AND TRACES OF EROSION OF THE TEETH. COMPLAINTS OF DIGESTIVE DISORDERS WITH PYROSIS AND CONSTIPATION HAVE ALSO BEEN REPORTED.

FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, GIVE ARTIFICIAL RESPIRATION. MAINTAIN AIRWAY AND BLOOD PRESSURE AND ADMINISTER OXYGEN IF AVAILABLE. KEEP AFFECTED PERSON WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. ADMINISTRATION OF OXYGEN SHOULD BE PERFORMED BY QUALIFIED PERSONNEL. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:
ACETIC ACID, GLACIAL:
CORROSIVE.
ACUTE EXPOSURE- DIRECT CONTACT MAY CAUSE SEVERE IRRITATION WITH PAIN, ERYTHEMA, BLISTERS, BURNS AND SUPERFICIAL DESTRUCTION OF THE SKIN WITH SLOW HEALING. THE SKIN MAY BECOME BLACKENED, HYPERKERATOTIC AND FISSURED. READILY ABSORBED THROUGH THE SKIN.
CHRONIC EXPOSURE- REPEATED AND PROLONGED CONTACT MAY CAUSE DARKENING OF THE SKIN, IRRITATION AND DERMATITIS.

FIRST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). IN CASE OF CHEMICAL BURNS, COVER AREA WITH STERILE, DRY DRESSING. BANDAGE SECURELY, BUT NOT TOO TIGHTLY. GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:
ACETIC ACID, GLACIAL:
CORROSIVE.
ACUTE EXPOSURE- DIRECT CONTACT CAUSES SEVERE IRRITATION, LACRIMATION, CORNEAL EROSION, OPACIFICATION, IRITIS AND POSSIBLY LOSS OF SIGHT IN HUMANS. REGENERATION OF THE EPITHELIUM MAY TAKE MANY MONTHS, BUT CORNEAL ANESTHESIA AND OPACITY WILL USUALLY BE PERMANENT. IN LESS SEVERE CASES, CONJUNCTIVITIS, PHOTOPHOBIA AND HYPEREMIA OF THE CONJUNCTIVA OCCURRED. THE VAPOR AND DILUTE SOLUTIONS MAY CAUSE CONJUNCTIVAL HYPEREMIA AND SOMETIMES INJURY TO THE CORNEAL EPITHELIUM.
CHRONIC EXPOSURE- DEPENDING ON THE CONCENTRATION AND DURATION OF EXPOSURE, EFFECTS SIMILAR TO ACUTE EXPOSURE MAY OCCUR.

FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (AT LEAST 15-20 MINUTES). CONTINUE IRRIGATING WITH NORMAL SALINE UNTIL THE PH HAS RETURNED TO NORMAL (30-60 MINUTES). COVER WITH STERILE BANDAGES. GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:
ACETIC ACID, GLACIAL:
CORROSIVE.

ACUTE EXPOSURE- IN CASES OF ACCIDENTAL INGESTION, SEVERE ULCERONECROTIC LESIONS OF THE UPPER DIGESTIVE TRACT, STRICTURE OF THE ESOPHAGUS, AND PERFORATION OF THE ESOPHAGUS AND PYLORUS HAVE BEEN OBSERVED WITH HEMATEMESIS, DIARRHEA, SHOCK, HEMOGLOBINURIA FOLLOWED BY ANURIA AND UREMIA. OTHER SYMPTOMS MAY INCLUDE VOMITING, ABDOMINAL SPASMS, THIRST, DIFFICULTY IN SWALLOWING, HYPOTHERMIA, RAPID AND WEAK PULSE, SLOW AND SHALLOW BREATHING, LARYNGITIS, BRONCHITIS, PULMONARY EDEMA, PNEUMONIA, HEMOLYSIS, ALBUMINURIA, HEMATURIA, TWITCHING, CONVULSIONS, CARDIOVASCULAR COLLAPSE, SHOCK AND DEATH. REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS.
CHRONIC EXPOSURE- NO DATA AVAILABLE.

FIRST AID- DO NOT USE GASTRIC LAVAGE OR EMESIS. DILUTE THE ACID IMMEDIATELY BY DRINKING LARGE QUANTITIES OF WATER OR MILK. IF VOMITING PERSISTS, ADMINISTER FLUIDS REPEATEDLY. INGESTED ACID MUST BE DILUTED APPROXIMATELY 100 FOLD TO RENDER IT HARMLESS TO TISSUES. MAINTAIN AIRWAY AND TREAT SHOCK (DREISBACH, HANDBOOK OF POISONING, 12TH ED.). GET MEDICAL ATTENTION IMMEDIATELY. IF VOMITING OCCURS, KEEP HEAD BELOW HIPS TO HELP PREVENT ASPIRATION.

ANTIDOTE:
NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

REACTIVITY

REACTIVITY:
STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.

INCOMPATIBILITIES:
ACETIC ACID, GLACIAL:
ACETALDEHYDE: VIOLENT, EXOTHERMIC POLYMERIZATION REACTION.
ACETIC ANHYDRIDE + WATER: VIOLENT, EXOTHERMIC REACTION.
2-AMINOETHANOL: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
AMMONIUM NITRATE: IGNITES ON WARMING, ESPECIALLY IF CONCENTRATED.
5-AZIDOTETRAZOLE: POSSIBLE EXPLOSIVE REACTION.
BASES: EXOTHERMIC REACTION.
BROMINE PENTAFLUORIDE: FIRE AND EXPLOSION HAZARD.
CARBONATES: INCOMPATIBLE.
CHLORINE TRIFLUORIDE: VIOLENT, POSSIBLY EXPLOSIVE REACTION.
CHLOROSULFONIC ACID: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
CHROMIC ACID: EXPLOSIVE REACTION IF NOT KEPT COLD.
CHROMIUM TRIOXIDE: POSSIBLE FIRE AND EXPLOSION HAZARD.
DIALLYL METHYL CARBINOL AND OZONE: EXPLOSIVE REACTION.
ETHYLENE DIAMINE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
ETHYLENEIMINE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
HYDROGEN PEROXIDE: EXOTHERMIC REACTION ON HEATING WITH THE PRODUCTION OF PERACETIC ACID WHICH WILL EXPLODE AT 110 C.
HYDROXIDES: INCOMPATIBLE.
LEAD: CORRODES.
METALS: ATTACKS MOST METALS, INCLUDING ZINC.
NITRIC ACID: EXPLOSIVE REACTION IF NOT KEPT COLD.
NITRIC ACID AND ACETONE: EXPLOSIVE REACTION (DELAYED) IN CLOSED CONTAINER.
OLEUM: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
OXIDIZERS: FIRE AND EXPLOSION HAZARD.
PERCHLORIC ACID: EXPLOSIVE REACTION.
PERMANGANATES: EXPLOSIVE REACTION IF NOT KEPT COLD.
PHOSPHATES: INCOMPATIBLE.
PHOSPHORUS ISOCYANATE: VIOLENT REACTION.
PHOSPHORUS TRICHLORIDE: EXPLOSIVE REACTION.
POTASSIUM HYDROXIDE: VIOLENT REACTION.
POTASSIUM PERMANGANATE: POSSIBLE EXPLOSION IF INADEQUATELY COOLED.
POTASSIUM TERT-BUTOXIDE: IGNITION REACTION.
SODIUM HYDROXIDE: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
SODIUM PEROXIDE: EXPLOSIVE REACTION IF NOT KEPT COLD.
XYLENE: MAY FORM DETONABLE MIXTURES DURING TERPHTHALIC ACID PRODUCTION, THE PRESENCE OF WATER MAY DECREASE THE HAZARD.

DECOMPOSITION:
THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE TOXIC OXIDES OF CARBON.

POLYMERIZATION:
HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

STORAGE AND DISPOSAL

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE. FOR ASSISTANCE, CONTACT THE DISTRICT DIRECTOR OF THE ENVIRONMENTAL PROTECTION AGENCY.

STORAGE

PROTECT AGAINST PHYSICAL DAMAGE. DETACHED STORAGE IS PREFERRED. SEPARATE FROM OXIDIZING MATERIALS AND AVOID STORAGE NEAR COMBUSTIBLE MATERIALS. KEEP ABOVE ITS FREEZING POINT (62 F) TO AVOID RUPTURE OF CARBOYS AND GLASS CONTAINERS (NFPA 49, HAZARDOUS CHEMICALS DATA, 1975).

BONDING AND GROUNDING: SUBSTANCES WITH LOW ELECTROCONDUCTIVITY, WHICH MAY BE IGNITED BY ELECTROSTATIC SPARKS, SHOULD BE STORED IN CONTAINERS WHICH MEET THE BONDING AND GROUNDING GUIDELINES SPECIFIED IN NFPA 77-1983, RECOMMENDED PRACTICE ON STATIC ELECTRICITY.

STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

STORE IN ACCORDANCE WITH 29 CFR 1910.106.

DISPOSAL

DISPOSAL MUST BE IN ACCORDANCE WITH STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE, 40 CFR 262. EPA HAZARDOUS WASTE NUMBER D002.
100 POUND CERCLA SECTION 103 REPORTABLE QUANTITY.

DISPOSAL MUST BE IN ACCORDANCE WITH STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE, 40 CFR 262. EPA HAZARDOUS WASTE NUMBER D001.
100 POUND CERCLA SECTION 103 REPORTABLE QUANTITY.

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CONDITIONS TO AVOID

AVOID CONTACT WITH HEAT, SPARKS, FLAMES OR OTHER IGNITION SOURCES. VAPORS MAY BE EXPLOSIVE. MATERIAL IS CORROSIVE; AVOID CONTACT WITH SKIN OR EYES. DO NOT ALLOW CONTAMINATION OF WATER SOURCES.

USUAL SHIPPING CONTAINERS:
GLASS AND POLYETHYLENE CARBOYS AND POLYETHYLENE-LINED DRUMS, TANK BARGES (NFPA 49, HAZARDOUS CHEMICALS DATA, 1975).

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SPILL AND LEAK PROCEDURES

SOIL SPILL:
DIG A HOLDING AREA SUCH AS A PIT, POND OR LAGOON TO CONTAIN SPILL AND DIKE SURFACE FLOW USING BARRIER OF SOIL, SANDBAGS, FOAMED POLYURETHANE OR FOAMED CONCRETE. ABSORB LIQUID MASS WITH FLY ASH OR CEMENT POWDER.

NEUTRALIZE WITH CAUSTIC SODA (NAOH) OR SOOA ASH (NA2C03)

AIR SPILL:
KNOCK DOWN VAPORS WITH WATER SPRAY. KEEP UPWIND.

WATER USED TO KNOCK DOWN VAPORS MAY BECOME CORROSIVE OR TOXIC AND SHOULD BE CONTAINED PROPERLY FOR LATER DISPOSAL.

WATER SPILL:
NEUTRALIZE WITH CAUSTIC SODA.

OCCUPATIONAL SPILL:
SHUT OFF IGNITION SOURCES. DO NOT TOUCH SPILLED MATERIAL. STOP LEAK IF YOU CAN DO IT WITHOUT RISK. USE WATER SPRAY TO REDUCE VAPORS. DO NOT GET WATER INSIDE CONTAINER. FOR SMALL SPILLS, TAKE UP WITH SAND OR OTHER ABSORBENT MATERIAL AND PLACE INTO CONTAINERS FOR LATER DISPOSAL. FOR LARGER SPILLS, DIKE FAR AHEAD OF SPILL FOR LATER DISPOSAL. NO SMOKING, FLAMES OR FLARES IN HAZARD AREA. KEEP UNNECESSARY PEOPLE AWAY; ISOLATE HAZARD AREA AND DENY ENTRY.

REPORTABLE QUANTITY (RQ): 5000 POUNDS
THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) SECTION 304 REQUIRES THAT A RELEASE EQUAL TO OR GREATER THAN THE REPORTABLE QUANTITY FOR THIS SUBSTANCE BE IMMEDIATELY REPORTED TO THE LOCAL EMERGENCY PLANNING COMMITTEE AND THE STATE EMERGENCY RESPONSE COMMISSION (40 CFR 355.40). IF THE RELEASE OF THIS SUBSTANCE IS REPORTABLE UNDER CERCLA SECTION 103, THE NATIONAL RESPONSE CENTER MUST BE NOTIFIED IMMEDIATELY AT (800) 424-8802 OR (202) 426-2675 IN THE METROPOLITAN WASHINGTON, D.C. AREA (40 CFR 302.6).

PROTECTIVE EQUIPMENT

VENTILATION:
PROVIDE LOCAL EXHAUST VENTILATION TO MEET PUBLISHED EXPOSURE LIMITS.
VENTILATION EQUIPMENT MUST BE EXPLOSION-PROOF.

RESPIRATOR:
THE FOLLOWING RESPIRATORS AND MAXIMUM USE CONCENTRATIONS ARE RECOMMENDATIONS BY THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIOSH POCKET GUIDE TO CHEMICAL HAZARDS; NIOSH CRITERIA DOCUMENTS OR BY THE U.S. DEPARTMENT OF LABOR, 29 CFR 1910 SUBPART Z.
THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND IN THE WORK PLACE, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

ACETIC ACID, GLACIAL:
250 PPM- ANY SUPPLIED-AIR RESPIRATOR OPERATED IN CONTINUOUS FLOW MODE.
ANY POWERED AIR-PURIFYING RESPIRATOR WITH ORGANIC VAPOR CARTRIDGE(S).

500 PPM- ANY CHEMICAL CARTRIDGE RESPIRATOR WITH FULL FACEPIECE AND ORGANIC

VAPOR CARTRIDGE(S).
ANY SELF-CONTAINED BREATHING APPARATUS WITH FULL FACEPIECE.
ANY SUPPLIED-AIR RESPIRATOR WITH FULL FACEPIECE.
ANY AIR-PURIFYING FULL FACEPIECE RESPIRATOR (GAS MASK) WITH CHIN-STYLE, FRONT- OR BACK-MOUNTED ORGANIC VAPOR CANISTER.
ANY POWERED AIR-PURIFYING RESPIRATOR WITH A TIGHT-FITTING FACEPIECE AND ORGANIC VAPOR CARTRIDGE(S).

1000 PPM- ANY SUPPLIED-AIR RESPIRATOR WITH FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

ESCAPE- ANY AIR-PURIFYING FULL FACEPIECE RESPIRATOR (GAS MASK) WITH CHIN-STYLE, FRONT- OR BACK-MOUNTED ORGANIC CANISTER.
ANY APPROPRIATE, ESCAPE-TYPE SELF-CONTAINED BREATHING APPARATUS.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ANY SUPPLIED-AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

CLOTHING:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT ANY POSSIBILITY OF SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS SUBSTANCE.

EYE PROTECTION:
EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES AND A FACESHIELD TO PREVENT CONTACT WITH THIS SUBSTANCE.

EMERGENCY WASH FACILITIES:
WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES AND/OR SKIN MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN AND QUICK DRENCH SHOWER WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

AUTHORIZED - FISHER SCIENTIFIC, INC.
CREATION DATE: 09/06/84 REVISION DATE: 06/23/92

-ADDITIONAL INFORMATION-

SODIUM HYDROXIDE, SOLUTIONS, 10N AND CO2 ABSORPTION
SODIUM HYDROXIDE, SOLUTIONS, 10N AND CO2 ABSORPTION
SODIUM HYDROXIDE, SOLUTIONS, 10N AND CO2 ABSORPTION

MATERIAL SAFETY DATA SHEET

FISHER SCIENTIFIC
CHEMICAL DIVISION
1 REAGENT LANE
FAIR LAWN NJ 07410
(201) 796-7100

EMERGENCY NUMBER: (201) 796-7100
CHEMTREC ASSISTANCE: (800) 424-9300

SUBSTANCE IDENTIFICATION

CAS-NUMBER 1310-73-2
SUBSTANCE: **SODIUM HYDROXIDE, SOLUTIONS, 10N AND CO2 ABSORPTION**

TRADE NAMES/SYNONYMS:
CAUSTIC SODA SOLUTION; LYE SOLUTION; SODA LYE; SODIUM HYDROXIDE SOLUTION; SODIUM HYDROXIDE LIQUID; WHITE CAUSTIC SOLUTION; SS255; SS267; UN 1824; ACC40175

CERCLA RATINGS (SCALE 0-3): HEALTH=3 FIRE=0 REACTIVITY=1 PERSISTENCE=0
NFPA RATINGS (SCALE 0-4): HEALTH=3 FIRE=0 REACTIVITY=1

COMPONENTS AND CONTAMINANTS

COMPONENT: SODIUM HYDROXIDE PERCENT: 26.7-30.6
CAS# 1310-73-2

COMPONENT: WATER PERCENT: 69.4-73.3

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:
SODIUM HYDROXIDE:
2 mg/m3 OSHA ceiling
2 mg/m3 ACGIH ceiling
2 mg/m3 NIOSH recommended ceiling
2 mg/m3 DFG MAK TWA (total dust);
4 mg/m3 DFG MAK 5 minute peak, momentary value, 8 times/shift

Measurement method: Particulate filter; hydrochloric acid; titration; (NIOSH Vol. III # 7401, Alkaline Dusts).

1000 pounds CERCLA Section 103 Reportable Quantity

OSHA revoked the final rule limits of January 19, 1989 in response to the 11th Circuit Court of Appeals decision (AFL-CIO v. OSHA) effective June 30, 1993. See 29 CFR 1910.1000 (58 FR 35338)

PHYSICAL DATA

DESCRIPTION: Clear liquid. BOILING POINT: 234 F (112 C)

MELTING POINT: 5 F (-15 C) SPECIFIC GRAVITY: 1.3 PH: alkaline

SOLUBILITY IN WATER: complete

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
Negligible fire hazard when exposed to heat or flame.

FIREFIGHTING MEDIA:
Dry chemical, carbon dioxide, water spray or regular foam (1993 Emergency Response Guidebook, RSPA P 5800.8).

For larger fires, use water spray, fog or regular foam (1993 Emergency Response Guidebook, RSPA P 5800.8).

FIREFIGHTING:
Move container from fire area if you can do it without risk. Apply cooling water to sides of containers that are exposed to flames until well after fire is out. Stay away from ends of tanks (1993 Emergency Response Guidebook, RSPA P 5800.6, Guide Page 60).

Use agent suitable for type of fire; use flooding quantities of water as fog, apply from as far a distance as possible. Avoid breathing corrosive vapors, keep upwind.

TRANSPORTATION DATA

U.S. DEPARTMENT OF TRANSPORTATION SHIPPING NAME-ID NUMBER, 49 CFR 172.101:
Sodium hydroxide, solutions-UN 1824

U.S. DEPARTMENT OF TRANSPORTATION HAZARD CLASS OR DIVISION, 49 CFR 172.101:
8 - Corrosive material

U.S. DEPARTMENT OF TRANSPORTATION PACKING GROUP, 49 CFR 172.101:
PG II

U.S. DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS, 49 CFR 172.101 AND SUBPART E:
Corrosive

U.S. DEPARTMENT OF TRANSPORTATION PACKAGING AUTHORIZATIONS:
EXCEPTIONS: 49 CFR 173.154
NON-BULK PACKAGING: 49 CFR 173.202
BULK PACKAGING: 49 CFR 173.242

U.S. DEPARTMENT OF TRANSPORTATION QUANTITY LIMITATIONS 49 CFR 172.101:
PASSENGER AIRCRAFT OR RAILCAR: 1 L
CARGO AIRCRAFT ONLY: 30 L

TOXICITY

SODIUM HYDROXIDE:
IRRITATION DATA: 500 mg/24 hours skin-rabbit severe; 1% eye-rabbit severe; 50 ug/24 hours eye-rabbit severe; 1 mg/24 hours eye-rabbit severe; 400 ug eye-rabbit mild; 1 mg/30 seconds rinsed eye-rabbit severe; 1%/24 hours eye-monkey severe.
TOXICITY DATA: 1350 mg/kg skin-rabbit LD50 (Van Waters & Rogers Inc. MSDS); 500 mg/kg oral-rabbit LDLo; 104-340 mg/kg oral-rat LD50 (Van Waters & Rogers Inc. MSDS); 40 mg/kg intraperitoneal-mouse LD50; mutagenic data (RTECS).
CARCINOGEN STATUS: None.
LOCAL EFFECTS: Corrosive- inhalation, skin, eye, ingestion.
ACUTE TOXICITY LEVEL: Toxic by ingestion; moderately toxic by dermal absorption.
TARGET EFFECTS: No data available.
AT INCREASED RISK FROM EXPOSURE: Persons with pre-existing skin and eye conditions.

HEALTH EFFECTS AND FIRST AID

INHALATION:
SODIUM HYDROXIDE:
CORROSIVE. 250 mg/m3 Immediately Dangerous to Life or Health.
ACUTE EXPOSURE- Effects due to inhalation of dusts or mist may vary from mild irritation of the nose at 2 mg/m3 to severe pneumonitis depending on the severity of exposure. Low concentrations may cause mucous membrane irritation with sore throat, coughing, and dyspnea. Intense exposures may result in destruction of mucous membranes and delayed pulmonary edema or pneumonitis. Shock may occur.
CHRONIC EXPOSURE- Prolonged exposures to high concentrations of dusts or mists may cause discomfort and ulceration of the nasal passages. Repeated exposures of 5000 mg/L were harmless to rats, but 10,000 mg/L led to nervousness, sore eyes, diarrhea and retarded growth. Rats exposed 30 minutes/day to unmeasured concentrations of sodium hydroxide aerosols suffered pulmonary damage after 2-3 months. Death occurred in 2 of 10 rats exposed to an aerosol of 40% aqueous sodium hydroxide for 30 minutes, twice a week for 3 weeks. Histopathological examination showed mostly normal lung tissue with foci of enlarged alveolar septae, emphysema, bronchial ulceration, and enlarged lymph adenoidal tissues. An epidemiologic study of 291 workers chronically exposed to caustic dusts for 30 years or more found no significant increase in mortality in relation to duration or intensity of such exposures.

FIRST AID- Remove from exposure area to fresh air immediately. Perform artificial respiration if necessary. Maintain airway, blood pressure and respiration. Keep warm and at rest. Treat symptomatically and supportively. Get medical attention immediately. Qualified medical personnel should consider administering oxygen.

SKIN CONTACT:
SODIUM HYDROXIDE:
CORROSIVE.
ACUTE EXPOSURE- Upon contact with the skin, damage including redness, cuteneous burns, skin fissures and white eschars may occur without immediate pain. Exposure to solutions as weak as 0.03 N (0.12%) for 1 hour has caused injury to healthy skin. With solutions of 0.4-4%, irritation does not occur until after several hours. Solutions of 25-50% caused no sensation of irritation within 3 minutes in human subjects. Skin biopsies from human subjects having 1 N sodium hydroxide applied to

their arms for 15 to 180 minutes showed progressive changes beginning with dissolution of the cells in the horny layer and progressing through edema to total destruction of the epidermis in 60 minutes. A 5% aqueous solution caused severe necrosis to the skin of rabbits when applied for 4 hours. Alkalies penetrate the skin slowly. The extent of injury depends on the duration of contact. If sodium hydroxide is not removed from the skin, severe burns with deep ulceration may occur. Exposure to the dust or mist may cause multiple small burns and temporary loss of hair. Pathologic findings due to alkalies may include gelatinous, necrotic areas at the site of contact.
CHRONIC EXPOSURE- Effects are dependent upon concentration and duration of exposure. Dermatitis or effects similar to those for acute exposure may occur.

FIRST AID- Remove contaminated clothing and shoes immediately. Wash with soap or mild detergent and large amounts of water until no evidence of chemical remains (at least 15-20 minutes). If burns occur, proceed with the following: Cover affected area securely with sterile, dry, loose-fitting dressing. Treat symptomatically and supportively. Get medical attention immediately.

EYE CONTACT:
SODIUM HYDROXIDE:
CORROSIVE.
ACUTE EXPOSURE- Contact may cause disintegration and sloughing of conjunctival and corneal epithelium, corneal opacification, marked edema and ulceration. After 7 to 13 days either gradual recovery begins or there is progression of ulceration and corneal opacification. Complications of severe eye burns are symblepharon with overgrowth of the cornea by a vascularized membrane, progressive or recurrent corneal ulceration and permanent corneal opacification. Blindness may occur.
CHRONIC EXPOSURE- Effects are dependent upon concentration and duration of exposure. Conjunctivitis or effects similar to those for acute exposure may occur.

FIRST AID- Wash eyes immediately with large amounts of water, occasionally lifting upper and lower lids, until no evidence of chemical remains (at least 15-20 minutes). Continue irrigating with normal saline until the pH has returned to normal (30-60 minutes). Cover with sterile bandages. Get medical attention immediately.

INGESTION:
SODIUM HYDROXIDE:
CORROSIVE/TOXIC.
ACUTE EXPOSURE- The reported lethal dose in rats is 140-340 mg/kg. Ingestion may cause a burning sensation in the mouth, corrosion of the lips, mouth, tongue and pharynx, and severe esophageal and abdominal pain, vomiting of blood and large pieces of mucosa, and bloody diarrhea. Asphyxia can occur from swelling of the throat. Mediastinitis, alkalemia, pallor, weak, slow pulse, cardiovascular collapse, shock, coma and death may occur. Perforation of the alimentary tract and constrictive scarring may result. Esophageal stricture may occur weeks, months, or even years later to make swallowing difficult. The estimated fatal dose in man is 5 grams. Cases of squamous cell carcinoma of the esophagus have occurred with latent periods of 12 to 42 years after ingestion. These cancers were believed to be sequela of tissue destruction and possibly scar formation rather than the result of direct carcinogenic action of sodium hydroxide.
CHRONIC EXPOSURE- Depending on the concentration, repeated ingestion of alkaline substances may result in inflammatory and ulcerative effects on the oral mucous membranes and other effects as with acute ingestion.

FIRST AID- Give large amounts of water or milk immediately. Allow vomiting to occur. Do not perform gastric lavage or induce emesis. Esophagoscopy is the only way to exclude th possibility of corrosion in the upper gastro-intestinal tract; if corrosion is suspected, esophagoscopy should usually be performed within 24 hours. (Dreisbach & Robertson; Handbook of Poisoning; 12th Ed.). Do not give anything by mouth if person is unconscious or otherwise unable to swallow. If vomiting occurs, keep head lower than hips to help prevent aspiration. Maintain airway and respiration. Treat symptomatically and supportively. Get medical attention immediately.

ANTIDOTE:
No specific antidote. Treat symptomatically and supportively.

REACTIVITY

REACTIVITY:
Reacts exothermically with water.

INCOMPATIBILITIES:
SODIUM HYDROXIDE:
ACETALDEHYDE: May result in violent polymerization.
ACETIC ACID: Mixing in closed container increases temperature and pressure.
ACETIC ANHYDRIDE: Mixing in a closed container increases temperature and pressure.
ACIDS: May react violently.
ACROLEIN: May result in an extremely violent polymerization.
ACRYLONITRILE: May cause violent polymerization.

ALLYL ALCOHOL + BENZENE SULFONYL CHLORIDE: Possible explosion hazard.
ALLYL CHLORIDE: Hydrolyzes.
ALUMINUM: Vigorous reaction.
ALUMINUM, ARSENIC TRIOXIDE, SODIUM ARSENATE: May generate flammable hydrogen gas.
AMMONIA + SILVER NITRATE: Precipitation of explosive silver nitride may occur.
AMMONIUM SALTS: May react violently evolving ammonia gas.
BENZENE-1,4-DIOL: Exothermic reaction.
N,N'-BIS(TRINITROETHYL)UREA: Formation of explosive compound.
BROMINE: Possible explosion if not stirred continously.
CHLORINE TRIFLUORIDE: May cause violent reaction.
CHLOROFORM + METHYL ALCOHOL: Exothermic reaction.
CHLOROHYDRIN: Mixing in a closed container causes an increase in temperature and pressure.
4-CHLORO-2-METHYLPHENOL: Possible ignition.
CHLORONITROTOLUENES: Possible explosion.
CHLOROPICRIN: May cause violent reaction.
CHLOROSULFONIC ACID: Mixing in a closed container causes an increase in temperature and pressure.
CINNAMALDEHYDE: Exothermic reaction.
COATINGS: May be attacked.
COPPER: Solutions may slowly corrode.
CYANOGEN AZIDE: May form sodium 5-azidotetrazolide, which is explosive if isolated.
2,2-DICHLORO-3,3-DIMETHYLBUTANE: Hazardous reaction.
1,2-DICHLOROETHYLENE: May form spontaneously flammable monochloroacetylene.
DIBORANE AND OCTANAL OXIME: Exothermic reaction.
ETHYLENE CYANOHYDRIN: Mixing in a closed container causes an increase in temperature and pressure.
FLAMMABLE LIQUIDS: Fire and explosion hazard.
GLYCOLS: May cause exothermic decomposition with evolution of hydrogen gas.
GLYOXAL: Mixing in a closed container increases temperature and pressure.
HALOGENATED HYDROCARBONS: Violent reaction.
HYDROCHLORIC ACID: Mixing in a closed container causes an increase in temperature and pressure.
HYDROFLUORIC ACID: Mixing in a closed container causes an increase in temperature and pressure.
HYDROQUINONE: Rapid decomposition of hydroquinone with evolution of heat.
IRON: Solutions may slowly corrode.
LEAD: May be attacked; flammable hydrogen gas may be liberated.
LEATHER: May be attacked.
MALEIC ANHYDRIDE: Explosive decomposition.
METALS: Corrodes metals, reacting to form flammable hydrogen gas.
4-METHYL-2-NITROPHENOL: Exothermic reaction.
NITRIC ACID: Mixing in closed container increases temperature and pressure.
NITROBENZENE: Possibly explosive reaction upon heating in presence of water.
NITROETHANE: Forms an explosive salt.
NITROMETHANE: Forms an explosive salt.
NITROPARAFFINS: The nitroparaffins, in the presence of water, form dry salts with organic bases. The dry salts are explosive.
NITROPROPANE: Forms an explosive salt.
O-NITROTOLUENE: Possible explosion.
OLEUM: Mixing in a closed container causes an increase in temperature and pressure.
ORGANIC PEROXIDES: Incompatible.
PENTOL (3-METHYL-2-PENTENE-4-YN-1-OL): Possible explosion.
PHOSPHORUS: May form mixed phosphines which may ignite spontaneously in air.
PHOSPHORUS PENTOXIDE: May react violently when heated.
PLASTICS: May be attacked.
B-PROPIOLACTONE: Mixing in a closed container causes an increase in *temperature and pressure.*
PROPYLENE OXIDE: Ignition or explosion may occur.
RUBBER: May be attacked.
SODIUM TETRAHYDROBORATE: Dry mixtures with sodium hydroxide containing 15-40% of tetrahydroborate liberate hydrogen explosively at 230-270 C.
SULFURIC ACID: Mixing in a closed container causes an increase in temperaure and pressure.
1,2,4,5-TETRACHLOROBENZENE: Violent reaction.
TETRACHLOROBENZENE + METHYL ALCOHOL: Possible explosion.
TETRACHLOROETHYLENE: Possible explosion.
TETRAHYDROFURAN: Serious explosions can occur.
TIN: Evolution of hydrogen gas which may form an explosive mixture.
1,1,1-TRICHLOROETHANOL: Explosion may occur.
TRICHLOROETHYLENE: Formation of explosive mixtures of dichloroacetylene.
TRICHLORONITROMETHANE + METHANOL: May cause violent reaction.
WOOL: May be attacked.
ZINC (DUST): Fire and explosion hazard.
ZIRCONIUM: May cause explosive reaction upon heating.

DECOMPOSITION:
Thermal decomposition may release toxic fumes of sodium oxide.

POLYMERIZATION:
Hazardous polymerization has not been reported to occur under normal temperatures and pressures.

STORAGE AND DISPOSAL

Observe all federal, state and local regulations when storing or disposing of this substance.

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CONDITIONS TO AVOID

Avoid contact with or storage with water, acids, and other incompatibilities. Flammable, poisonous gases may accumulate in tanks and hopper cars.

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SPILL AND LEAK PROCEDURES

SOIL SPILL:
Dig holding area such as lagoon, pond or pit for containment.

Use soil, sand bags, foamed polyurethane, or foamed concrete to dike surface flow.

Use fly ash or cement powder to absorb bulk liquid.

Use vinegar or other dilute acid to neutralize.

WATER SPILL:
Add suitable agent to neutralize spilled material to pH-7.

OCCUPATIONAL SPILL:
Do not touch spilled material. Stop leak if you can do it without risk. For small spills, take up with sand or other absorbent material and place into containers for later disposal. For small dry spills, with clean shovel place material into clean, dry container and cover. Move containers from spill area. For larger spills, dike far ahead of spill for later disposal. Keep unnecessary people away. Isolate hazard area and deny entry.

Reportable Quantity (RQ): 1000 pounds
The Superfund Amendments and Reauthorization Act (SARA) Section 304 requires that a release equal to or greater than the reportable quantity for this substance be immediately reported to the local emergency planning committee and the state emergency response commission (40 CFR 355.40). If the release of this substance is reportable under CERCLA Section 103, the National Response Center must be notified immediately at (800) 424-8802 or (202) 426-2675 in the metropolitan Washington, D.C. area (40 CFR 302.6).

PROTECTIVE EQUIPMENT

VENTILATION:
Provide local exhaust or process enclosure ventilation to meet published exposure limits.

RESPIRATOR:
The following respirators and maximum use concentrations are recommendations by the U.S. Department of Health and Human Services, NIOSH Pocket Guide to Chemical Hazards; NIOSH criteria documents or by the U.S. Department of Labor, 29 CFR 1910 Subpart Z.
The specific respirator selected must be based on contamination levels found in the work place, must not exceed the working limits of the respirator and be jointly approved by the National Institute for Occupational Safety and Health and the Mine Safety and Health Administration (NIOSH-MSHA).

SODIUM HYDROXIDE:

50 mg/m3- Any powered air-purifying respirator with a dust and mist filter.
Any supplied-air respirator operated in a continuous flow mode.

100 mg/m3- Any self-contained breathing apparatus with a full facepiece.
Any supplied-air respirator with a full facepiece.
Any air-purifying full facepiece respirator with a high efficiency particulate filter.

250 mg/m3- Any supplied-air respirator with a full facepiece and operated in a pressure-demand or other positive pressure mode.

Escape- Any air-purifying full facepiece respirator with a high efficiency particulate filter.
Any appropriate escape-type self-contained breathing apparatus.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

CLOTHING:
Employee must wear appropriate protective (impervious) clothing and equipment to prevent any possibility of skin contact with this substance.

GLOVES:
Employee must wear appropriate protective gloves to prevent contact with this substance.

EYE PROTECTION:
Employee must wear splash-proof or dust-resistant safety goggles and a faceshield to prevent contact with this substance.

Emergency wash facilities:
Where there is any possibility that an employee's eyes and/or skin may be exposed to this substance, the employer should provide an eye wash fountain and quick drench shower within the immediate work area for emergency use.

AUTHORIZED - FISHER SCIENTIFIC, INC.
CREATION DATE: 07/19/85 REVISION DATE: 06/30/94

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FREON 113

DATE: 08/31/91 ACCT: 146965-01
INDEX: 02912420177 CAT NO: T1804 PO NBR: VERBAL MIKE 08-30-91 AIR

1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE

MATERIAL SAFETY DATA SHEET

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SUBSTANCE IDENTIFICATION

CAS-NUMBER 76-13-1

SUBSTANCE: **1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE**

TRADE NAMES/SYNONYMS:
REFRIGERANT 113; TTE; UCON 113; FREON 113; FREON 113 TR-T; TRICHLOROTRIFLUOROETHANE; 1,1,2-TRIFLUORO-1,2,2-TRICHLOROETHANE; UCON FLUOROCARBON 113; T180; T178; C2CL3F3; ACC26370

CHEMICAL FAMILY:
HALOGEN COMPOUND, ALIPHATIC

MOLECULAR FORMULA: C2-CL3-F3

MOLECULAR WEIGHT: 187.37

CERCLA RATINGS (SCALE 0-3): HEALTH=1 FIRE=0 REACTIVITY=0 PERSISTENCE=3
NFPA RATINGS (SCALE 0-4): HEALTH=1 FIRE=0 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

COMPONENT: 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE PERCENT: 100
CAS# 76-13-1

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE (FREON TF):
1000 PPM (7670 MG/M3) OSHA TWA; 1250 PPM (9590 M3/M3) OSHA STEL
1000 PPM (7670 MG/M3) ACGIH TWA; 1250 PPM (9590 MG/M3) ACGIH STEL
1000 PPM (7670 MG/M3) NIOSH RECOMMENDED TWA;
1250 PPM (9590 MG/M3) NIOSH RECOMMENDED STEL
500 PPM (3832 MG/M3) DFG MAK TWA;
1000 PPM (7670 MG/M3) DFG MAK 60 MINUTE PEAK, MOMENTARY VALUE, 3 TIMES/SHIFT

MEASUREMENT METHOD: CHARCOAL TUBE; CARBON DISULFIDE; GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION; (NIOSH VOL. III # 1020).

SUBJECT TO SARA SECTION 313 ANNUAL TOXIC CHEMICAL RELEASE REPORTING.

PHYSICAL DATA

DESCRIPTION: COLORLESS LIQUID WITH AN ODOR LIKE AMMONIA AT HIGH CONCENTRATIONS. BOILING POINT: 114.4 F (45.8 C)

MELTING POINT: 55.8 F (13.2 C) SPECIFIC GRAVITY: 1.6 @ 77 F

VAPOR PRESSURE: 284 MM HG @ 20 C EVAPORATION RATE: (ACETONE=1) 0.45

SOLUBILITY IN WATER: 0.028% VAPOR DENSITY: APPROX 6

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
NEGLIGIBLE FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

AUTOIGNITION TEMP.: 1256 F (680 C)

FIREFIGHTING MEDIA:
DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR REGULAR FOAM
(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR REGULAR FOAM
(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

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FIREFIGHTING:
MOVE CONTAINER FROM FIRE AREA IF YOU CAN DO IT WITHOUT RISK. DO NOT SCATTER SPILLED MATERIAL WITH HIGH-PRESSURE WATER STREAMS. DIKE FIRE-CONTROL WATER FOR LATER DISPOSAL (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5, GUIDE PAGE 31).

USE AGENTS SUITABLE FOR TYPE OF SURROUNDING FIRE. AVOID BREATHING HAZARDOUS VAPORS, KEEP UPWIND.

TOXICITY

1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE (FREON TF):
IRRITATION DATA: 500 MG OPEN SKIN-RABBIT MILD; 500 MG/24 HOURS SKIN-RABBIT MILD.
TOXICITY DATA: 87,000 PPM/6 HOURS INHALATION-RAT LCLO; 25 PPH/90 SECONDS INHALATION-MOUSE LCLO; 43 GM/KG ORAL-RAT LD50.
CARCINOGEN STATUS: NONE.
ACUTE TOXICITY LEVEL: RELATIVELY NON-TOXIC BY INGESTION.
TARGET EFFECTS: CENTRAL NERVOUS SYSTEM DEPRESSANT; SIMPLE ASPHYXIANT. POISONING MAY ALSO AFFECT THE LIVER AND KIDNEYS.
AT INCREASED RISK FROM EXPOSURE: PERSONS WITH PRE-EXISTING SKIN DISORDERS, IMPAIRED CARDIOVASCULAR FUNCTION, PARTICULARLY CARDIAC ARRYTHMIAS OR IMPAIRED RESPIRATORY FUNCTION.
ADDITIONAL DATA: STIMULANTS SUCH AS EPINEPHRINE MAY INDUCE VENTRICULAR FIBRILLATION.

HEALTH EFFECTS AND FIRST AID

INHALATION:
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE (FREON TF):
NARCOTIC/SIMPLE ASPHYXIANT.
4500 PPM IMMEDIATELY DANGEROUS TO LIFE OR HEALTH.
ACUTE EXPOSURE- MAY CAUSE MILD IRRITATION OF THE MUCOUS MEMBRANES OF THE UPPER RESPIRATORY TRACT. MAY BE ANESTHETIC AND CAUSE CENTRAL NERVOUS SYSTEM DEPRESSION WITH DROWSINESS AND ARRHYTHMIAS. HUMANS EXPOSED TO 2500 TO 4500 PPM FOR 30-100 MINUTES SHOWED SIGNIFICANT IMPAIRMENT OF MANUAL DEXTERITY AND VIGILANCE, LOSS OF CONCENTRATION, SOMNOLENCE AND HEAVINESS IN THE HEAD, WHICH DISAPPEARED 15 MINUTES AFTER THE EXPOSURE ENDED. SIMPLE ASPHYXIATION MAY OCCUR AT HIGH CONCENTRATIONS. OVEREXPOSURE COULD RESULT IN EPINEPHINE SENSITIZATION OF THE HEART AND SUBSEQUENTLY MAY CAUSE SUDDEN DEATH FROM VENTRICULAR FIBRILLATION UNDER PHYSICAL OR EMOTIONAL STRESS. DOGS EXPOSED TO 11,000-13,000 PPM FOR 6 HOURS EXPERIENCED VOMITING, LETHARGY, NERVOUSNESS, AND TREMORS. ALL SYMPTOMS WERE REVERSIBLE WITHIN 15 MINUTES. IN EXPERIMENTAL ANIMALS, VARIABLE DEGREES OF CARDIODYNAMIC EFFECTS THAT INCLUDED TACHYCARDIA, MYOCARDIAL DEPRESSION, AND HYPOTENSION HAVE BEEN REPORTED. PULMONARY EDEMA AND SEVERE VENTRICULAR DYSRHYTHMIA MAY RESULT FROM THE INHALATION OF FREONS.
CHRONIC EXPOSURE- PROLONGED HUMAN EXPOSURES FOR 2 WEEKS AT CONCENTRATIONS OF APPROXIMATELY 500 AND 1000 PPM CAUSED MILD THROAT IRRITATION ON THE FIRST DAY, BUT NO DECREMENT IN PERFORMANCE OF COMPLEX MENTAL TASKS. PATHOLOGIC FINDINGS IN RATS INCLUDED VERY SLIGHT DIFFUSE DEGENERATIVE FATTY INFILTRATION OF THE LIVER. NO CHANGES WERE PRODUCED IN THE OFFSPRING OF PREGNANT RABBITS EXPOSED TO 9 DAILY 2 HOUR EXPOSURES AT LEVELS AS HIGH AS 20,000 PPM.

FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, PERFORM ARTIFICIAL RESPIRATION. KEEP PERSON WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE (FREON TF):
ACUTE EXPOSURE- CONTACT MAY CAUSE IRRITATION.
CHRONIC EXPOSURE- REPEATED OR PROLONGED CONTACT MAY CAUSE DERMATITIS WITH DRYING AND CRACKING. NO EFFECTS WERE NOTED IN RABBITS AFTER 20 WEEKS OF APPLICATION TO UNCOVERED SKIN. HOWEVER, OCCLUDED CONTACT OF 5 GM/KG WITH RABBIT SKIN FOR 5 SUCCESSIVE DAYS RESULTED IN LOCAL NECROSIS AND SLOUGHING PLUS CONSPICUOUS ENLARGEMENT OF LIVER CELLS.

FIRST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE (FREON TF):
ACUTE EXPOSURE- MAY CAUSE IRRITATION. APPLICATION OF 0.1 ML TO RABBIT EYES IS REPORTED TO HAVE PRODUCED ONLY MILD CONJUNCTIVITIS AND MINIMAL CORNEAL DULLNESS AT 24 HOURS. ALL EYES RETURNED TO NORMAL WITHIN 48 HOURS.
CHRONIC EXPOSURE- NO DATA AVAILABLE.

FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER OR NORMAL SALINE, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE (FREON TF):
NARCOTIC.

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ACUTE EXPOSURE- ONE HUMAN ACCIDENTALLY RECEIVED 1 LITER OF 1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE IN THE STOMACH WHILE UNDER ANESTHESIA. THIS PRODUCED IMMEDIATE BUT TRANSIENT CYANOSIS. THE INDIVIDUAL SURVIVED AND REPORTED ONLY SEVERE RECTAL IRRITATION AND DIARRHEA FOR 3 DAYS THEREAFTER. IF SUFFICIENT AMOUNTS ARE INGESTED, SYSTEMIC TOXICITY MAY OCCUR AS DETAILED IN ACUTE INHALATION. INGESTION OF HYDROCARBONS IS ASSOCIATED WITH PNEUMONITIS, CENTRAL NERVOUS SYSTEM DEPRESSION AND ARRHYTHMIAS.
CHRONIC EXPOSURE- NO CHANGES WERE PRODUCED IN THE OFFSPRING OF PREGNANT RABBITS EXPOSED ORALLY.

FIRST AID- TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION IMMEDIATELY. IF VOMITING OCCURS, KEEP HEAD LOWER THAN HIPS TO PREVENT ASPIRATION.

ANTIDOTE:
NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

REACTIVITY

REACTIVITY:
STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.

INCOMPATIBILITIES:
1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE:
ALKALI METALS: VIOLENT REACTION POSSIBLE.
ALUMINUM (POWDERED): FORMS SHOCK-SENSITIVE MIXTURE.
BARIUM (POWDERED): FORMS EXPLOSIVE MIXTURE.
BERYLLIUM: VIOLENT REACTION POSSIBLE.
CALCIUM: VIOLENT REACTION POSSIBLE.
LITHIUM (POWDERED): FORMS EXPLOSIVE MIXTURE.
MAGNESIUM: VIOLENT REACTION POSSIBLE.
MAGNESIUM ALLOY: DECOMPOSITION POSSIBLE.
PLASTICS, RUBBER, COATINGS: MAY BE ATTACKED.
POTASSIUM: FORMS IGNITABLE COMPOUND.
SAMARIUM: EXPLODES ON FRICTION.
SODIUM: FORMS IGNITABLE COMPOUND.
SODIUM-POTASSIUM ALLOY: VIOLENT EXPLOSION.
TITANIUM (POWDERED): FORMS SHOCK-SENSITIVE MIXTURE.
ZINC: VIOLENT REACTION POSSIBLE.

DECOMPOSITION:
THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE TOXIC AND CORROSIVE FUMES OF CHLORIDES AND FLUORIDES, AND TOXIC OXIDES OF CARBON.

POLYMERIZATION:
HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

STORAGE AND DISPOSAL

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE. FOR ASSISTANCE, CONTACT THE DISTRICT DIRECTOR OF THE ENVIRONMENTAL PROTECTION AGENCY.

STORAGE

STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

KEEP IN A TIGHTLY CLOSED CONTAINER. STORE IN A COOL, DRY, VENTILATED AREA.

****

CONDITIONS TO AVOID

MAY BURN BUT DOES NOT IGNITE READILY. AVOID CONTACT WITH STRONG OXIDIZERS, EXCESSIVE HEAT, SPARKS, OR OPEN FLAME.

****

SPILL AND LEAK PROCEDURES

OCCUPATIONAL SPILL:
STOP LEAK IF YOU CAN DO IT WITHOUT RISK. FOR SMALL SPILLS, TAKE UP WITH SAND OR OTHER ABSORBENT MATERIAL AND PLACE INTO CLEAN, DRY CONTAINERS FOR LATER DISPOSAL. KEEP UNNECESSARY PEOPLE AWAY. ISOLATE HAZARD AREA AND DENY ENTRY.

PROTECTIVE EQUIPMENT

VENTILATION:
PROVIDE GENERAL DILUTION VENTILATION TO MEET PUBLISHED EXPOSURE LIMITS.

RESPIRATOR:
THE FOLLOWING RESPIRATORS AND MAXIMUM USE CONCENTRATIONS ARE RECOMMENDATIONS BY THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIOSH POCKET GUIDE TO CHEMICAL HAZARDS; NIOSH CRITERIA DOCUMENTS OR BY THE U.S. DEPARTMENT OF LABOR, 29 CFR 1910 SUBPART Z.
THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND

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IN THE WORK PLACE, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

1,1,2-TRICHLORO-1,2,2-TRIFLUOROETHANE:

4500 PPM- ANY SUPPLIED-AIR RESPIRATOR.
ANY SELF-CONTAINED BREATHING APPARATUS.

ESCAPE- ANY AIR-PURIFYING FULL FACEPIECE RESPIRATOR (GAS MASK) WITH A CHIN-STYLE OR FRONT OR BACK-MOUNTED ORGANIC VAPOR CANISTER.
ANY APPROPRIATE ESCAPE-TYPE SELF-CONTANINED BREATHING APPARATUS.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ANY SUPPLIED-AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

CLOTHING:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT REPEATED OR PROLONGED SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES:
PROTECTIVE GLOVES ARE NOT REQUIRED BUT RECOMMENDED.

EYE PROTECTION:
EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES AND A FACESHIELD TO PREVENT CONTACT WITH THIS SUBSTANCE.

EMERGENCY WASH FACILITIES:
WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES AND/OR SKIN MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN AND QUICK DRENCH SHOWER WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

AUTHORIZED - FISHER SCIENTIFIC, INC.
CREATION DATE: 01/15/85 REVISION DATE: 05/03/91

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METHYLENE CHLORIDE
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MATERIAL SAFETY DATA SHEET

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SUBSTANCE IDENTIFICATION

CAS-NUMBER 75-09-2

SUBSTANCE: **METHYLENE CHLORIDE**

TRADE NAMES/SYNONYMS:
METHANE, DICHLORO-; METHYLENE CHLORIDE; METHYLENE DICHLORIDE;
METHANE DICHLORIDE; SOLAESTHIN; NARKOTIL; SOLMETHINE; DICHLOROMETHANE;
RCRA U080; STCC 4941132;
D150; D143; D142; D123; D35; D37; D37S; D37SK; D150SK; D143SK; D151; BP1186;
D152; UN 1593; CH2CL2;

CHEMICAL FAMILY:
Halogen compound, aliphatic

MOLECULAR FORMULA: C-H2-CL2

MOLECULAR WEIGHT: 84.93

CERCLA RATINGS (SCALE 0-3): HEALTH=3 FIRE=1 REACTIVITY=0 PERSISTENCE=1
NFPA RATINGS (SCALE 0-4): HEALTH=2 FIRE=1 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

COMPONENT: METHYLENE CHLORIDE PERCENT: 100.0
CAS# 75-09-2

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:
DICHLOROMETHANE (METHYLENE CHLORIDE):
500 ppm OSHA TWA; 1000 ppm OSHA ceiling; 2000 ppm/5 min in 2 hours OSHA peak
50 ppm (174 mg/m3) ACGIH TWA
ACGIH A2- Suspected Human Carcinogen
Lowest feasible limit NIOSH recommended exposure criteria
100 ppm (360 mg/m3) DFG MAK TWA;
500 ppm (1800 mg/m3) DFG MAK 30 minute peak, average value, 2 times/shift

Measurement method: Charcoal tube (2); carbon disulfide; gas chromatography with flame ionization detection; (NIOSH Vol. III # 1005).

1000 pounds CERCLA Section 103 Reportable Quantity
Subject to SARA Section 313 Annual Toxic Chemical Release Reporting
Subject to California Proposition 65 cancer and/or reproductive toxicity warning and release requirements- (April 1, 1988)

PHYSICAL DATA

DESCRIPTION: Clear, colorless liquid with an mild, chloroform-like odor

BOILING POINT: 104 F (40 C) MELTING POINT: -139 F (-95 C)

SPECIFIC GRAVITY: 1.3266 VOLATILITY: 100%

VAPOR PRESSURE: 400 mmHg @ 24 C EVAPORATION RATE: (butyl acetate=1) 27.5

SOLUBILITY IN WATER: 1.32% @ 20 C ODOR THRESHOLD: 25-50 ppm

VAPOR DENSITY: 2.9

SOLVENT SOLUBILITY: Soluble in alcohol, ether, dimethylformamide, phenols, aldehydes, ketones, glacial acetic acid, triethyl phosphate, acetoacetic acid, cyclohexylamine, chlorinated solvents.

VISCOSITY: 0.441 cP @ 20 C

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
Slight fire hazard when exposed to heat or flame.

UPPER EXPLOSIVE LIMIT: 23% LOWER EXPLOSIVE LIMIT: 13%

AUTOIGNITION TEMP.: 1033 F (556 C)

FIREFIGHTING MEDIA:
Dry chemical or carbon dioxide
(1993 Emergency Response Guidebook, RSPA P 5800.6).

For larger fires, use water spray, fog or regular foam
(1993 Emergency Response Guidebook, RSPA P 5800.6).

FIREFIGHTING:
Apply cooling water to sides of containers that are exposed to flames until well after fire is out. Stay away from ends of tanks. Isolate for 1/2 mile in all directions if tank, rail car or tank truck is involved in fire (1993 Emergency Response Guidebook, RSPA P 5800.6, Guide Page 74).

Extinguish using agents suitable for surrounding fire. Use flooding quantities of water to cool affected containers, applying from as far a distance as possible. Avoid breathing hazardous vapors, keep unwind.

TRANSPORTATION DATA

U.S. DEPARTMENT OF TRANSPORTATION SHIPPING NAME-ID NUMBER, 49 CFR 172.101:
Dichloromethane-UN 1593

U.S. DEPARTMENT OF TRANSPORTATION HAZARD CLASS OR DIVISION, 49 CFR 172.101:
6.1 - Poisonous materials

U.S. DEPARTMENT OF TRANSPORTATION PACKING GROUP, 49 CFR 172.101:
PG III

U.S. DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS, 49 CFR 172.101 AND SUBPART E:
Keep away from food

U.S. DEPARTMENT OF TRANSPORTATION PACKAGING AUTHORIZATIONS:
EXCEPTIONS: 49 CFR 173.153
NON-BULK PACKAGING: 49 CFR 173.203
BULK PACKAGING: 49 CFR 173.241

U.S. DEPARTMENT OF TRANSPORTATION QUANTITY LIMITATIONS 49 CFR 172.101:
PASSENGER AIRCRAFT OR RAILCAR: 60 L
CARGO AIRCRAFT ONLY: 220 L

TOXICITY

DICHLOROMETHANE (METHYLENE CHLORIDE):
IRRITATION DATA: 162 mg eye-rabbit moderate; 10 mg eye-rabbit mild; 500 mg/24 hours eye-rabbit mild; 810 mg/24 hours skin-rabbit severe; 100 mg/24 hours skin-rabbit moderate.
TOXICITY DATA: 500 ppm/1 year intermittent inhalation-human TCLo; 500 ppm/8 hours inhalation-human TCLo; 88000 mg/m3/30 minutes inhalation-rat LC50; 552 ppm/6 hours/5 days intermittent inhalation-rat TCLo; 14400 ppm/7 hours inhalation-mouse LC50; 10000 ppm/7 hours inhalation-rabbit LCLo; 5000 ppm/2 hours inhalation-guinea pig LCLo; 14108 ppm/7 hours inhalation-dog LCLo; 43400 mg/m3/4.5 hours inhalation-cat LCLo; 357 mg/kg oral-human LDLo; 1600 mg/kg oral-rat LD50; 1900 mg/kg oral-rabbit LDLo; 3 gm/kg oral-dog LDLo; 6460 mg/kg subcutaneous-mouse LD50; 2700 mg/kg subcutaneous-rabbit LDLo; 200 mg/kg intravenous-dog LDLo; 916 mg/kg intraperitoneal-rat LD50; 437 mg/kg intraperitoneal-mouse LD50; 950 mg/kg intraperitoneal-dog LDLo; 4770 mg/kg unreported-mouse LD50; 13000 ppm/6 hours/19 days intermittent inhalation-rat TCLo; 44 mg/m3/24 hours/96 days continuous inhalation-rat TCLo; 8400 ppm/6 hours/13 weeks intermittent inhalation-rat; 13000 ppm/6 hours/19 days intermittent inhalation-mouse TCLo; 8400 ppm/6 hours/13 weeks intermittent inhalation-mouse TCLo; 39270 mg/kg/17 weeks intermittent skin-rat TDLo; mutagenic data (RTECS); reproductive effects data (RTECS); tumorigenic data (RTECS).
CARCINOGEN STATUS: Anticipated Human Carcinogen (NTP); Human Inadequate Evidence, Animal Sufficient Evidence (IARC Group-2B). Exposure by inhalation increased the incidence of benign and malignant lung and liver tumors in mice of each sex and the incidence or multiplicity of benign mammary tumors in rats of each sex; in male rats, an increased incidence of sarcomas located in the neck was also observed.
LOCAL EFFECTS: Irritant- inhalation, skin, eye
ACUTE TOXICITY LEVEL: Moderately toxic by inhalation and ingestion.
TARGET EFFECTS: Central nervous system depressant; chemical asphyxiant. Poisoning may affect the blood, liver and kidneys.
AT INCREASED RISK FROM EXPOSURE: Persons with skin, liver, kidney, cardiovascular disease or anemia.
ADDITIONAL DATA: Concurrent exposure to other sources of carbon monoxide,

smoking, or physical activity may increase the level of carboxyhemoglobin in the blood resulting in additive effects. Alcohol may enhance the toxic effects. Stimulants such as epinephrine may induce cardiac arrhythmias. One study indicated that chronic exposure may be associated with an increased risk of spontaneous abortion. Dichloromethane crosses the placenta and is excreted in breast milk.

HEALTH EFFECTS AND FIRST AID

INHALATION:
DICHLOROMETHANE (METHYLENE CHLORIDE):
IRRITANT/NARCOTIC/CHEMICAL ASPHYXIANT/CARCINOGEN.

ACUTE EXPOSURE- Human exposure to 100 ppm has resulted in upper respiratory tract irritation; concentrations as low as 200 ppm have produced temporary neurobehavioural effects; 500-1000 ppm for 1-2 hours has caused lightheadedness and elevated carboxyhemoglobin level; 2300 ppm for 30 minutes has caused nausea and narcosis; 5000 ppm has caused headache, fatigue, neurasthenic disorders and digestive disturbances. Other symptoms may include dizziness, tingling, numbness of the extremities, a sensation of heat, a sensation of fullness in the head, drunkenness, stupor, dullness and mental confusion. Massive exposure may cause pharyngeal erosion, pulmonary edema, staggering, hemolysis with gross hematuria, rapid unconsciousness and death. Recovery is generally complete if exposure is terminated before anesthetic death. Exposure to high levels may also cause cardiac arrhythmias.

CHRONIC EXPOSURE- More than 100 workers exposed to levels below 500 ppm have developed health problems including significant upper respiratory irritation, exacerbation of coronary artery disease, and a high incidence of neurotoxicity; increased complaints of chest pains were reported at concentrations of 10 to 35 ppm. Repeated human exposure to 500-3600 ppm has caused signs of toxic encephalopathy with acoustic [illegible] delusions and hallucinations. A case of serious cerebral deterioration was observed in an individual exposed for several years to dichloromethane. In a mortality study of two groups of workers, one exposed to acetone and the other to dichloromethane and acetone, a statistically significant difference in deaths from diseases of the circulatory system and from ischemic heart disease were reported from the dichloromethane and acetone group. In another mortality study of workers exposed to dichloromethane, a significant increase in hypertensive disease and a "suggestive excess" of pancreatic cancer were reported. Liver disease has been reported in workers. In one study, an increase in serum bilirubin was observed in exposed workers, but no other sign of liver injury or hemolysis was reported. Adverse liver effects were observed in several animal species chemically exposed. Testicular [illegible]
Repeated inhalation by rodents prior to and/or during gestation caused fetal skeletal abnormalities and behavioral effects in newborn offspring. Repeated inhalation increased the incidence of benign and malignant lung and liver tumors in mice of each sex and the incidence or multiplicity of benign mammary tumors in rats of each sex; in male rats, an increased incidence of sarcomas located in the neck was also observed.

FIRST AID- Remove from exposure area to fresh air immediately. Perform artificial respiration if necessary. Maintain airway, blood pressure and respiration. Keep warm and at rest. Treat symptomatically and supportively. Get medical attention immediately. Qualified medical personnel should consider administering oxygen.

SKIN CONTACT:
DICHLOROMETHANE (METHYLENE CHLORIDE):
IRRITANT.
ACUTE EXPOSURE- May cause effects ranging from mild irritation to severe pain, paresthesias, and possibly burns, depending on the intensity of contact.
CHRONIC EXPOSURE- Prolonged or repeated contact may cause a dry, scaly and fissured dermatitis due to defatting action of liquid on skin.

FIRST AID- Remove contaminated clothing and shoes immediately. Wash with soap or mild detergent and large amounts of water until no evidence of chemical remains (at least 15-20 minutes). Get medical attention immediately.

EYE CONTACT:
DICHLOROMETHANE (METHYLENE CHLORIDE):
IRRITANT.
ACUTE EXPOSURE- Vapor concentrations above 2000 ppm may cause irritation. Direct contact may cause pain and extreme irritation, but it is not likely to cause serious injury. 10 mg applied to rabbit eyes produced keratitis, iritis, increased corneal thickness, and inflammation of the conjunctiva and eyelids with some effects lasting up to two weeks.
CHRONIC EXPOSURE- Repeated or prolonged exposure to irritants may cause conjunctivitis.

FIRST AID- Wash eyes immediately with large amounts of water or normal saline, occasionally lifting upper and lower lids, until no evidence of chemical remains (at least 15-20 minutes). Get medical attention immediately.

INGESTION:
DICHLOROMETHANE (METHYLENE CHLORIDE):
NARCOTIC/CHEMICAL ASPHYXIANT.
Acute exposure: May cause rapid, then slowed respiration, glottal and pharyngeal edema, intravascular hemolysis with gross hematuria, gastrointestinal ulceration and hemorrhage, and carboxyhemoglobinemia. These symptoms may progress rapidly to unconsciousness and lack of response to painful stimuli. Pharyngeal erosions may disturb the swallowing mechanism resulting in aspiration pneumonia. In addition, symptoms of central nervous system depression may occur followed by convulsions and paresthesia of the extremities. Large doses may cause liver and kidney damage. The estimated lethal dose for an adult is 25 grams.
CHRONIC EXPOSURE- Repeated ingestion by rats and mice resulted in histomorphological changes in the liver.

FIRST AID- Remove by gastric lavage or emesis. Maintain blood pressure and airway. Give oxygen if respiration is depressed. Do not perform gastric lavage or emesis if victim is unconscious. Get medical attention immediately (Dreisbach, Handbook of Poisoning, 12th Ed.). Administration of gastric lavage or oxygen should be performed by qualified medical personnel.

ANTIDOTE:
No specific antidote. Treat symptomatically and supportively.

REACTIVITY

REACTIVITY:
Stable under normal temperatures and pressures.

INCOMPATIBILITIES:
DICHLOROMETHANE (METHYLENE CHLORIDE):
ALKALI METALS: Possible explosive reaction.
ALUMINUM: Violent, uncontrollable reaction above 95 C.
CAUSTICS (STRONG): Vigorous, possibly violent reaction.
COPPER: May corrode at elevated temperatures in the presence of moisture.
DINITROGEN PENTOXIDE: Possible explosion.
DINITROGEN TETROXIDE: Forms shock-sensitive mixture.
IRON: May corrode at elevated temperatures in the presence of moisture.
LITHIUM: Forms shock-sensitive mixture.
MAGNESIUM: Possible explosion.
NICKEL: May corrode at elevated temperatures in the presence of moisture.
NITRIC ACID: Exothermic reaction yielding detonable solution.
OXIDIZERS (STRONG): Fire and explosion hazard.
OXYGEN (LIQUID): Explosive reaction on ignition.
PLASTICS, RUBBER, AND COATINGS: May be attacked.
POTASSIUM: Explosive reaction.
POTASSIUM HYDROXIDE + N-METHYL-N-NITROSO UREA: Possible explosion.
POTASSIUM TERT-BUTOXIDE: Ignition reaction.
SODIUM: Forms shock-sensitive mixture.
SODIUM-POTASSIUM ALLOY: Forms shock-sensitive mixture.
STAINLESS STEEL: May corrode at elevated temperatures in the presence of moisture.
TITANIUM: Possible violent reaction.
ZINC: Possible violent reaction.

DECOMPOSITION:
Thermal decomposition products may include toxic and hazardous phosgene gas, toxic and corrosive fumes of chlorides, and oxides of carbon.

POLYMERIZATION:
Hazardous polymerization has not been reported to occur under normal temperatures and pressures.

STORAGE AND DISPOSAL

Observe all federal, state and local regulations when storing or disposing of this substance.

Storage

Protect against physical damage. Store in cool, dry, well ventilated location, away from any area where the fire hazard may be acute (NFPA 49, Hazardous Chemicals Data, 1975).

Store in a tightly closed container.

Store under nitrogen.

Store away from incompatible substances.

Disposal

Disposal must be in accordance with standards applicable to generators of hazardous waste, 40CFR 262. EPA Hazardous Waste Number U080.

****

CONDITIONS TO AVOID

May burn but does not ignite readily. Container may explode in heat of fire.

****

SPILL AND LEAK PROCEDURES

SOIL SPILL:
Dig a holding area such as a pit, pond or lagoon to contain spill and dike surface flow using barrier of soil, sandbags, foamed polyurethane or foamed concrete. Absorb liquid mass with fly ash or cement powder.

AIR SPILL:
Apply water spray to knock down vapors.

WATER SPILL:
Trap spilled material at bottom in deep water pockets, excavated holding areas or within sand bag barriers.

Use suction hoses to remove trapped spill material.

The California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65) prohibits contaminating any known source of drinking water with substances known to cause cancer and/or reproductive toxicity.

OCCUPATIONAL SPILL:
Shut off ignition sources. Stop leak if you can do it without risk. For small liquid spills, take up with sand, earth or other absorbent material. For larger spills, dike far ahead of spill for later disposal. No smoking, flames or flares in hazard area! Keep unnecessary people away.

Reportable Quantity (RQ): 1000 pounds
The Superfund Amendments and Reauthorization Act (SARA) Section 304 requires that a release equal to or greater than the reportable quantity for this substance be immediately reported to the local emergency planning committee and the state emergency response commission (40 CFR 355.40). If the release of this substance is reportable under CERCLA Section 103, the National Response Center must be notified immediately at (800) 424-8802 or (202) 426-2675 in the metropolitan Washington, D.C. area (40 CFR 302.6).

PROTECTIVE EQUIPMENT

VENTILATION:
Process enclosure recommended to meet published exposure limits.

RESPIRATOR:
The following respirators and maximum use concentrations are recommendations by the U.S. Department of Health and Human Services, NIOSH Pocket Guide to Chemical Hazards; NIOSH criteria documents or by the U.S. Department of

Labor, 29 CFR 1910 Subpart Z.
The specific respirator selected must be based on contamination levels found in the work place, must not exceed the working limits of the respirator and be jointly approved by the National Institute for Occupational Safety and Health and the Mine Safety and Health Administration (NIOSH-MSHA).

DICHLOROMETHANE (METHYLENE CHLORIDE):
At any detectable concentration:

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.
Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

Escape- Any air-purifying, full-facepiece respirator (gas mask) with a chin-style, front- or back-mounted organic vapor canister.
Any appropriate escape-type, self-contained breathing apparatus.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

Any self-contained breathing apparatus that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode.

Any supplied-air respirator that has a full facepiece and is operated in a pressure-demand or other positive-pressure mode in combination with an auxiliary self-contained breathing apparatus operated in pressure-demand or other positive-pressure mode.

CLOTHING:
Employee must wear appropriate protective (impervious) clothing and equipment to prevent repeated or prolonged skin contact with this substance.

GLOVES:
Employee must wear appropriate protective gloves to prevent contact with this substance.

EYE PROTECTION:
Employee must wear splash-proof or dust-resistant safety goggles and a faceshield to prevent contact with this substance.

Emergency wash facilities:
Where there is any possibility that an employee's eyes and/or skin may be exposed to this substance, the employer should provide an eye wash fountain and quick drench shower within the immediate work area for emergency use.

AUTHORIZED - FISHER SCIENTIFIC, INC.
CREATION DATE: 09/26/84 REVISION DATE: 12/08/9-

-ADDITIONAL INFORMATION-

·88 M04 METHYL ISO-BUTYL KETONE

EFFECTIVE: 01/04/94 ISSUED: 01/15/94

J.T.BAKER INC., 222 RED SCHOOL LANE, PHILLIPSBURG, NJ 08865

SECTION I - PRODUCT IDENTIFICATION

PRODUCT NAME: METHYL ISO-BUTYL KETONE
COMMON SYNONYMS: 4-METHYL-2-PENTANONE; ISOPROPYLACETONE; HEXONE
CHEMICAL FAMILY: KETONES
FORMULA: CH3COCH2CH(CH3)2
FORMULA WT.: 100.16
CAS NO.: 108-10-1
NIOSH/RTECS NO.: SA9275000
PRODUCT USE: LABORATORY REAGENT
PRODUCT CODES: 5384,9212,9320,4855,9322,5384

PRECAUTIONARY LABELING

BAKER SAF-T-DATA* SYSTEM

HEALTH	-	2	MODERATE
FLAMMABILITY	-	3	SEVERE (FLAMMABLE)
REACTIVITY	-	1	SLIGHT
CONTACT	-	1	SLIGHT

LABORATORY PROTECTIVE EQUIPMENT

GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER

U.S. PRECAUTIONARY LABELING

WARNING
FLAMMABLE. CAUSES IRRITATION. HARMFUL IF SWALLOWED OR INHALED. KEEP AWAY FROM HEAT, SPARKS, FLAME. AVOID CONTACT WITH EYES, SKIN, CLOTHING. AVOID BREATHING VAPOR. KEEP IN TIGHTLY CLOSED CONTAINER. USE WITH ADEQUATE VENTILATION. WASH THOROUGHLY AFTER HANDLING. IN CASE OF FIRE, USE ALCOHOL FOAM, DRY CHEMICAL, CARBON DIOXIDE - WATER MAY BE INEFFECTIVE. FLUSH SPILL AREA WITH WATER SPRAY.

INTERNATIONAL LABELING

AVOID CONTACT WITH EYES. AFTER CONTACT WITH SKIN, WASH IMMEDIATELY WITH PLENTY OF WATER. KEEP CONTAINER TIGHTLY CLOSED.

SAF-T-DATA* STORAGE COLOR CODE: RED (FLAMMABLE)

CONTINUED ON PAGE: 2

SECTION II - COMPONENTS

COMPONENT	CAS NO.	WEIGHT %	OSHA/PEL	ACGIH/TLV
METHYL ISO-BUTYL KETONE	108-10-1	90-100	50 PPM	50 PPM

SECTION III - PHYSICAL DATA

BOILING POINT: 116 C (240 F)
(AT 760 MM HG)

VAPOR PRESSURE (MMHG): 15
(20 C)

MELTING POINT: -85 C (-121 F)
(AT 760 MM HG)

VAPOR DENSITY (AIR=1): 3.5

SPECIFIC GRAVITY: 0.79
(H2O=1)

EVAPORATION RATE: 1.6
(BUTYL ACETATE = 1)

SOLUBILITY(H2O): MODERATE (1-10%)

% VOLATILES BY VOLUME: 100
(21 C)

N/A

ODOR THRESHOLD (P.P.M.): N/A

PHYSICAL STATE: LIQUID

COEFFICIENT WATER/OIL DISTRIBUTION: N/A

APPEARANCE & ODOR: COLORLESS LIQUID. PLEASANT ODOR.

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (CLOSED CUP): 15 C (60 F)

NFPA 704M RATING: 2-3-0

AUTOIGNITION TEMPERATURE: 448 C (840 F)

FLAMMABLE LIMITS: UPPER - 7.5 % LOWER - 1.4 %

FIRE EXTINQUISHING MEDIA
USE ALCOHOL FOAM, DRY CHEMICAL OR CARBON DIOXIDE. (WATER MAY BE INEFFECTIVE.)

SPECIAL FIRE-FIGHTING PROCEDURES
FIREFIGHTERS SHOULD WEAR PROPER PROTECTIVE EQUIPMENT AND SELF-CONTAINED BREATHING APPARATUS WITH FULL FACEPIECE OPERATED IN POSITIVE PRESSURE MODE. MOVE CONTAINERS FROM FIRE AREA IF IT CAN BE DONE WITHOUT RISK. USE

CONTINUED ON PAGE: 3

SECTION IV - FIRE AND EXPLOSION HAZARD DATA (CONTINUED)

WATER TO KEEP FIRE-EXPOSED CONTAINERS COOL.

UNUSUAL FIRE & EXPLOSION HAZARDS
VAPORS MAY FLOW ALONG SURFACES TO DISTANT IGNITION SOURCES AND FLASH BACK. CLOSED CONTAINERS EXPOSED TO HEAT MAY EXPLODE. CONTACT WITH STRONG OXIDIZERS MAY CAUSE FIRE.

TOXIC GASES PRODUCED
CARBON MONOXIDE, CARBON DIOXIDE

EXPLOSION DATA-SENSITIVITY TO MECHANICAL IMPACT
NONE IDENTIFIED.

EXPLOSION DATA-SENSITIVITY TO STATIC DISCHARGE
NONE IDENTIFIED.

SECTION V - HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE (TLV/TWA): 205 MG/M (50 PPM)

SHORT-TERM EXPOSURE LIMIT (STEL): 300 MG/M (75 PPM)

PERMISSIBLE EXPOSURE LIMIT (PEL): 205 MG/M (50 PPM)

TOXICITY OF COMPONENTS

ORAL RAT LD50 FOR METHYL ISO-BUTYL KETONE	2080	MG/KG
INHALATION MOUSE LC50 FOR METHYL ISO-BUTYL KETONE	23	G/M
INTRAPERITONEAL MOUSE LD50 FOR METHYL ISO-BUTYL KETONE	268	MG/KG

CARCINOGENICITY: NTP: NO IARC: NO Z LIST: NO OSHA REG: NO

CARCINOGENICITY
NONE IDENTIFIED.

REPRODUCTIVE EFFECTS
NONE IDENTIFIED.

CONTINUED ON PAGE: 4

SECTION V - HEALTH HAZARD DATA (CONTINUED)

EFFECTS OF OVEREXPOSURE

INHALATION: HEADACHE, NAUSEA, VOMITING, DIZZINESS, DROWSINESS, IRRITATION OF UPPER RESPIRATORY TRACT, UNCONSCIOUSNESS

SKIN CONTACT: IRRITATION, DERMATITIS

EYE CONTACT: IRRITATION

SKIN ABSORPTION: NONE IDENTIFIED

INGESTION: IRRITATION OF MUCOUS MEMBRANES, HEADACHE, NAUSEA, VOMITING, DIZZINESS, GASTROINTESTINAL IRRITATION, CENTRAL NERVOUS SYSTEM DEPRESSION

CHRONIC EFFECTS: KIDNEY DAMAGE, LIVER DAMAGE

TARGET ORGANS
RESPIRATORY SYSTEM, EYES, SKIN, CENTRAL NERVOUS SYSTEM

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE
EYE DISORDERS, SKIN DISORDERS, RESPIRATORY SYSTEM DISEASE

PRIMARY ROUTES OF ENTRY
INHALATION, INGESTION, EYE CONTACT, SKIN CONTACT

EMERGENCY AND FIRST AID PROCEDURES

INGESTION: CALL A PHYSICIAN. IF SWALLOWED, IF CONSCIOUS, GIVE LARGE AMOUNTS OF WATER. INDUCE VOMITING.

INHALATION: IF INHALED, REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN.

SKIN CONTACT: IN CASE OF CONTACT, FLUSH SKIN WITH WATER.

EYE CONTACT: IN CASE OF EYE CONTACT, IMMEDIATELY FLUSH WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES.

SARA/TITLE III HAZARD CATEGORIES AND LISTS

ITE: YES CHRONIC: YES FLAMMABILITY: YES PRESSURE: NO REACTIVITY: NO

CONTINUED ON PAGE: 5

SECTION V - HEALTH HAZARD DATA (CONTINUED)

EXTREMELY HAZARDOUS SUBSTANCE: NO
CERCLA HAZARDOUS SUBSTANCE: YES CONTAINS METHYL ISOBUTYL KETONE (RQ = 5000 LBS)
SARA 313 TOXIC CHEMICALS: YES CONTAINS METHYL ISOBUTYL KETONE
GENERIC CLASS: GENERIC CLASS REMOVED FROM CFR: 7/1/91
TSCA INVENTORY: YES

SECTION VI - REACTIVITY DATA

STABILITY: STABLE HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

CONDITIONS TO AVOID: HEAT, FLAME, OTHER SOURCES OF IGNITION

INCOMPATIBLES: STRONG OXIDIZING AGENTS, STRONG BASES, AMINES AND AMMONIA, STRONG ACIDS

DECOMPOSITION PRODUCTS: CARBON MONOXIDE, CARBON DIOXIDE

SECTION VII - SPILL & DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN THE EVENT OF A SPILL OR DISCHARGE
WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. SHUT OFF IGNITION SOURCES; NO FLARES, SMOKING OR FLAMES IN AREA. STOP LEAK IF YOU CAN DO SO WITHOUT RISK. USE WATER SPRAY TO REDUCE VAPORS. TAKE UP WITH SAND OR OTHER NON-COMBUSTIBLE ABSORBENT MATERIAL AND PLACE INTO CONTAINER FOR LATER DISPOSAL. FLUSH AREA WITH WATER.

J. T. BAKER SOLUSORB(R) SOLVENT ADSORBENT IS RECOMMENDED FOR SPILLS OF THIS PRODUCT.

DISPOSAL PROCEDURE
DISPOSE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL ENVIRONMENTAL REGULATIONS.

EPA HAZARDOUS WASTE NUMBER: U161 (TOXIC WASTE)

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SECTION VIII - INDUSTRIAL PROTECTIVE EQUIPMENT

VENTILATION: USE GENERAL OR LOCAL EXHAUST VENTILATION TO MEET TLV REQUIREMENTS.

RESPIRATORY PROTECTION: RESPIRATORY PROTECTION REQUIRED IF AIRBORNE CONCENTRATION EXCEEDS TLV. AT CONCENTRATIONS UP TO 1000 PPM, A CHEMICAL CARTRIDGE RESPIRATOR WITH ORGANIC VAPOR CARTRIDGE IS RECOMMENDED. ABOVE THIS LEVEL, A SELF-CONTAINED BREATHING APPARATUS IS RECOMMENDED.

EYE/SKIN PROTECTION: SAFETY GOGGLES, UNIFORM, APRON, POLYVINYL ALCOHOLGLOVES ARE RECOMMENDED.

SECTION IX - STORAGE AND HANDLING PRECAUTIONS

-T-DATA* STORAGE COLOR CODE: RED (FLAMMABLE)

TORAGE REQUIREMENTS
KEEP CONTAINER TIGHTLY CLOSED. STORE IN A COOL, DRY, WELL-VENTILATED, FLAMMABLE LIQUID STORAGE AREA.

SPECIAL PRECAUTIONS
BOND AND GROUND CONTAINERS WHEN TRANSFERRING LIQUID.

SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION

DOMESTIC (D.O.T.)

PROPER SHIPPING NAME: METHYL ISOBUTYL KETONE
HAZARD CLASS: 3
UN/NA: UN1245 PACKAGING GROUP: II
LABELS: FLAMMABLE LIQUID
REGULATORY REFERENCES: 49CFR 172.101

INTERNATIONAL (I.M.O.)

PROPER SHIPPING NAME: METHYL ISOBUTYL KETONE
HAZARD CLASS: 3.2 I.M.C. PAGE: 3257
UN/NA: UN1245 MARINE POLLUTANTS: NO PACKAGING GROUP: II
LABELS: FLAMMABLE LIQUID

CONTINUED ON PAGE: 7

SECTION X - TRANSPORTATION DATA AND ADDITIONAL INFORMATION (CONTINUED)

REGULATORY REFERENCES: 49CFR PART 176; IMDG CODE

AIR (I.C.A.O.)

PROPER SHIPPING NAME: METHYL ISOBUTYL KETONE
HAZARD CLASS: 3.2
UN: UN1245 PACKAGING GROUP: II
LABELS: FLAMMABLE LIQUID
REGULATORY REFERENCES: 49CFR PART 175; ICAO=== WE BELIEVE THE TRANSPORTATION DATA AND REFERENCES CONTAINED HEREIN TO BE FACTUAL AND THE OPINION OF QUALIFIED EXPERTS. THE DATA IS MEANT AS A GUIDE TO THE OVERALL CLASSIFICATION OF THE PRODUCT AND IS NOT PACKAGE SIZE SPECIFIC, NOR SHOULD IT BE TAKEN AS A WARRANTY OR REPRESENTATION FOR WHICH THE COMPANY ASSUMES LEGAL RESPONSIBILITY.=== THE INFORMATION IS OFFERED SOLELY FOR YOUR CONSIDERATION, INVESTIGATION, AND VERIFICATION. ANY USE OF THE INFORMATION MUST BE DETERMINED BY THE USER TO BE IN ACCORDANCE WITH APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND REGULATIONS. SEE SHIPPER REQUIREMENTS 49CFR 171.2, CERTIFICATION 172.204, AND EMPLOYEE TRAINING 49 CFR 173.1(8).

U.S. CUSTOMS HARMONIZATION NUMBER: 29141300006

NOTE: WHEN HANDLING LIQUID PRODUCTS, SECONDARY PROTECTIVE CONTAINERS MUST BE USED FOR CARRYING.
-N/A = NOT APPLICABLE, OR NOT AVAILABLE;
N/E = NOT ESTABLISHED.-
THE INFORMATION IN THIS MATERIAL SAFETY DATA SHEET MEETS THE REQUIREMENTS OF THE UNITED STATES OCCUPATIONAL SAFETY AND HEALTH ACT AND REGULATIONS PROMULGATED THEREUNDER (29 CFR 1910.1200 ET. SEQ.) AND THE CANADIAN WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM. THIS DOCUMENT IS INTENDED ONLY AS A GUIDE TO THE APPROPRIATE PRECAUTIONARY HANDLING OF THE MATERIAL BY A PERSON TRAINED IN, OR SUPERVISED BY A PERSON TRAINED IN, CHEMICAL HANDLING. THE USER IS RESPONSIBLE FOR DETERMINING THE PRECAUTIONS AND DANGERS OF THIS CHEMICAL FOR HIS OR HER PARTICULAR APPLICATION. DEPENDING ON USAGE, PROTECTIVE CLOTHING INCLUDING EYE AND FACE GUARDS AND RESPIRATORS MUST BE USED TO AVOID CONTACT WITH MATERIAL OR BREATHING CHEMICAL VAPORS/FUMES.
EXPOSURE TO THIS PRODUCT MAY HAVE SERIOUS ADVERSE HEALTH EFFECTS. THIS CHEMICAL MAY INTERACT WITH OTHER SUBSTANCES. SINCE THE POTENTIAL USES

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ARE SO VARIED, BAKER CANNOT WARN OF ALL OF THE POTENTIAL DANGERS OF USE OR INTERACTION WITH OTHER CHEMICALS OR MATERIALS. BAKER WARRANTS THAT THE CHEMICAL MEETS THE SPECIFICATIONS SET FORTH ON THE LABEL.
BAKER DISCLAIMS ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED WITH REGARD TO THE PRODUCT SUPPLIED HEREUNDER, ITS MERCHANTABILITY OR ITS FITNESS FOR A PARTICULAR PURPOSE.
THE USER SHOULD RECOGNIZE THAT THIS PRODUCT CAN CAUSE SEVERE INJURY AND EVEN DEATH, ESPECIALLY IF IMPROPERLY HANDLED OR THE KNOWN DANGERS OF USE ARE NOT HEEDED. READ ALL PRECAUTIONARY INFORMATION. AS NEW DOCUMENTED GENERAL SAFETY INFORMATION BECOMES AVAILABLE, BAKER WILL PERIODICALLY REVISE THIS MATERIAL SAFETY DATA SHEET.
NOTE: CHEMTREC, CANUTEC, AND NATIONAL RESPONSE CENTER EMERGENCY TELEPHONE NUMBERS ARE TO BE USED ONLY IN THE EVENT OF CHEMICAL EMERGENCIES INVOLVING A SPILL, LEAK, FIRE, EXPOSURE, OR ACCIDENT INVOLVING CHEMICALS. ALL NON-EMERGENCY QUESTIONS SHOULD BE DIRECTED TO CUSTOMER SERVICE (1-800-JTBAKER) FOR ASSISTANCE.

===
APPROVED BY QUALITY ASSURANCE DEPARTMENT.

-- LAST PAGE --
"ISSUED BY VWR 09/24/94"

DATE: 07/01/92 ACCT: 146965-01
INDEX: 02921820210 CAT NO: H3031 PO NBR: 921019

N-HEXANE
N-HEXANE
N-HEXANE

MATERIAL SAFETY DATA SHEET

FISHER SCIENTIFIC
CHEMICAL DIVISION
1 REAGENT LANE
FAIR LAWN NJ 07410
(201) 796-7100

EMERGENCY NUMBER: (201) 796-7100
CHEMTREC ASSISTANCE: (800) 424-9300

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SUBSTANCE IDENTIFICATION

SUBSTANCE: **N-HEXANE** CAS-NUMBER 110-54-3

TRADE NAMES/SYNONYMS:
HEXANE; NCI-C60571; HEXYLHYDRIDE; NORMAL HEXANE; SKELLYSOLVE B; STCC 4908183; UN 1208; H301; C6H14; ACC10950

CHEMICAL FAMILY:
HYDROCARBON, ALIPHATIC

MOLECULAR FORMULA: C-H3-(C-H2)4-C-H3

MOLECULAR WEIGHT: 86.18

CERCLA RATINGS (SCALE 0-3): HEALTH=3 FIRE=3 REACTIVITY=0 PERSISTENCE=1
NFPA RATINGS (SCALE 0-4): HEALTH=1 FIRE=3 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

COMPONENT: N-HEXANE PERCENT: 100.0
CAS# 110-54-3

OTHER CONTAMINANTS: NONE.

EXPOSURE LIMITS:
N-HEXANE:
50 PPM (180 MG/M3) OSHA TWA
50 PPM (180 MG/M3) ACGIH TWA
50 PPM (180 MG/M3) NIOSH RECOMMENDED TWA
50 PPM (180 MG/M3) DFG MAK TWA;
100 PPM (360 MG/M3) DFG MAK 30 MINUTE PEAK, AVERAGE VALUE, 4 TIMES/SHIFT

MEASUREMENT METHOD: CHARCOAL TUBE; CARBON DISULFIDE; GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION; (NIOSH VOL. III # 1500, HYDROCARBONS).

PHYSICAL DATA

DESCRIPTION: CLEAR, COLORLESS MOBILE LIQUID WITH A MILD GASOLINE-LIKE ODOR.

BOILING POINT: 156 F (69 C) MELTING POINT: -139 F (-95 C)

SPECIFIC GRAVITY: 0.6603 VISCOSITY: .32 CPS @ 25 C VOLATILITY: 100%

VAPOR PRESSURE: 124 MMHG @ 20 C EVAPORATION RATE: (BUTYL ACETATE=1) 15.8

PH: NEUTRAL SOLUBILITY IN WATER: 0.014% @ 20 C

ODOR THRESHOLD: 64-244 PPM VAPOR DENSITY: 3.0

SOLVENT SOLUBILITY: SOLUBLE IN ALCOHOL, CHLOROFORM, ETHER, ACETONE, AND OTHER ORGANIC SOLVENTS.

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
DANGEROUS FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL A CONSIDERABLE DISTANCE TO A SOURCE OF IGNITION AND FLASH BACK.

VAPOR-AIR MIXTURES ARE EXPLOSIVE.

DUE TO LOW ELECTROCONDUCTIVITY OF THE SUBSTANCE, FLOW OR AGITATION MAY GENERATE ELECTROSTATIC CHARGES RESULTING IN SPARKS WITH POSSIBLE IGNITION.

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FLASH POINT: -7 F (-22 C) (CC) UPPER EXPLOSIVE LIMIT: 7.5%

LOWER EXPLOSIVE LIMIT: 1.1% AUTOIGNITION TEMP.: 437 F (225 C)

FLAMMABILITY CLASS(OSHA): IB

FIREFIGHTING MEDIA:
DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR REGULAR FOAM
(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR REGULAR FOAM
(1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FIREFIGHTING:
MOVE CONTAINER FROM FIRE AREA IF YOU CAN DO IT WITHOUT RISK. APPLY COOLING WATER TO SIDES OF CONTAINERS THAT ARE EXPOSED TO FLAMES UNTIL WELL AFTER FIRE IS OUT. STAY AWAY FROM ENDS OF TANKS. FOR MASSIVE FIRE IN CARGO AREA, USE UNMANNED HOSE HOLDER OR MONITOR NOZZLES; IF THIS IS IMPOSSIBLE, WITHDRAW FROM AREA AND LET FIRE BURN. WITHDRAW IMMEDIATELY IN CASE OF RISING SOUND FROM VENTING SAFETY DEVICE OR ANY DISCOLORATION OF TANK DUE TO FIRE. ISOLATE FOR 1/2 MILE IN ALL DIRECTIONS IF TANK, RAIL CAR OR TANK TRUCK IS INVOLVED IN FIRE (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5, GUIDE PAGE 27).

EXTINGUISH ONLY IF FLOW CAN BE STOPPED; USE WATER IN FLOODING AMOUNTS AS FOG. SOLID STREAMS MAY NOT BE EFFECTIVE. COOL CONTAINERS WITH FLOODING QUANTITIES OF WATER. APPLY FROM AS FAR A DISTANCE AS POSSIBLE. AVOID BREATHING TOXIC VAPORS; KEEP UPWIND. EVACUATE TO A RADIUS OF 1500 FEET FOR UNCONTROLLABLE FIRES. CONSIDER EVACUATION OF DOWNWIND AREA IF MATERIAL IS LEAKING.

WATER MAY BE INEFFECTIVE (NFPA 325M, FIRE HAZARD PROPERTIES OF FLAMMABLE LIQUIDS, GASES, AND VOLATILE SOLIDS, 1991)

TRANSPORTATION DATA

DEPARTMENT OF TRANSPORTATION HAZARD CLASSIFICATION 49 CFR 172.101:
FLAMMABLE LIQUID

DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS 49 CFR 172.101 AND SUBPART E:
FLAMMABLE LIQUID

DEPARTMENT OF TRANSPORTATION PACKAGING REQUIREMENTS: 49 CFR 173.119
EXCEPTIONS: 49 CFR 173.118

FINAL RULE ON HAZARDOUS MATERIALS REGULATIONS (HMR, 49 CFR PARTS 171-180), DOCKET NUMBERS HM-181, HM-181A, HM-181B, HM-181C, HM-181D AND HM-204. EFFECTIVE DATE OCTOBER 1, 1991. HOWEVER, COMPLIANCE WITH THE REGULATIONS IS AUTHORIZED ON AND AFTER JANUARY 1, 1991. (55 FR 52402, 12/21/90)

EXCEPT FOR EXPLOSIVES, INHALATION HAZARDS, AND INFECTIOUS SUBSTANCES, THE EFFECTIVE DATE FOR HAZARD COMMUNICATION REQUIREMENTS IS EXTENDED TO OCTOBER 1, 1993. (56 FR 47158, 10/18/91)

U.S. DEPARTMENT OF TRANSPORTATION SHIPPING NAME-ID NUMBER, 49 CFR 172.101:
HEXANES-UN 1208

U.S. DEPARTMENT OF TRANSPORTATION HAZARD CLASS OR DIVISION, 49 CFR 172.101:
3 - FLAMMABLE LIQUID

U.S. DEPARTMENT OF TRANSPORTATION PACKING GROUP, 49 CFR 172.101:
PG II

U.S. DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS, 49 CFR 172.101 AND SUBPART E:
FLAMMABLE LIQUID

U.S. DEPARTMENT OF TRANSPORTATION PACKAGING AUTHORIZATIONS:
EXCEPTIONS: 49 CFR 173.150
NON-BULK PACKAGING: 49 CFR 173.202
BULK PACKAGING: 49 CFR 173.242

U.S. DEPARTMENT OF TRANSPORTATION QUANTITY LIMITATIONS 49 CFR 172.101:
PASSENGER AIRCRAFT OR RAILCAR: 5 L
CARGO AIRCRAFT ONLY: 60 L

TOXICITY

N-HEXANE:
IRRITATION DATA: 10 MG EYE-RABBIT MILD.
TOXICITY DATA: 190 PPM/8 WEEKS INHALATION-HUMAN TCLO; 120 GM/M3 INHALATION-MOUSE LCLO; 28,710 MG/KG ORAL-RAT LD50; 831 MG/KG INTRAVENOUS-MOUSE LDLO; 132 MG/KG INTRAVENOUS-RABBIT LDLO; 9100 MG/KG INTRAPERITONEAL-RAT LDLO; MUTAGENIC DATA (RTECS); REPRODUCTIVE EFFECTS DATA (RTECS).
CARCINOGEN STATUS: NONE.
LOCAL EFFECTS: IRRITANT- SKIN, EYE.
ACUTE TOXICITY LEVEL: RELATIVELY NON-TOXIC BY INGESTION.
TARGET EFFECTS: CENTRAL NERVOUS SYSTEM DEPRESSANT; NEUROTOXIN.

AT INCREASED RISK FROM EXPOSURE: PERSONS WITH SKIN, PULMONARY, LIVER, OR KIDNEY DISORDERS.
ADDITIONAL DATA: ALCOHOL MAY ENHANCE THE TOXIC EFFECT. A LOW ORDER OF MYOCARDIAL SENSITIZATION TO EPINEPHRINE MAY OCCUR. ACETONE AND METHYL ETHYL KETONE MAY ENHANCE THE TOXIC EFFECTS.

HEALTH EFFECTS AND FIRST AID

INHALATION:
N-HEXANE:
IRRITANT/NARCOTIC/NEUROTOXIN.
5000 PPM IMMEDIATELY DANGEROUS TO LIFE OR HEALTH.
ACUTE EXPOSURE- 880 PPM FOR 15 MINUTES HAS CAUSED UPPER RESPIRATORY TRACT IRRITATION. EXPOSURE TO 1000-5000 PPM MAY PRODUCE HEADACHE, NAUSEA, AND DIZZINESS. OTHER EFFECTS MAY INCLUDE GIDDINESS, COUGHING, NUMBNESS IN THE EXTREMITIES, DIFFICULTY WALKING, DEFECTS OF MEMORY, EXCITEMENT FOLLOWED BY DEPRESSION, AND UNCONSCIOUSNESS. ANESTHESIA OF SHORT DURATION WITHOUT SEQUELA IS POSSIBLE. PULMONARY EDEMA, CARDIAC ARRHYTHMIAS, BRAIN DAMAGE, CARDIAC ARREST AND DEATH MAY RESULT. HIGH CONCENTRATIONS MAY PRODUCE ASPHYXIA. CONVULSIONS HAVE BEEN PRODUCED IN ANIMALS.
CHRONIC EXPOSURE- RESULTS IN AXONAL NEUROPATHY. NEUROPATHY IS OF AN INSIDIOUS BILATERAL, SYMMETRICAL, SENSORIMOTOR, PERIPHERAL NATURE. 100 PPM DAILY MAY PRODUCE CHANGES IN MUSCLE STRENGTH. PROLONGED EXPOSURE MAY CAUSE EFFECTS AS IN ACUTE EXPOSURE AS WELL AS MEMORY LOSS, PROGRESSIVE WEAKNESS, ACHING MUSCLES, SENSORY LOSS IN FEET AND HANDS, CALF CRAMPS, FACIAL NUMBNESS, IMPOTENCE, BLURRED VISION, COLOR VISION ABNORMALITIES, AND PARALYSIS OF MUSCLES USUALLY OF LOWER LIMBS. EXAMINATION REVEALS HYPOACTIVE DEEP KNEE REFLEXES, BILATERAL FOOTDROP, REDUCTION IN NERVE AND SENSITIVE CONDUCTION VELOCITIES, MODIFICATION OF DISTAL LATENCY, DIMINISHING OF SENSORY POTENTIAL, AND NEUROGENIC ATROPHY OF SKELETAL MUSCLE. REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS.

FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, PERFORM ARTIFICIAL RESPIRATION. KEEP PERSON WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:
N-HEXANE:
IRRITANT.
ACUTE EXPOSURE- VAPOR MAY CAUSE IRRITATION WITH REDNESS. 2 ML/KG/4 HOURS ON RABBIT SKIN RESULTED IN ATAXIA AND RESTLESSNESS. AT 5 ML/KG/4 HOURS SOME DEATHS OCCURRED.
CHRONIC EXPOSURE- REPEATED OR PROLONGED CONTACT MAY CAUSE DERMATITIS DUE TO DEFATTING. BLISTER FORMATION, ITCHING, ERYTHEMA, PIGMENTATION AND PAIN HAVE BEEN REPORTED. SKIN EXPOSURES MAY ENHANCE NEUROTOXIC EFFECTS FROM INHALATION EXPOSURE.

FIRST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:
N-HEXANE:
IRRITANT.
ACUTE EXPOSURE- CONTACT MAY CAUSE IRRITATION WITH REDNESS AND PAIN. VAPORS AT 880 PPM FOR 15 MINUTES CAUSED IRRITATION.
CHRONIC EXPOSURE- REPEATED OR PROLONGED CONTACT WITH IRRITANTS MAY CAUSE CONJUNCTIVITIS.

FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER OR NORMAL SALINE, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:
N-HEXANE:
NARCOTIC.
ACUTE EXPOSURE- MAY CAUSE CENTRAL NERVOUS SYSTEM EFFECTS, HEADACHE, NAUSEA, VOMITING, VERTIGO, BRONCHIAL AND GENERAL INTESTINAL IRRITATION WITH ABDOMINAL SWELLING AND PAIN. THE FATAL HUMAN DOSE MAY BE ABOUT 50 GRAMS. MAY VAPORIZE WHEN ASPIRATED INTO THE TRACHEOBRONCHIAL TREE WITH A RESULTANT RAPID DILUTION OF ALVEOLAR AIR AND MARKED FALL IN ITS OXYGEN CONTENT, WITH CONSEQUENT BRAIN DAMAGE OR CARDIAC ARREST.
CHRONIC EXPOSURE- REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS.

FIRST AID- EXTREME CARE MUST BE USED TO PREVENT ASPIRATION. USE GASTRIC LAVAGE WITH ACTIVATED CHARCOAL AND A CUFFED ENDOTRACHEAL TUBE WITHIN 15 MINUTES. IN THE ABSENCE OF DEPRESSION OR CONVULSIONS OR IMPAIRED GAG REFLEX, IPECAC EMESIS CAN BE DONE. WHEN VOMITING BEGINS, KEEP HEAD LOWER THAN HIPS TO PREVENT ASPIRATION. AFTER VOMITING STOPS, GIVE 30-60 MILLILITERS OF FLEET'S PHOSPHO-SODA DILUTED 1:4 IN WATER. MAINTAIN AIRWAY, BLOOD PRESSURE AND RESPIRATION. (DREISBACH, HANDBOOK OF POISONING, 11TH ED.) TREATMENT MUST BE ADMINISTERED BY QUALIFIED MEDICAL PERSONNEL. GET MEDICAL ATTENTION.

ANTIDOTE:
NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

REACTIVITY

REACTIVITY:
STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.

INCOMPATIBILITIES:
N-HEXANE:
CALCIUM HYPOCHLORITE: FIRE AND EXPLOSION HAZARD.
CHLORINE (LIQUID): FIRE AND EXPLOSION HAZARD.
DINITROGEN TETRAOXIDE: POSSIBLE EXPLOSION HAZARD.
OXIDIZERS (STRONG): FIRE AND EXPLOSION HAZARD.
OXYGEN (CONCENTRATED): FIRE AND EXPLOSION HAZARD.
PLASTICS, RUBBER, AND COATINGS: MAY BE ATTACKED.
SODIUM HYPOCHLORITE: FIRE AND EXPLOSION HAZARD.

DECOMPOSITION:
THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE TOXIC OXIDES OF CARBON.

POLYMERIZATION:
HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

STORAGE AND DISPOSAL

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE. FOR ASSISTANCE, CONTACT THE DISTRICT DIRECTOR OF THE ENVIRONMENTAL PROTECTION AGENCY.

STORAGE

STORE IN ACCORDANCE WITH 29 CFR 1910.106.

BONDING AND GROUNDING: SUBSTANCES WITH LOW ELECTROCONDUCTIVITY, WHICH MAY BE IGNITED BY ELECTROSTATIC SPARKS, SHOULD BE STORED IN CONTAINERS WHICH MEET THE BONDING AND GROUNDING GUIDELINES SPECIFIED IN NFPA 77-1983, RECOMMENDED PRACTICE ON STATIC ELECTRICITY.

STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

STORE IN CLOSED CONTAINERS IN WELL-VENTILATED, COOL, DRY, DARK PLACE.

DISPOSAL

DISPOSAL MUST BE IN ACCORDANCE WITH STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE, 40 CFR 262. EPA HAZARDOUS WASTE NUMBER D001.
100 POUND CERCLA SECTION 103 REPORTABLE QUANTITY.

CONDITIONS TO AVOID

AVOID CONTACT WITH HEAT, SPARKS, FLAMES, OR OTHER SOURCES OF IGNITION. VAPORS MAY BE EXPLOSIVE. AVOID OVERHEATING OF CONTAINERS; CONTAINERS MAY VIOLENTLY RUPTURE IN HEAT OF FIRE. AVOID CONTAMINATION OF WATER SOURCES.

SPILL AND LEAK PROCEDURES

OCCUPATIONAL SPILL:
SHUT OFF IGNITION SOURCES. STOP LEAK IF YOU CAN DO IT WITHOUT RISK. USE WATER SPRAY TO REDUCE VAPORS. FOR SMALL SPILLS, TAKE UP WITH SAND OR OTHER ABSORBENT MATERIAL AND PLACE INTO CONTAINERS FOR LATER DISPOSAL. FOR LARGER SPILLS, DIKE FAR AHEAD OF SPILL FOR LATER DISPOSAL. NO SMOKING, FLAMES OR FLARES IN HAZARD AREA. KEEP UNNECESSARY PEOPLE AWAY; ISOLATE HAZARD AREA AND RESTRICT ENTRY.

PROTECTIVE EQUIPMENT

VENTILATION:
PROVIDE LOCAL EXHAUST VENTILATION TO MEET PUBLISHED EXPOSURE LIMITS.
VENTILATION EQUIPMENT MUST BE EXPLOSION-PROOF.

RESPIRATOR:
THE FOLLOWING RESPIRATORS AND MAXIMUM USE CONCENTRATIONS ARE RECOMMENDATIONS BY THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIOSH POCKET GUIDE TO CHEMICAL HAZARDS; NIOSH CRITERIA DOCUMENTS OR BY THE U.S. DEPARTMENT OF LABOR, 29 CFR 1910 SUBPART Z.
THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND IN THE WORK PLACE, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

N-HEXANE:
500 PPM- ANY SUPPLIED-AIR RESPIRATOR.
ANY SELF-CONTAINED BREATHING APPARATUS.

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1250 PPM- ANY SUPPLIED-AIR RESPIRATOR OPERATED IN A CONTINUOUS FLOW MODE.

2500 PPM- ANY SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE.
ANY SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE.
ANY SUPPLIED-AIR RESPIRATOR THAT HAS A TIGHT-FITTING FACEPIECE AND IS OPERATED IN A CONTINUOUS-FLOW MODE.

5000 PPM- ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ESCAPE- ANY AIR-PURIFYING FULL FACEPIECE RESPIRATOR (GAS-MASK) WITH A CHIN-STYLE OR FRONT- OR BACK-MOUNTED ORGANIC VAPOR CANISTER.
ANY APPROPRIATE ESCAPE-TYPE SELF-CONTAINED BREATHING APPARATUS.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ANY SUPPLIED-AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

CLOTHING:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT REPEATED OR PROLONGED SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS SUBSTANCE.

EYE PROTECTION:
EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES TO PREVENT EYE CONTACT WITH THIS SUBSTANCE.

EMERGENCY EYE WASH: WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

AUTHORIZED - FISHER SCIENTIFIC, INC.
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2-PROPANOL
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MATERIAL SAFETY DATA SHEET

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CHEMICAL DIVISION
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SUBSTANCE IDENTIFICATION

SUBSTANCE: **2-PROPANOL** CAS-NUMBER 67-63-0

TRADE NAMES/SYNONYMS:
ISOPROPANOL; LUTOSOL; PETROHOL; DIMETHYLCARBINOL; IPA; AVANTIN; PROPAN-2-OL; ALCOSOLVE 2; AVANTINE; ISOPROPYL ALCOHOL; ALCOJEL; ISOHOL; N-PROPAN-2-OL; SEC-PROPYL ALCOHOL; PRO; STCC 4909205; UN 1219; A415; A416; A417; A426; A419; A432; A451; A519; A520; A451SK; A416SK; A426P; A464; A516; C3H8O; ACC12090

CHEMICAL FAMILY:
HYDROXYL, ALIPHATIC

MOLECULAR FORMULA: C3-H8-O

MOLECULAR WEIGHT: 60.11

CERCLA RATINGS (SCALE 0-3): HEALTH=3 FIRE=3 REACTIVITY=0 PERSISTENCE=0
NFPA RATINGS (SCALE 0-4): HEALTH=1 FIRE=3 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

COMPONENT: 2-PROPANOL PERCENT: 100
CAS# 67-63-0

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:
ISOPROPYL ALCOHOL (ISOPROPANOL; 2-PROPANOL):
400 PPM (983 MG/M3) OSHA TWA; 500 PPM (1230 MG/M3) OSHA STEL
400 PPM (983 MG/M3) ACGIH TWA; 500 PPM (1230 MG/M3) ACGIH STEL
400 PPM (983 MG/M3) NIOSH RECOMMENDED TWA;
500 PPM (1230 MG/M3) NIOSH RECOMMENDED STEL
400 PPM (983 MG/M3) DFG MAK TWA;
800 PPM (1966 MG/M3) DFG MAK 30 MINUTE PEAK, AVERAGE VALUE, 4 TIMES/SHIFT

MEASUREMENT METHOD: CHARCOAL TUBE; 2-BUTANOL/CARBON DISULFIDE; GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION; (NIOSH VOL. III # 1400, ALCOHOLS I).

SUBJECT TO SARA SECTION 313 ANNUAL TOXIC CHEMICAL RELEASE REPORTING (ONLY PERSONS WHO MANUFACTURE BY THE STRONG ACID PROCESS ARE SUBJECT, SUPPLIER NOTIFICATION NOT REQUIRED.)

PHYSICAL DATA

DESCRIPTION: TRANSPARENT, COLORLESS, MOBILE LIQUID WITH A CHARACTERISTIC MILD

ALCOHOLIC ODOR AND A SLIGHTLY BITTER TASTE. BOILING POINT: 180 F (82 C)

MELTING POINT: -129 F (-89 C) SPECIFIC GRAVITY: 0.785 VOLATILITY: 100%

VAPOR PRESSURE: 40 MMHG @ 23.8 C EVAPORATION RATE: (BUTYL ACETATE=1) 2.88

SOLUBILITY IN WATER: SOLUBLE ODOR THRESHOLD: 50 PPM VAPOR DENSITY: 2.1

SOLVENT SOLUBILITY: SOLUBLE IN ETHANOL, ETHER, CHLOROFORM, ACETONE, BENZENE; INSOLUBLE IN SALT SOLUTIONS.

VISCOSITY: 2.1 CP @ 25 C

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
DANGEROUS FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

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VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL A CONSIDERABLE DISTANCE TO A SOURCE OF IGNITION AND FLASH BACK.

VAPOR-AIR MIXTURES ARE EXPLOSIVE ABOVE FLASH POINT.

FLASH POINT: 53 F (12 C) (CC) UPPER EXPLOSIVE LIMIT: 12.7% @ 93 C

LOWER EXPLOSIVE LIMIT: 2.0% AUTOIGNITION TEMP.: 750 F (399 C)

FLAMMABILITY CLASS(OSHA): IB

FIREFIGHTING MEDIA:
DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR ALCOHOL-RESISTANT FOAM (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR ALCOHOL-RESISTANT FOAM (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

ALCOHOL FOAM
(NFPA 325M, FIRE HAZARD PROPERTIES OF FLAMMABLE LIQUIDS, GASES, AND VOLATILE SOLIDS, 1991).

FIREFIGHTING:
MOVE CONTAINER FROM FIRE AREA IF YOU CAN DO IT WITHOUT RISK. APPLY COOLING WATER TO SIDES OF CONTAINERS THAT ARE EXPOSED TO FLAMES UNTIL WELL AFTER FIRE IS OUT. STAY AWAY FROM ENDS OF TANKS. FOR MASSIVE FIRE IN CARGO AREA, USE UNMANNED HOSE HOLDER OR MONITOR NOZZLES; IF THIS IS IMPOSSIBLE, WITHDRAW FROM AREA AND LET FIRE BURN. WITHDRAW IMMEDIATELY IN CASE OF RISING SOUND FROM VENTING SAFETY DEVICE OR ANY DISCOLORATION OF TANK DUE TO FIRE. ISOLATE FOR 1/2 MILE IN ALL DIRECTIONS IF TANK, RAIL CAR OR TANK TRUCK IS INVOLVED IN FIRE (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5, GUIDE PAGE 26).

EXTINGUISH ONLY IF FLOW CAN BE STOPPED; USE WATER IN FLOODING AMOUNTS AS FOG, SOLID STREAMS MAY NOT BE EFFECTIVE. COOL CONTAINERS WITH FLOODING QUANTITIES OF WATER, APPLY FROM AS FAR A DISTANCE AS POSSIBLE. AVOID BREATHING TOXIC VAPORS, KEEP UPWIND.

WATER MAY BE INEFFECTIVE (NFPA 325M, FIRE HAZARD PROPERTIES OF FLAMMABLE LIQUIDS, GASES, AND VOLATILE SOLIDS, 1991)

TRANSPORTATION DATA

DEPARTMENT OF TRANSPORTATION HAZARD CLASSIFICATION 49 CFR 172.101:
FLAMMABLE LIQUID

DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS 49 CFR 172.101 AND SUBPART E:
FLAMMABLE LIQUID

DEPARTMENT OF TRANSPORTATION PACKAGING REQUIREMENTS: 49 CFR 173.119
EXCEPTIONS: 49 CFR 173.118

FINAL RULE ON HAZARDOUS MATERIALS REGULATIONS (HMR, 49 CFR PARTS 171-180), DOCKET NUMBERS HM-181, HM-181A, HM-181B, HM-181C, HM-181D AND HM-204. EFFECTIVE DATE OCTOBER 1, 1991. HOWEVER, COMPLIANCE WITH THE REGULATIONS IS AUTHORIZED ON AND AFTER JANUARY 1, 1991. (55 FR 52402, 12/21/90)

EXCEPT FOR EXPLOSIVES, INHALATION HAZARDS, AND INFECTIOUS SUBSTANCES, THE EFFECTIVE DATE FOR HAZARD COMMUNICATION REQUIREMENTS IS EXTENDED TO OCTOBER 1, 1993. (56 FR 47158, 10/18/91)

U.S. DEPARTMENT OF TRANSPORTATION SHIPPING NAME-ID NUMBER, 49 CFR 172.101:
ISOPROPANOL-UN 1219

U.S. DEPARTMENT OF TRANSPORTATION HAZARD CLASS OR DIVISION, 49 CFR 172.101:
3 - FLAMMABLE LIQUID

U.S. DEPARTMENT OF TRANSPORTATION PACKING GROUP, 49 CFR 172.101:
PG II

U.S. DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS, 49 CFR 172.101 AND SUBPART E:
FLAMMABLE LIQUID

U.S. DEPARTMENT OF TRANSPORTATION PACKAGING AUTHORIZATIONS:
EXCEPTIONS: 49 CFR 173.150
NON-BULK PACKAGING: 49 CFR 173.202
BULK PACKAGING: 49 CFR 173.242

U.S. DEPARTMENT OF TRANSPORTATION QUANTITY LIMITATIONS 49 CFR 172.101:
PASSENGER AIRCRAFT OR RAILCAR: 5 L
CARGO AIRCRAFT ONLY: 60 L

TOXICITY

ISOPROPYL ALCOHOL (ISOPROPANOL; 2-PROPANOL):
IRRITATION DATA: 500 MG SKIN-RABBIT MILD; 100 MG/EYE-RABBIT SEVERE; 10 MG

EYE-RABBIT MODERATE; 100 MG/24 HOURS EYE-RABBIT MODERATE.
TOXICITY DATA: 16,000 PPM/4 HOURS INHALATION-RAT LCLO; 12,800 PPM/3 HOURS INHALATION-MOUSE LCLO; 12,800 MG/KG SKIN-RABBIT LD50; 5272 MG/KG ORAL-MAN LDLO; 14,432 MG/KG ORAL-MAN TDLO; 3570 MG/KG ORAL-HUMAN LDLO; 223 MG/KG ORAL-HUMAN TDLO; 5045 MG/KG ORAL-RAT LD50; 3600 MG/KG ORAL-MOUSE LD50; 6410 MG/KG ORAL-RABBIT LD50; 1537 MG/KG ORAL-DOG LDLO; 6 MG/KG SUBCUTANEOUS-MAMMAL LDLO; 6 GM/KG SUBCUTANEOUS-MOUSE LDLO; 1088 MG/KG INTRAVENOUS-RAT LD50; 1509 MG/KG INTRAVENOUS-MOUSE LD50; 1184 MG/KG INTRAVENOUS-RABBIT LD50; 1963 MG/KG INTRAVENOUS-CAT LDLO; 1024 MG/KG INTRAVENOUS-DOG LDLO; 2735 MG/KG INTRAPERITONEAL-RAT LD50; 4477 MG/KG INTRAPERITONEAL-MOUSE LD50; 667 MG/KG INTRAPERITONEAL-RABBIT LD50; 2560 MG/KG INTRAPERITONEAL-GUINEA PIG LD50; 3444 MG/KG INTRAPERITONEAL-HAMSTER LD50; 2770 MG/KG UNREPORTED-MAN LDLO; MUTAGENIC DATA (RTECS); REPRODUCTIVE EFFECTS DATA (RTECS).
CARCINOGEN STATUS: HUMAN INADEQUATE EVIDENCE, ANIMAL INADEQUATE EVIDENCE (IARC GROUP-3). STRONG ACID MANUFACTURING PROCESS: HUMAN SUFFICIENT EVIDENCE (IARC GROUP-1). WORKERS INVOLVED IN THE MANUFACTURE OF ISOPROPYL ALCOHOL BY THE STRONG-ACID PROCESS, INVOLVING THE FORMATION OF ISOPROPYL OILS, SHOWED AN INCREASE IN PARANASAL AND LARYNGEAL CANCER.
LOCAL EFFECTS: IRRITANT- INHALATION, EYE.
ACUTE TOXICITY LEVEL: SLIGHTLY TOXIC BY INGESTION, DERMAL ABSORPTION.
TARGET EFFECTS: CENTRAL NERVOUS SYSTEM DEPRESSANT.
AT INCREASED RISK FROM EXPOSURE: PERSONS WITH PRE-EXISTING SKIN DISORDERS; IMPAIRED LIVER, RENAL AND/OR PULMONARY FUNCTION.
ADDITIONAL DATA: POTENTIATES THE EFFECT OF CARBON TETRACHLORIDE AND OTHER HEPATOTOXIC CHLORINATED ALIPHATIC HYDROCARBONS.

HEALTH EFFECTS AND FIRST AID

INHALATION:
ISOPROPYL ALCOHOL (ISOPROPANOL; 2-PROPANOL):
IRRITANT/NARCOTIC. 12,000 PPM IMMEDIATELY DANGEROUS TO LIFE OR HEALTH.
- ACUTE EXPOSURE- HUMAN SUBJECTS EXPOSED TO 400 PPM FOR 3-5 MINUTES HAD MILD IRRITATION OF THE NOSE AND THROAT. AT 800 PPM THE IRRITATION WAS NOT SEVERE BUT UNCOMFORTABLE. HIGHER CONCENTRATIONS MAY CAUSE EFFECTS AS DETAILED IN ACUTE INGESTION. THE LENGTH OF TIME REQUIRED TO PRODUCE DEEP NARCOSIS IN ANIMALS WAS INVERSELY PROPORTIONAL TO THE CONCENTRATION: THE ONSET OF DEEP NARCOSIS RANGED FROM 460 MINUTES AT 3250 PPM TO 100 MINUTES AT 24,500 PPM.
- CHRONIC EXPOSURE- MICE SUBJECTED TO 10900 PPM ISOPROPYL ALCOHOL IN AIR FOR ABOUT 4 HOURS/DAY UNTIL THEY HAD ACCUMULATED 123 HOURS OF EXPOSURE WERE NARCOTIZED BUT SURVIVED. REVERSIBLE FATTY CHANGES WERE OBSERVED IN THE LIVER. MALE MICE EXPOSED TO EITHER 1000 OR 5000 PPM OF ISOPROPYL ALCOHOL VAPOR FOR 6 HOURS A DAY FOR 9 EXPOSURES EXHIBITED HYALINE DROPLET NEPHROPATHY. REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS. THERE HAS BEEN AN INCREASED INCIDENCE OF CANCER OF THE PARANASAL SINUSES, AND POSSIBLY OF THE LARYNX, IN THE MANUFACTURE OF ISOPROPYL ALCOHOL BY THE STRONG ACID PROCESS, INVOLVING THE FORMATION OF ISOPROPYL OILS. IT IS NOT CLEAR WHICH SUBSTANCES ARE RESPONSIBLE.

FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, PERFORM ARTIFICIAL RESPIRATION. KEEP PERSON WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:
ISOPROPYL ALCOHOL (ISOPROPANOL; 2-PROPANOL):
NARCOTIC.
- ACUTE EXPOSURE- CONTACT WITH THE SKIN MAY CAUSE SLIGHT IRRITATION. CONTACT DERMATITIS HAS BEEN REPORTED IN A FEW SENSITIVE INDIVIDUALS. SUBSTANCE MAY BE DERMALLY ABSORBED RESULTING IN SYSTEMIC TOXICITY AS DETAILED IN ACUTE INGESTION. TOXIC EFFECTS MAY BECOME MORE MARKED IF ABSORPTION AND INHALATION OCCUR CONCURRENTLY.
- CHRONIC EXPOSURE- REPEATED OR PROLONGED EXPOSURE MAY CAUSE DERMATITIS DUE TO THE DEFATTING ACTION ON THE SKIN. REPEATED AND PROLONGED EXPOSURE TO THE SKIN OF RABBITS CAUSED SLIGHT ERYTHEMA, DRYING, AND SUPERFICIAL DESQUAMATION.

FIRST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:
ISOPROPYL ALCOHOL (ISOPROPANOL; 2-PROPANOL):
IRRITANT.
- ACUTE EXPOSURE- 400-800 PPM MAY CAUSE IRRITATION. IN RABBIT EYES, A DROP CAUSED MILD TRANSITORY INJURY AND A 50% AQUEOUS SOLUTION AFTER 3 MINUTES CAUSED MODERATE IRRITATION. CONTACT WITH A 70% SOLUTION CAUSED CONJUNCTIVITIS, IRITIS, AND CORNEAL OPACITY.
- CHRONIC EXPOSURE- PROLONGED OR REPEATED EXPOSURE TO VAPORS MAY CAUSE CONJUNCTIVITIS.

FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER OR NORMAL SALINE, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:
ISOPROPYL ALCOHOL (ISOPROPANOL; 2-PROPANOL):

NARCOTIC.
- ACUTE EXPOSURE- INGESTION MAY CAUSE ABDOMINAL PAIN, HEMATEMESIS, NAUSEA, VOMITING, AND HEMORRHAGE. CENTRAL NERVOUS SYSTEM DEPRESSION MAY OCCUR WITH HEADACHE, DIZZINESS, FLUSHING, INCOORDINATION, STUPOR, CONFUSION, HYPOTENSION, AREFLEXIA, AND REFRACTORY NARCOSIS. OLIGURIA FOLLOWED BY DIURESIS AND COMA MAY ALSO OCCUR. OTHER SYMPTOMS MAY INCLUDE HYPOGLYCEMIA, TENDERNESS AND EDEMA OF MUSCLES, AND ARRHYTHMIAS. VOMITING WITH ASPIRATION MAY CAUSE ASPIRATION PNEUMONIA. DEPRESSED RESPIRATION AND DEATH DUE TO RESPIRATORY PARALYSIS MAY OCCUR IN A FEW HOURS AFTER EXPOSURE. SEVERE AND PROLONGED SHOCK MAY LEAD TO SERIOUS OR FATAL RENAL DAMAGE AFTER SEVERAL DAYS. PATHOLOGIC FINDINGS HAVE INCLUDED EXTENSIVE HEMORRHAGIC TRACHEOBRONCHITIS, BRONCHOPNEUMONIA AND HEMORRHAGIC PULMONARY EDEMA.
- CHRONIC EXPOSURE- NO ADVERSE EFFECTS RESULTED IN HUMANS FOLLOWING DAILY INGESTION OF 2.6 AND 6.4 MG/KG FOR 6 WEEKS. RATS THAT INGESTED 0.5 TO 10.0% ISOPROPYL ALCOHOL IN DRINKING WATER FOR 27 WEEKS SHOWED DECREASED BODY WEIGHT. PROLONGED ORAL ADMINISTRATION IN RABBITS PRODUCED ANESTHESIA AND DEATH. REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS.

FIRST AID- IN RESPIRATORY DEPRESSION, GIVE OXYGEN BY ARTIFICIAL RESPIRATION. GIVE ACTIVATED CHARCOAL. GASTRIC LAVAGE WITH PROTECTED AIRWAY IS USEFUL EVEN IF DELAYED. DO NOT ATTEMPT EMESIS IF RESPIRATION IS DEPRESSED. MAINTAIN BLOOD PRESSURE. TREATMENT SHOULD BE ADMINISTERED BY QUALIFIED MEDICAL PERSONNEL (DREISBACH, HANDBOOK OF POISONING, 12TH ED.). GET MEDICAL ATTENTION.

ANTIDOTE:
NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

REACTIVITY

REACTIVITY:
ISOPROPYL ALCOHOL (ISOPROPANOL; 2-PROPANOL):
STABLE UNDER NORMAL TEMPERATURES AND PRESSURES. MAY SLOWLY PEROXIDISE ON EXPOSURE TO AIR UNDER NORMAL STORAGE CONDITIONS. AN EXPLOSION HAZARD MAY EXIST IF THE SUBSTANCE IS DISTILLED OR ALLOWED TO EVAPORATE TO DRYNESS.

INCOMPATIBILITIES:
ISOPROPYL ALCOHOL (ISOPROPANOL; 2-PROPANOL):
- ACIDS: INCOMPATIBLE.
- ACIDS ANHYDRIDES; INCOMPATIBLE.
- ALUMINUM: DISSOLUTION IS EXOTHERMIC.
- BARIUM PERCHLORATE: FORMATION OF EXPLOSIVE COMPOUND.
- 2-BUTANONE (METHYL ETHYL KETONE): ACCELERATES THE PEROXIDATION OF THE ALCOHOL.
- CHROMIUM TRIOXIDE (GRANULAR): IGNITION.
- COATINGS: MAY BE ATTACKED.
- DIOXYGENYL TETRAFLUOROBORATE: IGNITION AT AMBIENT TEMPERATURES.
- HALOGENS: INCOMPATIBLE.
- HYDROGEN + PALLADIUM (PARTICLES): IGNITION ON EXPOSURE TO AIR.
- HYDROGEN PEROXIDE: FORMATION OF EXPLOSIVE COMPOUND.
- KETONES: MARKEDLY INCREASES THE POSSIBILITY OF PEROXIDATION.
- NITROFORM (TRINITROMETHANE): DISSOLVES LIBERATING HEAT AND POSSIBLY EXPLODING.
- OLEUM: TEMPERATURE AND PRESSURE INCREASE IN CLOSED CONTAINER.
- OXIDIZERS (STRONG): FIRE AND EXPLOSION HAZARD.
- OXYGEN (GAS): AUTOXIDATION, ON EXPOSURE TO LIGHT, RESULTS IN FORMATION OF KETONES AND POTENTIALLY EXPLOSIVE HYDROGEN PEROXIDE.
- PHOSGENE: IN THE PRESENCE OF IRON SALTS, MAY EXPLODE.
- PLASTICS: MAY BE ATTACKED.
- POTASSIUM TERT-BUTOXIDE: IGNITION.
- RUBBER: MAY BE ATTACKED.
- SODIUM DICHROMATE + SULFURIC ACID: EXOTHERMIC REACTION WITH POSSIBLE INCANDESCENCE.

SEE ALSO ALCOHOLS.

DECOMPOSITION:
THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE TOXIC OXIDES OF CARBON.

POLYMERIZATION:
HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

STORAGE AND DISPOSAL

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE. FOR ASSISTANCE, CONTACT THE DISTRICT DIRECTOR OF THE ENVIRONMENTAL PROTECTION AGENCY.

STORAGE

PRESERVE IN TIGHT CONTAINERS, REMOTE FROM HEAT. (U.S. PHARMACOPEIA, NATIONAL FORMULARY, 1985).

STORE IN ACCORDANCE WITH 29 CFR 1910.106.

BONDING AND GROUNDING: SUBSTANCES WITH LOW ELECTROCONDUCTIVITY, WHICH

MAY BE IGNITED BY ELECTROSTATIC SPARKS, SHOULD BE STORED IN CONTAINERS WHICH MEET THE BONDING AND GROUNDING GUIDELINES SPECIFIED IN NFPA 77-1983, RECOMMENDED PRACTICE ON STATIC ELECTRICITY.

STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

DISPOSAL

DISPOSAL MUST BE IN ACCORDANCE WITH STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE, 40 CFR 262. EPA HAZARDOUS WASTE NUMBER D001.
100 POUND CERCLA SECTION 103 REPORTABLE QUANTITY.

****
CONDITIONS TO AVOID

AVOID CONTACT WITH HEAT, SPARKS, FLAMES, OR OTHER SOURCES OF IGNITION. VAPORS MAY BE EXPLOSIVE AND POISONOUS; DO NOT ALLOW UNNECESSARY PERSONNEL IN AREA. DO NOT OVERHEAT CONTAINERS; CONTAINERS MAY VIOLENTLY RUPTURE AND TRAVEL A CONSIDERABLE DISTANCE IN HEAT OF FIRE.

****
SPILL AND LEAK PROCEDURES

OCCUPATIONAL SPILL:
SHUT OFF IGNITION SOURCES. STOP LEAK IF YOU CAN DO IT WITHOUT RISK. USE WATER SPRAY TO REDUCE VAPORS. FOR SMALL SPILLS, TAKE UP WITH SAND OR OTHER ABSORBENT MATERIAL AND PLACE INTO CONTAINERS FOR LATER DISPOSAL. FOR LARGER SPILLS, DIKE FAR AHEAD OF SPILL FOR LATER DISPOSAL. NO SMOKING, FLAMES OR FLARES IN HAZARD AREA. KEEP UNNECESSARY PEOPLE AWAY; ISOLATE HAZARD AREA AND DENY ENTRY.

PROTECTIVE EQUIPMENT

VENTILATION:
PROVIDE GENERAL DILUTION VENTILATION TO MEET PUBLISHED EXPOSURE LIMITS. VENTILATION EQUIPMENT MUST BE EXPLOSION-PROOF.

RESPIRATOR:
THE FOLLOWING RESPIRATORS AND MAXIMUM USE CONCENTRATIONS ARE RECOMMENDATIONS BY THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIOSH POCKET GUIDE TO CHEMICAL HAZARDS; NIOSH CRITERIA DOCUMENTS OR BY THE U.S. DEPARTMENT OF LABOR, 29 CFR 1910 SUBPART Z.
THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND IN THE WORK PLACE, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

ISOPROPYL ALCOHOL:

1000 PPM- ANY POWERED, AIR-PURIFYING RESPIRATOR WITH ORGANIC VAPOR CARTRIDGE(S).
ANY CHEMICAL CARTRIDGE RESPIRATOR WITH A FULL FACEPIECE AND ORGANIC VAPOR CARTRIDGE(S).

10,000 PPM- ANY SUPPLIED-AIR RESPIRATOR OPERATED IN A CONTINUOUS FLOW MODE.

12,000 PPM- ANY AIR-PURIFYING, FULL-FACEPIECE RESPIRATOR (GAS MASK) WITH A CHIN-STYLE, FRONT- OR BACK-MOUNTED ORGANIC VAPOR CANISTER.
ANY SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE.
ANY SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE.

ESCAPE- ANY AIR-PURIFYING, FULL-FACEPIECE RESPIRATOR (GAS MASK) WITH A CHIN-STYLE, FRONT- OR BACK-MOUNTED ORGANIC VAPOR CANISTER.
ANY APPROPRIATE ESCAPE-TYPE, SELF-CONTAINED BREATHING APPARATUS.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ANY SUPPLIED-AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

CLOTHING:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT REPEATED OR PROLONGED SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS SUBSTANCE.

EYE PROTECTION:
EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES TO PREVENT EYE CONTACT WITH THIS SUBSTANCE.

EMERGENCY EYE WASH: WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

AUTHORIZED - FISHER SCIENTIFIC, INC.
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METHANOL
METHANOL
METHANOL

MATERIAL SAFETY DATA SHEET

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SUBSTANCE IDENTIFICATION

SUBSTANCE: **METHANOL** CAS-NUMBER 67-56-1

TRADE NAMES/SYNONYMS:
METHYL ALCOHOL; WOOD ALCOHOL; METHYL HYDROXIDE; CARBINOL; MONOHYDROXYMETHANE; WOOD SPIRIT; WOOD NAPHTHA; METHYLOL; COLONIAL SPIRIT; COLUMBIAN SPIRIT; PYROXYLIC SPIRIT; COULOMATIC (R) CONDITIONER SOLUTION; STANDARD WATER IN METHANOL; STCC 4909230; UN 1230; RCRA U154; A454; A452; A936; A408; A947; A935; BP1105; A412; A411; A433P; SW2;; SC95; A452SK; A408SK; A412P; A434; A412SK; A450; A433S; CH40; ACC14280

CHEMICAL FAMILY:
HYDROXYL, ALIPHATIC

MOLECULAR FORMULA: C-H3-O-H

MOLECULAR WEIGHT: 32.04

CERCLA RATINGS (SCALE 0-3): HEALTH=3 FIRE=3 REACTIVITY=0 PERSISTENCE=0
NFPA RATINGS (SCALE 0-4): HEALTH=1 FIRE=3 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

COMPONENT: METHYL ALCOHOL (METHANOL) PERCENT: 100
CAS# 67-56-1

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:
METHYL ALCOHOL (METHANOL):
200 PPM (262 MG/M3) OSHA TWA (SKIN); 250 PPM (328 MG/M3) OSHA STEL
200 PPM (262 MG/M3) ACGIH TWA (SKIN); 250 PPM (328 MG/M3) ACGIH STEL
200 PPM (262 MG/M3) NIOSH RECOMMENDED TWA (SKIN);
250 PPM (328 MG/M3) NIOSH RECOMMENDED STEL
200 PPM (262 MG/M3) DFG MAK TWA (SKIN);
400 PPM (524 MG/M3) DFG MAK 30 MINUTE PEAK, AVERAGE VALUE, 4 TIMES/SHIFT

MEASUREMENT METHOD: SILICA GEL TUBE; WATER; GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION; (NIOSH VOL. III # 2000, METHANOL).

5000 POUNDS CERCLA SECTION 103 REPORTABLE QUANTITY
SUBJECT TO SARA SECTION 313 ANNUAL TOXIC CHEMICAL RELEASE REPORTING

PHYSICAL DATA

DESCRIPTION: CLEAR, COLORLESS LIQUID WITH A CHARACTERISTIC ALCOHOLIC ODOR.

BOILING POINT: 149 F (65 C) MELTING POINT: -137 F (-94 C)

SPECIFIC GRAVITY: 0.7914 VAPOR PRESSURE: 97.25 MMHG @ 20 C

EVAPORATION RATE: (BUTYL ACETATE=1) 4.6 SOLUBILITY IN WATER: VERY SOLUBLE

ODOR THRESHOLD: 100 PPM VAPOR DENSITY: 1.11

SOLVENT SOLUBILITY: ETHER, BENZENE, ALCOHOL, ACETONE, CHLOROFORM, ETHANOL.

VISCOSITY: 0.59 CPS @ 20 C

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
DANGEROUS FIRE HAZARD WHEN EXPOSED TO HEAT, FLAME, OR OXIDIZERS.

VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL A CONSIDERABLE DISTANCE TO A SOURCE

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OF IGNITION AND FLASH BACK.

VAPOR-AIR MIXTURES ARE EXPLOSIVE.

FLASH POINT: 52 F (11 C) (CC) UPPER EXPLOSIVE LIMIT: 36.0%

LOWER EXPLOSIVE LIMIT: 6.0% AUTOIGNITION TEMP.: 725 F (385 C)

FLAMMABILITY CLASS(OSHA): IB

FIREFIGHTING MEDIA:
DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR ALCOHOL-RESISTANT FOAM (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR ALCOHOL-RESISTANT FOAM (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FIREFIGHTING:
MOVE CONTAINER FROM FIRE AREA IF YOU CAN DO IT WITHOUT RISK. DIKE FIRE-CONTROL WATER FOR LATER DISPOSAL; DO NOT SCATTER THE MATERIAL. APPLY COOLING WATER TO SIDES OF CONTAINERS THAT ARE EXPOSED TO FLAMES UNTIL WELL AFTER FIRE IS OUT. STAY AWAY FROM ENDS OF TANKS. WITHDRAW IMMEDIATELY IN CASE OF RISING SOUND FROM VENTING SAFETY DEVICE OR ANY DISCOLORATION OF TANK DUE TO FIRE. ISOLATE FOR 1/2 MILE IN ALL DIRECTIONS IF TANK, RAIL CAR OR TANK TRUCK IS INVOLVED IN FIRE (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5, GUIDE PAGE 28).

EXTINGUISH ONLY IF FLOW CAN BE STOPPED; USE WATER IN FLOODING AMOUNTS AS FOG. SOLID STREAMS MAY NOT BE EFFECTIVE. COOL CONTAINERS WITH FLOODING QUANTITIES OF WATER, APPLY FROM AS FAR A DISTANCE AS POSSIBLE. AVOID BREATHING TOXIC VAPORS, KEEP UPWIND.

TRANSPORTATION DATA

DEPARTMENT OF TRANSPORTATION HAZARD CLASSIFICATION 49 CFR 172.101:
FLAMMABLE LIQUID

DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS 49 CFR 172.101 AND SUBPART E:
FLAMMABLE LIQUID

DEPARTMENT OF TRANSPORTATION PACKAGING REQUIREMENTS: 49 CFR 173.119
EXCEPTIONS: 49 CFR 173.118

FINAL RULE ON HAZARDOUS MATERIALS REGULATIONS (HMR, 49 CFR PARTS 171-180), DOCKET NUMBERS HM-181, HM-181A, HM-181B, HM-181C, HM-181D AND HM-204. EFFECTIVE DATE OCTOBER 1, 1991. HOWEVER, COMPLIANCE WITH THE REGULATIONS IS AUTHORIZED ON AND AFTER JANUARY 1, 1991. (55 FR 52402, 12/21/90)

EXCEPT FOR EXPLOSIVES, INHALATION HAZARDS, AND INFECTIOUS SUBSTANCES, THE EFFECTIVE DATE FOR HAZARD COMMUNICATION REQUIREMENTS IS EXTENDED TO OCTOBER 1, 1993. (56 FR 47158, 10/18/91)

U.S. DEPARTMENT OF TRANSPORTATION SHIPPING NAME-ID NUMBER, 49 CFR 172.101:
METHYL ALCOHOL-UN 1230

U.S. DEPARTMENT OF TRANSPORTATION HAZARD CLASS OR DIVISION, 49 CFR 172.101:
3 - FLAMMABLE LIQUID

U.S. DEPARTMENT OF TRANSPORTATION PACKING GROUP, 49 CFR 172.101:
PG II

U.S. DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS, 49 CFR 172.101 AND SUBPART E:
FLAMMABLE LIQUID, POISON

U.S. DEPARTMENT OF TRANSPORTATION PACKAGING AUTHORIZATIONS:
EXCEPTIONS: NONE
NON-BULK PACKAGING: 49 CFR 173.202
BULK PACKAGING: 49 CFR 173.243

U.S. DEPARTMENT OF TRANSPORTATION QUANTITY LIMITATIONS 49 CFR 172.101:
PASSENGER AIRCRAFT OR RAILCAR: 1 L
CARGO AIRCRAFT ONLY: 60 L

TOXICITY

METHYL ALCOHOL (METHANOL):
IRRITATION DATA: 20 MG/24 HOURS SKIN-RABBIT MODERATE; 40 MG EYE-RABBIT MODERATE; 100 MG/24 HOURS EYE-RABBIT MODERATE.
TOXICITY DATA: 86,000 MG/M3 INHALATION-HUMAN TCLO; 300 PPM INHALATION-HUMAN TCLO; 64,000 PPM/4 HOURS INHALATION-RAT LC50; 1000 PPM INHALATION-MONKEY LCLO; 50 GM/M3/2 HOURS INHALATION-MOUSE LCLO; 44,000 MG/M3/6 HOURS INHALATION-CAT LCLO; 15,800 MG/KG SKIN-RABBIT LD50; 393 MG/KG SKIN-MONKEY LDLO; 428 MG/KG ORAL-HUMAN LDLO; 143 MG/KG ORAL-HUMAN LDLO; 6422 MG/KG ORAL-MAN LDLO; 3429 MG/KG ORAL-MAN TDLO; 4 GM/KG ORAL-WOMAN TDLO; 7 GM/KG ORAL-MONKEY LD50; 5628 MG/KG ORAL-RAT LD50; 7300 MG/KG ORAL-MOUSE LD50; 14,200 MG/KG ORAL-RABBIT LD50; 7500 MG/KG ORAL-DOG LDLO; 9800 MG/KG SUBCUTANEOUS-MOUSE LD50; 2131 MG/KG INTRAVENOUS-RAT LD50; 4710 MG/KG

INTRAVENOUS-MOUSE LD50; 8907 MG/KG INTRAVENOUS-RABBIT LD50; 4641 MG/KG INTRAVENOUS-CAT LDLO; 7529 MG/KG INTRAPERITONEAL-RAT LD50; 10,765 MG/KG INTRAPERITONEAL-MOUSE LD50; 1826 MG/KG INTRAPERITONEAL-RABBIT LD50; 3556 MG/KG INTRAPERITONEAL-GUINEA PIG LD50; 8555 MG/KG INTRAPERITONEAL-HAMSTER LD50; 868 MG/KG UNREPORTED-MAN LDLO; MUTAGENIC DATA (RTECS); REPRODUCTIVE EFFECTS DATA (RTECS).
CARCINOGEN STATUS: NONE.
LOCAL EFFECTS: IRRITANT- SKIN, EYE.
ACUTE TOXICITY LEVEL: SLIGHTLY TOXIC BY INHALATION, DERMAL ABSORPTION, INGESTION.
TARGET EFFECTS: CENTRAL NERVOUS SYSTEM DEPRESSANT; NEUROTOXIN.
AT INCREASED RISK FROM EXPOSURE: PERSONS WITH KIDNEY, EYE OR SKIN DISORDERS.

HEALTH EFFECTS AND FIRST AID

INHALATION:
METHYL ALCOHOL (METHANOL):
NARCOTIC/NEUROTOXIN. 25,000 PPM IMMEDIATELY DANGEROUS TO LIFE OR HEALTH.
ACUTE EXPOSURE- MAY CAUSE IRRITATION OF THE MUCOUS MEMBRANES, COUGHING, OPPRESSION IN THE CHEST, TRACHEITIS, BRONCHITIS, TINNITUS, UNSTEADY GAIT, TWITCHING, COLIC, CONSTIPATION, NYSTAGMUS, AND BLEPHAROSPASM. SYMPTOMS FROM OCCUPATIONAL EXPOSURE INCLUDE PARESTHESIAS, NUMBNESS AND SHOOTING PAINS IN THE HANDS AND FOREARMS. METABOLIC ACIDOSIS, AND EFFECTS ON THE EYES AND CENTRAL NERVOUS SYSTEM MAY OCCUR AS DETAILED IN ACUTE INGESTION.
CHRONIC EXPOSURE- REPEATED OR PROLONGED EXPOSURE MAY CAUSE EFFECTS AS IN ACUTE INGESTION. REPEATED EXPOSURE TO 200-375 PPM CAUSED RECURRENT HEADACHES IN WORKERS. EXPOSURE FOR 4 YEARS TO 1200-8000 PPM RESULTED IN MARKED DIMINUTION OF VISION AND ENLARGEMENT OF THE LIVER IN A WORKMAN. REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS.

FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, PERFORM ARTIFICIAL RESPIRATION. KEEP PERSON WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:
METHYL ALCOHOL (METHANOL):
IRRITANT/NARCOTIC/NEUROTOXIN.
ACUTE EXPOSURE- CONTACT WITH LIQUID MAY CAUSE IRRITATION. SKIN ABSORPTION MAY OCCUR AND CAUSE METABOLIC ACIDOSIS AND EFFECTS ON THE EYES AND CENTRAL NERVOUS SYSTEM AS DETAILED IN ACUTE INGESTION.
CHRONIC EXPOSURE- REPEATED OR PROLONGED CONTACT WITH THE LIQUID MAY CAUSE DEFATTING OF THE SKIN RESULTING IN ERYTHEMA, SCALING, AND ECZEMATOID DERMATITIS. CHRONIC ABSORPTION MAY RESULT METABOLIC ACIDOSIS AND EFFECTS AS DETAILED IN ACUTE INGESTION.

FIRST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:
METHYL ALCOHOL (METHANOL):
IRRITANT.
ACUTE EXPOSURE- VAPORS MAY CAUSE IRRITATION. HIGH CONCENTRATIONS HAVE BEEN REPORTED TO CAUSE VIOLENT INFLAMMATION OF THE CONJUNCTIVA AND EPITHELIAL DEFECTS ON THE CORNEA. MILD IRRITATION MAY OCCUR WITH DILUTE SOLUTIONS; THE UNDILUTED LIQUID HAS PRODUCED MODERATE CORNEAL OPACITY AND CONJUNCTIVAL REDNESS IN RABBITS. APPLICATION OF A DROP OF METHANOL IN RABBIT EYES CAUSED A MILD REVERSIBLE REACTION, GRADED 3 ON A SCALE OF 1-10 AFTER 24 HOURS.
CHRONIC EXPOSURE- REPEATED OR PROLONGED CONTACT MAY CAUSE CONJUNCTIVITIS.

FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER OR NORMAL SALINE, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:
METHYL ALCOHOL (METHANOL):
NARCOTIC/NEUROTOXIN.
ACUTE EXPOSURE- MAY CAUSE MILD AND TRANSIENT INEBRIATION AND SUBSEQUENT DROWSINESS FOLLOWED BY AN ASYMPTOMATIC PERIOD LASTING 8-48 HOURS. FOLLOWING THE DELAY, COUGHING, DYSPNEA, HEADACHE, DULLNESS, WEAKNESS, VERTIGO OR DIZZINESS, NAUSEA, VOMITING, OCCASIONAL DIARRHEA, ANOREXIA, VIOLENT PAIN IN THE BACK, ABDOMEN, AND EXTREMITIES, RESTLESSNESS, APATHY OR DELIRIUM, AND RARELY, EXCITEMENT AND MANIA MAY OCCUR. RAPID, SHALLOW RESPIRATION DUE TO METABOLIC ACIDOSIS, COLD AND CLAMMY SKIN, HYPOTENSION, CYANOSIS, OPISTHOTONOS, CONVULSIONS, MILD TACHYCARDIA, CARDIAC DEPRESSION, PERIPHERAL NEURITIS, CEREBRAL AND PULMONARY EDEMA, UNCONSCIOUSNESS, AND COMA ARE POSSIBLE. EFFECTS ON THE EYE MAY INCLUDE OPTIC NEURITIS, BLURRED OR DIMMED VISION, DILATED, UNRESPONSIVE PUPILS, PTOSIS, EYE PAIN, CONCENTRIC CONSTRICTION OF VISUAL FIELDS, DIPLOPIA, CHANGE IN COLOR PERCEPTION, PHOTOPHOBIA, AND OPTIC NERVE ATROPHY. PARTIAL BLINDNESS OR POSSIBLY DELAYED TRANSIENT OR PERMANENT BLINDNESS MAY OCCUR. BILATERAL SENSORINEURAL DEAFNESS HAS BEEN REPORTED IN A SINGLE CASE. LIVER, KIDNEY, HEART, STOMACH, INTESTINAL AND PANCREATIC DAMAGE MAY ALSO OCCUR. DEATH MAY BE DUE TO RESPIRATORY FAILURE OR RARELY FROM CIRCULATORY COLLAPSE. AS LITTLE AS 15 ML HAS CAUSED BLINDNESS; THE USUAL FATAL DOSE IS

60-240 ML. PROLONGED ASTHENIA AND IRREVERSIBLE EFFECTS ON THE NERVOUS SYSTEM INCLUDING DIFFICULTY IN SPEECH, MOTOR DYSFUNCTION WITH RIGIDITY, SPASTICITY, AND HYPOKINESIS HAVE BEEN REPORTED.
CHRONIC EXPOSURE- REPEATED INGESTION MAY CAUSE VISUAL IMPAIRMENT AND BLINDNESS AND OTHER SYSTEMIC EFFECTS AS DETAILED IN ACUTE INGESTION. REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS.

FIRST AID- IF INGESTION OF METHANOL IS DISCOVERED WITHIN 2 HOURS, GIVE SYRUP OF IPECAC. LAVAGE THOROUGHLY WITH 2-4 L OF TAP WATER WITH SODIUM BICARBONATE (20 G/L) ADDED. GET MEDICAL ATTENTION IMMEDIATELY. LAVAGE SHOULD BE PERFORMED BY QUALIFIED MEDICAL PERSONNEL (DREISBACH, HANDBOOK OF POISONING, 12TH ED.).

ANTIDOTE:
THE FOLLOWING ANTIDOTE(S) HAVE BEEN RECOMMENDED. HOWEVER, THE DECISION AS TO WHETHER THE SEVERITY OF POISONING REQUIRES ADMINISTRATION OF ANY ANTIDOTE AND ACTUAL DOSE REQUIRED SHOULD BE MADE BY QUALIFIED MEDICAL PERSONNEL.

METHANOL POISONING:
GIVE ETHANOL, 50% (100 PROOF), 1.5 ML/KG ORALLY INITIALLY, DILUTED TO NOT MORE THAN 5% SOLUTION, FOLLOWED BY 0.5-1.0 ML/KG EVERY 2 HOURS ORALLY OR INTRAVENOUSLY FOR 4 DAYS IN ORDER TO REDUCE METABOLISM OF METHANOL AND TO ALLOW TIME FOR ITS EXCRETION. BLOOD ETHANOL LEVEL SHOULD BE IN THE RANGE OF 1-1.5 MG/ML (DREISBACH, HANDBOOK OF POISONING, 12TH ED.). ANTIDOTE SHOULD BE ADMINISTERED BY QUALIFIED MEDICAL PERSONNEL.

ORAL OR INTRAVENOUS ADMINISTRATION OF 4-METHYLPYRAZOLE INHIBITS ALCOHOL DEHYDROGENASE AND HAS BEEN USED EFFECTIVELY AS AN ANTIDOTE FOR METHANOL OR ETHYLENE GLYCOL POISONING (ELLENHORN AND BARCELOUX, MEDICAL TOXICOLOGY).

REACTIVITY

REACTIVITY:
STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.

INCOMPATIBILITIES:
METHYL ALCOHOL (METHANOL):
ACETYL BROMIDE: VIOLENT REACTION WITH FORMATION OF HYDROGEN BROMIDE.
ALKYLALUMINUM SOLUTIONS: VIOLENT REACTION.
ALUMINUM: CORRODES.
BARIUM PERCHLORATE: DISTILLATION YIELDS HIGHLY EXPLOSIVE ALKYL PERCHLORATE.
BERYLLIUM HYDRIDE: VIOLENT REACTION, EVEN AT -196 C.
BROMINE: VIGOROUSLY EXOTHERMIC REACTION.
CALCIUM CARBIDE: VIOLENT REACTION.
CHLORINE: POSSIBLE IGNITION AND EXPLOSION HAZARD.
CHLOROFORM AND SODIUM HYDROXIDE: EXPLOSIVE REACTION.
CHROMIUM TRIOXIDE (CHROMIC ANHYDRIDE): POSSIBLE IGNITION.
CYANURIC CHLORIDE: VIOLENT REACTION.
DICHLOROMETHANE: POSSIBLE IGNITION AND EXPLOSION.
DIETHYL ZINC: POSSIBLE IGNITION AND EXPLOSION.
HYDROGEN PEROXIDE + WATER: EXPLOSION HAZARD.
IODINE + ETHANOL + MERCURIC OXIDE: EXPLOSION HAZARD.
LEAD: CORRODES.
LEAD PERCHLORATE: EXPLOSION HAZARD.
MAGNESIUM: VIOLENT REACTION.
MAGNESIUM (POWDERED): MIXTURES ARE CAPABLE OF DETONATION.
METALS: INCOMPATIBLE.
NICKEL: POSSIBLE IGNITION IN THE PRESENCE OF NICKEL CATALYST.
NITRIC ACID (CONCENTRATED): MIXTURES OF GREATER THAN 25% ACID MAY DECOMPOSE VIOLENTLY.
OXIDIZERS (STRONG): FIRE AND EXPLOSION HAZARD.
PERCHLORIC ACID: EXPLOSION HAZARD.
PHOSPHOROUS TRIOXIDE: POSSIBLE VIOLENT REACTION AND IGNITION.
PLASTICS, RUBBER, COATINGS: MAY BE ATTACKED.
POTASSIUM: POSSIBLE DANGEROUS REACTION.
POTASSIUM HYDROXIDE + CHLOROFORM: EXOTHERMIC REACTION.
POTASSIUM TERT-BUTOXIDE: FIRE AND EXPLOSION HAZARD.
SODIUM + CHLOROFORM: POSSIBLE EXPLOSION.
SODIUM HYPOCHLORITE: EXPLOSION HAZARD.
SODIUM METHOXIDE + CHLOROFORM: VIOLENT REACTION.
SULFURIC ACID: FIRE AND EXPLOSION HAZARD.
ZINC: EXPLOSION HAZARD.

DECOMPOSITION:
THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE TOXIC OXIDES OF CARBON.

POLYMERIZATION:
HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

STORAGE AND DISPOSAL

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE. FOR ASSISTANCE, CONTACT THE DISTRICT DIRECTOR OF THE ENVIRONMENTAL PROTECTION AGENCY.

STORAGE

STORE IN ACCORDANCE WITH 29 CFR 1910.106.

STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

DISPOSAL

DISPOSAL MUST BE IN ACCORDANCE WITH STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE, 40 CFR 262. EPA HAZARDOUS WASTE NUMBER U154.

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CONDITIONS TO AVOID

AVOID CONTACT WITH HEAT, SPARKS, FLAMES OR OTHER IGNITION SOURCES. VAPORS MAY BE EXPLOSIVE. MATERIAL IS POISONOUS; AVOID INHALATION OF VAPORS OR CONTACT WITH SKIN. DO NOT ALLOW MATERIAL TO CONTAMINATE WATER SOURCES.

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SPILL AND LEAK PROCEDURES

SOIL SPILL:
DIG HOLDING AREA SUCH AS LAGOON, POND OR PIT FOR CONTAINMENT.

DIKE FLOW OF SPILLED MATERIAL USING SOIL OR SANDBAGS OR FOAMED BARRIERS SUCH AS POLYURETHANE OR CONCRETE.

AIR SPILL:
APPLY WATER SPRAY TO KNOCK DOWN VAPORS.

WATER SPILL:
ALLOW SPILLED MATERIAL TO AERATE.

LIMIT SPILL MOTION AND DISPERSION WITH NATURAL BARRIERS OR OIL SPILL CONTROL BOOMS.

USE SUCTION HOSES TO REMOVE TRAPPED SPILL MATERIAL.

OCCUPATIONAL SPILL:
SHUT OFF IGNITION SOURCES. DO NOT TOUCH SPILLED MATERIAL. STOP LEAK IF YOU CAN DO IT WITHOUT RISK. USE WATER SPRAY TO REDUCE VAPORS. FOR SMALL SPILLS, TAKE UP WITH SAND OR OTHER ABSORBENT MATERIAL AND PLACE INTO CONTAINERS FOR LATER DISPOSAL. FOR LARGER SPILLS, DIKE FAR AHEAD OF SPILL FOR LATER DISPOSAL. NO SMOKING, FLAMES OR FLARES IN HAZARD AREA! KEEP UNNECESSARY PEOPLE AWAY; ISOLATE HAZARD AREA AND DENY ENTRY.

REPORTABLE QUANTITY (RQ): 5000 POUNDS
THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT (SARA) SECTION 304 REQUIRES THAT A RELEASE EQUAL TO OR GREATER THAN THE REPORTABLE QUANTITY FOR THIS SUBSTANCE BE IMMEDIATELY REPORTED TO THE LOCAL EMERGENCY PLANNING COMMITTEE AND THE STATE EMERGENCY RESPONSE COMMISSION (40 CFR 355.40). IF THE RELEASE OF THIS SUBSTANCE IS REPORTABLE UNDER CERCLA SECTION 103, THE NATIONAL RESPONSE CENTER MUST BE NOTIFIED IMMEDIATELY AT (800) 424-8802 OR (202) 426-2675 IN THE METROPOLITAN WASHINGTON, D.C. AREA (40 CFR 302.6).

PROTECTIVE EQUIPMENT

VENTILATION:
PROVIDE GENERAL DILUTION VENTILATION TO MEET PUBLISHED EXPOSURE LIMITS.
VENTILATION EQUIPMENT MUST BE EXPLOSION-PROOF.

RESPIRATOR:
THE FOLLOWING RESPIRATORS AND MAXIMUM USE CONCENTRATIONS ARE RECOMMENDATIONS BY THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIOSH POCKET GUIDE TO CHEMICAL HAZARDS; NIOSH CRITERIA DOCUMENTS OR BY THE U.S. DEPARTMENT OF LABOR, 29 CFR 1910 SUBPART Z.
THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND IN THE WORK PLACE, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

METHYL ALCOHOL (METHANOL):

2000 PPM- ANY SUPPLIED-AIR RESPIRATOR.
ANY SELF-CONTAINED BREATHING APPARATUS.

5000 PPM- ANY SUPPLIED-AIR RESPIRATOR OPERATED IN A CONTINUOUS-FLOW MODE.

10,000 PPM- ANY SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE.
ANY SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE.
ANY SUPPLIED-AIR RESPIRATOR THAT HAS A TIGHT-FITTING FACEPIECE AND IS OPERATED IN A CONTINUOUS-FLOW MODE.

25,000 PPM- ANY SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE AND OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE PRESSURE MODE.

ESCAPE- ANY APPROPRIATE ESCAPE-TYPE, SELF-CONTAINED BREATHING APPARATUS.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ANY SUPPLIED-AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

CLOTHING:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT REPEATED OR PROLONGED SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS SUBSTANCE.

EYE PROTECTION:
EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES TO PREVENT EYE CONTACT WITH THIS SUBSTANCE.

EMERGENCY EYE WASH: WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

AUTHORIZED - FISHER SCIENTIFIC, INC.
CREATION DATE: 09/25/84 REVISION DATE: 02/25/92

-ADDITIONAL INFORMATION-
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1-PROPANOL
1-PROPANOL
1-PROPANOL

MATERIAL SAFETY DATA SHEET

FISHER SCIENTIFIC
CHEMICAL DIVISION
1 REAGENT LANE
FAIR LAWN NJ 07410
(201) 796-7100

EMERGENCY NUMBER: (201) 796-7100
CHEMTREC ASSISTANCE: (800) 424-9300

SUBSTANCE IDENTIFICATION

CAS-NUMBER 71-23-8

SUBSTANCE: **1-PROPANOL**

TRADE NAMES/SYNONYMS:
N-PROPYL ALCOHOL; ETHYL CARBINOL; PROPYL ALCOHOL; PROPANOL; N-PROPANOL; 1-HYDROXYPROPANE; OPTAL; OSMOSOL EXTRA; PROPANOL-1; PROPYLIC ALCOHOL; 1-PROPYL ALCOHOL; STCC 4909267; UN 1274; A-414; A-414-S; BP1130; ACC19780

CHEMICAL FAMILY:
HYDROXYL, ALIPHATIC

MOLECULAR FORMULA: C3-H8-O

MOLECULAR WEIGHT: 60.11

CERCLA RATINGS (SCALE 0-3): HEALTH=3 FIRE=3 REACTIVITY=0 PERSISTENCE=0
NFPA RATINGS (SCALE 0-4): HEALTH=1 FIRE=3 REACTIVITY=0

COMPONENTS AND CONTAMINANTS

COMPONENT: 1-PROPANOL PERCENT: 100
CAS# 71-23-8

OTHER CONTAMINANTS: NONE

EXPOSURE LIMITS:
N-PROPYL ALCOHOL:
200 PPM (492 MG/M3) OSHA TWA; 250 PPM (614 MG/M3) OSHA STEL
200 PPM (492 MG/M3) ACGIH TWA (SKIN); 250 PPM (614 MG/M3) ACGIH STEL
200 PPM (492 MG/M3) NIOSH RECOMMENDED TWA (SKIN);
250 PPM (614 MG/M3) NIOSH RECOMMENDED STEL

MEASUREMENT METHOD: CHARCOAL TUBE; 2-PROPANOL/CARBON DISULFIDE; GAS CHROMATOGRAPHY WITH FLAME IONIZATION DETECTION; (NIOSH VOL. III # 1401, ALCOHOLS II).

OSHA LIMITS ADOPTED JANUARY 19, 1989 ARE SUBJECT TO THE DECISION OF THE 11TH CIRCUIT COURT OF APPEALS (AFL-CIO V. OSHA) AS OF JULY 7, 1992.

PHYSICAL DATA

DESCRIPTION: COLORLESS, LIQUID, WITH A MILD ALCOHOLIC-LIKE AND SLIGHTLY

STUPEFYING ODOR. BOILING POINT: 207 F (97 C)

MELTING POINT: -195 F (-126 C) SPECIFIC GRAVITY: 0.8053 @ 20 C

VAPOR PRESSURE: 15 MMHG @ 20 C EVAPORATION RATE: (BUTYL ACETATE=1) 1.3

SOLUBILITY IN WATER: SOLUBLE ODOR THRESHOLD: 30 PPM VAPOR DENSITY: 2.1

SOLVENT SOLUBILITY: SOLUBLE IN ETHANOL, ETHYL ETHER, ACETONE, BENZENE

VISCOSITY: 2.256 CP AT 20 C

FIRE AND EXPLOSION DATA

FIRE AND EXPLOSION HAZARD:
DANGEROUS FIRE HAZARD WHEN EXPOSED TO HEAT OR FLAME.

MODERATE EXPLOSION HAZARD WHEN EXPOSED TO HEAT OR FLAME.

VAPORS ARE HEAVIER THAN AIR AND MAY TRAVEL A CONSIDERABLE DISTANCE TO A SOURCE OF IGNITION AND FLASH BACK.

VAPOR-AIR MIXTURES ARE EXPLOSIVE ABOVE FLASH POINT.

FLASH POINT: 74 F (23 C) (CC) UPPER EXPLOSIVE LIMIT: 13.7%

LOWER EXPLOSIVE LIMIT: 2.2% AUTOIGNITION TEMP.: 775 F (412 C)

FLAMMABILITY CLASS(OSHA): IB

FIREFIGHTING MEDIA:
DRY CHEMICAL, CARBON DIOXIDE, WATER SPRAY OR ALCOHOL-RESISTANT FOAM (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

FOR LARGER FIRES, USE WATER SPRAY, FOG OR ALCOHOL-RESISTANT FOAM (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5).

ALCOHOL FOAM
(NFPA 325M, FIRE HAZARD PROPERTIES OF FLAMMABLE LIQUIDS, GASES, AND VOLATILE SOLIDS, 1991).

FIREFIGHTING:
MOVE CONTAINER FROM FIRE AREA IF YOU CAN DO IT WITHOUT RISK. APPLY COOLING WATER TO SIDES OF CONTAINERS THAT ARE EXPOSED TO FLAMES UNTIL WELL AFTER FIRE IS OUT. STAY AWAY FROM ENDS OF TANKS. FOR MASSIVE FIRE IN CARGO AREA, USE UNMANNED HOSE HOLDER OR MONITOR NOZZLES; IF THIS IS IMPOSSIBLE, WITHDRAW FROM AREA AND LET FIRE BURN. WITHDRAW IMMEDIATELY IN CASE OF RISING SOUND FROM VENTING SAFETY DEVICE OR ANY DISCOLORATION OF TANK DUE TO FIRE. ISOLATE FOR 1/2 MILE IN ALL DIRECTIONS IF TANK, RAIL CAR OR TANK TRUCK IS INVOLVED IN FIRE (1990 EMERGENCY RESPONSE GUIDEBOOK, DOT P 5800.5, GUIDE PAGE 26).

EXTINGUISH ONLY IF FLOW CAN BE STOPPED; USE FLOODING AMOUNTS OF WATER AS A FOG, SOLID STREAMS MAY BE INEFFECTIVE. COOL CONTAINERS WITH FLOODING AMOUNTS OF WATER, APPLY FROM AS FAR A DISTANCE AS POSSIBLE. AVOID BREATHING VAPORS, KEEP UPWIND.

WATER MAY BE INEFFECTIVE (NFPA 325M, FIRE HAZARD PROPERTIES OF FLAMMABLE LIQUIDS, GASES, AND VOLATILE SOLIDS, 1991)

TRANSPORTATION DATA

DEPARTMENT OF TRANSPORTATION HAZARD CLASSIFICATION 49-CFR 172.101:
FLAMMABLE LIQUID

DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS 49-CFR 172.101 AND SUBPART E:
FLAMMABLE LIQUID

DEPARTMENT OF TRANSPORTATION PACKAGING REQUIREMENTS: 49-CFR 173.125
EXCEPTIONS: 49-CFR 173.118

FINAL RULE ON HAZARDOUS MATERIALS REGULATIONS (HMR, 49 CFR PARTS 171-180), DOCKET NUMBERS HM-181, HM-181A, HM-181B, HM-181C, HM-181D AND HM-204 EFFECTIVE DATE OCTOBER 1, 1991. HOWEVER, COMPLIANCE WITH THE REGULATIONS IS AUTHORIZED ON AND AFTER JANUARY 1, 1991. (55 FR 52402, 12/21/90)

EXCEPT FOR EXPLOSIVES, INHALATION HAZARDS, AND INFECTIOUS SUBSTANCES, THE EFFECTIVE DATE FOR HAZARD COMMUNICATION REQUIREMENTS IS EXTENDED TO OCTOBER 1, 1993. (56 FR 47158, 09/18/91)

U.S. DEPARTMENT OF TRANSPORTATION SHIPPING NAME-ID NUMBER, 49 CFR 172.101:
N-PROPANOL-UN 1274

U.S. DEPARTMENT OF TRANSPORTATION HAZARD CLASS OR DIVISION, 49 CFR 172.101:
3 - FLAMMABLE LIQUID

U.S. DEPARTMENT OF TRANSPORTATION PACKING GROUP, 49 CFR 172.101:
PG II

U.S. DEPARTMENT OF TRANSPORTATION LABELING REQUIREMENTS, 49 CFR 172.101 AND SUBPART E:
FLAMMABLE LIQUID

U.S. DEPARTMENT OF TRANSPORTATION PACKAGING AUTHORIZATIONS:
EXCEPTIONS: 49 CFR 173.150
NON-BULK PACKAGING: 49 CFR 173.202
BULK PACKAGING: 49 CFR 173.242

U.S. DEPARTMENT OF TRANSPORTATION QUANTITY LIMITATIONS 49 CFR 172.101:
PASSENGER AIRCRAFT OR RAILCAR: 5 L
CARGO AIRCRAFT ONLY: 60 L

TOXICITY

N-PROPYL ALCOHOL (1-PROPANOL):
IRRITATION DATA: 500 MG OPEN SKIN-RABBIT MILD; 20 MG/24 HOURS SKIN-RABBIT MODERATE; 4 MG OPEN EYE-RABBIT SEVERE; 20 MG/24 HOURS EYE-RABBIT MODERATE.
TOXICITY DATA: 48 GM/M3 INHALATION-MOUSE LC50; 5040 MG/KG SKIN-RABBIT LD50; 5700 MG/KG ORAL-WOMAN LDLO; 1870 MG/KG ORAL-RAT LD50; 6800 MG/KG

ORAL-MOUSE LD50; 3500 MG/KG ORAL-RABBIT LDLO; 3 GM/KG ORAL-DOG LDLO; 4 GM/KG SUBCUTANEOUS-DOG LDLO; 3 GM/KG SUBCUTANEOUS-RABBIT LDLO; 4700 MG/KG SUBCUTANEOUS-MOUSE LD50; 5 MG/KG SUBCUTANEOUS-MAMMAL LDLO; 590 MG/KG INTRAVENOUS-RAT LD50; 697 MG/KG INTRAVENOUS-MOUSE LD50; 483 MG/KG INTRAVENOUS-RABBIT LD50; 4008 MG/KG INTRAVENOUS-CAT LDLO; 2164 MG/KG INTRAPERITONEAL-RAT LD50; 3125 MG/KG INTRAPERITONEAL-MOUSE LD50; 515 MG/KG INTRAPERITONEAL-RABBIT LD50; 1208 MG/KG INTRAPERITONEAL-GUINEA PIG LD50; 2338 MG/KG INTRAPERITONEAL-HAMSTER LD50; 4500 MG/KG UNREPORTED-RABBIT LDLO; MUTAGENIC DATA (RTECS); REPRODUCTIVE EFFECTS DATA (RTECS); TUMORIGENIC DATA (RTECS).
CARCINOGEN STATUS: NONE.
LOCAL EFFECTS: IRRITANT- INHALATION, SKIN, EYE.
ACUTE TOXICITY LEVEL: MODERATELY TOXIC BY INHALATION, INGESTION; SLIGHTLY TOXIC BY DERMAL ABSORPTION.
TARGET EFFECTS: CENTRAL NERVOUS SYSTEM DEPRESSANT.
AT INCREASED RISK FROM EXPOSURE: PERSONS WITH PRE-EXISTING SKIN DISORDERS; IMPAIRED LIVER, RENAL AND/OR PULMONARY FUNCTION.
ADDITIONAL DATA: ALCOHOL MAY ENHANCE THE TOXIC EFFECTS.

HEALTH EFFECTS AND FIRST AID

INHALATION:
N-PROPYL ALCOHOL (1-PROPANOL):
IRRITANT/NARCOTIC. 4000 PPM IMMEDIATELY DANGEROUS TO LIFE OR HEALTH.
ACUTE EXPOSURE- INHALATION OF VAPORS MAY CAUSE MODERATE IRRITATION OF THE UPPER RESPIRATORY TRACT WITH COUGHING AND SHORTNESS OF BREATH. EXPOSURE TO HIGH CONCENTRATIONS MAY CAUSE MILD CENTRAL NERVOUS SYSTEM DEPRESSION WITH DIZZINESS, DROWSINESS, ATAXIA, INCOORDINATION, HEADACHE, STUPOR AND PERSISTENT NAUSEA AND VOMITING. AREFLEXIA, HEMATEMESIS, OLIGURIA FOLLOWED BY DIURESIS, LIVER DAMAGE, DEPRESSED RESPIRATION, PROSTRATION AND UNCONSCIOUSNESS MAY OCCUR. DEATH MAY OCCUR DUE TO RESPIRATORY FAILURE. MICE EXPOSED TO VAPOR AT 3250 PPM FOR 90-120 MINUTES DEVELOPED ATAXIA; DEEP NARCOSIS OCCURRED AFTER 240 MINUTES AT 4100 PPM AND AFTER 60 MINUTES AT 24,500 PPM.
CHRONIC EXPOSURE- REPRODUCTIVE EFFECTS HAVE BEEN REPORTED IN ANIMALS.

FIRST AID- REMOVE FROM EXPOSURE AREA TO FRESH AIR IMMEDIATELY. IF BREATHING HAS STOPPED, PERFORM ARTIFICIAL RESPIRATION. KEEP PERSON WARM AND AT REST. TREAT SYMPTOMATICALLY AND SUPPORTIVELY. GET MEDICAL ATTENTION IMMEDIATELY.

SKIN CONTACT:
N-PROPYL ALCOHOL (1-PROPANOL):
IRRITANT.
ACUTE EXPOSURE- CONTACT MAY CAUSE IRRITATION WITH REDNESS. ANIMAL STUDIES INDICATE SKIN ABSORPTION MAY OCCUR.
CHRONIC EXPOSURE- REPEATED OR PROLONGED EXPOSURE MAY CAUSE DEFATTING OF THE SKIN RESULTING IN DRYING, CRACKING, DERMATITIS AND POSSIBLY CORROSION. IT IS POSSIBLE THAT PERSONS SENSITIVE TO ISOPROPYL ALCOHOL MAY HAVE A CROSS-REACTION WITH N-PROPYL ALCOHOL. APPLICATION OF 38 ML/KG PER DAY TO RABBIT SKIN FOR 30 DAYS OVER A PERIOD OF 6 WEEKS RESULTED IN DEATH OF ONE THIRD OF THE TEST ANIMALS.

FIRST AID- REMOVE CONTAMINATED CLOTHING AND SHOES IMMEDIATELY. WASH AFFECTED AREA WITH SOAP OR MILD DETERGENT AND LARGE AMOUNTS OF WATER UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

EYE CONTACT:
N-PROPYL ALCOHOL (1-PROPANOL):
IRRITANT.
ACUTE EXPOSURE- VAPORS MAY CAUSE TRANSIENT EYE IRRITATION WITH REDNESS AND PAIN. INSTILLATION OF 0.1 ML OF 1-PROPYL ALCOHOL INTO THE CONJUNCTIVAL SAC OF RABBITS PRODUCED MARKED TO SEVERE CONJUNCTIVITIS, IRITIS, CORNEAL OPACITIES AND ULCERATIONS. DELAYED EFFECTS OF PANNUS FORMATION AND KERATACONUS ALSO OCCURRED.
CHRONIC EXPOSURE- REPEATED OR PROLONGED EXPOSURE MAY CAUSE CONJUNCTIVITIS.

FIRST AID- WASH EYES IMMEDIATELY WITH LARGE AMOUNTS OF WATER OR NORMAL SALINE, OCCASIONALLY LIFTING UPPER AND LOWER LIDS, UNTIL NO EVIDENCE OF CHEMICAL REMAINS (APPROXIMATELY 15-20 MINUTES). GET MEDICAL ATTENTION IMMEDIATELY.

INGESTION:
N-PROPYL ALCOHOL (1-PROPANOL):
NARCOTIC.
ACUTE EXPOSURE- INGESTION MAY CAUSE GASTROINTESTINAL PAIN, PERSISTENT NAUSEA AND VOMITING, HEMATEMESIS, CRAMPS, DIARRHEA AND DECREASED BLOOD PRESSURE. CENTRAL NERVOUS SYSTEM DEPRESSION MAY OCCUR WITH DROWSINESS, STUPOR, INCOORDINATION, ATAXIA, HEADACHE, DIZZINESS, AREFLEXIA, DEPRESSED RESPIRATION, PROSTRATION AND UNCONSCIOUSNESS. OLIGURIA FOLLOWED BY DIURESIS AND LIVER DAMAGE MAY ALSO OCCUR. ASPIRATION PNEUMONIA IS ALSO A RISK. A HUMAN DEATH HAS BEEN REPORTED AFTER INGESTION OF 400 TO 500 ML. THE PATHOLOGICAL FINDINGS INCLUDED BRAIN AND LUNG EDEMA.
CHRONIC EXPOSURE- PROLONGED TREATMENT OF RATS HAS BEEN REPORTED TO CAUSE SEVERE LIVER INJURY, HYPERPLASIA OF HEMATOPOIETIC TISSUE, MALIGNANT LIVER TUMORS AND LEUKEMIA.

FIRST AID- GASTRIC LAVAGE WITH A PROTECTED AIRWAY MAY BE USEFUL EVEN IF

DELAYED. GIVE ACTIVATED CHARCOAL. IF RESPIRATION IS DEPRESSED, DO NOT ATTEMPT EMESIS; GIVE OXYGEN BY ARTIFICIAL RESPIRATION. MAINTAIN BLOOD PRESSURE. (DREISBACH, HANDBOOK OF POISONING, 11TH ED.)LAVAGE MUST BE ADMINISTERED BY QUALIFIED MEDICAL PERSONNEL.

ANTIDOTE:
NO SPECIFIC ANTIDOTE. TREAT SYMPTOMATICALLY AND SUPPORTIVELY.

REACTIVITY

REACTIVITY:
STABLE UNDER NORMAL TEMPERATURES AND PRESSURES.

INCOMPATIBILITIES:
N-PROPYL ALCOHOL (1-PROPANOL):
ALKALI AND ALKALINE EARTH METALS: REACTS VIOLENTLY, GENERATING HIGHLY FLAMMABLE HYDROGEN GAS.
COATINGS: ATTACKED.
OXIDIZERS (STRONG): POSSIBLE FIRE AND EXPLOSION.
PLASTICS: ATTACKED.
POTASSIUM TERT-BUTOXIDE: VIOLENT IGNITION MAY OCCUR.
RUBBER: ATTACKED.
SEE ALSO ALCOHOLS.

DECOMPOSITION:
THERMAL DECOMPOSITION PRODUCTS MAY INCLUDE TOXIC OXIDES OF CARBON.

POLYMERIZATION:
HAZARDOUS POLYMERIZATION HAS NOT BEEN REPORTED TO OCCUR UNDER NORMAL TEMPERATURES AND PRESSURES.

STORAGE AND DISPOSAL

OBSERVE ALL FEDERAL, STATE AND LOCAL REGULATIONS WHEN STORING OR DISPOSING OF THIS SUBSTANCE. FOR ASSISTANCE, CONTACT THE DISTRICT DIRECTOR OF THE ENVIRONMENTAL PROTECTION AGENCY.

STORAGE

STORE IN ACCORDANCE WITH 29 CFR 1910.106.

BONDING AND GROUNDING: SUBSTANCES WITH LOW ELECTROCONDUCTIVITY, WHICH MAY BE IGNITED BY ELECTROSTATIC SPARKS, SHOULD BE STORED IN CONTAINERS WHICH MEET THE BONDING AND GROUNDING GUIDELINES SPECIFIED IN NFPA 77-1983, RECOMMENDED PRACTICE ON STATIC ELECTRICITY.

STORE AWAY FROM INCOMPATIBLE SUBSTANCES.

DISPOSAL

DISPOSAL MUST BE IN ACCORDANCE WITH STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE, 40 CFR 262. EPA HAZARDOUS WASTE NUMBER D001.
100 POUND CERCLA SECTION 103 REPORTABLE QUANTITY.

****

CONDITIONS TO AVOID

AVOID CONTACT WITH HEAT, SPARKS, FLAMES, OR OTHER SOURCES OF IGNITION. VAPORS MAY BE EXPLOSIVE AND POISONOUS; DO NOT ALLOW UNNECESSARY PERSONNEL IN AREA. DO NOT OVERHEAT CONTAINERS; CONTAINERS MAY VIOLENTLY RUPTURE AND TRAVEL A CONSIDERABLE DISTANCE IN HEAT OF FIRE.

****

SPILL AND LEAK PROCEDURES

OCCUPATIONAL SPILL:
SHUT OFF IGNITION SOURCES. STOP LEAK IF YOU CAN DO IT WITHOUT RISK. USE WATER SPRAY TO REDUCE VAPORS. FOR SMALL SPILLS, TAKE UP WITH SAND OR OTHER ABSORBENT MATERIAL AND PLACE INTO CONTAINERS FOR LATER DISPOSAL. FOR LARGER SPILLS, DIKE FAR AHEAD OF SPILL FOR LATER DISPOSAL. NO SMOKING, FLAMES OR FLARES IN HAZARD AREA. KEEP UNNECESSARY PEOPLE AWAY; ISOLATE HAZARD AREA AND DENY ENTRY.

PROTECTIVE EQUIPMENT

VENTILATION:
PROVIDE LOCAL EXHAUST OR GENERAL DILUTION VENTILATION TO MEET PUBLISHED EXPOSURE LIMITS. VENTILATION EQUIPMENT MUST BE EXPLOSION-PROOF.

RESPIRATOR:
THE FOLLOWING RESPIRATORS AND MAXIMUM USE CONCENTRATIONS ARE RECOMMENDATIONS BY THE U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES, NIOSH POCKET GUIDE TO CHEMICAL HAZARDS; NIOSH CRITERIA DOCUMENTS OR BY THE U.S. DEPARTMENT OF LABOR, 29 CFR 1910 SUBPART Z.
THE SPECIFIC RESPIRATOR SELECTED MUST BE BASED ON CONTAMINATION LEVELS FOUND

DATE: 02/06/93 ACCT: 146965-01
INDEX: 45930368051 CAT NO: A4141 PO NBR: N/A

IN THE WORK PLACE, MUST NOT EXCEED THE WORKING LIMITS OF THE RESPIRATOR AND BE JOINTLY APPROVED BY THE NATIONAL INSTITUTE FOR OCCUPATIONAL SAFETY AND HEALTH AND THE MINE SAFETY AND HEALTH ADMINISTRATION (NIOSH-MSHA).

N-PROPYL ALCOHOL:

1000 PPM- ANY POWERED AIR-PURIFYING RESPIRATOR WITH ORGANIC VAPOR CARTRIDGE(S).
ANY CHEMICAL CARTRIDGE RESPIRATOR WITH ORGANIC VAPOR CARTRIDGE(S).

2000 PPM- ANY SUPPLIED-AIR RESPIRATOR.
ANY SELF-CONTAINED BREATHING APPARATUS.

4000 PPM- ANY SUPPLIED-AIR RESPIRATOR OPERATED IN A CONTINUOUS FLOW MODE.
ANY SUPPLIED-AIR RESPIRATOR WITH A FULL FACEPIECE.
ANY AIR-PURIFYING FULL FACEPIECE RESPIRATOR (GAS MASK) WITH A CHIN-STYLE OR FRONT- OR BACK-MOUNTED ORGANIC VAPOR CANISTER.
ANY SELF-CONTAINED BREATHING APPARATUS WITH A FULL FACEPIECE.

ESCAPE- ANY AIR-PURIFYING FULL FACEPIECE RESPIRATOR (GAS MASK) WITH A CHIN-STYLE OR FRONT- OR BACK-MOUNTED ORGANIC VAPOR CANISTER.
ANY APPROPRIATE ESCAPE-TYPE SELF-CONTAINED BREATHING APPARATUS.

FOR FIREFIGHTING AND OTHER IMMEDIATELY DANGEROUS TO LIFE OR HEALTH CONDITIONS:

ANY SELF-CONTAINED BREATHING APPARATUS THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

ANY SUPPLIED-AIR RESPIRATOR THAT HAS A FULL FACEPIECE AND IS OPERATED IN A PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE IN COMBINATION WITH AN AUXILIARY SELF-CONTAINED BREATHING APPARATUS OPERATED IN PRESSURE-DEMAND OR OTHER POSITIVE-PRESSURE MODE.

CLOTHING:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE (IMPERVIOUS) CLOTHING AND EQUIPMENT TO PREVENT REPEATED OR PROLONGED SKIN CONTACT WITH THIS SUBSTANCE.

GLOVES:
EMPLOYEE MUST WEAR APPROPRIATE PROTECTIVE GLOVES TO PREVENT CONTACT WITH THIS SUBSTANCE.

EYE PROTECTION:
EMPLOYEE MUST WEAR SPLASH-PROOF OR DUST-RESISTANT SAFETY GOGGLES AND A FACESHIELD TO PREVENT CONTACT WITH THIS SUBSTANCE.

EMERGENCY WASH FACILITIES:
WHERE THERE IS ANY POSSIBILITY THAT AN EMPLOYEE'S EYES AND/OR SKIN MAY BE EXPOSED TO THIS SUBSTANCE, THE EMPLOYER SHOULD PROVIDE AN EYE WASH FOUNTAIN AND QUICK DRENCH SHOWER WITHIN THE IMMEDIATE WORK AREA FOR EMERGENCY USE.

AUTHORIZED - FISHER SCIENTIFIC, INC.
CREATION DATE: 12/06/84 REVISION DATE: 12/30/92

-ADDITIONAL INFORMATION-
THIS INFORMATION IS BELIEVED TO BE ACCURATE AND REPRESENTS THE BEST INFORMATION CURRENTLY AVAILABLE TO US. HOWEVER, WE MAKE NO WARRANTY OF MERCHANTABILITY OR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, WITH RESPECT TO SUCH INFORMATION, AND WE ASSUME NO LIABILITY RESULTING FROM ITS USE. USERS SHOULD MAKE THEIR OWN INVESTIGATIONS TO DETERMINE THE SUITABILITY OF THE INFORMATION FOR THEIR PARTICULAR PURPOSES.

JOHNSON CONTROLS

MATERIAL SAFETY DATA SHEET

MSDS No.
L 8
Date Issued
Nov. 15, 1985
Date Revised
Sept. 15, 1993

I. Product Identification

Chemical Trade Name (identity used on label)	Chemical Family Classification
Lead Acid Battery	Electric Storage Battery
Synonyms/Common Name	**DOT, IATA and IMO Description**
SLI or Industrial Battery	Battery, Wet, Filled with Acid, UN2794, Class 8

Company Name	Address
Johnson Controls Battery Group, Inc.	P.O. Box 591 Milwaukee, WI 53201
Division or Department	
Starting, Lighting, Ignition Division & Specialty Battery Division	

CONTACT	TELEPHONE NUMBER
Questions Concerning MSDS	
Industrial Hygiene & Safety Department	Day: (414) 228-3138
Transportation Emergencies	
CHEMTREC	24 Hours: (800) 424-9300

II. Hazardous Ingredients

Material	% by Wt.	CAS Number	Exposure Limits		
			OSHA	ACGIH	Other
Specific Chemical Identity: Lead Common Name: Grid	34	7439-92-1	50 $\mu g/m^3$	150 $\mu g/m^3$	NIOSH 100 $\mu g/m^3$
Specific Chemical Identity: Lead Dioxide Common Name: Lead Oxide	31	1309-60-0	50 $\mu g/m^3$	150 $\mu g/m^3$	NIOSH 100 $\mu g/m^3$
Specific Chemical Identity: Lead Sulfate Common Name: Anglisite	<1	7446-14-2	50 $\mu g/m^3$	150 $\mu g/m^3$	NIOSH 100 $\mu g/m^3$
Specific Chemical Identity: Sulfuric Acid (35%) Common Name: Battery Electrolyte (Acid)	34	7664-93-9	1 mg/m^3	1 mg/m^3	NIOSH 1 mg/m^3
Specific Chemical Identity: Common Name:					
Specific Chemical Identity: Common Name:					

NOTE: The contents of this product are toxic chemicals that are subject to the reporting requirements of section 302 and 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40CFR 355 and 372).

III. Physical Data

Material is (at normal temperatures)	Appearance and Odor
☐ Solid ☑ Liquid	Battery electrolyte (acid) is a clear to cloudy liquid with slight acidic odor. Acid saturated lead oxide is a dark reddish-brown to gray solid with slight acidic odor.
Boiling Point (at 760 mm Hg): Lead 1755°C; Batt. Electrolyte (Acid) 110-112°C. / Melting Point: Lead 327.4°C	
Specific Gravity (H_2O = 1): Battery Electrolyte (Acid) 1.210 – 1.300	Vapor Pressure ☒ (mm Hg at 20°C) ☐ (PSIG): Battery Electrolyte (Acid) 11.7
Vapor Density (AIR = 1): Battery Electrolyte (Acid) 3.4	Solubility in H_2O: Battery Electrolyte (Acid) is 100% soluble in water. Lead – Lead Dioxide are not soluble.
% Volatiles By Weight: Not Determined	Evaporation Rate (Butyl Acetate = 1): Not Determined

IV. Health Hazard Information

NOTE: Under normal conditions of battery use, internal components will not present a health hazard. The following information is provided for battery electrolyte (acid) and lead for exposure that may occur during battery production or container breakage or under extreme heat conditions such as a fire.

ROUTES AND METHODS OF ENTRY

Inhalation

Acid mist generated during battery formation may cause respiratory irritation. Spillage of acid from batteries in confined areas may also lead to exposure to sulfuric acid mist.

Skin Contact

Battery electrolyte (acid) may cause irritative contact dermatitis.

Skin Absorption

Skin absorption is not a significant route of entry.

Eye Contact

Battery electrolyte (acid) will irritate the eyes upon contact.

Ingestion

Hands contaminated by contact with internal components of a battery can cause ingestion of lead/lead compounds. Hands should be washed prior to eating, drinking, or smoking.

SIGNS AND SYMPTOMS OF OVEREXPOSURE

Acute Effects

Acute effects of overexposure to lead compounds are: GI (gastrointestinal) upset which may be loss of appetite, diarrhea and/or constipation with cramping, difficulty in sleeping, and fatigue. Exposure and/or contact with battery electrolyte (acid) may lead to acute irritation of the skin, corneal damage of the eyes, and irritation of the mucous membranes of the eyes and upper respiratory system including lungs.

Chronic Effects

Lead and its compounds may cause chronic anemia, damage to the kidneys and nervous system. Lead may also cause reproductive system damage and can affect developing fetuses in pregnant women. Battery electrolyte (acid) may lead to scarring of the cornea and chronic bronchitis as well as erosion of tooth enamel in mouth breathers in repeated exposures.

POTENTIAL TO CAUSE CANCER

The International Agency for Research on Cancer (IARC) has classified "strong inorganic acid mist containing sulfuric acid" as a Category 1 carcinogen, a substance that is carcinogenic to humans. This classification does not apply to liquid forms of sulfuric acid or sulfuric acid solutions contained within a battery. Inorganic acid mist (sulfuric acid mist) is not generated under normal use of this product. Misuse of the product, such as overcharging, may however result in the generation of sulfuric acid mist.

EMERGENCY AND FIRST AID PROCEDURES

Inhalation

Remove from exposure and consult a physician if any of the acute effects listed above develop.

Skin

Wash thoroughly with soap and water. If acid is splashed on clothing, remove and discard. If acid is splashed in shoes, remove them immediately and discard. Acid cannot be removed from leather.

Eyes

IMMEDIATELY rinse with cool running water for at least 15 minutes. Seek medical attention after rinsing.

Ingestion

Lead/lead compounds: Consult a physician.

Battery Electrolyte (Acid): Do not induce vomiting. Refer to a physician immediately.

MEDICAL CONDITIONS WHICH CAN BE AGGRAVATED BY EXPOSURE

Inorganic lead and its compounds can aggravate chronic forms of kidney, liver, and neurologic diseases. Contact of battery electrolyte (acid) with the skin may aggravate skin diseases such as eczema and contact dermatitis.

V. Fire and Explosion Data

Flash Point (test method)	Autoignition Temperature	Flammable Limits in Air, % by Vol
Hydrogen – 259°C	Hydrogen 580°C	Hydrogen LEL – 4.1 UEL – 74.2

Extinguishing Media

Dry chemical, foam, or CO_2.

Special Fire Fighting Procedures

Use positive pressure, self-contained breathing apparatus.

Unusual Fire and Explosion Hazard

Hydrogen and oxygen gases are produced in the cells during normal battery operation, hydrogen is flammable and oxygen supports combustion. These gases enter the air through the vent caps. To avoid the chance of a fire or explosion, keep sparks and other sources of ignition away from the battery.

VI. Reactivity Data

Stability	Conditions to avoid
☐ Unstable ☑ Stable	Sparks and other sources of ignition may ignite hydrogen gas.

Incompatibility (material to avoid)

Lead/lead compounds: Potassium, carbides, sulfides, peroxides, phosphorus, sulfur.
Battery electrolyte (acid): Combustible materials, strong reducing agents, most metals, carbides, organic materials, chlorates, nitrates, picrates, and fulminates.

Hazardous Decomposition Products

Lead/lead compounds: Oxides of lead and sulfur
Battery electrolyte (acid): Hydrogen, sulfur dioxide, sulfur trioxide

Hazardous Polymerization	Conditions to avoid
☐ May Occur ☑ Will Not Occur	High temperature. Battery electrolyte (acid) will react with water to produce heat. Can react with oxidizing or reducing agents.

VII. Control Measures

Engineering Controls

Store lead/acid batteries with adequate ventilation. Room ventilation is required for batteries utilized for standby power generation. Never recharge batteries in an unventilated, enclosed space.

Work Practices

Make certain vent caps are on tightly. Place a minimum of two layers of corrugated cardboard between layers of batteries. When stacking in trailer, stack no more than three layers high. Use a battery carrier to lift a battery or place hands at opposite corners to avoid spilling acid through the vents. Avoid contact with internal components of the batteries.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection

None required under normal handling conditions. During battery formation (high-rate charge condition), acid mist can be generated which may cause respiratory irritation. If irritation occurs, wear a respirator suitable for protection against acid mist.

Eyes and Face

Chemical splash goggles are preferred. Also acceptable are "Visor-Gogs" or a chemical faceshield worn over safety glasses.

Hands, Arms, Body

Vinyl coated, PVC, gauntlet type gloves with rough finish.

Other Special Clothing and Equipment

Safety shoes worn with rubber/neoprene boots or steel-toed rubber/neoprene boots to be worn over socks. Place pants' legs over boots to keep acid out of boots. All footwear must meet requirements of ANSI Z41.1 – Rev. 1972.

VIII. Safe Handling Precautions

Hygiene Practices

Wash hands thoroughly before eating, drinking, or smoking after handling batteries.

Protective Measures to be taken During Non-routine Tasks including Equipment Maintenance

Wear recommended eye protection. If clothing becomes saturated with acid, remove and wash affected area with water for 15 minutes. Discard saturated clothing.

SPILL OR LEAK PROCEDURES

Protective Measures to be taken if Material is Released or Spilled

Remove combustible materials and all sources of ignition. Contain spill by diking with soda ash (sodium carbonate) or quicklime (calcium oxide). Cover spill with either chemical. Mix well. Make certain mixture is neutral then collect residue and place in a drum or other suitable container. Dispose of as hazardous waste.

Wear acid resistant boots, chemical faceshield, chemical splash goggles, and acid resistant gloves. DO NOT RELEASE UNNEUTRALIZED ACID!

Waste Disposal Method

Battery Electrolyte (Acid): Neutralize as above for a spill, collect residue, and place in a drum or suitable container. Dispose of as hazardous waste.

DO NOT FLUSH LEAD CONTAMINATED ACID TO SEWER.

Batteries: Send to lead smelter for reclamation following applicable Federal, state, and local regulations.

OTHER HANDLING AND STORAGE PRECAUTIONS

An eyewash fountain and safety shower should be located in or near the production or storage area(s) for lead/acid batteries. Such storage areas should be equipped with a containment facility which captures spills of acid so that they may be neutralized, collected, and disposed of properly.

SHOP

TRIANGLE REFINERIES, Inc.
SPECIALTY PRODUCTS DIVISION
7020 KNIGHT STREET • SUITE 130 • SHREVEPORT, LOUISIANA 71105
TELEPHONE (800) 548-3317 (318) 861-0954
A SUBSIDIARY OF KERR-MCGEE REFINING CORPORATION

MATERIAL SAFETY DATA SHEET

MSDS NUMBER: W-1410

	COMPANY	CHEMTREC
EMERGENCY TELEPHONE	405/270-2526	800/424-9300

I. PRODUCT IDENTIFICATION

PRODUCT	CHEMICAL NAME	
KERMAC 100-W	Stoddard Solvent / White Spirits	
CHEMICAL FAMILY	FORMULA	CAS NUMBER
Petroleum Hydrocarbon Naphtha	C_8-C_{12}	64741-48-9

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATING CODES (Least - 0, Slight - 1, Moderate - 2, High - 3, Extreme - 4)	HEALTH CODE	FIRE CODE	REACTIVITY CODE
	0	2	0

II. HAZARDOUS COMPONENTS

INGREDIENT	%	OSHA LIMIT	TLV
Stoddard Solvent	100	TWA-500 ppm	TWA-100 ppm STEL-200 ppm
Xylene	Up to 1%	TWA-100 ppm	TWA-100 ppm STEL-150 ppm

III. PHYSICAL AND CHEMICAL PROPERTIES

BOILING POINT	VAPOR PRESSURE	EVAPORATION (ETHYL ETHER = 1)
300-410°F	Approx. 5.3 mm Hg @ 100°F	Estimated 4
PERCENT VOLATILE BY VOLUME (%)	MOLECULAR WEIGHT	APPEARANCE
100	Approximately 140	Clear Liquid
ODOR AND THRESHOLD	MELTING POINT	VAPOR DENSITY (AIR = 1)
Petroleum Naphtha/Approx 1 ppm	Not Available	4.8
SPECIFIC GRAVITY (H_2O = 1)	VISCOSITY	SOLUBILITY (g/100g WATER AT 20°C)
0.78	<32 SUS @ 100°F	Negligible

V. FIRE PROTECTION INFORMATION

FLASH POINT AND METHOD	AUTOIGNITION TEMPERATURE	FLAMMABLE LIMITS % VOLUME IN AIR	LOWER	UPPER
Tag Closed Cup 100°F minimum	Approx. 440°F		1	6

EXTINGUISHING MEDIA

Carbon dioxide, dry chemical, or foam. Water stream may spread fire, use water spray only to cool containers exposed to fire. If leak or spill has not ignited, use water spray to disperse vapors.

HAZARDOUS DECOMPOSITION PRODUCTS

Incomplete combustion can yield carbon monoxide and various hydrocarbons.

FIRE AND EXPLOSION HAZARDS

Can form flammable mixtures with air and flash when heated to approximately 100°F. Explosion hazard in fire situation. Vapor heavier than air and may travel considerable distance to a source of ignition and flash back.

HAZARDOUS POLYMERIZATION		STABILITY	
☒ Will Not Occur	☐ May Occur	☒ Stable	☐ Unstable

V. HEALTH INFORMATION

INHALATION

Possible effects include headache, nasal and respiratory irritation, nausea, drowsiness, fatigue, peumonitis, pulmonary edema, central nervous system depression.

EYE CONTACT

Irritation

SKIN CONTACT

Irritation, may cause dermatitis due to defatting of keratin layer.

INGESTION

Possible effects include headache, drowsiness, nausea, fatigue, peumonitis, pulmonary edema, central nervous system depression. Aspiration hazard.

REPORTED AS POTENTIAL CARCINOGEN OR CARCINOGEN		
☒ Not Applicable	☐ National Toxicology Program	
☐ International Agency for Research on Cancer	☐ OSHA	

VIII. TRANSPORTATION AND STORAGE INFORMATION

DOT Hazardous Material ☒ Yes ☐ No

DOT SHIPPING NAME AND NUMBER	DOT HAZARD CLASS
Petroleum naphtha UN1255	Combustible liquid

STORAGE

Do not store with strong oxidizers. Store as OSHA Class II combustible liquid.

IX. ENVIRONMENTAL PROTECTION

SPILLS

Notify emergency response personnel. Evacuate area and remove ignition sources. Build dike to contain flow. Remove free liquid, do not flush to sewer or open water. Pick up with inert absorbent and place in closed container for disposal. If flash point of residue is under 140°F, utilize hazardous waste manifest and permitted hazardous waste disposal site. If flash is above 140°F, utilize permitted industrial waste disposal site.

WASTE DISPOSAL

EPA Hazardous Waste ☒ Yes ☐ No

EPA WASTE CODE NUMBER	WASTE CHARACTERISTIC OR HAZARD CODE
D 001	Ignitable

Utilize licensed waste disposal company. Consider recycling or incineration. Based on flash point, utilize permitted hazardous waste disposal site and manifest or permitted industrial waste disposal site as appropriate.

MANAGER'S SIGNATURE (PRODUCT SAFETY AND COMPLIANCE)	DATE PREPARED
Prepared by Kerr-McGee Refining Corporation for Triangle Refineries, Inc. C. L. Russell	5-15-85

VI. FIRST AID PROCEDURES

INHALATION

Move exposed person to fresh air. If breathing has stopped, perform artificial respiration. Get medical attention as soon as possible.

EYE CONTACT

Immediately flush eyes with water for a minimum of 15 minutes, occasionally lifting the lower and upper lids. Get medical attention as soon as possible.

SKIN CONTACT

If clothing soaked, immediately remove clothing and wash skin with soap and water. Launder clothing before wearing. Get medical attention promptly.

INGESTION

Do not induce vomiting. Get medical attention as soon as possible.

VII. EMPLOYEE PROTECTION

RESPIRATORY PROTECTION (UTILIZE NIOSH APPROVED RESPIRATORS. REFER TO MANUFACTURER'S PROTECTION FACTORS AND OSHA STANDARD 1910.134, AS A GUIDELINE!)

Up to 500 ppm, half-mask organic vapor respirator.
Up to 1000 ppm, full-face organic vapor respirator or full-face supplied air respirator.
Greater than 1000 ppm, fire fighting, or unknown concentration, self-contained breathing apparatus with positive pressure.

PROTECTIVE CLOTHING

EYE: Chemical goggles, face shield.

SKIN: Gloves: Nitrile, neoprene or other material resistant to naphtha solvent.

VENTILATION

Maintain local or dilution ventilation to keep air concentration below 100 ppm. Loading, unloading, tank gauging, etc. remain upwind. Request assistance of safety and industrial hygiene personnel to determine air concentrations.

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
2040 S. PACHECO
SANTA FE, NEW MEXICO 87505
(505) 827-7131

April 25, 1995

CERTIFIED MAIL
RETURN RECEIPT NO.Z-765-962-671

Mr. Morris D. Young
ENVIROTECH INC.
5796 U.S. Highway 64-3014
Farmington, NM 87401

RE: Discharge Plan Requirement Inspection
Farmington Facilities
San Juan County, New Mexico

Dear Mr. Young:

Outlined below are the observations and findings made by the NMOCD team that recently inspected the Envirotech Inc. facilities located at 5796 and 5726 HWY 64 in Farmington, New Mexico.

1. 5 waste streams were identified in the lab area - with all wastes segregated.

2. A septic/leech system is on the facility but only handles domestic waste.

3. 2 fuel saddle tanks - need to have an impermeable barrier underneath that has a more rigid characteristic than the existing liner and berm.

4. DO NOT bring outside soils and store in either yard.

5. Lab waste drum(s) need to be sampled and characterized as to their nature, i.e. hazardous or non-hazardous. Also, lab waste needs to be stored in double containment.

6. Several empty 5 gallon buckets need to be disposed of properly.

7. Used batteries need to be disposed of properly - please clarify if in fact it is Intermountain Batteries who picks up the batteries.

8. Empty drums need to be stored on their side with the bungs in place and horizontal to the ground.

9. Full drums need to be clearly labelled and stored on some sort of pad and curb type containment.

10. The cleaning solvent at the equipment yard needs an MSDS and needs to be identified. Note: If the solvent is hazardous in nature its use is discouraged.

11. Spot type oil spills that a small in size need to be racked out.

12. Overall housekeeping at the facilities is in poor condition and should be addressed.

If you have any questions regarding this matter please feel free to call me at (505)-827-7156.

Sincerely,

Patricio W. Sanchez
Petroleum Engineer

xc: Denny Foust

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION
2040 S. PACHECO
SANTA FE, NEW MEXICO 87505
(505) 827-7131

April 21, 1995

CERTIFIED MAIL
RETURN RECEIPT NO.Z-765-962-658

Mr. Morris D. Young
ENVIROTECH INC.
5796 U.S. Highway 64-3014
Farmington, NM 87401

RE: Discharge Plan Requirement
Farmington Facilities
San Juan County, New Mexico

Dear Mr. Young:

Under the provision of the Water Quality Control Commission (WQCC) Regulations, ENVIROTECH INC. is hereby notified that the filing of a discharge plan is required for the ENVIROTECH INC. facilities located at 5796 and 5726 Highway 64 Farmington, New Mexico.

The discharge plan is required pursuant to Section 3-104 and 3-106 of the WQCC regulations. The discharge plan, defined in Section 1.101.Q of the WQCC regulations should cover all discharges of effluent or leachate at the facility site or adjacent to the facility site. Included in the plan should be plans for controlling spills and accidental discharges at the facility, including detection of leaks in buried underground tanks and\or piping.

Pursuant to Section 3-106.A, a discharge plan should be submitted for approval to the OCD Director within 120 days of receipt of this letter. Three copies of the discharge plan should be submitted.

A copy of the regulations and guidelines have been provided to ENVIROTECH INC. at a recent field inspection by OCD staff. Enclosed ENVIROTECH INC. will find an application form to be used with the guidelines for the preparation of discharge plans at oil & gas service companies. The guideline addresses berming of tanks, curbing and paving of process areas susceptible to leaks or spills and the disposition of any solid wastes.

The discharge plan is subject to the WQCC Regulation 3-114 discharge plan fee. Every billable facility submitting a discharge plan will be assessed a fee equal to the filing fee of fifty (50) dollars plus the flat rate of one thousand, three hundred and eighty ($1380) dollars for oil & gas service companies. The fifty (50) dollar filing fee is due when the discharge plan is submitted. The flat rate fee is due upon approval of the discharge plan.

Please make all checks payable to: **NMED Water Quality Management** and addressed to the OCD Santa Fe office.

If there are any questions on this matter, please feel free to contact Patricio Sanchez at 827-7156 or Roger Anderson at 827-7152.

Sincerely,

William J. LeMay
Director

WJL/pws

XC: OCD Aztec Office

March 25, 1993

OIL CONSERVATION DIVISION DISCHARGE PLAN INSPECTION REPORT
BY DENNY G. FOUST

RE: Preliminary discharge plan inspection of Envirotech's yard and office facilities located at 5796 U.S.Highway 64-3014, Farmington, New Mexico 87401

Denny Foust and Ernie Busch of the Oil Conservation Division were accompanied by Mike Lane and Gregg Mullineaux of Envirotech during the inspection conducted on March 24, 1993. No gross violations were found in the yard but several housekeeping recommendations were made. Barrels of lubricating oil need to be placed on a pad or containment located north of the shop-office building. Two used oil tanks (approx. 250 gallons each) located along the west yard fence are diked but need a liner under them. The used oil tanks should be clearly labeled. A used oil filter disposal area along the west fence was diked but did not have a liner. Barrels in this area need tops and labeling. Empty steel drums along the west fence need to be rotated for proper stacking. One flatbed trailer in the yard contained thirteen sealed drums. Eight blue drums were labeled NMED UST Drill Cuttings and are from a UST sampling operation north of Espanola and five yellow drums are from the city of Santa Fe containing contaminated soil from a car-truck accident. Containers of "Brine Buster" solid chemical are stored along the East fence in the yard. The "Brine Buster" needs to be on pallets in a more secure area. Three storage vans are located in the yard and are used for the storage of lubricants in small containers, supplies, parts and tools. Soil samples from the laboratory are stored in a barrel at the yard after analysis. This barrel needs to be clearly labeled and placed more securely, preferably on a portable slab or timbers. The laboratory facilities located in the office-shop building generate residue acids and bases which are accumulated separately, neutralized as volumes dictate and poured down the drain to the septic system. Organic solvents such as freon, hexane and propanol are recovered in separate four liter containers. As four liter volumes are recovered, these solvents are distilled for reuse in the laboratory. If Envirotech is to occupy this yard and office-shop less than six months, a discharge plan is not recommended. A discharge plan should be a requirement for the new facility Envirotech is building across from San Juan Downs.