111A
Acct #3

EPA-ARWM/PMTS
DEC 10 1984
Region VII K.C., MO

RCRA

PART B

APPLICATION

for

Reid Supply Company
Wichita, KS

to the

EPA REGION VII and the KDHE

by

David G. Trombold

12/6/84

RCRA
551109

TABLE OF CONTENTS

Number		Page
1	General Facility Description	1
2	Topographic Map	14
3	Facility Location Information	20
4	Traffic Patterns	21
5	Chemical and Physical Analyses	22
6	Waste Analysis Plan	43
7	Containers	65
8	Tanks	78
9	Security Procedures	97
10	Inspection Schedule and Log Sheets	98
11	Preparedness and Prevention Requirements	115
12	Preventive Procedures	147
13	Requirements for Ignitable Waste	151
14	Contingency Plan and Emergency Procedures	153
15	Personnel Training	165
16	Closure Plans	178
17	Notice to Local Land Authority	181
18	Notice in Deed to Property	181
19	Closure Cost Estimate and Financial Assurance Document	182
20	Post-Closure Cost Estimate	185
21	Liability Insurance Policy	186
22	Proof of Coverage by State Financial Mechanism	189
23	Manifest System, Record Keeping, and Reporting	190
24	Engineer Certification	192
25	Permit Application Certification	193
26	Appendix A	194

FIGURES

Figure		Page
1	Hazardous Waste Flow Chart	2
2	Chart Indicating Waste Channel Timing and Flow Rate	3
3	Part A	6
4	Geological Survey Map	15
5	Aerial Photograph	16
6	Facility Map	17
7	Letter from City of Wichita Department of Engineering	18
8	Flood Hazard Boundary Map	19
9	Analysis for Still Bottoms from a Drycleaner	25
10	Analysis for Car Body Gun Cleaner Solvent	26
11	Analysis for Manufacturer Generating Waste Paint Solvent	27
12	Analysis for Vapor Degreaser Still Bottoms	28
13	Analysis for Distillable 1,1,1-Trichloroethylene	29
14	Analysis for Paint Company Wash Solvent	30
15	Analysis for Acetone from Fiberglass Mfg	31
16	Letter from Systech Outlining Quality Assurance/Quality Control Procedures for Analysis	33
17	Fingerprint Analysis for Waste to be Blended	34
18	Fingerprint Analysis for Waste to be Distilled	34
19	Generator Audit	35
20	Analysis for Blended Solvents Going to Cement Kiln	39
21	Analysis for Unblendable Solvents for Landfill	40
22	Analysis for Unblendable, Low BTU/pound Liquid for Deepwell Injection	41
23	BTU/pound Analysis for Reid Supply Still Bottoms and Filter Cake	42
24	Waste Analysis Scheme	46

Figure		Page

25 Fingerprint Scheme..... 47
26 Sampling Procedure..... 52
27 Hazardous Waste Received Checklist..... 53
28 Solids Depth in Liquid Drums..... 55
29 Hazardous Waste Label..... 66
30 Flammable Liquid Label..... 66
31 Drum Storage Area..... 67
32 Fire Department Waiver with Compliance Schedule. 73
33 Concrete Interface Bonding Agent..... 76
34 Waste Solvent Process Flow Diagram Showing Solvent Resident Duration..... 79
35 Storage Tank Thickness Measurements..... 80
36 Overfill Control Mechanism..... 85
37 Storage Tanks..... 90
38 Still Feed Tanks..... 91
39 Settling Tank..... 92
40 3,000 Gallon Transfer Tank..... 93
41 1,200 Gallon Transfer Tank..... 94
42 General Inspection Schedule..... 99
43 Daily Inspection Log Sheets..... 103
44 Weekly Inspection Log Sheet.....105
45 Annual Inspection Log Sheet for Tank Interior...112
46 Annual Inspection Log Sheet for Ultrasonic Tank Thickness.....113
47 Five Year Inspection Log Sheet for Tank Interior114
48 Emergency Equipment Location Map.....116
49 Drum Storage Floor Plan with Drum & Aisle Spacing.....120
50 Initial Notification of Local Authorities.....122
51 March 1984 Local Authority Notification.....130

Figure		Page

52 April 1984 Local Authority Notification.....136
53 Confirmation of Mutual Pact Agreement.....142
54 Contingency Plan Approval.....146
55 Common Waste Solvents with TLV's.....149
56 Organization of Personnel.....168
57 Job Classifications and Corresponding Training Modules Chart.....170
58 Training and Evaluation Log Sheet.....175
59 Job Title Card.....176
60 Training Manual.....177
61 Irrevocable Letter of Credit.....184
62 Certificate of Liability Insurance.....187

TABLES

Table		Page
1	Waste, Associated Hazards, and Basics for Hazard Description	24
2	Reid Supply Analysis Parameters and Rationale	44
3	Reid Supply Analysis Parameters and Test Methods	45
4	Cement Kiln Specification Limits	49
5	Cement Kiln Test Parameters and Rationale	57
6	Cement Kiln Test Methods for Parameters of Blended Waste Solvents	58
7	Parameters and Rationale for Waste Going to Landfill	60
8	Test Methods for Waste Going to Landfill	61
9	Parameters and Rationale for Waste Going to Deepwell Injection	62
10	Test Methods for Waste Going to Deepwell Injection	63
11	Tank Dimensions and Capacitities	95

1. GENERAL DESCRIPTION OF THE FACILITY

122.25(a)(1)

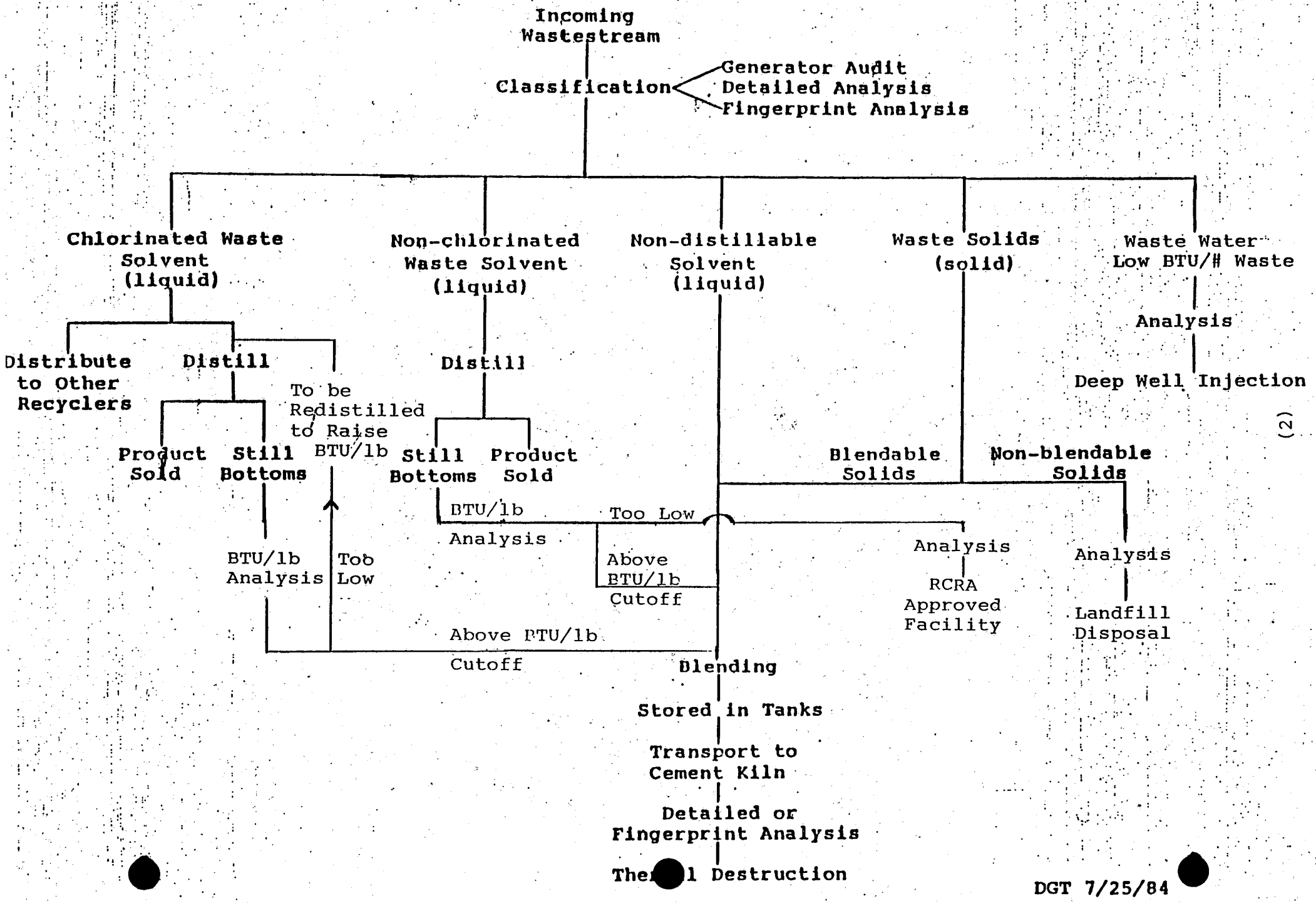
Reid Supply Company has been a supplier of industrial chemicals and laundry and drycleaning supplies for over fifty years. In the last eight years Reid Supply has moved into the area of reclaiming waste solvents for reuse as industrial solvents and for reuse as an alternative fuel source for industrial cement kilns. Since Reid Supply Company already supplied industrial solvents to many customers, it was a natural step to provide environmentally sound channels for waste solvents and related waste streams. The waste that is handled at this facility is almost totally from offsite generators.

There are four channels for the waste streams handled at Reid Supply Company. Please refer to Fig. 1 and Fig. 2 . Fig. 1 provides the overall flow of waste through the facility and beyond. Fig. 2 provides the approximate timing and flow rates of waste streams received at Reid Supply. First, suitable waste solvent streams are distilled and resold for industrial use. This includes both non-chlorinated and chlorinated waste solvents. All non-chlorinated solvents suitable for distillation are distilled at Reid Supply. All chlorinated solvents suitable for distillation are presently stored in drums until a truckload is accumulated and distributed to other recycling facilities because Reid Supply does not have a stainless steel still to handle potential acid conditions of chlorinated solvents. Reid Supply will probably acquire a still in the future suitable for chlorinated solvents, but this will not affect the proceedings of this permit application. The approximate gallons of distillable waste streams that pass through Reid Supply per month are provided at the bottom of Fig. 2 .

Secondly, waste solvents, compatible waste solids, and still bottoms including Reid Supply still bottoms are blended according to state, federal, and cement kiln specifications and burned as an alternative fuel source at a cement kiln.(Table 4) Most of the waste solids handled at Reid Supply are settled paint solids that accompany waste solvent drums that contain mostly solvent. The quantity of blendable, chlorinated waste to be blended is restricted because of state, federal, and cement kiln specifications which limit the amount of halogen contained in the waste solvent fuel. At present 3 percent is the limit but may be raised to 5 percent in the future. As a result of the limitation, waste streams that contain over 3 percent halogen must be diluted down to the acceptable level.

HAZARDOUS WASTE FLOW CHART

Fig.1



(2)

DGT 7/25/84

Fig. 2

CHART INDICATING WASTE
CHANNEL TIMING AND FLOW RATES

Timing:	Distillable Waste		Blendable Waste		Non-Blendable Waste	
	Non-Chlorinated	Chlorinated	Non-Chlorinated	Chlorinated	Solids for Landfill	Low BTU/lb Liq. for Deepwl. Inj.
Detailed Analysis Time	3 weeks	3 weeks	3 weeks	3 weeks	3 weeks	3 weeks
Sampling Time for Fingerprint	1 day	1 day	1 day	1 day	1 day	N.A.
Fingerprint Analysis Time	1 week	1 week	3 weeks	3 weeks	4 weeks	N.A.
Processing Time	1 month	N.A.	1 month	2 months	1 month	N.A.
Shipout Time	1 month to sell distilled product	3 months before being shipped to another facility	1 month	1 month	6 months	As needed to accumulate enough for a bulk shipment
Flow Rate:						
Present	8000 gal/mo	500 gal/mo	4000 gal/mo	500 gal/mo	10X55 gal drums/mo	Irregular 100 gal/mo

(3)

Definitions: Detailed Analysis Time - the time required for a detailed analysis to be performed

Sampling Time - the time between waste stream arrival and when samples are taken

Fingerprint Analysis Time - the time required to perform a fingerprint analysis and receive results

Processing Time - the time between fingerprint analysis approval and actual processing of the waste stream

Shipout Time - the time the processed material is stored before it is shipped out

In addition, to guard against sham recycling, all waste streams blended for fuel are required to be above 8,000 BTU per pound. Reid Supply has maintained this standard, but requests that should there be a reduction of the standard, Reid Supply could in turn lower its standard accordingly. It should be noted that the blendable chlorinated waste is relatively low in halogen content but above 8,000 BTU per pound (Fig.12). This is because these chlorinated waste streams are usually chlorinated still bottoms from vapor degreasing operations and dry cleaning plants that contain mostly high BTU per pound grease and oil and a minimum of chlorinated solvent. On the other hand, waste chlorinated solvents cannot be blended for fuel because they are high in chlorinated solvent. The high concentration of chlorinated solvent drives the BTU per pound level well below 8,000 and the halogen content is so high that blending for fuel is not allowed. The outlet for these non-blendable chlorinated solvents is distillation.

Thirdly are the non-blendable waste solids for hazardous waste landfill. These are typically paint solids left when all the waste solvent has been pumped out that will not blend into waste solvents with the blending equipment used at Reid Supply. This means of disposal is being phased out at Reid Supply since landfill is not a permanent solution. Reid Supply will be experimenting with special grinders and mixers to allow all this material to be blended with waste solvent and burned up as fuel.

The fourth channel is low BTU per pound liquid for deepwell injection. This channel has been used infrequently in the past for clearing out material that was primarily water mixed with a little flammable solvent to give it a D001 classification. Reid Supply encountered this situation when it cleared out drums that had been accumulated before implementation of its present waste analysis program including fingerprinting. Since implementing the present waste analysis program and educating customers to reduce water in their drums, this form of low BTU per pound liquid has been eliminated. Reid Supply intends to continue to keep this material to a minimum and does not purposely receive material like this.

The only other low BTU per pound liquid for deepwell injection is water runoff that has collected in the outdoor diked areas and a one-time shipment of water from steamcleaning the tanks and diked areas at closure. This material will be stored in drums until 5,000 gallons is reached to fill a bulk transport and be taken for deepwell injection.

It is Reid Supply's goal to eliminate hazardous waste landfill

of presently non-blendable solids and to eliminate solvents mixed with water that lower the BTU per pound below the permitted level apart from contaminated accumulated water. This will provide a permanent and secure solution to the waste streams handled by Reid Supply Company.

Waste streams received by Reid Supply are stored in drums until they can be distilled, blended, or sent to another facility for recycling or disposal. Blended waste solvents are stored in two 4500 gallon tanks until they are transported to a cement kiln and used as fuel.

The Reid Supply Company Plant where the TSD facility is located at 2549 New York on the north central side of Wichita, Kansas, just off of 21st Street and I-35. This area is a heavy industrial area including Derby Refinery to the south and Missouri Pacific to the north of the facility.

Provided is a copy of the current Part A application.(Fig. 3)

Please print or type in the unshaded areas only
(fill—in areas are spaced for elite type, i.e., 12 characters/inch).

Fig. 3

Form Approved OMB No. 158-R0175

FORM 1 GENERAL

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

GENERAL INFORMATION

Consolidated Permits Program

(Read the "General Instructions" before starting.)

I. EPA I.D. NUMBER

S		T/A	C
F	K S D 0 0 7 2 4 6 8 4 6		D

LABEL ITEMS

EPA I.D. NUMBER

III. FACILITY NAME

V. FACILITY MAILING ADDRESS

VI. FACILITY LOCATION

PLEASE PLACE LABEL IN THIS SPACE

GENERAL INSTRUCTIONS

If a preprinted label has been provided, affix it in the designated space. Review the information carefully; if any of it is incorrect, cross through it and enter the correct data in the appropriate fill—in area below. Also, if any of the preprinted data is absent *(the area to the left of the label space lists the information that should appear)*, please provide it in the proper fill—in area(s) below. If the label is complete and correct, you need not complete Items I, III, V, and VI *(except VI-B which must be completed regardless)*. Complete all items if no label has been provided. Refer to the instructions for detailed item descriptions and for the legal authorizations under which this data is collected.

II. POLLUTANT CHARACTERISTICS

INSTRUCTIONS: Complete A through J to determine whether you need to submit any permit application forms to the EPA. If you answer "yes" to any questions, you must submit this form and the supplemental form listed in the parenthesis following the question. Mark "X" in the box in the third column if the supplemental form is attached. If you answer "no" to each question, you need not submit any of these forms. You may answer "no" if your activity is excluded from permit requirements; see Section C of the instructions. See also, Section D of the instructions for definitions of bold—faced terms.

SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED	SPECIFIC QUESTIONS	MARK 'X' YES	NO	FORM ATTACHED
A. Is this facility a publicly owned treatment works which results in a discharge to waters of the U.S.? (FORM 2A)		X		B. Does or will this facility *(either existing or proposed)* include a concentrated animal feeding operation or aquatic animal production facility which results in a discharge to waters of the U.S.? (FORM 2B)		X	
C. Is this a facility which currently results in discharges to waters of the U.S. other than those described in A or B above? (FORM 2C)		X		D. Is this a proposed facility *(other than those described in A or B above)* which will result in a discharge to waters of the U.S.? (FORM 2D)		X	
E. Does or will this facility treat, store, or dispose of hazardous wastes? (FORM 3)	X			F. Do you or will you inject at this facility industrial or municipal effluent below the lowermost stratum containing, within one quarter mile of the well bore, underground sources of drinking water? (FORM 4)		X	
G. Do you or will you inject at this facility any produced water or other fluids which are brought to the surface in connection with conventional oil or natural gas production, inject fluids used for enhanced recovery of oil or natural gas, or inject fluids for storage of liquid hydrocarbons? (FORM 4)		X		H. Do you or will you inject at this facility fluids for special processes such as mining of sulfur by the Frasch process, solution mining of minerals, in situ combustion of fossil fuel, or recovery of geothermal energy? (FORM 4)		X	
I. Is this facility a proposed stationary source which is one of the 28 industrial categories listed in the instructions and which will potentially emit 100 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X		J. Is this facility a proposed stationary source which is NOT one of the 28 industrial categories listed in the instructions and which will potentially emit 250 tons per year of any air pollutant regulated under the Clean Air Act and may affect or be located in an attainment area? (FORM 5)		X	

III. NAME OF FACILITY

C 1 SKIP: REID SUPPLY COMPANY

IV. FACILITY CONTACT

A. NAME & TITLE *(last, first, & title)*	B. PHONE *(area code & no.)*
C 2 TROMBOLD CHUCK PROCESS ENGR	316 267 5742

V. FACILITY MAILING ADDRESS

A. STREET OR P.O. BOX

C 3 PO BOX 730

B. CITY OR TOWN	C. STATE	D. ZIP CODE
C 4 WICHITA	KS	67201

VI. FACILITY LOCATION

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER

C 5 2549 N NEW YORK

B. COUNTY NAME

SEDGWICK

C. CITY OR TOWN	D. STATE	E. ZIP CODE	F. COUNTY CODE *(if known)*
C 6 WICHITA	KS	67219	SG

EPA Form 3510-1 (6-80)

CONTINUE ON REVERSE

CONTINUED FROM THE FRONT

VII. SIC CODES (4-digit, in order of priority)

A. FIRST	B. SECOND
7399 (specify) SOLVENT RECOVERY	(specify)
C. THIRD	**D. FOURTH**
(specify)	(specify)

VIII. OPERATOR INFORMATION

A. NAME: REID SUPPLY COMPANY

B. Is the name listed in Item VIII-A also the owner? ☐ YES ☒ NO

C. STATUS OF OPERATOR (Enter the appropriate letter into the answer box; if "Other", specify.)
F = FEDERAL, S = STATE, P = PRIVATE, M = PUBLIC (other than federal or state), O = OTHER (specify)

P (specify) PRIVATE

D. PHONE (area code & no.): 316 267 1231

E. STREET OR P.O. BOX: PO BOX 730

F. CITY OR TOWN	G. STATE	H. ZIP CODE
WICHITA	KS	67201

IX. INDIAN LAND

Is the facility located on Indian lands? ☐ YES ☒ NO

X. EXISTING ENVIRONMENTAL PERMITS

A. NPDES (Discharges to Surface Water): 9N	D. PSD (Air Emissions from Proposed Sources): 9P
B. UIC (Underground Injection of Fluids): 9U	E. OTHER (specify): 9 (specify)
C. RCRA (Hazardous Wastes): KSD007246846	E. OTHER (specify): 9 (specify)

XI. MAP

Attach to this application a topographic map of the area extending to at least one mile beyond property bounderies. The map must show the outline of the facility, the location of each of its existing and proposed intake and discharge structures, each of its hazardous waste treatment, storage, or disposal facilities, and each well where it injects fluids underground. Include all springs, rivers and other surface water bodies in the map area. See instructions for precise requirements.

XII. NATURE OF BUSINESS (provide a brief description)

RECYCLE WASTE SOLVENTS BY DISTILLATION AND CHANNEL
WASTE SOLVENTS TO OTHER EPA APPROVED FACILITIES

WE ALSO TRANSPORT AND STORE WASTE SOLVENTS

XIII. CERTIFICATION (see instructions)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this application and all attachments and that, based on my inquiry of those persons immediately responsible for obtaining the information contained in the application, 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.

A. NAME & OFFICIAL TITLE (type or print)	B. SIGNATURE	C. DATE SIGNED
WALTER S. TROMBOLD, PRESIDENT	Walter S Trombold	11/14/84

COMMENTS FOR OFFICIAL USE ONLY

Please print or type in the unshaded areas only
(fill—in areas are spaced for elite type, i.e., 12 characters/inch).

Form Approved OMB No. 158-S80004

FORM 3 RCRA

EPA

U.S. ENVIRONMENTAL PROTECTION AGENCY

HAZARDOUS WASTE PERMIT APPLICATION

Consolidated Permits Program

(This information is required under Section 3005 of RCRA.)

I. EPA I.D. NUMBER

S												T/A	C
F	K	S	D	0	0	7	2	4	6	8	4	6	1

1 2 - 13 14 15

FOR OFFICIAL USE ONLY

APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	COMMENTS
23	24 - 29	

II. FIRST OR REVISED APPLICATION

Place an "X" in the appropriate box in A or B below *(mark one box only)* to indicate whether this is the first application you are submitting for your facility or a revised application. If this is your first application and you already know your facility's EPA I.D. Number, or if this is a revised application, enter your facility's EPA I.D. Number in Item I above.

A. FIRST APPLICATION *(place an "X" below and provide the appropriate date)*

XX 1. EXISTING FACILITY *(See instructions for definition of "existing" facility. Complete item below.)* 71

FOR EXISTING FACILITIES, PROVIDE THE DATE *(yr., mo., & day)* OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED *(use the boxes to the left)*

C	YR.	MO.	DAY
8	79	06	01
15	73 74	75 76	77 78

☐ 2. NEW FACILITY *(Complete item below.)* 71

FOR NEW FACILITIES, PROVIDE THE DATE *(yr., mo., & day)* OPERATION BEGAN OR IS EXPECTED TO BEGIN

YR.	MO.	DAY
73 74	75 76	77 78

B. REVISED APPLICATION *(place an "X" below and complete Item I above)*

☒ 1. FACILITY HAS INTERIM STATUS 72

☐ 2. FACILITY HAS A RCRA PERMIT 72

III. PROCESSES — CODES AND DESIGN CAPACITIES

A. PROCESS CODE — Enter the code from the list of process codes below that best describes each process to be used at the facility. Ten lines are provided for entering codes. If more lines are needed, enter the code*(s)* in the space provided. If a process will be used that is not included in the list of codes below, then describe the process *(including its design capacity)* in the space provided on the form *(Item III-C)*.

B. PROCESS DESIGN CAPACITY — For each code entered in column A enter the capacity of the process.

1. AMOUNT — Enter the amount.
2. UNIT OF MEASURE — For each amount entered in column B(1), enter the code from the list of unit measure codes below that describes the unit of measure used. Only the units of measure that are listed below should be used.

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Storage:		
CONTAINER *(barrel, drum, etc.)*	S01	GALLONS OR LITERS
TANK	S02	GALLONS OR LITERS
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS
Disposal:		
INJECTION WELL	D79	GALLONS OR LITERS
LANDFILL	D80	ACRE-FEET *(the volume that would cover one acre to a depth of one foot)* OR HECTARE-METER
LAND APPLICATION	D81	ACRES OR HECTARES
OCEAN DISPOSAL	D82	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	D83	GALLONS OR LITERS

PROCESS	PROCESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
Treatment:		
TANK	T01	GALLONS PER DAY OR LITERS PER DAY
SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
OTHER *(Use for physical, chemical, thermal or biological treatment processes not occurring in tanks, surface impoundments or incinerators. Describe the processes in the space provided; Item III-C.)*	T04	GALLONS PER DAY OR LITERS PER DAY

UNIT OF MEASURE	UNIT OF MEASURE CODE
GALLONS	G
LITERS	L
CUBIC YARDS	Y
CUBIC METERS	C
GALLONS PER DAY	U
LITERS PER DAY	V
TONS PER HOUR	D
METRIC TONS PER HOUR	W
GALLONS PER HOUR	E
LITERS PER HOUR	H
ACRE-FEET	A
HECTARE-METER	F
ACRES	B
HECTARES	Q

EXAMPLE FOR COMPLETING ITEM III *(shown in line numbers X-1 and X-2 below)*: A facility has two storage tanks, one tank can hold 200 gallons and the other can hold 400 gallons. The facility also has an incinerator that can burn up to 20 gallons per hour.

S		T/A	C
C	DUP		1

1 2 - 13 14 15

LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT (specify)	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY	LINE NUMBER	A. PROCESS CODE (from list above)	B. PROCESS DESIGN CAPACITY 1. AMOUNT	B. PROCESS DESIGN CAPACITY 2. UNIT OF MEASURE (enter code)	FOR OFFICIAL USE ONLY
	16 - 18	19 - 27	28	29 - 32		16 - 18	19 - 27	28	29 - 32
X-1	S 0 2	600	G		5				
X-2	T 0 3	20	E		6				
1	S 0 1	27500	G		7				
2	S 0 2	9000	G		8				
3					9				
4					10				
	16 - 18	19 - 27	28	29 - 32		16 - 18	19 - 27	28	29 - 32

CONTINUE ON REVERSE

Continued from the front.

III. PROCESSES *(continued)*

C. SPACE FOR ADDITIONAL PROCESS CODES OR FOR DESCRIBING OTHER PROCESSES *(code "T04")*. FOR EACH PROCESS ENTERED HERE INCLUDE DESIGN CAPACITY.

IV. DESCRIPTION OF HAZARDOUS WASTES

A. **EPA HAZARDOUS WASTE NUMBER** — Enter the four—digit number from 40 CFR, Subpart D for each listed hazardous waste you will handle. If you handle hazardous wastes which are not listed in 40 CFR, Subpart D, enter the four—digit number*(s)* from 40 CFR, Subpart C that describes the characteristics and/or the toxic contaminants of those hazardous wastes.

B. **ESTIMATED ANNUAL QUANTITY** — For each **listed waste** entered in column A estimate the quantity of that waste that will be handled on an annual basis. For each **characteristic** or **toxic contaminant** entered in column A estimate the total annual quantity of all the non—listed waste*(s)* that will be handled which possess that characteristic or contaminant.

C. **UNIT OF MEASURE** — For each quantity entered in column B enter the unit of measure code. Units of measure which must be used and the appropriate codes are:

ENGLISH UNIT OF MEASURE	CODE	METRIC UNIT OF MEASURE	CODE
POUNDS	P	KILOGRAMS	K
TONS	T	METRIC TONS	M

If facility records use any other unit of measure for quantity, the units of measure must be converted into one of the required units of measure taking into account the appropriate density or specific gravity of the waste.

D. **PROCESSES**

1. PROCESS CODES:
   For listed hazardous waste: For each **listed** hazardous waste entered in column A select the code*(s)* from the list of process codes contained in Item III to indicate how the waste will be stored, treated, and/or disposed of at the facility.
   For non—listed hazardous wastes: For each characteristic or toxic contaminant entered in column A, select the code*(s)* from the list of process codes contained in Item III to indicate all the processes that will be used to store, treat, and/or dispose of all the non—listed hazardous wastes that possess that characteristic or toxic contaminant.
   Note: Four spaces are provided for entering process codes. If more are needed: (1) Enter the first three as described above; (2) Enter "000" in the extreme right box of Item IV-D(1); and (3) Enter in the space provided on page 4, the line number and the additional code*(s)*.

2. PROCESS DESCRIPTION: If a code is not listed for a process that will be used, describe the process in the space provided on the form.

NOTE: HAZARDOUS WASTES DESCRIBED BY MORE THAN ONE EPA HAZARDOUS WASTE NUMBER — Hazardous wastes that can be described by more than one EPA Hazardous Waste Number shall be described on the form as follows:

1. Select one of the EPA Hazardous Waste Numbers and enter it in column A. On the same line complete columns B,C, and D by estimating the total annual quantity of the waste and describing all the processes to be used to treat, store, and/or dispose of the waste.
2. In column A of the next line enter the other EPA Hazardous Waste Number that can be used to describe the waste. In column D(2) on that line enter "included with above" and make no other entries on that line.
3. Repeat step 2 for each other EPA Hazardous Waste Number that can be used to describe the hazardous waste.

EXAMPLE FOR COMPLETING ITEM IV *(shown in line numbers X-1, X-2, X-3, and X-4 below)* — A facility will treat and dispose of an estimated 900 pounds per year of chrome shavings from leather tanning and finishing operation. In addition, the facility will treat and dispose of three non—listed wastes. Two wastes are corrosive only and there will be an estimated 200 pounds per year of each waste. The other waste is corrosive and ignitable and there will be an estimated 100 pounds per year of that waste. Treatment will be in an incinerator and disposal will be in a landfill.

LINE NO.	A. EPA HAZARD. WASTE NO (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)	D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
X-1	K 0 5 4	900	P	T 0 3 D 8 0	
X-2	D 0 0 2	400	P	T 0 3 D 8 0	
X-3	D 0 0 1	100	P	T 0 3 D 8 0	
X-4	D 0 0 2				included with above

CONTINUE ON PAGE 3

Continued from page 2.

NOTE: Photocopy this page before completing if you have more than 26 wastes to list.

Form Approved OMB No. 158-S80004

EPA I.D. NUMBER (enter from page 1)															FOR OFFICIAL USE ONLY				
S												T/A	C		S		T/A	C	
W	K	S	D	0	0	7	2	4	6	8	4	6		1	W	DUP		2	DUP
1	2											13	14	15	1	2	13	14 15	23 - 26

IV. DESCRIPTION OF HAZARDOUS WASTES *(continued)*

LINE NO.	A. EPA HAZARD. WASTE NO. (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEASURE (enter code)	D. PROCESSES 1. PROCESS CODES (enter)				D. PROCESSES 2. PROCESS DESCRIPTION (if a code is not entered in D(1))
	23 - 26	27 - 35	36	27 - 29	27 - 29	27 - 29	27 - 29	
1	F001	35,000	P	S01				
2	F002	35,000	P	S01				
3	F003	55,000	P	S01				
4	F005	55,000	P	S01				
5	D001	1,330,000	P	S01	S02			
6	D005	20,000	P	S01				
7	D006	20,000	P	S01				
8	D007	20,000	P	S01				
9	D008	20,000	P	S01				
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								

Continued from the front.

IV. DESCRIPTION OF HAZARDOUS WASTES *(continued)*

E. USE THIS SPACE TO LIST ADDITIONAL PROCESS CODES FROM ITEM D(1) ON PAGE 3.

EPA I.D. NO. *(enter from page 1)*

S												T/A	C
F	K	S	D	0	0	7	2	4	8	4	6		6

V. FACILITY DRAWING

All existing facilities must include in the space provided on page 5 a scale drawing of the facility *(see instructions for more detail).*

VI. PHOTOGRAPHS

All existing facilities must include photographs *(aerial or ground—level)* that clearly delineate all existing structures; existing storage, treatment and disposal areas; and sites of future storage, treatment or disposal areas *(see instructions for more detail).*

VII. FACILITY GEOGRAPHIC LOCATION

LATITUDE *(degrees, minutes, & seconds)*	LONGITUDE *(degrees, minutes, & seconds)*
37 43 50 N	97 19 08 W

VIII. FACILITY OWNER

☐ A. If the facility owner is also the facility operator as listed in Section VIII on Form 1, "General Information", place an "X" in the box to the left and skip to Section IX below.

B. If the facility owner is not the facility operator as listed in Section VIII on Form 1, complete the following items:

1. NAME OF FACILITY'S LEGAL OWNER	2. PHONE NO. *(area code & no.)*
E WALTER S. TROMBOLD PRESIDENT OF REID SUPPLY COMPANY	316-267-1231

3. STREET OR P.O. BOX	4. CITY OR TOWN	5. ST.	6. ZIP CODE
F P. O. BOX 730	G WICHITA	KS	67201

IX. OWNER CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted 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.

A. NAME *(print or type)*	B. SIGNATURE	C. DATE SIGNED
WALTER S. TROMBOLD	Walter S Trombold	11/14/84

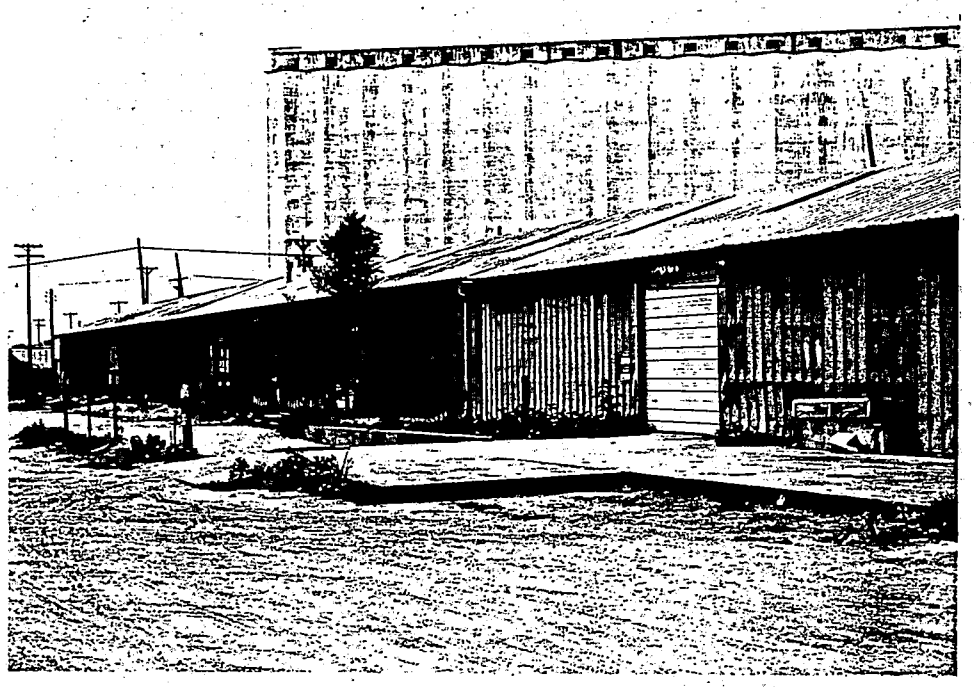
X. OPERATOR CERTIFICATION

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted 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.

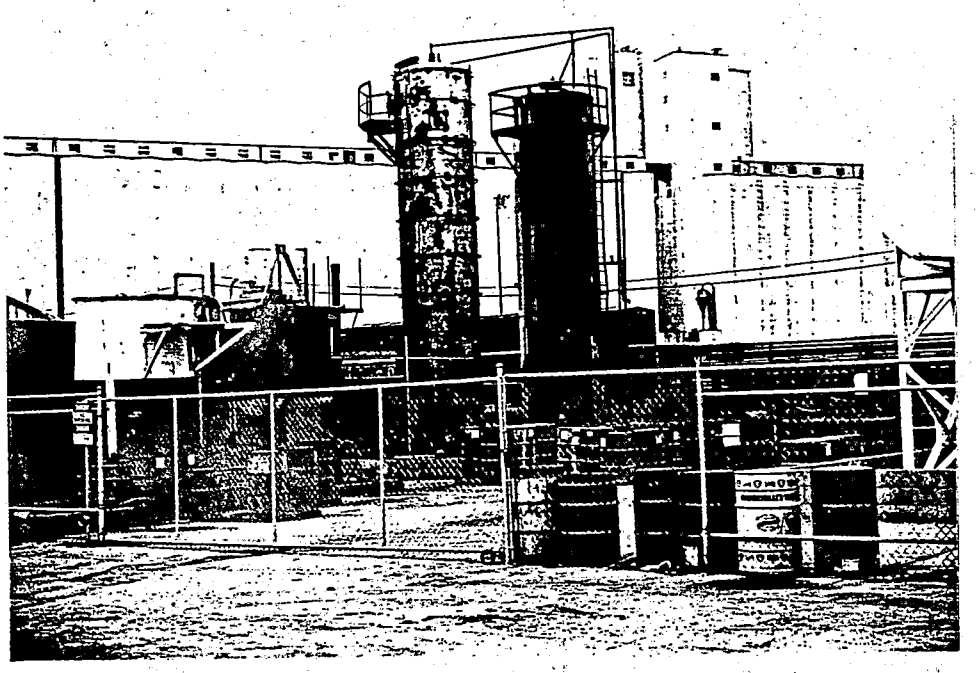
A. NAME *(print or type)*	B. SIGNATURE	C. DATE SIGNED
REID SUPPLY COMPANY	Walter S Trombold	~~11~~/14/84

CONTINUE ON PAGE 5

FACILITY PHOTOGRAPHS

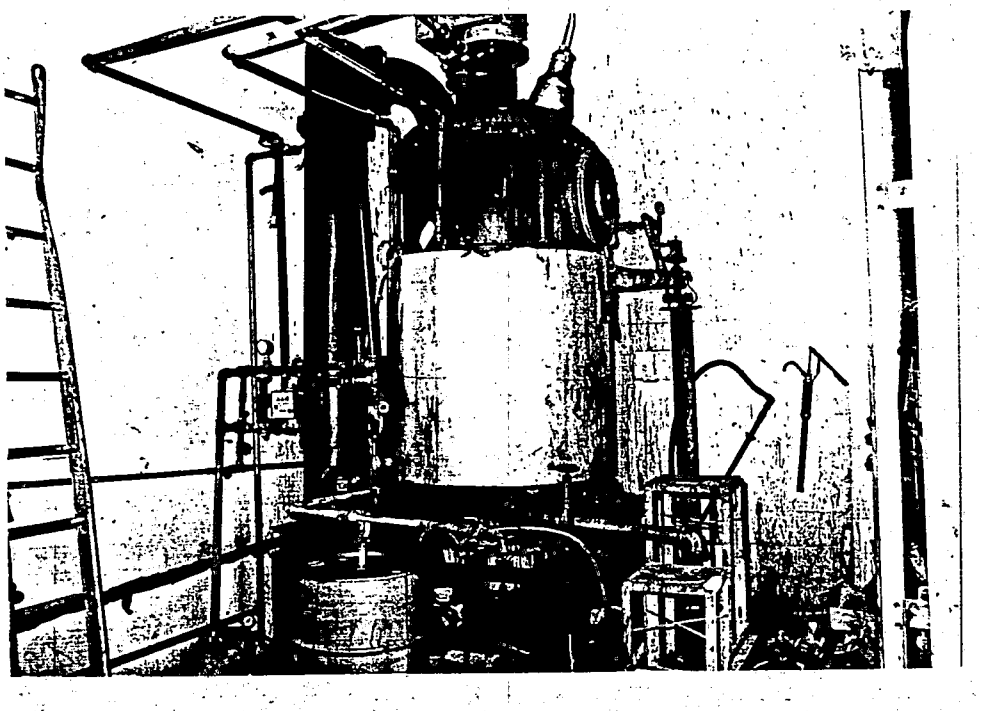


DRUM STORAGE AREA



BULK STORAGE AND DRUM PROCESSING

STILL FEED TANKS



STILL

2. TOPOGRAPHIC MAP
122.25(a)(19)

The only topographic map available for the area including Reid Supply Company is the United States Department of the Interior Geological Survey Map of the Wichita East Quadrangle. Contours are shown on the map in five foot intervals but they do not give any idea of the relief of the area on and around the facility, because the relief is flatter than the contours can describe (Figure 4).

The Wichita City Department of Engineering does not have a topographical map with two foot contour intervals. However, in order to show how the water flows from the facility, an aerial photograph (Figure 5) has been provided to show the water flow away from the facility. In addition the aerial photograph shows the surface waters, surrounding land uses, legal boundaries of the facility, buildings, and storage sites for hazardous waste. The wind rose, access control, buildings, storage sites, and operation sites are shown in detail on the supplemental map of the facility (Figure 6). The wind rose was taken from the Kansas Wind Energy Handbook, Kansas Energy Office, 1981. The facility does not have any on-site injection or withdrawal wells nor are there any water wells within 1000 feet of the property according to available well listings from the K.D.H.E. Division of Environment and the Kansas Geological Survey Geohydrology Section except for a well in I Building used for the still cooling water. Figures 7 and 8 show that the Reid Supply plant does not lie within a 100 year floodplain.

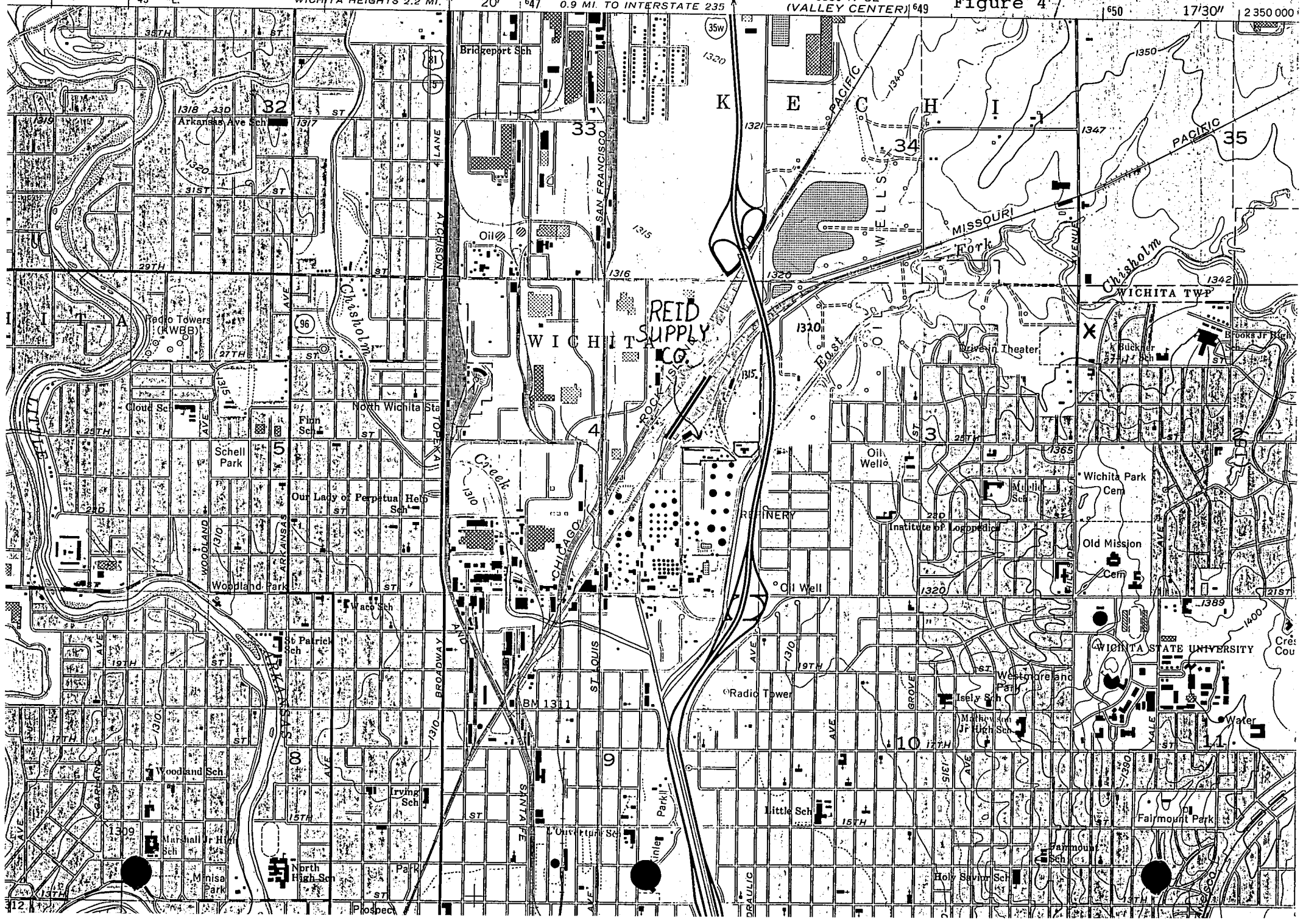
INTERIOR
VEY

UNITED STATES DEPARTMENT OF THE INTERIOR GEOLOGICAL SURVEY 1975

STATE OF KANSAS

1 mile

Figure 4



HEAVY
INDUSTRIAL
HEAVY
INDUSTRIAL
Water
Flow
Still
Processing
Drum
Storage
CANAL
RESIDENTIAL
HEAVY
INDUSTRIAL

Figure 7

THE CITY OF WICHITA

DEPARTMENT OF ENGINEERING
CITY HALL — SEVENTH FLOOR
455 NORTH MAIN STREET
WICHITA, KANSAS 67202
(316) 268-4501

March 4, 1983

Mr. David Trombold
The Reid Supply Company
Sales & Service
911 E. Indianapolis
Wichita, KS 67211

Dear Mr. Trombold:

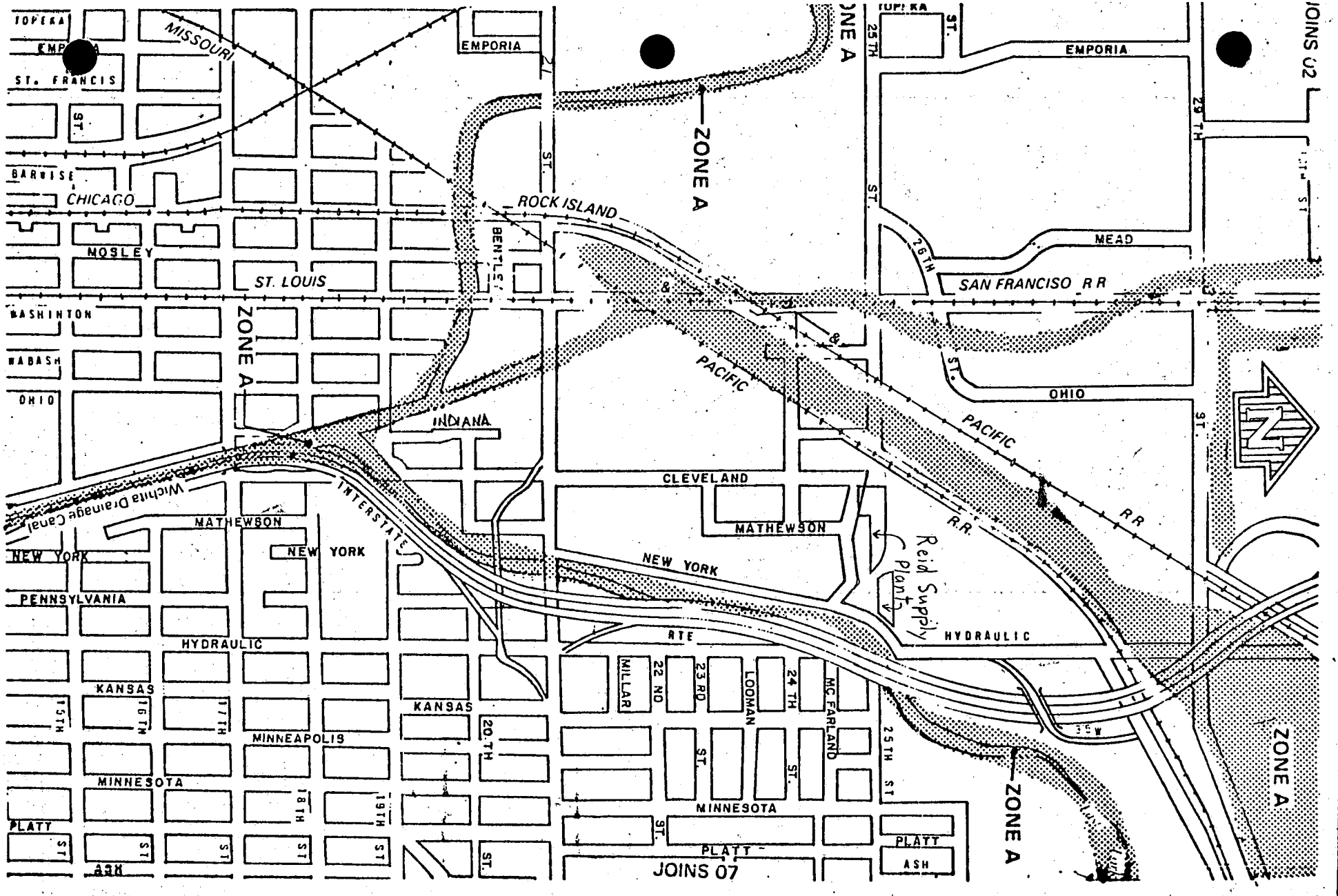
The property of 2549 New York is shown not to be within a special flood hazard area as indicated by Map Panel Number 06, Flood Hazard Boundary Map for Wichita, Kansas.

If you have any further questions, please don't hesitate to contact me at 268-4235.

Sincerely,

Chris J. Breitenstein, P.E.
Drainage & Flood Control Engineer

/ms



DEPARTMENT OF HOUSING AND URBAN DEVELOPMENT
Federal Insurance Administration

CITY OF WICHITA, KS
(SEDGWICK CO.)

06

APPROXIMATE SCALE
1000 0 1000 2000 3000 FEET

FLOOD HAZARD BOUNDARY MAP

MAP REVISED:
4/1/77

Figure 8

3. FACILITY LOCATION INFORMATION
122.25(a)(11) and 264.18(a)(b) and
Appendix VI (Part 264)

Seismic Standard. This does not apply because Reid Supply is not located within a political jurisdiction in which there is significant seismic activity.

Floodplain Standard. The Reid Supply Plant does not lie within a 100 year floodplain. Refer to the letter from the City of Wichita Department of Engineering (Figure 7) and the Flood Hazard Map (Figure 8). Therefore, the floodplain requirements do not apply.

4. TRAFFIC PATTERNS
122.25(a) and (b)

Access to the Reid Supply Plant is from Interstate 135, west on 21st Street to New York Avenue, right at New York, and left after about one quarter of a mile from the intersection. The main road that passes between the Reid Supply property to the right and Trombold Industrial Park to the left is two way (Figure 6). The only traffic on this road other than Reid Supply traffic is an occasional vehicle going to and from the Missouri Pacific property to the north. Two traffic control signs which warn traffic movement to and from Missouri Pacific of trucks entering the road going to Missouri Pacific are shown on the Facility Map in Figure 6 . Figure 6 also shows the on-site traffic pattern between the Reid Supply Company Plant which is the location of the still processing area and Trombold Industrial Park which is the location of the drum storage, drum processing, and tank storage areas. The only other significant flow of traffic occurs on the road that passes east and west through the center of Trombold Industrial Park.

The vehicle traffic to the drum storage, drum processing and tank storage areas will be one of three vans which have capacities of 30,000, 30,000, and 48,000 pounds transporting drums of waste solvent twice each week, a 75,000 pound bulk solvent transport twice each month for waste solvents going to a cement kiln as fuel, and a three quarter ton pick up truck will make approximately three trips daily to these areas.

The road surface of New York Avenue is concrete. The road surface of the road passing between the Reid Supply Plant and Trombold Industrial Park is asphalt. The road surface of the road running east and west to the drum storage, drum processing, and tank storage is gravel. Each is adequate to support the weight of the traffic.

5. CHEMICAL AND PHYSICAL ANALYSES
264.13(a) and 122.25(a)(2)

There are two facets to the waste analysis program: (1) analyses for waste received at the facility and (2) analyses for waste leaving the facility after processing. Normally waste received by Reid Supply is processed by either distillation, blending for fuel, or repacking solids for hazardous waste landfill. In each case, a waste analysis of the processed waste is necessary. Fig. 1 shows the flow of hazardous waste to and from Reid Supply. If a waste stream is received at the facility and transported to another facility without going through any processing, a second detailed analysis is not necessary. Each analysis report is kept on file at the facility.
Although Reid Supply may not process a given drum of waste received at the facility, the material will be fingerprinted as all other drums that are received to assure that the material is what the detailed analysis and hazardous waste manifest indicate. All hazardous waste approved to be received by Reid Supply is non-reactive and compatible. Unless the fingerprint analysis shows anything unusual these waste streams will be stored as the other waste streams. However, if the fingerprint analysis shows that the waste stream is reactive or incompatible it will be stored separately from the other material and immediate action taken to return the material safely to the generator. If the material is different than the detailed analysis with respect to composition or BTU/pound the discrepancy will be corrected or the waste will be sent back to the customer. The detailed analysis, if it is confirmed by the fingerprint, can be used to give to another facility receiving the unprocessed waste stream.

In order to demonstrate that the analyses performed on the hazardous waste received and processed at the facility are sufficient to insure their proper treatment, storage and disposal, the following information is provided. Hazardous wastes are stored at this facility in 55 gallon drum containers and two 4500 gallon storage tanks. The two storage tanks contain blended waste paint solvents, still bottoms, and other materials suitable to be used as cement kiln fuel having EPA hazardous waste number D001. The 55 gallon drums contain the following:

	EPA Hazardous Waste #
Waste lacquer and enamel thinner	D001
Waste tetrachlorocthylene, trichloroethylene methylene chloride, 1,1,1 - Trichloroethane, the sludges from the recovery of these	F001, F002
Waste xylene and acetone	F003
Waste methanol, toluene, methyl ethyl ketone	F005
Paint solids	D001, D005, D006, D007, D008

The waste lacquer and enamel thinners are ignitable because the components of these blends have flashpoints below 140°F. The waste chlorinated solvents are listed as hazardous waste because of their toxicity. The waste xylene, acetone, methanol, toluene, and methyl ethyl ketone are ignitable because they have flashpoints below 140°F. The paint solids are ignitable because they contain flammable organic solvents with a flashpoint below 140°F and EP toxic because they contain heavy metals that are EP toxic, such as lead and chromium.

Table 1 lists the hazardous wastes stored at the Reid Supply facility, their associated classification, and the basis for the hazard classification. In most cases, the classification is based on known characteristics of the wastes, such as ignitability. For listed wastes, the classification is based on the listing.

WASTES RECEIVED AT REID SUPPLY:

Since Reid Supply Company is an off-site facility receiving at least 64 different waste streams, a waste analysis form will not be provided for each waste stream. Instead, representative detailed analysis forms are provided for a drycleaner generating perchloroethylene still bottoms (Fig.9), a car body shop generating waste spray gun cleaner solvent (Fig.10), a manufacturer generating waste paint solvent (Fig.11), a manufacturer generating 111, trichloroethane still bottoms from its vapor degreaser operation (Fig.12), a manufacturer generating waste from its cold degreasing operation (Fig.13), a paint company generating waste solvent from paint vat cleaning (Fig.14), and a fiberglass manufacturing generating waste acetone (Fig.15). Detailed analyses may be provided by a private

TABLE 1

Wastes, Associated Hazards, and Basis for Hazard Description

Waste	Hazard	Basis for Hazard Designation
Tanks		
Blended waste paint solvents, still bottoms, and other materials suitable for cement kiln fuel	Ignitable	Flashpoint below 140°F
Drums		
Lacquer thinner	Ignitable	Flashpoint below 140°F
Enamel thinner	Ignitable	Flashpoint below 140°F
Xylene	Ignitable	Flashpoint below 140°F
Methyl Ethyl Ketone	Ignitable	Flashpoint below 140°F
Acetone	Ignitable	Flashpoint below 140°F
Toluene	Ignitable	Flashpoint below 140°F
Methanol	Ignitable	Flashpoint below 140°F
Tetrachloroethylene	Toxic	Listed waste F001 or F002
Methylene Chloride	Toxic	Listed waste F001 or F002
Trichlorocthylene	Toxic	Listed waste F001 or F002
1,1,1,-Trichloroethane	Toxic	Listed waste F001 or F002
Lead	Toxic	EP Toxicity
Chromium	Toxic	EP Toxicity
Barium	Toxic	EP Toxicity
Cadmium	Toxic	EP Toxicity

Fig. 9

SYSTECH CORPORATION
245 North Valley Road
Xenia, Ohio 45385
(513) 372-8077

Generator: Stillbottoms from Drycleaner using Perchloroethylene ~~waste perchloroethylene~~

Source:

Address:

Date: 5/2/84

Contact/Phone:

Volume:

QUALIFICATION ANALYSIS FOR

Organics	%			
Perc horoethylene	49.1	Heat Content	11600	Btu's/lb
Aliphatics	48.9	Viscosity		cp
Toluene	0.7	Solids		% volume
Xylene	1.3	Sulfur		% wt.
		Nitrogen		% wt.
		Halogens		% wt. as Cl
		Aqueous Extraction		pH
		Water (separated phase)		% volume
		Ash		% wt.
		Specific Gravity		gr/ml
		PCBs	<50	ppm
benzene				

Metals			
Pb	ppm	Ba	ppm
Zn	ppm	Ti	ppm
Cr	ppm	Fe	ppm

Fig. 10

SYSTECH CORPORATION
245 North Valley Road
Xenia, Ohio 45385
(513) 372-8077

Generator: Car Body Shop Gun Cleaner Paint Solvent
Source:
Address: Waste lacquer
Date: 9/13/84
Contact/Phone:
Volume:

QUALIFICATION ANALYSIS FOR

Organics				
ethanol	2.0 %	Heat Content	15300	Btu's/lb
acetone	8.0 %	Viscosity		cp
isopropanol	10.9 %	Solids		% volume
MEK	3.2 %	Sulfur		% wt.
toluene	46.2 %	Nitrogen		% wt.
butyl acetate	9.8 %	Halogens	< 0.1	% wt. as Cl
MIBK	1.8 %	Aqueous Extraction		pH
ethyl benzene	0.2 %	Water (separated phase)		% volume
xylene	2.5 %	Ash		% wt.
cellosolve acetate	9.4 %	Specific Gravity		gr/ml
	%	PCBs	< 50	ppm
	%			
	%			
	%			
	%			
benzene	< 0.1 %			

Metals					
Pb		ppm	Ba		ppm
Zn		ppm	Ti		ppm
Cr		ppm	Fe		ppm

Serviced by: Reid Supply Company, Inc.
P.O. Box 730 911 Indianapolis
Wichita, Kansas 67201-0730 (316) 267-1231

Date 10/15/84

cps: Customer
DT
CT
Salesman
File

Fig. 11

SYSTECH CORPORATION
245 North Valley Road
Xenia, Ohio 45385
(513) 372-8077

Generator B-4 Manufacturer with Source
Address Waste Paint Solvent for Cleaning
Waste Enamel Tol/Xyl Date 6/14/84
Contact/Phone Volume

QUALIFICATION ANALYSIS FOR

Organics

Acetone	2.0 %	Heat Content	16200	Btu's/lb
Methylene Chloride	0.1 %	Viscosity		cp
MEK	2.7 %	Solids		% volume
Benzene	1.0 %	Sulfur		% wt.
N-Butanol	4.3 %	Nitrogen		% wt.
MIBK	0.8 %	Halogens	0.7	% wt. as Cl
Toluene	31.1 %	Aqueous Extraction	6	pH
Butyl Acetate	10.3 %	Water (separated phase)		% volume
Ethyl Benzene	9.4 %	Ash		% wt.
Xylene	33.2 %	Specific Gravity		gr/ml
Aliphatics	5.1 %	PCBs	< 50	ppm
	%			
	%			
	%			
	%			
	%			
benzene	%			

Metals

Pb	ppm	Ba		ppm
Zn	ppm	Ti		ppm
Cr	ppm	Fe		ppm

Serviced by: Reid Supply Company, Inc.
P.O. Box 730 911 Indianapolis
Wichita, Kansas 67201-0730 (316) 267-1231

Date 9/18/84

cps: Customer
DT
Salesman
File

ANALYSIS FOR VAPOR DEGREASER STILL BOTTOMS
Fig. 12

LANGSTON LABORATORIES, INC.

Laboratory Report

Date Received: February 25, 1983
Time Received: 1:00 pm
Date Completed: March 23, 1983

Manufacturer using a vapor degreaser still

LLI Project No.: 83-9850

Sample Description: Sludge

Sample Identification	Analysis	Results
Still Bottom Sludge 1,1,1-Trichloroethane	Flash Point	68°F
	Total Solids (Nonvolatile at 100°C)	73.1%
	Total Cyanide	< 1.0 mg/kg
	Free Cyanide	< 1.0 mg/kg
	Specific Gravity	0.949 g/ml
	Ash	0.036%
	BTU	16,300 BTU/lb
	Total Chlorine	3.5%
	Polychlorinated Biphenyls	< 10 mg/kg
	Total Arsenic	< 1 mg/kg
	Total Barium	< 1 mg/kg
	Total Cadmium	0.14 mg/kg
	Total Chromium	12 mg/kg
	Hexavalent Chromium	< 0.20 mg/kg
	Total Copper	1.5 mg/kg
	Total Lead	3.5 mg/kg
	Total Mercury	< 0.05 mg/kg
	Total Nickel	0.61 mg/kg
	Total Selenium	< 0.2 mg/kg
	Total Silver	< 0.2 mg/kg
	Total Zinc	74 mg/kg

Approved: Alan Kerschen
Alan Kerschen
Laboratory Director

2005 West 103rd Terrace Leawood, KS 66206 913/341-7800

Fig. 13

SYSTECH CORPORATION
245 North Valley Road
Xenia, Ohio 45385
(513) 372-8077

Generator: T-1 Manufacturer Degreasing
Source:
Address: with Chlorinated Solvents for distillation
Waste 1,1,1 Trichloroethane
Date: 8/15/84
Contact/Phone:
Volume:

QUALIFICATION ANALYSIS FOR

Organics				
1,1,1 Trichloroethane	56.7%	Heat Content	-----	Btu's/lb
Tetrachloroethylene	5.4%	Viscosity		cp
Toluene	2.0%	Solids		% volume
Aliphatics	36.9%	Sulfur		% wt.
	%	Nitrogen		% wt.
	%	Halogens	-----	% wt. as Cl
	%	Aqueous Extraction		pH
	%	Water (separated phase)		% volume
	%	Ash		% wt.
	%	Specific Gravity		gr/ml
	%	PCBs	< 50	ppm
	%			
benzene	%			

Metals			
Pb	ppm	Ba	ppm
Zn	ppm	Ti	ppm
Cr	ppm	Fe	ppm

Serviced by: Reid Supply Company, Inc.
P.O. Box 730 911 Indianapolis
Wichita, Kansas 67201-0730 (316) 267-1231

Date 9/18/84

cps: Customer
DT
Salesman
File

Fig. 14

SYSTECH CORPORATION
245 North Valley Road
Xenia, Ohio 45385
(513) 372-8077

Generator: Paint Company W-3
Source:
Address:
Waste Paint Wash
Date: 11/1/84
Contact/Phone:
Volume:

QUALIFICATION ANALYSIS FOR

Organics

MEK	1.6 %	Heat Content	16,600	Btu's/lb
MIBK	3.8 %	Viscosity		cp
Toluene	81.7 %	Solids		% volume
Butyl Acetate	.1 %	Sulfur		% wt.
Ethyl Benzene	.8 %	Nitrogen		% wt.
Xylene	1.0 %	Halogens	0.3	% wt. as Cl
C_9-C_{10} Alkyl benzenes	.6 %	Aqueous Extraction		pH
C_9-C_{13} Aliphatics	1.2 %	Water (separated phase)		% volume
	%	Ash		% wt.
	%	Specific Gravity		gr/ml
	%	PCBs	< 50	ppm
	%			
	%			
	%			
	%			
benzene	< 0.1 %			

Metals

Pb	ppm	Ba	ppm
Zn	ppm	Ti	ppm
Cr	ppm	Fe	ppm

Serviced by: Reid Supply Company, Inc.
P.O. Box 730 911 Indianapolis
Wichita, Kansas 67201-0730 (316) 267-1231

Date 11/14/84

cps: Customer
DT
CT
Salesman
File

FIBERGLASS MANUFACTURER ANALYSIS

Fig. 15

SYSTECH CORPORATION
245 North Valley Road
Xenia, Ohio 45385
(513) 372-8077

Generator: Fiberglass Manufacturer
Source: Waste Acetone
Address:
Date:
Contact/Phone:
Volume:

QUALIFICATION ANALYSIS FOR

Organics

Acetone	66.6	%
Toluene	0.4	%
Butyl Cellosolve	31.1	%
Aliphatics	1.9	%
		%
		%
		%
		%
		%
		%
		%
		%
		%
		%
		%
		%
		%
benzene		%

Heat Content	10600	Btu's/lb
Viscosity		cp
Solids		% volume
Sulfur		% wt.
Nitrogen		% wt.
Halogens	0.2	% wt. as Cl
Aqueous Extraction	6	pH
Water (separated phase)		% volume
Ash	1	% wt.
Specific Gravity		gr/ml
PCBs	< 50	ppm

Metals

Pb		ppm	Ba		ppm
Zn		ppm	Ti		ppm
Cr		ppm	Fe		ppm

laboratory of the customers choice or by Reid Supply. The detailed analysis provided by Reid Supply is performed by Systech Corporation since they are already geared for this type of analysis. Most detailed analyses are performed by Systech. Fig.16 is a letter from Systech outlining their quality assurance/quality control procedures for analysis. In addition to the detailed analysis one of two types of fingerprint analysis are performed depending on if the waste stream is for blending or distillation (Fig.17 and Fig.18). A detailed analysis will be performed on each waste stream and a fingerprint analysis will be performed on each waste stream for each pick up. A detailed analysis will be performed annually on each wastestream generating over ten drums per year. Wastestreams that generate ten drums or less per year will still have a fingerprint analysis performed with each pick up but the detailed analysis will only be performed if the fingerprint analysis shows a significant variance from the detailed analysis or the customer notifies Reid Supply of a change in his wastestream. This is done so that the small drum quantity generator does not have to perform additional expensive analyses that are not necessary to show that the wastestream remains constant. The less expensive fingerprint analysis is adequate for these small drum quantity generators to insure wastestream consistency.

To supplement the waste analysis is the Generator Audit (Fig.19). This form is to be completed annually for each wastestream of the customer in order to specifically identify the waste, additional toxic substances which it might contain, any wastestream change, and any incompatible wastestreams that could be included by the generator in a waste pick up. The analyses and survey provided will insure that the material stored, distilled, and blended at Reid Supply are compatible with the steel drum containers, tanks, and wastestreams with which they are mixed. Also included in the Generator Audit is an agreement clause stating,"

> I certify that the above information is correct to the best of my knowledge and I realize that if there is a significant variation between the information provided both in the detailed analysis and in the questionnaire and the wastestream received by Reid Supply Company special costs to my company and procedures may be necessary for proper handling of the waste.

_____ _____

Company representative Date

Figure 16

SYSTECH®

specialists in environmental technology
SYSTECH CORPORATION
245 North Valley Road
Xenia, Ohio 45385
513/372-8077
513/429-2533

November 21, 1984

Mr. Dave Trombold
Reid Supply Co.
P.O. Box 730
Wichita, KS 67201

Dear Dave:

I am providing this letter in response to your inquiry into our laboratory quality assurance program. Our quality control program consists of routine procedures such as calibration, the use of standards, and periodic audits. Our audit program includes the exchange of identical samples between our three laboratories and comparison with the analyses of other commercial laboratories on select samples. This program has been very effective in maintaining control over the quality of our analyses.

If you have any further questions on this matter, please feel free to contact me.

Sincerely,

SYSTECH CORPORATION

Art Helmstetter

Arthur J. Helmstetter, P.E.
Manager of Operations
and Development

AJH:jr

cc: T. Spaits
D. Gossman

WASTE FOR BLENDING FINGERPRINT REPORT

Fig. 17

Customer _____

Manifest or pick up date CLN HAC 112983

Heat content 16,300 BTU/lb

Total Halogens 3.5 %wt as Cl

pH 6

Compatibility OK

Wastestream 1,1,1, Trichloroethane still bottoms

RECYCLING BY DISTILLATION FINGERPRINT REPORT

Fig. 18

Customer _____

Manifest or pick up date 51684

Organics	Volume %
Methanol	0.6
Ethanol	24.0
Isopropanol	7.0
Methyl Ethyl Ketone	42.6
Methyl Isobutyl Ketone	16.0
Water	9.7

pH 6

Compatibility OK

Wastestream Waste Lacquer Solvents

Fig. 19

GENERATOR AUDIT
One form per wastestream

Date _____

Generator Name _____ EPA ID# _____

Address _____ City _____ State _____ Zip _____

Phone _____ Company Representative _____

DOT Shipping Name _____ Hazard Class _____

ID# _____ EPA Hazardous Waste # _____

SPECIFIC WASTESTREAM INFORMATION

Waste Name _____

Known components _____

_____

Process generating waste _____

Types and quantities of raw materials, catalysts, and reagents used in process _____

_____

Possible alternatives resulting in use of other hazardous or non-hazardous materials which could cause wastestream variation _____

_____

Routine variations in process operation _____

Average rate of production _____

Any variation in the rate of production _____

Time of storage onsite before shipment _____

Controlled or uncontrolled changes to waste during storage (including water) _____

Any waste analysis data for wastestream (Any analysis form) _____

_____

Approximate amount of settled solids in drums _____

Relative viscosity _____

General ranking of wastestream's ignitability or reactivity _____

_____

Previous history of waste handling and any remarkable incidents_____

_____

_____

GENERAL WASTESTREAM INFORMATION

Other sources of waste which could be intentionally or accidentally mixed with the wastestream_____

_____

Any waste containing radioactivity_____

Any waste containing PCB's_____

Procedures for managing other wastes on site_____

_____

Practices used to avoid cross-contamination_____

Specific wastes that are incompatible with this waste stream_____

_____ Any present onsite_____

Provide representative sample (Consult Reid Supply for procedure)

Customer sampled_____ Salesman sampled_____

Analysis provided by_____

Is the generator willing to notify Reid Supply of any significant variations in the wastestream?_____

Salesman collecting information_____ Date_____

I certify that the above information is correct to the best of my knowledge and I realize that if there is a significant variation between the information provided both in the detailed analysis and in the questionnaire and the wastestream received by Reid Supply Company special costs to my company and procedures may be necessary for proper handling of the waste.

Company representative_____ Date_____

Cps:
Process Engineer
Customer
Salesman
File

5X50 DGT4/84

Of the discrepancies encountered most have been simple to correct without having to return drums to the customer. Usually it has only been a matter of assigning the material to blending rather than distillation or to landfill rather than blending. On occasion drums have been returned to customers because of low BTU per pound levels.

The specific procedures and rationale for the waste analysis program are covered in the Waste Analysis Plan that follows:

Drycleaning wastestreams:

Reid Supply is planning to pick up and process perchloroethylene still bottoms and filter cartridges. Since the need for this service has increased in the last few months due to regulations, the felt need for an outlet for this waste has increased with few responsible outlets available. Reid Supply has already been handling the perchloroethylene still bottoms but further attention needs to be given to both perchloroethylene still bottoms and the filter cartridges to assure the EPA and the KDHE that Reid Supply can handle the drycleaning waste properly. For this reason, Appendix A will discuss the handling of drycleaning wastestreams.

WASTE LEAVING REID SUPPLY:

In order to demonstrate that the analyses performed on the hazardous wastes leaving the facility after processing are sufficient to insure their proper handling, the following information is provided. There are three wastestreams leaving the facility that require analysis.

They are the following:

	EPA Hazardous Waste #
Waste blended solvents	D001
Unblendable waste paint solids	D001, D005, D006, D007, D008
Unblendable, low BTU/pound liquid for deepwell injection	D001, D005, D006, D007, D008

These three wastestreams are classified as ignitable because they contain components having flashpoints below 140°F. They also have potential for EP toxicity due to heavy metals they might contain. An analysis form for waste solvent going to a cement kiln (Fig.20), for waste solids going to a landfill (Fig.21), and for low BTU/pound liquid going to deepwell

injection (Fig.22) are provided. The cement kiln, landfill, and deepwell injection facility perform their own fingerprint analyses upon their receipt of waste from Reid Supply to insure waste identification and consistency with the original analysis.

Included in the waste leaving Reid Supply are the still bottoms generated by the Reid Supply still and filter cake from pre-filtering distillable material. This waste has been analysed for BTU/pound to prevent low BTU/pound blending (Fig.23). This wastestream will be monitored quarterly to see that the BTU/pound level stays above the permitted level.

The specific procedures and rationale for the waste analysis of waste leaving Reid Supply are covered in the Waste Analysis Plan that follows.

Fig. 20

SYSTECH CORPORATION
245 North Valley Road
Xenia, Ohio 45385
(513) 372-8077

Generator Reid Supply Company — Source Waste solvent
Address P.O. Box 11365
Wichita, KS 67202 — Date February 21, 1984
Contact/Phone Chuck Trombold (316) 267-5742 — Volume

QUALIFICATION ANALYSIS FOR FREDONIA

Organics

acetone	7.8%	Heat Content	14500	Btu's/lb
methylene chloride	0.3%	Viscosity	15	cp
MEK	22.0%	Solids	10	% volume
n-butanol	0.4%	Sulfur	0.4	% wt.
MIBK	6.8%	Nitrogen	<0.1	% wt.
toluene	18.9%	Halogens	4.7	% wt. as Cl
butyl acetate	2.5%	Aqueous Extraction	5	pH
perchloroethylene	2.7%	Water (separated phase)	0	% volume
ethyl benzene	4.7%	Ash	3	% wt.
xylene	21.0%	Specific Gravity	0.89	gr/ml
styrene	3.7%	PCBs	<50	ppm
C_{10} - C_{11} aromatics	2.1%			
C_7 - C_{12} aliphatics	7.1%			
	%			
	%			
	%			
	%			
benzene	<0.1%			

Metals

Pb	<100	ppm	Ba	<100	ppm
Zn	100	ppm	Ti	100	ppm
Cr	<100	ppm	Fe	<100	ppm
		ppm			ppm
		ppm			ppm

Note: organic composition presented as area percent of FID/GC plot.

Site Manager Comments

Signature

Technical Service Director Signature

Date submitted to General Portland Inc. for approval as a qualified source.

☐ Accepted for use as fuel ☐ Rejected for use as fuel

By Date

Fig. 21

David W. Daniels
PRESIDENT

MID WEST ANALYTICAL LABORATORIES, INC.

ANALYTICAL-CONSULTING CHEMISTS & ENGINEERS

419 N. HANDLEY • P.O. BOX 2312 • WICHITA, KS 67201 • (316) 262-4407

TO: Reid Chemical Company
P.O. Box 730
Wichita, KS 67201
Atten: Chuck Trombold

DATE: 11-15-84

LAB. NO.: 18333

SAMPLE SUBMITTED: One-Sludge

DATE SUBMITTED: 10-31-84

ANALYSIS

ANALYTE	SLUDGE
pH	5.5
Cadmium	2.07ppm
Barium	10.80ppm
Chromium	352.20ppm
Flash Pt.	35°F
Lead	13.23ppm

Respectfully submitted,

MID WEST ANALYTICAL LABORATORIES, INC.

Terry Martin

Terry Martin

I.D. 48-0959346

David W. Daniels
PRESIDENT

MID WEST ANALYTICAL LABORATORIES, INC.
ANALYTICAL-CONSULTING CHEMISTS & ENGINEERS
419 N. HANDLEY • P.O. BOX 2312 • WICHITA, KS 67201 • (316) 262-4407

TO: Reid Chemical Company
P.O. Box 730
Wichita, KS 67201
Atten: Chuck Trombold

DATE: 11-15-84

LAB. NO.: 18333

SAMPLE SUBMITTED: One-Sump Water

DATE SUBMITTED: 10-31-84

ANALYSIS

ANALYTE	SUMP WATER
pH	4.6
Cadmium	.83mg/l
Barium	.43mg/l
Chromium	1.06mg/l
Flash Pt.	112.3°F
Lead	1.88mg/l

Respectfully submitted,

MID WEST ANALYTICAL LABORATORIES, INC.

Terry Martin

Terry Martin

I.D. 48-0959346

STILL BOTTOM BTU/POUND RECORD Fig. 23

Mr. Dale Stuckey
Kansas Dept. of Health and Environment
202 Century Plaza Bldg.
111 W. Douglas
Wichita, Ks. 67202

Aug. 2, 1984

Wichita

Dear Mr. Stuckey:

I have heat content information on the materials we generate:

Acetone still bottoms	13,500	(BTU/lb)
111 Trichloroethane still bottoms	18,800	
Enamel still bottoms	15,800	
Decanted settlings	7,700	
Filter cake	15,800	
Lacquer still bottoms	13,800	

All these results came from Systech Corporation.

If you need anymore information, please let me know.

Sincerely,

Chuck Trombold

Chuck Trombold

CT/lt

6. WASTE ANALYSIS PLAN
264.13(b),(c) and 122.25(a),(3)

As stated in the Chemical and Physical Analyses section there are two main parts to the waste analysis plan. The first part is the waste received from generators that will be distilled, blended, or landfilled. The second part is the analysis plan for waste leaving Reid Supply. This is waste solvent, solids, or contaminated water that have been processed and are ready either to be used for fuel, to be landfilled, or deepwell injected as hazardous waste.

WASTE TO BE RECEIVED AT THE FACILITY

Parameters and Rationale:

Table 2 shows the analytical parameters that apply to the waste solvents received at the facility and the rationale for selection of these parameters. Table 3 shows the test methods that are used to measure the analytical parameters. Fig.24 shows the waste analysis scheme and Fig.25 gives a detailed scheme of the fingerprint procedure.

The detailed waste analysis for each solvent wastestream consists of qualitative and quantitative gas chromatography to provide a breakdown of solvent composition, heat content, organic chloride content* pH, PCB content, and compatibility with waste solvent. If a drum of waste paint solvent has more than six inches of settled solids in the bottom, the solids are also analyzed for three heavy metals- lead, chromium, and barium.

The gas chromatograph analysis identifies the kind and quantity of solvents in a given wastestream. If the wastestream is predominantly one solvent or has a desirable composition of several solvents it will be distilled. Otherwise the material will be blended as fuel. Knowledge of solvent content is also a good check to prevent blending incompatible materials.

Heat content of a given wastestream is important to know for blending because the EPA requires a minimum heat content of 8000 BTU's per pound to avoid sham recycling. This limit may be reduced in the future. Reid Supply will adjust accordingly. Chlorinated solvents for distilling do not need to be measured for BTU/pound because the waste will not be blended for fuel since it has less than 8000 BTU/pound heat content.

* This is the case unless chlorinated solvent is measureable by gas chromatography. The gas chromatography value can be used to determine blending dilution.

TABLE 2

REID SUPPLY ANALYSIS
PARAMETERS AND RATIONALE

Parameters	Rationale
Solvent composition (qualitative and quantitative)	Handling safety, industrial hygiene, compatibility
Heat content	Prevent sham recycling for material going to a cement kiln as fuel
pH (aqueous)	Drum, tank, and solvent compatibility
Organic chlorides	Cement kilns are permitted only to burn a small percentage of this and chlorinated solvent waste is received at Reid Supply Company. It would be possible for Reid Supply to exceed the limit.
Heavy metals (Pb, Cr, Ba)	Insure cement quality for cement kiln
PCB's	Reid Supply is not permitted to handle above 50 ppm. For industrial hygiene at Reid Supply to prevent unexpected exposure
Compatibility with waste solvent mixture	Drum and tank compability, hazard to workers

TABLE 3

REID SUPPLY ANALYSIS
PARAMETERS AND TEST METHODS

Parameters	Test method
Solvent composition	Flame ionization chromatography
Heat content	Bomb calorimeter
Organic chloride	Ion chromatograph
pH	pH meter or pH paper test of aqueous layer
Heavy metals (Pb, Cr, Ba)	Atomic absorption or atomic emission
PCB's	Gas chromatograph electrocapture detector

WASTE ANALYSIS SCHEME
Fig. 24

ORIGINAL ANALYSIS, ANNUAL, OR SPECIAL ANALYSIS
DUE TO SIGNIFICANT VARIATION IN WASTESTREAM
(on representative composite sample of wastestream)

Parameters: solvent composition
BTU/lb content (except distillable chlorinated solvents)
pH
heavy metals (Ba, Cr, Pb) (if warranted)
compatibility with waste solvent mixture
organic chloride (unless chlorinated solvent is measureable by gas chromatography)*

PCB's (if generator handles PCB's in his operation)

EACH PICK UP

WASTE FOR DISTILLATION
(representative composite sample)
from each drum
FINGERPRINT ANALYSIS

Parameters: solvent composition
pH
compatibility with waste solvent mixture
PCB's (if generator handles them in his operation)

Fail → Special Analysis or Return to Customer

Pass → Storage and Processing

WASTE FOR BLENDING
(representative composite sample)
from each drum
FINGERPRINT ANALYSIS

Parameters: BTU/lb
organic chloride content
pH
compatibility with waste solvent mixture
PCB's (if generator handles them in his operation)

Fail → Special Analysis or Return to Customer

Pass → Storage and Processing

* unless chlorinated solvent is measurable by gas chromatograph

FINGERPRINT PROCEDURE FOR INCOMING
WASTESTREAMS TO REID SUPPLY COMPANY
Fig. 25

Representative Composite Sample
of Wastestream

Compare with
original or
annual detailed
waste analysis

pH
Blending compatibility test
Solvent composition or BTU/lb
and Halogen
PCB (if a likely component
of wastestream)

Store
and
Process

if: pH outside the range of 4-11
Incompatible response after mixing
Chlorinated solvent or halogens are
present or too high in composition
Different solvent composition from
gas chromatograph
Unusual fluctuation below 8,000 BTU/lb
PCB's are detected over 50 ppm (for
designated wastestreams)

Notify generator
Repeat detailed analysis for the wastestream
or return to generator

Organic chloride content is important because it is a likely contaminant of blended waste solvent fuel. This contaminant would be from chlorinated solvents. Cement kilns are normally limited to 3-5 percent halogens that they can have in their fuel. Chlorinated wastestreams, such as chlorinated solvent for distillation or perchloroethylene still bottoms which have an expected measureable chlorinated solvent content by gas chromatography, are analyzed and fingerprinted this way because the halogen test is not effective at these higher levels.

The pH is important to know to avoid tank and drum corrosion and incompatible reactions with organic solvents. Levels of pH below 4 and above 11 are unacceptable.

PCB content is important because cement kilns, although they are capable of PCB destruction, are not permitted presently to handle them at levels higher than 50 ppm.

Compatibility with waste solvents is important to determine because a wastestream will be stored with other solvents and eventually blended with other solvents. Compatibility determination by mixing a representative sample of the wastestream with a representative sample of waste solvent blend insures that incompatible wastes are not stored or blended together.

Heavy metal concentration for settled solids is important because most solids will be paint solids that could have a high concentration of heavy metals. The heavy metals most encountered in paint are lead, chromium, and barium. The heavy metal level is important to know for safe handling and because cement kilns in order to maintain cement quality have to keep this level down to a permitted level - 0.5 percent (total)(4,000 ppm lead, 3,000 ppm Cr, 3,000 ppm Ba).

It should be noted that by knowing the BTU/pound, halogen, and heavy metal levels in a given wastesteeam, waste sovlents can be blended to meet cement kiln specifications. Table 4 lists the specifications of one cement kiln operation necessary to be met in order for blended solvents to be used as fuel. The other parameters are not tested for receipt at Reid Supply because they are not as limiting as the ones described above.

It should also be noted that some wastestreams would not require a PCB content determination if the generator can show that they do not handle PCB's in the generator audit (Fig.19).

Test Methods:

Table 3 shows the parameters and test methods used. Solvent

TABLE 4

CEMENT KILN SPECIFICATION LIMITS

PARAMETER	SPECIFICATION LIMITS
1. Heat content (Btu./lb.)	10,000 minimum *
2. Ash content	7 percent maximum
3. Water	1 percent separated phase
4. Halogens	3 percent maximum**
5. Sulfur	3 percent maximum
6. PCBs	Less than 50 ppm PCB
7. Metals	0.5 percent (Total) (4000 ppm lead, 3000 ppm Cr, 3000 ppm Ba)
8. Viscosity	Less than 100 centipoise
9. Solids	30 percent maximum

* This is the cement kiln requirement and does not relate to the 8,000 BTU/lb limit set by the EPA
** May be raised to 5 percent in the future

composition is determined by comparative, flame ionization gas chromatography. A particular solvent is identified by matching its chromatograph with chromatographs of known solvents. The percentage composition is determined by computing the area under a solvent component curve as a percentage of total area under the whole sample curve. The detection limit is 1 percent.

Heat content is determined by a bomb calorimeter. The detection limit is 100 BTU/pound.

Organic chloride content is determined by ion chromatograph. The detection limit is 0.1 percent by weight.

pH is determined by either pH meter or pH paper. Since organic solvents cannot be measured directly for pH, water is mixed into a sample of waste solvent to form a thin aqueous layer which can then be measured for pH. The detection limit is one pH level.

Heavy metal levels are determined by atomic absorption or atomic emission. The detection limit is 100 ppm.

PCB content is determined by a gas chromatograph electrocapture detector. The detection limit is 10 ppm.

Wastestream compatibility with blended waste solvents is determined by mixing a four ounce representative sample of the wastestream with a four ounce representative sample of blended solvents and observing the mixture for fifteen minutes to see if there is any temperature increase, gas generated, or thicknening.

For detailed analyses all of the above tests are performed by professional labs except the compatibility check. However, Reid Supply can perform the gas chromatograph and pH as well as compatibility determinations for fingerprint analyses.

Sampling Methods:

Before any new wastestream is received by Reid Supply Company, each salesman is required to obtain a representative one pint sample for analysis from the generator. The salesman or the generator takes the sample.

Samples for fingerprint analysis are taken by Reid Supply process technicians. No matter who takes the sample, three methods are used for the different wastestream consistancies that are encountered. For waste solvents that do not contain settled solids a COLIWASA will be used. For wastestreams with very thick or solid consistencies a trier will be used.

However, many of the wastestreams received have a combination of liquid and settled solids that cannot be adequately collected using either a COLIWASA, trier, or both, because the COLIWASA gets plugged up with solids and before a trier can be drawn out of a drum the solids have been rinsed off. In this case, a quarter to half inch diameter plastic or glass tube is used to obtain a sample comparable to both a COLIWASA and trier. A copy of the sampling procedures is provided in Fig.26 .

Analysis Frequency:

For wastestreams generating over ten 55 gallon drums per year, an annual detailed waste analysis will be performed. For those wastestreams generating ten drums or less per year, a detailed waste analysis will be repeated if the generator gives notification of a change in the wastestream composition as specified in the Generator Audit (Fig.19) or if a fingerprint analysis reveals a change in wastestream consistency. These ten drum or less wastestreams are not likely to change significantly from year to year to warrant performing a detailed analysis because these are single wastestream generators that have no other wastestreams to get mixed up with. The fingerprint analysis will be performed each time the wastestream is picked up and will insure reasonable wastestream consistency determination. Each drum from the wastestream will be sampled and a composite sample made for testing.

Off-site Facility Requirements:

Before a wastestream is received at Reid Supply, a detailed analysis is required. This detailed analysis can be supplied by the generator or supplied by Reid Supply through an outside lab. This analysis must include quantitative and qualitative solvent composition, heat content, and pH compatibility determination. Halogen content is determined for all wastestreams except those that have a measureable level of chlorinated solvent on the gas chromatograph. PCB content is determined if the generator is likely to have PCB contamination. Heavy metals (Pb, Cr, Ba) are measured if the wastestream is paint-related solvent that contains over six inches of settled solids in the bottom (determined at the time of sampling).

Upon receipt of a wastestream at the facility hazardous waste labels and the hazardous waste manifest are compared for discrepancies (Fig. 27) which are corrected within fifteen days. A sixteen ounce representative sample is taken of the wastestream and half is saved until ten days after the material has been disposed of. This allows for any final analysis

SAMPLING PROCEDURES
Fig. 26

Preparation

1. Wear protective gloves.
2. Wear protective glasses, goggles, or face shield.
3. Have a glass bottle large enough or enough small bottles to hold all representative samples taken from a given waste stream.
4. Have label(s) ready for bottle(s) so it can be attached after sampling is completed.
6. Open one drum at a time and close securely after completing sampling from each drum.

Liquid Sampling (COLIWASA, glass tube, or plastic tube)

1. Place COLIWASA or tube slowly into the drum.
2. Close COLIWASA or place thumb firmly over the top opening of the tube and draw tube out quickly.
3. If there are any settled solids in the tube, measure the depth of the solids.
4. Dispense liquid into sample bottle.
5. Repeat steps 1-4 four more times.
6. Repeat steps 1-5 for each drum in the waste stream.
7. Dispose of glass or plastic tube.

Viscous Sampling

1. Have wooden tongue depressors handy.
2. Push trier into the drum until it reaches the drum bottom.
3. Rotate trier slowly and pull it out slowly.
4. Use tongue depressor to scrape waste into sample bottle.
5. Repeat steps 2-5 one time.
6. Repeat steps 2-5 for each drum in waste stream.
7. Clean off trier.

Fig.27

HAZARDOUS WASTE RECEIVED CHECKLIST

(To be completed for each incoming Waste stream)

Any discrepancies with Manifest _____
Any leakers _____
Incompatibility _____
Fingerprint Variations _____

Information from Manifest

Date _____

Generator Name _____ EPA ID # _____

Address _____ City _____ State _____ Zip _____

Phone _____ Company Representative _____

DOT Shipping name _____ Hazard class _____

ID # _____ EPA Hazardous Waste # _____

Waste Name _____ # of Drums _____

Manifest Document # _____

Information from Drums

DOT Shipping Name _____ # of Drums _____

Are there any Proper DOT shipping names on the that do not appear in the manifest? _____ If so, what? _____

Are any drums leaking? _____ Is the leak controlled? _____

Hasform for depth of solids been completed and given to Process Engineer? _____ Date _____

All drums sampled, large sample and mixed for one minute, and two composite one pint samples made _____ Date _____

ph _____ Date _____ compatibility test _____ Date _____

If incompatible, explain why _____

Drums are stored in chlorinated section _____

Drums are stored in flammable section _____

Have discrepancies between manifest and actual drum numbers and numbers been corrected? _____ Date _____

Filled out by _____ _____ Date _____

of a wastestream should an unusual problem occur during waste processing. Settled solids levels are noted (Fig.28) as well as the condition of the drums (Fig.27). If the wastestream is for recycling, a gas chromatograph is performed to confirm solvent composition or if the wastestream is for blending, a BTU/pound and halogen content determination is made to insure adequate BTU/pound and low chloride levels. Other than these two differences the rest of the fingerprinting is the same with compatibility with blended solvents and pH being determined. The values determined from each of the tests performed are recorded in either Fig.17 or Fig.18 and compared with the detailed analysis for significant variances. If there is a significant difference the generator is notified for an explanation and the waste drums are either returned or resampled and a new detailed analysis performed if necessary.

Significant variation that would warrant generator notification would be:

1) pH outside the range of 4-11
2) incompatible response when mixed with a sample of blended solvent
3) greater than 3 percent halogen level detected in previously reported non-chlorinated wastestream or halogen content is much higher in composition when compared with the detailed analysis
4) an unusual peak in the gas chromatograph or unusually different solvent composition mix
5) an unusual fluctuation below 8000 BTU/pound compared with the detailed analysis
6) PCB's detected at levels over 50 ppm (this test only for special fingerprinting of wastestreams that could contain PCB's)

Note: There is more tolerance allowed in handling a variation in the cases of 3 and 4 because Reid Supply can still handle these conditions with its own system. The customer would still be notified and possibl another detailed analysis performed but the waste would not have to be returned to the customer. The other variations would warrant returning the variant waste to the customer.

Additional Waste Analysis Requirements:

In order to insure that the waste solvents mixed at the facility do not : (1) generate extreme heat or pressure, fire or explosions, or violent reactions; (2) produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health or the environment; (3) produce uncontrolled flammable fumes, or gas in sufficient quantities to pose a risk

SOLIDS DEPTH IN LIQUID DRUMS
Fig. 28
(To be completed for each incoming waste stream)

Date _____

Generator Name _____ EPA ID # _____

Address _____ City _____ State _____ Zip_____

Phone _____ Company Representative _____

Waste Name _____ DOT Shipping Name _____

Manifest Document # _____ Number of Drums _____

	Depth of Solids (inches)		Depth of Solids (inches)
1.		21.	
2.		22.	
3.		23.	
4.		24.	
5.		25.	
6.		26.	
7.		27.	
8.		28.	
9.		29.	
10.		30.	
11.		31.	
12.		32.	
13.		33.	
14.		34.	
15.		35.	
16.		36.	
17.		37.	
18.		38.	
19.		39.	
20.		40.	

of fire or explosions; (4) damage the structural integrity of the device or facility; (5) through other like means threaten human health or the environment; the following precautions have been taken in the analysis plan:

- The Generator Audit provides information that could help avoid mixing of incompatible hazardous waste.
- The gas chromatograph screens for unusual components that might be incompatible.
- pH determination screens for extremely corrosive materials that would react violently with organic solvents and screens for strongly acid wastestreams that could cause rapid corrosion of drums, tanks, and equipment.
- The compatibility test would ultimately determine if the wastestream is compatible with the blended waste solvents before blending on a large scale

Drycleaning Wastestreams:

This specific wastestream is discussed in Appendix A.

FOR WASTE LEAVING THE FACILITY

There are three outlets presently that require analysis for proper handling: (1) blended waste solvents for fuel to a cement kiln, (2) non-blendable paint solids for landfill, and (3) low BTU/pound liquid for deepwell injection.

(1) Blended Waste Solvents

Table 5 shows the analytical parameters that apply to blended waste solvents leaving the facility and the rationale for selection of these parameters. Table 6 shows the test methods that are used to measure the analytical parameters.

In addition to the detailed analysis, each load received by the cement kiln is fingerprinted for solvent composition, BTU/pound, ash, organic chloride, lead, and PCB levels. If the levels tested do not meet the permitted specification limits of the cement kiln, further tests are performed or the load is rejected at that point. In some unusual cases if the halogen content is slightly over the cement kiln specifications for fuel, other low halogen solvent can be added to the Reid Supply blended solvents to bring the content to below 3 percent before burning, rather than returning the load to Reid Supply.

The blended waste solvents are sampled at the cement kiln by means of a COLIWASA thus obtaining a representative columnar sample of the solvents.

Detailed analyses are repeated only as dictated by questionable findings from the fingerprint analysis.

TABLE 5

CEMENT KILN TEST
PARAMETERS AND RATIONALE

Parameters	Rationale
Solvent composition	Compatibility, industrial hygiene, and handling safety
Heat content	Determine fuel potential, monitor against sham recycling ($<$8,000 BTU/lb)
Ash content	Insure cement quality
Water	Prevent structural damage by freezing
Halogens	Can tolerate only a certain amount in cement
Sulfur	Can tolerate only a certain amount in cement
PCB's	Not permitted to receive more than 50 ppm, industrial hygiene
Metals	Insure cement quality
Viscosity	Insure proper pump and burning torch operation
Solids	Insure proper pump and burning torch operation

TABLE 6

CEMENT KILN
TEST METHODS FOR PARAMETERS
OF BLENDED WASTE SOLVENTS

Parameters (units)	Test Method	Accuracy
Solvent Content	Flame ionization gas chromatograph	0.1%
Heat Content (BTU/lb)	Bomb calorimeter	100 BTU/lb
Ash content (% by weight)	From bomb calorimeter	0.1%
Water (% by volume in separated stage)	Centrifuge	1%
Halogens (% by weight as chlorides)	Ion chromatograph of bomb calorimeter ash	0.1%
Sulfur (% by weight)	Ion chromatograph of bomb calorimeter ash	0.1%
PCB's (ppm)	Gas chromatography capture detector	1 ppm
Metals (ppm)	Atomic absorption or atomic emission	100 ppm
Viscosity (centipoise)		10%
Solids (% by volume)	Centrifuge	1%

Included in this blended waste are still bottoms from the Reid Supply still and filter cake from filtering waste solvent prior to distillation. The parameter measured quarterly is BTU/pound because this must be above the permitted level which is presently 8000 BTU/pound. The test method is by bomb calorimeter with accuracy to the nearest 100 BTU/pound.

(2) Non-blendable Paint Solids

Table 7 shows the parameters that apply to the paint solids leaving the facility for landfill and the rationale for selection of these parameters. Table 8 shows the test methods that are used to measure the parameters.

In addition to the analysis provided by Reid Supply, each load received by the landfill is fingerprinted to insure that the material received is the same as that originally specified. The parameters that are measured are pH, ignitability, density, mix ratio of solvent to solids, cyanide, sulfide, and water reactivity. Each of these parameters not only helps match the waste received with the waste originally specified, but also insures that the landfill does not receive waste that is not suitable for hazardous waste landfill.

The drums of solid waste are sampled at Reid Supply by means of a trier sampler which is designed to obtain a representative columnar sample of waste solids. A trier sample from each drum is composited, mixed, and sampled again by trier to obtain a representative sample for analysis. Detailed analyses are repeated annually.

(3) Low BTU/pound Liquid

Table 9 shows the parameters and rationale for the parameters that apply to this wastestream. Table 10 shows the test methods that are used to measure the parameters.

In addition to the detailed analysis each load received by the deepwell injection facility is fingerprinted for pH, sulfide, cyanide, PCB's, and chlorinated hydrocarbons, viscosity, temperature, specific gravity, and color. These parameters help match the waste received with the waste originally specified, and insures that the facility does not receive waste that is not suitable for deepwell injection.

The facility also takes two random samples each month from wastestreams received at the facility and a complete detailed analysis is performed as required by the EPA for this facility.

TABLE 7

PARAMETERS AND RATIONALE
FOR WASTE GOING TO LANDFILL

Parameters	Rationale
Flashpoint	Determine ignitability
Heavy metals (Pb, Cr, Ba, Cd)	Necessary for landfill records to determine if hazardous
pH	Indicate compatibility with steel drums and other wastes

TABLE 8

TEST METHODS FOR
WASTE GOING TO LANDFILL

Parameters	Test Methods
Flashpoint	Pensky-Martin closed cup
Heavy metals (Pb, Cr, Ba, Cd)	Test Methods for Evaluating Solid Waste SW 846
pH	Electronic pH meter of aqueous layer

TABLE 9

PARAMETERS AND RATIONALE
FOR WASTE GOING TO DEEPWELL INJECTION

Parameters	Rationale
Flashpoint	Determine ignitability
Heavy metals (Pb, Cr, Ba, Cd)	Necessary for deepwell injection facility records to determine if hazardous
pH	Indicate compatibility with tank transport drums and other wastes

TABLE 10

TEST METHODS FOR WASTE
GOING TO DEEPWELL INJECTION

Parameters	Test Method
Flashpoint	Pensky-Martin closed cup
Heavy metals (Pb, Cr, Ba, Cd)	Test Methods for Evaluating Solid Waste SW846
pH	Electronic pH meter of aqueous layer

This wastestream is sampled by means of a COLIWASA to obtain a representative columnar sample.

The analysis for the wastestream is repeated annually or as shipments are made if that is a longer period of time.

7. CONTAINERS
264.171, 264.172, 264.173, 264.175, 264.176, and 122.25(b)(1)

Condition of Containers:

The containers used for primary containment are DOT 17E and 17H steel drums. The containers are normally the ones provided by the customer. However, drums are also provided by the facility to customers that are DOT approved reconditioned 17E and 17H drums. All drums received at the facility are labeled with EPA approved Hazardous Waste Labels (Fig.29). If the contents are considered ignitable, a flammable liquid label (Fig.30) is placed beside the other label.

If a container is not in good condition (i.e., severe rusting, apparent structural defects) or if it begins to leak, the contents of the container will be transferred to another container in good condition or immediately processed.

Compatibility of Waste with Containers:

The various types of hazardous wastes handled by Reid Supply as seen on Table 1 in the Chemical and Physical Analysis section are compatible with steel 17E and 17H drums used by the facility for storage. The pH of the wastes is confirmed to not be below 4 or above 11 upon receipt of a given waste stream. At these pH levels severe corrosion is not a problem.

Management of Containers:

In order to insure that drums holding hazardous waste are closed during storage, the drums are inspected weekly according to the inspection. Inspection is facilitated by placing four drums per pallet, twelve drums per pile, four foot secondary aisles between piles, and a ten foot primary aisle. This drum arrangement is in accordance with NFPA 30 4-5.7.12.

A forklift equipped with a special drum handling attachment is used to move the drums so that drums are not damaged while handling. The drums are arranged so that a ten foot aisle space allows plenty of forklift maneuvering room to minimize drum damage by the forklift.

Inspections:

According to the inspection schedule the drum storage area will

HAZARDOUS WASTE

FEDERAL LAW PROHIBITS IMPROPER DISPOSAL

IF FOUND, CONTACT THE NEAREST POLICE, OR
PUBLIC SAFETY AUTHORITY, OR THE
U.S. ENVIRONMENTAL PROTECTION AGENCY

PROPER D.O.T.
SHIPPING NAME_____ UN OR NA#_____

GENERATOR INFORMATION:

NAME_____

ADDRESS_____

CITY_____ STATE_____ ZIP_____

EPA
ID NO._____

EPA
WASTE NO._____

ACCUMULATION
START DATE_____

MANIFEST
DOCUMENT NO._____

HANDLE WITH CARE!

CONTAINS HAZARDOUS OR TOXIC WASTES

STYLE WM-6

© LABELMASTER, CHICAGO, IL 60646

Fig. 29

Fig. 30

be inspected for inadequate aisle space, open lids, container labeling, corrosion, leakage, structural defects of containers, damaged pallets, containment base for cracks and wet spots, dikes for cracks and damage, ramps for warping or stress fractures, and warning signs for damage. See the Inspection Schedule in Section 10 (Fig.42).

Containment:

At present the drum storage area is not completed. Although it has a good concrete base and good roof and walls, the dikes and additional sumps still need to be put in. The Drum Storage Area located in Building C (Fig.6) is designed to be finished as follows (Fig.31):

(1) The underlying base is an 18 inch thick slab which is free from cracks or gaps that might prevent containment of a leak or spill until the collected material is detected and removed.

(2) The base if flat and therefore provides no drainage, but each drum is placed on wooden pallets to keep the drums from sitting in spilled or leaked liquid.

(3) The dike system will be composed of a perimeter concrete dike 175 feet long, 36 feet wide and three inches high. The outer perimeter will be divided along its length into three equal sections 58 feet long by concrete dikes three inches high. A sump will be constructed in each of the three sections. See Fig.31. Each of the three sections will more than adequately contain 10 percent of the total drum capacity in each section. Each section can contain 166 drums. The total volumes of 166 drums is 9130 gallons and ten percent of this is 913 gallons. The total capacity of each section of 58 feet X 36 feet X 3 inches is 3915 gallons. The maximum displaced volume from 166 drums and the pallets supporting them is 1289 gallons. This leaves a volume of 2626 gallons available to contain 913 gallons of liquid for each of the three sections of the containment area.

(4) Run-on into the drum storage area is prevented since the galvanized steel warehouse roof provides shelter from any run-on. The warehouse size is 40 feet wide by 300 feet long.

(5) In the event of a spill a self-contained breathing apparatus will be used by the worker who will squeegee the standing liquid into the sump and the liquid will be pumped into drums and analyzed according to the procedures

of the detailed analysis described in Section 5 unless the materials can be identified by the drums from which the liquid came. This collected material, even though it might be mixed with hazardous waste from other leaking drums, will still be compatible (due to information from fingerprint analyses performed on each wastestream received at the facility including pH and solvent blending compatibility) and can be incorporated immediately into the waste solvent blend going to be burned as fuel at the cement kiln. If the material spilled is chlorinated (determined either by Hazardous Waste Label or drum location in the storage area), then the material will be marked and analysed to determine if it should be recycled or be channeled to some other route for disposal. In any case, liquid accumulated in the diked area will be removed quickly enough to prevent overflow of the collection system. It is not likely that over 48 drums per section would leak out at once. This is the volume that each of the three sections can hold allowing for drum and pallet displacement.

(6) All drums with either solid or liquid contents will be stored in the diked storage area. The number of drums will not exceed 500 drums.

Special Requirements for Ignitable Waste:

Although there is an EPA requirement for a 50 foot buffer zone to exist between the storage area of ignitable waste and the property line, a waiver for this requirement has been requested. This is because the container storage area was already built before the EPA regulations came into effect so that the property line to the west of the drum storage area is five feet away and to the north it is fifteen feet away. In addition, a waiver is necessary from the Wichita Fire Department because these distances and the five foot distance between the drum storage building and another small building which holds the lab are too small for the buffer zone standards set forth in NFPA 30 for flammable liquid storage. The drum storage warehouse qualifies as a liquid warehouse which is defined as a separate, detached building or attached building used only for warehousing-type operations. The relevant standards from NFPA 30 are as follows:

> 4-5.7.1 Liquid warehouses shall be separate, detached buildings or shall be separated from other type occupancies by standard 4 hour fire walls, with comminicating openings protected on each side of the wall with automatic-closing listed at 3 hour (A) fire doors. Fire doors shall be installed in accordance with NFPA 80, <u>Standard for Fire Doors and Windows</u>.

4-5.7.2 If the warehouse building is located more than ten feet but less than fifty feet from an important building or line of adjoining property that can be built upon, the exposing wall shall have a fire resistance rating of at least 2 hours with each opening protected with a listed 1½ hour (D) fire door.

4-5.7.3 If the warehouse is located ten feet or less from an important building or line of adjoining property that can be built upon, the exposing wall shall have a fire resistance rating of 4 hours with each opening protected with a listed 3 hour fire door.

Please refer to the facility map (Fig. 6) that shows the relevant distances in regard to the waiver. The south side of the warehouse is in compliance with both the EPA buffer zone and NFPA requirement. However, the other three sides need to be reconciled with the buffer zone and/or NFPA requirements. The north side does not meet the buffer zone requirement but is in compliance with NFPA 30, 4-5.7.2 since the property boundary is more than ten feet from the warehouse and the railroad track area cannot be built upon. Missouri Pacific only occasionally stores empty box cars on the tracks close to the warehouse. The next building is 115 feet away which would be safe from a fire in the warehouse. As a result a fire wall would not be nedded on the north wall.

The west side of the warehouse falls within 4-5.7.3 of NFPA 30 since it is less than ten feet from the property line. However, a fire wall is not necessary because the land thirty feet to the west of the warehouse is a city established fire lane which cannot be built upon. There is virtually no traffic on this road and there are no buildings for at least 100 feet to the west of the building. If an important building were constructed within fifty feet of the west side, a 4 hour fire wall would be constructed as required by 4-5.7.3.

The east side of the building is only five feet from the lab. However, between the lab and the drum storage area is 110 feet. The Wichita Fire Department recommended that a two hour fire wall with a two hour fire door be constructed between the drum storage area and the remaining storage area to the east. This is to allow combustible materials to be stored in the area to the east and not be an immediate potential fire hazard to the lab. No flammable liquid will be stored in this area to the east. This arrangement will act as the 50 foot buffer that NFPA 30, 4-5.7.2 specifies.

In addition to these considerations, Reid Supply has agreed with

the Fire Chief to reimburse the private industry that provides the firefighting equipment and material. This arrangement is a mutual aid pact that the Fire Department has made with Wichita area industrial firefighting brigades, such as Boeing and Derby Refinery, to provide equipment and materials necessary for fighting an organic solvent fire for which the Wichita Fire Department may not be as well equipped. A call to 911 is all that is necessary to activate the Fire Department and the private industry fire brigades. Response time will be 10 min. See Fig.53 for the arrangements for the Mutual Aid Pact. Derby Refinery has also given the Fire Department permission to cut through their fence adjoining Reid Supply Company in order to have access to the fire hydrant that is located among four gasoline storage tanks located 172 feet south of Reid Supply. This hydrant has a static pressure of 155 psi, a residual pressure of 95 psi, and a flow rate of 3,000 gallons per minute. There are three additional fire hydrants, however only one could be used at a time since they are all on the same line and the line dead ends at the hydrant near the drum processing area. The other two hydrants are shown on the facility map (Fig.6) on the far west side of the map along the fire lane. The capacities of these hydrants are as follows:

	Static (psi)	Residual (psi)	Flow (gpm)
Drum processing area	88	38	1400
64 feet from drum storage area	95	45	1600
400 feet south of fire hydrant near drum storage area	95	45	1800

The Chief Fire Inspector also set forth a number of improvement requirements to be fulfilled in order for the waiver to be granted.

1. Clear all combustible trash and weeds from inside and out, stack outside storage neatly, and maintain this orderliness.
2. Construct a two hour fire wall between combustible material in drum storage area warehouse and the hazardous waste storage area.
3. Place Hazardous Material Response Team specified placard on warehouse to inform firefighters of the way to fight the fire.
4. Insure that Reid Supply insurance covers any damage to Missouri Pacific property.
5. Maintain no more than 500 drums storage in storage area.

6. Construct dikes that would contain spills and keep liquid from spreading too far indiked areas.
7. Provide approved fire extinguishers.

A copy of the granted waiver is shown in Figure 32.

Special Requirements for Incompatible Wastes:

Wastestreams will not be mixed until compatibility is demonstrated by the waste solvent compatibility test described in the Waste Analysis Plan. Hazardous Waste will not be placed in an unwashed container that previously held an incompatible waste or material because compatibility will be tested as stated above and process technicians are instructed about what are possible incompatible mixtures to avoid.

Reid Supply does not plan to receive any incompatible hazardous waste from generators. However, should a wastestream demonstrate incompatibility with organic solvents as a result of the fingerprint analysis performed on each incoming waste stream, the drums will be temporarily stored in the small diked section at the far east end of the drum storage area (Fig.31) until they can be returned to the generator. It is not Reid Supply's intention to regularly handle or even store waste that is incompatible with organic solvents. This special diked area enables separate storage should a leak occur and possibly result in the mixing of incompatible wastes.

Closure:

The closure plan will address the decontamination of the drum storage area. The drum storage area will be scraped, steam cleaned, the water and residue collected in the sumps, pumped into drums, analysed and properly disposed.

Containment System Design:

The dike system will be composed of a perimeter concrete dike 175 feet long, 36 feet wide and three inches high. The outer perimeter will be divided along its length into three equal sections 58 feet long, 36 feet wide, and 3 inches high. A sump will be constructed in each of the three sections. See Fig.31.

In addition to the 3 main sections there will be a small diked section 24 feet long, 12 feet wide, and 2 inches high in the northeast corner of the drum storage area. This will act as a temporary storage area for drums that are found by fingerprint analysis to be incompatible with the other organic waste solvents.

Fig. 32a

THE CITY OF WICHITA

FIRE DEPARTMENT
CITY HALL — TWELFTH FLOOR
455 NORTH MAIN STREET
WICHITA, KANSAS 67202
(316) 268-4451

1ST RESPONDER TO: PREVENTION, PROTECTION, PRESERVATION

October 17, 1984

Mr. David Trombold
Hazardous Waste Coordinator
Reid Supply Company
P.O. Box 11365
Wichita, KS 67202

Re: Request for Waiver-Drum storage requirements/buffer zone (NFPA No. 30)

Dear Mr. Trombold:

In light of your offer to make improvements to your facilities located at 2549 New York, specifically related to the drum storage area, your request for waiver from the buffer zone requirements contained in NFPA No. 30 is hereby approved, based on the following conditions:

1. That facilities improvement, reference your letter of September 26, 1984 be completed within 180 days from the date of this letter. Such improvement would include the removal of the inner office structure at the east end of the storage area.

2. That the Emergency Incident Contingency Plan for your facility be completed by January 1, 1985 with the guidance and assistance of the Hazardous Materials Response Team (HMRT) members. Said plan to be approved by the Deputy Chief of Operations.

3. During the interim, periodic inspections may be conducted by members of the HMRT to monitor the progress of the improvements.

4. Permanent structure on the inside of the building, which is an office built some time ago, has to be removed from the buffer zone if the fire wall is not going to be built.

5. We concur with your proposal regarding the diked storage area with the provision that you continually insure that the storage remains within the diked area.

THE CITY OF WICHITA 2

October 17, 1984
Request for Waiver-Drum storage

The Wichita Fire Department will continue to provide guidance and/or technical assistance that may be required in your effort to develop and maintain a viable, safe operation at the Trombold Industrial Park. We are very appreciative of your efforts and cooperation.

Sincerely,

THE WICHITA FIRE DEPARTMENT

Jim E. Sparr

Jim E. Sparr
Fire Chief

gc

cc: Chief Larry Garcia
Captain Larry Mullikin

Note to Part B Application reader:
Compliance Schedule on following page

COMPLIANCE SCHEDULE BASED ON
FIRE DEPARTMENT WAIVER OCTOBER 17, 1984

1.a. Remove inner office structure in C-Building by April 17, 1985.

b. Remove excess combustible material from area inside C-Building between the drum storage area and the east end of C-Building by April 17, 1985.

c. Construct the drum storage dike system by April 17, 1985

d. Clean up and maintain Reid Supply grounds in an orderly and weed-free state by April 17, 1985.

e. Placard the drum storage building and waste bulk storage tanks with Hazardous Materials Response Team approved 704 symbols by April 17, 1985.

f. Have sufficient insurance to cover Reid Supply's liability in case of damage to Missouri Pacific property north of C-Building by April 17, 1985.

2. Acquire approval of Reid Supply Contingency Plan by the Hazardous Materials Response Team member by January 1, 1985 (See Fig. 54 on page 146).

3. Expect Hazardous Materials Response Team periodic inspections to monitor the progress of improvements during the interim.

4. The removal of the inner office structure in C-Building is covered previously in 1.a.

5. A maximum of 500 drums of hazardous waste will be stored within the diked area. Hazardous Waste drums will not be stored elsewhere.

The underlying base of the containment system is an 18 inch thick slab of concrete which is free from cracks and gaps that might prevent the containment of a leak or spill until the collected material is detected and removed.

The dikes will be constructed of concrete and the interface between the dike and the older concrete floor will be secured by a special concrete product that bonds concrete to concrete or mortar to concrete. This will preserve a good seal to prevent dike leaks and protect the dike from damage when it is bumped. Fig.33 indicates the bonding agent that will be used between the dike and concrete floor. Portland cement will be used for the dike. The drums are kept from contact with standing liquids by placing the drums on wooden pallets.

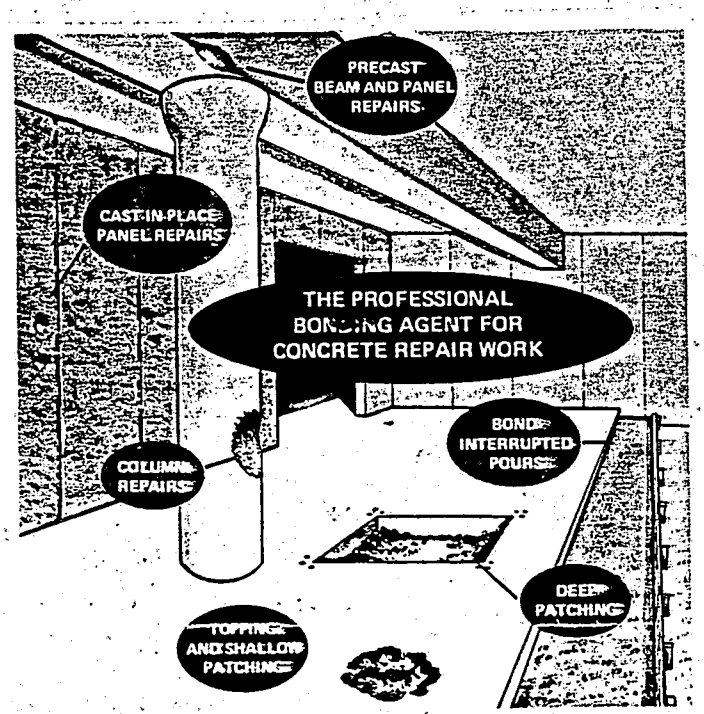
Each of the three sections will more than adequately contain 10 percent of the total drum capacity in each section as explained in point (3) of the containment subsection. For each of the three sections there is a capacity of 2626 gallons available to contain 913 gallons (10 percent of 166 drums). This capacity will actually hold 41 percent of the total volume of drums in each section.

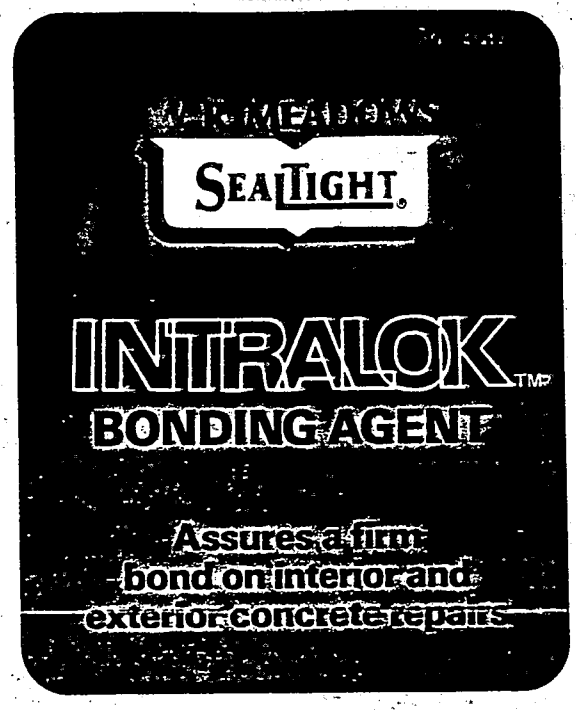
All drums whether containing solid or liquids will be stored in the dike area on pallets.

As stated earlier, run-on is prevented by the galvanized steel building covering the drum storage area.

Point (5) of the previous Containment subsection describes the procedure followed for the analysis and removal of spilled or leaked waste in a timely manner, as would be necessary to prevent overflow of the dike system.

Storage of solid wastes, buffer zone requirements, and incompatible waste management have previously been described in this section.





Also used as an interface or intramix bonding agent

GENERAL

SEALTIGHT INTRALOK Bonding Agent is a high solids content, water dispersion of bonding polymers compounded specifically for modifying Portland Cement compositions. It is a milky-white, non-yellowing liquid ready for use as an interface or intramix bonding agent. When properly mixed and applied, INTRALOK forms a bond between new to old, or new to new, concrete that is stronger than the concrete itself.

Cement mortars modified with INTRALOK are hard, tough and durable . . . offer superior flexual, adhesive and impact strengths plus excellent abrasion resistance.

INTRALOK is not re-emulsifiable and, when used in a bonding grout, will withstand intermittent or continuous exposure to water. It improves both the early and ultimate strength of the mix and is unaffected by repeated wet freeze-thaw cycles.

USES

Most common usage of INTRALOK is for patching and resurfacing, spray and fill coats, repairing precast building panels and beams, industrial flooring and highway and bridge deck repairs.

It is ideal for interior or exterior bonding, topping, leveling, patching and dressing of concrete and masonry. As a bonding grout, it improves the adhesion of pneumatically applied concrete or mortar. INTRALOK modified mortars provide excellent adhesion to a variety of surfaces, including concrete, masonry and brick. The result is a more attractive, durable, uniform and weatherproof concrete finish—and costs far less than polishing or rubbing.

INTRALOK modified concrete is unaffected by most industrial chemicals, ultraviolet light, heat and will not yellow or discolor.

ADVANTAGES

- Forms a tenacious and permanent bond that is stronger than concrete itself.
- Equally effective for both interior and exterior repairs.
- Provides a durable and weatherproof concrete finish at far less cost than polishing or rubbing.
- Will not after-yellow or discolor.
- Withstands constant exposure to water.
- One gallon used in patching mix yields approximately 1.8 cubic feet to cover 86 square feet at 1/4" thickness.

APPLICATION

INTRALOK is ideal for use as an interface or intramix bonding agent in bonding grouts, topping mixtures, finishing and mortar mixes. Specific mixing proportions for these various INTRALOK mixes are listed on the container. All cautions, mixing and application information and directions furnished on container labels should be read and followed.

W.R. MEADOWS, INC.
April 1, 1981
3
03320
CONCRETE
Concrete Topping

W. R. MEADOWS, INC.
P.O. BOX 543 • ELGIN, IL 60120
Other Plants:
HAMPSHIRE, IL / ATLANTA, GA / YORK, PA
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W. R. MEADOWS

SEALTIGHT

Typical INTRALOK™ Bonding Applications

APPLICATION (continued)

Surface Preparation: All surfaces to which INTRALOK bonding grout and/or topping is to be applied must be structurally sound, clean and free of grease, oil, dust, dirt, curing and release compounds and other foreign contaminants. All loose and unsound concrete must be removed.

After cleaning, the concrete surface should be etched with a 1:1 muriatic acid solution, then thoroughly rinsed of all traces of acid with water.

All surfaces are pre-soaked with water prior to applying the bonding grout—making sure all puddles and free water are removed.

Mixing: For normal mixing, dry blend the Portland Cement and sand. Mix the INTRALOK and water together, add to the cement-sand mix and then thoroughly blend the complete mix by mechanical means. Quantity of water should be determined by trial mix . . . where only 50% of the water is first added to the INTRALOK before adding to the sand-cement mix. After thorough preliminary mixing, add increments of additional water until the desired consistency is obtained.

APPLICATION MIXES

1. **Bonding Grout:**
   1 part INTRALOK
   5 parts Portland Cement
   2.5 parts fine sand (ASTM C 144)
   Water—enough for thick, creamy consistency (Approximately 1 part)

   One-gallon unit of INTRALOK used to mix a bonding grout will yield approximately 0.67 cubic feet, enough to cover an area of 130 square feet at 1/16 inch thickness or 65 square feet at 1/8 inch thickness. Apply with a stiff bristle brush.

2. **Topping and Shallow Patching Mix:**
   1 part INTRALOK
   5 parts Portland Cement
   15 parts fine sand (ASTM C 404, Size #2)
   Water—enough for trowelable consistency (Approximately 2 parts)

3. **Mortar Mix:**
   1 part INTRALOK
   5 parts Portland Cement
   15 parts fine sand (ASTM C 404, Size #2)
   Water—enough for desired consistency (Approximately 1-1/2-2 parts)

   One gallon of INTRALOK used in a topping or mortar mix will yield approximately 1.8 cubic feet to cover an area of 86 square feet at 1/4 inch thickness. Topping or mortar mix should be applied while the INTRALOK Bonding Grout is still soft and plastic.

4. **Finishing Mix: (For non-traffic surfaces)**
   1 part INTRALOK
   10 parts Portland Cement
   10 parts fine sand (ASTM C 404, Size #2)
   Water—enough for stiff, brushable consistency (Approximately 4 parts)

   INTRALOK Bonding Grout must be thoroughly worked and scrubbed onto the prepared concrete surface in order to realize maximum bonding efficiency.

COVERAGE

Approximately 300 sq. ft. per gallon straight; diluted with equal parts of water, approximately 600 sq. ft. per gallon. One gallon used in a bonding grout yields approximately 0.67 cubic feet to cover 130 sq. ft. at 1/16" thickness; one gallon in a topping or patching mix will yield approximately 1.8 cubic feet to cover 86 sq. ft. at 1/4" thickness.

Usually, INTRALOK is not required for toppings or patches exceeding 1/2" in depth. Larger aggregate may be used in sizes consistent with the depth of such toppings or patches.

PACKAGING

1-Gallon Units (4 per carton)
5-Gallon Pails
55-Gallon Drums

PRECAUTIONS

Keep from freezing. Mix only enough for 30-40 minutes of work life. Use care in finishing thin overlays. Wood float when possible. Steel trowelling should be limited to minimum number of passes 10-15 minutes after placement. When INTRALOK is used in the bonding grout and the patch topping is plain concrete, use a membrane curing compound. If the body of the patch or topping contains INTRALOK as an admixture, wet curing is not recommended. INTRALOK Bonding Grout or Topping Mix should be mixed thoroughly to remove lumps. Avoid air entrapment. Clean all tools with water immediately after using. Follow all cautions described on container labels. Do not add to premixed grouts. Specifier and user shall determine suitability of product for specific applications and assume all responsibilities in connection therewith.

NOTE: Current use of increased amounts of various fillers, extenders or additives in the concrete mix can result in the concrete mass and finished surface having a higher than normal porosity and some very porous hot-spots. Coverage ratios must be adjusted to compensate for resulting penetration and additional coverage coats required to provide proper surface treatment.

LIMITED WARRANTY . . . "W. R. Meadows, Inc. warrants that, at the time and place we make shipment, our material will be of good quality and will conform with our published specifications in force on the date of the acceptance of the order." Read complete Warranty; copy furnished upon request.

DISCLAIMER . . . The information contained herein is included for illustrative purposes only and, to the best of our knowledge, is accurate and reliable. W. R. Meadows, Inc. cannot however under any circumstances make any guarantee of results or assume any obligation or liability in connection with the use of this information. As W. R. Meadows, Inc. has no control over the use to which others may put its products, it is recommended that the products be tested to determine if suitable for a specific application and/or our information is valid in a particular circumstance. Responsibility remains with the architect or engineer, contractor and owner for the design, application and proper installation of each product. Specifier and user shall determine suitability of products for specific application and assume all responsibilities in connection therewith.

GUARDIAN OF THE PATRIMONY

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P.O. Box 909
Benicia, CA 94510
Phone: 707-745-6666

9/81 Printed in U.S.A.

8. TANKS
264.191, 264.192, 264.194, 264.197, 264.198, 264.199, 122.25(b)(2)

There are only two tanks that qualify as storage tanks for hazardous waste at Reid Supply Company. These are the two 4500 gallon vertical tanks used to store blended waste solvents for one to four weeks prior to shipping out. The other tanks that contain hazardous waste solvents which include one settling tank, two transfer tanks, and three still feed tanks are only for processing distillable material. Their use is only temporary and not for storage (Fig.34). The usual amount of time hazardous wastes are held in the settling, transfer, and still feed tanks before they are emptied is 16 hours. The maximum amount of time hazardous wastes are contained in these tanks is 24 hours. Virtually no hazardous waste remains in these processing tanks after the tanks have been emptied because the tanks empty from the lowest point of the curved tank bottoms. In addition, there are no solids that would accumulate in the feed tanks since a 200 micron filter is used to minimize solids. The accumulation of solids in the other processing and transfer tanks is prevented by using a stand pipe with openings one-eighth of an inch in diameter to filter out large pieces of solids that could cause accumulation and clogging problems. To further assure that the feed tanks are operating properly the inflow of liquid to the still can be visually observed through the port to the distillation chamber. When the tanks are empty the vacuum in the still begins to drop. If there is a clogged line the vacuum pressure rises.

Therefore only the two 4500 gallon storage tanks will be considered for permitting to comply with all the regulations set forth by the EPA and KDHE. However, many of the precautions required for the 4500 gallon storage tanks will be applied to the other tanks. For example, all stationary tanks will be diked to control possible spills and all tanks will be inspected according to the Inspection Schedule.

Design (Shell Thickness):

Refer to Fig.35for the current thickness measurements for the two 4500 gallon storage tanks. The following procedure for ultrasonic tank thickness testing was followed.

<u>Ultrasonic Testing of Vertical, Cylindrical Metal Tanks</u>

A. Testing must be done by an individual trained in the use of ultrasonic measuring equipment.

WASTE SOLVENT PROCESS FLOW DIAGRAM SHOWING SOLVENT RESIDENT DURATION

Fig. 34

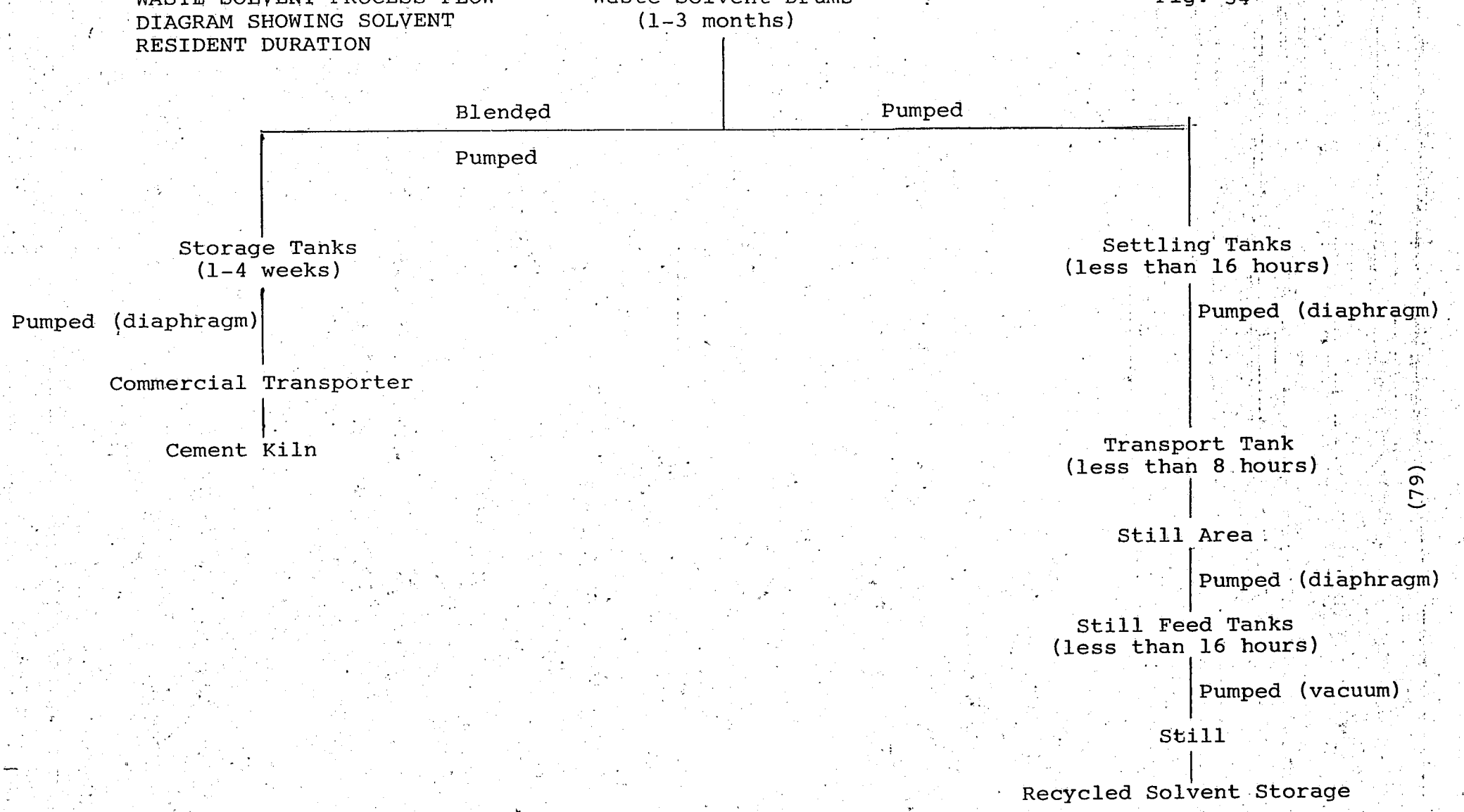


Fig. 35

ELBERT M. DEFOREST
LICENSED PROFESSIONAL CHEMICAL ENGINEER

June 18, 1984

Mr. David Trombold
Reid Supply Company
911 E. Indianapolis
Wichita, KS 67202

Dear Mr. Trombold:

As per your request, I have made a survey of the wall thickness of your storage tanks. The determinations were made with a DM 2 LCD ultrasonic thickness gage manufactured by Krautkramer Branson, Inc. Stratford, Conn.

Measurements were made at approximately 2 ft. intervals the full length of both tanks on three vertical lines, each approximately 1/3 the way around the tank. Physical limitations required some deviations from this exact program. It should be understood that these are old tanks and there could conceivably be small spots not picked up by the survey which would be thinner than shown by the data obtained. However, the measurements do not show any drastic thinning in any place. With the large number of measurements made and none showing unusual thinning, I would doubt there are any really dangerously thin spots.

The data obtained is shown on the attached sheets. Measurements were recorded out to the closest thousands of an inch. However, it is doubtful if anything smaller than .005 inch is very meaningful.

Thank you for this assignment. I am attaching my invoice for the work.

Very truly yours,

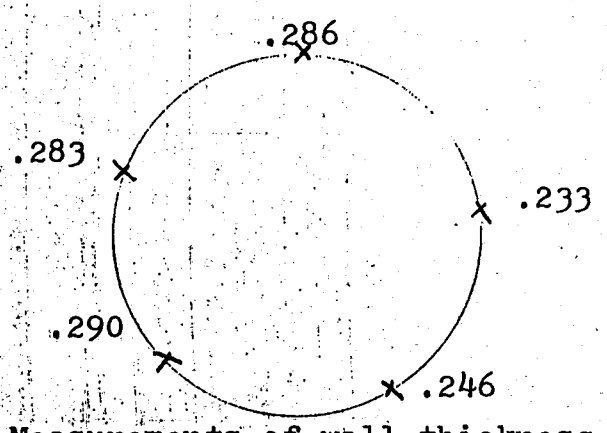
Elbert M. DeForest

Elbert M. DeForest

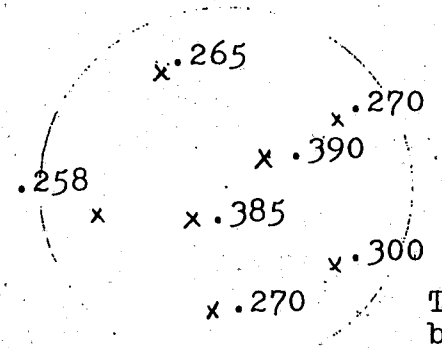
3047 BENJAMIN CT. • WICHITA, KANSAS 67204 • (316) 838-3806

Wall Thickness Survey for East Vertical Storage Tank Located in Reid Supply Manufacturing Area on New York Ave, Wichita, Kansas

NORTHWEST Side Tank		SOUTHWEST Side Tank		NORTHEAST Side Tank	
Distance from top of tank, Inches	Wall thickness, Inches	Distance from top of tank, Inches	Wall thickness, Inches	Distance from top of tank, Inches	Wall thickness Inches
4"	0.268	5"	0.313	5"	0.340
24"	.282	29"	.263	28"	.321
44"	.312	51"	.331	49"	.317
63"	.306	75"	.325	75"	.332
81"	.313	99"	.346	97"	.337
98"	.300	119"	.332	123"	.374
119"	.327	147"	.382	144"	.337
137"	.335	163"	.371	167"	.355
155"	.351	184"	.390	191"	.358
175"	.338	211"	.270	214"	.265
198"	.267				



Measurements of wall thickness at weld line of tank bottom.

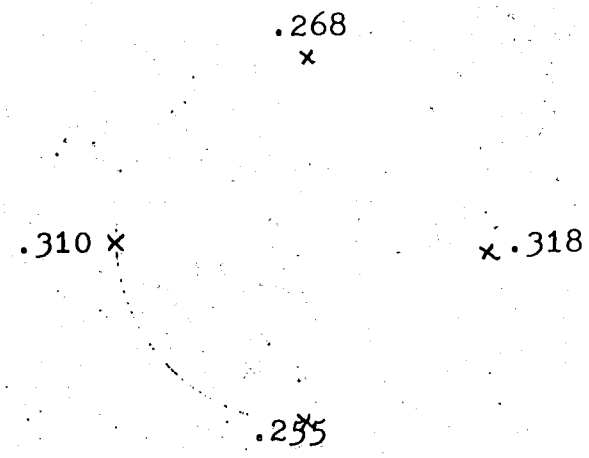


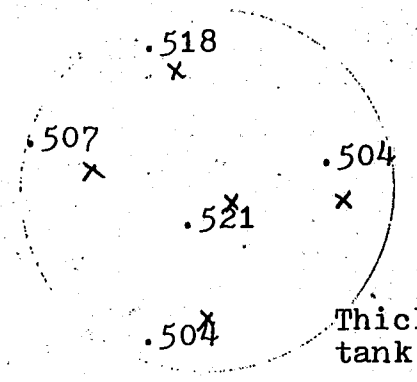
Thickness of tank bottom head.

Survey made June 15, 1984

Wall Thickness Survey for West Vertical Storage Tank Located in Reid Supply Manufacturing Area on New York Ave., Wichita, Kansas

SOUTH Side Tank		NORTHEAST Side Tank		NORTHWEST Side Tank	
Distance from top of tank, Inches	Wall thickness, Inches	Distance from top of tank, Inches	Wall thickness, Inches	Distance from top of tank, Inches	Wall thickness, Inches
6"	0.290	34"	0.252	11"	0.323
47"	.292	59"	.282	42"	.270
85"	.302	91"	.301	67"	.275
89"	.317	125"	.307	105"	.220
110"	.325	152"	.303	136"	.215
123"	.290	174"	.294	168"	.240
137"	.296	199"	.274	222"	.324
158"	.258	220"	.234	236"	.310
172"	.270	243"	.186	248"	.303
196"	.232	282"	.255	266"	.302
220"	.207	315"	.318	300"	.280
323"	.207		"	315"	.310
254"	.203				
265"	.177				
280"	.178				
315"	.268				





Thickness of tank bottom head.

Measurements of wall thickness at weld line of tank bottom.

Survey made June 15, 1984

(82)

B. Measurements shall be concentrated at areas on the tank shell which are most likely to be in frequent contact with stored liquid.

C. At minimum, measurements shall be made as follows:

1. For the tank wall, take measurements along three vertical rows spaced 120 feet apart, at no less than two foot vertical intervals. At least one measurement in each row shall be taken within one foot of the bottom of the tank. Measurements shall be concentrated up to the most common liquid level of the tank.
2. For the tank bottom, take no fewer than four measurements, at least two feet from the center point of the tank bottom, spaced at 90 degrees intervals.
3. At least 25 percent of all measurements must be taken within one inch of a seam ("heat affected zone"), if possible.

The person operating the ultrasonic thickness meter was trained by Dupont Chemical Company during his employment there.

All tanks are vented to the atmosphere to assure that they do not collapse or rupture during regular filling and emptying procedures. In addition, the two 4500 gallon storage tanks have the upper parts that are 18 inches in diameter specially attached so that should there be a rapid increase in pressure due to an internal explosion the ports would be able to release pressure to accomodate the explosion. This would help prevent a severe rupture of the tank.

General Operating Requirements:

The cold steel tanks are compatible with the waste solvents and solids that are contained by them. The one potentially damaging variable in the hazardous waste contained by the steel tanks is pH. The pH, which is monitored by the fingerprint analysis of each incoming wastestream, is not allowed to be below 4 or above 11. This will prevent rapid corrosion of the tanks. No special lining, coating, or inhibitors are necessary.

The two 4500 gallon tanks have an automatic overfill prevention control. This control mechanism is fastened inside an open top 55 gallon drum and operates by means of a float and air valve. When either one of the 4500 gallon tanks is full, the liquid overflows through a pipe down into the drum with the overfill control mechanism. The float of the fastened mechanism will rise with the solvent level and activate a switch that

shuts off the air supply to the diaphragm pump and thereby stops the liquid flow into the tank. The overfill mechanism is pictured in Fig.34 .

The still feed tanks have overflow pipes directed down into a standby drum that is monitored to see if the tanks are full.

Inspections:

Refer to the Inspection Schedule in Fig.42 . According to the Inspection Schedule, the overfilling control equipment will be inspected once each day that the tanks are being filled. No monitoring equipment is necessary for the storage tanks. There is therefore no data gathered to be inspected. All the tanks are covered, therefore freeboard levels are not necessary to be inspected. Construction materials of all the tanks are inspected weekly to detect corrosion, leaking, or weakening of the tanks. The area immediately surrounding the tanks will be inspected weekly for signs of leakage. The Inspection Schedule provides for weekly inspection of the storage, transfer, and processing tanks. It also provides internal inspection of the two storage tanks. The tanks will be entered and inspected once every 5 years and internally inspected from the upper and lower 18 inch diameter ports of the tanks once each year. In conjunction with the annual ultrasonic thickness test, the limited inspection of the inside of the tanks from the ports which will be performed once every year will provide sufficient information to determine the soundness of the tanks between total internal inspections. The annual ultrasonic thickness test will reveal on a random basis any seriously thin areas. This schedule and procedures will be adequate to detect cracks, leaks, or corrosion, that might lead to cracks, leaks, or wall thinning. Rarely do pH levels of waste solvents fluctuate below 6 or above 8. This means that corrosion damage to the steel tank walls and bottom should be minimal from one inspection to the next.

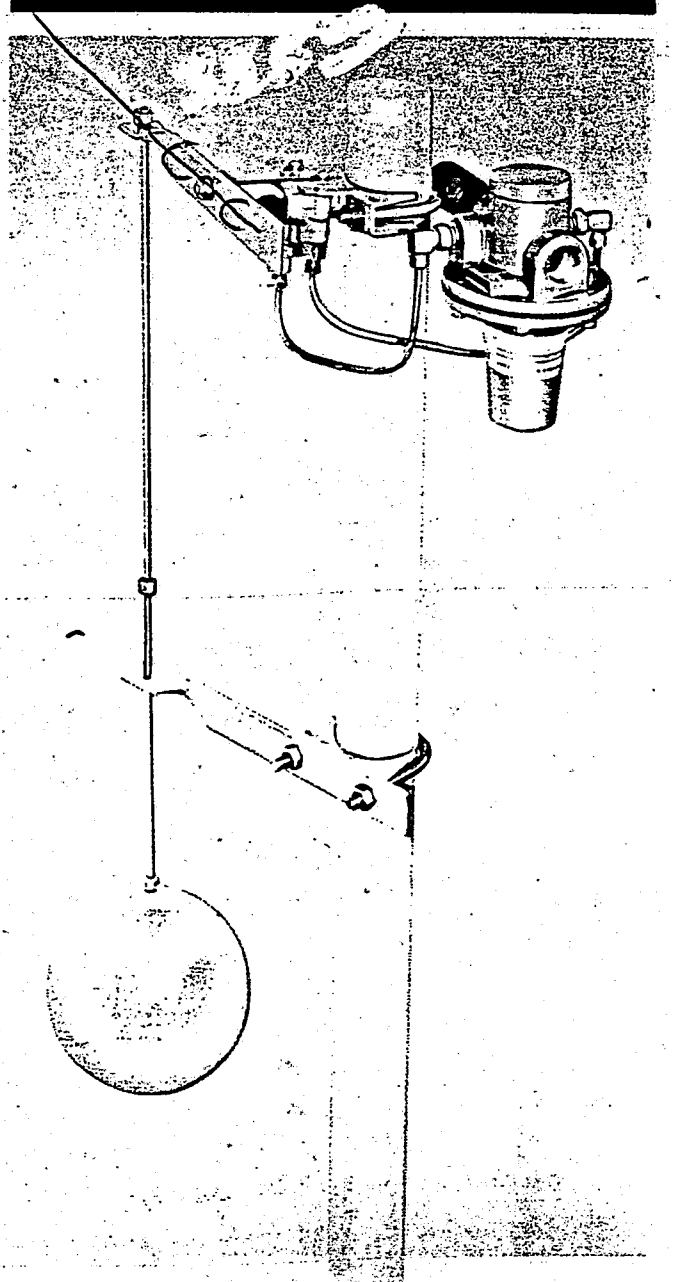
There are two types of internal tank inspection for the 4500 gallon tanks. There is the non-entry inspection to be performed every year and the total entry inspection to be performed every 5 years.

<u>Non-entry inspection</u> - The two 4500 gallon tanks can be emptied by drawing the contents out through the drain pipe at the very bottom of the tank. The tank bottom is curved so that all liquid will be removed from this outlet. Any solid residual will be flushed out. The upper and lower ports will be opened. A ventilation blower will be installed at the top port to force fresh air into the tank over a period of at least two days.

Fig. 36

THE WARREN RUPP float actuated air valve and liquid level control

Automatically opens and closes air supply for on-off control of air-powered pumps and other pneumatic equipment.



Provides for all-pneumatic operation of complete pump and control systems

Here's the right answer for supervising the operation of air-powered pumps in all sumping and liquid transfer operations. Float-actuated switch opens and closes air supply to the pump for positive "ON-OFF" response. Here are the features and benefits:

- Completely automatic operation.
- Quick, low-cost installation. Easily plumbed as part of the piping system.
- No electrical connections. All-pneumatic operation.
- One control can be installed for either

  Sumping operations to:
  Start pump at high liquid level.
  Stop pump at low liquid level.

  Tank filling and transfer to:
  Start pump at low liquid level.
  Stop pump at high liquid level.
- Completely adjustable to any liquid level operating range . . . from a few inches to several feet.
- Explosion-proof. Especially ideal for use in hazardous areas.
- Long life operation. Corrosion-resistant wetted parts.
- High capacity air valve . . . for air flow requirements up to 125 cfm. (Less than 10 psi pressure drop.)

Model No. 032-002-000 includes: Lever operated pilot actuator valve, diaphragm-type pilot actuated air control valve with ½-inch female pipe thread inlet and outlet air connections, interconnecting tubing and fittings, mounting bracket and U-bolts and nuts, guide bracket with U-bolt and nuts, 18 - 8 stainless steel float and 6-ft. rod assembly (rod furnished in two 3-ft. sections with coupling), and adjustable stops. Furnished complete for mounting on 1½" pipe as shown.

THE WARREN RUPP COMPANY

P. O. Box 1568 • Mansfield, Ohio 44901 • Phone (419) 524-8388 • Telex 987-458

World's leading producer of air-powered pumps. Distributed by over 300 qualified pump distributors throughout the United States and Canada. Look for Warren Rupp under "PUMPS" in the Yellow Pages.

Originators in Pumping

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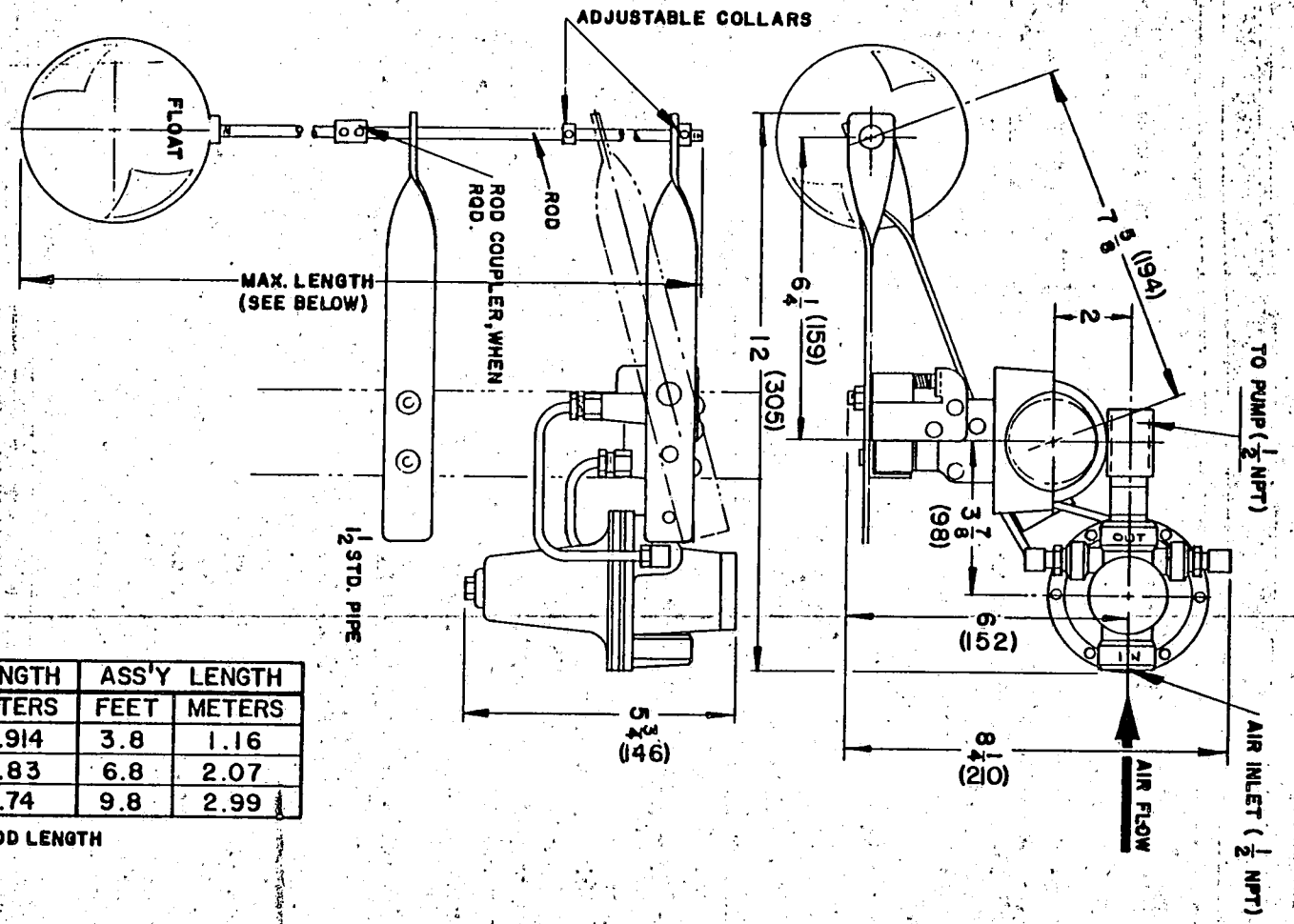
Form No. F-471 Litho in U.S.A.

( ) Metric Dimensions (Millimeters)



ROD LENGTH		ASS'Y LENGTH	
FEET	METERS	FEET	METERS
3.0	.914	3.8	1.16
6.0	1.83	6.8	2.07
●9.0	2.74	9.8	2.99

●MAX. ROD LENGTH

NOTE: RODS ARE SUPPLIED IN 3 FT. (.91M) LENGTHS, THE FLOAT SUPPLIED IS 6 IN. (152MM) IN DIAMETER

FLOAT ACTUATED AIR VALVE

½ NPT AIR PORTS

5 P.S.I. (0.35 Kg/Cm²) MIN. AIR PRESSURE
125 P.S.I. (8.8 Kg/Cm²) MAX. AIR PRESSURE

THE WARREN RUPP COMPANY

DIMENSIONAL OUTLINE 450-026-000 REV.-

(86)

The oxygen level will be tested to make sure it is 19.5% or above and the tank inside will be tested for flammable vapors. After these condition are clear, a self-contained breathing apparatus will be used to visually inspect the internal portion of the tank without actually entering the tank. One other person will be standing by to offer assistance to the person inspecting the tank. The visual inspection of the tank inside will take place from the upper and lower ports with the aid of an explosion proof flashlight. Designated areas just inside the lower and upper ports about six inches in diameter will be brushed clean with a spark proof brass brush and observed to note any serious pitting and signs of serious corrosion. Written descriptions will be made as well as ultrasonic thickness testing. The area at the upper port will be at a position where the blended solvent levels will fluctuate most resulting in more corrosion potential. The area at the lower port will be just inside and below the port opening. The inspector will be the process engineer or process technician supervisor. The records of these inspections will be kept as part of the inspection log. See Fig.45 .

Total Entry Inspection - The tank to be entered will be emptied, ventilated, 19.5% oxygen level insured and flammable vapors eliminated. A tank entry permit will be used and be signed by the process engineer and process technician supervisor verifying that the above steps have been satisfactorily complied with. The person to enter the tank and safety observer will be equipped with life belts and ropes. A rope ladder to be used inside the tank will be inspected. The person to enter and the safety observer will be provided with a self-contained breathing apparatus, hard hat, rubber boots, and rubber gloves. The safety observer will be present at the entrance to the vessel. Life line signals will be established prior to entry for communication by tugging rope. There will be an additional person assisting the safety observer. Each participant will be trained before being allowed to inspect the tank. The individual inspecting the tank with an explosion proof flashlight will move up and down the inside of the tank looking for pitting and severe corrosion or any other unusual conditions in the tank. All observations will be recorded on the inspection log sheet. See Fig.47 .

Should the tank develop a leak, the contents of the tank will be immediately pumped out into the other tank if the other tank is available. If the tank is not available, emergency drums that are stored in the warehouse of the drum storage area will be filled and stored in the drum storage area. Any blended waste solvent collected in the diked area will also be immediately pumped into drums and stored for future processing.

When the tank with the leak is empty it will be ventilated for two days and steam cleaned to insure that no flammable vapors remain. Vapor level checks will be performed. The tank will be totally inspected inside before it will be repaired by welding. The water from steam cleaning will be analysed and deep well injected.

Closure:

At closure the various tanks and piping will be emptied and ventilated for two days. Each tank and piping system will be steam cleaned. The tanks will be internally inspected for any residue. If more than 3% of the total volume of a given tank is residue the tanks will be sand blasted.

The area around the tanks in the diked area will be scraped, swept, and then steam cleaned. Any residual water will be collected and disposed of properly.

Special Requirements for Ignitable or Reactive Wastes:

As a result of the fingerprint analysis which tests incoming waste streams for reactive responses, large scale reactive responses should not occur. Since the waste solvents stored in the tanks are ignitable, the tanks and area surrounding them are protected from ignition sources by restricting access and prohibiting smoking or the use of equipment that could cause a spark or other ignition source.

In regard to the National Fire Protection Association's (NFPA) buffer zone requirements for tanks containing flammable liquids, these requirements are met for the two 4500 gallon storage tanks.

NFPA 30, 2-2.1.1 states that:

> Every above ground tank for the storage of Class I, Class II, or Class IIIA liquids, except as provided in 2-2.1.2 and those liquids with boilover characteristics and unstable liquids, operating at pressures not in excess of 2.5 psig and designed with a weak roof-to-shell seam or equipped with emergency venting devices which will not permit pressures to exceed 2.5 psig, shall be located in accordance with table 2-1.

Table 2-1 specifies 7.5 feet as the minimum distance in feet from a property line which is or can be built upon, including the opposite side of a public way. It also specifies that there be a minimum of 2.5 feet from the nearest side of any public way or from the nearest important building on the same

property. In both cases the tanks meet these minimum requirements. The tanks are 15 feet from the property line and fifteen feet from the nearest building on the same property.

Special Requirements for Incompatible Wastes:

As stated before in the previous section on Special Requirements for Ignitable or Reactive Wastes, the fingerprint analysis performed on each incoming waste stream will insure that no incompatible reactions occur on a large scale during blending, distilling, or storage of the hazardous waste at Reid Supply Company.

Tank Design Requirements:

The information that is available concerning design and construction of the tanks is what can be measured and observed, because the tanks were bought used and without technical drawings or specifications. The tanks and piping are cold steel and unlined. The piping on the engineering drawing for the 4500 gallon storage tanks and still feed tanks in Fig.37 and Fig.38 describes the extent of the piping except for the overflow control mechanisms. For this each tank has an inch and a quarter pipe coming from a height of about a foot from the top of each tank down into a collection drum. The piping and valves for the storage tanks and still feed tanks are two inch . The valves are brass. All tanks are filled from the top and emptied from a valve positioned at the lowest point. The storage tank input and output points are equipped with brass quick disconnects for solvent resistant hoses used to fill and empty the tanks. See Fig.37 through Fig.41 and Table 11 for tank drawings, dimensions, and capacities.

The average shell thickness of the East Storage Tank is 0.309 inches and the minimum thickness measured is 0.233 inches. The average shell thickness of the West Storage Tank is 0.271 inches and the minimum thickness is 0.177 inches. The thicknesses of the processing and transfer tanks are not less than an eighth of an inch.

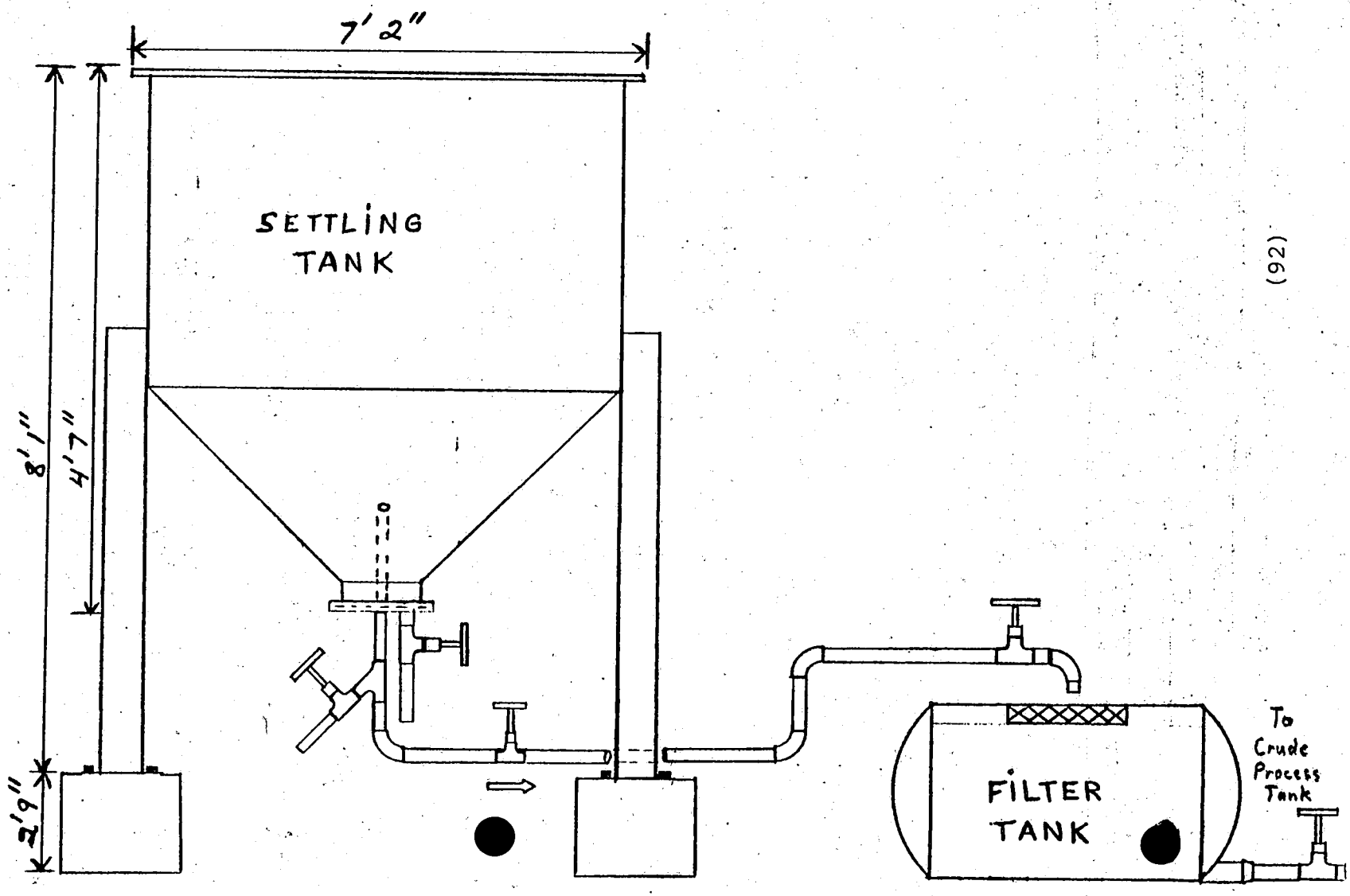
The diagrams of piping are provided in Fig.37 and Fig.38 . The process flow is as follows:

(1) For waste solvents to be used as cement kiln fuel

(a) blend and pump appropriate waste materials from drums in drum processing area into both 4500 gallon storage tanks

PIPING LAYOUT FOR SETTLING TANK
TO FILTERING TANK

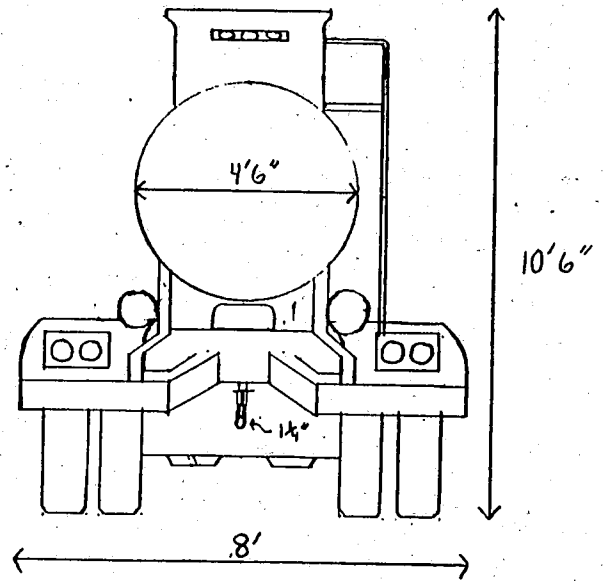
Fig. 39



7-2-81
RAP

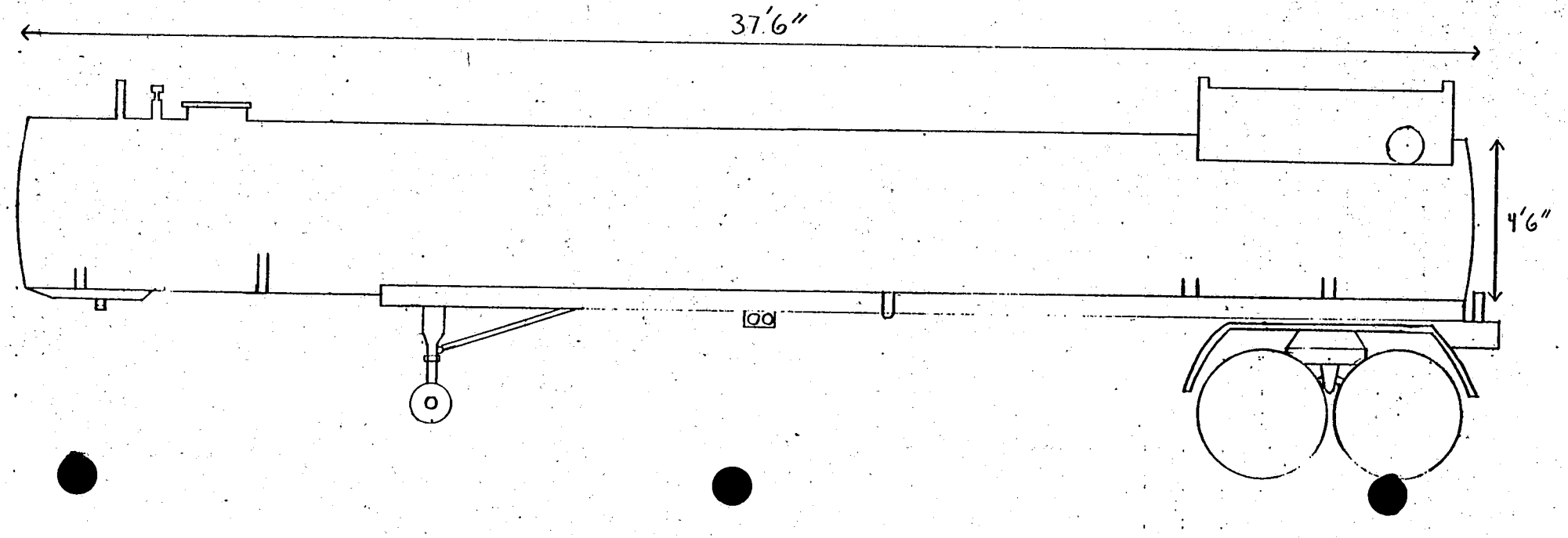
3000 GALLON TRANSFER TANK

Fig. 40



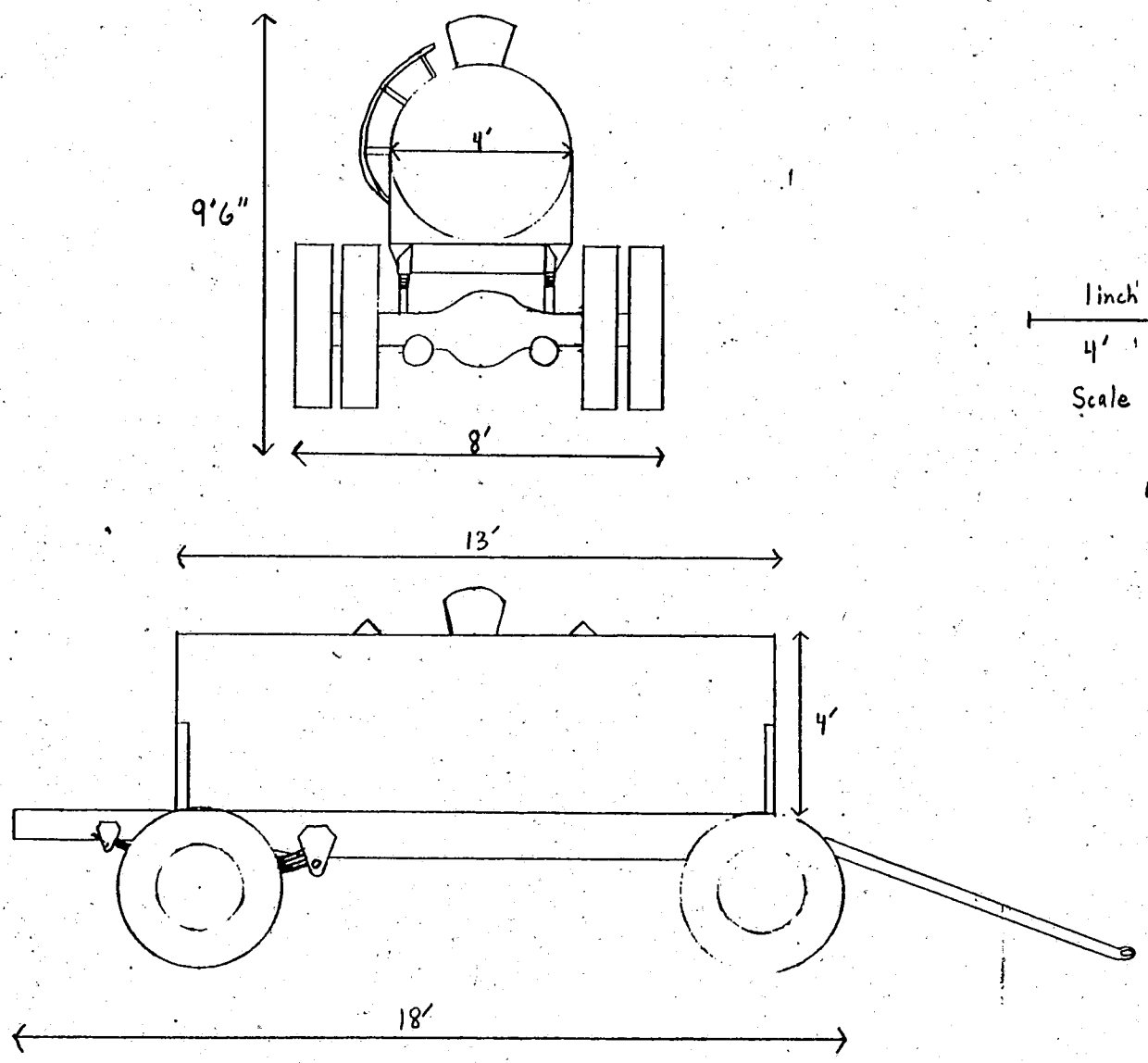
1 inch
4'
Scale

DGT 3/83



1200 GALLON TRANSFER TANK

Fig. 41



1 inch
4'
Scale

DGT 3/83

Table 11

TANK DIMENSIONS AND CAPACITIES

Tank Use	Verical/Horizontal	Dimensions (radius X length)	Volume (gallons)
Storage	V	3' X 21'	4500
Storage	V	3' X 21'	4500
Settling	V	3'7" X 4'7"	1000
Still Feed 1	V	2' X 8'7"	800
Still Feed 2	V	2' X 8'7"	800
Still Feed 3	V	2' X 6'3"	600
Transfer	H	2'3" X 37'6"	4000
Transfer	H	2' X 13'	1200

(b) when tanks are full, a bulk transport is called in to draw off the contents of the tanks from the bottom of the tanks

(2) For waste solvents to be distilled

(a) drums of a certain type of waste solvent are pumped into settling tank
(b) water is allowed to settle out of the solvent and the water is drawn out from the bottom along with some solvent. This solvent-water mixture is blended with the other waste solvent to be used as a fuel source since it has a BTU per pound value above 8,000 BTU per pound.
(c) the residual waste solvent is drawn out of the settling tank, pumped into a transport tank, transported to the still processing area, and pumped into the still feed tanks
(d) the solvent is drawn from the still feed tanks into the distillation chambers of the still by the still vacuum pump
(e) distilled solvent is stored in bulk tanks or immediately drummed

All pumping except for the vacuum pump in the still is performed by diaphragm pumps driven by air to prevent ignition sources.

The existing process at Reid Supply Company does not require a special feed system other than using the pumps as described above. Bypass systems are also not necessary. The safety cut-off valve to prevent overflowing is described in the General Operating Requirements of this section.

The description of procedures for handling reactive, ignitable, or incompatible wastes including the use of buffer zones is found earlier in Special Requirements For Ingitable Or Reactive Wastes and Special Requirements For Incompatible Wastes. Dikes have been constructed around all the stationary storage and processing tanks to contain the volume of the largest tank. The dikes are shown in the tank drawings. Dikes have been constructed of masonry block and mortar. The base will be sealed with a bonding agent that mixes with concrete to assure a firm bond on exterior concrete repairs.

9. SECURITY PROCEDURES
264.14 and 122.25(a)(4)

Entry Control:

The still processing area (Fig.6) has an eight foot chain link fence surrounding it. The fence has three gates which are locked when not in use and checked for being locked at the end of each working day. This helps assure that unauthorized personnel do not enter unless someone from Reid Supply is on hand to accompany the visitor.

The tank storage, drum storage, and drum processing areas are also surrounded by an eight foot chain link fence with gates that can be secured (Fig. 6). However, since there are other industrial businesses renting buildings within this fenced area, it has been necessary to erect an additional barrier fence system to limit access to the tank storage and drum processing areas (Fig.6). This additional barrier fence is a six foot high chain link with two sliding gates that are locked by a three-eights inch chain and number one padlock and a walk-in gate that is locked by a gate latch and padlock. The drum storage area is secured by locking the garage doors and locking the two walk-through doors from the inside.

Both the drum processing area, which includes the tank storage area, and the drum processing area are locked when the areas are unattended. This could be at break time, lunch, or closing time. Employees are instructed to question and direct unauthorized visitors to the office if they should try to enter an active portion of the facility when it is not locked.

Warning signs saying, "Danger - Authorized Personnel Only" which are clearly visible from 25 feet have been placed at each entrance and around the still processing area so that sufficient warning is given for each approach. The same warning signs have also been placed on the drum storage building and on the gates to the drum processing and tank storage area. See Fig.48 for the locations. These signs will be inspected according to the inspection schedule to insure that they continue to be visible from 25 feet and are securely fastened.

10. INSPECTION SCHEDULE AND LOG SHEETS 264.15 & 122.25(a)(5)

A copy of the general inspection schedule is provided (Figure 42). The items inspected and the frequency of inspection were determined based upon the specific requirements in Sections 264.174, 264.194, 264.226, and 264.254. The schedule includes inspections of safety and emergency equipment, security devices, and operating and structural equipment that are important to preventing, detecting, or responding to environmental or human health hazards. The schedule also identifies the problems which are to be looked for during inspection.

Upon detecting any deterioration or malfunction of equipment or structures either by inspection or upon detection of an immenent or present hazard, remedial action will be taken by Reid Supply Company.

Reid Supply is also recording the regular inspection of the items listed on the inspection schedule. This is done on inspection log sheets (Figures 43-47) that are organized according to frequency of inspection. These records will be kept for three years from the date of inspection.

INSPECTION SCHEDULE

Fig. 42

Area/Equipment	Specific Items	Types of Problems	Frequency of Inspection
Safety and Emergency Equipment	Fire Hydrant	Area not clear for its use	Monthly (1st week)
	Shovels	Broken, missing	Monthly
	Fire Extinguishers	Charged and inspected by an official	Monthly (1st week)
	Emergency Alarm	Does not sound	Weekly
	Two-Way Radio	Poor reception or none	Weekly
	Portable P.A. System	Poor volume	Monthly
	Oil Absorbent	Inadequate supply at each processing area	Weekly
	Empty Drums	Less than 80 drums available for spills, poor condition	Weekly
	Air Compressor	Water accumulation, oil level	Weekly
	Flexible Hoses & Quick Couplings	Leaks, smooth operation of couplings	Weekly
	Emergency Shower and Eye Wash	Water pressure leakage drainage	Weekly
	Goggles, Faceshields	Impaired vision	Weekly
	Organic Vapor Masks & SCBA	Faulty straps, dirty, cracked rubber, not charged	Weekly
	Protective Clothing	Holes, too soiled	Monthly (1st week)
	Portable Sump Pump	Power, clogging	Weekly
	First Aid Kit	Missing items	Monthly (1st week)
Security Devices	Still Processing Area Fence	Damaged	Weekly
	Drum Processing and Tank Storage Area Fence	Damaged	Weekly
	Warehouse Doors to Drum Storage	Damaged	Weekly

INSPECTION SCHEDULE (CONTINUED) Fig. 42 (cont.)

Area/Equipment	Specific Items	Types of Problems	Frequency of Inspection
(Safety Devices continued)	Gates	Damaged	Weekly
	Locks	Damaged, missing	Weekly
	Warning Signs	Damaged, missing, unreadable	Monthly (1st week)
Operating and Structural Equipment	Portable Sump Pump	Power, clogging	Weekly
	Dikes	Cracks, damaged	Weekly
	Bases, foundations	Cracks, deterioration	Weekly
	Piping to Holding Tanks	Leaks, deterioration	Weekly
	Blender Motor	Oil level too low	Weekly
	Drum Opener	Not lubricated or sharp	Weekly
Container Storage Area	Container Placement	Inadequate aisle space	Weekly
	Sealing of Containers	Open lids	Weekly
	Labeling of Containers	Incomplete information	Weekly
	Containers	Corrosion, leakage, structural defects	Weekly
	Pallets	Damaged	Weekly
	Base or Foundation, Sump	Cracks, deterioration, wet spots	Weekly
	Dikes	Cracks, damaged	Weekly
	Ramps	Stress fractures, warping	Weekly
	Warning Signs	Damaged, missing	Weekly
Tank Storage Area and Ancillary Equipment	Dike	Cracks, deterioration	Weekly
	Base or Foundation, Sump	Cracks, deterioration, wet spots	Weekly
	Warning Sign	Damaged, missing	Weekly
	Pipes	Leaks, deterioration	Weekly
	Valves	Leaks, deterioration	Weekly

INSPECTION SCHEDULE (CONTINUED) Fig. 42 (cont.)

Area/Equipment	Specific Items	Types of Problems	Frequency of Inspection
(Tanks Storage Area and Ancillary Equipment con't)	Fittings	Leaks, deterioration	Weekly
	Overfill Prevention Mechanisms	Clogging, leaks, alarm not activated	Daily (each operating day)
Tanks - Storage 4500, 4500 gallons	Ladders	Damaged, structural stability	Weekly
	Structural Supports	Damaged, structural stability	Weekly
	Pipe Connections	Leaks, deterioration	Weekly
	Tank Shells (external)	Leaks, deterioration	Weekly
	Tank Shells (internal)	Corrosion pits, sprung seams, rivets, depressions	Every 5 years (total entry) Every year (from ports
	Shell Thickness	Less than 0.100 inch thick	Yearly
Loading and Unloading Areas	Steel Plates	Weakening/Missing	Daily or as used
	Forklift	Lift not working smoothly	Daily or as used
	Drums	Leaking	Daily or as used

(NON-REGULATED)

INSPECTION SCHEDULE (CONTINUED) Fig. 42 (cont.)

Area/Equipment	Specific Items	Types of Problems	Frequency of Inspection
Processing Tanks and Ancillary Equipment	Dike	Cracks, deterioration	Weekly
	Base of Foundation Sump	Cracks, deterioration, wet spots	Weekly
	Warning	Damaged, missing	Weekly
	Pipes	Leaks, deterioration	Weekly
	Valves	Leaks, deterioration	Weekly
	Fittings	Leaks, deterioration	Weekly
	Overfill Prevention Mechanism	Leaks, deterioration	Weekly
Tanks - Settling 1000 gal Still Feed 600,800, 800 gal. Transfer 1200, 1400 gal.	Ladders	Damaged, structural stability	Weekly
	Structural Supports	Damaged, structural stability	Weekly
	Pipe Connections	Leaks, deterioration	Weekly
	Tanks Shells	Leaks, deterioration	Weekly

DAILY INSPECTION LOG SHEET

OF OVERFILL PREVENTION MECHANISM

Fig. 43

Possible Problems clogging, leaks, alarm not activating

Inspector Initials/Title	Date Mo/Day/Yr	Time	Status (X) Accept	Unaccept	Observations	Date and Nature of Repairs/Remedial Actions

Fig. 43 (cont.)

DAILY INSPECTION LOG SHEFT
OF LOADING AND UNLOADING AREAS

Possible Problems		
	Steel Plates	Weakening/Missing
	Forklift	Lift not working smoothly
	Drums	Leaking

Inspector Initials/Title	Date Mo/Day/Yr	Time	Status (X) Accept	Status (X) Unaccept	Observations	Date and Nature of Repairs/Remedial Action

WEEKLY INSPECTION LOG SHEET

Fig. 44

Inspector's name/title _____

Date of Inspection _____ month/day/yr

Time of inspection _____ (a.m. or p.m.)

Item	Possible Problems	Status (X)		Observations	Date and Nature of Repairs/Remedial Action
		Accept	Unaccept		
<u>Safety and Emergency Equipment</u>					
Oil Absorbent	Inadequate supply at each processing area				
Empty Drums	Less than 80 drums available for tank leakage, poor condition				
Air Compressor	Water accumulation, oil level				
Flexible Hoses and Quick Couplings	Leaks, unsmooth operation of couplings				
Emergency Shower/ Eye Wash	Water pressure, leakage				
Shovels	Broken, missing				
Goggles, Faceshields	Impaired vision				
Organic Vapor Masks and SCBA	Faulty straps, dirty, cracked rubber, not charged				
Portable Sump Pump	Power, clogging				
Emergency Alarm	Does not sound				
Telephone	Poor reception or none				
Portable P.A. System	Poor volume				
First Aid Kit	Missing items				

WEEKLY INSPECTION LOG SHEET (CONTINUED) Fig. 44 (cont.)

Inspector's name/title _____

Date of inspection _____ month/day/yr

Time of inspection _____ (a.m. or p.m.)

Item	Possible Problems	Status (X)		Observations	Date and Nature of Repairs/Remedial Action
		Accept	Unaccept		
Security Devices					
Still Processing Area Fence	Damaged				
Drum Processing and Tank Storage Area Fence	Damaged				
Warehouse Doors to Drum Storage Area	Damaged, unlocked				
5 Gates	Damaged				
5 Locks	Damaged, missing				
Operating and Structural Equipment					
Portable Sump Pump	Power, clogging				
Drum Opener	Not lubricated or sharp				
Bases, Foundations	Cracks, deterioration				
Piping to Holding Tanks	Leaks, deterioration				
Blender Motor	Oil level too low				
Container Storage Area					
Container Placement	Inadequate aisle space				
Sealing of Containers	Open lids				
Labeling of Containers	Incomplete information				

WEEKLY INSPECTION LOG SHEET (CONTINUED) Fig. 44 (cont.)

Inspector's name/title _____

Date of inspection _____ month/day/yr

Time of inspection _____ (a.m. or p.m.)

Item	Possible Problems	Status (X)		Observations	Date and Nature of Repairs/Remedial Action
		Accept	Unaccept		
(Container Storage Area con't)					
Containers	Corrosion, leakage, structural defects				
Pallets	Damaged				
Sump Area	Cracks, deterioration, wet spots				
Base or Foundation	Cracks, deterioration, wet spot				
Dikes	Cracks, damaged				
Ramps	Stress fractures, warping				
Warning signs	Damaged, missing				
Tank Storage Area					
Dikes	Cracks, deterioration				
Base or Foundation	Cracks, deterioration, wet spots				
Sump Area	Cracks, deterioration, wet spots				
Warning sign	Damaged, missing				
Pipes	Leaks, deterioration				
Valves	Leaks, deterioration				
Fittings	Leaks, deterioration				

WEEKLY INSPECTION LOG SHEET (CONTINUED) Fig. 44 (cont.)

Inspector's name/title _____

Date of inspection _____ month/day/yr

Time of inspection _____ (a.m. or p.m.)

Item	Possible Problems	Status (X)		Observations	Date and Nature of Repair/Remedial Action
		Accept	Unaccept		
East 4500 Gallon Storage Tank					
Ladders (if applicable)	Damaged, poor structural stability				
Structural Supports	Damaged, poor structural stability				
External Shells	Leaks, deterioration				
Pipes/Valves/ Fittings	Leaks, deterioration				
West 4500 Gallon Storage Tank					
Ladders (if applicable)	Damaged, poor structural stability				
Structural Supports	Damaged, poor structural stability				
External Shells	Leaks, deterioration				
Pipes/Valves/ Fittings	Leaks, deterioration				
Safety and Emergency Equipment					
Fire Hydrant	Area not clear for its use				
Fire Extinguisher	Not present, not charged, not currently inspected				
Shovels (two)	Broken, missing				
Protective Clothing	Holes, too soiled				
Security Devices					
Warning signs	Damaged, missing, unreadable				

(NON-REGULATED ITEMS)

WEEKLY INSPECTION LOG SHEET (CONTINUED) Fig. 44 (cont.)

Inspector's name/title _____

Date of inspection _____ month/day/yr

Time of inspection _____ (a.m. or p.m.)

Item	Possible Problems	Status		Observation	Date and Nature of Repairs/Remedial Action
		Accept	Unaccept		
Still Feed Tank Area					
Dikes	Cracks, deterioration				
Base or Foundation	Cracks, deterioration wet spots				
Sump Area	Cracks, deterioration, wet spots				
Warning Signs	Damaged, missing				
Pipes	Leaks, deterioration				
Valves	Leaks, deterioration				
Fittings	Leaks, deterioration				
600 Gallon Still Feed Tank					
Ladders (if applicable)	Damaged, poor structural stability				
Structural Supports	Damaged, poor structural stability				
External Shells	Leaks, deterioration				
Pipes/Valves/ Fittings	Leaks, deterioration				
North 800 Gallon Still Feed Tank					
Ladders (if applicable)	Damaged, poor structural stability				
Structural Supports	Damaged, poor structural stability				

(NON-REGULATED ITEMS)
WEEKLY INSPECTION LOG SHEET (CONTINUED)

Fig. 44 (cont.)

Inspector's name/title _____

Date of inspection _____ month/day/yr

Time of inspection _____ (a.m. or p.m.)

Item	Possible Problems	Status (X)		Observations	Date and Nature of Repair/Remedial Action
		Accept	Unaccept		
(North 800 Gallon Still Feed Tank con't)					
External Shells	Leaks, deterioration				
Pipes/Valves/ Fittings	Leaks, deterioration				
South 800 Gallon Still Feed Tank					
Ladders (if applicable)	Damaged, poor structural stability				
Structural Supports	Damaged, poor structural stability				
External Shells	Leaks, deterioration				
Pipes/Valves/ Fittings	Leaks, deterioration				
1000 Gallon Settling Tank					
Ladders (if applicable)	Damaged, poor structural stability				
Structural Supports	Damaged, poor structural stability				
External Shells	Leaks, deterioration				
Pipes/Valves/ Fittings	Leaks, deterioration				
4000 Gal. Trans. Tnk					
Ladder	Damaged, poor structural stability				
Structural Supports	Damaged, poor structural stability				
Pipes/Valves/ Fittings	Leaks, deterioration				

WEEKLY INSPECTION LOG SHEET (CONTINUED) Fig. 44 (cont.)

Inspector's name/title _____

Date of inspection _____ month/day/yr

Time of inspection _____ (a.m. or p.m.)

Item	Possible Problems	Status (X)		Observations	Date and Nature of Repair/Remedial Action
		Accept	Unaccept		
(4000 Gallon Transfer Tank con't)					
Tank, Shell (external)	Leaks, deterioration				
Tires	Flat, damaged				
1200 Gallon Transfer Tank					
Ladder	Damaged, poor structural stability				
Structural Supports	Damaged, poor structural stability				
Pipes/Valves/ Fittings	Leaks, deterioration				
Tank, Shell (external)	Leaks, deterioration				
Tires	Flat, damaged				

Fig. 45

ANNUAL INSPECTION LOG SHEET
FOR INTERIOR OF BULK STORAGE TANKS
INSPECTION FROM PORTS

Inspector's name/title _____

Date of inspection _____ month/day/yr

Time of inspection _____ (a.m. or p.m.)

Item	Possible Problems	Status (X)		Observations*	Date and Nature of Repairs/Remedial Action
		Accept	Unaccept		
East Bulk Storage Tank	Corrosion pits, sprung seams, depressions			Condition of 6" diameter area	
				Ultrasonic reading	
				General condition of interior	
West Bulk Storage Tank	Corrosion pits, sprung seams, depressions			Condition of 6" diameter area	
				Ultrasonic reading	
				General condition of interior	

*Note additional observations on back

Fig. 46

ANNUAL INSPECTION LOG SHEET
ULTRASONIC THICKNESS TEST

Inspector's name/title _____

Date of inspection _____ month/day/yr

Time of inspection _____ (a.m. or p.m.)

Attach readings and comments to this sheet
for both the East and West bulk storage tanks.

Fig. 47

FIVE YEAR INSPECTION LOG SHEET
FOR INTERIOR OF BULK STORAGE TANKS
COMPLETE INTERNAL INSPECTION

Inspector's name/title _____

Date of inspection _____ month/day/yr

Time of inspection _____ (a.m. or p.m.)

Item	Possible Problems	Status (X)		Observations	Date and Nature of Repairs/Remedial Action
		Accept	Unaccept		
East Bulk Storage Tank	Corrosion pits, sprung seams, depressions				
West Bulk Storage Tank	Corrosion pits, sprung seams, depression				

11. PREPAREDNESS AND PREVENTION REQUIREMENTS
264, Subpart C

Required Equipment:

Alarms - Alarm sirens have been installed in the still processing, drum processing (which includes the tank storage), and drum storage areas as shown on the two part Emergency Equipment Location Map (Fig.48). The alarms will be used to warn of spills and fires and preliminary evacuation. The same signal will be used for both types of emergencies and preliminary evacuation.

Telephones - Telephones are located in the plant office still processing area, and in C Building in a location easily accessible from the drum storage, bulk storage, and drum processing areas. These allow routine and emergency communication.

Portable P.A. System: This is used by the Emergency Coordinator to give orders during emergencies.

Portable Fire Extinguishers: Portable fire extinguishers are located in the still processing, drum processing, and drum storage areas to take care of small fires. See Fig.48 .

Spill Control Equipment: Dikes protect the still feed tanks and tank storage area from spills and the drum storage area will have a complete dike system according to Fig.31 . In addition to dikes, each area has oil absorbent for controlling small spills and pumps, hoses, and air compressors suitable for pumping out of the sumps within the dikes. Empty drums are kept on hand to pump spilled solvents into and to transfer the contents of leaking containers and tanks into. Shovels are available to divert an uncontained spill away from ignition sources, water ways, or other potentially hazardous conditions. If the shovels are not adequate, a back hoe is available at either Victor Phillips or Price Brothers Equipment according to the Contingency Plan.

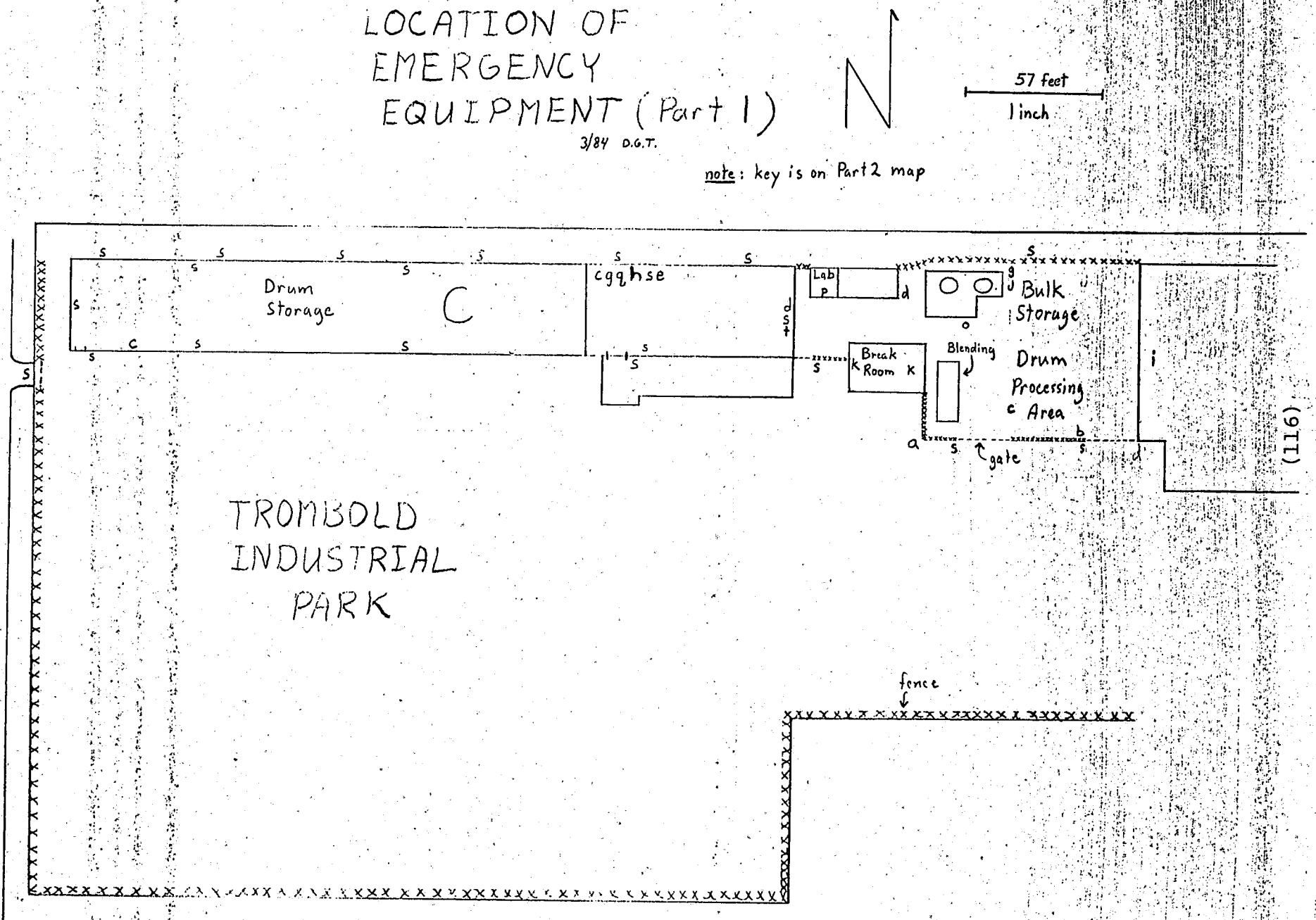
Decontamination Equipment: Decontamination equipment includes two showers and two eye wash stations as shown on the location of Emergency Equipment Map.

First Aid Kit: This contains supplies to treat minor cuts,

Fig. 48

LOCATION OF EMERGENCY EQUIPMENT (Part 1)

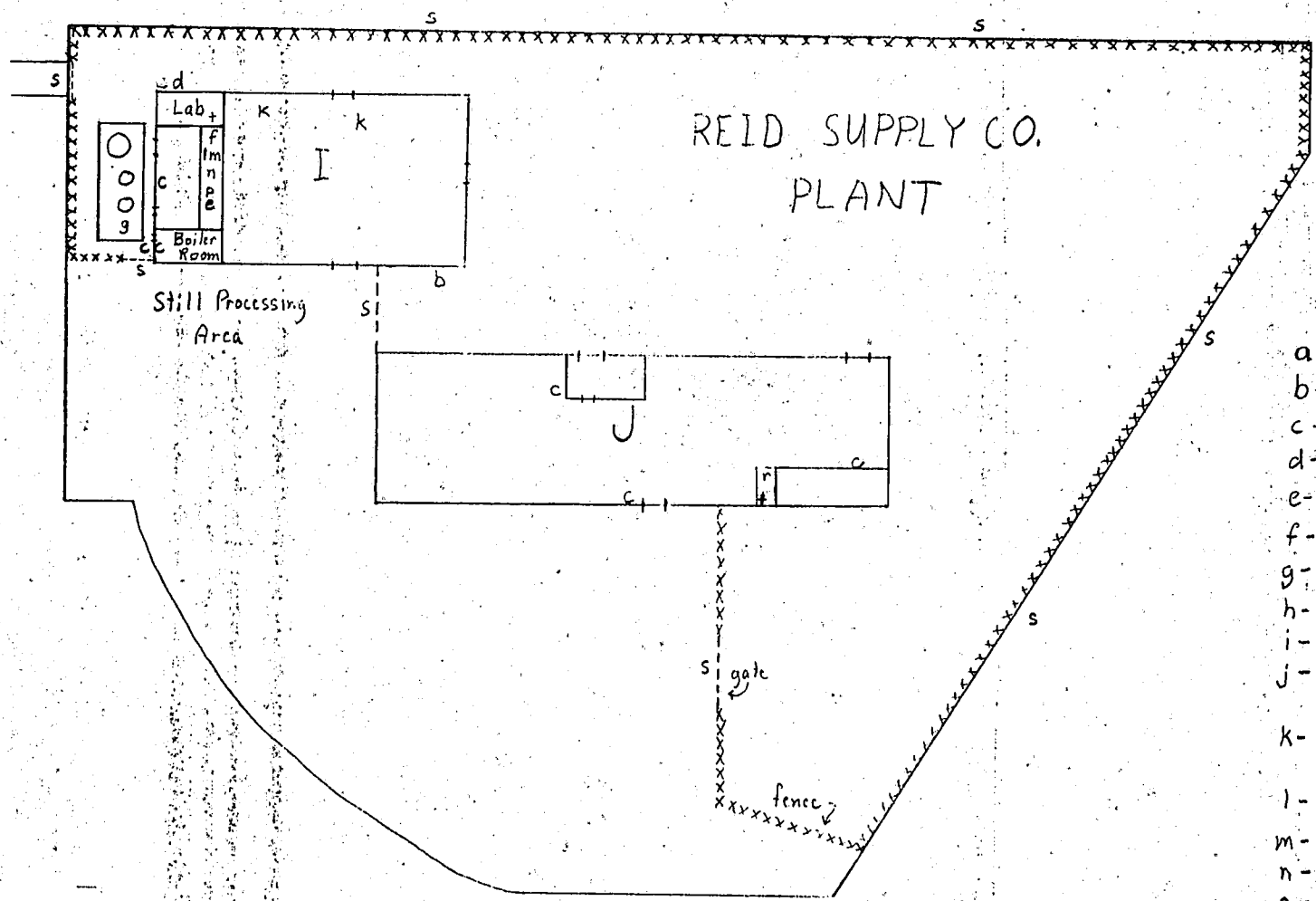
3/84 D.G.T.



(116)

LOCATION OF EMERGENCY EQUIPMENT (Part 2).

3/84 D.G.T.



a - fire hydrant
b - portable 150 lb. fire extinguisher
c - fire extinguishers (hand held)
d - emergency alarm
e - shovel
f - portable p.a. system
g - oil absorbant
h - empty drums
i - air compressor
j - flexible hose and quick couplings
k - emergency shower or eye wash
l - goggles, face shields
m - organic vapor masks, SCBA
n - protective clothing, boots
o - portable sump pump
p - first aid kit
q - squeegee
r - hard hats
s - no smoking/danger signs
t - telephone

burns, and abrasions and is located in the room just outside the lab in I Building.

Water for Fire Fighting: Four fire hydrants are accessible to Reid Supply. (Fig. 6) One is on the property between the drum processing and drum storage sreas. This hydrant has 88 psi static, 38 psi residual, and 1400 gallon per minute flow rate. Along the same water line to the west about 60 feet from the drum storage area is a city hydrant with about the same pressure readings and flow rate of about 200 gallon per minute higher. Along the same water line about 300 feet south is another city hydrant that has about the same pressure and flow rate as the previous hydrant. These two hydrants are easily accessible from the fire lane through Derby Refinery. Only one of these three hydrants can be used at one time because they are all part of the same deadend line. Depending on the location and severity of the fire, a different hydrant could be used. In addition, a hydrant owned and maintained by Derby Refinery is located among the Gasoline Storage Tanks. This hydrant has 155 psi static, 95 psi residual, and 3000 gallon per minute flow rate. The Fire Department in conjunction with this hydrant and one of the other three can provide enough water for fire fighters to protect surrounding areas from fire spread and also to supply water to foam wagons and other specialized fire fighting equipment. This special equipment is available to the Wichita Fire Department through a mutual aid agreement it has made with local private industries who have their own specialized fire fighting equipment for polar and nonpolar solvent fires. An example of the kind of equipment available through this mutual aid pact is a state-of-the-art foam wagon designed to fight polar and nonpolar solvent fires. It has a foam concentration capacity of 1000 gallons with another 1000 gallons on standby. It can dispense either a 3 or 6% foam solution with water at a rate of 1500 gallons per minute with the aid of a pumper which they have. This equipment as well as equipment from other private industry is available within 15 to 30 minutes of the fire alert. The Fire Department or private fire brigade personnel are trained to operate this equipment.

Protective Clothing: This includes solvent resistant boots, gloves, aprons, suits, goggles, and faceshields. These items are stored outside the lab in I Building. All are worn regularly by workers when they are handling waste solvents.

Respirators: Three types of resiprators are used: organic vapor cartridge masks, organic vapor canister masks, and self-contained breathing apparatus. The first two are used when there is over 19.5% oxygen present and organic solvent vapor

levels are above TLV values as a result of waste solvent processing. The self-contained breathing apparatus is used for confined space entry and for emerging situations such as spills where the organic solvent vapor level is very high or when the oxygen level is below 19.5%.

Testing and Maintenance of Equipment: All of the previously mentioned emergency equipment is inspected visually and if appropriate, tested to see if it functions properly. Inspections are performed according to the Inspection Schedule in Fig. 42 and documented on the Inspection Log Sheets.

Access to Communications or Alarm System: As a rule no employee of Reid Supply Company works alone. This is to assure that if there is an injury or emergency which would incapacitate one of the workers, the other could provide or get help. The two process technicians as well have a telephone in C Building. This enables the workers to communicate quickly with the office for regular work activities and in case of an emergency.

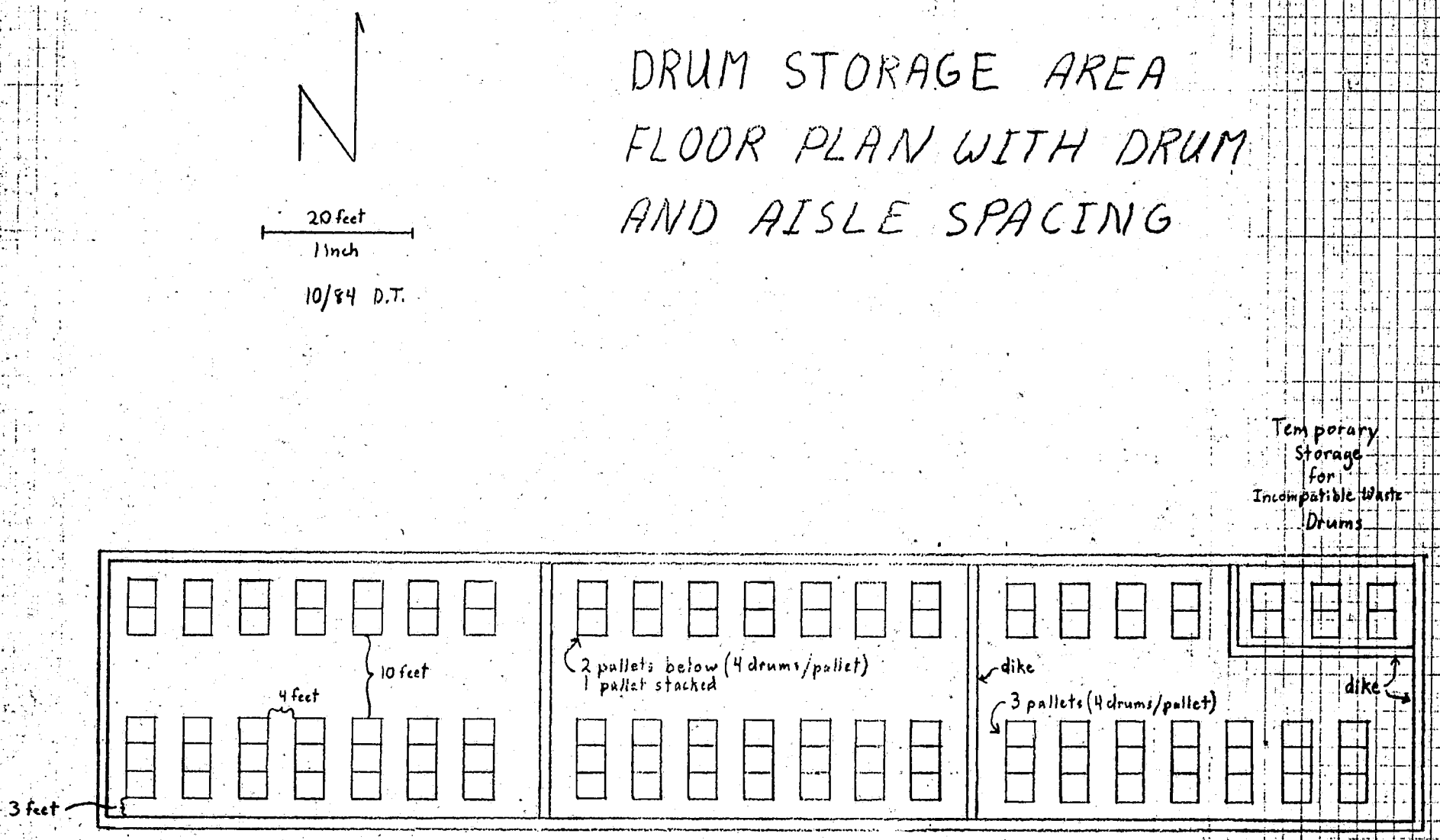
Required Aisle Space: NFPA fire codes require that drums of I A liquids have to be stored in piles of twelve drums or less (NFPA 30, 4-5.7.6), secondary aisles have to be at least four feet wide between piles (NFPA 30, 4-5.7.12), and the primary aisle space has to be at least eight feet wide (NFPA 30, 4-5.7.12). See the drawing of the drum storage area indicating aisle spacing and drum grouping (Fig.49). The primary aisle is 10 feet and the secondary aisles are 4 feet wide with piles not exceeding 12 drums. This will allow 500 drums to be stored in the diked area and conform to the NFPA code standards.

Arrangements with Local Authorities: Arrangements have made to familiarize the Wichita Police, Fire Department, Emergency Medical Service, and Sedgwick County Civil Preparedness with the layout of the facility, properties of the hazardous waste handled at the facility and associated hazards, places where personnel would normally be working, and phone numbers where knowledgeable Reid Supply personnel can be reached during off-hours and possible evacuation routes. This information has been sent to each of the agencies. The Fire Department has also been given a copy of the Contingency Plan for reference during an emergency. Arrangements have also been made to notify St. Francis Hospital here in Wichita of the properties of hazardous waste handled at the facility and are therefore aware of the types of injuries which could result from fires, explosions, or releases at Reid Supply.

All of the agencies contacted have been most appreciative and

FIGURE 49

DRUM STORAGE AREA FLOOR PLAN WITH DRUM AND AISLE SPACING



willing to help. In particular the Wichita Fire Department has been eager to assist with the preparations for a potential emergency. The Fire Department has provided instruction for fire extinguisher use to prevent small fires from getting large, to review Reid Supply's contingency plan in order to make helpful suggestions, aided with buffer zone requirement waivers, and informed Reid Supply of their role in coordinating the other emergency agencies as the Hazardous Materials Response Team. Letters confirming Reid Supply notifying these authorities are provided in Fig. 50 through Fig. 54 .

Fig. 50

The Reid Supply Company

911 E. Indianapolis
Wichita, Kansas 67211
267-1231
(AC 316)

950 Liberty
Kansas City, Missouri 64101
842-4440
(AC 816)

Reply to Wichita office

April 25, 1983

Mr. Larry Garcia
Wichita Fire Department
455 N. Main
Wichita, Kansas 67202

Dear Mr. Garcia:

In order to better inform you of the layout of the Reid Supply Company Plant, properties and associated hazards of the hazardous waste handled, places where personnel would normally be working, phone numbers where knowledgeable Reid Supply personnel can be reached during off-hours and possible evacuation routes are enclosed. Please let me know if you have any questions.

Yours truly,

David A. Trombold

David Trombold
Hazardous Waste Coordinator

DT:aaa

Fig. 50 (cont.)

The Reid Supply Company

CHEMICALS AND SUPPLIES FOR INDUSTRY — INSTITUTIONS DRY CLEANERS — LAUNDRIES MUNICIPALITIES
RESCO

911 E. Indianapolis
Wichita, Kansas 67211
267-1231
(AC 316)

950 Liberty
Kansas City, Missouri 64101
842-4440
(AC 816)

Reply to Wichita office

April 25, 1983

Mr. Olin Tapely
Emergency Medical Service
538 N. Main
Wichita, Kansas 67214

Dear Mr. Tapely:

In order to better inform you of the layout of the Reid Supply Company Plant, properties and associated hazards of the hazardous waste handled, places where personnel would normally be working, phone numbers where knowledgeable Reid Supply personnel can be reached during off-hours and possible evacuation routes are enclosed. Please let me know if you have any questions.

Yours truly,

David H. Trombold

David Trombold
Hazardous Waste Coordinator

DT:aaa

The Reid Supply Company

911 E. Indianapolis
Wichita, Kansas 67211
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Kansas City, Missouri 64101
842-4440
(AC 816)

CHEMICALS AND SUPPLIES FOR INDUSTRY — INSTITUTIONS DRY CLEANERS — LAUNDRIES MUNICIPALITIES

RESCO

Reply to Wichita office

April 25, 1983

Ken Hastings
Civil Preparedness
525 N. Main
Wichita, Kansas 67203

Dear Mr. Hastings:

In order to better inform you of the layout of the Reid Supply Company Plant, properties and associated hazards of the hazardous waste handled, places where personnel would normally be working, phone numbers where knowledgeable Reid Supply personnel can be reached during off-hours and possible evacuation routes are enclosed. Please let me know if you have any questions.

Yours truly,

David D. Trombold

David Trombold
Hazardous Waste Coordinator

DT:aaa

The Reid Supply Company

CHEMICALS AND SUPPLIES FOR INDUSTRY — INSTITUTIONS DRY CLEANERS — LAUNDRIES MUNICIPALITIES

RESCO

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Wichita, Kansas 67211
267-1231
(AC 316)

950 Liberty
Kansas City, Missouri 64101
842-4440
(AC 816)

Reply to Wichita office

April 25, 1983

Dr. Bertram H. Carson
St. Francis Emergency Dept.
St. Francis Hospital
Wichita, Kansas 67214

Dear Dr. Carson:

To follow up on our conversation last March, I have enclosed material safety data sheets that give the properties of hazardous waste handled and the types of injuries or illnesses resulting from fires, explosions, or releases. Even though the safety data sheets relate to virgin solvents, the hazards and properties still apply to the respective waste solvents listed in Table 1. Please keep these on file for your reference should an emergency arise.

Yours truly,

David G. Trombold

David G. Trombold
Hazardous Waste Coordinator

DGT:aaa

The Reid Supply Company

CHEMICALS AND SUPPLIES FOR INDUSTRY — INSTITUTIONS DRY CLEANERS — LAUNDRIES MUNICIPALITIES
RESCO

911 E. Indianapolis
Wichita, Kansas 67211
267-1231
(AC 316)

950 Liberty
Kansas City, Missouri 64101
842-4440
(AC 816)

Reply to Wichita office

April 25, 1983

Lieutenant Stevens
Wichita Police Dept.
455 N. Main
Wichita, Kansas 67202

Dear Lt. Stevens:

In order to better inform you of the layout of the Reid Supply Company Plant, properties and associated hazards of the hazardous waste handled, places where personnel would normally be working, phone numbers where knowledgeable Reid Supply personnel can be reached during off-hours and possible evacuation routes are enclosed. Please let me know if you have any questions.

Yours truly,

David T. Trombold

David Trombold
Hazardous Waste Coordinator

DT:aaa

WASTES AND ASSOCIATED HAZARDS
Ignitable Waste Solvents

The ignitable wastes in Table 1 besides being hazardous due to flammability and the ability to form combustible and/or explosive mixtures with air, have hazards that can develop upon burning. The waste lacquer and enamel thinners which contain paint may give off toxic fumes from the burning epoxy in the paint. All of the ignitable waste solvents have carbon monoxide as one of their hazardous decomposition products. This along with the toxic fumes from burning epoxy make it necessary during fire fighting to have a self contained breathing apparatus with a full face-piece operated in pressure-demand or other positive pressure mode. In addition all of the ignitable waste solvents are highly volitile whose vapors are heavier than air and may travel along the ground or may be moved by ventilation and ignited by any ignition source at locations distant from the vapor source.

The Chlorinated Waste Solvents listed in Table 1, such as Tetrachloroethylene (Perchloroethylene), Methylene Chloride, Trichloroethylene, and 1,1,1, - Trichloroctane besides their toxicity in liquid and vapor form will decompose in the presence of a high intensity heat source to form hydrogen chloride and small amounts of phosgene. This makes a self contained breathing apparatus necessary for fire fighting.

TABLE 1

Wastes, Associated Hazards, and Basis for Hazard Description

Waste	Hazard	Basis for Hazard Designation
Tanks		
Lacquer thinner	Ignitable	Flashpoint below 140°F
Enamel thinner	Ignitable	Flashpoint below 140°F
Drums		
Lacquer thinner	Ignitable	Flashpoint below 140°F
Enamel Thinner	Ignitable	Flashpoint below 140°F
Xylene	Ignitable	Flashpoint below 140°F
Methyl Ethyl Ketone	Ignitable	Flashpoint below 140°F
Acetone	Ignitable	Flashpoint below 140°F
Toluene	Ignitable	Flashpoint below 140°F
Methanol	Ignitable	Flashpoint below 140°F
Tetrachloroethylene	Toxic	Listed waste F001 or F002
Methylene Chloride	Toxic	Listed waste F001 or F002
Trichlorocthylene	Toxic	Listed waste F001 or F002
1,1,1 - Trichloroethane	Toxic	Listed waste F001 or F002
Electroplating Baths	Toxic	Listed waste F007, EP Toxic contains sodium cyanide
Electroplating Bath Sludges	Toxic	Listed waste F007, EP toxic contains sodium cyanide

Fig. 50 (cont.)

EVACUATION ROUTES

N

To Missouri Pacific

REID SUPPLY CO. PLANT
2549 New York

fence

gate

I

virgin solvent storage

gate

gate

Still Processing

Virgin Flammable and Chlorinated Drum Storage

gate

Virgin Methanol Storage

Drum Storage

C

Bulk Storage

Drum Processing

Virgin Chlorinated Solvent Storage

gate

fence

TROMBOLD INDUSTRIAL PARK

New York Ave.

(129)

------ evacuation route

120 feet
1 inch

Off-hour Emergency Numbers

Chuck Trombold
David Trombold
Gene Stamm
Mike Shaw

[redacted]

Ex. 6 PII

Personnel would normally be working in any of the outlined buildings above.

Fig. 51

The Reid Supply Company

911 E. Indianapolis
P. O. Box 11365
Wichita, Kansas 67202
267-1231
(AC 316)

950 Liberty Street
(at Union Avenue)
Kansas City, Mo. 64101
842-4440
(AC 816)

Mr. Larry Garcia
Wichita Fire Department
455 N. Main
Wichita, Ks. 67202

March 28, 1984

Reply to Wichita office

Dear Mr. Garcia:

I am writing to give you an update on the letter I sent you April 25, 1983. Enclosed is a larger and better detailed map of Reid Supply Company's plant facility at 2549 New York, showing the locations of our hazardous waste management activities (drum storage, tank storage, drum processing, and still processing). Also included are the emergency escape routes from these various areas and the location of fire hydrants on or near the property.

In addition note the new numbers for off-hour emergency contact:

David Trombold
Chuck Trombold
Mike Shaw
Gene Stamm

[redacted] Ex. 6 PII

If I can answer any questicns please call me at 267-1231.

Yours truly,

David G. Trombold

David G. Trombold
Hazardous Waste Coordinator

CHEMICALS AND SUPPLIES FOR INDUSTRY — INSTITUTIONS DRY CLEANERS — LAUNDRIES MUNICIPALITIES
RESCO

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Mr. Olin Tapely
Emergency Medical Service
538 N. Main
Wichita, Ks. 67214

March 28, 1983

Reply to Wichita office

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David Trombold
Chuck Trombold
Mike Shaw
Gene Stamm

[redacted] Ex. 6 PII

If I can answer any questicns please call me at 267-1231.

Yours truly,

David G. Trombold

David G. Trombold
Hazardous Waste Coordinator

CHEMICALS AND SUPPLIES FOR INDUSTRY — INSTITUTIONS DRY CLEANERS — LAUNDRIES MUNICIPALITIES
RESCO

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(AC 316)

950 Liberty Street
(at Union Avenue)
Kansas City, Mo. 64101
842-4440
(AC 816)

Mr. Ken Hastings
Civil Preparedness
525 N. Main
Wichita, Ks. 67203

March 28, 1984

Reply to Wichita office

Dear Mr. Hastings:

I am writing to give you an update on the letter I sent you April 25, 1983. Enclosed is a larger and better detailed map of Reid Supply Company's plant facility at 2549 New York, showing the locations of our hazardous waste management activities (drum storage, tank storage, drum processing, and still processing). Also included are the emergency escape routes from these various areas and the location of fire hydrants on or near the property.

In addition note the new numbers for off-hour emergency contact:

David Trombold
Chuck Trombold
Mike Shaw
Gene Stamm

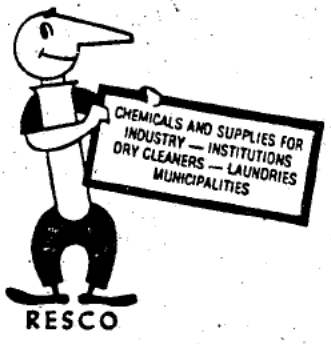
[redacted] Ex. 6 PII

If I can answer any questions please call me at 267-1231.

Yours truly,

David G. Trombold

David G. Trombold
Hazardous Waste Coordinator



The Reid Supply Company

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Dr. Bertam H. Carson
St. Francis Emergency Dept.
St. Francis Hospital
Wichita, Ks. 67214

March 28, 1984

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Dear Dr. Carson:

I am writing to give you an update on the letter I sent you April 25, 1983. Enclosed is a larger and better detailed map of Reid Supply Company's plant facility at 2549 New York, showing the locations of our hazardous waste management activities (drum storage, tank storage, drum processing, and still processing). Also included are the emergency escape routes from these various areas and the location of fire hydrants on or near the property.

In addition note the new numbers for off-hour emergency contact:

David Trombold
Chuck Trombold
Mike Shaw
Gene Stamm

[redacted] Ex. 6 PII

If I can answer any questions please call me at 267-1231.

Yours truly,

David G. Trombold

David G. Trombold
Hazardous Waste Coordinator

CHEMICALS AND SUPPLIES FOR INDUSTRY — INSTITUTIONS DRY CLEANERS — LAUNDRIES MUNICIPALITIES
RESCO

The Reid Supply Company

911 E. Indianapolis
P. O. Box 11365
Wichita, Kansas 67202
267-1231
(AC 316)

950 Liberty Street
(at Union Avenue)
Kansas City, Mo. 64101
842-4440
(AC 816)

Lieutenant Stevens
Wichita Police Dept.
455 N. Main
Wichita, Ks. 67202

March 28, 1984

Reply to Wichita office

Dear Lt. Stevens:

I am writing to give you an update on the letter I sent you April 25, 1983. Enclosed is a larger and better detailed map of Reid Supply Company's plant facility at 2549 New York, showing the locations of our hazardous waste management activities (drum storage, tank storage, drum processing, and still processing). Also included are the emergency escape routes from these various areas and the location of fire hydrants on or near the property.

In addition note the new numbers for off-hour emergency contact:

David Trombold
Chuck Trombold
Mike Shaw
Gene Stamm

[redacted] Ex. 6 PII

If I can answer any questions please call me at 267-1231.

Yours truly,

David G. Trombold

David G. Trombold
Hazardous Waste Coordinator

Fig. 51 (cont.)

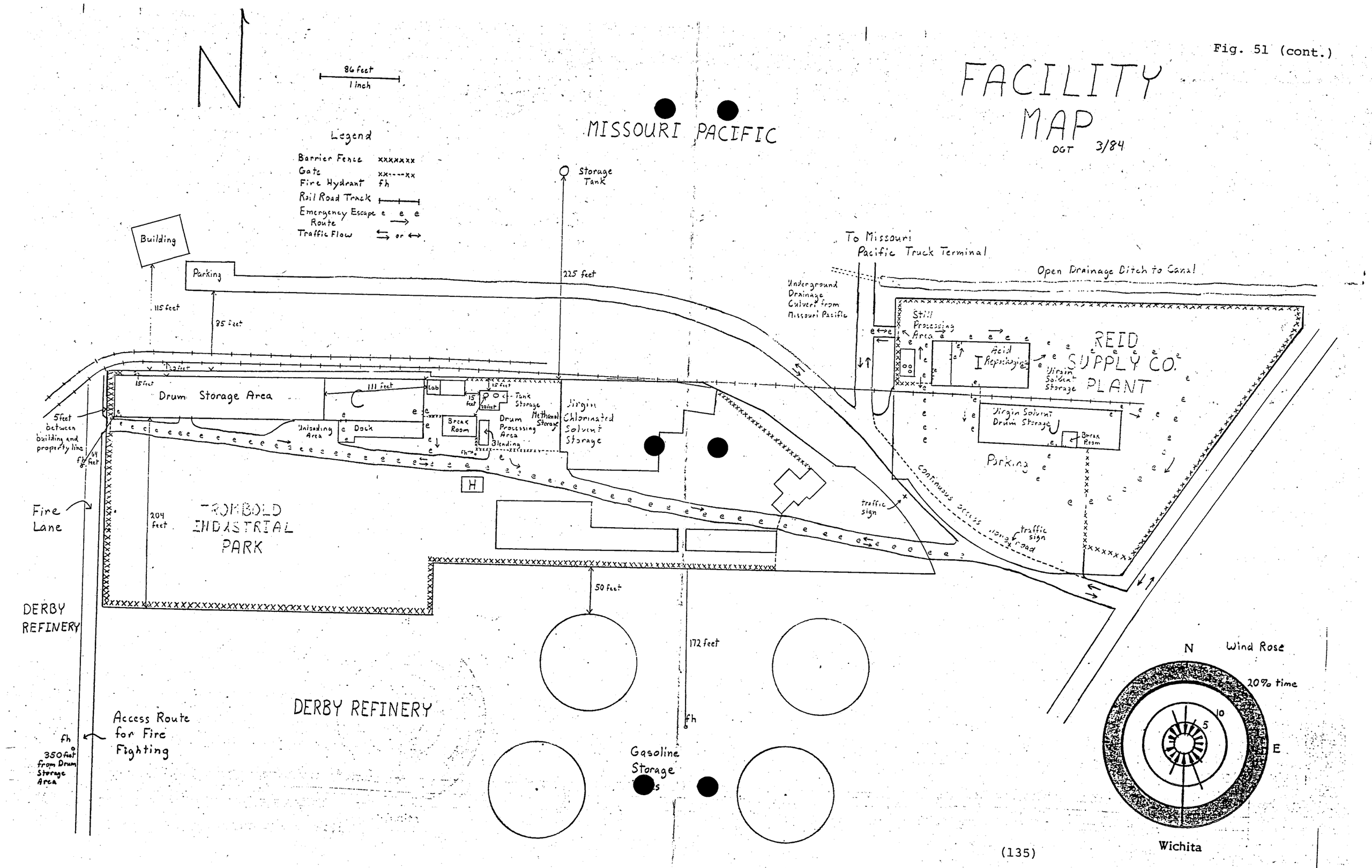
FACILITY MAP
DGT 3/84
N
86 feet
1 inch
Legend
Barrier Fence xxxxxxx
Gate xx----xx
Fire Hydrant fh
Rail Road Track
Emergency Escape Route e e e
Traffic Flow or
MISSOURI PACIFIC
Storage Tank
Building
Parking
115 feet
85 feet
225 feet
To Missouri Pacific Truck Terminal
Open Drainage Ditch to Canal
Underground Drainage Culvert from Missouri Pacific
Still Processing Area
Acid Repackaging
Virgin Solvent Storage
REID SUPPLY CO. PLANT
Virgin Solvent Drum Storage
Break Room
Parking
Continuous access road
traffic sign
Drum Storage Area
111 feet
Lab
Tank Storage
Methanol Storage
Drum Processing Area
Blending
Break Room
Unloading Area
Dock
Virgin Chlorinated Solvent Storage
5 feet between building and property line
Fire Lane
204 feet
TROMBOLD INDUSTRIAL PARK
DERBY REFINERY
50 feet
172 feet
fh
Access Route for Fire Fighting
350 feet from Drum Storage Area
Gasoline Storage
Wind Rose
20% time
10
5
E
Wichita

Fig. 52

The Reid Supply Company

CHEMICALS AND SUPPLIES FOR INDUSTRY — INSTITUTIONS DRY CLEANERS — LAUNDRIES MUNICIPALITIES

RESCO

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(AC 816)

April 16, 1984

Mr. Larry Garcia
Wichita Fire Dept.
455 N. Main
Wichita, Ks. 67202

Reply to Wichita office

Dear Mr. Garcia:

Enclosed you will find a copy of Reid Supply Company's contingency plan. This will better familiarize you with what Reid Supply will do should an incident occur that would neccessitate implementation of the contingency plan.

If you have any questions or suggestions, please let me know.

Yours truly,

David G. Trombold

David G. Trombold
Hazardous Waste Coordinator

The Reid Supply Company

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Wichita, Kansas 67202
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(at Union Avenue)
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842-4440
(AC 816)

Mr. Michael Everhart
Director of Environmental Health
1900 E. 9th
Wichita, Ks. 67214

April 19, 1984

Reply to Wichita office

Dear Mike:

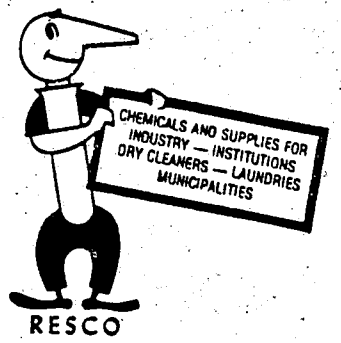
In order to inform you of the emergency plans that Reid Supply Company has prepared, I have enclosed a copy of our contingency plan, a description of the hazardous wastes we handle, and a listing of their associated hazards.

If you have any questions or comments, please let me know.

Yours truly,

David G. Trombold

David G. Trombold
Hazardous Waste Coordinator



The Reid Supply Company

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(AC 816)

April 16, 1984

Mr. Olin Tapely
Emergency Medical Service
538 N. Main
Wichita, Ks. 67214

Reply to Wichita office

Dear Mr. Tapely:

Enclosed you will find a copy of Reid Supply Company's contingency plan. This will better familiarize you with what Reid Supply will do should an incident occur that would neccessitate implementation of the contingency plan.

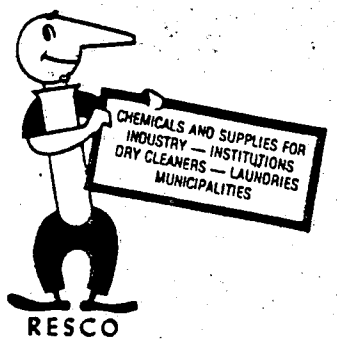
If you have any questions or suggestions, please let me know.

Yours truly,

David G. Trombold

David G. Trombold
Hazardous Waste Coordinator

Fig. 52 (cont.)



The Reid Supply Company

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267-1231
(AC 316)

950 Liberty Street
(at Union Avenue)
Kansas City, Mo. 64101
842-4440
(AC 816)

April 16, 1984

Mr. Ken Hastings
Civil Preparedness
525 N. Main
Wichita, Ks. 67203

Reply to Wichita office

Dear Mr. Hastings:

Enclosed you will find a copy of Reid Supply Company's contingency plan. This will better familiarize you with what Reid Supply will do should an incident occur that would neccessitate implementation of the contingency plan.

If you have any questions or suggestions, please let me know.

Yours truly,

David G. Trombold

David G. Trombold
Hazardous Waste Coordinator

RESCO
CHEMICALS AND SUPPLIES FOR INDUSTRY — INSTITUTIONS DRY CLEANERS — LAUNDRIES MUNICIPALITIES

The Reid Supply Company

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842-4440
(AC 816)

April 16, 1984

Lieutenant Stevens
Wichita Police Dept.
455 N. Main
Wichita, Ks. 67202

Reply to Wichita office

Dear Lieutenant Stevens:

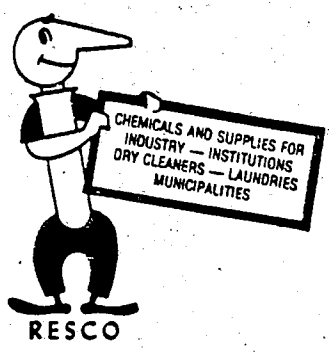
Enclosed you will find a copy of Reid Supply Company's contingency plan. This will better familiarize you with what Reid Supply will do should an incident occur that would neccessitate implementation of the contingency plan.

If you have any questions or suggestions, please let me know.

Yours truly,

David G. Trombold

David G. Trombold
Hazardous Waste Coordinator



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842-4440
(AC 816)

April 16, 1984

Dr. Bertam H. Carson
St. Francis Emergency Dept.
St. Francis Hospital
Wichita, Ks. 67214

Reply to Wichita office

Dear Dr. Carson:

Enclosed you will find a copy of Reid Supply Company's contingency plan. This will better familiarize you with what Reid Supply will do should an incident occur that would neccessitate implementation of the contingeny plan.

If you have any questions or suggestions, please let me know.

Yours truly,

David G. Trombold

David G. Trombold
Hazardous Waste Coordinator

Fig. 53

THE CITY OF WICHITA

FIRE DEPARTMENT
CITY HALL — TWELFTH FLOOR
455 NORTH MAIN STREET
WICHITA, KANSAS 67202
(316) 268-4451

1ST RESPONDER TO: PREVENTION, PROTECTION, PRESERVATION

June 26, 1984

Mr. David Trombold
P.O. Box 730
Wichita, KS 67201-0730

Dear Mr. Trombold:

At your request of June 26th, please find enclosed a suggested mutual aid agreement with Derby Refining. I understand your need for this document is to provide additional information to the EPA.

As I discussed on the telephone with you this is a working draft and some verbiage changes will be needed. However, the substantive portion of the agreement is reflected in the working draft.

If I can provide you with any information please advise.

Sincerely,

THE WICHITA FIRE DEPARTMENT

Jim E. Sparr

Jim E. Sparr
Fire Chief

JES/gc

Enclosure

SUGGESTED MUTUAL AID AGREEMENT

This Mutual Aid Agreement between the Derby Refining Company (a wholly-owned subsidiary of the Coastal Corporation), and the City of Wichita, Kansas Fire Department shall remain in effect indefinitely unless rescinded by formal written notice of either party.

This Agreement may be modified at any time by a written amendment approved by both parties.

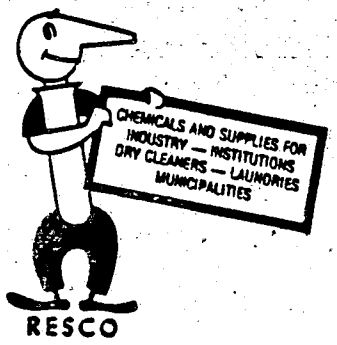
Pursuant to this Agreement, Derby Refining Company agrees to make available to the Wichita Fire Department any foam concentrate, foam delivery systems, and any other fire fighting equipment associated with the Foam Delivery System, if this equipment is not immediately necessary for the protection of Derby employees or facilities. This equipment is available to the Wichita Fire Department free of any charges for use or fair wear and tear. The Wichita Fire Department agrees to promptly return all requested equipments to the Derby Refinery as quickly as practical after control of the emergency for which it was requested. The Wichita Fire Department also agrees to secure for Derby Refining Company replacement agent of the same types and amounts expended to control the emergency, and to replace or repair any equipment damaged other than fair wear and tear.

Under normal circumstances, upon receipt of an oral request from the Wichita Fire Department, Derby will deliver the requested equipment to any location in Sedgwick County, Kansas. If, because of operational necessity, Derby is unable to deliver the requested equipment, the Fire Department may pick up the equipment at the Derby Refinery located at 1100 East 21st Street, North, Wichita, Kansas. The Wichita Fire Department may transport this equipment to any location within Sedgwick County, Kansas.

Pursuant to this Agreement, the Wichita Fire Department agrees to make available to the Derby Refining Company any foam concentrates, foam delivery systems, or any other fire fighting or other emergency equipment available to the Wichita Fire Department by mutual aid agreement with any other entity. Derby agrees to release this equipment as quickly as practical after control of the emergency for which it was requested. The Wichita Fire Department agrees to make this equipment available free of any charges for use or fair wear and tear. Derby agrees to replace all expended foam agents supplied by private industry with agents of like kind.

Upon receipt of an oral request for equipment by Derby, the Wichita Fire Department will take the necessary action to make the requested equipment available to Derby at any location specified by Derby within Sedgwick County, Kansas. This action may include Police escort, if necessary, to insure timely delivery of the requested equipment.

Fig. 53 (cont.)



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842-4440
(AC 816)

Fire Chief Sparr
Wichita Fire Department
455 N. Main
Wichita, Ks. 67202

August 20, 1984

Reply to Wichita office

Dear Fire Chief Sparr:

Captian Larry Mullikin has informed me that you would like a written confirmation concerning the mutual aid agreement for reimbursement for extinguishing agent used during a Reid Supply fire. Reid Supply Company is willing to make reimbursement to the supplier for the cost of the extinguishing agent used to fight a fire at Reid Supply Company.

I am pleased that Wichita has this kind of an arrangement with local private fire brigades. It has been a pleasure working with every aspect of the Fire Department in reference to this project.

Sincerely yours,

David Trombold

David Trombold
Hazardous Waste Coordinator

DGT/ltt

THE CITY OF WICHITA

FIRE DEPARTMENT
CITY HALL — TWELFTH FLOOR
455 NORTH MAIN STREET
WICHITA, KANSAS 67202
(316) 268-4451

November 13, 1984

Mr. David Trombold
Hazardous Waste Coordination
Reid Supply Company
P. O. Box 11365
Wichita, KS 67202

Re: Emergency Incident
Contingency Plan

Dear Mr. Trombold:

We have reviewed your contingency plan and discussed it with our Haz-Mat people and find it to be satisfactory.

This is your letter of approval.

Thank you for your cooperation in bringing your facility up to standard.

Sincerely,

WICHITA FIRE DEPARTMENT

W. E. Campbell
Deputy Chief - Operations

nb

12. PREVENTIVE PROCEDURES
122.25(a)(8)

In order to prevent hazards in unloading hazardous waste drums, a special forklift attachment is used which is designed to handle one drum at a time without wedging the drum between two forks or otherwise damaging the drum. The drum handler, which conforms to the roundness of the drum, is adjustable for 30 gallon and 55 gallon steel drums. In addition to the forklift for unloading a truck, each of the three van trucks are equipped with hydraulic tail gates that permit drums to be brought down to ground level when a dock is not available as in the case of unloading drums in the still processing area. The forklift can also be used to unload trucks from ground level. When drums are unloaded at dock high level, a suitable steel ramp is used to allow safe movement in and out of the truck. Whenever drums are transferred from one part of the plant to another, the forklift or tailgate are used to load and unload the truck, but a truck is used to transport drums, not the forklift. This insures that the drum will not shake loose from the drum handler if it is used to transport drums.

In order to prevent hazards when using the two transfer tanks to bring waste solvent over to the still processing area, explosion proof pumps are used and the tanks are secured in position when loading and unloading. The 3000 gallon transfer tank is moved by Reid Supply's diesel semitractor and secured by lowering the support wheels so that they support the front weight of the tank. The 1200 gallon transfer tank is moved by pulling it with a truck equipped with a tongue and pin hitch. It is secured by wedging blocks under the tires. These tanks are not cleaned after each use. Incompatible reactions between remaining waste and new waste is prevented by incompatible screening during fingerprinting.

In order to prevent runoff from the tank storage, drum storage and still processing areas, dikes have been constructed to contain potential spills. The still processing area and the drum storage area are both covered to prevent rain water run-on. This is handled more fully in the discussion of secondary containment for containers and tanks. An additional diked area will be constructed in the drum processing area in which all drums of waste to be blended will be opened and processed here. This will prevent the spread of any spills that might occur while handling the drums. Any water collected in this area will be disposed of properly. The area will be approximately 10 feet by 15 feet by two inches. The contingency plan deals

with the procedures in case of spills.

In order to prevent the contamination of water supplies, the dikes and overhead shelter mentioned earlier are provided. Again the procedures in case of a spill are covered in the contingency plan.

The inspection schedule (Fig.42) will help mitigate the occurance and therefore the effects of equipment failure. The consequences of equipment and power failure are minimal and can be handled easily because of the simplicity of the operation. If a pump fails while filling a tank, a valve can be closed to prevent any significant backflushing. The liquid still in the hose can be transferred to an empty drum. If the forklift fails, the drum can be manually lowered safely to the ground.

In order to prevent undue exposure of personnel to hazardous waste, each employee who will be directly handling hazardous waste are supplied with protective goggles or faceshield, solvent resistant gloves, rubber boots, solvent resistant suit or apron, and respirator.

As a result of measuring parts per million concentrations of specific organic vapors from solvents typical of the waste streams handled at Reid Supply such as toluene, methyl ethyl ketone, and xylene, the TWA TLV of methyl ethyl ketone was found to be exceeded when vapor samples were taken in the drum processing area two feet from open drums containing waste solvents. Further than two feet from the drums the TWA TLV's were not exceeded. Since the area is outdoors, the oxygen level was 19.5 percent which is necessary for the use of air purifying respirators. In addition, the warning properites of waste solvents commonly handled at Reid Supply are all below their respective TWA TLV's. This means that before the TLV of a given solvent is exceeded the warning properties (odor) of one or more of the solvents will be detected through the gradually spent organic vapor cartridge. See Fig.55 that gives the common waste solvents handled with their respective odor thresholds and TWA TLV's. When organic vapors can be detected through the air purifying respirator the organic vapor cartridges will be replaced.

As a necessary prevention against inhaling harmful organic vapors, half-mask, air purifying respirators equipped with organic vapor cartridges will be worn by workers handling hazardous waste solvents when they are withing 5 feet of an organic vapor source, such as an open drum or tank port. In the case of a spill inside or when entering a tank for inspection where vapor concentrations could exceed 1000 ppm, or

TLV'S AND ODOR THRESHOLDS FOR SOLVENTS HANDLED BY REID SUPPLY

Solvent	TLV-TWA (ppm)	Odor Threshold (ppm)
Acetone	750	100
Cellosolve Acetate (2 ethoxyethyl acetate)	50	---*
Ethanol	1000	10
Isopropanol	400	90
Methanol	200	100
Methyl Ethyl Ketone	200	10
Methyl Isobutyl Ketone	50	0.47
Perchloroethylene (Tetrachloroethylene)	50	5
Styrene	50	0.148
Toluene	100	0.17
1,1,1-Trichloroethane	350	---*
Trichloroethylene	50	50
Xylene	100	0.05

*Not provided in literature reviewed.

when oxygen could be below 19.5 percent, a self contained breathing apparatus will be used.

13. REQUIREMENTS FOR IGNITABLE WASTES 264.17, 264.36 & 122.25(a)(a)

Reid Supply Company does handle ignitable waste but not reactive or incompatible wastes. The list of ignitable wastes is given in Table 1. As a result of detailed analyses as shown in Fig. 9 through Fig. 15, the ignitability of the solvents received at Reid Supply is confirmed by the identification of the composition of the various waste solvents. Flashpoints can be determined for the identified solvents by consulting published literature for this information.

To prevent the chance of ignition of these flammable waste solvents, employees handling these waste solvents are trained concerning potential hazards of ignitable wastes. In addition, explosion proof lights are used in the still processing area, explosion proof pumps are used for all solvent transfers, and a drum opener with explosion proof motor is used. Proper grounding practices are used on the drums and tanks that contain flammable waste solvents in order to prevent dangerous static electricity build up during solvent transfer. All drums are inspected weekly for loose bungs and leaks and the tanks are also inspected weekly for leaks that would be potential fire hazards. Drums in the drum storage areaare placed on pallets with four drums per pallet. No more than three pallets or twelve drums are grouped together. Each drum grouping is separated by four foot aisles. The primary aisle is 10 feet wide. This arrangement is in conformity with NFPA 30 4-5.7.12 and allows for easy inspection of drums for leaks and for easy access to drums by the forklift. The ignitable solvent drums are labeled with both a bright yellow Hazardous Waste Label and a red diamond Flammable Liquid Label. The Flammable Liquid Label distinguishes the ignitable waste drums from the other waste drums.

To further separate the ignitable wastes from sources of ignition, smoking is confined to two break rooms shown in Fig. 6 which are isolated in J Building and near the drum processing area from the three areas of ignitable waste activity. "No Smoking" and "Danger-Authorized Personnel Only" signs are placed around the still processing area, the drum processing and tank storage area, and inside and around the drum storage area (Fig. 6)

In order to prevent reactions which generate extreme heat or pressure, fire or explosion, or violent reactions; produce uncontrolled toxic mists, fumes, dusts, or gases in suffiecient

quantities to threaten human health or the environment; produce uncontrolled flammable fumes or gas in sufficient quantities to pose a risk of fire or explosions; damage the structural integrity of the device or facility; through other like means threaten human health or the environment, the waste analysis program described in the Waste Analysis Plan section was developed in part to do this.

First of all, the generator audit (Fig. 19) is designed to locate potential sources of incompatible or reactive waste. Other waste streams produced by a given generator besides the one being handled by Reid Supply will be determined and evaluated with respect to incompatibility or reactivity to organic solvents. If there is a possible problem steps will be taken with the generator to minimize the probability of a mix up.

Secondly, the "fingerprint" analysis described in the Waste Analysis Plan section made upon receipt of the waste at the facility will show if there is any potential incompatibility or reactivity. The primary indicators are:

(1) the gas chromatograph for waste solvents to be distilled which will show any components that are unusual from the original detailed analysis
(2) pH which will red-flag any reactive pH levels
(3) watching for incompatible reactions of incoming waste with a blend of waste solvent that would be typical of what the waste would be blended with

Incompatible or reactive waste streams will not normally be managed by Reid Supply Company but if one is found it will be returned to the customer or channeled through a responsible EPA approved channel. Any waste that is determined to be incompatible or reactive will be stored inside the diked drum storage area in another small diked area until the material can be safely removed (Fig. 32).

These safeguards mentioned above will also prevent damage to waste drums and the storage and processing tanks. The pH check will prevent their corrosion and any violent reaction that might occur between a strong acid or base with organic solvents. The mixture of incoming hazardous waste with a small sample of a waste solvent blend which is typical of the blended solvent to which it will ultimately be blended with will show if there are any other incompatibilities or reactions that might rupture or damage the containers or tanks.

The buffer zone waiver discussion is covered in the subsection on Special Requirements for Ignitable Waste in the Section on Containers.

REID SUPPLY COMPANY, INC.

14. CONTINGENCY PLAN AND EMERGENCY PROCEDURE

Part 264, Subpart D & 122.25(a)(7)

The following discussion provides the contingency plan and emergency procedures in case of spills, fires, and explosions that might occur at Reid Supply Company.

General Facility Description:

Please refer to Enlarged Facility Drawing while reading the following general description of the operations of the Reid Supply Company plant. North of Building I are bulk nitric and muriatic acid tanks, and in the northeast corner of the property are bulk sulfuric tanks. Building I houses the two stills, lab, and acid repackaging room. Adjoining Building I are the processing tanks and recycled solvent tanks used in conjunction with the stills. Building J houses the solvent repackaging and drummed virgin and recycled solvent storage. Trombold Industrial Park is the location of the drum processing, tank storage, and waste solvent drum storage areas. There are also other businesses renting space in Trombold Industrial Park which are located in the unmarked buildings on the map. Building D in Trombold Industrial Park contains bulk chlorinated solvent storage.

Spill Control:

If a drum springs a leak that releases less than 5 gallons per day, it will be necessary first to contain the leak by opening doors for ventilation, put on self-contained breathing apparatus, surrounding the drum with oil absorbent provided in each area, getting a pump to transfer the contents of the drum to a good drum, shoveling up the oil absorbent, and placing it in a 17H drum for disposal. The emergency coordinator is to be notified of the spill and cause of it.

If a larger leak occurs in the drum storage area, it will be necessary first to alert the emergency coordinator, put on self-contained breathing apparatus, open up doors for better ventilation, squeege the spilled solvent into the sump, and pump the liquid into drums. The remaining solvent on the floor will be absorbed by oil absorbent and shoveled into a 17H drum for disposal. The damaged and leaking drums will be emptied as in the above paragraph and disposed of properly. The emergency coordinator will write up a report giving the date, time of incident, people involved, cause, extent of the spill, and any injury.

If a large leak occurs in a tank, it will be necessary to notify the emergency coordinator. Suitable emergency clothing will need to be worn, such as an organic vapor mask, self-contained breathing apparatus, protective eye glasses, solvent resistant gloves, and solvent resistant boots. The leaking solvent will be collected in the secondary containment dike and then pumped into drums. The remaining solvent within the dike can be absorbed by oil absorbent and shoveled into a 17H drum for disposal.

If a transfer tank begins to leak, a drum or other container will be placed under the leak and the contents pumped into empty drums or the other transfer tank.

If a leak occurs outside any containment area, the spill will be contained as much as possible using dirt, shovels, and oil absorbent to avoid ignition sources, waterways, or other potentially hazardous conditions. But if the spill is too large to be contained by available equipment, Victor L. Phillips Co. will be called and notified of our need for a 580 unit with a 24 inch back hoe and bucket. Reid Supply will send a trained driver over to drive the back hoe to Reid Supply. This will only take 15-20 minutes. Prior arrangements have been made with Phillips and having one of these units on hand is no problem. Two people can be notified during off hours to get the back hoe should there be an off hour leak. As an added precaution, Price Brothers Equipment has been contacted as a back up to Phillips. In the event Phillips does not have a unit available, Price Brothers will be notified that a JCB 1400 unit is needed on a trailer and Reid Supply will pick it up in 15 minutes. A trench or dike will be constructed to prevent the spread of the spill to waterways or ignition sources. All contaminated soil will be shoveled up and placed in 17H drums for disposal.

Any waste solvent spill of 15 gallons or more will be reported to the Hazardous Materials Response Team.

Fire and Explosion Procedures:

Any small fires should be put out immediately by an available fire extinguisher. The alarm in the appropriate area will be sounded and the incident is to be reported at once to the emergency coordinator by the telephone. The Fire Department will be notified immediately. The person at the scene of the fire will stand with a fire extinguisher prepared for any possible fire outbreaks until the Fire Department arrives to inspect the scene. The emergency coordinator is to make a report giving the date, time of the incident, people involved, extent of damage, extent of remaining hazard if any, and the cause of the fire. A small fire can be classified as one that can be controlled by the largest fire extinguisher available for controlling the fire.

5 pound can control a 10 square foot BC fire
20 pound can control a 80 square foot BC fire
150 pound can control a 240 square foot BC fire

If a larger fire or an explosion occurs that cannot be controlled by a fire extinguisher, the alarm in the appropriate area will be sounded and the emergency coordinator is to be notified immediately by the telephone. The emergency coordinator is to notify the Fire Department and Derby Refinery of the specific location of the fire at the facility as well as quantity and type of solvents involved.

The emergency coordinator will alert people in the immediate area of the fire for evacuation of the area to 100 yards upwind. Other renters in Trombold Industrial Park will be notified at this time. If the fire is not brought under control, the emergency coordinator is to evacuate totally the area of the fire using the portable address system. Derby and Missouri Pacific will be contacted to evacuate. The evacuation will be done according to the evacuation plan that is detailed later. The emergency coordinator is to stay at a safe distance ready to give information to the Fire Department Incident Commander about the location and contents of the drums and tanks involved in the fire.

The Fire Department prefers that since they can reach the fire within four minutes, they want the fire hydrant available for their use rather than have Reid Supply use their own equipment.

If an emergency occurs at night where the Fire Department or Police have been notified of the incident before the emergency coordinator, each has numbers where the emergency coordinator can be reached so that he can be on hand to direct the fireman or other emergency personnel.

Injury Procedures:

In the event of an injury, first aid is to be administered to lessen the potential danger of the injury. If the injury is too severe, the Emergency Medical Services is to be notified on 911 informing them of the location and type of injury. If the person can be taken to an emergency center, the injured person will be taken immediately to St. Francis Emergency Center. While the victim is in route the Administrative Director of Emergency Services must be notified of the incoming patient for authorization and type of injury.

Arrangements with Local Emergency Agencies:

Arrangements have been made with the Hazardous Materials Response Team, the Wichita Police, Wichita Fire Department,

Emergency Medical Services, Civil Preparedness, and St. Francis Hospital. A packet of information is to be sent to each of them giving a map of the facility with locations of hazardous waste operations, evacuation routes, a list of hazardous waste handled at the facility, phone numbers where the primary emergency coordinator or back up emergency coordinator can be reached during off hours, and types of injuries that might occur. More detail is given in Section 11 on Preparedness and Prevention Requirements.

Names, Addresses, and Phone Numbers:

The primary emergency coordinator is Chuck Trombold, the Process Engineer. He was selected because of his knowledge of the hazardous waste handling system and other facility operations, the facility's contingency plan, the location and characteristics of the waste handled, the location of all the hazardous waste records, the facility layout, and his availability should an accident occur. He has the responsibility for coordinating all emergency response measures. He can be reached during work hours at 267-5742, 267-5987, or 267-1231. During off hours he can be reached at [redacted]. The address for this number is [redacted] Mike Shaw, the Plant Superintendent, will be acting as assistant emergency coordinator, and can be reached at the above numbers during work hours. His home address and phone number are [redacted]

Ex. 6 PII

Emergency Equipment: (Please refer to map showing Emergency Equipment Locations)

<u>150 pound Dry Chemical Units</u> - The two dry chemical units for fighting fires will be used for fires that cannot be controlled by a hand held fire extinguisher in the still processing area.

<u>Fire extinguishers</u> - Fire extinguishers are located just within the drum processing area. Another is located in the drum storage area. Fire extinguishers are also located in the distillation processing area just inside the boiler room and just inside the still room. A fire extinguisher is located on each forklift. The use of the extinguishers is to be reviewed annually. Other extinguishers can be located on the map of Emergency Equipment Locations.

<u>Emergency alarms</u> - One emergency alarm is located in the still processing area, another is located in the drum processing area, and a third is in the drum storage area. These are acti-

vated by the worker discovering the fire in the event of an emergency large enough to warn all people in the area, such as a fire.

Telephone - A telephone is located in I, J, and C Building. This allows communication in every area involved with hazardous waste as well as with the plant office. The telephone in C Bldg. in particular will provide necessary communication with the emergency coordinator during an emergency in the drum and bulk storage areas.

First aid kit - One first aid kit is located in the lab in Building I. Another is located in the lab just west of the drum processing area. The first aid kit contents are to be reviewed annually with each employee so that he is familiar with how each item can be used in an emergency.

Oil absorbent drums - Drums containing oil absorbent are located at each of the areas where hazardous waste is handled. The absorbent is used to prevent the spread of spills and to soak up spills that may cover a large area. Once it has absorbed liquid, it can be shoveled into a 17H drum for disposal.

Empty drums - Empty drums are located in Building C and are kept on hand to hold waste solvent pumped into them in the case of a large spill. Eighty drums are kept on hand to contain the capacity of the larger transfer tank.

Portable public address system - The portable p.a. system is located in the emergency coordinator's office. This will enable him to announce instructions audibly during an emergency, such as when evacuation is necessary.

Air compressor, flexible hoses with quick couplings, and portable sump pump - These are located in D Building and drum processing area. They are to be used in the case of a spill that is large enough to be pumped from the sump into emergency drums.

Emergency shower and eye wash - An emergency shower and eye wash are located in I Building and an eye wash unit and shower are located in the breakroom west of the drum processing area. These are to be used if a worker is sprayed by hazardous waste on the face, skin, or clothes.

Protective clothing, organic vapor masks , self-contained breathing apparatus, gloves, goggles, and boots - These are located in Building I and to be used if there is a chance of breathing harmful vapors or hazardous waste coming in contact with skin.

All of these emergency items are inspected and maintained according to the inspection schedule.

Evacuation routes:

In case of fire in the drum storage area, bulk storage, or drum processing areas, the evacuation route is along the road leading out of Trombold Industrial Park. (See Enlarged Facility Map) An alternate route would be through one of the doors along the north wall of C Building and around the north side of the property to the road leading to Missouri Pacific.

If there is a fire in the still processing area, three evacuation routes are available. (Enlarged Facility Map) An exit can be made through the gate to the south of the still processing area. Another exit is the gate to the west of the area. The third route is to go around the north side of I Building, around the east side of J Building, and out the gate just south of J Building.

Evacuation will be directed by the acting emergency coordinator through the use of the portable public address system. Once personnel have reached the area between the Reid Supply Company Plant and Trombold Industrial Park, the emergency coordinator will direct them north toward Missouri Pacific or south down New York Avenue. Employees are to stay together and the leadman is to make a head count to make sure everyone is safe.

Responsibilities of the Emergency Coordinator:

Whenever there is a spill, fire, or explosion, the emergency coordinator must identify immediately the character, exact source, amount of aerial extent of released materials. At the same time he is to assess possible hazard to human health or the environment that may result from the spill, fire, or explosion. This assessment must consider both direct and indirect effects of the incident. He has the authority to commit the necessary resources needed to carry out the contingency plan. If the emergency coordinator determines that the incident could threaten human health, or the environment outside the facility, he must report his findings as follows:

1. If he determines that evacuation of local areas is advisable, he must notify the Fire Department Incident Commander who is over the Hazardous Materials Response Team to help decide whether the evacuation should be done.

2. Further coordinate with the Fire Department Incident Commander concerning additional action.
3. He must call the National Response Center within 24 hours at 1-800-424-8802 to make sure the incident was reported by the Hazardous Materials Response Team. The report must include:
   a) His name and phone number
   b) Name and address of the facility
   c) Time and type of incident
   d) Name and quantity of material(s) involved
   e) The extent of injuries, if any
   f) The possible hazards to human health and environment outside the facility

During an emergency, the emergency coordinator must take all reasonable measures necessary to ensure that fires, explosions, and spills do not occur, reoccur, or spread to other hazardous waste at the facility. These measures must include, where applicable, stopping processes and operations, collecting and containing released waste, and removing or isolating containers.

If the facility stops operations during such an incident, the emergency coordinator must monitor for leaks or other related occurances wherever this is appropriate.

After an emergency, the emergency coordinator must provide for treating, storing, or disposing of recovered waste, contaminated soil, or surface water, or any other material that results from such an incident at the facility.

The emergency coordinator must see that all emergency equipment listed in the contingency plan is cleaned and fit for its intended use before operations are resumed.

Responsibility of the Hazardous Waste Coordinator:

He is to notify the Region VII Administrator and the Kansas Department of Health and Environment in Topeka and Wichita that the facility has cleaned up all emergency equipment as stated above.

The Hazardous Waste Coordinator must note in his files the time, date, and details of any incident that requires implementing the contingency plan. Within 15 days after the incident, he must submit a written report on the incident to the Region VII Administrator and KDHE. The report must include:

1. Name, address, and phone number of the Hazardous Waste Coordinator

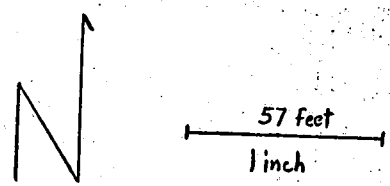
2. Name, address, and phone number of the facility
3. Date, time, and type of incident
4. Name and quantity of the material(s) involved
5. The extent of injuries
6. The assessment of actual or potential hazards to human health or to the environment, where this is applicable
7. Estimated quantity and disposition of recovered material that resulted from the incident

Emergency phone numbers:

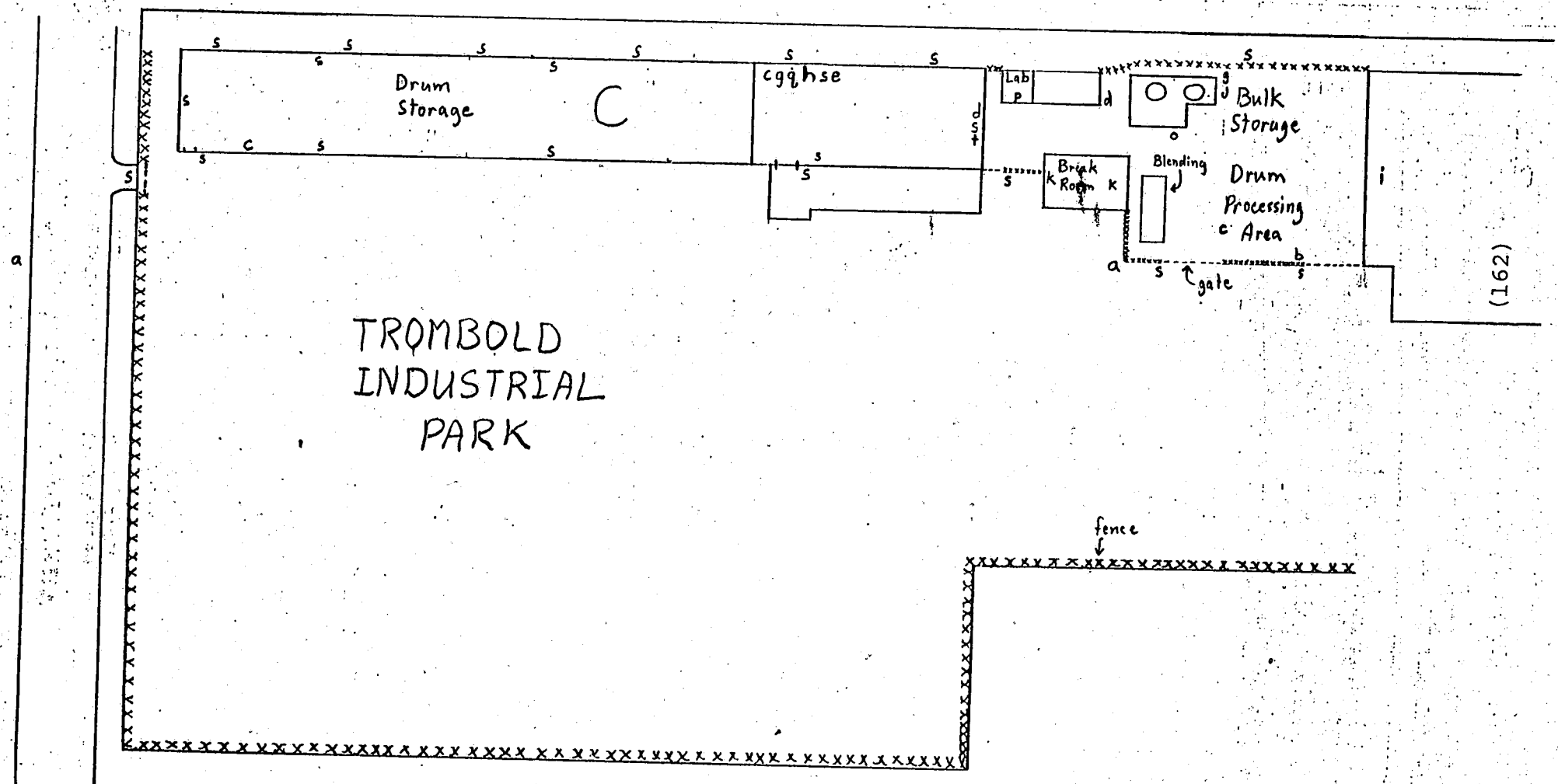
Emergency	Organization/Agency	Phone #
Injury	Emergency Medical Services	911
	St. Francis Emergency Center, Melanie Glover	268-5052
Hazardous Waste Spill or Release	Hazardous Materials Response Team	911 or 264-8664
Fire/Explosion	Wichita Fire Department	911
Spill Control Equipment	Victor L. Phillips 3250 N. Hyraulic during hours Clarence W. Barnes or Ken Steinhoff	838-3346
	off hours Clarence W. Barnes or Ken Steinhoff	[redacted] Ex. 6 PII
	Alternate: Price Brothers Equipment 619 S. Washington (across the street from Reid Supply) 8-5 p.m.	265-9577
	after hours Mike Moore	[redacted] Ex. 6 PII
Evacuation or Fire Alert	Derby Refinery before 5:00 p.m.	267-0361
	after 5:00 p.m. Missouri Pacific	[redacted] Ex. 6 PII
EPA National Response		1-800-424-8802
KDHE Emergency Response		1-913-862-9360

LOCATION OF EMERGENCY EQUIPMENT (Part 1)

3/84 D.G.T.

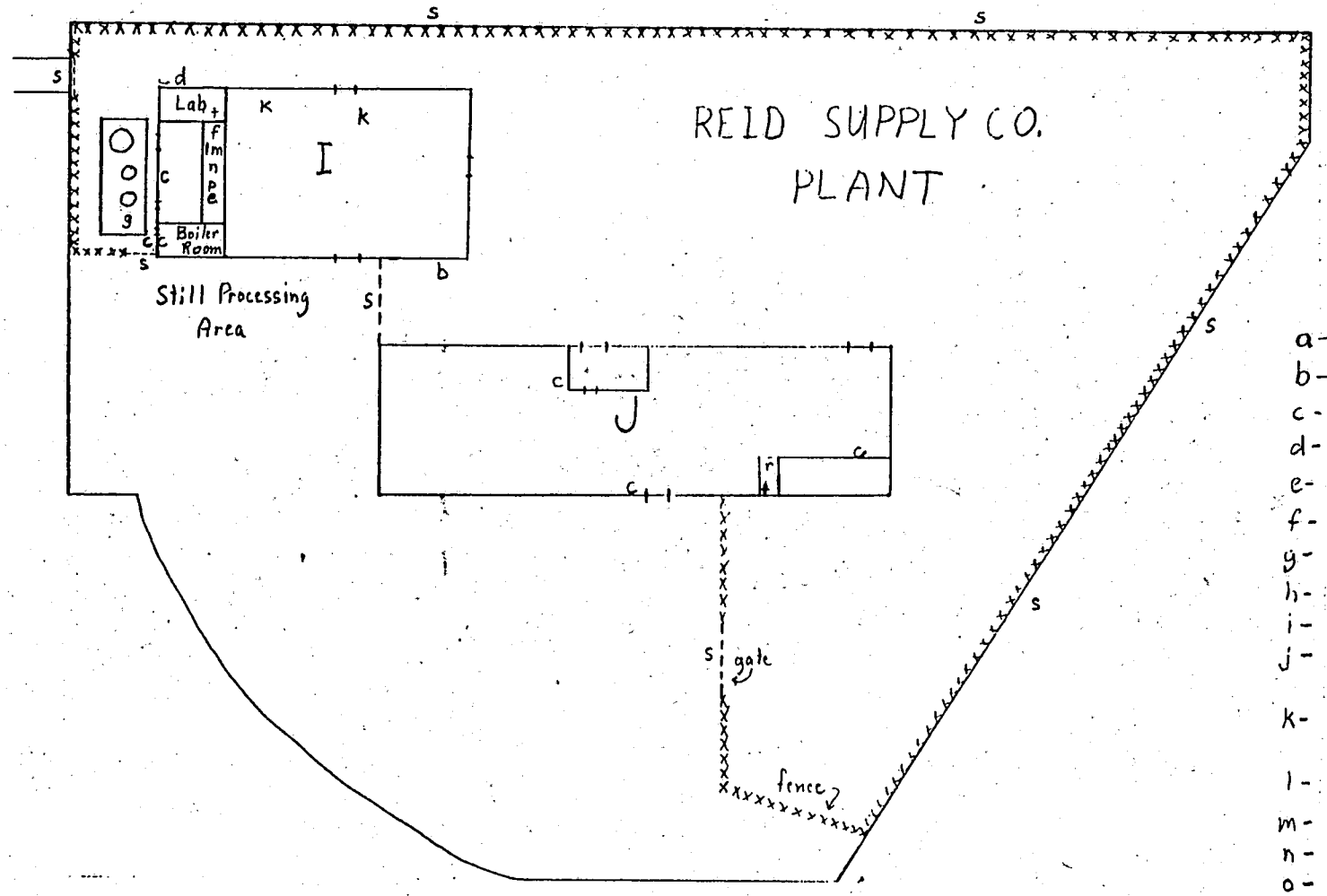


note: key is on Part 2 map



LOCATION OF EMERGENCY EQUIPMENT (Part 2)

3/84 D.G.T.

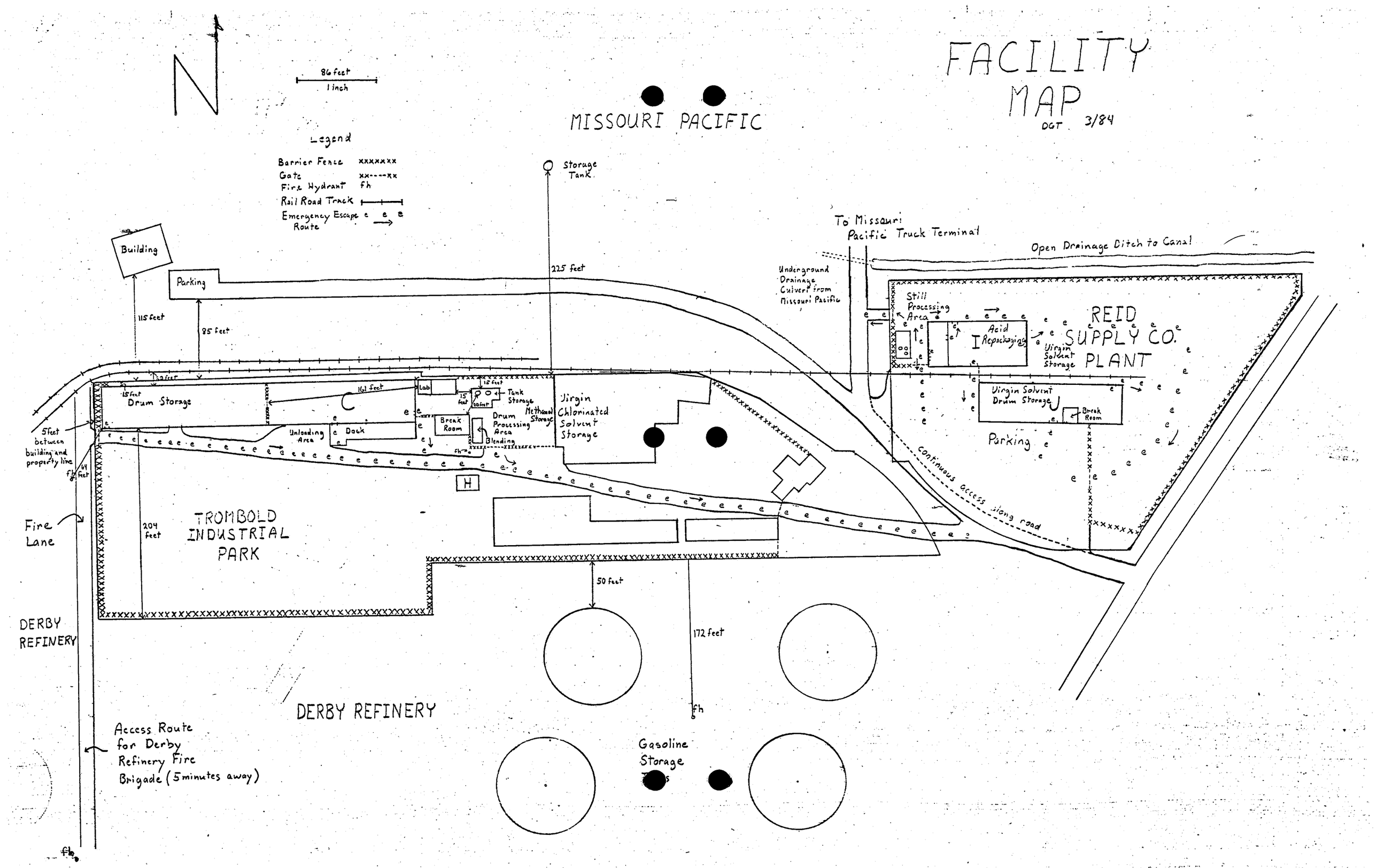


a - fire hydrant
b - portable 150 lb. fire extinguisher
c - fire extinguishers (hand held)
d - emergency alarm
e - shovel
f - portable p.a. system
g - oil absorbant
h - empty drums
i - air compressor
j - flexible hose and quick couplings
k - emergency shower or eye wash
l - goggles, face shields
m - organic vapor marks, SCBA
n - protective clothing, boots
o - portable sump pump
p - first aid kit
q - squeegee
r - hard hats
s - no smoking/danger signs
t - telephone

(163)

FACILITY MAP

DGT 3/84



15. PERSONNEL TRAINING
264.16 & 122.25(a)(12)

The information contained in this section outlines the personnel training program for Reid Supply's hazardous waste storage facility.

Fig.56 shows the organization of personnel at the facility. Management and supervisory responsibilities involving compliance with RCRA regulations, but not necessarily involving actual handling of the wastes are shared among the hazardous waste coordinator, process engineer, plant and warehouse superintendent, and warehouse supervisor. The positions directly involved in handling hazardous waste are process technician supervisor, process technician, still operator, lab technician, and truck driver.

In addition, the position of salesman requires a broad level of training to communicate to customers how Reid Supply Company handles hazardous waste and how RCRA affects the customer as a generator.

POSITION TITLE - Hazardous Waste Coordinator

Position Responsibilities and Duties:

(1) Knows all pertinent regulations.
(2) Supervises all hazardous waste operations.
(3) Supervises training.
(4) Drafts and submits all required reports.
(5) Assures compliance with regulations.

Experience and Qualifications:

(1) B.S. degree in Chemical, Civil, or Environmental Engineering. B.A. in Chemistry or Biology also acceptable.
(2) At least one year experience in handling hazardous waste.
(3) Training and/or experience in hazardous waste management is desireable.

POSITION TITLE - Process Engineer

Position Responsibilities and Duties:

(1) Emergency Coordinator.
(2) Supervises hazardous waste handling.
(3) Performs training.
(4) Evaluates training.

(5) Maintains hazardous waste records.
(6) Reports to Hazardous Waste Coordinator.

Experience and Qualifications:

(1) B.S. Degree in Chemical, Civil, Environmental, or Mechanical Engineering
(2) B.A. in Chemistry acceptable.
(3) At least one year experience in hazardous waste handling.
(4) Hazardous waste management experience is important but not required.

POSITION TITLE: Plant and Warehouse Superintendent

Position Responsibilities:

(1) Coordinates and supervises waste pick ups.
(2) Evaluates training effectiveness.
(3) Enforces safety policies.

Experience and Qualifications:

(1) High school education
(2) One year previous experience at Reid Supply or at another comparable warehouse position.

POSITION TITLE: Salesman

Position Responsibilities:

(1) Contacts and advises customers about hazardous waste.

Experience and Qualifications:

(1) B.S. or B.A. in Chemistry, Biology, or previous sales experience with a college degree.
(2) No experience is required, but experience in industrial sales or industrial chemicals is preferred.

POSITION TITLE: Process Technician Supervisor

Position Responsibilities:

(1) Supervises drum processing tank storage, and drum storage areas
(2) Reports to Process Engineer.
(3) Other responsibilities are the same as the Process Technician.

Experience and Qualifications:

(1) Can read.
(2) Demonstrates personal integrity.
(3) Demonstrates teachability and respect for authority.
(4) Has been a Process Technician for 3 months.

POSITION TITLE: Process Technician

Position Responsibilities:

(1) Handles and processes hazardous waste.
(2) Reports to Process Technician Supervisor.
(3) Operates still.

Experience and Qualifications:

(1) Can read.
(2) Demonstrates personal integrity, teachability, and respect for authority.
(3) No experience required.

POSITION TITLE: Lab Technician

Position Responsibilities:

(1) Performs the necessary tests on hazardous waste received at Reid Supply.
(2) Prepares analysis records and reference samples.
(3) Reports to the Process Engineer.

Experience and Qualifications:

(1) College student or graduate with experience with analytical chemical instruments, namely gas chromatography and bomb calorimetry.
(2) Demonstrates attention to detail.

POSITION TITLE: Warehouse Supervisor

Position Responsibilities:

(1) Supervise waste pick up preparation.

Experience and Qualifications:

(1) Can read.
(2) Demonstrates personal integrity, teachability, and respect for authority.

(3) Demonstrates attention to detail.
(4) Six month previous experience at Reid Supply or at another comparable warehouse position.

POSITION TITLE: Truck Driver

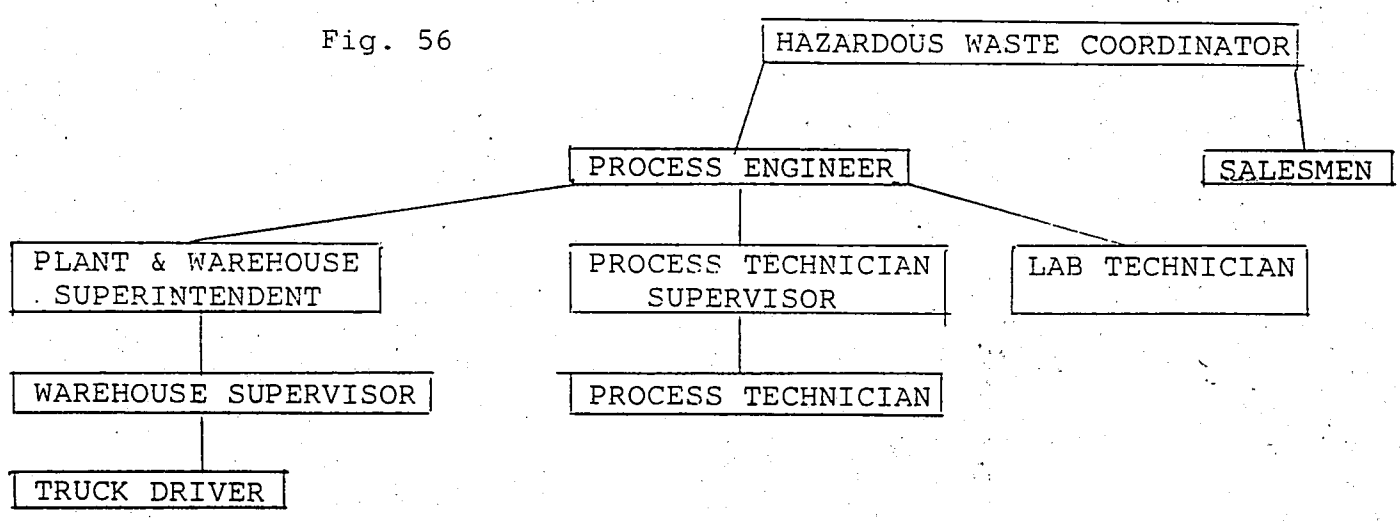
Position Responsibilities:

(1) Make hazardous waste pick ups in accordance with DOT, EPA, and KDHE regulations.

Qualifications and Experiences:

(1) Can read.
(2) Previous experience as a truck driver.
(3) Demonstrates personal integrity, teachability, and attention to detail.

Fig. 56



Training Content:

The training for handling and managing hazardous waste at Reid Supply Company has been organized into the "Hazardous Waste Training Manual". This manual was written with the intent that it can be updated or revised in order to more safely handle and manage hazardous waste. Each employee involved with hazardous waste has his or her own copy of the manual. This training manual is kept on file at the facility and is available for official review.

Below is a description of the hazardous waste training program modules that appear on the Job Classifications and Corresponding Training Modules Chart (Fig.57). 4 training options exist for each module for a given job classification: the module is omitted because it does not apply to the job, the module is the same for any particular job classification (denoted in the chart as "S"), the module is limited in scope to prevent the provision of overly technical information that could cause confusion (denoted in the chart as "L"), and the module is broad in its scope to provide more technical information to supervisory and sales personnel (denoted in the chart as "B"). On the Training Log and Duty Breakdown Card the training module code distinguishes broad training with the module number and the letter "B", ie. 2B, and limited training with the module number and the letter "L", ie. 2L. The Job Code precedes each job classification in the Job Classification and Corresponding Training Module Chart and appears on the Job Description Card.

RCRA and Reid Supply This introductory section provides background on the significance of RCRA, the relationship between the Kansas Department of Health and Environment and the Environmental Protection Agency, a general facility description, and an overview and rationale of the four channels of hazardous waste recycling disposal.

Hazardous Waste Manifests The broad training describes how to correctly fill out a hazardous waste manifest. The limited training describes how to get information from the manifest and how to check for manifest errors.

Labeling and Placarding The broad training describes the various DOT labels and placards and criteria for their use. It also describes how to fill out a Hazardous Waste Label. The limited training describes the relevant labeling and placarding. It also shows how to get information from the Hazardous Waste Label.

Classification of Hazardous Waste The broad training covers four main systems of hazardous material and waste classification. These include the RCRA hazardous waste classifications, the United Nations and DOT hazardous material classifications, the NFPA 704M system, and generic

Fig. 57

JOB CLASSIFICATION AND CORRESPONDING TRAINING MODULES

B = Broad Instruction
L = Limited Instruction
S = Same Instruction

		J1 Haz. Waste Coord.	J2 Process Engineer	J3 Plnt. & Wrhs. Supt	J4 Salesman	J5 Proc. Tech. Supe	J6 Proc. Technician	J7 Still Operator	J8 Lab Technician	J9 Wrhs. Supervisor	J10 Truck Driver
1.	RCRA and Reid Supply	S	S	S	S	S	S	S	S	S	S
2.	Haz. Waste Manifest	B	B	B	B	B	L	L	L	L	L
3.	Labeling and Placarding	S	S	S	S	S	S	S	S	S	S
4.	Class. of Haz. Waste	B	B	B	B	B	L	L	L	L	B
5.	Haz. Properties for Haz. Materials & Waste	S	S	S	S	S	S	S	S	S	S
6.	Fire Prev. and Fighting	S	S	S	S	S	S	S	S	S	S
7.	Protective Clothing	S	S	S	S	S	S	S	S	S	S
8.	Contamination Prev.	S	S	S	S	S	S	S	S	S	S
9.	Respirators	S	S	S	S	S	S	S	S	S	S
10.	Haz. Waste Pick Up	S	S	S	S	S			S	S	S
11.	Forklift	S	S	S		S	S	S		S	S
12.	Contingency Plan	B	B	B		B	L	L	L	L	L
13.	Potential Hazards	S	S	S	S	S	S	S	S	S	S
14.	Drum Processing & Tank Storage Area	S	S	S		S	S				
15.	Drum Storage Area	S	S	S		S	S		S		
16.	Still Area	S	S				S	S			
17.	Lab	S	S		S	S	S		S		
18.	First Aid	S	S	S	S	S	S	S	S	S	S
19.	Records	S	S								
20.	Sampling	S	S		S	S	S		S		
21.	Buddy System	S	S	S		S	S	S			
22.	Tank Entry and Inspection	S	S		S	S	S	S			
23.	Unauthorized Personnel	S	S	S	S	S	S	S	S	S	S

classification based upon the hazard. The limited training covers the specific applicable aspects of the four hazard classifications listed above.

Hazardous Properties for Hazardous Materials and Wastes The training module covers definitions, mechanisms of exposure, exposure limits, and harmful effects and symptoms of the various materials and wastes that might be handled at Reid Supply.

Fire Prevention and Fighting This training covers ignitions sources, chemistry of fire, types of fires, extinguishing agents, and fire extinguisher use.

Protective Clothing This covers the types of protective clothing, rationale for specific protective clothing, application, limitations of protective clothing, proper method of wearing and removing protective clothing, inspecting protective clothing, proper method of maintaining clothing, and heat build up prevention.

Contamination Prevention This training suggests ways of avoiding serious contamination after working with or after being exposed to hazardous waste.

Respirators This training covers types of respirators, respirator use criteria, respiratory protection program, respirator limitations, respirator fit testing, respirator cleaning, respirator inspection and service life recognition, and standard safety precautions for respirators.

Hazardous Waste Pick Up This covers training for proper placarding, hydraulic tailgate use, inspecting hazardous waste drums to be picked up, spotting manifest omitions, emergency equipment use in the case of spills, and emergency notification.

Forklift This training covers the operators guide provided by the forklift manufacturer.

Contingency Plan The broad training covers every aspect

and responsibility involved in the contingency plan. The limited training covers job specific responsibilities of the contingency plan.

Potential Hazards This covers the recognition of potential hazards and reporting of them.

Drum Processing and Tank Storage Area This covers the equipment, the procedures for using and maintaining the equipment to process drums, and the requirements for maintaining this area.

Drum Storage Area This covers procedures for receiving hazardous waste drums, storing waste drums, and maintaining the area.

Still Area This training covers procedures for still operation and maintenance, filling feed tanks, and area maintenance.

Lab The broad training covers procedures and rationale for lab equipment use and maintenance, pH determination, compatibility determination, and solvent composition determination. The limited training covers the types of analyses and the rationale for them.

First Aid This covers first aid procedures for solvent or corrosive liquid exposure to eyes, skin, or ingestion.

Records This covers the maintenance of records for inspections, analyses, training completion and evaluation, incoming waste, hazardous waste inventory, and hazardous waste manifests.

Sampling This module covers procedures for drum sampling using a coliwasa trier.

Buddy System This emphasizes the importance of working with someone else and gives guidelines for following the system.

Tank Entry for Inspection This covers the OSHA approved procedure for entering a confined space and inspecting the tank for corrosion damage.

Unauthorized Personnel This covers the policy to insure that unauthorized personnel are accompanied by a Reid Supply employee.

Training Method:

A modular training system including classroom and on-the-job instruction has been adopted to assure that each employee involved with hazardous waste is trained in accordance with his job duties and responsibilities. The chart of Job Classification and Corresponding Training Modules (Fig.57) describes the relevant modules for a given job. This system prevents superfluous training for job positions that would not require certain types of training. The training is further specialized by providing broad or limited training for a given module where more or less detailed training is necessary.

Employees will be trained within six months of their employment date or date of position change, whichever is later. The training will be by module according to the requirements of the particular job. The employee that is new to the job will be supervised until they have completed the relevant training module(s).

This training should satisfy the requirement for "introductory" training. As the training is revised due to improvements for safety and emergency procedures, employees will be brought up to date. In addition, each employee will be evaluated for training compliance by his performance. The employee will be reminded of his training if his performance is not according to training. Otherwise, each employee will have an annual training review to keep the procedures and policies fresh.

Training Director:

The personnel training program is directed by David G. Trombold, the Hazardous Waste Coordinator. He has been with Reid Supply since October 1980 [redacted] Ex. 6 PII

[redacted]

Personnel Training Records:

Ex. 6 PII

Training records of the type and amount of training received by each employee are kept on the Training and Evaluation Log Sheet (Fig.58) and the job descriptions with duties and qualifications are provided on the Job Title Card (Fig.59). These records are kept at the facility for each employee and each position involved with hazardous waste. These records will be kept until closure for current employees. Records of former employees will be kept for at least three years from the date the employee last worked at the facility.

Training Manual

Fig. 60 is the training manual that has been prepared for the employees involved with hazardous waste. Each person receives his own copy with a contingency plan and safety data sheets.

TRAINING AND EVALUATION LOG SHEET

Fig. 58

Employee Name:

Job Title and Code:

Date of Employment in Current Position:

Required Training Modules and Training Schedule:

Training Record:

Date	Training Module Code	Module Title and Manner of Presentation	Trainer Verification	Trainee Verification

Performance Evaluation Record:

Date	Description of Evaluation	Evaluator Verification

Fig. 59

Job code:

Job Title:

Duties:

Requisite Qualifications:

Education:

Experience:

RESCO

50 9/83

Job Title Card

Fig. 60

REID SUPPLY

HAZARDOUS WASTE TRAINING

MANUAL

8/84

JOB CLASSIFICATION
AND CORRESPONDING
TRAINING MODULES

B = Broad Instruction
L = Limited Instruction
S = Same Instruction

		J1 Haz. Waste Coord.	J2 Process Engineer	J3 Plnt. & Wrhs. Supt	J4 Salesman	J5 Proc. Tech. Super	J6 Proc. Technician	J7 Still Operator	J8 Lab Technician	J9 Wrhs. Supervisor	J10 Truck Driver
1.	RCRA and Reid Supply	S	S	S	S	S	S	S	S	S	S
2.	Haz. Waste Manifest	B	B	B	B	B	L	L	L	L	L
3.	Labeling and Placarding	S	S	S	S	S	S	S	S	S	S
4.	Class. of Haz. Waste	B	B	B	B	B	L	L	L	L	B
5.	Haz. Properties for Haz. Materials & Waste	S	S	S	S	S	S	S	S	S	S
6.	Fire Prev. and Fighting	S	S	S	S	S	S	S	S	S	S
7.	Protective Clothing	S	S	S	S	S	S	S	S	S	S
8.	Contamination Prev.	S	S	S	S	S	S	S	S	S	S
9.	Respirators	S	S	S	S	S	S	S	S	S	S
10.	Haz. Waste Pick Up	S	S	S	S	S			S	S	S
11.	Forklift	S	S	S		S	S	S		S	S
12.	Contingency Plan	B	B	B		B	L	L	L	L	L
13.	Potential Hazards	S	S	S	S	S	S	S	S	S	S
14.	Drum Processing & Tank Storage Area	S	S	S		S	S				
15.	Drum Storage Area	S	S	S		S	S		S		
16.	Still Area	S	S				S	S			
17.	Lab	S	S		S	S	S		S		
18.	First Aid	S	S	S	S	S	S	S	S	S	S
19.	Records	S	S								
20.	Sampling	S	S		S	S	S		S		
21.	Buddy System	S	S	S		S	S	S			
22.	Tank Entry and Inspection	S	S		S	S	S	S			
23.	Unauthorized Personnel	S	S	S	S	S	S	S	S	S	S

TABLE OF CONTENTS

Training Modules	Page
1. RCRA and Reid Supply	1
2. Hazardous Waste Manifests	2
3. Labeling and Placarding	14
4. Classification of Hazardous Waste	17
5. Hazardous Properties for Hazardous Materials and Waste	28
6. Fire Prevention and Fighting	38
7. Protective Clothing	41
8. Contamination Prevention	45
9. Respirators	46
10. Hazardous Waste Pick Up	52
11. Forklift	56
12. Contingency Plan	57
13. Potential Hazards	58
14. Drum Processing and Tank Storage Area	60
15. Drum Storage Area	68
16. Still Area	70
17. Lab	73
18. First Aid	74
19. Records	75
20. Sampling	76
21. Buddy System	77
22. Tank Entry and Inspection	78
23. Unauthorized Personnel	80

1.0 RCRA AND REID SUPPLY

The Resource Conservation and Recovery Act (RCRA) is a federal statute enacted in 1976, and then modified in 1978 and 1980. The purpose behind the law is that it establishes a "cradle-to-grave" system for managing hazardous wastes. This means that from the time a hazardous waste is created until it is finally destroyed, a system of paperwork makes sure someone is responsible for safeguarding it, such as hazardous waste manifests. The law also provides specific requirements for those who generate, transport, treat, store, or dispose of hazardous wastes, such as Part B application procedures.

The federal agency that enforces these regulations is the Environmental Protection Agency (EPA). The state enforcement agency is the Kansas Department of Health and Environment (KDHE). The Departments of Transportation (DOT), both the federal and state, are the enforcers of hazardous waste transport.

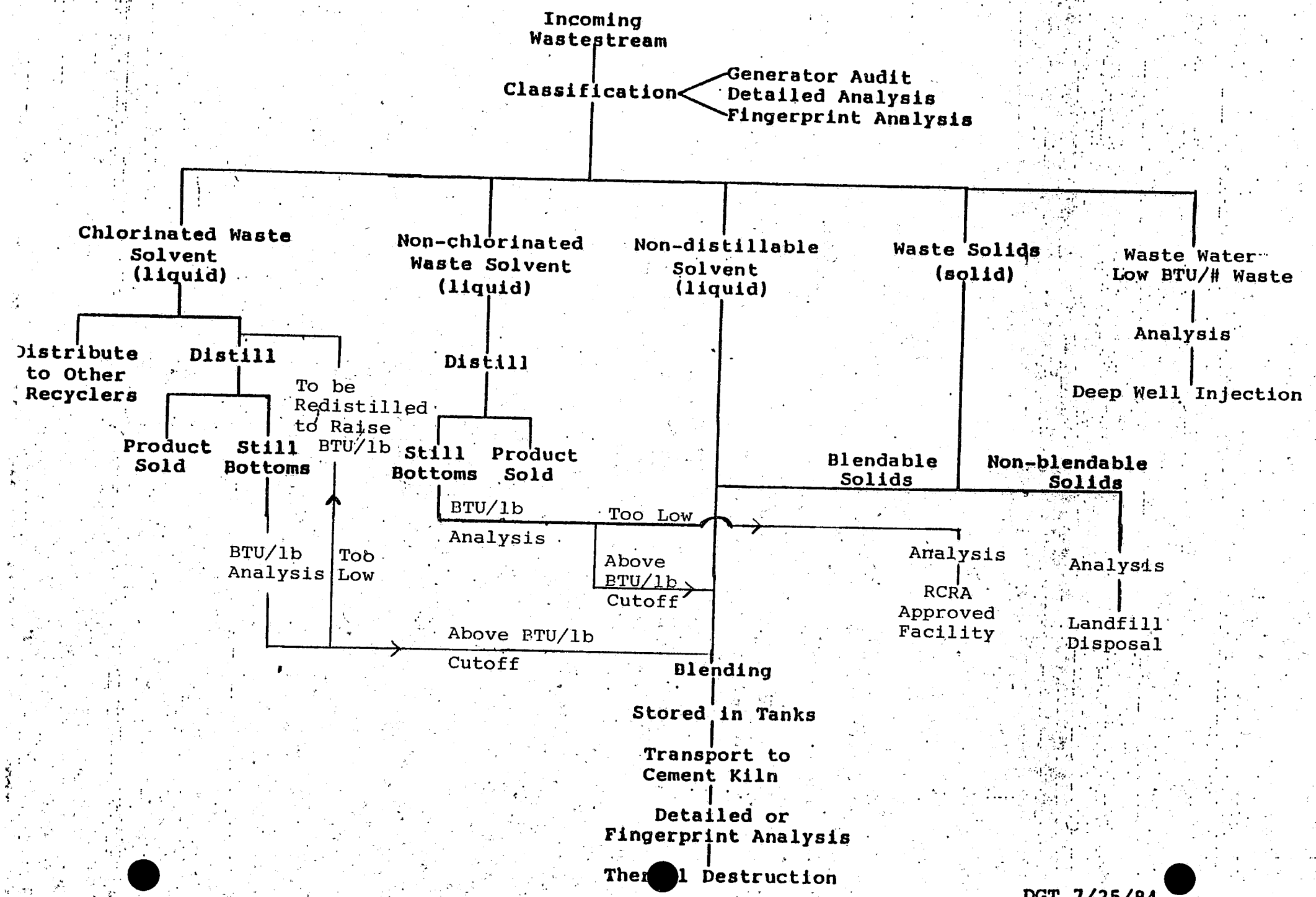
It is the purpose of this training to assure that you as an employee of Reid Supply Company handle hazardous waste in a manner that is in compliance with state and federal regulations, safe to you, and does not threaten the environment.

Reid Supply, in cooperation with the KDHE, EPA, and DOT is in a significant position to help our customers channel their hazardous wastes in a way that will not harm the environment. We at Reid Supply can play an important part in keeping Kansas a clean and healthy place to live and by recycling much of the hazardous waste solvents through distillation and alternate source fuel blending, we help conserve on natural resources.

Reid Supply Company is basically a transporter and storage facility for hazardous waste solvents that are generated primarily in painting, degreasing, and dry cleaning operations. These materials are either distilled by Reid Supply or channeled to another recycler, blended to make fuel for use in cement kilns, or soldified and landfilled in an approved hazardous waste landfill. See Fig.1.1. The following procedures describe how these hazardous wastes and associated aspects are to be handled.

HAZARDOUS WASTE FLOW CHART

Fig.1.1



DGT 7/25/84

2.0 HAZARDOUS WASTE MANIFESTS (BROAD)

Federal regulations require generators and transporters of hazardous waste and owners or operators of hazardous waste treatment, storage, and disposal facilities to use this form (Fig.2.1) and if necessary, the Continuation Sheet (Fig.2.2) for both inter and intrastate transportation. These forms help trace the flow of hazardous waste from "cradle-to-grave".

Federal regulations also require generators and transporters of hazardous waste and owners or operators of hazardous waste treatment, storage, and disposal facilitities to complete the following information:

2.1 INSTRUCTIONS FOR FIRST PAGE (Fig.2.1)

2.1.1 GENERATORS

Item 1. Generator's U.S.EPA ID Number - Manifest Document Number

Enter the generator's U.S. EPA twelve digit identification number and the unique five digit number assigned to this manifest.

Any person who generates any hazardous waste, which is not acutely hazardous waste, in any calendar month shall be subject to regulation as a generator in accordance with the following schedule:

(1) From and after July 1, 1984, all persons generating 165 pounds (75 kilograms) or more per month;
(2) from and after July 1, 1985, all persons generating 110 pounds (50 kilograms) or more per month;
(3) from and after July 1, 1986, all persons generating 55 pounds (25 kilograms) or more per month.

Anyone who falls within this schedule is required to apply for an EPA ID number by calling the KDHE Hazardous Waste Section at 913-862-9360. Anyone falling below the figures in this schedule is considered a small quantity generator and instead of providing an EPA ID number in the space, "Small Quantity Generator" can be written.

Item 2. Page 1 of ____

Enter the total number of pages used to complete this Manifest,

ie., the first page plus the number of Continuation Sheets, if any. A Continuation Sheet is required if:

(1) more than two transporters are to be used to transport the waste;
(2) more space is required for the U.S. DOT description and related information in Item 11 if the first page of the Manifest.

Item 3. Generator's Name and Mailing Address

Enter the name and mailing address of the generator. The address should be the location that will manage the returned Manifest forms.

Item 4. Generator's Phone Number

Enter a telephone number where an authorized agent of the generator may be reached in the event of an emergency.

Item A. State Manifest Document Number

Fill out for Oklahoma.

Item B. State Generator's I.D.

Fill out for Oklahoma.

Item 5. Transporter 1 Company Name

This will be the name of the first transporter who will transport the waste. This will almost always be Reid Supply Company when we are dealing with a customer. Other transporters will be used when we ship hazardous waste to other TSD facilities.

Item 6. U.S. EPA ID Number

Enter the U.S. EPA twelve digit identification number of the first transporter identified in Item 5. For Reid Supply Company it is KSD007246846.

Item C. State Transporter's ID

Fill out for Oklahoma.

Item D. Transporter's Phone

Fill out for Oklahoma.

Item 7. Transporter 2 Company Name

If applicable, enter the company name of the second transporter who will transport the waste. If more than two transporters are used, use a Continuation Sheet(s) and list the transporters in the order they will be transporting the waste.

Item 8. U.S. EPA ID Number

If applicable, enter the U.S. EPA ID twelve digit number of the second transporter identified in Item 7.

Item E. State Transporter's ID

Fill out for Oklahoma.

Item F. Transporter's Phone

Fill out for Oklahoma.

Item 9. Designated Facility Name and Site Address

Enter the company name and site address of the facility designated to receive the waste listed on this Manifest. The address must be the site address, which may differ from the company mailing address. Reid Supply Company will normally be the designated facility for Manifests being filled out for or by customers. The facility name and site address are as follows:

Reid Supply Company
2549 New York
Wichita, Ks. 67219

When Reid Supply ships to another facility, the other facility name and site address will be used.

Item 10. U.S. EPA ID Number

Enter the U.S. EPA twelve digit identification number of the designated facility identification in Item 9. For Reid Supply Company it is the same as the transporter U.S. EPA ID number, KSD007246846.

Item G. State Facility's ID

Fill out for Oklahoma.

Item H. Facility's Phone

Fill out for Oklahoma.

Item 11. U.S. DOT Description Including Proper Shipping Name, Hazard Class, and ID Number (UN/NA)

Enter the U.S. DOT Proper Shipping Name, Hazard Class, ID Number (UN/NA), and Reportable Quantity (RQ) for each waste as identified in 49 CFR 171 through 177. The RQ for all waste solvents that Reid Supply handles is one pound. "Waste" should always precede the Proper Shipping Name. If additional space is needed for waste descriptions, enter these additional desceiptions in Item 28 on the Continuation Sheet.

Item 12. Containers (number and type)

Enter the number of containers for each waste and the appropriate abbreviation from Table 1 for the type of container.

Table 1 - Types of Containers

DM = Metal drums, barrels, keys
TT = Cargo tanks (tank trucks)
DT = Dump truck

Item 13. Total Quantity

Enter the total quantity of waste described on each line.

Item 14. Unit (weight)

Enter the number of total pounds of waste for each wastestream.

Item I. Waste No.

Enter the appropriate F001-F003, F005, D001, D005-D008 numbers for each wastestream. This is not required by the EPA but is necessary for our annual reports to the KDHE. OKLAHOMA requires both the Federal and State waste codes for each Waste Number. The Federal Waste code is to be above the State waste code in the same box.

Item 15. Special Handling Instructions and Additional Information

Generators may use this space to indicate special transportation, treatment, storage, or disposal information or Bill of Lading information. Kansas or Oklahoma does not require additional, new, or different information in this space.

Item 16. Generator's Certification

The generator must read, sign (by hand), and date the certification statement.

2.1.2 TRANSPORTERS

Item 17. Transporter 1 Acknowledgement of Receipt of Materials

Enter the name of the person accepting the waste on behalf of the first transporter. That person must acknowledge acceptance of the waste described on the Manifest by signing and entering the date of receipt.

Item 18. Transporter 2 Acknowledgement of Receipt of Materials

Enter if applicable the name of the person accepting the waste on behalf of the second transporter. That person must acknowledge acceptance of the waste described on the Manifest by signing and entering the date of receipt.

2.1.3 FACILITY

Item 19. Discrepancy Indication Space

The authorized representative of the designated (or alternate) facility's owner or operator must note in this space any significant discrepancy between the waste described on the Manifest and the waste actually received at the facility. Any significant discrepancies must be resolved within 15 days of receiving the waste or else the KDHE is to be notified by letter with a copy of the Manifest at issue describing the discrepancy and attempts to reconcile it (40 CFR 264.72 and 265.72).

Item 20. Facility Owner or Operator: Certification of Receipt of Hazardous Materials Covered by This Manifest Except as Noted in Item 19

Print or type the name of the person accepting the waste on behalf of the owner or operator of the facility. That person must acknowledge acceptance of the waste described on the Manifest by signing and entering the date of receipt.

Items A-K are not required by Federal Regulations for intra- or interstate transportation. However, states may have special requirements and need to be consulted.

2.2 INSTRUCTIONS FOR CONTINUATION SHEET (Fig.2.2)

2.2.1 GENERATORS

Item 21. Generator's U.S. EPA ID Number - Manifest Document Number

Enter the generator's U.S. EPA twelve digit identification number and the unique five digit number assigned to this Manifest as it appears in Item 1 on the first page of the Manifest.

Item 22. Page ___

Enter the page number of this Continuation Sheet.

Item 23. Generator's Name

Enter the generator's name as it appears in Item 3 on the first page of the Manifest.

Item L. State Manifest Document Number

Fill out for Oklahoma.

Item M. State Generator's ID

Fill out for Oklahoma.

Item 24. Transporter ___ Company Name

If additional transporters are used to transport the waste described on this Manifest, enter the company name of each additional transporter in the order inwhich they will transport the waste. Enter after the word "Transporter" the order of the transporter.

Item 25. U.S. EPA ID Number

Enter the U.S. EPA twelve digit identification number of the transporter described in Item 24.

Item N. State Transporter I.D.

Fill out for Oklahoma.

Item O. Transporter's Phone

Fill out for Oklahoma.

Item 26. Transporter ___ Company Name

Item 27. U.S. EPA ID Number

Item P. State Transporter's ID.

Fill out for Oklahoma.

Item Q. Transporter's Phone

Fill out for Oklahoma.

Item 28. U.S. DOT Description Including Proper Shipping Name, Hazardous Class, ID Number (UN/NA), and RQ

Refer to Item 11.

Item R. Oklahoma required both the Federal and State waste codes for each Waste Number. The Federal waste code is to be above the State waste code in the same box.

Item 29. Containers (Number and Type)

Refer to Item 12.

Item 30. Total Quantity

Refer to Item 13.

Item 31. Unit (Weight)

Refer to Item 14.

Item 32. Special Handling Instructions

Refer to Item 15.

2.2.2 TRANSPORTERS

Item 33. Transporter ___ Acknowledgement of Receipt of Materials

Enter the same number of the transporter as identified in Item 24. Enter also the name of the person accepting the waste on behalf of the Transporter (Company Name) identified in Item 24. That person must acknowledge acceptance of the waste described on the Manifest by signing and entering the date of receipt.

Item 34. Transporter ___ Acknowledgement of Receipt of Materials

2.2.3 FACILITY

Item 35. Discrepancy Indication Space

Refer to Item 19.

Items L-R are not required by Federal Regulations for intra- or interstate transportation. However, states may have special requirements and need to be consulted.

2.3 CHANNELING MANIFESTS

2.3.1 MANIFESTS RECEIVED

Manifests received at Reid Supply Company and signed for the Facility are to be given to the Process Engineer. The Process Engineer inspects the Manifest for completeness, removes the Transporter copy if Reid Supply was the Transporter and the Facility copy, and files these two copies permanently. The rest of the copies go to the General Manager to have the original copy sent back to the Generator within 10 days and the other copies filed.

If the generator is from Oklahoma, the original is sent to the Oklahoma State Department of Health (O.S.D.H.) and a copy is sent to the generator within 10 days.

If another Transporter was used besides Reid Supply, the Manifest is to be inspected for completeness and signed for the Facility in the presence of the transporter. The Transporter is given the transporter copy. The rest of the copies are distributed as indicated above.

2.3.2 MANIFESTS GIVEN TO TRANSPORTER

Before leaving Reid Supply Company with hazardous waste, the Transporter, whether it is Reid Supply or not, must sign and date the Transporter 1 space in the presence of a Reid Supply employee and leave the Generator copy with the Process Engineer to be filed. If Reid Supply is the Transporter 1, the material is taken to the designated Facility. Upon receipt of the material, the Facility signs and dates the Manifest in the Facility space in the presence of the Transporter. The Transporter receives the Transporter 1 copy and returns it to the

Process Engineer for filing.

Reid Supply should receive either the original or a copy signed and dated by the Facility receiving the waste within 35 days. The KDHE should be notified if a copy has not been received within 45 days. This copy is to be filed with the other copy(s) of the manifest by the Process Engineer.

UNDER NO CIRCUMSTANCES ARE MANIFEST COPIES TO BE LOST OR DISCARDED. THE KDHE AND EPA ARE VERY PROTECTIVE OF THESE DOCUMENTS AND MAKE REGULAR INSPECIONS OF MANIFESTS ON FILE.

Fig. 2.1

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2000-0404. Expires 7-31-86

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No.

2. Page 1 of

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address

4. Generator's Phone ( )

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name | 6. US EPA ID Number

C. State Transporter's ID

D. Transporter's Phone

7. Transporter 2 Company Name | 8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address | 10. US EPA ID Number

G. State Facility's ID

H. Facility's Phone

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class and ID Number)	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.						
b.						
c.						
d.						

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national governmental regulations.

Printed/Typed Name | Signature | Date: Month Day Year

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date: Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name | Signature | Date: Month Day Year

Style F15-6 · Labelmaster, Chicago, IL 60646 (312) 478-0900

EPA Form 8700-22 (3-84)

ORIGINAL—RETURN TO GENERATOR

Fig. 2.2

Please print or type. (Form designed for use on elite (12-pitch) typewriter.) Form Approved. OMB No. 2000-0404. Expires 7-31-86

UNIFORM HAZARDOUS WASTE MANIFEST
(Continuation Sheet)

21. Generator's US EPA ID No. | Manifest Document No. | 22. Page | Information in the shaded areas is not required by Federal law.

23. Generator's Name | L. State Manifest Document Number | M. State Generator's ID

24. Transporter ____ Company Name | 25. US EPA ID Number | N. State Transporter's ID | O. Transporter's Phone

26. Transporter ____ Company Name | 27. US EPA ID Number | P. State Transporter's ID | Q. Transporter's Phone

28. US DOT Description *(Including Proper Shipping Name, Hazard Class, and ID Number)*	29. Containers No.	Type	30. Total Quantity	31. Unit Wt/Vol	R. Waste No.
a.					
b.					
c.					
d.					
e.					
f.					
g.					
h.					
i.					

S. Additional Descriptions for Materials Listed Above | T. Handling Codes for Wastes Listed Above

32. Special Handling Instructions and Additional Information

GENERATOR

TRANSPORTER

33. Transporter ____ Acknowledgement of Receipt of Materials | Date

Printed/Typed Name | Signature | Month Day Year

34. Transporter ____ Acknowledgement of Receipt of Materials | Date

Printed/Typed Name | Signature | Month Day Year

FACILITY

35. Discrepancy Indication Space

EPA Form 8700-22A (3-84)

BILLING CODE 6560-50-C

2.0 HAZARDOUS WASTE MANIFESTS (LIMITED)

Federal Regulations require generators and transporters of hazardous waste and owners or operators of hazardous waste treatment, storage, and disposal facilities to use this form (Fig.2.1) and if necessary, the Continuation Sheet (Fig.2.2) for both inter and intrastate transportation. These forms help trace the flow of hazardous waste from "cradle-to-grave".

Of particular importance are the following items:

Item 1. Generator's U.S EPA ID Number - Manifest Document Number

The generator's U.S. EPA twelve digit identification number and the five digit number assigned to the Manifest by the generator must be in this space.

Item 3. Generator's Name and Mailing Address

This will identify the source of the waste.

Item 11. U.S. DOT Description Including Proper Shipping Name, Hazard Class, ID Number (UN/NA), and RQ

Each entry for the proper shipping name must begin with "Waste..". The Hazard Class is to be identified as either Flammable Liquid or ORM-E. The UN or NA followed by a four digit number must be provided. The RQ which is the reportable quantity in case of a spill is one pound.

Item 12 and 28. Containers (Number and Type)

Make sure the number of containers picked up equals the number on the manifest for a given entry.

Items 15 and 32. Special Handling Instructions and Additional Information

Note the information provided and follow if applicable.

Item 16. Generator's Certification

Make sure an employee of the generator company signs and dates the generator certification.

Item 17. Transporter 1 Acknowledgement of Receipt of Materials

Make sure the truck driver performing the pick up signs and dates the space in Item 17.

Item 19 and 35. Discrepancy Indication Space

If upon receipt of the waste at Reid Supply any significant discrepancy is discovered between the waste described on the Manifest and the waste actually received at the facility, the discrepancy is to be noted in this space.

Item 20. Facility Owner or Operator: Certification of Receipt of Hazardous Materials Covered by this Manifest Except as Noted in Item 19

This space must be signed and dated by an authorized person upon receipt and inspection for discrepancies of the material at Reid Supply.

2.1 HANDLING MANIFESTS

As Transporter 1 Reid Supply by means of the driver must sign the Manifest in the appropriate place in the presence of the Generator whether the Generator is a customer or Reid Supply. The driver also gives the Generator copy to the Generator (Process Engineer if the Generator is Reid Supply) and takes the rest of the Manifest copies with him.

If the waste is coming to Reid Supply as the Facility, the driver leaves the Manifest copies with the Process Technician Supervisor or Process Engineer to be verified with the shipment, signed and dated.

If the waste is leaving Reid Supply to go to another Hazardous Waste Facility, the driver must receive a copy signed and dated by the Facility representative in the presence of the driver before he leaves the Facility. This copy is to be turned in with his log papers and channeled to the Process Engineer for filing.

UNDER NO CIRCUMSTANCES ARE MANIFEST COPIES TO BE LOST OR DISCARDED. THE KDHE AND EPA ARE VERY PROTECTIVE OF THESE DOCUMENTS ARE MAKE REGULAR INSPECTIONS OF MANIFESTS ON FILE.

2.2 Excercise 2.1

2.3 Exeercise 2.2

2.4 Excercise 2.3

Exercise 2.1 Fill out the Manifest given the following information as well as information obtained from the Hazardous Material Label.

(a) Reid Supply is the TSD facility
(b) Reid Supply is the transporter
(c) The pick up is to occur on September 30, 1984
(d) Generator is Acme, Inc., EPA ID #KSD003721891
1227 Marshall, P.O. Box 25, Wichita, Ks., 67202
(e) The shipment of hazardous waste is as follows:

10 X 55 gallon drums of paint thinner, Waste #D001
5 X 55 gallon drums 1,1,1-trichloroethane used in degreasing, Waste #F001
3 X 55 gallon drums of perchloroethylene still bottoms, Waste #F002
8 X 55 gallon drums of MEK, Waste #F005
20 X 55 gallon drums of Acetone, Waste #F003

Exercise 2.2 Fill out the Manifest given the following information:

(a) Reid Supply is the generator
(b) Becker is the transporter
EPA ID #KSD031226764
(c) Systech is the TSD facility
EPA ID #KSD980633259
(d) The shipment of hazardous waste is 7,000 gallons of blended flammable solvent
(e) The date of the shipment is September 20, 1984

Exercise 2.3 Fill out the Manifest given the following information:

(a) Reid Supply is the generator
(b) Wichita Trucking is the Transporter
EPA ID #KSD980632764
(c) Chemical Waste Management is the TSD facility
EPA ID #TXD000838896
(d) The shipment is:

40 X 55 gallon drums of paint solids
40 X 55 gallons drums of spent perchloroethylene cartridge filters

3.0 LABELING AND PLACARDING

Labeling and placarding is necessary to identify hazardous wastes between the times they are generated until they are recycled, destroyed, or disposed of. There are two labels used, the Hazardous Waste Label and the Flammable liquid Label. There is one placard used, the Flammable Placard.

3.1 LABELING

3.1.1 HAZARDOUS WASTE LABEL

The Hazardous Waste Label (Fig. 3.1.1) contains information that is nearly identical to the Hazardous Waste Manifest. The only additional information necessary is the accumulation start date. The information from the Hazardous Waste Label must be the same as that provided in the Manifest before hazardous waste can be picked up.

One label is to be placed on the side of each drum to be used to collect waste prior to putting waste in the drum. The label is to be dated at this time with month/day/year for the accumulation start date.

A permanent black ink pen or type should be used to mark the Hazardous Waste Label to prevent smearing of information.

3.1.2 FLAMMABLE LIQUID LABEL

Flammable Liquid Labels (Fig.3.1.2) must be placed beside the Hazardous Waste Labels only if the waste solvent is flammable (non-halogenated). It should accompany the Hazardous Waste Label at the accumulation start date. The halogenated solvents that Reid Supply handles do not require an additional label besides the Hazardous Waste Label. To make sure if a waste drum should have a flammable liquid sticker, the proper shipping name can be looked up in 49 CFR 171 through 177. The Hazard Class column will tell if the waste is a flammable liquid.

Before picking up any waste drums, the Manifest should be checked at items 11 and 28 to see if any of these waste streams are indicated as a flammable liquid. If they are, the drums of that waste stream must have Flammable Liquid Labels.

HAZARDOUS WASTE

FEDERAL LAW PROHIBITS IMPROPER DISPOSAL

IF FOUND, CONTACT THE NEAREST POLICE, OR
PUBLIC SAFETY AUTHORITY, OR THE
U.S. ENVIRONMENTAL PROTECTION AGENCY

PROPER D.O.T.
SHIPPING NAME_____ UN OR NA#_____

GENERATOR INFORMATION:

NAME_____

ADDRESS_____

CITY_____ STATE_____ ZIP_____

EPA
ID NO._____

EPA
WASTE NO._____

ACCUMULATION
START DATE_____

MANIFEST
DOCUMENT NO._____

HANDLE WITH CARE!

CONTAINS HAZARDOUS OR TOXIC WASTES

STYLE WM-6

© LABELMASTER, CHICAGO, IL 60646

Fig.3.1.1

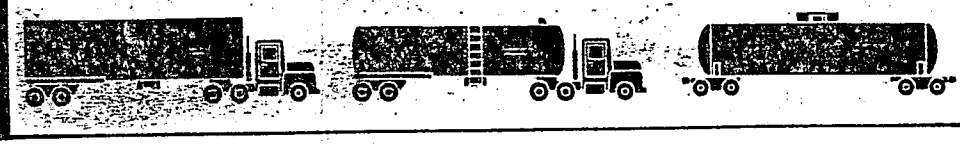
Fig.3.1.2

3.2 PLACARDING

The only placarding required for waste handled by Reid Supply is the Flammable Placard (Fig. 3.2.1). If more than 1000 pounds of a flammable waste or approximately three drums are going to be carried in a truck, a Flammable Placard is required on each of the four sides of the truck. To determine if flammable placarding is required, look up the proper shipping name in 49 CFR 171 through 177. If there is a question during a waste pick up whether placarding should be used, the Manifest should be examined to see if there are any waste streams that have a flammable liquid hazard class. If there are at least three drums total, Flammable Placards are required. Also if at least three drums are labeled with Flammable Liquid Labels, Flammable Placards are required. Placards are not to be used unless 1000 pounds of flammable material is in the truck. If the truck is empty or contains less than 1000 pounds of flammable material, the "Drive Safely" placard must be visible.

Fig.3.2.1

PERMANENT PLACARDING SYSTEMS



SPACEMASTER

DUO-FLIP

RAILMASTER

SLIDEMASTER

SPACEMASTER™

Proven reliable on more trailers than any other system in America!

Year after year, Spacemaster continues to be the acknowledged favorite of both private and common carrier fleets. Our exclusive deep-formed aluminum frame provides good wind protection for the aluminum flip-leaves. Panels are permanently locked in place by four double-riveted stainless steel pressure fasteners. Split frame and clipped corner units available for rear roll up doors.

DUO-FLIP™

The perfect solution for compliance with HM 126. Both placards and numbers are completely locked in on a single frame. Change both quickly and easily to produce any possible combination of placard and I.D. number required. Construction is all-aluminum with stainless steel fasteners. Fits on same mountings being used for your present system. In the tradition of Spacemaster, new DUO-FLIP offers the total flexibility required by new regulations.

RAILMASTER™

This heavy-duty steel placarding system is ideally suited for either dedicated or multi-use tank cars. The permanently locked in steel placards completely eliminate blow-outs and the problems of non-available placards, particularly of the "Empty" side for return trips. Railmaster is easily installed on the same tank car brackets as are presently provided for the present slide holders.

SLIDEMASTER™

The traditional slide-in placard holder...produced to Labelmaster's quality standards. Available in annodized aluminum, and now exclusively from Labelmaster, in Stainless Steel for maximum strength and durability.

REQUEST CATALOG 81-3

Exercise 3.1 Using the information from Exercise 2.1:

(a) Fill out a Hazardous Waste Label for each waste stream.
(b) Indicate any additional labeling required.
(c) Indicate any placarding required.

Exercise 3.2 With the Manifest and Hazardous Waste Labels provided, determine:

(a) What additional labeling and placarding is required
(b) Any discrepancies between the Manifest and the Hazardous Waste Label

Exercise 3.3

The first stop for the waste pick up route is at Specialty Fiberglass for two drums of waste acetone. The next pick up at Modern Drycleaner is for three drums of Perchloroethylene still bottoms. The last pick up is at Ace Body Shop for two drums of waste lacquer thinner. The waste is delivered to the Reid Supply Plant and the truck is returned to the warehouse at 911 E. Indianapolis. Describe the placarding required during the course of the waste pick up route.

4.0 CLASSIFICATION OF HAZARDOUS WASTE (BROAD)

There are three main types of hazardous waste classification:

(1) RCRA Hazardous Waste Classification
(2) DOT Hazardous Material Classification
(3) National Fire Protection Association (NFPA) Classification

4.1 RCRA HAZARDOUS WASTE CLASSIFICATION

There are five types of hazardous waste according to the RCRA Hazardous Waste Classification:

(1) Hazardous wastes from non-specific sources
(2) Hazardous wastes from specific sources
(3) Commercial chemical product hazardous wastes
(4) Characteristic of non-listed hazardous wastes

4.1.1 HAZARDOUS WASTES FROM NON-SPECIFIC SOURCES

These are the wastes listed in 40 CFR Part 261.31 (Fig.4.1.1). They include many of the hazardous wastes handled by Reid Supply for which we are permitted.

F001 - spent halogenated solvents used in degreasing: tetrachloroethylene (perchloroethylene), trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; and sludges from the recovery of these solvents in degreasing operations.

F002 - spent halogenated solvents: tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloroethylene, 1,2,2-trifluoroethane, orthodichlorobenzene, and trichlorofluoromethane; and the still bottoms from the recovery of these solvents.

F003 - spent non-halogenated solvents: xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; and the still bottoms from the recovery of these solvents.

§ 261.31 Hazardous wastes from non-specific sources.

Fig.4.1.1

Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
Generic:		
F001	The following spent halogenated solvents used in degreasing: tetrachloroethylene, trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; and sludges from the recovery of these solvents in degreasing operations.	(T)
F002	The following spent halogenated solvents: tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloro-1,2,2-trifluoroethane, ortho-dichlorobenzene, and trichlorofluoromethane; and the still bottoms from the recovery of these solvents.	(T)
F003	The following spent non-halogenated solvents: xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; and the still bottoms from the recovery of these solvents.	(I)
F004	The following spent non-halogenated solvents: cresols and cresylic acid, and nitrobenzene; and the still bottoms from the recovery of these solvents.	(T)
F005	The following spent non-halogenated solvents: toluene, methyl ethyl ketone, carbon disulfide, isobutanol, and pyridine; and the still bottoms from the recovery of these solvents.	(I, T)
F006	Wastewater treatment sludges from electroplating operations except from the following processes: (1) sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning/stripping associated with tin, zinc and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum.	(T)
F019	Wastewater treatment sludges from the chemical conversion coating of aluminum	(T)
F007	Spent cyanide plating bath solutions from electroplating operations (except for precious metals electroplating spent cyanide plating bath solutions).	(R, T)
F008	Plating bath sludges from the bottom of plating baths from electroplating operations where cyanides are used in the process (except for precious metals electroplating plating bath sludges).	(R, T)
F009	Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process (except for precious metals electroplating spent stripping and cleaning bath solutions).	(R, T)
F010	Quenching bath sludge from oil baths from metal heat treating operations where cyanides are used in the process (except for precious metals heat-treating quenching bath sludges).	(R, T)
F011	Spent cyanide solutions from salt bath pot cleaning from metal heat treating operations (except for precious metals heat treating spent cyanide solutions from salt bath pot cleaning).	(R, T)
F012	Quenching wastewater treatment sludges from metal heat treating operations where cyanides are used in the process (except for precious metals heat treating quenching wastewater treatment sludges).	(T)

[46 FR 4617, Jan. 16, 1981, as amended at 46 FR 27477, May 20, 1981]

§ 261.32 Hazardous wastes from specific sources.

Fig.4.1.2

Industry and EPA hazardous waste No.	Hazardous waste	Hazard code
Wood preservation: K001	Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol.	(T)
Inorganic pigments:		
K002	Wastewater treatment sludge from the production of chrome yellow and orange pigments.	(T)
K003	Wastewater treatment sludge from the production of molybdate orange pigments	(T)
K004	Wastewater treatment sludge from the production of zinc yellow pigments	(T)
K005	Wastewater treatment sludge from the production of chrome green pigments	(T)
K006	Wastewater treatment sludge from the production of chrome oxide green pigments (anhydrous and hydrated).	(T)
K007	Wastewater treatment sludge from the production of iron blue pigments	(T)
K008	Oven residue from the production of chrome oxide green pigments	(T)
Organic chemicals:		
K009	Distillation bottoms from the production of acetaldehyde from ethylene	(T)
K010	Distillation side cuts from the production of acetaldehyde from ethylene	(T)
K011	Bottom stream from the wastewater stripper in the production of acrylonitrile	(R, T)
K013	Bottom stream from the acetonitrile column in the production of acrylonitrile	(R, T)

F005 - spent non-halogenated solvents: toluene, methyl ethyl ketone, carbon disulfide, isobutanol, and pyridine; and the still bottoms from the recovery of these solvents.

These four-digit numbers should appear in items I and R as the Waste Number on the Hazardous Waste Manifest.

4.1.2 HAZARDOUS WASTES FROM SPECIFIC SOURCES

These are the wastes listed in 40 CFR Part 261.32 (Fig.4.1.2). Reid Supply is not permitted to handle these wastes. They include wastes from specific industrial sources such as:

K002 - wastewater treatment sludge from the production of chrome yellow and orange pigments.

K009 - distillation bottoms from the production of acetaldehyde from ethylene.

K073 - chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production.

4.1.3 COMMERCIAL CHEMICAL PRODUCT HAZARDOUS WASTES

These are waste commercial chemical products listed in 40 CFR Part 261.33 (Fig.4.1.3). These are pure chemicals without contamination that have been discarded or are intended to be discarded. They include wastes such as:

P003 - Acrolein

P030 - Cyanides (soluble cyanide), not elsewhere specified

P056 - Fluorine

U002 - Acetone

U159 - Methyle ethyl ketone

U228 - Trichloroethylene

U043 - Vinyl chloride

Although the "U" numbers list some of the waste solvents

Fig.4.1.3

is the sole active ingredient. It does not refer to a material, such as a manufacturing process waste, that contains any of the substances listed in paragraphs (e) or (f). Where a manufacturing process waste is deemed to be a hazardous waste because it contains a substance listed in paragraphs (e) or (f), such waste will be listed in either §§ 261.31 or 261.32 or will be identified as a hazardous waste by the characteristics set forth in Subpart C of this Part.]

(e) The commercial chemical products, manufacturing chemical intermediates or off-specification commercial chemical products or manufacturing chemical intermediates referred to in paragraphs (a) through (d) of this section, are identified as acute hazardous wastes (H) and are subject to be the small quantity exclusion defined in § 261.5(e).

[*Comment:* For the convenience of the regulated community the primary hazardous properties of these materials have been indicated by the letters T (Toxicity), and R (Reactivity). Absence of a letter indicates that the compound only is listed for acute toxicity.]

These wastes and their corresponding EPA Hazardous Waste Numbers are:

Hazardous waste No.	Substance
P023	Acetaldehyde, chloro-
P002	Acetamide, N-(aminothioxomethyl)-
P057	Acetamide, 2-fluoro-
P058	Acetic acid, fluoro-, sodium salt
P066	Acetimidic acid, N-[(methylcarbamoyl)oxy]thio-, methyl ester
P001	3-(alpha-acetonylbenzyl)-4-hydroxycoumarin and salts
P002	1-Acetyl-2-thiourea
P003	Acrolein
P070	Aldicarb
P004	Aldrin
P005	Allyl alcohol
P006	Aluminum phosphide
P007	5-(Aminomethyl)-3-isoxazolol
P008	4-aAminopyridine
P009	Ammonium picrate (R)
P119	Ammonium vanadate
P010	Arsenic acid
P012	Arsenic (III) oxide
P011	Arsenic (V) oxide
P011	Arsenic pentoxide
P012	Arsenic trioxide
P038	Arsine, diethyl-
P054	Aziridine
P013	Barium cyanide
P024	Benzenamine, 4-chloro-
P077	Benzenamine, 4-nitro-
P028	Benzene, (chloromethyl)-
P042	1,2-Benzenediol, 4-[1-hydroxy-2-(methylamino)ethyl]-
P014	Benzenethiol
P028	Benzyl chloride
P015	Beryllium dust
P016	Bis(chloromethyl) ether
P017	Bromoacetone
P018	Brucine
P021	Calcium cyanide
P123	Camphene, octachloro-
P103	Carbamimidoselenoic acid
P022	Carbon bisulfide
P022	Carbon disulfide
P095	Carbonyl chloride
P033	Chlorine cyanide
P023	Chloroacetaldehyde
P024	p-Chloroaniline
P026	1-(o-Chlorophenyl)thiourea
P027	3-Chloropropionitrile
P029	Copper cyanides
P030	Cyanides (soluble cyanide salts), not elsewhere specified
P031	Cyanogen
P033	Cyanogen chloride
P036	Dichlorophenylarsine
P037	Dieldrin
P038	Diethylarsine
P039	O,O-Diethyl S-[2-(ethylthio)ethyl] phosphorodithioate
P041	Diethyl-p-nitrophenyl phosphate
P040	O,O-Diethyl O-pyrazinyl phosphorothioate
P043	Diisopropyl fluorophosphate
P044	Dimethoate
P045	3,3-Dimethyl-1-(methylthio)-2-butanone, O-[(methylamino)carbonyl] oxime
P071	O,O-Dimethyl O-p-nitrophenyl phosphorothioate
P082	Dimethylnitrosamine
P046	alpha, alpha-Dimethylphenethylamine
P047	4,6-Dinitro-o-cresol and salts
P034	4,6-Dinitro-o-cyclohexylphenol
P048	2,4-Dinitrophenol
P020	Dinoseb
P085	Diphosphoramide, octamethyl-
P039	Disulfoton
P049	2,4-Dithiobiuret
P109	Dithiopyrophosphoric acid, tetraethyl ester
P050	Endosulfan
P088	Endothall
P051	Endrin
P042	Epinephrine
P046	Ethanamine, 1,1-dimethyl-2-phenyl-
P084	Ethenamine, N-methyl-N-nitroso-
P101	Ethyl cyanide
P054	Ethylenimine
P097	Famphur
P056	Fluorine
P057	Fluoroacetamide
P058	Fluoroacetic acid, sodium salt
P065	Fulminic acid, mercury(II) salt (R,T)
P059	Heptachlor
P051	1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo,endo-1,4:5,8-dimethanonaphthalene
P037	1,2,3,4,10,10-Hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-endo,exo-1,4:5,8-demethanonaphthalene
P060	1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4:5,8-endo, endo-dimethanonaphthalene
P004	1,2,3,4,10,10-Hexachloro-1,4,4a,5,8,8a-hexahydro-1,4:5,8-endo,exo-dimethanonaphthalene

These wastes and their corresponding EPA Hazardous Waste Numbers are:

Hazardous Waste No.	Substance
U001	Acetaldehyde (I)
U034	Acetaldehyde, trichloro-
U187	Acetamide, N-(4-ethoxyphenyl)-
U005	Acetamide, N-9H-fluoren-2-yl-
U112	Acetic acid, ethyl ester (I)
U144	Acetic acid, lead salt
U214	Acetic acid, thallium(I) salt
U002	Acetone (I)
U003	Acetonitrile (I,T)
U004	Acetophenone
U005	2-Acetylaminofluorene
U006	Acetyl chloride (C,R,T)
U007	Acrylamide
U008	Acrylic acid (I)
U009	Acrylonitrile
U150	Alanine, 3-[p-bis(2-chloroethyl)amino] phenyl-, L-
U011	Amitrole
U012	Aniline (I,T)
U014	Auramine
U015	Azaserine
U010	Azirino(2',3':3,4)pyrrolo(1,2-a)indole-4,7-dione, 6-amino-8-[((aminocarbonyl) oxy)methyl]-1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5-methyl-,
U157	Benz[j]aceanthrylene, 1,2-dihydro-3-methyl-
U016	Benz[c]acridine
U016	3,4-Benzacridine
U017	Benzal chloride
U018	Benz[a]anthracene
U018	1,2-Benzanthracene
U094	1,2-Benzanthracene, 7,12-dimethyl-
U012	Benzenamine (I,T)
U014	Benzenamine, 4,4'-carbonimidoylbis(N,N-dimethyl-
U049	Benzenamine, 4-chloro-2-methyl-
U093	Benzenamine, N,N'-dimethyl-4-phenylazo-
U158	Benzenamine, 4,4'-methylenebis(2-chloro-
U222	Benzenamine, 2-methyl-, hydrochloride
U181	Benzenamine, 2-methyl-5-nitro
U019	Benzene (I,T)
U038	Benzeneacetic acid, 4-chloro-alpha-(4-chlorophenyl)-alpha-hydroxy, ethyl ester
U030	Benzene, 1-bromo-4-phenoxy-
U037	Benzene, chloro-
U190	1,2-Benzenedicarboxylic acid anhydride
U028	1,2-Benzenedicarboxylic acid, [bis(2-ethylhexyl)] ester
U069	1,2-Benzenedicarboxylic acid, dibutyl ester
U088	1,2-Benzenedicarboxylic acid, diethyl ester
U102	1,2-Benzenedicarboxylic acid, dimethyl ester
U107	1,2-Benzenedicarboxylic acid, di-n-octyl ester
U070	Benzene, 1,2-dichloro-
U071	Benzene, 1,3-dichloro-
U072	Benzene, 1,4-dichloro-
U017	Benzene, (dichloromethyl)-
U223	Benzene, 1,3-diisocyanatomethyl- (R,T)
U239	Benzene, dimethyl-(I,T)
U201	1,3-Benzenediol
U127	Benzene, hexachloro-
U056	Benzene, hexahydro- (I)
U188	Benzene, hydroxy-
U220	Benzene, methyl-
U105	Benzene, 1-methyl-1-2,4-dinitro-
U106	Benzene, 1-methyl-2,6-dinitro-
U203	Benzene, 1,2-methylenedioxy-4-allyl-
U141	Benzene, 1,2-methylenedioxy-4-propenyl-
U090	Benzene, 1,2-methylenedioxy-4-propyl-
U055	Benzene, (1-methylethyl)- (I)
U169	Benzene, nitro- (I,T)
U183	Benzene, pentachloro-
U185	Benzene, pentachloro-nitro-
U020	Benzenesulfonic acid chloride (C,R)
U020	Benzenesulfonyl chloride (C,R)
U207	Benzene, 1,2,4,5-tetrachloro-
U023	Benzene, (trichloromethyl)-(C,R,T)
0234	Benzene, 1,3,5-trinitro- (R,T)
U021	Benzidine
U202	1,2-Benzisothiazolin-3-one, 1,1-dioxide
U120	Benzo[j,k]fluorene
U022	Benzo[a]pyrene
U022	3,4-Benzopyrene
U197	p-Benzoquinone
U023	Benzotrichloride (C,R,T)
U050	1,2-Benzphenanthrene
U085	2,2'-Bioxirane (I,T)
U021	(1,1'-Biphenyl)-4,4'-diamine
U073	(1,1'-Biphenyl)-4,4'-diamine, 3,3'-dichloro-
U091	(1,1'-Biphenyl)-4,4'-diamine, 3,3'-dimethoxy-
U095	(1,1'-Biphenyl)-4,4'-diamine, 3,3'-dimethyl-
U024	Bis(2-chloroethoxy) methane
U027	Bis(2-chloroisopropyl) ether
U244	Bis(dimethylthiocarbamoyl) disulfide
U028	Bis(2-ethylhexyl) phthalate
U246	Bromine cyanide
U225	Bromoform
U030	4-Bromophenyl phenyl ether
U128	1,3-Butadiene, 1,1,2,3,4,4-hexachloro-
U172	1-Butanamine, N-butyl-N-nitroso-
U035	Butanoic acid, 4-[Bis(2-chloroethyl)amino] benzene-
U031	1-Butanol (I)
U159	2-Butanone (I,T)
U160	2-Butanone peroxide (R,T)
U053	2-Butenal
U074	2-Butene, 1,4-dichloro- (I,T)
U031	n-Butyl alchohol (I)
U136	Cacodylic acid
U032	Calcium chromate
U238	Carbamic acid, ethyl ester
U178	Carbamic acid, methylnitroso-, ethyl ester
U176	Carbamide, N-ethyl-N-nitroso-
U177	Carbamide, N-methyl-N-nitroso-
U219	Carbamide, thio-
U097	Carbamoyl chloride, dimethyl-
U215	Carbonic acid, dithallium(I) salt
U156	Carbonochloridic acid, methyl ester (I,T)
U033	Carbon oxyfluoride (R,T)
U211	Carbon tetrachloride
U033	Carbonyl fluoride (R,T)
U034	Chloral
U035	Chlorambucil
U036	Chlordane, technical
U026	Chlornaphazine
U037	Chlorobenzene
U039	4-Chloro-m-cresol
U041	1-Chloro-2,3-epoxypropane
U042	2-Chloroethyl vinyl ether
U044	Chloroform
U046	Chloromethyl methyl ether
U047	beta-Chloronaphthalene
U048	o-Chlorophenol
U049	4-Chloro-o-toluidine, hydrochloride
U032	Chromic acid, calcium salt
U050	Chrysene
U051	Creosote
U052	Cresols
U052	Cresylic acid
U053	Crotonaldehyde

handled by Reid Supply Company, the source of the waste solvents handled by Reid Supply are from processes that result in spent solvents rather than from commercial chemical products, manufacturing chemical intermediates, or off-specification commercial chemical products. Customers that Reid Supply serves do not normally deal with this type of waste and therefore they should not use this "U" number for EPA Hazardous Waste Numbers on their Hazardous Waste Labels of Manifests. Technically Reid Supply cannot pick up material with this designation.

CHARACTERISTIC NON-LISTED HAZARDOUS WASTES

These non-listed hazardous wastes are described in 40 CFR Parts 261.21 - 261.24 (Fig.4.1.5 and Fig.4.1.6). There are four types of characteristic wastes.

Characteristic Ignitability

D001 - a waste other than a aqueous solution containing less than 24 percent alcohol by volume that has a flash point less than 60°C (140°F), as determined by a Pensky-Martens Closed Cup Terter, using the test method specified in ASTM Standard D-93-79 or D-93-80 or another EPA approved test method.

The mixed flammable solvents that Reid Supply handles falls into this catagory. This Hazardous Waste Number should appear in items I and R of the Hazardous Waste Manifest.

Characteristic Corrosivity

D002 - a waste that has an aqueous layer pH less than or equal to 2 or greater than or equal to 12.5 as determined by an EPA test method. It could also corrode steel (SAE 1020) at a rate of 6.35 mm (0.250 inch) per year at a test temperature of 55°C (130°F) as determined by a specific test method.

Fig.4.1.5

ered in paragraph (a)(3)(vii) of this section.

(iv) The persistence of the constituent or any toxic degradation product of the constituent.

(v) The potential for the constituent or any toxic degradation product of the constituent to degrade into nonharmful constituents and the rate of degradation.

(vi) The degree to which the constituent or any degradation product of the constituent bioaccumulates in ecosystems.

(vii) The plausible types of improper management to which the waste could be subjected.

(viii) The quantities of the waste generated at individual generation sites or on a regional or national basis.

(ix) The nature and severity of the human health and environmental damage that has occurred as a result of the improper management of wastes containing the constituent.

(x) Action taken by other governmental agencies or regulatory programs based on the health or environmental hazard posed by the waste or waste constituent.

(xi) Such other factors as may be appropriate.

Substances will be listed on Appendix VIII only if they have been shown in scientific studies to have toxic, carcinogenic, mutagenic or teratogenic effects on humans or other life forms.

(Wastes listed in accordance with these criteria will be designated Toxic wastes.)

(b) The Administrator may list classes or types of solid waste as hazardous waste if he has reason to believe that individual wastes, within the class or type of waste, typically or frequently are hazardous under the definition of hazardous waste found in Section 1004(5) of the Act.

(c) The Administrator will use the criteria for listing specified in this section to establish the exclusion limits referred to in § 261.5(c).

Subpart C—Characteristics of Hazardous Waste

§ 261.20 General.

(a) A solid waste, as defined in § 261.2, which is not excluded from regulation as a hazardous waste under § 261.4(b), is a hazardous waste if it exhibits any of the characteristics identified in this Subpart.

[Comment: § 262.11 of this Chapter sets forth the generator's responsibility to determine whether his waste exhibits one or more of the characteristics identified in this Subpart]

(b) A hazardous waste which is identified by a characteristic in this subpart, but is not listed as a hazardous waste in Subpart D, is assigned the EPA Hazardous Waste Number set forth in the respective characteristic in this Subpart. This number must be used in complying with the notification requirements of Section 3010 of the Act and certain recordkeeping and reporting requirements under Parts 262 through 265 and Part 122 of this Chapter.

(c) For purposes of this Subpart, the Administrator will consider a sample obtained using any of the applicable sampling methods specified in Appendix I to be a representative sample within the meaning of Part 260 of this Chapter.

[Comment: Since the Appendix I sampling methods are not being formally adopted by the Administrator, a person who desires to employ an alternative sampling method is not required to demonstrate the equivalency of his method under the procedures set forth in §§ 260.20 and 260.21.]

§ 261.21 Characteristic of ignitability.

(a) A solid waste exhibits the characteristic of ignitability if a representative sample of the waste has any of the following properties:

(1) It is a liquid, other than an aqueous solution containing less than 24 percent alcohol by volume and has flash point less than 60°C (140°F), as determined by a Pensky-Martens Closed Cup Tester, using the test method specified in ASTM Standard D-93-79 or D-93-80 (incorporated by reference, see § 260.11), or a Setaflash Closed Cup Tester, using the test method specified in ASTM Standard D-3278-78 (incorporated by reference, see § 260.11), or as determined by an equivalent test method approved by the Administrator under procedures set forth in §§ 260.20 and 260.21.

(2) It is not a liquid and is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture or spontaneous chemical changes and, when ignited, burns so vigorously and persistently that is creates a hazard.

(3) It is an ignitable compressed gas as defined in 49 CFR 173.300 and as determined by the test methods described in that regulation or equivalent test methods approved by the Administrator under §§ 260.20 and 260.21.

(4) It is an oxidizer as defined in 49 CFR 173.151.

(b) A solid waste that exhibits the characteristic of ignitability, but is not listed as a hazardous waste in Subpart D, has the EPA Hazardous Waste Number of D001.

[45 FR 33119, May 19, 1980, as amended at 46 FR 35247, July 7, 1981]

§ 261.22 Characteristic of corrosivity.

(a) A solid waste exhibits the characteristic of corrosivity if a representative sample of the waste has either of the following properties:

(1) It is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5, as determined by a pH meter using either an EPA test method or an equivalent test method approved by the Administrator under the procedures set forth in §§ 260.20 and 260.21. The EPA test method for pH is specified as Method 5.2 in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods" (incorporated by reference, see § 260.11).

(2) It is a liquid and corrodes steel (SAE 1020) at a rate greater than 6.35 mm (0.250 inch) per year at a test temperature of 55°C (130°F) as determined by the test method specified in NACE (National Association of Corrosion Engineers) Standard TM-01-69 as standardized in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods" (incorporated by reference, see § 260.11) or an equivalent test method approved by the Administrator under the procedures set forth in §§ 260.20 and 260.21.

(b) A solid waste that exhibits the characteristic of corrosivity, but is not listed as a hazardous waste in Subpart D, has the EPA Hazardous Waste Number of D002.

[45 FR 33119, May 19, 1980, as amended at 46 FR 35247, July 7, 1981]

§ 261.23 Characteristic of reactivity.

(a) A solid waste exhibits the characteristic of reactivity if a representative sample of the waste has *any* of the following properties:

(1) It is normally unstable and readily undergoes violent change without detonating.

(2) It reacts violently with water.

(3) It forms potentially explosive mixtures with water.

(4) When mixed with water, it generates toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment.

(5) It is a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment.

(6) It is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement.

(7) It is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure.

(8) It is a forbidden explosive as defined in 49 CFR 173.51, or a Class A explosive as defined in 49 CFR 173.53 or a Class B explosive as defined in 49 CFR 173.88.

(b) A solid waste that exhibits the characteristic of reactivity, but is not listed as a hazardous waste in Subpart D, has the EPA Hazardous Waste Number of D003.

§ 261.24 Characteristic of EP toxicity.

(a) A solid waste exhibits the characteristic of EP toxicity if, using the test methods described in Appendix II or equivalent methods approved by the Administrator under the procedures set forth in §§ 260.20 and 260.21, the extract from a representative sample

Fig.4.1.6

of the waste contains any of the contaminants listed in Table I at a concentration equal to or greater than the respective value given in that Table. Where the waste contains less than 0.5 percent filterable solids, the waste itself, after filtering, is considered to be the extract for the purposes of this section.

(b) A solid waste that exhibits the characteristic of EP toxicity, but is not listed as a hazardous waste in Subpart D, has the EPA Hazardous Waste Number specified in Table I which corresponds to the toxic contaminant causing it to be hazardous.

TABLE I.—MAXIMUM CONCENTRATION OF CONTAMINANTS FOR CHARACTERISTIC OF EP TOXICITY

EPA hazardous waste number	Contaminant	Maximum concentration (milligrams per liter)
D004	Arsenic	5.0
D005	Barium	100.0
D006	Cadmium	1.0
D007	Chromium	5.0
D008	Lead	5.0
D009	Mercury	0.2
D010	Selenium	1.0
D011	Silver	5.0
D012	Endrin (1,2,3,4,10,10-hexachloro-1,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4-endo, endo-5,8-dimethano-naphthalene.	0.02
D013	Lindane (1,2,3,4,5,6-hexa- chlorocyclohexane, gamma isomer.	0.4
D014	Methoxychlor (1,1,1-Trichloro-2,2-bis [p-methoxyphenyl]ethane).	10.0
D015	Toxaphene ($C_{10}H_{10}Cl_8$, Technical chlorinated camphene, 67–69 percent chlorine).	0.5
D016	2,4-D, (2,4-Dichlorophenoxyacetic acid).	10.0
D017	2,4,5-TP Silvex (2,4,5-Trichlorophenoxypropionic acid).	1.0

Subpart D—Lists of Hazardous Wastes

§ 261.30 General.

(a) A solid waste is a hazardous waste if it is listed in this Subpart, unless it has been excluded from this list under §§ 260.20 and 260.22.

(b) The Administrator will indicate his basis for listing the classes or types of wastes listed in this Subpart by employing one or more of the following Hazard Codes:

Ignitable Waste	(I)
Corrosive Waste	(C)
Reactive Waste	(R)
EP Toxic Waste	(E)
Acute Hazardous Waste	(H)
Toxic Waste	(T)

Appendix VII identifies the constituent which caused the Administrator to list the waste as an EP Toxic Waste (E) or Toxic Waste (T) in §§ 261.31 and 261.32.

(c) Each hazardous waste listed in this Subpart is assigned an EPA Hazardous Waste Number which precedes the name of the waste. This number must be used in complying with the notification requirements of Section 3010 of the Act and certain recordkeeping and reporting requirements under Parts 262 through 265 and Part 122 of this Chapter.

(d) The following hazardous wastes listed in § 261.31 or § 261.32 are subject to the exclusion limits for acutely hazardous wastes established in § 261.5: [Reserved]

[45 FR 33119, May 19, 1980, as amended at 45 FR 74892, Nov. 12, 1980]

Characteristic Reactivity

D003 - a waste that is unstable and will change violently without detonation, reacts violently with water, forms explosive mixtures with water, generates toxic gases when mixed with water, a cyanide or sulfide bearing waste when exposed to pH conditions between 2 and 12.5 generates toxic gases, capable of detonation if subjected to a strong initiating force or if heated under confinement, readily detonated at standard temperature and pressure, is a forbidden explosive according to 49 CFR 173.51 or a Class A or B explosive.

Characteristic EP (Extraction Procedure) Toxicity

D004 to D017 - a waste that after using prescribed test methods approved by the EPA, the extract from which contains any of the contaminants listed in Table of 40 CFR 261.30, such as arsenic, barium, or lead in concentrations equal to or greater than the respective value in the table.

Reid Supply is permitted to handle ignitable (D001) wastes, as well as wastes containing EP toxic levels of barium, cadmium, chromium, or lead. The waste streams most likely to be handled with EP toxic levels of heavy metals will be paint solids associated with waste paint solvents.

In summary, Reid Supply handles hazardous wastes that are classified according to the RCRA Hazardous Waste Classification System. These include wastes that are from non-specific sources and are given the EPA Hazardous Waste Numbers F001, F002, F003, and F005. They also include Characteristic Ignitable wastes and are given the EPA Hazardous Waste Number D001 and Characteristics wastes with EP toxic levels of barium, cadmium, chromium, or lead having the EPA Hazardous Waste Numbers D005-D008. Wastes with any other Hazardous Waste Number cannot be handled by Reid Supply.

4.2 DOT CLASSIFICATION OF HAZARDOUS MATERIALS

The system is as follows:

Hazard Class No.	Description
1	Class A,B and C explosive
2	Non-flammable and flammable compresses gases
3	Flammable liquid
4	Flammable solids, spontaneously combustible substances, and water reactive substances
5	Oxidizing materials, including organic peroxides
6	Class A and B poisons, irritants, and etiologic (disease causing) materials
7	Radioactive materials
8	Corrosive materials (acids, alkaline liquids, and certain corrosive liquids and solids)
9	Miscellaneous hazardous materials not covered by any other classes

(This last classification includes the ORM-A and ORM-E hazard class designations used by Reid Supply that appear in the Table of Hazardous Materials of 49 CFR Part 172.101 in the third column and in items 11 and 28 of the Hazardous Waste Manifest. ORM stands for "Other Regulated Material". When choosing a hazard class designation for halogenated solvents ORM-A is used for halogenated waste streams that are nearly all one component except for the minimal amount of oil and grease that may contaminate the solvent. ORM-E is used for a halogenated solvent mixed with other halogenated solvents or other materials and therefore must use the proper shipping name "Waste Solvent N.O.S." rather than "Waste Trichloroethylene".)

The hazard class number appears in the bottom corner of each DOT hazardous material label. The flammable liquid label has a "3" in the bottom corner.

Although Reid Supply sells, stores, and delivers hazardous materials that are flammable liquids, oxidizers, and corrosive, only flammable liquids, ORM-A, and ORM-E substances are handled as hazardous waste. Only flammable liquid labels are required for drums containing hazardous waste. No special label is necessary for ORM-A or ORM-E wastes. However, the three classifications of hazardous materials are explained here because they are incompatible with each other and should not be mixed. If they are mixed a violent or otherwise dangerous reaction releasing heat or poisonous gas may result. Knowing these labels and the rationale for establishing these three hazardous material classifications could help prevent Reid Supply or a customer from mixing these incompatible materials.

4.2.1 FLAMMABLE LIQUID LABEL (Hazard Class No.3)(Fig.4.2.1)

As defined by DOT, a flammable liquid is one that evolves flammable vapors in air at a temperature of 100°F or below as determined by a specific test method. Any liquid that has a flash point at or above 100°F and below 200°F is a combustible liquid. The vapors from flammable liquids ignite when they aremixed with air in an enclosed space in the presence of an ignition source (cigarette, spark, pilot light). The combustion of the vapor-air mixture may be sufficiently vigorous to simulate an explosion.

4.2.2 OXIDIZER LABEL (Hazard Class No.5)(Fig.4.2.2)

An oxidizer is a material that yields oxygen readily to stimulate combustion of organic matter. Such reactions can be explosive.

4.2.3 CORROSIVE LABEL (Hazard Class No.8)(Fig.4.2.3)

A corrosive material is a liquid or solid that is capable of causing visible destruction or irreversible alterations in human skin tissue at the site of contact. In the case of leakage from its packaging, it is a liquid that has a severe corrosion rate on other materials, such as steel or aluminum. This phenomenon is described as "eating" into metals causing them to disintegrate.

4.3 NATION FIRE PROTECTION ASSOCIATION (NFPA) 704 M SYSTEM

This system, which has been adopted by the Wichita Fire Department, aims to identify the hazards of health, flammability, and chemical reactivity by one of five numbers (Fig. 4.3.1). The severity of a hazard increases from 0 to 4. The numeral "0" basically refers to the absence of a hazard, whereas "4" refers to the most potentially severe hazard associated with the given material. The numbers occupy one of the top three quadrants of a diamond-shaped diagram.

Reid Supply will have its drum storage area and tanks marked with this system to aid the Hazardous Materials Response Team in determining a strategy for controling a spill or fire emergency.

Fig.4.2.1

Fig.4.2.2

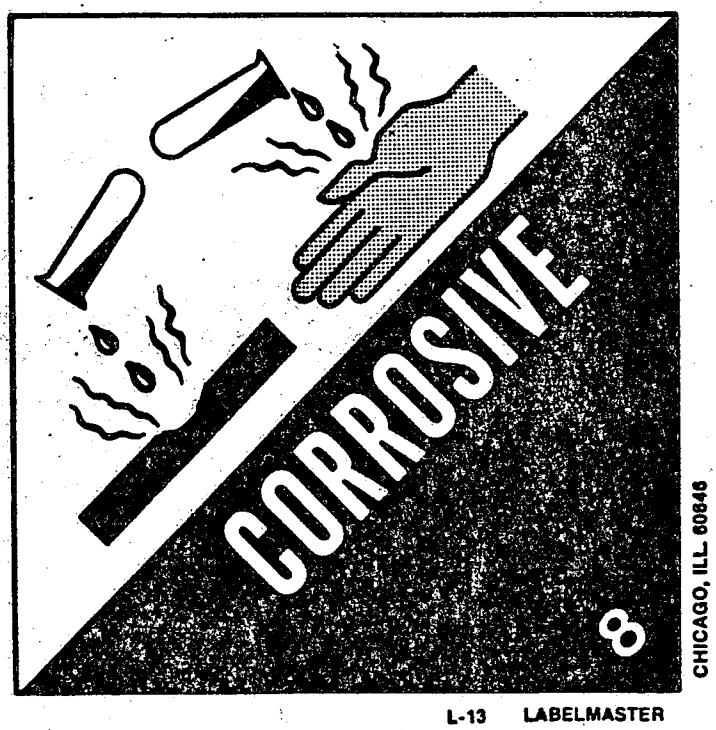
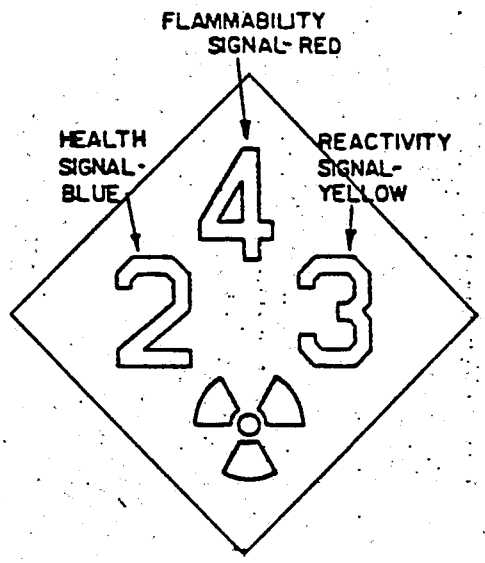


Fig.4.2.3

NFPA 704 M SYSTEM Fig. 4.3.1



Identification of Health Hazard Color Code: BLUE		Identification of Flammability Color Code: RED		Identification of Reactivity (Stability) Color Code: YELLOW	
	Type of Possible Injury		Susceptibility of Materials to Burning		Susceptibility to Release of Energy
Signal		Signal		Signal	
4	Materials which on very short exposure could cause death or major residual injury even though prompt medical treatment were given.	4	Materials which will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature, or which are readily dispersed in air and which will burn readily.	4	Materials which in themselves are readily capable of detonation or of explosive decomposition or reaction at normal temperatures and pressures.
3	Materials which on short exposure could cause serious temporary or residual injury even though prompt medical treatment were given.	3	Liquids and solids that can be ignited under almost all ambient temperature conditions.	3	Materials which in themselves are capable of detonation or explosive reaction but require a strong initiating source or which must be heated under confinement before initiation or which react explosively with water.
2	Materials which on intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical treatment is given.	2	Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur.	2	Materials which in themselves are normally unstable and readily undergo violent chemical change but do not detonate. Also materials which may react violently with water or which may form potentially explosive mixtures with water.
1	Materials which on exposure would cause irritation but only minor residual injury even if no treatment is given.	1	Materials that must be preheated before ignition can occur.	1	Materials which in themselves are normally stable, but which can become unstable at elevated temperatures and pressures or which may react with water with some release of energy but not violently.
0	Materials which on exposure under fire conditions would offer no hazard beyond that of ordinary combustible material.	0	Materials that will not burn.	0	Materials which in themselves are normally stable, even under fire exposure conditions, and which are not reactive with water.

NFPA Flammability Classification System

According to the NFPA, a flammable liquid is a liquid with a flash point below 200°F. There are three classes that fall within this definition:

Class I-A - liquids with flash points below 73°F and boiling points below 100°F

Class I-B - liquids with flash points below 73°F and boiling points above 100°F

Class I-C - liquids with flash points at or above 73°F and below 100°F

Class II - liquids with flash points at or above 100°F but below 140°F

Class III - liquids with flash points at or above 140°F but below 200°F

The flammable solvents that Reid Supply handles as waste are in Classes I-A and I-B. The NFPA Classification for flammable liquids is of importance primarily for NFPA fire code considerations. The RCRA definition specifying a flash point below 140°F will be used the most by Reid Supply Company in reference to hazardous waste.

4.0 CLASSIFICATION OF HAZARDOUS WASTE (LIMITED)

There are three main types of hazardous waste classifications:

(1) RCRA Hazardous Waste Classification
(2) DOT Hazardous Material Classification
(3) National Fire Protection Association (NFPA) Classification

4.1 RCRA HAZARDOUS WASTE CLASSIFICATION

Although there are five types of hazardous waste according to the RCRA Hazardous Waste Classification, only hazardous waste from non-specific sources and characteristic non-listed hazardous wastes will be covered in this training.

HAZARDOUS WASTES FROM NON-SPECIFIC SOURCES

These are the wastes listed in 40CFR Part 261.31(Fig.4.1.1). Reid Supply is permitted through the KDHE and EPA to handle the following wastes which are assigned specific four digit EPA Hazardous Waste Number:

F001 - spent halogenated solvents used in degreasing: tetrachloroethylene (perchloroethylene), trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, and chlorinated fluorocarbons; and sludges from the recovery of these solvents in degreasing operations.

F002 - spent halogenated solvents: tetrachloroethylene, methylene chloride, trichloroethylene, 1,1,1-trichloroethane, chlorobenzene, 1,1,2-trichloroethane, 1,2,2-trifluoroethane, ortho-dichlorobenzene, and trichlorfluoromethane; and the still bottoms from the recovery of these solvents.

F003 - spent non-halogenated solvents: xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; and the still bottoms from the recovery of these solvents.

F005 - spent non-halogenated solvents: toluene, methyl ethyl ketone, carbon disulfide, isobutanol, and pyridine; and the still bottoms from the recovery of these solvents.

CHARACTERISTIC NON-LISTED HAZARDOUS WASTES

These characteristic non-listed hazardous wastes are described in 40 CFR Parts 261.21 - 261.24 (Fig. 4.1.5 and 4.1.5). There are four types of characteristic wastes and Reid Supply is permitted to handle only waste with characteristic ignitability with the Hazardous Waste Number D001 and characteristic EP toxic wastes including barium, cadmium, chromium, and lead at EP toxic levels. The Hazardous Waste Numbers for the heavy metals are D005-D008 respectively.

The mixed flammable solvents and paint solids containing heavy metals that Reid Supply handles falls into these catagories.

The Hazardous Waste Numbers F001, F002, F003, F005, D001, and D005-D008 appear in items I and R of the Hazardous Waste Manifest.

4.2 DOT CLASSIFICATION OF HAZARDOUS MATERIALS

The system is as follows:

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1	Class A,B, and C explosives
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9	Miscellaneous hazardous materials not covered by any other classes

(Note: This last classification includes the ORM-A and ORM-E hazard class designations used by Reid Supply that appear in items 11 and 28 of the Hazardous Waste Manifest.)

The hazard class number appears in the bottom corner of each DOT Hazardous material label. The flammable liquid label has a "3" in the bottom corner.

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Reid Supply will have its drum storage area and tanks marked with this system to aid the Hazardous Materials Response Team in determining a strategy for controling a spill or fire emergency.

5.0 HAZARDOUS PROPERTIES FOR HAZARDOUS WASTE

Four basic types of hazardous waste are handled in this section. They include flammable or ignitable, toxic, corrosive, and reactive or incompatible wastes.

5.1 FLAMMABLE OR IGNITABLE WASTES

The following definitions and concepts are important for the safe handling of flammable hazardous wastes: (See the Material Safety Data Sheets for specific organic solvents)

Flash point - The minimum temperature of the waste at which it gives off vapor sufficient to form an ignitable mixture with air near the surface of the liquid. The ignition of a liquid at the flashpoint is not continuous. A 140°F or below flash point of a waste solvent determines if it is an ignitable hazardous waste.

Almost all non-halogenated waste solvents handled by Reid Supply have flash points below 73°F. They are considered hazardous because a fire or explosion could occur easily at room temperature in the presence of the solvent and an ignition source.

Fire point - The temperature at which a liquid gives off enough vapor to continue to burn when it is ignited. It is generally 30-50° higher than the flash point.

Auto ignition point - The temperature at which ignition occurs without the introduction of an ignition source.

Lower explosive limit (Lel) - The minimum concentration of gas or vapor in air below which a substance does not burn when exposed to an ignition source. It is expressed in percent volume of vapor in air. The Lel of non-halogenated solvents handled by Reid Supply is usually between 1.0 and 3.0 percent of air. Chlorinated solvents have higher volumes between 7.5 and 16 percent of, but those handled by Reid Supply do not have flash points.

Upper explosive limit (Uel) - The maximum concentration of the substance in air above which ignition does not occur. It is expressed in percent volume of vapor in air. (Note: The above values found in a material safety data sheet or in other literature give an idea of the level of fire or explosion hazard there is with a given solvent.)

Vapor Density - The weight of a gas or of the vapor of a liquid relative to another gas. The reference gas is normally air. Vapor density is expressed as a ratio of the density of the gas or vapor to the density of air. The vapor density of air is 1.0. If the vapor density of a gas or vapor is less than 1.0 it will tend to rise. If the gas density is greater than 1.0 the gas or vapor is heavier than air and will tend to sink. It is important to know what a solvent vapor will do for fire and explosion prevention. If a vapor has a vapor density less than 1.0 ventilation must be at the ceiling because the vapor will float. If the vapor has a vapor density greater than 1.0 (this is true for most organic solvents handled by Reid Supply) ventilation of a room must be ventilated at floor level. In addition these vapors will tend to travel along the ground until an ignition source is reached or collect in a low area awaiting ignition by a random ignition source like a cigarette.

5.2 TOXIC WASTES

The toxicity of organic solvents and heavy metals will be discussed in this section. Detailed information specific to the type of waste can be obtained from the Material Safety Data Sheets.

5.2.1 ROUTES OF ABSORPTION

Contact with skin - Organic solvents and heavy metals can be absorbed by the skin and into the systemic circulation. This is one reason why protective clothing such as solvent resistant gloves, boots, aprons, and suits are worn. The other reason is to avoid skin irritation.

Contact with eyes - Organic solvents and heavy metals can be absorbed through the eyes and into the systemic circulation. This is one reason why goggles and face shields are worn when handling waste solvents besides avoiding eye irritation.

Note: Of the waste material handled by Reid Supply heavy metals, cellosolve acetate, methanol, methyl isobutyl ketone, perchloroethylene, toluene, and xylene are possibly

absorbed through the skin and eyes if splashed or spilled on them.

Breathe large amounts of vapors or dust - Organic solvent vapors and heavy metals can be transmitted from the lungs directly to the blood stream and circulated throughout the body. This is why respirators are used in potentially high organic vapor concentration conditions.

Swallow organic solvents - Organic solvents or heavy metals can be accidentally swallowed and absorbed into the blood stream by the stomach and intestines. Respirators worn when working with solvents prevent splashing solvent from entering the mouth.

The Material Safety Data Sheets provide a LD_{50} figure to indicate the toxicity by ingestion of a given material. LD_{50} signifies that about 50% of the testing animals given the specified dose by mouth will die. Thus for a Grade 4 chemical (below 50 mg/kg) the toxic dose for 50% of animals weighing 70 kg (150 lb.) is 70 X 50 = 3500 mg = 3.5 g, or less than 1 teaspoonful; it might be as little as a few drops. For a Grade 1 chemical (5 to 15 g/kg), the LD_{50} would be between a pint and a quart for a 150 lb man. All LD_{50} values have been obtained using small animals such as rodents, cats, and dogs.

5.2.2 TOXICITY LEVELS OF ORGANIC VAPORS

An important route of absorption that requires special attention is absorption of toxic levels of organic vapors. As a guide to determining hazardous concentrations of organic solvent vapors as well as other toxic media, the following TLVs, which appear in material safety data sheets, are commonly used to determine what to do for respiratory protection:

Time-weighted average (TWA) is an average concentration of exposure for a normal eight-hour work day and 40-hour work week, to which nearly all workers may be repeatedly exposed day after day without adverse effect.

Short-term exposure limit (STEL) is defined as a 15-minute TWA that should not be exceeded at any time during a work day, even if the eight-hour TWA is not exceeded. This is always a higher value than the regular TWA because the

duration of exposure is shorter.

Threshold limit value ceiling (TLV-C) is a concentration that should not be exceeded even instaneously.

Another abbreviation to be familiar with is IDLH. This refers to concentrations of vapors or other toxic media that are immediately dangerous to life and health.

In the instruction that follows in this section and in the module on Respirators more attention will be given to the toxicity of organic vapors and how to prevent hazardous exposure to organic vapors. Below is a table listing the main waste solvents handled by Reid Supply Company with the TWA, STEL, and the IDLH values.

Below the TLV for a given solvent protective respirators are not necessary. Above the TLV an air purifying respirator or self-contained breathing apparatus (SCBA) are required.

In IDLH environments an air-purifying respirator cannot be used, but only a self-contained breathing apparatus. Other considerations for air-purifying respirators and SCBA's are given in the Respirator module. IDLH values are expressed in terms of parts per million (ppm) or milligrams per cubic meter (mg/m^3). See the Material Safety Data sheets for additional information, such as symptoms of overexposure and first aid.

Note: Employees should always inform their supervisor of any illness that could either interfere with their job performance or could mask symptoms caused by materials in the facility. Especially respiratory illnesses and skin disorders which could interfere with wearing of protective equipment.

5.2.3 TOXICITY LEVELS OF HEAVY METALS

Some of the waste solvents from paint operations have paint solids which contain heavy metals. Some heavy metals are necessary for human existance, but others are toxic. Heavy metals are poisonous in the same way. They have an extraordinary chemical affinity for sulfur. Sulfur is a constituent of compounds such as cystine, which form part of larger biological molecules, such as proteins and enzymes. In chemically combining with the constituent sulfur in the body, heavy metals totally alter enzymatic and protein action. When significant

TLV'S AND IDLH'S FOR COMMON WASTE SOLVENTS HANDLED BY REID SUPPLY

Solvent	TLV-TWA (ppm)	STEL (ppm)	IDLH (ppm)
Acetone	750	1000	20,000
Cellosolve Acetate (2 ethoxyethyl acetate)	50	100	2,500
Ethanol	1000	none	5,000
Isopropanol	400	250	20,000
Methanol	200	250	25,000
Methylene Chloride (Dichloromethane)	100	500	5,000
Methyl Ethyl Ketone	200	300	3,000
Methyl Isobutyl Ketone	50	75	3,000
Perchloroethylene (Tetrachloroethylene)	50	none	500
Styrene	50	100	5,000
Toluene	100	150	2,000
1,1,1-Trichloroethane	350	450	1,000
Trichloroethylene	50	150	1,000
Xylene	100	150	10,000

amounts of proteins and enzymes have been altered in molecular structure the victim dies.

The routes of entry for heavy metals are by ingestion, inhalation, or eye and skin contact with dust. The primary route of entry is by breathing the dust. The best way to prevent serious exposure to heavy metals is good housekeeping practices in the drum processing area. Any paint solids that fall on the ground should be cleaned up immediately before the material dries, breaks up and the wind picks up the dust. Like organic solvent vapors, heavy metals have TLV's. Lead's TWA is 0.15 mg/m^3 and an STEL of 0.45 mg/m^3. Zinc chromate is suspected as a cancer causing agent with a TWA of 0.05 mg/m^3.

See the Material Safety Data Sheets for additional information, such as symptoms of overexposure and first aid.

Note: Employees should always inform their supervisor of any illness that could either interfere with their job performance or could mask symptoms caused by materials in the facility. Especially respiratory illnesses and skin disorders which could interfere with wearing protective equipment.

5.3 CORROSIVE MATERIALS AND WASTES

5.3.1 CORROSIVITY

The RCRA definition of corrosivity is any material that is aqueous and has a pH less than or equal to 2 or greater than or equal to 12.5, as determined by a pH meter using either the test method specified in the "Test Methods for the Evaluation of Solid Waste, Physical Methods" or an equivalent test method approved by the administrator under the procedures set forth in subsection 260.20 and 260.21.

5.3.2 pH

The definition for pH is the measurement of hydrogen ion concentration in a water solution. The lower the hydrogen ion concentration, the higher the pH. The scale of pH ranges from 1 to 14. The formula for pH determination is: $pH = -(\log[H^+])$, where $[H^+]$ is the hydrogen ion concentration. The measurement

of pH is most simply done by pH paper that turns color when dipped into the solution to be tested in response to the solution pH. The color is then matched on a color scale that gives the pH. A pH meter can also be used for very accurate pH determinations.

5.3.4 ACIDITY

Acidity is determined by a substance's ability to give hydrogen ions in a solution with water. Acids have a pH below 7. Stronger acids have lower pH's.

5.3.4 ALKALINITY

Alkalinity is determined by a substance's ability to accept hydrogen ions in solution with water. Alkaline solutions, also known as basic solutions, have a pH of above 7. Stronger alkaline materials or bases have higher pH's and are sometimes described as being caustic.

5.3.6 NEUTRALITY

A solution is neutral if the pH is 7. A solution can be neutralized when a base is added to an acidic solution or an acid is added to a base so that the solution has a pH of 7.

5.3.6 COMMON CORROSIVE MATERIALS

Common hazardous acids would include the following:

Sulfuric Acid	H_2SO_4
Nitric Acid	HNO_3
Hydrochloric (Muriatic) Acid	HCl
Phosphoric Acid	H_3PO_4
Hydrofluoric Acid	HF
Acetic Acid	CH_3COOH

Common hazardous bases are as follows:

Caustic Soda (Sodium Hydroxide)	$NaOH$
Caustic Potash (Potassium Hydroxide)	KOH

5.3.7 PRECAUTIONS

The knowledge of the pH of a meterial to be processed as a hazardous waste is important because highly corrosive substances whether acidic or basic can cause serious burns and permanent damage to skin and eyes. They will react violently with organic solvents to cause dangerous spraying or drum and tank rupture. In addition, too low pH solvents can cause corrosion damage to the drums and tanks which could result in a serious spill or accident. For these reasons, the pH will be measured for each waste stream that Reid Supply receives. The pH can be greater than or equal to 4 and less than or equal to 11. Waste streams outside this range will not be blended with other waste streams without special precautions being made to neutralize the waste stream beforehand. In addition, waste solvents will not be stored with corrosive materials. They must at least be separated by a dike to prevent the substances from flowing together in the case of a leak or spill.

5.4 REACTIVE AND INCOMPATIBLE WASTES

A reactive waste is a waste that by itself demonstrates one or more of these characteristics:

1. It is normally unstable and readily undergoes violent change without detonating.
2. It reacts violently with water.
3. It forms potentially explosive mixtures with water.
4. When mixed with water, it generates toxic gases, vapors, or fumes in a quantity sufficient to present a danger to human health or the environment.
5. It is a cyanide or sulfide bearing waste which, when exposed to pH conditions between 2 and 12.5, can generate toxic gases, vapors or fumes in a quantity sufficient to present a danger to human health or the environment.
6. It is capable of detonation or explosive reaction if it is subjected to a strong initiating source or if heated under confinement.
7. It is readily capable of detonation or explosive decomposition or reaction at standard temperature and pressure.
8. It is a forbidden explosive as defined in 49 CFR 173.51, or a Class A explosive as defined in 49 CFR 173.53 or a Class B explosive as defined in 49 CFR 173.88.

None of the waste streams handled by Reid Supply are reactive. The Generator Audit and detailed analysis help to assure that

none will be picked up by Reid Supply.

An incompatible waste is a substance that, when mixed together, are capable of producing heat, pressure, fire, explosion, violent reaction, release of toxic flammable fumes, or structural damage to containers or tanks.

5.4.1 CLASSIFICATION FOR INCOMPATIBLE MATERIALS

There are six classification categories for incompatibles. They are as follows:

Corrosives - When highly acidic compounds are brought into contact with highly alkaline compounds, the result is violent reaction and generation of dangerous amounts of heat. On the one hand are the acids--principally, metal finishing wastes and acid electrolytes. On the other hand are the alkaline caustics--typically, cleaning compounds, lime sludges and waste waters, alkaline battery fluids and acetylene sludges. Neutralization is the most common method of avoiding reaction when mixing these substances.

Reactive Metals - Certain metals and metal hydrides will generate flammable hydrogen gas and ignite or explode when exposed to corrosives. Aluminum, beryllium, calcium, lithium, magnesium, potassium, sodium, and zinc powder, most notably, are not to be mixed with either highly alkaline or highly acidic compounds. Again, neutralization is the typical method of avoiding any potential for reaction in the case of corrosives.

Water Reactives - There are a number of substances that should not be mixed with water. Concentrated corrosives, both alkaline and acidic, can react dangerously if water or alcohol is added to them. For this reason, dilution is accomplished by adding the corrosives to the water rather than vice-versa. Calcium, lithium, metal hydrides, potassium, SO_2Cl_2, $SOCl_2$, PCl_3, and CH_3SiCl_3 can generate heat and toxic or flammable gases if exposed to water or alcohol, regardless of how the materials are combined.

Reactive Solvents - Several organic compounds, including a number of solvents, can cause fire, explosion, or violent reaction if mixed with concentrated corrosives or with any of the reactive metals mentioned above. Alcohols, aldehydes, halogenated hydrocarbons, nitrated hydrocarbons, and unsaturated hydrocarbons are all capable of producing

this reaction unless treated properly by dilution or other means.

Sulfides and Cyanides - Toxic gas can be generated by combinations of spent cyanide or spent sulfide solutions with any highly acidic compound. Hydrogen cyanide and hydrogen sulfide gas are deadly, and isolation of such wastes from all potential sources of reaction is essential.

Strong Oxidizers - Certain substances yield oxygen readily to stimulate combustion of organic matter. Chlorine, chlorates, chlorites, perchlorates, hypochlorites, chromic acid, nitrates, fuming nitric acid, permanganates, and peroxides are all capable of causing fire, explosion or violent reaction when added to flammables and combustibles. Strong oxidizers like these should be kept away from all such materials and from concentrated mineral acids, acetic acid and other organic acids, and from reactive solvents and reactive metals.

5.4.2 PRECAUTIONS

There are two categories of incompatibles that relate more directly to the types of hazardous waste handled by Reid Supply. These include reactive solvents and strong oxidizers. Although reactive solvents can be mixed with each other, mixing with corrosives should not occur. As well since strong oxidizers react violently with flammables, mixing materials from these categories should not occur. In order to prevent the mixture of incompatible materials the Generator Audit will help the customer avoid sending by mistake incompatible waste streams. The Hazardous Waste Label,which should be checked upon receipt of the drum at Reid Supply, will also show if the material is something that is compatible. If there is any question the process engineer should be notified. In addition the detailed waste analysis and fingerprint analysis includes a small scale compatibility check with other blended solvents. If there is an incompatible reaction, such as gas or heat given off when the small waste stream sample is mixed with a small sample of blended solvent, the drums containing the incompatible material will be isolated in the special diked area of the the drum storage area until they can be properly handled.

The Material Safety Data Sheets provided for each of the hazardous wastes handled by Reid Supply Company indicate what is incompatible with a given waste.

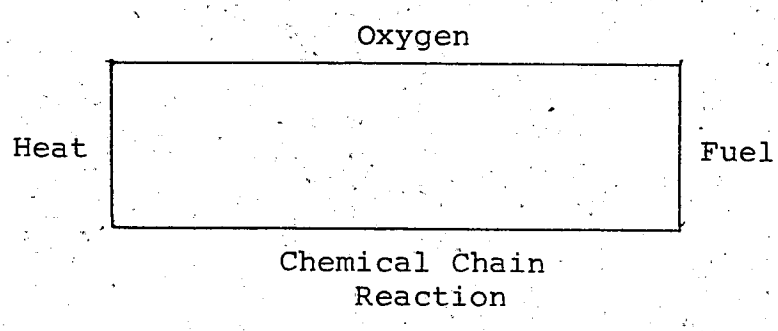
6.0 FIRE PREVENTION AND FIGHTING

6.1 IGNITION SOURCES

Since most of the hazardous waste handled at Reid Supply is ignitable it is important for anyone working with the waste solvents to be aware of ignition sources. An ignition source could be any spark, open flame, or a condition that could produce a spark or flame. Even though organic vapors of an ignitable solvent are present in sufficient quantity to ignite, this will not happen unless an ignition source is available. Examples of possible ignition sources are as follows: open flames, smoking, cutting and welding, hot surfaces, frictional heat, sparks (static, electrical, or mechanical), spontaneous ignition from heat producing chemical reactions, and radiant heat.

6.2 CHEMISTRY OF FIRE

There are four elements necessary for a fire to continue to burn.



In fighting a fire one or more of these elements must be removed to put the fire out. The most recent essential element discovered is the chemical reaction chain. The necessity of this element was discovered with the use of dry chemical for fire fighting. Dry chemical does not remove the oxygen, fuel, or heat from a fire. Instead it appears to break up the chain reaction occuring among the other three elements.

6.3 TYPES OF FIRES AND EXTINGUISHING AGENTS

There are four types of fires and each has a letter designation.

Type	Letter
Paper, Wood	A
Chemical, Solvent	B
Electrical	C
Metal (not applicable)	D

Five extinguishing agents are suitable for the three common types of fire as shown below.

Agent	Fire Type			Essential Element Controled
	A	B	C	
Water	yes	?	no	Heat/Fuel
Dirt	yes	?	yes	Oxygen/Fuel
Foam	yes	yes	no	Fuel
Dry Chemical	yes	yes	yes	Chain reaction
CO_2	no	yes	yes	Oxygen

Water is questionable for chemical/solvent fires because organic solvents will usually float on the water and cause more spreading of the fire. Dirt is questionable for chemical/solvent fires because dirt will sink in the solvent. Water and foam are not suitable for electrical fires because the water will conduct electricity and shock the fire fighter.

6.4 FIRE EXTINGUISHER USE

Reid Supply uses primarily dry chemical and limited CO_2 extinguishers. The methods described below are for dry chemical extinguishers but also apply generally for CO_2 extinguishers. Reid Supply has five pound extinguishers for the trucks and fork lifts and twenty and 150 pound dry chemical extinguishers for the hazardous waste areas.

6.4.1 IN THE CASE OF A FIRE

(1) Sound alarm before fighting
(2) Notify Wichita Fire Department
(3) Evacuate immediate area to upwind and 100 feet away
(4) Evaluate the size of the fire with respect to the size of fire extinguisher.

5 pound can control a 10 square foot BC fire
20 pound can control an 80 square foot BC fire
150 pound can control a 240 square foot BC fire

(5) Approach fire from upwind (make sure there is an exit between you and the fire)

(6) Operate fire extinguisher (do not invert fire extinguisher)

- (a) Pull pin
- (b) Aim just short of the base of the flame at no more than a 45° angle with the ground
- (c) Squeeze
- (d) Sweeping motion (broad)

(7) Do not stand in the fluid in case of flash back

(8) Push the flame away from the liquid downwind

(9) If the fire is in a container aim the extinguisher just short of the edge

(10) If there is an obstacle two people need to work together from the upwind side and each cover 2/3 of the burning area

7.0 PROTECTIVE CLOTHING

The protective clothing worn by Reid Supply employees handling hazardous waste solvent are resistant boots, suit or apron, gloves, respirator, face shield or goggles, and hard hat. Respirators will be covered in Section 9.

7.1 BOOTS

7.1.1 Solvent resistant boots are chosen to prevent solvent from being splashed on or soaked up through socks and coming in contact with feet. These boots also have the added protection of a steel toe to prevent toes from being injured. Although these boots are solvent resistant, some solvents may still penetrate the resistant material if the boots are kept in contact with solvent for extended periods of time. For this reason a person should not stand in solvent over the depth of the sole of the boot for prolonged periods of time without checking the boots for solvent penetration evidenced by swelling or cracking of the boot material or a solvent odor in the boots.

7.1.2 Boots should be fitted so that they are comfortable and snug. The apron or pants should extend over the top of the boot to prevent solvent from entering the top of the boot. Read the manufacturer's instructions for other use instructions.

7.1.3 Boots should be removed with gloves on to prevent contact of bare hands with any hazardous material on the boots.

7.1.4 Boots should be inspected before putting them on and after taking them off for any cracks, leaks, or deterioration of the boot material. If there is, the boots should be replaced.

7.1.5 Boots are to be worn during normal working activities in the drum storage, drum processing, and still processing areas.

7.2 APRON OR SUIT

7.2.1 The solvent resistant apron or suit have been selected to prevent contamination in the case of a splash during hazardous

waste processing. The apron is to be used when the weather is too hot to wear the full suit except if the apron will restrict safe movement. However, whenever possible the suit should be worn.

7.2.2 Both apron or suit should be worn so that they provide maximum protection from splashing. The manufacturer's instructions should be read for proper use and fitting.

7.2.3 Boots should be removed first before removing the suit pants. The apron can be removed before the boots are removed. If contamination with hazardous waste is likely if gloves are removed before removing the apron or unbuttoning the suit coat, the gloves should remain on until the apron is removed or the suit coat has been unbuttoned. With the suit coat unbuttoned the gloves can then be removed.

7.2.4 The apron and suit are to be inspected before being put on or after being taken off for heavy hazardous waste soils or holes that would reduce the effectiveness of their protection.

7.2.5 The apron or suit should be worn during normal working activities in the drum storage, drum processing, and still processing areas.

7.3 GLOVES

7.3.1 Solvent resistant gloves are chosen to prevent solvent exposure and injury from cuts. A double glove system has been chosen to provide good chemical attach resistance and protection from cuts. The inner black glove is made of butyl rubber which is resistant to chemical attack by solvents such as methyl ethyl ketone and resistant to vapor permeation. The butyl rubber glove is easily damaged. Therefore an outer glove of PVC is worn for further solvent protection and it is a more rugged material for better wear and protection from cuts.

7.3.2 The butyl rubber gloves should always be worn on the inside of the two gloves and never by themselves. The gloves should be tucked inside the suit coat sleeves to prevent solvent from running into glove cuffs. The manufacturer's instructions should be read for additional information.

7.3.3 Gloves should be removed carefully to avoid touching the outside of the gloves with bare hands. They should be removed when there is no chance of contaminating the hands by handling any contaminated protective clothing or equipment. After removing gloves, hands should be washed thoroughly with soap and water.

7.3.4 Gloves are to be inspected by the worker for any holes or tears, and replaced if any are found.

7.3.5 The gloves should be worn during normal working activities in all areas where hazardous waste is handled or stored.

7.4 FACE SHIELD OR GOGGLES

7.4.1 A face shield or goggles are worn to prevent solvent from splashing into the eyes. The face shield provides more complete face and neck protection and should be preferred over the goggles.

7.4.2 The face shield or goggles should be worn down in protective position whenever the worker is handling or processing hazardous waste or drums containing hazardous waste.

7.4.3 Face shields and goggles should be inspected before and after each day's use. If vision is impaired by soil or the equipment is damaged so that its effectiveness is impaired the equipment should be replaced. The manufacturer's instructions should be read for additional information.

7.5 HARD HAT

7.5.1 Workers are to wear hard hats to protect their heads from hitting hard objects. Hard hats also provide some protection from solvent splashing onto the head. The face shield also attaches to the hard hat.

7.5.2 The hard hat should be adjusted so that it fits snuggly around the head and does not fall off easily. The manufacturer's instructions should be read for additional information.

7.5.3 The hard hat should be inspected daily for any damage that could hinder its proper protection of the head. The inside should also be inspected to see that no hazardous waste will be on the head piece to come in contact with the head.

7.5.4 Hard hats are to be worn at all times at the plant except in the break room or while driving.

8.0 CONTAMINATION PREVENTION

Below are several rules to be followed in order to prevent contamination by hazardous waste.

8.1 Street clothing will not be worn in operation areas by workers.

8.2 Working clothing are to be changed into upon arriving at work and changed out of before leaving.

8.3 All personnel are to wash their hands with soap and water before eating, drinking, smoking, or using toilet facilities.

8.4 Contaminated clothing should not be worn until laundered. If a worker is soaked by waste solvent, he is to remove contaminated work clothing that has absorbed the solvent, shower with soap and water, and put on clean work clothes.

9.0 RESPIRATORS

Respirators are important to prevent hazardous exposure of workers to organic solvent vapors. Exposure to these vapors are serious because the inhaled vapors can be transferred directly into the bloodstream through the lungs. Although each of the waste solvents handled by Reid Supply are considered safe to breathe in concentrations below the TLV values given in Section 5.2.2, there are situations when the TLV value may be exceeded. In these situations either an air-purifying organic vapor mask or a self-contained breathing apparatus (SCBA) will be used depending on the level of the organic solvent vapor concentration.

9.1 AIR-PURIFYING ORGANIC VAPOR CARTRIDGE RESPIRATOR

9.1.1 WHEN TO USE

Air purifying respirators can be used only under the following circumstances:

(1) The identity and concentration of the contaminant are known.

To insure this, organic vapor concentration measurements have been taken for methyl ethyl ketone, toluene, and xylene when these materials were being processed in the hazardous waste areas. The apparatus used for vapor concentration measurement is a Bendix/Gastic Precision Gas Detector with solvent specific, direct reading detector tubes. The results of two separate testings are as follows:

Solvent	Open drum		General area		Still room	
	5/23/84	8/13/84	5/23/84	8/13/84	5/23/84	8/13/84
MEK	200 ppm	300 ppm	ND	ND		
Toluene	35	60	ND	ND	20	
Xylene	90	<20	ND	ND	<20	

Concentrations were measured in parts per million (ppm), the open drum measurement was taken two feet from the edge of a drum being processed to simulate possible exposure that a worker might receive, the general area was measurement taken from the area greater than two feet from a drum being processed in the drum processing area, and the still room measurement was taken in the still

room while the still was operating. Additional measurements will be made to build up the vapor concentration data. Since the MEK vapor concentration two feet from a drum being processed was 100ppm above its TLV, half mask air-purifying respirators with organic vapor cartridges will be used when a worker is within five feet of waste solvents being processed, sampled, or distilled as a precaution.

(2) The oxygen content in air is at least 19.5%.

Normal oxygen levels in air are 21%. Concentrations less than 19.5% will occur only in confined spaces, such as a closed room or tank and not in open air. If the concentration of oxygen is less than 19.5%, the SCBA will be used. Measurements for oxygen will be taken using the Bendix/Gastic gas detector.

(3) The contaminant has adequate warning properties.

Organic vapor cartridges do not last forever. After a while solvent vapors will break through the sorbant in the cartridges and be detected as an odor. In order for a respirator to be effective the detectable odor must be below the TLV of a given solvent. This odor that warns the user to change cartridges is called a warning property. Since nearly all of the waste solvents handled by Reid Supply have warning properties below their respective TLV's and the solvent vapors will be mixed so that no one solvent will be absorbed by a given set of vapor cartridges, organic vapor cartridges will be replaced upon the first detection of solvent odor through the mask. The cartridges will have much longer protection capabilities even though the odor is detectable, but this is the only certain way of changing the cartridges before they are fully spent and dangerous levels of organic vapors penetrate the cartridge sorbant.

(4) Approved cartridges for the contaminant/concentration are available.

Activated carbon will absorb all the organic solvent vapor types present in significant quantities in the waste solvents handled by Reid Supply. Since cartridges do not last forever and higher vapor concentrations of contaminants will use up the absorbant factor, cartridges are assigned a maximum use concentration above which they should not be used. The maximum use concentration for the organic vapor cartridges used by Reid Supply is 1,000 ppm.

(5) The concentration does not exceed the IDLH.

An air-purifying respirator can be worn in atmospheres up to the concentration limits placed on its cartridge. This holds as long as the maximum use concentration is not immediately dangerous to life or health (ILDH) -- that is, one that causes irreversible damage to life or health within 30 minutes by toxic action. An atmosphere which is within the flammable or explosive limits of the contaminant is also considered IDLH. If the concentration is at an IDLH level and still within the use limits approved for the cartridge, that respirator cannot be worn. Only an approved positive pressure SCBA is allowed.

9.1.2 RESPIRATOR CONSTRUCTION

The facepiece is one of two major components of an air-purifying respirator (the air-purifying device being the other). Essentially five types of facepieces and devices may be used:

(1) Half-mask disposable respirator
(2) Half-mask with twin cartrides
(3) Full-face mask with twin cartridges
(4) Full-face mask with chin mounted canister
(5) Full-face mask with harness mounted canister (gas mask)

The facepiece is the means of sealing the respirator to the wearer. Attached to the face piece is the lens (in the case of the full-face piece) and the suspension for holding the mask to the face. An adapter is attached to the cartridge or canister. With the adapter and the mask is an inhalation check valve, which prevents exhaled breath from coming back through the cartridge. An exhalation valve permits the exhaled breath to be exhausted and prevents air from entering it during inhalation. Each respirator has different ways of assembling and attaching parts. Hybridizing two different makes into one immediately voids its approval.

The full-face mask with twin cartridges provides eye protection, is easier to fit and has a protection factor of 100X when multiplied by the TLV of the solvent in question, giving the upper limit of vapor concentration of a given solvent for which the respirator is safe. The half-mask is more convenient to use and eye protection from splashing can be accomplished with face shield or goggles. However, the protection factor is 10X. This is more than adequate for the vapor levels measured in work areas up to this time.

The wearer is to be familiar with the respirator he is using. The parts should be easily identified by function, which is important in maintenance and cleaning. The manufacturer's manual is to be read by the wearer.

9.1.3 RESPIRATOR CLEANING

Once a respirator has been used, it must be cleaned. All detachable parts such as straps, valves, and gaskets are removed and cleaned separately. Cartridges cannot be cleaned. They can be used again if their service life has not been exhausted. The facepeice and other parts can be washed separately in sanitizer solution made by the manufacturer of the respirator. The parts should go through two water rinses and left to air dry. When dry, the parts are assembled and the respirator is put in a clean plastic bag and stored where it will be protected from conditions that could alter the shape of the mask, such as high temperatures or very dusty environments.

9.1.4 PUTTING ON AND FIT TESTING

"Every respirator wearer shall receive fitting instructions including demonstrations and practice in how the respirator should be worn, how to adjust it, and how to determine if it fits properly. Respirators shall not be worn when conditions prevent a good face seal, such as growth of beard, sideburns, or temple pieces on glasses. Also the absence of one or both dentures can seriously affect the fit of a facepiece. The worker's diligence in observing these factors will be evaluated by periodic check. To assure proper protection, the facepiece fit shall be checked by the wearer each time he puts on the respirator. This may be done by fitting instructions."
OSHA regulations, in 29 CFR 1910.134(e)(5)(i)

A. Fitting

Place the respirator over the face and draw the straps securely. The mask should not be so tight as to cause discomfort or a headache. Secure bottom straps first.

B. Pressure testing

Once the respirator is on make two pressure tests:

(1) Negative pressure test:

(a) close off cartridge inlet with the palm of the

hand or card (cartridges may have to be removed)

(b) gently inhale so the facepiece collapses against the face for about 10 seconds.

(c) determine by an inward rushing of air if the negative pressure within the facepiece is maintained over the 10 seconds.

(2) Positive pressure test:

(a) close off exhalation valve with the palm of the hand or card (valve cover may have to be removed).

(b) gently exhale into the facepiece so a slight positive pressure builds.

(c) note if the positive pressure can be built. If it cannot, air is leaking out.

C. Qualitative fit-test

Perform a qualitative fit-test with banana odor ampules before using a respirator under hazardous conditions.

D. Protection factors (PF)

If a respirator passes the qualitative test, it can be worn in contrations determined by the assigned Protection Factor (PF). The maximum concentration is calculated by multiplying the TLV of the contaminant by its PF. PF's for cartridge and canister respirators are:

Half-face mask, 10X
Full-face mask, 100X

Example: Protection (ppm) = PF X TLV

TLV = 10
PF = 10

Protection = 10 X 10
= 100 ppm

Thus for substance X with a TLV of 10, the half-mask respirator provides protection up to a concentration of 100 ppm of the substance, regardless of the cartridge capabilities.

9.2 SELF-CONTAINED BREATHING APPARATUS (SCBA)

9.2.1 WHEN TO USE

A SCBA is to be used under these circumstances:

(1) Oxygen content is below 19.5%
(2) The environment is IDLH.
(3) A tank is to be entered.
(4) There is a spill inside that could raise the vapor concentration beyond the protection capability of the cartridge respirator.
(5) There is any question about the adequacy of the air-purifying respirator, because the identity and concentration of the vapors are not known.

9.2.2 SCBA CONSTRUCTION

The SCBA consists basically of a high pressure tank with frame and shoulder straps for the air supply, air flow valve, a regulator to regulate air flow during normal operation or in an emergency, a hose connecting the regulator to the face mask, and a full-face mask. As with the previous discussion of the air-purifying respirator in 9.1.2, the facepiece is the means of sealing the respirator to the wearer. Attached to the facepiece is the lens and the suspension for holding the mask to the face. With the mask is an inhalation check valve, which prevents exhaled breath from coming back through the air intake hose. An exhalation valve permits the exhaled breath to be exhausted and prevents air from entering it during inhalation. More detailed information is provided in the manufacturer's instruction manual. This should be read so that parts should be easily identified by function. This is important in maintenance and cleaning.

9.2.3 RESPIRATOR CLEANING

Once the SCBA has been used, the face mask must be cleaned as described in 9.1.3. The tanks, shoulder straps, regulator, valves and connecting hose to the face mask are to be inspected for damage and replaced if they are found to be defective.

9.2.4 PUTTING ON AND FIT TESTING

The same procedure as 9.1.4 will be followed. Putting on the tank and operating the regulator will be demonstrated to and tried by each potential wearer. The manufacturer's instruction manual should be read by each potential wearer.

10.0 HAZARDOUS WASTE PICK UP

Drivers play an important role in responsible hazardous waste management. It is their responsibility to see that the waste has been properly packaged, labeled, placarded, manifested, transported, and controled or handled should a spill or leak occur during transport. (See Truck Driver Check List, Fig. 10.0) (See Sales Representative Check List, Fig. 10.1)

10.1 INSPECTION OF HAZARDOUS WASTE DRUMS

All drums are to be checked for possible leaks. Tip the drum slightly allowing it to fall back into position and listen for gurgling and watching for leaks around the bottom, top, and bungs. Also the drum should be free of major dents, deformed appearance, and rust. If any of these conditions exist the drum cannot be picked up. Call back to Reid Supply and leave word for the salesman of that account to call the company contact about the drum(s). The salesman will have to arrange with the customer to have the drum repackaged in an acceptable drum before the waste can be picked up.

10.2 HAZARDOUS WASTE LABEL

The driver is to make sure that each drum has a hazardous waste label. He should also see that the Proper DOT Shipping Names on the labels are the same as the Proper DOT Shipping Name on the Hazardous Waste Manifest.

10.3 FLAMMABLE LIQUID LABEL

If the hazardous waste solvent is chlorinated, such as Solvent III, Trichloroethylene, Methylene Chloride, or Perchlorethylene, a red Flammable Liquid Label is not required, but each drum of flammable waste must have a red Flammable Liquid Label beside the Hazardous Waste Label. Any waste labeled as "Waste Flammable Liquid N.O.S." should have a red Flammable Liquid Label. Also any waste stream designated as haveing a hazard class of "Flammable Liquid" on the Manifest should also have Flammable Liquid Labels on each drum of that waste stream.

10.4 PLACARDING

If three or more 55 gallon drums of flammable waste solvents are on the truck, the truck must be placarded for Flammable

TRUCK DRIVER CHECK LIST FOR

HAZARDOUS WASTE PICK UP

Fig. 10.0

___ 1. Check all drums for possible leaks. If a drum leaks, don't pick it up.

___ 2. Check each drum for a hazardous waste label.

___ 3. If the material is chlorinated, such as Solvent III, Trichloroethylene, Methylene Chloride, or Perchlorethylene, a <u>red Flammable Liquid Label is not required</u> with the hazardous waste label, but each drum of flammable waste must have a <u>red Flammable Liquid Label</u>.

___ 4. If the hazardous waste is flammable, make sure the Reid Supply truck is placarded for flammable liquid.

___ 5. Before signing the Hazardous Waste Manifest form as transporter #1 be sure all the blanks are filled. Of particular importance are:

___ a. Manifest Document number

___ b. Name and EPA ID number for the T/S/D facility.

___ c. Name and EPA ID number for the generator.

___ d. Correct number and type of shipping units; i.e. "5 drums".

___ e. Each entry for the proper DOT shipping name should begin with "Waste..."

___ f. A person has signed and dated the generator signature. This should not be a company name, but an individual name.

___ g. Reid Supply's name and information is included in the Transporter #1 space.

IF ANY OF THESE ARE INCORRECT AND CANNOT BE CORRECTED BY THE GENERATOR, CALL REID SUPPLY (MAIN OFFICE) FOR INSTRUCTIONS.

___ 6. If all is correct, sign the Transporter #1 signature.

___ 7. Give the Generator Copy to the generator and return the rest of the manifest copies with the sales order to Resco.

(Driver ✓ each of the above and return this list with the manifest and sales order.)

_____	_____	_____
DATE	CUSTOMER SIGNATURE	DRIVER SIGNATURE

5X50 DGT 9/84

SALES REPRESENTATIVE CHECK LIST FOR

HAZARDOUS WASTE PICK UP

Fig. 10.1

1. WHAT IS HAZARDOUS WASTE? (Generic Name)

2. HOW MUCH IS GENERATED PER MONTH? EPA ID Number is required if the following criteria are met:

   (a) From and after July 1, 1984, all persons generating 165 pounds (75 kilograms) or more per month;

   (b) from and after July 1, 1985, all persons generating 110 pounds (50 kilograms) or more per month;

   (c) from and after July 1, 1986, all persons generating 55 pounds (25 kilograms) or more per month.

If an EPA number is required, inform the customer that the law required that in order for us to pick up their waste they must have an EPA identification number.

In order to get an EPA number the customer needs to call the Kansas Department of Health and Environment in Topeka (913-862-9360). The KDHE will send an application form to the customer which the customer needs to fill out and return. Upon receipt of the application the KDHE will notify the customer by phone of his EPA identification number. Reid Supply Company can at this point pick up their waste solvent. The customer will later receive by mail a written confirmation of the EPA number.

3. WASTE SOLVENT PICK UP

A Generator Audit must be completed for each waste stream.

A one pint sample should be taken from the hazardous waste stream.

The sample should be representative of all that is to be picked up. Sampling should be performed according to the prescribed procedure. A sample should be made from each waste stream. The sample is to be labeled with the name of the customer, date and type of waste. The sample goes to the lab for analysis and approval for recycling or incineration. These must be classified as D001, F001, F002, F003, F005, D005, D006, D007, and D008 waste streams.

If rejected because the waste cannot be handled by Reid Supply, we will refer the customer to another hazardous waste facility.

If the waste stream is acceptable, five areas must be given attention:

A. PRICE
B. PICK UP ORDER
C. HAZARDOUS WASTE MANIFEST FORM
D. HAZARDOUS WASTE LABELS
E. FLAMMABLE LIQUID LABELS

The PRICE is up to the salesman and current policies.

The PICK UP ORDER is to be filled out as any other sales order, except that the first line of the order indicates a waste pick up and the waste solvent should be identified in parentheses. The other exception is that the sales order must be placed in Gene Stamm's box for final approval.

The HAZARDOUS WASTE MANIFEST should be completed initially by the salesman to be used as a model for the customer on future pick ups.

All blands should be filled in with the appropriate information except the generator signature and date, transporter #1 signature and date, transporter #2 and date, and T/S/D facility signature and date.

Of particular importance on the manifest is:

a. The consecutive manifest document number.
b. Correct EPA identification code number for both the T/S/D facility and generator.
c. Specifications of the type of shipping unit along with the number of units, i.e. drums or gallons.
d. Each DOT shipping name beginning with "Waste".
e. Each hazardous waste classified as one of the following EPA waste number catagories: D001, F001, F002, F003, F005, D005, D006, D007, and D008.
f. List the placards required (if none are required, indicated so).
g. The transporter #1 (Reid Supply Company) information should be filled out except the driver's signature.
h. Write in "NA" (not applicable) in each of the spaces for the agreed or declared value of the property, the consignor signature and freight charges.
i. Be sure an authorized employee of the generator company signs his or her name and not the name of the company.

The manifest form shall be left with the customer and the customer should be informed that when we pick up the waste:

1. Drums will be inspected by the truck driver and not picked up if they leak or are in poor condition.
2. Truck driver will sign and give the date for the transporter #1 space.
3. Leave the customer the generator copy.
4. We will later sign and date the T/S/D facility signature and send him the original to accompany the other copy.
5. They are to hold these forms for three years (each waste stream).

The HAZARDOUS WASTE LABEL should also be completed initially by the salesman to be used as a model for future pick ups. One label is to be placed on each drum.

All blanks should be filled in with the correct information and correspond to the same information on the manifest form. The only additional information that is necessary is the generator's zip code and the accumulation start date.

The labels are supposed to be placed on the side of the waste collection drum at the time of initial filling and dated at that time.

FLAMMABLE LIQUID LABELS should be placed beside the hazardous waste labels only if the waste solvent is flammable (non-halogenated).

If water is a problem in the waste stream the customer needs to be informed how to segregate water waste from solvent waste and to close collection drum tightly between fillings.

Liquid at each of the four placard locations in front, back, and on the two sides. If zero, one, or two drums of flammable liquid waste drums are on the truck no matter how many chlorinated waste drums there may be, a flammable liquid placard should not be displayed.

10.5 HAZARDOUS WASTE MANIFEST

Before signing and dating the Hazardous Waste Manifest form as transporter #1, the following unshaded blanks should be filled:

(1) Manifest document number
(2) Name and EPA ID number for the T/S/D facility
(3) Name and EPA ID number for the generator (customer)
(4) Correct number and type of shipping units; i.e. 5 DM
(5) Each entry for the proper DOT shipping name should begin with "Waste..."
(6) A person has signed and dated the generator signature. This cannot be a company name but only an individual's name.
(7) Reid Supply's name and information is included in the Transporter #1 space.

If any of these are not completed and cannot be corrected by the generator (customer), Reid Supply (Main Office) should be called for instructions.

If all of this is complete, the Transporter #1 blanks should be signed and dated. The generator is then given "The Generator Copy" and the rest of the manifest copies should be returned with the sales order copy to Resco.

10.6 TRANSPORTATION

Hazardous waste like other industrial chemicals should be carried carefully. Busy parts of town, such as downtown, should be avoided as well as traveling or passing by a school or public building. These are things to be avoided if possible to assure that if an accident occurred that as few people as possible would be involved.

10.7 SPILL OR LEAK CONTROL

10.7.1 EMERGENCY EQUIPMENT

The following emergency equipment should be in each truck making a hazardous waste pick up:

(1) Salvage drum - If a drum begins to leak, this will contain the leak.
(2) Drum lever - This enables one man to upright a salvage drum that contains a leaking waste drum.
(3) Organic vapor mask and unvented goggles - This provides temporary protection from organic vapor in the event of a leak.
(4) Solvent resistant apron - This provides protection from solvent exposure when handling drums.
(5) Solvent resistant gloves - These provide protection from solvent exposure when handling leaking drums.
(6) Solvent resistant boots - These also provide protection from leaking solvent.
(7) 100 lbs. floor absorbant - This can be used to control leaks and spills.
(8) Flat shovel - This can scoop up and distribute absorbant.
(9) Drum wheeler - This can help move drums.

These pieces of equipment will be demonstrated for proper use.

10.7.2 LEAKING DRUM

If a drum begins to leak while the truck is in route to pick up hazardous waste drums, the drum should be attended to immediately. This procedure should be followed:

(1) Turn off the engine.
(2) A respirator, protective gloves, apron, and boots should be put on.
(3) The extent of the leak should be determined. If the leak is spreading solvent quickly, the solvent should be contained immediately with a floor absorbant dike to block solvent flow before finding and isolating the leaking drum so that it can be placed in the salvage drum. If the leak is slow, the drum should be located and immediately placed in the salvage drum.
(4) Any free waste solvent should be contained by the floor absorbant. If the floor absorbant is not enough, use dirt.
(5) Shovel the absorbant and dirt into the salvage drum.
(6) Note the location, extent of the spill (approximate

gallons), the type of waste spilled, and report this information to the Reid Supply Office at the nearest phone. Using the truck should be avoided until the danger of solvent ignition has been determined to be under control. If there is any solvent on or around the engine or muffler, the engine should not be started until it has been removed or has evaporated. The office should be consulted by phone concerning starting up the truck after a spill.

10.7.3 LARGE SPILL

If an accident occurs that results in multiple leaking drums that cannot be controled with the salvage drum and floor absorbant, the following procedure should be followed:

(1) Turn off engine.
(2) Put on protective clothing and respirator.
(3) Prevent spill from spreading or going into a water way; i.e. sewer, stream, or river. This can be done by constructing a dirt or floor absorbant dike or digging a containment trench to divert the flow of waste solvent.
(4) Assess the location, extent of spill, and waste solvent involved.
(5) Notify Reid Supply Co. (Main Office) of the accident, information, and further instructions.

11.0 FORKLIFT

The forklift manufacturer's instructions are to be read and proficiency demonstrated for:

(1) Carrying drums safely with drum handler.
(2) Stacking drums on pallets with drum handler.
(3) Positioning pallets in storage area.
(4) Stacking pallets loaded with drums.
(5) Operating the drum tilt mechanism.
(6) Forklift manuevering.

The following represents specific items that must be followed for safe forklift operation:

(1) When going down an incline with a load, the forklift must be put in reverse and backed down the incline. This reduces the chance of losing the load and protects the driver from possible injury.
(2) When carrying a load anywhere the forks must be tilted back to prevent the load from slipping forward on the forks.
(3) The fork should never be "speed shifted". All shifting must be done from a complete stop.
(4) All fluid levels are to be checked once each week.
(5) When parking the lift, the forks are to be tilted forward and lowered to the ground. This reduces the chance of accidental tripping of personnel.
(6) Inspect and position the unloading ramp to assure that it will support the weight of the load and not slip during use.
(7) Drum tipper - read the instruction manual for proper operation.

    (a) The chain should be kept free of pain solids and dirt by soaking it in solvent and wiping clean weekly or as needed.
    (b) The bolts that secure the tipper to the forks are to be secure.
    (c) The wrap around chain should be tight and the drum secure against the metal harness before lifting the drum.
    (d) All tipping should be done slowly.
    (e) Any necessary adjustments to control liquid and solid removal from drums should be done using the tilt and raise/lower controls.

(8) Drum carrier tongs.

    (a) The bolts securing the drum carrier tongs to the forks are to be secure.

(b) The slide rods are to be greased as needed.
(c) The tilt control should always be used initially to lift the drum. Then the raise/lower control is to be used to lift the drum one to two feet off the ground before relocating the drum. This procedure helps keep uniform contact with the drum ridge and prevents dropping the drum during transport.
(d) To remove the tongs from the drum the reverse procedure as described in (c) above can be done. Occasionally simultaneous tipping and reversing is required to release the tongs.

12.0 CONTINGENCY PLAN

12.1 CONTINGENCY PLAN READING

The Contingency Plan should be read and become familiar with it so that when asked what should be done given an emergency, the procedure can be given. The emergency equipment use and their location should be familiar as well. Also the use of the emergency phone numbers should be understood.

12.2 SPECIFIC ASSIGNMENTS

Spill Control - The actual clean up of a spill can be carried out by the process engineer, process technician supervisor, or process technician. The use of the 24 inch back hoe will be performed by either the plant superintendant or process technician supervisor. The emergency coordinator will notify the HMRT of the extent and type of spill. The process technician will assist the emergency coordinator to notify people in the immediate area of the need to evacuate if necessary. He will also direct people to the safest place to evacuate which is determined by the emergency coordinator. All people should stay with the process technician to make sure all people can be accounted for. He will find out if all people are accounted for and report to the emergency coordinator. The other responsibilities of the Emergency Coordinator and Hazardous Waste Coordinator are given in the Reid Supply Contingency Plan.

Fire and Explosion Procedure - Again the process technician is to assist the emergency coordinator as described in the previous section on spill procedures.

13.0 POTENTIAL HAZARDS

This section will help identify potential hazards that could result in a serious emergency or accident if nothing is done to correct the situation.

13.1 CHEMICAL HAZARDS

Incompatible Wastes - Mixing of incompatible wastes is to be avoided. Normal operating procedures involving manifest and hazardous waste label inspection and waste analyses help to prevent storing and mixing of incomaptible wastes together. More detail is given to incompatible chemical combinations in Section 5 - Hazardous Properties for Hazardous Materials and Waste. The types of materials that should not be mixed with organic waste solvents are:

(1) strong acids (Sulfuric acid, Nitric acid, Muriatic acid)
(2) strong bases (Casutic soda, Caustic potash)
(3) strong oxidizers (Calcium hypochlorite or HTH, Potassium permanganate, Nitric acid)

If any of these chemicals are identified in the drum storage, drum processing, or still processing areas, the process engineer should be notified immediately.

Flammable Solvents - Flammable solvents are hazardous because of the potential for fire and explosions given the right vapor concentration and ignition source.

If solvent vapors are escaping from a drum or tank, it is important to remember that most of the organic solvents handled by Reid Supply are heavier than air. This means that waste solvent vapors will flow along the ground and collect in low areas, thus developing a potential situation for fire or explosion. Solvent vapors can be a result of a spill or open drum on a hot day. Without proper ventilation, a hazardous situation could develop. As a result spills should be cleaned up immediately and open drums in confined spaces kept closed. Open drums outside should be closed when not being processed. In addition, ignition sources should be eliminated from areas with potential organic solvent vapor build up. Ignition sources might be:

(1) cigarettes
(2) improper grounding
(3) heaters
(4) pilot light
(5) non spark-proof tools
(6) non explosion-proof motors

Heavy Metals - In order to remove any chance of breathing heavy metal dust from dried paint solids, any paint solids that might fall on the ground are to be picked up or swept up immediately and either blended or placed in a 17H drum for disposal. The drum processing area is to be kept clean of dust build up.

Faulty Equipment - Whenever a piece of equipment is not working properly, this is an opportunity for an accident. Report the faulty equipment to the Process Engineer immediately.

13.2 REPORTING POTENTIAL HAZARDS

When a potential hazard is discovered, report it immediately to the Process Engineer and fill out a Potential Hazard Report (Fig.13.2) The hazard is to be corrected immediately so that a hazard does not exist.

POTENTIAL HAZARD REPORT Fig.13.2

Employee _____

Date _____ Time discovered _____

Description of Hazard _____

_____

_____

Action taken _____

_____

_____

Date and time of action _____

14.0 DRUM PROCESSING AND TANK STORAGE AREAS

14.1 SPARK-PROOF EQUIPMENT

There are four types of spark-proof safety tools used. They include shovels, chisels, hammers, and scrapers. The primary purpose for spark-proof equipment is to eliminate sparks caused by hitting tools against steel or concrete. Sparks in an environment with the right amount of oxygen and solvent vapors can cause a fire and explosion. The tools are made of materials such as beryllium, aluminum, dairy metal, or plastic. Directions for care of the tools are listed below:

(1) Shovels or scoops need to be kept clean by scraping residue off the contact surface with a safety scraper.
(2) Chisels need to be kept sharp using a conventional grinding wheel, stone, or file.
(3) Hammers are sometimes broken at the handle during normal use. To avoid breaking hammer handles, the hammer should not be used in tight locations or where hitting a surface is obstructed or hindered in any way. A broken handle should be replaced immediately.
(4) Scrapers need to be kept clean by scraping residue off or soaking in a paint related solvent and wiping clean.

14.2 DRUM OPENER OPERATION AND MAINTENANCE

An air operated drum opener is used that leaves an "OSHA-safe edge" after removing the lid from the drum. The purpose for opening the drums is to remove the last amount of liquid and solids contained in a drum of waste solvents. Standard operating procedures are given in the instruction manual. This should be read by each operator before using it.

The air-powered model instead of electric is used because it removes one more source of ignition in the area.

A specific area has been assigned for drum opening to minimize accidental air line cuts and tripping of personnel when moving the opener around. The fixed location also reduces the need to lift the opener from the ground to the drum and back because a special stand is used that will hold the opener at the level of the drum.

The operator must wear an apron, rubber gloves and boots, face-shield, and organic vapor mask when opening drums.

14.3 BLENDER OPERATION AND MAINTENANCE

The blender is powered by air to remove one potential ignition source from the area. As in all air equipment, air quality is important. Filters and lubricators are used to remove particulate matter and water and to lubricate the metal surfaces in the motor. This air equipment must be cleaned and maintained on a daily basis. Standard procedures are those outlined in the owner's manual. This should be read by the operator before using it.

To prevent the possibility of solvent splashing, special care needs to be taken not to operate the blender unless the impellers are at least one foot below the liquid level. Also the air valve should be opened slowly.

The operator must wear solvent-resistant suit or apron, rubber boots and gloves, faceshield, and organic vapor mask when blending. The vapor mask can be removed if the operator is more than five feet from the material being blended.

ONLY DRUMS AUTHORIZED BY THE PROCESS ENGINEER ARE TO BE BLENDED.

14.4 PICK UP TRUCK HITCH

This is used when the 1400 gallon transfer tank is to be pulled. A steel rod is inserted through the holes on the trailer tongue and the holes on the back end of the pick up truck. A chain is then wrapped around the tongue and truck frame to assure a secure hitch during transit between the processing area and the still processing area.

14.5 DIKE PROTECTION

Dikes are inspected weekly and cracks are filled immediately with butyl rubber caulking or silicon rubber caulking.

To prevent damage by drums being placed too close to the dikes, drums are to be placed at least <u>three</u> feet from the dikes.

14.6 AIR COMPRESSOR OPERATION AND MAINTENANCE

The complete instruction manual is in the process engineer's office. Each operator is to be familiar with this.

The on/off switch is manually operated and the unit has an

automatic on/off activator that turns on at 60 psi and turns off at 100 psi. There are water bleed off valves at the bottom of each tank immediately below the air compressor. These are to be opened weekly as part of the weekly inspection schedule. In addition, the oil level is to be checked weekly. The overall quarterly maintenance is performed by an air compressor service company.

14.7 PUMPS

The types of pumps used to transfer hazardous waste are air-operated, double diaphragm pumps. Air power is safe not only in areas with ignitable hazardous waste, but also desirable because of the varying viscosities and particle size of the material being pumped. Other types of pumps, such as gear or centrifugal pumps tend to clog much more easily.

Instruction and repair manuals are in the process engineer's office for each particular pump. Each operator is to be familiar with the instruction manual for each pump he is operating.

Maintenance items include cleaning water trap and filter and maintaining a full lubricator level in the oiler. Troubleshooting information is provided in the instruction manuals.

14.8 PROCEDURES

This section includes various procedures associated with the drum processing area.

A. Hose Hook Up - Before hooking up hoses the gaskets must be checked before each coupling. A snug fit is required. If the gaskets are in poor condition, they are to be replaced. If the fit is less than secure, replace the "ears" and pins on the female coupling. These replacement parts are located in the equipment storage area.

   Hose Inspection - Hose inspection consists of looking for weak spots in the hose, i.e. exposed wires, pieces of hose missing, and excessively kinked hose. In all of these cases, special attention and care must be used when pumping. These conditions should be repaired or the hose replaced. A leaking hose should be replaced immediately rather than trying to patch or splice the hose, because one weak area that leaks means that other areas are probably weak.

B. Storage Tank Loading, Circulating, and Unloading - The procedures are as follows:

(1) Check the overflow mechanism. (a) Before starting the pumping procedure turn on the air, raise the mechanism float, and see if the air flow shuts off. If it does, then the system is functioning properly. (b) Also make sure that the water trap and filter are clean and empty each day.

(2) Fill the first tank. Either the East or the West Storage Tank can be filled first. (a) Hook all hoses up to the pump, open discharge valve, open air valve, and adjust the air flow until the pump begins pumping. (b) At this time open the air valve completely. (c) Continue pumping into this tank until the overflow control shuts off the air flow and consequently the pump stops pumping. (d) Close the discharge valve and air valve.

(3) Fill the second tank. (a) When disconnecting the hoses from the first tank, open the pressure relief valves near the discharge valve to release liquid and air pressure into a bucket. (b) Disconnect the hose, inspect gaskets, reconnect the hose on the second tank inlet, and open the discharge valve. (c) Pump the overflow reservoir out and change the tank overflow to the second tank. (d) Begin pumping just as with the first tank.

(4) Circulate the tanks. (a) Connect the intake hose to the bottom of the tank and the discharge hose to the inlet of the same tank. (b) Open the intake and discharge valves and open the air valves to begin pumping. This procedure should be done daily for thirty minutes for each tank to prevent the plugging of the tanks and to further blend and disperse the solid material in the tanks.

(5) Unload the tanks into a transport tanker. (a) Check the hoses and quick couplings before proceeding. (b) Hook the short 2 inch diameter hose to the bottom of the East Storage Tank and connect the other end to the suction end of the pump. (c) Connect the longer section of 2 inch diameter hose to the discharge end of the pump and place the other end of the hose into the top port of the tanker. (d) Secure the hose in the port with a wire or a rope. This practice prevents the hose from breaking free and causing a hazardous spill. (e) Connect the air hose to the pump. (f) Open all intake and discharge valves and turn the air on to the pump. (g) Pump the East Storage Tank until it is empty. (h) While pumping out the East Storage Tank, connect the 1½ inch hose to the valve located

10 feet from the ground on the West Storage Tank. Put the hose through the top port on the tanker and secure it. Open the valve and allow the liquid to flow into the tanker by gravity. This simply saves time loading the tanker. (i) When the East Storage Tank is empty, disconnect the hoses from the East Storage Tank as discussed in the hose procedure and connect the suction hose to the bottom outlet of the West Storage Tank. (j) Resume pumping until the liquid level in the tanker is three feet below the top of the tanker or until the storage tank is empty. This three feet freeboard gives the tanker driver a safety space for inclines and breaking when traveling or unloading the material. Otherwise liquid can spill out of the tanker and create a hazard.

C. Processing Area Clean Up - There are two types of clean up. One is immediate and the other is routine.

(1) The immediate clean up is to occur when solid or liquid waste is spilled on the ground. (a) Shovel as much of the material as possible into a 17H drum. (b) Then add absorbent to collect free liquid. This should be done to minimize hazardous waste exposure to personnel and to the environment.

(2) Routine clean up is to occur once each week. The whole processing area is to be swept and the dry dust used as solidification and absorbent material when filling 17H drums. This material should be treated as hazardous waste because it could contain heavy metals from dried paint solids.

D. Pumping Out Drums - The below procedures are to be followed:

(1) Put on solvent-resistant suit or apron, rubber gloves and boots, face shield, and organic vapor mask before opening the drum. (2) Slowly open the 2 inch bung on the drum to remove built up pressure in the drum. (3) If the 2 inch bung cannot be opened, try to release pressure by opening the 3/4 inch bung. (4) If no bungs open, puncture the top of the drum with a spark-proof chisel to release pressure. (5) After pressure is released, remove the 2 inch bung or else cut a hole in the top large enough for the aluminum standpipe to slip into the drum. (6) Place the aluminum standpipe into the opening. (7) Make sure the discharge line on the pump is open by opening all valves. (8) Turn air on to the pump and bleed off the trapped water in the

water trap and filter. (9) Adjust the air flow until the pump starts pumping, then increase the air flow by opening the air valve. (10) When the liquid is pumped out, turn the air off and close the discharge valves. (11) Remove the standpipe from the drum and replace the bungs or cover the top until the lid can be removed by the drum opener. (12) If finished with the pump, continue pumping air until the line is empty and then turn the air off and close the discharge valve.

E. Drum Opening - See Section 14.2.

F. Blending of Solvents and Solids - See Section 14.3.

G. Removing Solids from Drums - The below procedures are to be followed:

(1) Put on suitable protective clothing including the organic vapor mask and face shield before beginning this activity. (2) Dislodge solids from the bottom of the drum with a spark-proof shovel. (3) If less than fifty pounds of material is left inside the drum, two workers should lift the drum and transfer the solids to a 17H drum that has some free liquid absorbent already in it. If more than 50 pounds of solids is in the drum, the forklift and drum dumping device is to be used to transfer the contents into a 17H drum. (4) Take a spark-proof hammer and hit the bottom of the drum to help dislodge the solids from the bottom of the drum. (5) Carefully set the empty drum back on the ground and recover the 17H drum.

G. Removing Hazardous Waste Labels - After removing all the liquids and solids from a drum, the drum can now be considered empty. The waste label and flammable liquid label can either be torn off manually or painted. The labels are to be thrown away and the empty drums stacked.

I. Stacking Empty Drums - The drums should then be stacked on their sides to prevent rain accumulation. A stationary, upright drum filled with cut out lids should be placed at the end of each row to prevent drums from rolling. Empty drums may be stacked three high and out three rows before they must be scrapped.

J. Scrapping Empty Drums - Empty drums may be scrapped by taking drums as is to a scrap metal dealer, or they may

be crushed or shredded. Before drums are removed each drum should be inspected and hit with a spark-proof hammer to remove any loose dried solids. The solids are to be placed in a 17H drum for disposal.

K. Settling Tank Procedure - The settling tank is used to remove settleable liquids and solids from distillable wastestreams.

(1) Once liquid has passed through the process filter it may go into the settling tank. (2) The settling tank is filled until the overflow system is activated or until there is no more product to be settled. (3) The liquid only needs to be settled a minimum of 16 hours to separate the majority of water and solids that are in the solvent. (4) The tank is decanted 16 hours later from the bottom until phase separation is apparant. Instructions from the processing engineer are necessary to achieve this separation. (5) The settlings are then pumped into the tank for disposal.

L. Pressure Filter Cleaning - There are two types of pressure filters - batch and continuous. Presently, the type used is a batch filter, but a continuous filter may be used in the future.

(1) Before cleaning the batch pressure filter, rubber boots and gloves must be worn as well as a faceshield and organic vapor mask. (2) Release pressure through the outlet valve into a five gallon bucket to collect any discharged liquid. (3) Loosen the bolts and remove the top of the filter chamber. (4) Remove the filter basket and bag and dump the contents into a drum for blending. (5) Inspect the bag for damage and replace it if necessary, and discard the damaged filter bag in a 17H drum for disposal. (6) Inspect the chamber gaskets and replace if necessary. (7) Put the filter bag and gasket back into place and tighten the bolts. Replacement bolts are available if needed. (8) Close the pressure relief outlet valve and resume pumping.

M. Transfer Tank Procedure

(1) Loading

(a) All material that enters the transfer tanks must be prefiltered. This has already been done when using

the settling tank procedure. When pumping directly from drums into the transfer tank through the filter, the procedure is the same as with the settling tank except that the appropriate valves must be opened and closed. (b) Before beginning to pump, the wheels of the transfer tank must be blocked to prevent rolling. (c) The quick coupling gaskets must be inspected before each hook up. (d) Overfill must be carefully monitored and hoses secured to the transfer tank port to prevent the hoses from slipping out and causing a spill.

(2) Unloading

(a) Block the wheels. (b) Put the portable transfer pump near the transfer tank outlet. (c) The quick couplings must be inspected for worn gaskets and replaced if necessary. The short hose should be connected to the 2 inch transfer tank outlet and the other end connected to the intake opening of the pump. The discharge hose is connected to the pump and to the still feed tanks. (d) Pumping is done with an air-operated pump. Therefore, the air lines must be purged of water by opening the water trap and sufficient lubrication fluid must be used to lubricate the internal parts. (e) The still feed tank valves are both opened. (f) Once all the connections are made, the intake valve opened, the discharge line opened on the still feed tanks, and stillfeed tanks opened, then the pump may be turned on. (g) The still feed tanks total 1600 gallons capacity and the transfer tank totals 1200 gallons. This eliminates the chance of an overfill. However, someone should always supervise the pumping procedure to assure that all things run smoothly. (h) Once the transfer tank is empty, allow the tank to run dry and walk the solvent lines toward the still feed tanks starting from the transfer tank and finishing at the still feed tanks. (i) Shut the air off and close the intake and discharge valves before disconnecting hoses.

N. Securing Drum Processing and Drum Storage Area - Whenever there are employees in each area the gates and doors may be unlocked. However, as soon as the last person leaves, even if it is not the end of the day, the gates and doors must be locked to prevent unauthorized personnel from entering. The process technicians have keys as well as the emergency coordinators and process engineer.

15.0 DRUM STORAGE AREA

This section includes various procedures and guidelines that will be followed in the drum storage area located in C-Building.

15.1 DIKE PROTECTION

Drums and pallets are to be positioned at least 3 feet from the dikes. This will help prevent dike damage.

15.2 DRUM POSITIONING ON PALLETS

All drums placed in the storage area must be on secure pallets. Pallets in deteriorated condition are to be placed in the pallet reconditioning area just south of C-Building. Three to four drums may be placed on a pallet.

15.3 RECEIVING WASTE DRUMS

1. The driver must identify the waste shipment to the Process Technician before unloading occurs. This is accomplished by giving the hazardous waste manifest to the Process Technician.

2. The driver may then unload the drums on the dock south of C-Building.

3. The Process Technician inspects the drums for leaks, rust, and dents and verifies the number and labeling with the hazardous waste manifest using Reid Supply's checklist for waste received. Any discrepancies are noted on the manifest in the appropriate place and on Reid Supply's checklist. All information for a given wastestream that is available at this time should be recorded on the checklist.

4. The Process Technician then signs and dates the manifest and gives the driver the transporter copy if he is from another company. Otherwise the Process Technician keeps all the signed manifests.

5. The driver is free to leave.

6. The drums are then placed on pallets in the staging area.

7. Before storing the drums each drum is sampled and a composite sample is made for each wastestream to be fingerprinted and a reference sample saved according to the

procedures in Section 21. Compatibility and pH are determined before storing drums and the other tests are performed at an independent lab. All fingerprint information is to be recorded on the checklist. The solid level is also measured in each drum and recorded on the checklist.

8. Unusually high solid levels are to be reported to the salesman by the Process Engineer. This will enable the salesman to make appropriate price adjustments to his customer.

9. The wastestream samples, manifests, and wastestream checklist are to be brought to the Process Engineer for filing and further tests.

10. Once the samples have been taken and compatibility and pH have been confirmed, the drums may be placed in their designated areas according to the storage plan with a four foot aisle between each set of three pallets and three feet from the dikes. The pallets cannot be grouped in sets of more than three pallets holding a total of twelve drums. The pallets may be arranged with three pallets on the floor in a row on the south side of the area and on the north side with two pallets on the floor and one pallet stacked on top of these two pallets. As stated before, the aisle space between these sets of no more than twelve drums on three pallets is to be four feet to permit easy inspection. The middle aisle space between the south and north storage of drums is to be ten feet wide to allow safe forklift travel.

11. If the waste is found to be incompatible during the compatibility and pH tests, the drums in question are to be moved into the incompatible storage area and the generator is contacted for the return of the drums.

15.4 CLEAN UP AND HOUSEKEEPING

The drum storage area is to be swept weekly and whenever an area has drums moved from it. All spills are to be cleaned up immediately as described in the Contingency Plan.

16.0 STILL AREA

16.1 START UP PROCEDURE

Be familiar with the operation manual.

1. Take boiler blow down sample. Check pH (must be 10 or above) with pH paper and total solids content with the solids detector. If the pH is low, mix four pints of powdered boiler compound with water and pour into the feed inlet of the boiler. Make sure all three valves are closed. Start up the boiler. Make a record of the time started, pH, and solids content on boiler log.

2. Check the basket strainer as needed to the still.

3. Remove water from lines using the 90° ball valve.

4. (a) Start the still up by opening the condenser water valve and pressing the vacuum pump switch. (b) Make sure throttling valve is open one-half turn to prevent the pump from running dry. (c) Make sure all vacuum valves are closed.

5. Turn steam on to still and allow it to preheat until the steam exhaust temperature is greater than 200°F. Then begin adding feed to the still.

6. Check for foaming. If there is foam, steadily watch it and control it using the vacuum break valve.

7. Turn the scraper drive on when the distillation starts.

8. Pump the distillate tank when it is full and record the volume.

16.2 STILL SHUT DOWN

1. Make sure the boiler is off 10-15 minutes before the still is turned off.

2. Shut off all steam valves to the still immediately before the still is turned off.

3. Shut off condensor and city water booster valves and break the vacuum.

4. Drain and scrape the still and then add sealer to clean out the port and close all valves and ports to the still. Turn the scraper drive off.

5. Make sure all the lights are out.

6. Lock all gates and doors in the still area.

16.3 DRAINING THE STILL

1. Follow the above shut down procedure.

2. Wear rubber boots and gloves, faceshield, solvent-resistant apron or suit, and organic vapor mask.

3. When the still is off, open the vacuum break valve.

4. Open the drain valve and drain the still into drums or tote tank and secure the lid.

5. Move the drums or tote tank to the processing area.

6. Place another drum beneath the clean out port and open the port door. Shut off the scraper drive before removing the remaining liquid with a non-sparking scraper.

7. Close the port and close the vacuum break valve.

8. Clean up any spilt material from the floor with absorbent.

16.4 SPECIAL STILL CLEAN UP

Occasionally the still requires cleaning with liquid caustic soda. A caustic-resistant suit, boots, gloves, and faceshield are required for this.

1. A carbon steel (not aluminum) diaphragm pump is necessary to pump the liquid caustic into the distillation chamber.

2. The caustic is allowed to sit over night.

3. The scraper is activated for fifteen minutes.

4. The residue is pumped into drums and stored away from solvents until it can be used again for cleaning.

16.5 STILL AREA CLEAN UP AND HOUSEKEEPING

During the operation of the still, routine clean up procedures may be performed. Sweeping and removal of dried paint from the floor may be done. This is to be done with spark-proof equipment. The sweepings and dried paint are to be handled as if hazardous because of the potential of heavy metals in the dried paint.

All still related equipment should be kept either in the still room or the process building immediately west of the still building. All plumbing related equipment should be kept in the boiler room. All pipe greater than three feet long should be placed on the north side of the process area on the cement. This prevents accidents involving loose pipes. All hoses when not in use should be coiled up to prevent tripping of personnel.

17.0 LAB

This section includes procedures for determining pH and blending compatibility of a wastestream. Whenever performing these tests, proper protective clothing should be worn. Solvent resistant gloves, boots, apron, and faceshield are required as well as an organic vapor mask. These are necessary as a precaution in case a violent reaction should occur.

17.1 pH DETERMINATION

(1) Mix four ounces of a representative sample of a given waste stream with two ounces of water.

(2) Dip a one inch strip of pH paper into the water layer. (A dropper may be necessary to remove the water layer from below the solvent layer)

(3) Compare the color of the paper with the color chart on the pH paper holder.

(4) Record the pH of the material on the checklist for waste received.

(5) Alert the Process Engineer immediately if the pH is below 4 or above 11.

17.2 COMPATIBILITY DETERMINATION

(1) Record the temperature of the four ounce representative sample of blended solvents.

(2) Mix <u>slowly</u> a four ounce representative sample of a given waste stream with the representative sample of blended solvents. The mixture should be observed for any signs of reaction. The signs of reaction are: temperature increase, gas generation, or solution thickening.

(3) Observe the mixture for fifteen minutes to see if there is any reaction.

(4) Record the results.

(5) Report any type of reaction immediately to the Process Engineer.

(6) Non-reactive test material should be blended with the other compatible solvents to be used as fuel.

18.0 FIRST AID

The prescribed First Aid procedures for exposure contamination to a given hazardous material is given in the Material Safety Data Sheets provided in Section 5. Basically the procedures are the same.

(1) Eye contamination requires rinsing with large amounts of water for 15 minutes. Note the locations of emergency wash stations on the map of Emergency Equipment Locations.

(2) Skin contamination requires washing with soap and water.

(3) Breathing of vapors requires moving the person to fresh air and if necessary artificial respiration.

(4) Swallowing requires getting medical attention and inducing or not inducing vomiting depending on the material ingested. Generally speaking, vomiting should be induced for all solvents swallowed except toluene and xylene. Vomiting can be induced by making the victim drink a large amount of water and triggering vomiting with a finger down the victim's throat.

19.0 RECORDS

The Process Engineer is to keep the following records on hand and current as required:

A. Hazardous Waste Manifests

B. Inspection Log

C. Training Log

D. Detailed and Fingerprint Analyses

E. Generator Audits

F. Checklist of Incoming Waste

G. Sales Orders

H. Hazardous Waste Inventory

I. Potential Hazard Report

J. Spill, Fire, and Accident Reports

20.0 SAMPLING

The sampling procedure described in Fig.20 is to be followed. In addition, once the samples have been collected for a given wastestream the composite sample must be mixed thoroughly before samples are taken for reference, analysis, compatibility and pH determination. One pint is sufficient for all of these purposes.

Eight ounces of each sample is saved until 10 days after the wastestream has been disposed of. This is for reference should a problem arise.

SAMPLING PROCEDURES
Fig. 20

Preparation

1. Wear protective gloves.
2. Wear protective glasses, goggles, or face shield.
3. Have a glass bottle large enough or enough small bottles to hold all representative samples taken from a given waste stream.
4. Have label(s) ready for bottle(s) so it can be attached after sampling is completed.
6. Open one drum at a time and close securely after completing sampling from each drum.

Liquid Sampling (COLIWASA, glass tube, or plastic tube)

1. Place COLIWASA or tube slowly into the drum.
2. Close COLIWASA or place thumb firmly over the top opening of the tube and draw tube out quickly.
3. If there are any settled solids in the tube, measure the depth of the solids.
4. Dispense liquid into sample bottle.
5. Repeat steps 1-4 four more times.
6. Repeat steps 1-5 for each drum in the waste stream.
7. Dispose of glass or plastic tube.

Viscous Sampling

1. Have wooden tongue depressors handy.
2. Push trier into the drum until it reaches the drum bottom.
3. Rotate trier slowly and pull it out slowly.
4. Use tongue depressor to scrape waste into sample bottle.
5. Repeat steps 2-5 one time.
6. Repeat steps 2-5 for each drum in waste stream.
7. Clean off trier.

21.0 BUDDY SYSTEM

Whenever work is being done with hazardous waste there should always be at least two people in the immediate area. These individuals do not have to be doing the same thing, but close enough to render assistance should the other need help.

23.0 UNATHORIZED PERSONNEL

Any individuals that come onto Reid Supply property should be asked if they can be helped and directed to either the plant office or main office. Customers and others should not be allowed in the warehouse or in the plant operation areas without a Reid Supply employee with him. This is particularly true for the hazardous waste areas. Each visitor should have suitable protective clothing. This practice of restricting unauthorized personnel is for safety and security reasons.

22.0 TANK ENTRY AND INSPECTION

Tank entry for inspection can be very dangerous if it is not carefully planned and performed. To insure safety during this procedure the following discussion of the definition of a confined space, kinds of hazards, and Tank Entry Checklist is provided. (See Fig. 22.0) (See Fig. 22.1)

22.1 DEFINITION

Any space without good ventilation should be viewed as a confined space. Poor ventilation means that fumes, either already present or recently generated by chemical processes, are trapped, waiting to injure or kill anyone not properly protected.

22.2 THE KINDS OF HAZARDS

Oxygen Deficiency - Lack of oxygen can kill, quickly and without warning. Three conditions can cause an oxygen-deficient environment: combustion (burning or an explosion), corrosion (rust), and displacement by other gases (such as solvent fumes). The latter applies to entry of the waste solvent storage tanks at Reid Supply. The air sampler with oxygen sensitive tubes is necessary to tell if there is adequate oxygen present. Measurements must be made both before and after entering the space since conditions might change. Appropriate respiratory protective equipment must be worn. At Reid Supply a self-contained breathing apparatus is necessary.

Combustibility - Since the blended solvents stored in the tanks to be inspected are flammable it is to be assumed that a fire or explosion could happen at any time. This danger is always present. Ignition sources, such as cigarettes and non-explosion proof equipment, can easily explode an unexpected buildup of vapor. Monitor equipment should be used to measure whether combustible vapors are present. In the case of multiple solvent vapors, Acetone, Methyl Ethyl Ketone, Toluene, and Xylene vapors will be monitored every five minutes using the air sampling apparatus. Readings will be taken at the lower port only since all of these vapors are heavier than air.

Toxicity - The kind of toxic substances that would be encountered are irritants. Irritants can irritate the body's systems at low concentrations and kill at high levels. Another type of toxic substance is a chemical asphyxiant. Such a substance causes injury or death by preventing the body from using the oxygen it needs. Some common and dangerous asphyxiants are

TANK ENTRY CHECKLIST

Fig. 22.0

Date of entry _____ Entry Authorized by _____

1. Preparing to enter

Completely drain tank ____

Remove residual solids ____

Disconnect pumps ____

Open upper & lower ports ____

Allow to stand open for at least 24 hours ____

Start ventilation fan at upper port ____

Make initial oxygen and solvent vapor measurements ____

Verify completion of above steps by signing tank entry permit ____

Gather necessary equipment

- 2X SCBA ____
- 2X life belts with ropes ____
- 3X hard hats ____
- Explosion proof light ____
- Solvent resistant jacket ____
- Rubber boots ____
- Rubber gloves ____
- Rope ladder with rigid rungs ____

Establish life line signals ____

Review SCBA use ____

Check SCBA face piece fit ____

Standby man and equipment ready ____

Another person to help standby man ____

Fire-fighting equipment ready ____

Person entering briefed on potential hazards ____

2. Entering the space

Take readings for oxygen and solvent vapor concen. at lower port ____

3. While inside the space

Take oxygen and solvent vapor concentration readings every 5 min. ____

Make sure ventilation fan is working properly every 5 min. ____

Be alert for signs of danger ____

Inspect tank for severe corrosion ____

4. Afterwards

Wash off any contamination ____

Wash contaminated clothes ____

Clean equipment ____

Close tank ____

Report any unusual findings ____

TANK ENTRY PERMIT

Fig. 22.1

This is to certify that the following steps and precautions have been taken to prevent an accident while entering the storage tank: the tank is completely empty, pumps to the tank are disconnected, upper and lower ports have been opened, the tank has stood open for at least 24 hours, the ventilation fan has been installed and activated, and the concentration of oxygen and acetone, methyl ethyl ketone, toluene, and xylene vapors has been determined and the vapor levels have been found to be below the explosive limits.

Process Engineer	Date and Time
Process Technician	Date and Time

carbon monoxide (CO), carbon dioxide (CO_2), sulfur dioxide (SO_2), and hydrogen sulfide (H_2S). The self-contained breathing apparatus with its full-face piece provides protection from these irritants.

23.0 UNATHORIZED PERSONNEL

Any individuals that come onto Reid Supply property should be asked if they can be helped and directed to either the plant office or main office. Customers and others should not be allowed in the warehouse or in the plant operation areas without a Reid Supply employee with him. This is particularly true for the hazardous waste areas. Each visitor should have suitable protective clothing. This practice of restricting unauthorized personnel is for safety and security reasons.

ACT

ACETONE

Common Synonyms
Dimethyl ketone
Propanone

Watery liquid | Colorless | Sweet odor

Floats and mixes with water. Flammable, irritating vapor is produced.

Stay upwind and use water spray to "knock down" vapor.
Shut off ignition sources and call fire department. Keep people away.
Stop discharge if possible.
Isolate and remove discharged material.
Avoid contact with liquid and vapor.
Notify local health and pollution control agencies.

Fire

FLAMMABLE.
Flashback along vapor trail may occur.
Vapor may explode if ignited in an enclosed area.
Extinguish with dry chemical, alcohol foam, or carbon dioxide.
Water may be ineffective on fire.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Irritating to eyes, nose and throat.
If inhaled, may cause difficult breathing or loss of consciousness.
Move to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID
Irritating to eyes.
Not irritating to skin.
IF IN EYES, hold eyelids open and flush with plenty of water.

Water Pollution

Dangerous to aquatic life in high concentrations.
May be dangerous if it enters water intakes.
Notify local health and pollution control officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Pesticide Methods Handbook, CG 446-4)

Issue warning - high flammability
Disperse and flush

2. LABEL

Red

3. CHEMICAL DESIGNATIONS

3.1 **Synonyms:** Dimethyl ketone
2-Propanone

3.2 **Coast Guard Compatibility Classification:** Ketone

3.3 **Chemical Formula:** CH_3COCH_3

3.4 **IMCO/United Nations Numerical Designation:** 3.1/1090

4. OBSERVABLE CHARACTERISTICS

4.1 **Physical State (as shipped):** Liquid

4.2 **Color:** Colorless

4.3 **Odor:** Sweetish; pleasant, resembling that of mint or fruit; pungent; sharp, penetrating residual; ketonic, pleasant, non-residual

5. HEALTH HAZARDS

5.1 **Personal Protective Equipment:** Organic vapor canister or air-supplied mask; synthetic rubber gloves; chemical safety goggles or face splash shield.

5.2 **Symptoms Following Exposure:**
INHALATION: vapor irritating to eyes and mucous membranes; acts as an anesthetic in very high concentrations. INGESTION: low order of toxicity but very irritating to mucous membranes. SKIN: prolonged excessive contact causes defatting of the skin, possibly leading to dermatitis.

5.3 **Treatment for Exposure:**
INHALATION: if victim is overcome, remove to fresh air and call a physician; administer artificial respiration if breathing is irregular or stopped. INGESTION: if victim has swallowed large amounts and is conscious and not having convulsions, induce vomiting and get medical help promptly; no specific antidote known. SKIN: wash well with water. EYES: flush with water immediately for at least 15 min. Consult a physician.

5.4 **Toxicity by Inhalation (Threshold Limit Value):** 1000 ppm

5.5 **Short-Term Inhalation Limits:** 1000 ppm for 30 min.

5.6 **Toxicity by Ingestion:** Grade 1: LD_{50} 5 to 15 g/kg (dog)

5.7 **Late Toxicity:** Not pertinent

5.8 **Vapor (Gas) Irritant Characteristics:** If present in high concentrations, vapors cause moderate irritation of the eyes or respiratory system. Effect is temporary.

5.9 **Liquid or Solid Irritant Characteristics:** No appreciable hazard. Practically harmless to the skin because it is very volatile and evaporates quickly from the skin.

5.10 **Odor Threshold:** 100 ppm

6. FIRE HAZARDS

6.1 **Flash Point:** 4°F O.C.; 0°F C.C.

6.2 **Flammable Limits in Air:** 2.6%--12.8%

6.3 **Fire Extinguishing Agents:** Alcohol foam, dry chemical, carbon dioxide.

6.4 **Fire Extinguishing Agents Not to be Used:** Water in straight hose stream will scatter and spread fire and should not be used.

6.5 **Special Hazards of Combustion Products:** Not pertinent

6.6 **Behavior in Fire:** Not pertinent

6.7 **Ignition Temperature:** 869°F

6.8 **Electrical Hazard:** Class I, Group D

6.9 **Burning Rate:** 3.9 mm/min.

7. CHEMICAL REACTIVITY

7.1 **Reactivity with Water:** No reaction

7.2 **Reactivity with Common Materials:** No reaction

7.3 **Stability During Transport:** Stable

7.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent

7.5 **Polymerization:** Not pertinent

7.6 **Inhibitor of Polymerization:** Not pertinent

8. WATER POLLUTION

8.1 **Aquatic Toxicity:** 14,250 ppm/24 hr/sunfish/killed/tap water
13,000 ppm/48 hr/mosquito fish/TL_m/turbid water

8.2 **Waterfowl Toxicity:** Not pertinent

8.3 **Biological Oxygen Demand (BOD):** (Theor) 122%, 5 days

8.4 **Food Chain Concentration Potential:** None noted

9. SELECTED MANUFACTURERS

1. Allied Chemical Corp.
Specialty Chemicals Div.
Wilmington Turnpike
Marcus Hook, Pa. 19061
2. Shell Chemical Co.
Industrial Chemicals Div.
Houston, Texas 77001
3. Union Carbide Corp.
Chemicals and Plastics Div
270 Park Ave.
New York, N. Y. 10017

10. SHIPPING INFORMATION

10.1 **Grades or Purity:**
Technical: 99.5% plus 0.5% water
Reagent: 99.5% plus 0.5% water

10.2 **Storage Temperature:** Ambient

10.3 **Inert Atmosphere:** No requirement

10.4 **Venting:** Open (flame arrester) or pressure-vacuum

11. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook, CG 446-3)

A-P-Q-R-S

12. HAZARD CLASSIFICATIONS

12.1 **Code of Federal Regulations:** Flammable liquid

12.2 **NAS Hazard Rating for Bulk Water Transportation:**

Category	Rating
Fire	3
Health	
Vapor Irritant	1
Liquid or Solid Irritant	0
Poisons	0
Water Pollution	
Human Toxicity	1
Aquatic Toxicity	1
Aesthetic Effect	1
Reactivity	
Other Chemicals	2
Water	0
Self-Reaction	1

12.3 **NFPA Hazard Classifications:**

Category	Classification
Health Hazard (Blue)	1
Flammability (Red)	3
Reactivity (Yellow)	0

13. PHYSICAL AND CHEMICAL PROPERTIES

13.1 **Physical State at 15°C and 1 atm:** Liquid

13.2 **Molecular Weight:** 58.08

13.3 **Boiling Point at 1 atm:** 133°F = 56.1°C = 329.3°K

13.4 **Freezing Point:** −138°F = −94.7°C = 178.5°K

13.5 **Critical Temperature:** 455°F = 235°C = 508°K

13.6 **Critical Pressure:** 682 psia = 46.4 atm = 4.70 MN/m^2

13.7 **Specific Gravity:** 0.791 at 20°C (liquid)

13.8 **Liquid Surface Tension:** Not pertinent

13.9 **Liquid-Water Interfacial Tension:** Not pertinent

13.10 **Vapor (Gas) Specific Gravity:** 2.0

13.11 **Ratio of Specific Heats of Vapor (Gas):** 1.127

13.12 **Latent Heat of Vaporization:** 220 Btu/lb = 122 cal/g = 5.11×10^5 J/kg

13.13 **Heat of Combustion:** −12,250 Btu/lb = −6808 cal/g = -285.0×10^5 J/kg

13.14 **Heat of Decomposition:** Not pertinent

13.15 **Heat of Solution:** Not pertinent

13.16 **Heat of Polymerization:** Not pertinent

NOTES

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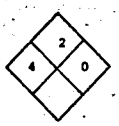
ETHANOLAMINE



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO.

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS: 2 amino ethanol

FORMULA: $NH_2CH_2CH_2OH$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD_{50} mg/kg. ORAL	LD_{50} mg/kg. PERCUT.	LC_{50} SPECIES	LC_{50} CONC.
			2100		rat	
				1000	rabbit	

SECTION III PHYSICAL DATA MW - 61.08

BOILING POINT: 171°C °F.

VAPOR PRESSURE: at 60°C mm Hg.

MELTING POINT: 11°C °F.

VAPOR DENSITY (Air = 1): 2.1

SPECIFIC GRAVITY (H_2O = 1): 1.02

EVAPORATION RATE (= 1)

SOLUBILITY IN WATER Pts/100 pts H_2O: very soluble

VOLATILE % Vol. % Wt.

APPEARANCE AND ODOR: colorless oil, ammoniacal odor.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: 185°F

METHOD USED

FLAMMABLE (EXPLOSIVE) LIMITS: UPPER / LOWER

EXTINGUISHING MEDIA: alcohol foam, water, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL: 3 PPM, 6 mg/C.M.

CARCINOGENIC: no

PRINCIPLE ROUTES OF ABSORPTION: ingestion, inhalation

SKIN AND EYE IRRITATION: severe

RELEVANT SYMPTOMS OF EXPOSURE: Affects central nervous system, eye and respiratory tract irritation.

EFFECTS OF CHRONIC EXPOSURE: Weight loss, decrease in alertness, skin irritation, liver and kidney damage.

EMERGENCY AND FIRST AID PROCEDURES: If swallowed - drink water, fruit juice, get medical aid; inhalation - rest; wash eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Take up liquid in sodium bisulfite, then add water.

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

MECHANICAL (GENERAL)

SPECIAL

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE: goggles

GLOVES: rubber (butyl)

RESPIRATOR: with proper filter

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

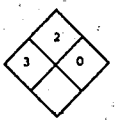
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Store in well-ventilated area, away from flammable material.

OTHER PRECAUTIONS

SIGNATURE

DATE

β-ETHOXYETHYL ACETATE



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME

EMERGENCY TELEPHONE NO

ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE)

TRADE NAME AND SYNONYMS: Cellosolve acetate

CHEMICAL FAMILY

CHEMICAL NAME AND SYNONYMS: 2 Ethoxyethyl Acetate

FORMULA: $CH_3CO_2CH_2CH_2OC_2H_5$

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD_{50} mg/kg ORAL	LD_{50} mg/kg PERCUT.	LC_{50} SPECIES	LC_{50} CONC.
			1910		guinea pig	
LDLO - oral - human 500 mg/kg			5100		rat	
lowest published lethal concentration in air				15,500	rabbit	
inhalation - rat 1500 PPM			1910		guinea pig	

SECTION III PHYSICAL DATA MW - 132.17

BOILING POINT: 156°C °F.

VAPOR PRESSURE: at 20°C mm Hg. 1.2

MELTING POINT: -62°C °F.

VAPOR DENSITY (Air = 1): 4.72

SPECIFIC GRAVITY (H_2O = 1): 0.97

EVAPORATION RATE (= 1)

SOLUBILITY IN WATER Pts/100 pts H_2O: soluble

VOLATILE % Vol. % Wt.

APPEARANCE AND ODOR: colorless liquid, pleasant odor, bitter taste.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: 120°F

METHOD USED: COC

FLAMMABLE (EXPLOSIVE) LIMITS: UPPER / LOWER 1.7%

EXTINGUISHING MEDIA: Alcohol foam, carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING PROCEDURES

UNUSUAL FIRE AND EXPLOSION HAZARDS

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL: TLV - 100 PPM, 540 mg/C.M. (skin)

CARCINOGENIC: no

PRINCIPLE ROUTES OF ABSORPTION: inhalation, ingestion, skin

SKIN AND EYE IRRITATION: slightly

RELEVANT SYMPTOMS OF EXPOSURE: restlessness, drowsiness, coma, irritation of eyes & nose.

EFFECTS OF CHRONIC EXPOSURE: kidney injury

EMERGENCY AND FIRST AID PROCEDURES: If swallowed - give emetic, get medical aid; inhalation - rest; wash from eyes and skin.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION

INCOMPATABILITY (MATERIALS TO AVOID)

HAZARDOUS DECOMPOSITION PRODUCTS

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

WASTE DISPOSAL METHOD

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS LOCAL EXHAUST

MECHANICAL (GENERAL)

SPECIAL

PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE: goggles

GLOVES: rubber

RESPIRATOR

OTHER PROTECTIVE EQUIPMENT

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

OTHER PRECAUTIONS

SIGNATURE

DATE

EAL

ETHYL ALCOHOL

Common Synonyms
Ethanol
Alcohol
Grain alcohol
Denatured alcohol

Watery liquid — Colorless — Alcohol odor

Floats and mixes with water. Flammable, irritating vapor is produced.

Stop discharge if possible. Keep people away.
Shut off ignition sources and call fire department.
Stay upwind and use water spray to "knock down" vapor.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

FLAMMABLE.
Flashback along vapor trail may occur.
Vapor may explode if ignited in an enclosed area.
Extinguish with dry chemical, alcohol foam, or carbon dioxide.
Water may be ineffective on fire.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Irritating to eyes, nose and throat.
Move to fresh air.

LIQUID
Not harmful.

Water Pollution

Dangerous to aquatic life in high concentrations.
May be dangerous if it enters water intakes.
Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook, CG 446-4)

Issue warning—high flammability
Disperse and flush.

2. LABEL

Red

3. CHEMICAL DESIGNATIONS

3.1 **Synonyms:**

Alcohol	Fermentation alcohol
Cologne spirit	Grain alcohol
Denatured alcohol	Spirit
Ethanol	Spirits of wine

3.2 **Coast Guard Compatibility Classification:** Alcohol

3.3 **Chemical Formula:** C_2H_5OH

3.4 **IMCO/United Nations Numerical Designation:** 3.2/1170

4. OBSERVABLE CHARACTERISTICS

4.1 **Physical State (as shipped):** Liquid

4.2 **Color:** Colorless

4.3 **Odor:** Mild, rather pleasant; like wine or whiskey. (Denatured alcohol may be unpleasant.)

5. HEALTH HAZARDS

5.1 **Personal Protective Equipment:** All-purpose canister; safety goggles. Avoid contact with liquid and inhalation of vapors.

5.2 **Symptoms Following Exposure:** Irritation of eyes, nose and throat. Headache and drowsiness may occur. Liquid causes intoxication.

5.3 **Treatment for Exposure:** INHALATION: if breathing is affected, remove victim to fresh air; call physician; administer oxygen. Speed is of primary importance. EYES OR SKIN: flush with water.

5.4 **Toxicity by Inhalation (Threshold Limit Value):** 1000 ppm

5.5 **Short-Term Inhalation Limits:** 5000 ppm for 15 min.

5.6 **Toxicity by Ingestion:** Grade I; LD_{50} 5 to 15 g/kg

5.7 **Late Toxicity:** None

5.8 **Vapor (Gas) Irritant Characteristics:** Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary.

5.9 **Liquid or Solid Irritant Characteristics:** No appreciable hazard. Practically harmless to the skin.

5.10 **Odor Threshold:** 10 ppm

6. FIRE HAZARDS

6.1 **Flash Point:** 55°F C.C.; 64°F O.C.

6.2 **Flammable Limits in Air:** 3.3%—19%

6.3 **Fire Extinguishing Agents:** Carbon dioxide, dry chemical, water spray, alcohol foam

6.4 **Fire Extinguishing Agents Not to be Used:** None

6.5 **Special Hazards of Combustion Products:** None

6.6 **Behavior in Fire:** Not pertinent

6.7 **Ignition Temperature:** 689°F

6.8 **Electrical Hazard:** Class I, Group D

6.9 **Burning Rate:** 3.9 mm/min.

7. CHEMICAL REACTIVITY

7.1 **Reactivity with Water:** No reaction

7.2 **Reactivity with Common Materials:** No reaction

7.3 **Stability During Transport:** Stable

7.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent

7.5 **Polymerization:** Not pertinent

7.6 **Inhibitor of Polymerization:** Not pertinent

8. WATER POLLUTION

8.1 **Aquatic Toxicity:** 250 ppm/6 hr/goldfish/lethal/fresh water

8.2 **Waterfowl Toxicity:** Data not available

8.3 **Biological Oxygen Demand (BOD):** 125%, 5 days; 44.2% (theor.), 5 days; 71.2% (theor.), 20 days

8.4 **Food Chain Concentration Potential:** None

9. SELECTED MANUFACTURERS

1. Commercial Solvents Corp.
   245 Park Ave.
   New York, N. Y. 10017
2. National Distillers and Chemical Corp.
   U. S. Industrial Chemicals Co. Division
   Tuscola, Ill. 61953
3. Publicker Industries, Inc.
   1429 Walnut St.
   Philadelphia, Pa. 19102

10. SHIPPING INFORMATION

10.1 **Grades or Purity:** Anhydrous (200 proof); 190 proof; specially denatured; completely denatured

10.2 **Storage Temperature:** Ambient

10.3 **Inert Atmosphere:** No requirement

10.4 **Venting:** Open (flame arrester) or pressure-vacuum

11. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook, CG 446-3)

A-P-Q-R-S

12. HAZARD CLASSIFICATIONS

12.1 **Code of Federal Regulations:** Flammable liquid

12.2 **NAS Hazard Rating for Bulk Water Transportation:**

Category	Rating
Fire	3
Health	
Vapor Irritant	1
Liquid or Solid Irritant	0
Poisons	1
Water Pollution	
Human Toxicity	1
Aquatic Toxicity	1
Aesthetic Effect	1
Reactivity	
Other Chemicals	2
Water	0
Self-Reaction	0

12.3 **NFPA Hazard Classifications:**

Category	Classification
Health Hazard (Blue)	0
Flammability (Red)	3
Reactivity (Yellow)	0

13. PHYSICAL AND CHEMICAL PROPERTIES

13.1 **Physical State at 15°C and 1 atm:** Liquid

13.2 **Molecular Weight:** 46.07

13.3 **Boiling Point at 1 atm:** 172.9°F = 78.3°C = 351.5°K

13.4 **Freezing Point:** −173°F = −114°C = 159°K

13.5 **Critical Temperature:** 469.6°F = 243.1°C = 516.3°K

13.6 **Critical Pressure:** 926 psia = 63.0 atm = 6.38 MN/m^2

13.7 **Specific Gravity:** 0.790 at 20°C (liquid)

13.8 **Liquid Surface Tension:** Not pertinent

13.9 **Liquid-Water Interfacial Tension:** Not pertinent

13.10 **Vapor (Gas) Specific Gravity:** 1.6

13.11 **Ratio of Specific Heats of Vapor (Gas):** 1.128

13.12 **Latent Heat of Vaporization:** 360 Btu/lb = 200 cal/g = 8.37 × 10^5 J/kg

13.13 **Heat of Combustion:** −11,570 Btu/lb = 6425 cal/g = −268.8 × 10^5 J/kg

13.14 **Heat of Decomposition:** Not pertinent

13.15 **Heat of Solution:** −99 Btu/lb = −55 cal/g = −2.3 × 10^5 J/kg

13.16 **Heat of Polymerization:** Not pertinent

NOTES

REVISED 1978

IPA — ISOPROPYL ALCOHOL

Common Synonyms
Isopropanol
2-Propanol
Dimethylcarbinol
sec-Propyl alcohol
Rubbing alcohol

Watery liquid — Colorless — Unpleasant alcohol odor like rubbing alcohol

Floats and mixes with water. Flammable, irritating vapor is produced.

Stop discharge if possible. Keep people away.
Shut off ignition sources and call fire department.
Stay upwind and use water spray to "knock down" vapor.
Avoid contact with liquid and vapor.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

FLAMMABLE.
Flashback along vapor trail may occur.
Vapor may explode if ignited in an enclosed area.
Extinguish with dry chemical, alcohol foam, or carbon dioxide.
Water may be ineffective on fire.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Irritating to eyes, nose and throat.
Move to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID
Irritating to eyes.
Harmful if swallowed.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.

Water Pollution

Dangerous to aquatic life in high concentrations.
May be dangerous if it enters water intakes.
Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook, CG 446-4)

Issue warning—high flammability
Disperse and flush

2. LABEL

Red

3. CHEMICAL DESIGNATIONS

3.1 **Synonyms:**
Dimethylcarbinol — 2-Propanol
Isopropanol — sec-Propyl alcohol
Petrohol — Rubbing alcohol

3.2 **Coast Guard Compatibility Classification:** Alcohol

3.3 **Chemical Formula:** $CH_3CH(OH)CH_3$

3.4 **IMCO/United Nations Numerical Designation:** 3.2/1219

4. OBSERVABLE CHARACTERISTICS

4.1 **Physical State (as shipped):** Liquid

4.2 **Color:** Colorless

4.3 **Odor:** Like ethyl alcohol; sharp, somewhat unpleasant; characteristic mild alcoholic; nonresidual

5. HEALTH HAZARDS

5.1 **Personal Protective Equipment:** Organic vapor canister or air-supplied mask; chemical goggles or face splash shield.

5.2 **Symptoms Following Exposure:** Vapors cause mild irritation of eyes and upper respiratory tract; high concentrations may be anesthetic. Liquid irritates eyes and may cause injury; harmless to skin; if ingested causes drunkenness and vomiting.

5.3 **Treatment for Exposure:** INHALATION: if victim is overcome by vapors, remove from exposure immediately; call a physician; if breathing is irregular or has stopped, start resuscitation and administer oxygen. EYES: flush with water for at least 15 min.

5.4 **Toxicity by Inhalation (Threshold Limit Value):** 400 ppm

5.5 **Short-Term Inhalation Limits:** 400 ppm for 10 min.

5.6 **Toxicity by Ingestion:** Grade 1; LD_{50} 5 to 15 g/kg (rat: LD_{50}: 5.84 g/kg)

5.7 **Late Toxicity:** Data not available

5.8 **Vapor (Gas) Irritant Characteristics:** Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary.

5.9 **Liquid or Solid Irritant Characteristics:** No appreciable hazard. Practically harmless to the skin.

5.10 **Odor Threshold:** 90 mg/m³

6. FIRE HAZARDS

6.1 **Flash Point:** 65°F O.C.; 53°F C.C.

6.2 **Flammable Limits in Air:** 2.3%—12.7%

6.3 **Fire Extinguishing Agents:** Alcohol foam, dry chemical, or carbon dioxide

6.4 **Fire Extinguishing Agents Not to be Used:** Water may be ineffective

6.5 **Special Hazards of Combustion Products:** Not pertinent

6.6 **Behavior in Fire:** Not pertinent

6.7 **Ignition Temperature:** 750°F

6.8 **Electrical Hazard:** Class I, Group D

6.9 **Burning Rate:** 2.3 mm/min.

7. CHEMICAL REACTIVITY

7.1 **Reactivity with Water:** No reaction

7.2 **Reactivity with Common Materials:** No reaction

7.3 **Stability During Transport:** Stable

7.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent

7.5 **Polymerization:** Not pertinent

7.6 **Inhibitor of Polymerization:** Not pertinent

8. WATER POLLUTION

8.1 **Aquatic Toxicity:** 900-1100 ppm/24 hr/chub/critical range/fresh water

8.2 **Waterfowl Toxicity:** Data not available

8.3 **Biological Oxygen Demand (BOD):** 133%, 5 days

8.4 **Food Chain Concentration Potential:** None

9. SELECTED MANUFACTURERS

1. ARCO Chemical Co.
   260 South Broad St.
   Philadelphia, Pa. 19101
2. Shell Chemical Co.
   Industrial Chemical Division
   Houston, Tex. 77001
3. Union Carbide Corp.
   Chemicals and Plastics Division
   270 Park Ave.
   New York, N. Y. 10017

10. SHIPPING INFORMATION

10.1 **Grades or Purity:** 91%, 95%, Anhydrous

10.2 **Storage Temperature:** Ambient

10.3 **Inert Atmosphere:** No requirement

10.4 **Venting:** Open (flame arrester) or pressure-vacuum

11. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook, CG 446-3)

A-P-Q-R-S

12. HAZARD CLASSIFICATIONS

12.1 **Code of Federal Regulations:** Flammable liquid

12.2 **NAS Hazard Rating for Bulk Water Transportation:**

Category	Rating
Fire	3
Health	
Vapor Irritant	1
Liquid or Solid Irritant	0
Poisons	2
Water Pollution	
Human Toxicity	2
Aquatic Toxicity	2
Aesthetic Effect	1
Reactivity	
Other Chemicals	2
Water	0
Self-Reaction	0

12.3 **NFPA Hazard Classifications:**

Category	Classification
Health Hazard (Blue)	1
Flammability (Red)	3
Reactivity (Yellow)	0

13. PHYSICAL AND CHEMICAL PROPERTIES

13.1 **Physical State at 15°C and 1 atm:** Liquid

13.2 **Molecular Weight:** 60.10

13.3 **Boiling Point at 1 atm:** 180.1°F = 82.3°C = 355.5°K

13.4 **Freezing Point:** −127.3°F = −88.5°C = 184.7°K

13.5 **Critical Temperature:** 455.4°F = 235.2°C = 508.4°K

13.6 **Critical Pressure:** 691 psia = 47.0 atm = 4.76 MN/m²

13.7 **Specific Gravity:** 0.785 at 20°C (liquid)

13.8 **Liquid Surface Tension:** Not pertinent

13.9 **Liquid-Water Interfacial Tension:** Not pertinent

13.10 **Vapor (Gas) Specific Gravity:** 2.1

13.11 **Ratio of Specific Heats of Vapor (Gas):** 1.105

13.12 **Latent Heat of Vaporization:** 286 Btu/lb = 159 cal/g = 6.66 × 10⁵ J/kg

13.13 **Heat of Combustion:** −12,960 Btu/lb = −7,201 cal/g = −301.5 × 10⁵ J/kg

13.14 **Heat of Decomposition:** Not pertinent

13.15 **Heat of Solution:** (est.) −9 Btu/lb = −5 cal/g = −0.2 × 10⁵ J/kg

13.16 **Heat of Polymerization:** Not pertinent

NOTES

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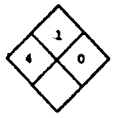
LEAD METAL



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME:
EMERGENCY TELEPHONE NO.:
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE):
TRADE NAME AND SYNONYMS:
CHEMICAL FAMILY:
CHEMICAL NAME AND SYNONYMS: Lead
FORMULA: Pb

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD_{50} ORAL	LD_{50} PERCUT.	LC_{50} SPECIES	LC_{50} CONC.
Oral - woman - TDLO 450 mg/kg - 6Y						
Al lowest published lethal dose						
Intraperitoneal - guinea pig 100 mg/kg						

SECTION III PHYSICAL DATA MW 207.19

BOILING POINT: 1744° C. °F.
VAPOR PRESSURE: mm Hg.
MELTING POINT: 327.5 °F.
VAPOR DENSITY (Air = 1):
SPECIFIC GRAVITY (H2O = 1): 11.3436
EVAPORATION RATE: = 1
SOLUBILITY IN WATER: Insoluble
VOLATILE: % Vol. % Wt.
APPEARANCE AND ODOR: Silver blue soft metal.

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: None available
METHOD USED:
FLAMMABLE (EXPLOSIVE) LIMITS: UPPER / LOWER
EXTINGUISHING MEDIA: Not available
SPECIAL FIRE FIGHTING PROCEDURES:
UNUSUAL FIRE AND EXPLOSION HAZARDS:

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL: TLV - 0.05 mg/C.M.
CARCINOGENIC: No
PRINCIPLE ROUTES OF ABSORPTION: Inhalation of dust or fume, ingestion
SKIN AND EYE IRRITATION: No
RELEVANT SYMPTOMS OF EXPOSURE: Abdominal pain, constipation, diarrhea, loss of appetite, muscular weakness, headache, line on gums, pyorrhea.
EFFECTS OF CHRONIC EXPOSURE: Loss of appetite, muscular weakness, loss of weight, blue line on gums.
EMERGENCY AND FIRST AID PROCEDURES: If swallowed - give egg white, milk or tannin, also gastric lavage with 1% solution of magnesium sulfate if inhaled - rest, keep warm, get medical aid.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY:
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION:
INCOMPATIBILITY (MATERIALS TO AVOID): Ammonium nitrate, hydrogen peroxide, zirconium.
HAZARDOUS DECOMPOSITION PRODUCTS:

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
WASTE DISPOSAL METHOD:

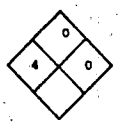
SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS (LOCAL EXHAUST):
MECHANICAL (GENERAL):
SPECIAL:
OTHER PROTECTIVE EQUIPMENT:
PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE: Goggles
GLOVES: Rubber
RESPIRATOR: With proper filter

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:
OTHER PRECAUTIONS:
SIGNATURE:
DATE:

LEAD OXIDE



SECTION I SOURCE AND NOMENCLATURE

MANUFACTURER'S NAME:
EMERGENCY TELEPHONE NO.:
ADDRESS (NUMBER, STREET, CITY, STATE, ZIP CODE):
TRADE NAME AND SYNONYMS: C.I. 77577, C.I. Pigment yellow 46
CHEMICAL FAMILY:
CHEMICAL NAME AND SYNONYMS: Litharge
FORMULA: PbO

SECTION II HAZARDOUS INGREDIENTS

BASIC MATERIAL	APPROXIMATE OR MAXIMUM % WT. OR VOL.	ESTABLISHED OSHA STANDARD	LD_{50} ORAL	LD_{50} PERCUT.	LC_{50} SPECIES	LC_{50} CONC.
			See Note			
Intraperitoneal - rat	LD50 450 mg/kg					

SECTION III PHYSICAL DATA MW-223.19

BOILING POINT: °F.
VAPOR PRESSURE: mm Hg.
MELTING POINT: 888° C. °F.
VAPOR DENSITY (Air = 1):
SPECIFIC GRAVITY (H2O = 1): 9.53
EVAPORATION RATE: = 1
SOLUBILITY IN WATER: 0.0068
VOLATILE: % Vol. % Wt.
APPEARANCE AND ODOR: Yellow powder

SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: Will not burn
METHOD USED:
FLAMMABLE (EXPLOSIVE) LIMITS: UPPER / LOWER
EXTINGUISHING MEDIA: Flood with water
SPECIAL FIRE FIGHTING PROCEDURES:
UNUSUAL FIRE AND EXPLOSION HAZARDS:

SECTION V HEALTH HAZARD DATA

TOXIC LEVEL: TLV - TWA 0.054 mg/m³
CARCINOGENIC: no
PRINCIPLE ROUTES OF ABSORPTION: Inhalation of dust or ingestion
SKIN AND EYE IRRITATION: No
RELEVANT SYMPTOMS OF EXPOSURE: Headache, muscular weakness, constipation, collapse, gastro-enteric symptoms, abdominal pain, vomiting.
EFFECTS OF CHRONIC EXPOSURE: Loss of appetite, anemia, loss of weight, blue line on gums.
EMERGENCY AND FIRST AID PROCEDURES: If inhaled - rest, get medical attention; if swallowed - wash mouth, give emetic, then epsom salts 30 g/250 ml. of hot water, get medical attention; wash from skin and eyes.

SECTION VI REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY:
CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION:
INCOMPATIBILITY (MATERIALS TO AVOID):
HAZARDOUS DECOMPOSITION PRODUCTS:

SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
WASTE DISPOSAL METHOD:

SECTION VIII SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS (LOCAL EXHAUST):
MECHANICAL (GENERAL):
SPECIAL:
OTHER PROTECTIVE EQUIPMENT: Face shield
PROTECTIVE EQUIPMENT (SPECIFY TYPES) EYE: Face shield
GLOVES:
RESPIRATOR: With appropriate filter

SECTION IX SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE:
OTHER PRECAUTIONS:
SIGNATURE:
DATE:

MAL

METHYL ALCOHOL

Common Synonyms
Methanol
Wood alcohol
Wood naphtha
Wood spirit
Pyroxylic spirit

Watery liquid — Colorless — Alcohol odor

Floats and mixes with water. Flammable, irritating vapor is produced.

Stop discharge if possible. Keep people away.
Shut off ignition sources and call fire department.
Stay upwind and use water spray to "knock down" vapor.
Avoid contact with liquid and vapor.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

FLAMMABLE.
Vapor may explode if ignited in an enclosed area.
Flashback along vapor trail may occur.
Extinguish with dry chemical, alcohol foam, or carbon dioxide.
Water may be ineffective on fire.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Irritating to eyes, nose and throat.
If inhaled, will cause dizziness, headache, difficult breathing, or loss of consciousness.
Move to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID:
POISONOUS IF SWALLOWED.
Irritating to skin and eyes.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk and have victim induce vomiting.
IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.

Water Pollution

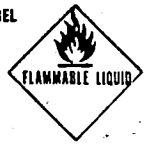
Dangerous to aquatic life in high concentrations.
May be dangerous if it enters water intakes.
Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook, CG 446-4)

Issue warning - high flammability
Restrict access
Evacuate area
Disperse and flush

2. LABEL



Red

3. CHEMICAL DESIGNATIONS

3.1 **Synonyms:** Colonial spirit, Wood alcohol, Columbian spirit, Wood naphtha, Methanol, Wood spirit

3.2 **Coast Guard Compatibility Classification:** Alcohol

3.3 **Chemical Formula:** CH_3OH

3.4 **IMCO/United Nations Numerical Designation:** 3.2/1230

4. OBSERVABLE CHARACTERISTICS

4.1 **Physical State (as shipped):** Liquid

4.2 **Color:** Colorless

4.3 **Odor:** Faint alcohol; like ethyl alcohol; faintly sweet; characteristic pungent

5. HEALTH HAZARDS

5.1 **Personal Protective Equipment:** Approved canister mask for high vapor concentrations; safety goggles; rubber gloves.

5.2 **Symptoms Following Exposure:** Exposure to excessive vapor causes eye irritation, headache, fatigue and drowsiness. High concentrations can produce central nervous system depression and optic nerve damage. 50,000 ppm will probably cause death in 1 to 2 hrs. Can be absorbed through skin. Swallowing may cause death or eye damage.

5.3 **Treatment for Exposure:** Remove victim from exposure and apply artifical respiration if breathing has ceased. INGESTION: induce vomiting, then give 2 teaspoons of baking soda in glass of water; call a physician. SKIN OR EYES: flush with water for 15 min.

5.4 **Toxicity by Inhalation (Threshold Limit Value):** 200 ppm

5.5 **Short-Term Inhalation Limits:** 260 mg/m^3 for 60 min.

5.6 **Toxicity by Ingestion:** Grade 1; 5 to 15 g/kg (rat)

5.7 **Late Toxicity:** None

5.8 **Vapor (Gas) Irritant Characteristics:** Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary.

5.9 **Liquid or Solid Irritant Characteristics:** Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.

5.10 **Odor Threshold:** 100 ppm

6. FIRE HAZARDS

6.1 **Flash Point:** 54°F C.C.; 61°F O.C.

6.2 **Flammable Limits in Air:** 6.0%—36.5%

6.3 **Fire Extinguishing Agents:** Alcohol foam, dry chemical, or carbon dioxide

6.4 **Fire Extinguishing Agents Not to be Used:** Water may be ineffective.

6.5 **Special Hazards of Combustion Products:** Not pertinent

6.6 **Behavior in Fire:** Containers may explode.

6.7 **Ignition Temperature:** 867°F

6.8 **Electrical Hazard:** Class I, Group D

6.9 **Burning Rate:** 1.7 mm/min.

7. CHEMICAL REACTIVITY

7.1 **Reactivity with Water:** No reaction

7.2 **Reactivity with Common Materials:** No reaction

7.3 **Stability During Transport:** Stable

7.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent

7.5 **Polymerization:** Not pertinent

7.6 **Inhibitor of Polymerization:** Not pertinent

8. WATER POLLUTION

8.1 **Aquatic Toxicity:** 250 ppm/11 hr/goldfish/died/fresh water

8.2 **Waterfowl Toxicity:** Data not available

8.3 **Biological Oxygen Demand (BOD):** 0.6 to 1.12 lb/lb in 5 days

8.4 **Food Chain Concentration Potential:** None

9. SELECTED MANUFACTURERS

1. Borden Inc.
   Borden Chemical Division
   Geismar, La. 70734
2. Celanese Corp.
   Celanese Chemical Co. Division
   245 Park Ave.
   New York, N. Y. 10017
3. E. I. du Pont de Nemours & Co., Inc.
   Industrial and Biochemical Dept.
   Wilmington, Del. 19898

10. SHIPPING INFORMATION

10.1 **Grades or Purity:** CP, Crude, ACS: all 99.9%

10.2 **Storage Temperature:** Ambient

10.3 **Inert Atmosphere:** No requirement

10.4 **Venting:** Open (flame arrester) or pressure-vacuum

11. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook, CG 446-3)

A-P-Q-R-S

12. HAZARD CLASSIFICATIONS

12.1 **Code of Federal Regulations:** Flammable liquid

12.2 **NAS Hazard Rating for Bulk Water Transportation:**

Category	Rating
Fire	3
Health	
Vapor Irritant	1
Liquid or Solid Irritant	1
Poisons	2
Water Pollution	
Human Toxicity	1
Aquatic Toxicity	1
Aesthetic Effect	1
Reactivity	
Other Chemicals	2
Water	0
Self-Reaction	0

12.3 **NFPA Hazard Classifications:**

Category	Classification
Health Hazard (Blue)	1
Flammability (Red)	3
Reactivity (Yellow)	0

13. PHYSICAL AND CHEMICAL PROPERTIES

13.1 **Physical State at 15°C and 1 atm:** Liquid

13.2 **Molecular Weight:** 32.04

13.3 **Boiling Point at 1 atm:** 148.1°F = 64.5°C = 337.7°K

13.4 **Freezing Point:** −144.0°F = −97.8°C = 175.4°K

13.5 **Critical Temperature:** 464°F = 240°C = 513°K

13.6 **Critical Pressure:** 1142.0 psia = 77.7 atm = 7.87 MN/m^2

13.7 **Specific Gravity:** 0.792 at 20°C (liquid)

13.8 **Liquid Surface Tension:** Not pertinent

13.9 **Liquid-Water Interfacial Tension:** Not pertinent

13.10 **Vapor (Gas) Specific Gravity:** 1.1

13.11 **Ratio of Specific Heats of Vapor (Gas):** 1.254

13.12 **Latent Heat of Vaporization:** 473.0 Btu/lb = 262.8 cal/g = 11.00 × 10^5 J/kg

13.13 **Heat of Combustion:** −8419 Btu/lb = −4677 cal/g = −195.8 × 10^5 J/kg

13.14 **Heat of Decomposition:** Not pertinent

13.15 **Heat of Solution:** (est.) −9 Btu/lb = −5 cal/g = −0.2 × 10^5 J/kg

13.16 **Heat of Polymerization:** Not pertinent

NOTES

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DCM — DICHLOROMETHANE

Common Synonyms
Methylene chloride
Methylene dichloride

Watery liquid — Colorless — Sweet, pleasant odor

Sinks in water. Irritating vapor is produced.

Stop discharge if possible.
Avoid contact with liquid and vapor.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

Not flammable.
POISONOUS GASES ARE PRODUCED WHEN HEATED.
Wear goggles and self-contained breathing apparatus.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Irritating to eyes, nose and throat.
If inhaled, will cause nausea and dizziness.
Move to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID
Irritating to skin and eyes.
Harmful if swallowed.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.

Water Pollution

Effect of low concentrations on aquatic life is unknown.
May be dangerous if it enters water intakes.
Notify local health and pollution control officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook, CG 446-4)

Disperse and flush

2. LABELS

No hazard label required by Code of Federal Regulations

3. CHEMICAL DESIGNATIONS

3.1 **Synonyms:** Methylene chloride; Methylene dichloride
3.2 **Coast Guard Compatibility Classification:** Halogenated hydrocarbon
3.3 **Chemical Formula:** CH_2Cl_2
3.4 **IMCO/United Nations Numerical Designation:** 9.0/1593

4. OBSERVABLE CHARACTERISTICS

4.1 **Physical State (as shipped):** Liquid
4.2 **Color:** Colorless
4.3 **Odor:** Pleasant, aromatic; like chloroform; sweet, ethereal

5. HEALTH HAZARDS

5.1 **Personal Protective Equipment:** Organic vapor canister mask, safety glasses, protective clothing.
5.2 **Symptoms Following Exposure:** INHALATION: anesthetic effects, nausea and drunkenness. CONTACT WITH SKIN AND EYES: skin irritation, irritation of eyes and nose.
5.3 **Treatment for Exposure:** INHALATION: remove from exposure. Give oxygen if needed. INGESTION: no specific antidote. CONTACT WITH SKIN AND EYES: remove contaminated clothing; wash skin or eyes if affected.
5.4 **Toxicity by Inhalation (Threshold Limit Value):** 500 ppm
5.5 **Short-Term Inhalation Limits:** 100 ppm for 60 min.
5.6 **Toxicity by Ingestion:** Grade 2; LD_{50} 0.5 to 5 g/kg
5.7 **Late Toxicity:** None
5.8 **Vapor (Gas) Irritant Characteristics:** Vapors cause moderate irritation such that personnel will find high concentrations unpleasant. The effect is temporary.
5.9 **Liquid or Solid Irritant Characteristics:** Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.
5.10 **Odor Threshold:** 205-307 ppm

6. FIRE HAZARDS

6.1 **Flash Point:** Not flammable under conditions likely to be encountered.
6.2 **Flammable Limits in Air:** 12% - 19%
6.3 **Fire Extinguishing Agents:** Not pertinent
6.4 **Fire Extinguishing Agents Not to be Used:** Not pertinent
6.5 **Special Hazards of Combustion Products:** Dissociation products generated in a fire may be irritating or toxic.
6.6 **Behavior in Fire:** Not pertinent
6.7 **Ignition Temperature:** 1184°F
6.8 **Electrical Hazard:** Not pertinent
6.9 **Burning Rate:** Not pertinent

7. CHEMICAL REACTIVITY

7.1 **Reactivity with Water:** No reaction
7.2 **Reactivity with Common Materials:** No reaction
7.3 **Stability During Transport:** Stable
7.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent
7.5 **Polymerization:** Not pertinent
7.6 **Inhibitor of Polymerization:** Not pertinent

8. WATER POLLUTION

8.1 **Aquatic Toxicity:** Not pertinent
8.2 **Waterfowl Toxicity:** Not pertinent
8.3 **Biological Oxygen Demand (BOD):** Not pertinent
8.4 **Food Chain Concentration Potential:** None

9. SELECTED MANUFACTURERS

1. Ancon Chemical Corp.
   Westlake, La. 70669
2. Dow Chemical Co.
   Midland, Mich. 48640
3. Ethyl Corp.
   Industrial Chemicals Division
   451 Florida St.
   Baton Rouge, La. 70801

10. SHIPPING INFORMATION

10.1 **Grades or Purity:** Aerosol grade; technical grade
10.2 **Storage Temperature:** Data not available
10.3 **Inert Atmosphere:** Inerted
10.4 **Venting:** Data not available

11. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook, CG 446-3)

A-P-X

12. HAZARD CLASSIFICATIONS

12.1 **Code of Federal Regulations:** ORM-A
12.2 **NAS Hazard Rating for Bulk Water Transportation:**

Category	Rating
Fire	1
Health	
Vapor Irritant	2
Liquid or Solid Irritant	1
Poisons	2
Water Pollution	
Human Toxicity	1
Aquatic Toxicity	2
Aesthetic Effect	2
Reactivity	
Other Chemicals	1
Water	0
Self-Reaction	0

12.3 **NFPA Hazard Classifications:**

Category	Classification
Health Hazard (Blue)	2
Flammability (Red)	1
Reactivity (Yellow)	0

13. PHYSICAL AND CHEMICAL PROPERTIES

13.1 **Physical State at 15°C and 1 atm:** Liquid
13.2 **Molecular Weight:** 84.93
13.3 **Boiling Point at 1 atm:** 104°F = 39.8°C = 313.0°K
13.4 **Freezing Point:** −142°F = −96.7°C = 176.5°K
13.5 **Critical Temperature:** 473°F = 245°C = 518°K
13.6 **Critical Pressure:** 895 psia = 60.9 atm = 6.17 MN/m²
13.7 **Specific Gravity:** 1.322 at 20°C (liquid)
13.8 **Liquid Surface Tension:** Not pertinent
13.9 **Liquid-Water Interfacial Tension:** Not pertinent
13.10 **Vapor (Gas) Specific Gravity:** 2.9
13.11 **Ratio of Specific Heats of Vapor (Gas):** 1.199
13.12 **Latent Heat of Vaporization:** 142 Btu/lb = 78.7 cal/g = 3.30×10^5 J/kg
13.13 **Heat of Combustion:** Not pertinent
13.14 **Heat of Decomposition:** Not pertinent
13.15 **Heat of Solution:** Not pertinent
13.16 **Heat of Polymerization:** Not pertinent

NOTES

REVISED 1978

MEK — METHYL ETHYL KETONE

Common Synonyms
MEK
2-Butanone
Ethyl methyl ketone

Liquid — Colorless — Sweet odor

Floats and mixes with water. Flammable, irritating vapor is produced.

Stop discharge if possible. Keep people away.
Shut off ignition sources and call fire department.
Stay upwind and use water spray to "knock down" vapor.
Avoid contact with liquid and vapor.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

FLAMMABLE.
Flashback along vapor trail may occur.
Vapor may explode if ignited in an enclosed area.

Extinguish with dry chemical, alcohol foam, or carbon dioxide.
Water may be ineffective on fire.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Irritating to eyes, nose and throat.
If inhaled, will cause nausea, vomiting, headache, dizziness, difficult breathing, or loss of consciousness.

Move to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID
Will burn eyes.
Harmful if swallowed.

Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.

Water Pollution

Dangerous to aquatic life in high concentrations.
May be dangerous if it enters water intakes.

Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook, CG 446-4)

Issue warning—high flammability
Disperse and flush

2. LABEL

Red

3. CHEMICAL DESIGNATIONS

3.1 **Synonyms:** 2-Butanone
Ethyl methyl ketone
MEK

3.2 **Coast Guard Compatibility Classification:** Ketone

3.3 **Chemical Formula:** $CH_3COCH_2CH_3$

3.4 **IMCO/United Nations Numerical Designation:** 3.2/1193

4. OBSERVABLE CHARACTERISTICS

4.1 **Physical State (as shipped):** Liquid

4.2 **Color:** Colorless

4.3 **Odor:** Like acetone; pleasant; pungent

5. HEALTH HAZARDS

5.1 **Personal Protective Equipment:** Organic canister or air pack; plastic gloves; goggles or face shield.

5.2 **Symptoms Following Exposure:** Liquid causes eye burn. Vapor irritates eyes, nose, and throat; can cause headache, dizziness, nausea, weakness, and loss of consciousness.

5.3 **Treatment for Exposure:** INHALATION: remove victim to fresh air; if breathing is irregular or has stopped, start resuscitation and administer oxygen. EYES: wash with plenty of water for at least 15 min. and call physician.

5.4 **Toxicity by Inhalation (Threshold Limit Value):** 200 ppm

5.5 **Short-Term Inhalation Limits:** 290 mg/m³ for 60 min.

5.6 **Toxicity by Ingestion:** Grade 2; 0.5 to 5 g/kg (rat)

5.7 **Late Toxicity:** None

5.8 **Vapor (Gas) Irritant Characteristics:** Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary.

5.9 **Liquid or Solid Irritant Characteristics:** Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.

5.10 **Odor Threshold:** 10 ppm

6. FIRE HAZARDS

6.1 **Flash Point:** 20°F C.C.; 22°F O.C.

6.2 **Flammable Limits in Air:** 1.8%—11.5%

6.3 **Fire Extinguishing Agents:** Alcohol foam, dry chemical, or carbon dioxide

6.4 **Fire Extinguishing Agents Not to be Used:** Water may be ineffective

6.5 **Special Hazards of Combustion Products:** Not pertinent

6.6 **Behavior in Fire:** Not pertinent

6.7 **Ignition Temperature:** 961°F

6.8 **Electrical Hazard:** Class I, Group D

6.9 **Burning Rate:** 4.1 mm/min.

7. CHEMICAL REACTIVITY

7.1 **Reactivity with Water:** No reaction

7.2 **Reactivity with Common Materials:** No reaction

7.3 **Stability During Transport:** Stable

7.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent

7.5 **Polymerization:** Not pertinent

7.6 **Inhibitor of Polymerization:** Not pertinent

8. WATER POLLUTION

8.1 **Aquatic Toxicity:** 5640 mg/l /48 hr/bluegill/TL_m/fresh water

8.2 **Waterfowl Toxicity:** Data not available

8.3 **Biological Oxygen Demand (BOD):** 214%, 5 days

8.4 **Food Chain Concentration Potential:** None

9. SELECTED MANUFACTURERS

1. Celanese Corp.
   Celanese Chemical Co. Division
   245 Park Ave.
   New York, N. Y. 10017
2. Exxon Chemical Co.
   Houston, Tex. 77001
3. Shell Chemical Co.
   Industrial Chemicals Division
   Houston, Tex. 77001

10. SHIPPING INFORMATION

10.1 **Grades or Purity:** 99.5+%

10.2 **Storage Temperature:** Ambient

10.3 **Inert Atmosphere:** No requirement

10.4 **Venting:** Open (flame arrester) or pressure-vacuum

11. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook, CG 446-3)

A-P-Q-R-S

12. HAZARD CLASSIFICATIONS

12.1 **Code of Federal Regulations:** Flammable liquid

12.2 **NAS Hazard Rating for Bulk Water Transportation:**

Category	Rating
Fire	3
Health	
Vapor Irritant	1
Liquid or Solid Irritant	1
Poisons	2
Water Pollution	
Human Toxicity	2
Aquatic Toxicity	1
Aesthetic Effect	1
Reactivity	
Other Chemicals	2
Water	0
Self-Reaction	0

12.3 **NFPA Hazard Classifications:**

Category	Classification
Health Hazard (Blue)	1
Flammability (Red)	3
Reactivity (Yellow)	0

13. PHYSICAL AND CHEMICAL PROPERTIES

13.1 **Physical State at 15°C and 1 atm:** Liquid

13.2 **Molecular Weight:** 72.11

13.3 **Boiling Point at 1 atm:** 175.3°F = 79.6°C = 352.8°K

13.4 **Freezing Point:** −123.3°F = −86.3°C = 186.9°K

13.5 **Critical Temperature:** 504.5°F = 262.5°C = 535.7°K

13.6 **Critical Pressure:** 603 psia = 41.0 atm = 4.15 MN/m²

13.7 **Specific Gravity:** 0.806 at 20°C (liquid)

13.8 **Liquid Surface Tension:** Not pertinent

13.9 **Liquid-Water Interfacial Tension:** Not pertinent

13.10 **Vapor (Gas) Specific Gravity:** 2.5

13.11 **Ratio of Specific Heats of Vapor (Gas):** 1.075

13.12 **Latent Heat of Vaporization:** 191 Btu/lb = 106 cal/g = 4.44 × 10⁵ J/kg

13.13 **Heat of Combustion:** −13,480 Btu/lb = −7491 cal/g = −313.6 × 10⁵ J/kg

13.14 **Heat of Decomposition:** Not pertinent

13.15 **Heat of Solution:** (est.) −9 Btu/lb = −5 cal/g = −0.2 × 10⁵ J/kg

13.16 **Heat of Polymerization:** Not pertinent

NOTES

REVISED 1978

MIK — METHYL ISOBUTYL KETONE

Common Synonyms
4-Methyl-2-pentanone
Isobutyl methyl ketone
MIBK

Watery liquid — Colorless — Mild pleasant odor

Floats and mixes slowly with water. Flammable, irritating vapor is produced.

Stop discharge if possible. Keep people away.
Shut off ignition sources and call fire department.
Stay upwind and use water spray to "knock down" vapor.
Avoid contact with liquid and vapor.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

FLAMMABLE.
Flashback along vapor trail may occur.
Vapor may explode if ignited in an enclosed area.
Wear goggles and self-contained breathing apparatus.
Extinguish with dry chemical, alcohol foam, or carbon dioxide.
Water may be ineffective on fire.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Irritating to eyes, nose and throat.
If inhaled, will cause dizziness or loss of consciousness.
Move to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID
Irritating to skin and eyes.
Harmful if swallowed.

Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.

Water Pollution

Effect of low concentrations on aquatic life is unknown.
Floating to shoreline.
May be dangerous if it enters water intakes.
Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook, CG 446-4)

Issue warning—high flammability
Evacuate area
Disperse and flush

2. LABEL

Red

3. CHEMICAL DESIGNATIONS

3.1 **Synonyms:** Hexone; Isobutyl methyl ketone; Isopropylacetone; 4-Methyl-2-pentanone; MIBK; MIK

3.2 **Coast Guard Compatibility Classification:** Ketone

3.3 **Chemical Formula:** $(CH_3)_2CHCH_2COCH_3$

3.4 **IMCO/United Nations Numerical Designation:** 3.2/1245

4. OBSERVABLE CHARACTERISTICS

4.1 **Physical State (as shipped):** Liquid

4.2 **Color:** Colorless

4.3 **Odor:** Pleasant; mild, characteristic; sharp; non-residual; ketonic

5. HEALTH HAZARDS

5.1 **Personal Protective Equipment:** Organic canister or air pack; rubber gloves; goggles or face shield.

5.2 **Symptoms Following Exposure:** Vapor causes irritation of eyes and nose; high concentrations cause anesthesia and depression. Liquid dries out skin and may cause dermatitis; irritates eyes but does not injure them.

5.3 **Treatment for Exposure:** INHALATION: remove to fresh air, give artificial respiration if needed; call a doctor. SKIN OR EYES: wash eyes thoroughly with water; wash skin with water until irritation stops.

5.4 **Toxicity by Inhalation (Threshold Limit Value):** 100 ppm

5.5 **Short-Term Inhalation Limits:** 100 ppm for 60 min.

5.6 **Toxicity by Ingestion:** Grade 2; LD_{50} 0.5 to 5 g/kg (rat)

5.7 **Late Toxicity:** None

5.8 **Vapor (Gas) Irritant Characteristics:** Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary.

5.9 **Liquid or Solid Irritant Characteristics:** Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.

5.10 **Odor Threshold:** 0.47 ppm

6. FIRE HAZARDS

6.1 **Flash Point:** 73°F C.C.; 75°F O.C.

6.2 **Flammable Limits in Air:** 1.4%—7.5%

6.3 **Fire Extinguishing Agents:** Alcohol foam, dry chemical, or carbon dioxide

6.4 **Fire Extinguishing Agents Not to be Used:** Water may be ineffective

6.5 **Special Hazards of Combustion Products:** Irritating vapors are generated when heated.

6.6 **Behavior in Fire:** Vapors may travel a considerable distance and ignite.

6.7 **Ignition Temperature:** 854°F

6.8 **Electrical Hazard:** Class I, Group D

6.9 **Burning Rate:** Data not available

7. CHEMICAL REACTIVITY

7.1 **Reactivity with Water:** No reaction

7.2 **Reactivity with Common Materials:** No reaction

7.3 **Stability During Transport:** Stable

7.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent

7.5 **Polymerization:** Not pertinent

7.6 **Inhibitor of Polymerization:** Not pertinent

8. WATER POLLUTION

8.1 **Aquatic Toxicity:** Data not available

8.2 **Waterfowl Toxicity:** Data not available

8.3 **Biological Oxygen Demand (BOD):** (theor.) 1.8%, 0.5 day; (theor.) 12%, 5 days

8.4 **Food Chain Concentration Potential:** None

9. SELECTED MANUFACTURERS

1. Exxon Chemical Co.
   Houston, Tex. 77001
2. Shell Chemical Co.
   Industrial Chemicals Division
   Houston, Tex. 77001
3. Union Carbide Corp.
   Chemicals & Plastics Division
   270 Park Ave.
   New York, N. Y. 10017

10. SHIPPING INFORMATION

10.1 **Grades or Purity:** 99+%

10.2 **Storage Temperature:** Ambient

10.3 **Inert Atmosphere:** No requirement

10.4 **Venting:** Open (flame arrester) or pressure-vacuum

11. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook, CG 446-3)

A-P-Q-T-U

12. HAZARD CLASSIFICATIONS

12.1 **Code of Federal Regulations:** Flammable liquid

12.2 **NAS Hazard Rating for Bulk Water Transportation:**

Category	Rating
Fire	3
Health	
Vapor Irritant	1
Liquid or Solid Irritant	1
Poisons	1
Water Pollution	
Human Toxicity	2
Aquatic Toxicity	1
Aesthetic Effect	2
Reactivity	
Other Chemicals	2
Water	0
Self-Reaction	0

12.3 **NFPA Hazard Classifications:**

Category	Classification
Health Hazard (Blue)	2
Flammability (Red)	3
Reactivity (Yellow)	0

13. PHYSICAL AND CHEMICAL PROPERTIES

13.1 **Physical State at 15°C and 1 atm:** Liquid

13.2 **Molecular Weight:** 100.16

13.3 **Boiling Point at 1 atm:** 241.2°F = 116.2 = 389.4°K

13.4 **Freezing Point:** −119°F = −84°C = 189°K

13.5 **Critical Temperature:** 568.9°F = 298.3°C = 571.5°K

13.6 **Critical Pressure:** 475 psia = 32.3 atm = 3.27 MN/m²

13.7 **Specific Gravity:** 0.802 at 20°C (liquid)

13.8 **Liquid Surface Tension:** 23.6 dynes/cm = 0.0236 N/m at 20°C

13.9 **Liquid-Water Interfacial Tension:** 15.7 dynes/cm = 0.0157 N/m at 22.7°C

13.10 **Vapor (Gas) Specific Gravity:** Not pertinent

13.11 **Ratio of Specific Heats of Vapor (Gas):** 1.061

13.12 **Latent Heat of Vaporization:** 149 Btu/lb = 82.5 cal/g = 3.45 × 10⁵ J/kg

13.13 **Heat of Combustion:** (est.) −10,400 Btu/lb = −5,800 cal/g = −242 × 10⁵ J/kg

13.14 **Heat of Decomposition:** Not pertinent

13.15 **Heat of Solution:** (est.) −9 Btu/lb = −5 cal/g = −0.2 × 10⁵ J/kg

13.16 **Heat of Polymerization:** Not pertinent

NOTES

REVISED 1978

TTE — TETRACHLOROETHYLENE

Common Synonyms
Tetracap
Perclene
Perchloroethylene

Watery liquid | Colorless | Sweet odor

Sinks in water. Irritating vapor is produced.

Stop discharge if possible.
Avoid contact with liquid and vapor.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

Not flammable.
Poisonous gases are produced when heated.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Irritating to eyes, nose, and throat.
If inhaled, will cause difficult breathing, or loss of consciousness.
Move to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID
Irritating to skin and eyes.
Harmful if swallowed.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.

Water Pollution

Effect of low concentrations on aquatic life is unknown.
May be dangerous if it enters water intakes.
Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook, CG 448-4)

Should be removed
Chemical and physical treatment

2. LABELS

No hazard label required by Code of Federal Regulations

3. CHEMICAL DESIGNATIONS

3.1 **Synonyms:** Perchloroethylene, Perclene, Perk
3.2 **Coast Guard Compatibility Classification:** Halogenated hydrocarbon
3.3 **Chemical Formula:** $Cl_2C{=}CCl_2$
3.4 **IMCO/United Nations Numerical Designation:** 9.0/1897

4. OBSERVABLE CHARACTERISTICS

4.1 **Physical State (as shipped):** Liquid
4.2 **Color:** Colorless
4.3 **Odor:** Ethereal; like chloroform; mildly sweet

5. HEALTH HAZARDS

5.1 **Personal Protective Equipment:** For high vapor concentrations use approved canister or air-supplied mask; chemical goggles or face shield; plastic gloves.
5.2 **Symptoms Following Exposure:** Vapor can affect central nervous system and cause anesthesia. Liquid may irritate skin after prolonged contact. May irritate eyes but causes no injury.
5.3 **Treatment for Exposure:** INHALATION: if illness occurs, remove patient to fresh air, keep him warm and quiet, and get medical attention. INGESTION: induce vomiting only on physician's recommendation. EYES AND SKIN: flush with plenty of water and get medical attention if irritation or injury occurs.
5.4 **Toxicity by Inhalation (Threshold Limit Value):** 100 ppm
5.5 **Short-Term Inhalation Limits:** 100 ppm for 60 min.
5.6 **Toxicity by Ingestion:** Grade 2: LD_{50} 0.5 to 5 g/kg
5.7 **Late Toxicity:** None
5.8 **Vapor (Gas) Irritant Characteristics:** Vapors cause a slight smarting of the eyes or throat if present in high concentrations. The effect is temporary.
5.9 **Liquid or Solid Irritant Characteristics:** Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.
5.10 **Odor Threshold:** 5 ppm

6. FIRE HAZARDS

6.1 **Flash Point:** Not flammable
6.2 **Flammable Limits in Air:** Not flammable
6.3 **Fire Extinguishing Agents:** Not pertinent
6.4 **Fire Extinguishing Agents Not to be Used:** Not pertinent
6.5 **Special Hazards of Combustion Products:** Toxic, irritating gases may be generated in fires.
6.6 **Behavior in Fire:** Not pertinent
6.7 **Ignition Temperature:** Not flammable
6.8 **Electrical Hazard:** Not pertinent
6.9 **Burning Rate:** Not flammable

7. CHEMICAL REACTIVITY

7.1 **Reactivity with Water:** No reaction
7.2 **Reactivity with Common Materials:** No reaction
7.3 **Stability During Transport:** Stable
7.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent
7.5 **Polymerization:** Not pertinent
7.6 **Inhibitor of Polymerization:** Not pertinent

8. WATER POLLUTION

8.1 **Aquatic Toxicity:** Data not available
8.2 **Waterfowl Toxicity:** Data not available
8.3 **Biological Oxygen Demand (BOD):** None
8.4 **Food Chain Concentration Potential:** None

9. SELECTED MANUFACTURERS

1. Dow Chemical Co.
   Midland, Mich. 48640
2. PPG Industries Inc.
   Industrial Chemical Division
   Barberton, Ohio 44203
3. Vulcan Materials Co.
   Chemicals Division
   Wichita, Kan. 67201

10. SHIPPING INFORMATION

10.1 **Grades or Purity:** Dry cleaning and industrial grades; 95+%
10.2 **Storage Temperature:** Ambient
10.3 **Inert Atmosphere:** No requirement
10.4 **Venting:** Pressure-vacuum

11. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook, CG 448-3)

A-X

12. HAZARD CLASSIFICATIONS

12.1 **Code of Federal Regulations:** ORM–A
12.2 **NAS Hazard Rating for Bulk Water Transportation:**

Category	Rating
Fire	0
Health	
Vapor Irritant	1
Liquid or Solid Irritant	1
Poisons	2
Water Pollution	
Human Toxicity	1
Aquatic Toxicity	3
Aesthetic Effect	2
Reactivity	
Other Chemicals	1
Water	0
Self-Reaction	1

12.3 **NFPA Hazard Classifications:** Not listed

13. PHYSICAL AND CHEMICAL PROPERTIES

13.1 **Physical State at 15°C and 1 atm:** Liquid
13.2 **Molecular Weight:** 165.83
13.3 **Boiling Point at 1 atm:** 250°F = 121°C = 394°K
13.4 **Freezing Point:** −8.3°F = −22.4°C = 250.8°K
13.5 **Critical Temperature:** 657°F = 347°C = 620°K
13.6 **Critical Pressure:** Not pertinent
13.7 **Specific Gravity:** 1.63 at 20°C (liquid)
13.8 **Liquid Surface Tension:** 31.3 dynes/cm = 0.0313 N/m at 20°C
13.9 **Liquid-Water Interfacial Tension:** 44.4 dynes/cm = 0.0444 N/m at 25°C
13.10 **Vapor (Gas) Specific Gravity:** Not pertinent
13.11 **Ratio of Specific Heats of Vapor (Gas):** 1.116
13.12 **Latent Heat of Vaporization:** 90.2 Btu/lb = 50.1 cal/g = 2.10×10^5 J/kg
13.13 **Heat of Combustion:** Not pertinent
13.14 **Heat of Decomposition:** Not pertinent
13.15 **Heat of Solution:** Not pertinent
13.16 **Heat of Polymerization:** Not pertinent

NOTES

REVISED 1978

STY — STYRENE

Common Synonyms
Styrol
Vinylbenzene
Phenylethylene

Watery liquid Colorless to light yellow Sweet pleasant odor

Floats on water. Flammable, irritating vapor is produced.

Avoid contact with liquid and vapor. Keep people away.
Wear chemical protective suit with self-contained breathing apparatus.
Stop discharge if possible.
Call fire department.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

FLAMMABLE
CONTAINERS MAY EXPLODE IN FIRE.
Flashback along vapor trail may occur.
Vapor may explode if ignited in an enclosed area.
Wear chemical protective suit with self-contained breathing apparatus.
Combat fires from safe distance or protected location.
Extinguish with dry chemical, foam, or carbon dioxide.
Water may be ineffective on fire.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Irritating to eyes, nose and throat.
If inhaled, will cause dizziness or loss of consciousness.
Move to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID
Will burn skin and eyes.
Harmful if swallowed.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.
DO NOT INDUCE VOMITING.

Water Pollution

HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS.
Fouling to shoreline
May be dangerous if it enters water intakes.
Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook, CG 446-4)

Issue warning air contaminant
Mechanical containment
Should be removed
Chemical and physical treatment

2. LABEL

Red

3. CHEMICAL DESIGNATIONS

3.1 **Synonyms:** Phenethylene; Phenylethylene; Styrol; Styrolene; Vinylbenzene

3.2 **Coast Guard Compatibility Classification:** Olefin

3.3 **Chemical Formula:** $C_6H_5CH{=}CH_2$

3.4 **IMCO/United Nations Numerical Designation:** 3.3/2055

4. OBSERVABLE CHARACTERISTICS

4.1 **Physical State (as shipped):** Liquid

4.2 **Color:** Colorless

4.3 **Odor:** Sweet at low concentrations, characteristic pungent; sharp; disagreeable

5. HEALTH HAZARDS

5.1 **Personal Protective Equipment:** Air-supplied mask or approved canister; rubber or plastic gloves; boots; goggles or face shield.

5.2 **Symptoms Following Exposure:** Moderate irritation of eyes and skin. High vapor concentrations cause dizziness, drunkenness, and anesthesia.

5.3 **Treatment for Exposure:** INHALATION: remove to fresh air, keep warm and quiet; use artificial respiration if needed. INGESTION: do NOT induce vomiting; call physician; no known antidote. SKIN OR EYE CONTACT: flush with plenty of water, for eyes get medical attention.

5.4 **Toxicity by Inhalation (Threshold Limit Value):** 100 ppm

5.5 **Short-Term Inhalation Limits:** 100 ppm for 30 min.

5.6 **Toxicity by Ingestion:** Grade 2; LD_{50} 0.5 to 5 g/kg

5.7 **Late Toxicity:** Data not available

5.8 **Vapor (Gas) Irritant Characteristics:** Vapors cause moderate irritation such that personnel will find high concentrations unpleasant. The effect is temporary.

5.9 **Liquid or Solid Irritant Characteristics:** Causes smarting of the skin and first-degree burns on short exposure; may cause secondary burns on long exposure.

5.10 **Odor Threshold:** 0.148 ppm

6. FIRE HAZARDS

6.1 **Flash Point:** 93°F O.C.; 88°F C.C.

6.2 **Flammable Limits in Air:** 1.1% - 6.1%

6.3 **Fire Extinguishing Agents:** Water fog, foam, carbon dioxide, or dry chemical

6.4 **Fire Extinguishing Agents Not to be Used:** Water may be ineffective.

6.5 **Special Hazards of Combustion Products:** Not pertinent

6.6 **Behavior in Fire:** Vapor is heavier than air and may travel considerable distance to a source of ignition and flash back. At elevated temperatures such as in fire conditions, polymerization may take place which may lead to container explosion.

6.7 **Ignition Temperature:** 914°F

6.8 **Electrical Hazard:** Class I, Group D

6.9 **Burning Rate:** 5.2 mm/min

7. CHEMICAL REACTIVITY

7.1 **Reactivity with Water:** No reaction

7.2 **Reactivity with Common Materials:** No reaction

7.3 **Stability During Transport:** Stable

7.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent

7.5 **Polymerization:** May occur if heated above 150°F. Can cause rupture of container. Metal salts, peroxides, and strong acids may also cause polymerization.

7.6 **Inhibitor of Polymerization:** Tertiary-butylcatechol, 10-15 ppm

8. WATER POLLUTION

8.1 **Aquatic Toxicity:** 22 ppm/96 hr/bluegill/TL_m/fresh water

8.2 **Waterfowl Toxicity:** Data not available

8.3 **Biological Oxygen Demand (BOD):** 18% (theor.), 412 days

8.4 **Food Chain Concentration Potential:** None

9. SELECTED MANUFACTURERS

1. Amoco Chemicals Corp.
   910 South Michigan Ave.
   Chicago, Ill. 60605
2. Dow Chemical Co.
   Midland, Mich. 48640
3. Monsanto Co.
   Monsanto Polymers & Petrochemicals Co.
   800 North Lindbergh Blvd.
   St. Louis, Mo. 63166

10. SHIPPING INFORMATION

10.1 **Grades or Purity:** 99.5+%

10.2 **Storage Temperature:** Ambient

10.3 **Inert Atmosphere:** No requirement

10.4 **Venting:** Open (flame arrester)

11. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook, CG 446-3)

A-T-U-Z

12. HAZARD CLASSIFICATIONS

12.1 **Code of Federal Regulations:** Flammable Liquid

12.2 **NAS Hazard Rating for Bulk Water Transportation:**

Category	Rating
Fire	3
Health	
Vapor Irritant	2
Liquid or Solid Irritant	2
Poisons	2
Water Pollution	
Human Toxicity	1
Aquatic Toxicity	3
Aesthetic Effect	2
Reactivity	
Other Chemicals	2
Water	0
Self-Reaction	3

12.3 **NFPA Hazard Classifications:**

Category	Classification
Health Hazard (Blue)	2
Flammability (Red)	3
Reactivity (Yellow)	2

13. PHYSICAL AND CHEMICAL PROPERTIES

13.1 **Physical State at 15°C and 1 atm:** Liquid

13.2 **Molecular Weight:** 104.15

13.3 **Boiling Point at 1 atm:** 293.4°F = 145.2°C = 418.4°K

13.4 **Freezing Point:** −23.1°F = −30.6°C = 242.6°K

13.5 **Critical Temperature:** 703°F = 373°C = 646°K

13.6 **Critical Pressure:** 580 psia = 39.46 atm = 4.00 MN/m^2

13.7 **Specific Gravity:** 0.906 at 20°C (liquid)

13.8 **Liquid Surface Tension:** 32.14 dynes/cm = 0.03214 N/m at 19°C

13.9 **Liquid-Water Interfacial Tension:** 35.48 dynes/cm = 0.03548 N/m at 19°C

13.10 **Vapor (Gas) Specific Gravity:** Not pertinent

13.11 **Ratio of Specific Heats of Vapor (Gas):** 1.074

13.12 **Latent Heat of Vaporization:** 156 Btu/lb = 86.8 cal/g = 3.63 × 10^5 J/kg

13.13 **Heat of Combustion:** Not pertinent

13.14 **Heat of Decomposition:** Not pertinent

13.15 **Heat of Solution:** Not pertinent

13.16 **Heat of Polymerization:** −277 Btu/lb = −154 cal/g = −6.45 × 10^5 J/kg

NOTES

REVISED 1978

TOL — TOLUENE

Common Synonyms
Toluol
Methylbenzene
Methylbenzol

Watery liquid — Colorless — Pleasant odor

Floats on water. Flammable, irritating vapor is produced.

Stop discharge if possible. Keep people away.
Shut off ignition sources and call fire department.
Stay upwind and use water spray to "knock down" vapor.
Avoid contact with liquid and vapor.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

FLAMMABLE.
Flashback along vapor trail may occur.
Vapor may explode if ignited in an enclosed area.
Wear goggles and self-contained breathing apparatus.
Extinguish with dry chemical, foam, or carbon dioxide.
Water may be ineffective on fire.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Irritating to eyes, nose and throat.
If inhaled, will cause nausea, vomiting, headache, dizziness, difficult breathing, or loss of consciousness.
Move to fresh air.
If breathing has stopped, give artificial respiration.
If breathing difficult, give oxygen.

LIQUID
Irritating to skin and eyes.
If swallowed, will cause nausea, vomiting or loss of consciousness.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.
DO NOT INDUCE VOMITING.

Water Pollution

Dangerous to aquatic life in high concentrations.
Fouling to shoreline.
May be dangerous if it enters water intakes.
Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook, CO 446-4)

Issue warning - high flammability
Evacuate area

2. LABEL

Red

3. CHEMICAL DESIGNATIONS

3.1 **Synonyms:** Methylbenzene, Methylbenzol, Toluol
3.2 **Coast Guard Compatibility Classification:** Aromatic hydrocarbon
3.3 **Chemical Formula:** $C_6H_5CH_3$
3.4 **IMCO/United Nations Numerical Designation:** 3.2/1294

4. OBSERVABLE CHARACTERISTICS

4.1 **Physical State (as shipped):** Liquid
4.2 **Color:** Colorless
4.3 **Odor:** Pungent; aromatic, benzene-like; distinct, pleasant

5. HEALTH HAZARDS

5.1 **Personal Protective Equipment:** Air-supplied mask; goggles or face shield; plastic gloves.
5.2 **Symptoms Following Exposure:** Vapors irritate eyes and upper respiratory tract; cause dizziness, headache, anesthesia, respiratory arrest. Liquid irritates eyes and causes drying of skin. If aspirated, causes coughing, gagging, distress, and rapidly developing pulmonary edema. If ingested causes vomiting, griping, diarrhea, depressed respiration.
5.3 **Treatment for Exposure:** INHALATION: remove to fresh air, give artificial respiration and oxygen if needed; call a doctor. INGESTION: do NOT induce vomiting; call a doctor. EYES: flush with water for at least 15 min. SKIN: wipe off, wash with soap and water.
5.4 **Toxicity by Inhalation (Threshold Limit Value):** 100 ppm
5.5 **Short-Term Inhalation Limits:** 600 ppm for 30 min.
5.6 **Toxicity by Ingestion:** Grade 2; LD_{50} 0.5 to 5 g/kg
5.7 **Late Toxicity:** Kidney and liver damage may follow ingestion.
5.8 **Vapor (Gas) Irritant Characteristics:** Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary.
5.9 **Liquid or Solid Irritant Characteristics:** Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.
5.10 **Odor Threshold:** 0.17 ppm

6. FIRE HAZARDS

6.1 **Flash Point:** 40°F C.C.; 55°F O.C.
6.2 **Flammable Limits in Air:** 1.27%—7%
6.3 **Fire Extinguishing Agents:** Carbon dioxide or dry chemical for small fires, ordinary foam for large fires.
6.4 **Fire Extinguishing Agents Not to be Used:** Water may be ineffective
6.5 **Special Hazards of Combustion Products:** Not pertinent
6.6 **Behavior in Fire:** Vapor is heavier than air and may travel a considerable distance to a source of ignition and flash back.
6.7 **Ignition Temperature:** 997°F
6.8 **Electrical Hazard:** Class I, Group D
6.9 **Burning Rate:** 5.7 mm/min.

7. CHEMICAL REACTIVITY

7.1 **Reactivity with Water:** No reaction
7.2 **Reactivity with Common Materials:** No reaction
7.3 **Stability During Transport:** Stable
7.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent
7.5 **Polymerization:** Not pertinent
7.6 **Inhibitor of Polymerization:** Not pertinent

8. WATER POLLUTION

8.1 **Aquatic Toxicity:** 1180 mg/l /96 hr/sunfish/TL_m/fresh water
8.2 **Waterfowl Toxicity:** Data not available
8.3 **Biological Oxygen Demand (BOD):** 0%, 5 days; 38% (theor.), 8 days
8.4 **Food Chain Concentration Potential:** None

9. SELECTED MANUFACTURERS

1. Exxon Chemical Co.
   Houston, Tex. 77001
2. Shell Chemical Co.
   Petrochemicals Division
   Houston, Tex. 77001
3. Sun Oil Co.
   St. Davids, Pa. 19087

10. SHIPPING INFORMATION

10.1 **Grades or Purity:** Research, reagent, nitration--all 99.8+%, industrial: contains 94+%, with 5% xylene and small amounts of benzene and nonaromatic hydrocarbons; 90/120: less pure than industrial.
10.2 **Storage Temperature:** Ambient
10.3 **Inert Atmosphere:** No requirement
10.4 **Venting:** Open (flame arrester) or pressure-vacuum

11. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook, CO 446-3)

A-T-U

12. HAZARD CLASSIFICATIONS

12.1 **Code of Federal Regulations:** Flammable liquid
12.2 **NAS Hazard Rating for Bulk Water Transportation:**

Category	Rating
Fire	3
Health	
Vapor Irritant	1
Liquid or Solid Irritant	1
Poisons	2
Water Pollution	
Human Toxicity	1
Aquatic Toxicity	3
Aesthetic Effect	2
Reactivity	
Other Chemicals	1
Water	0
Self-Reaction	0

12.3 **NFPA Hazard Classifications:**

Category	Classification
Health Hazard (Blue)	2
Flammability (Red)	3
Reactivity (Yellow)	0

13. PHYSICAL AND CHEMICAL PROPERTIES

13.1 **Physical State at 15°C and 1 atm:** Liquid
13.2 **Molecular Weight:** 92.14
13.3 **Boiling Point at 1 atm:** 231.1°F = 110.6°C = 383.8°K
13.4 **Freezing Point:** −139°F = −95.0°C = 178.2°K
13.5 **Critical Temperature:** 605.4°F = 318.6°C = 591.8°K
13.6 **Critical Pressure:** 596.1 psia = 40.55 atm = 4.108 MN/m²
13.7 **Specific Gravity:** 0.867 at 20°C (liquid)
13.8 **Liquid Surface Tension:** 29.0 dynes/cm = 0.0290 N/m at 20°C
13.9 **Liquid-Water Interfacial Tension:** 36.1 dynes/cm = 0.0361 N/m at 25°C
13.10 **Vapor (Gas) Specific Gravity:** Not pertinent
13.11 **Ratio of Specific Heats of Vapor (Gas):** 1.089
13.12 **Latent Heat of Vaporization:** 155 Btu/lb = 86.1 cal/g = 3.61 × 10⁵ J/kg
13.13 **Heat of Combustion:** −17,430 Btu/lb = −9686 cal/g = −405.5 × 10⁵ J/kg
13.14 **Heat of Decomposition:** Not pertinent
13.15 **Heat of Solution:** Not pertinent
13.16 **Heat of Polymerization:** Not pertinent

NOTES

REVISED 1978

TCE — TRICHLOROETHANE

Common Synonyms			
1,1,1-Trichloroethane Methylchloroform	Watery liquid	Colorless	Sweet odor
	Sinks in water. Irritating vapor is produced.		

Stop discharge if possible. Keep people away.
Avoid contact with liquid and vapor.
Call fire department.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

Combustible.
POISONOUS GASES ARE PRODUCED IN FIRE.
Wear goggles and self-contained breathing apparatus.
Extinguish with dry chemical, carbon dioxide, or foam.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Irritating to eyes, nose and throat.
If inhaled, will cause dizziness or difficult breathing.
Move to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID:
Irritating to skin and eyes.
If swallowed, may produce nausea.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk and have victim induce vomiting.
IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.

Water Pollution

Effect of low concentrations on aquatic life is unknown.
May be dangerous if it enters water intakes.
Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook, CG 446-4)

Should be removed
Chemical and physical treatment

2. LABELS

No hazard label required by Code of Federal Regulations

3. CHEMICAL DESIGNATIONS

3.1 **Synonyms:** Aerothene, Chlorothene, Methyl chloroform, 1,1,1-Trichloroethane

3.2 **Coast Guard Compatibility Classification:** Halogenated hydrocarbon

3.3 **Chemical Formula:** CH_3CCl_3

3.4 **IMCU/United Nations Numerical Designation:** Not listed

4. OBSERVABLE CHARACTERISTICS

4.1 **Physical State (as shipped):** Liquid

4.2 **Color:** Colorless

4.3 **Odor:** Chloroform-like; sweetish

5. HEALTH HAZARDS

5.1 **Personal Protective Equipment:** Organic vapor-acid gas canister; self-contained breathing apparatus for emergencies; neoprene or polyvinyl-alcohol-type gloves; chemical safety goggles and face shield; neoprene safety shoes (or leather safety shoes plus neoprene footwear); neoprene or polyvinyl alcohol suit or apron for splash protection.

5.2 **Symptoms Following Exposure:** INHALATION: symptoms range from loss of equilibrium and incoordination to loss of consciousness; high concentration can be fatal due to simple asphyxiation combined with loss of consciousness. INGESTION: produces effects similar to inhalation and may cause some feeling of nausea. EYES: slightly irritating and lachrymatory. SKIN: defatting action may cause dermatitis.

5.3 **Treatment for Exposure:** Get medical attention for all eye exposures and any other serious overexposures. Do NOT administer adrenalin or epinephrine; otherwise, treatment is symptomatic. INHALATION: remove victim to fresh air; if necessary, apply artificial respiration and/or administer oxygen. INGESTION: have victim drink water and induce vomiting. EYES: flush thoroughly with water. SKIN: remove contaminated clothing and wash exposed area thoroughly with soap and warm water.

5.4 **Toxicity by Inhalation (Threshold Limit Value):** 350 ppm

5.5 **Short-Term Inhalation Limits:** 1000 ppm for 60 min. in man

5.6 **Toxicity by Ingestion:** Grade 1; LD_{50} 5 to 15 g/kg (rat, mouse, rabbit, guinea pig)

5.7 **Late Toxicity:** Data not available

5.8 **Vapor (Gas) Irritant Characteristics:** Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary.

6. FIRE HAZARDS

6.1 **Flash Point:** Data not available

6.2 **Flammable Limits in Air:** 7%—16%

6.3 **Fire Extinguishing Agents:** Dry chemical, foam, or carbon dioxide

6.4 **Fire Extinguishing Agents Not to be Used:** Not pertinent

6.5 **Special Hazards of Combustion Products:** Toxic and irritating gases are generated in fires.

6.6 **Behavior in Fire:** Not pertinent

6.7 **Ignition Temperature:** 932°F

6.8 **Electrical Hazard:** Not pertinent

6.9 **Burning Rate:** (est.) 2.9 mm/min.

7. CHEMICAL REACTIVITY

7.1 **Reactivity with Water:** Reacts slowly, releasing corrosive hydrochloric acid.

7.2 **Reactivity with Common Materials:** Corrodes aluminum, but reaction is not hazardous.

7.3 **Stability During Transport:** Stable

7.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent

7.5 **Polymerization:** Not pertinent

7.6 **Inhibitor of Polymerization:** Not pertinent

8. WATER POLLUTION

8.1 **Aquatic Toxicity:** 75 - 150 ppm/*/pinfish/TL_m/salt water
*Time period not specified.

8.2 **Waterfowl Toxicity:** Data not available

8.3 **Biological Oxygen Demand (BOD):** Data not available

8.4 **Food Chain Concentration Potential:** None

9. SELECTED MANUFACTURERS

1. Dow Chemical Co.
   Midland, Mich. 48640
2. PPG Industries, Inc.
   Industrial Chemicals Division
   1 Gateway Center
   Pittsburgh, Pa. 15222
3. Vulcan Materials Co.
   Chemicals Division
   Wichita, Kan. 67201

10. SHIPPING INFORMATION

10.1 **Grades or Purity:** Uninhibited; inhibited; industrial inhibited; white room; cold cleaning

10.2 **Storage Temperature:** Ambient

10.3 **Inert Atmosphere:** No requirement

10.4 **Venting:** Pressure-vacuum

11. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook, CG 446-3)

A-X-Y

12. HAZARD CLASSIFICATIONS

12.1 **Code of Federal Regulations:** Not listed

12.2 **NAS Hazard Rating for Bulk Water Transportation:**

Category	Rating
Fire	1
Health	
Vapor Irritant	1
Liquid or Solid Irritant	1
Poisons	2
Water Pollution	
Human Toxicity	1
Aquatic Toxicity	3
Aesthetic Effect	2
Reactivity	
Other Chemicals	1
Water	0
Self-Reaction	0.

12.3 **NFPA Hazard Classifications:** Not listed

13. PHYSICAL AND CHEMICAL PROPERTIES

13.1 **Physical State at 15°C and 1 atm:** Liquid

13.2 **Molecular Weight:** 133.41

13.3 **Boiling Point at 1 atm:** 165°F = 74°C = 347°K

13.4 **Freezing Point:** <−38°F = <−39°C = <234°K

13.5 **Critical Temperature:** Not pertinent

13.6 **Critical Pressure:** Not pertinent

13.7 **Specific Gravity:** 1.31 at 20°C (liquid)

13.8 **Liquid Surface Tension:** 25.4 dynes/cm = 0.0254 N/m at 20°C

13.9 **Liquid-Water Interfacial Tension:** (est.) 45 dynes/cm = 0.045 N/m at 20°C

13.10 **Vapor (Gas) Specific Gravity:** 4.6

13.11 **Ratio of Specific Heats of Vapor (Gas):** 1.104

13.12 **Latent Heat of Vaporization:** 100 Btu/lb = 58 cal/g = 2.4×10^5 J/kg

13.13 **Heat of Combustion:** (est.) 4700 Btu/lb = 2600 cal/g = 110×10^5 J/kg

13.14 **Heat of Decomposition:** Not pertinent

13.15 **Heat of Solution:** Not pertinent

13.16 **Heat of Polymerization:** Not pertinent

5. HEALTH HAZARDS (Cont'd.)

5.9 **Liquid or Solid Irritant Characteristics:** Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.

5.10 **Odor Threshold:** 100 ppm

REVISED 1978

TCL — TRICHLOROETHYLENE

Common Synonyms
Trichloroethene
Trilene

Watery liquid | Colorless | Sweet odor

Sinks in water. Irritating vapor is produced.

Stop discharge if possible. Keep people away.
Avoid contact with liquid and vapor.
Call fire department.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

Combustible.
POISONOUS GASES ARE PRODUCED IN FIRE.
Wear goggles and self-contained breathing apparatus.
Extinguish with dry chemical, carbon dioxide, or foam.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Irritating to eyes, nose and throat.
If inhaled, will cause nausea, vomiting, difficult breathing, or loss of consciousness.
Move to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID
Irritating to skin and eyes.
If swallowed, will cause nausea, vomiting, difficult breathing, or loss of consciousness.
Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk and have victim induce vomiting.
IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.

Water Pollution

Effect of low concentrations on aquatic life is unknown.
May be dangerous if it enters water intakes.
Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook, CG 446-4)

Should be removed
Chemical and physical treatment

2. LABELS

No hazard label required by Code of Federal Regulations

3. CHEMICAL DESIGNATIONS

3.1 **Synonyms:** Algylen; Chlorylen; Gemalgene; Threthylene; Trethylene; Tri; Trichloran; Trichloroethene; Tri-Clene; Trielene; Trilene; Triline; Trimar

3.2 **Coast Guard Compatibility Classification:** Halogenated hydrocarbon

3.3 **Chemical Formula:** $CHCl{=}CCl_2$

3.4 **IMCO/United Nations Numerical Designation:** 9.0/1710

4. OBSERVABLE CHARACTERISTICS

4.1 **Physical State (as shipped):** Liquid

4.2 **Color:** Colorless

4.3 **Odor:** Chloroform-like, ethereal

5. HEALTH HAZARDS

5.1 **Personal Protective Equipment:** Organic vapor-acid gas canister; self-contained breathing apparatus for emergencies; neoprene or vinyl gloves; chemical safety goggles; face-shield; neoprene safety shoes; neoprene suit or apron for splash protection.

5.2 **Symptoms Following Exposure:** INHALATION: symptoms range from irritation of the nose and throat to nausea, an attitude of irresponsibility, blurred vision, and finally disturbance of central nervous system resulting in cardiac failure. Chronic exposure may cause organic injury. INGESTION: symptoms similar to inhalation. SKIN: defatting action can cause dermatitis. EYES: slightly irritating sensation and lachrymation.

5.3 **Treatment for Exposure:** Do NOT administer adrenalin or epinephrine; get medical attention for all cases of overexposure. INHALATION: remove victim to fresh air; if necessary, apply artificial respiration and/or administer oxygen. INGESTION: have victim drink water and induce vomiting; repeat three times; then give 1 tablespoon epsom salts in water. EYES: flush thoroughly with water. SKIN: wash thoroughly with soap and warm water.

5.4 **Toxicity by Inhalation (Threshold Limit Value):** 100 ppm

5.5 **Short-Term Inhalation Limits:** 200 ppm for 30 min.

5.6 **Toxicity by Ingestion:** Grade 3; LD_{50} 50 to 500 mg/kg

5.7 **Late Toxicity:** Data not available

5.8 **Vapor (Gas) Irritant Characteristics:** Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary.

5.9 **Liquid or Solid Irritant Characteristics:** Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.

5.10 **Odor Threshold:** 50 ppm

6. FIRE HAZARDS

6.1 **Flash Point:** 90°F C.C.; practically nonflammable

6.2 **Flammable Limits in Air:** 8.0% - 10.5%

6.3 **Fire Extinguishing Agents:** Water fog

6.4 **Fire Extinguishing Agents Not to be Used:** Not pertinent

6.5 **Special Hazards of Combustion Products:** Toxic and irritating gases are produced in fire situations.

6.6 **Behavior in Fire:** Not pertinent

6.7 **Ignition Temperature:** 770 °F

6.8 **Electrical Hazard:** Not pertinent

6.9 **Burning Rate:** Not pertinent

7. CHEMICAL REACTIVITY

7.1 **Reactivity with Water:** No reaction

7.2 **Reactivity with Common Materials:** No reaction

7.3 **Stability During Transport:** Stable

7.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent

7.5 **Polymerization:** Not pertinent

7.6 **Inhibitor of Polymerization:** Not pertinent

8. WATER POLLUTION

8.1 **Aquatic Toxicity:** 660 mg/l /40 hr/daphnia/kill/fresh water

8.2 **Waterfowl Toxicity:** Data not available

8.3 **Biological Oxygen Demand (BOD):** Data not available

8.4 **Food Chain Concentration Potential:** None

9. SELECTED MANUFACTURERS

1. Dow Chemical Co.
   Midland, Mich. 48640
2. E. I. duPont de Nemours & Co., Inc.
   Electrochemicals Dept.
   Wilmington, Del. 19898
3. PPG Industries Inc.
   Industrial Chemical Division
   Lake Charles, La. 70601

10. SHIPPING INFORMATION

10.1 **Grades or Purity:** Technical; dry cleaning, degreasing; extraction

10.2 **Storage Temperature:** Ambient

10.3 **Inert Atmosphere:** No requirement

10.4 **Venting:** Pressure-vacuum

11. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook, CG 446-3)

A-X-Y

12. HAZARD CLASSIFICATIONS

12.1 **Code of Federal Regulations:** ORM-A

12.2 **NAS Hazard Rating for Bulk Water Transportation:**

Category	Rating
Fire	1
Health	
Vapor Irritant	1
Liquid or Solid Irritant	1
Poisons	2
Water Pollution	
Human Toxicity	1
Aquatic Toxicity	2
Aesthetic Effect	2
Reactivity	
Other Chemicals	1
Water	0
Self-Reaction	1

12.3 **NFPA Hazard Classifications:** Not listed

13. PHYSICAL AND CHEMICAL PROPERTIES

13.1 **Physical State at 15°C and 1 atm:** Liquid

13.2 **Molecular Weight:** 131.39

13.3 **Boiling Point at 1 atm:** 189°F = 87°C = 360°K

13.4 **Freezing Point:** −123.5°F = −86.4°C = 186.8°K

13.5 **Critical Temperature:** Not pertinent

13.6 **Critical Pressure:** Not pertinent

13.7 **Specific Gravity:** 1.46 at 20°C (liquid)

13.8 **Liquid Surface Tension:** 29.3 dynes/cm = 0.0293 N/m at 20°C

13.9 **Liquid-Water Interfacial Tension:** 34.5 dynes/cm = 0.0345 N/m at 24°C

13.10 **Vapor (Gas) Specific Gravity:** 4.5

13.11 **Ratio of Specific Heats of Vapor (Gas):** 1.116

13.12 **Latent Heat of Vaporization:** 103 Btu/lb = 57.2 cal/g = 2.40×10^5 J/kg

13.13 **Heat of Combustion:** Not pertinent

13.14 **Heat of Decomposition:** Not pertinent

13.15 **Heat of Solution:** Not pertinent

13.16 **Heat of Polymerization:** Not pertinent

NOTES

REVISED 1978

XLM — m-XYLENE

Common Synonyms
1,3-Dimethylbenzene
Xylol

Watery liquid — Colorless — Sweet odor

Floats on water. Flammable, irritating vapor is produced.

Stop discharge if possible. Keep people away.
Call fire department.
Avoid contact with liquid and vapor.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire

FLAMMABLE
Flashback along vapor trail may occur.
Vapor may explode if ignited in an enclosed area.
Wear self-contained breathing apparatus.
Extinguish with foam, dry chemical, or carbon dioxide.
Water may be ineffective on fire.
Cool exposed containers with water.

Exposure

CALL FOR MEDICAL AID.

VAPOR
Irritating to eyes, nose, and throat.
If inhaled, will cause headache, difficult breathing, or loss of consciousness.

Move to fresh air.
If breathing has stopped, give artificial respiration.
If breathing is difficult, give oxygen.

LIQUID
Irritating to skin and eyes.
If swallowed, will cause nausea, vomiting, or loss of consciousness

Remove contaminated clothing and shoes.
Flush affected areas with plenty of water.
IF IN EYES, hold eyelids open and flush with plenty of water.
IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk.
DO NOT INDUCE VOMITING.

Water Pollution

HARMFUL TO AQUATIC LIFE IN VERY LOW CONCENTRATIONS.
Fouling to shoreline.
May be dangerous if it enters water intakes.

Notify local health and wildlife officials.
Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook, CG 446-4)

Issue warning — high flammability
Evacuate area
Should be removed
Chemical and physical treatment

2. LABEL

Red

3. CHEMICAL DESIGNATIONS

3.1 **Synonyms:** 1,3-Dimethylbenzene
Xylol

3.2 **Coast Guard Compatibility Classification:** Aromatic hydrocarbon

3.3 **Chemical Formula:** $m\text{-}C_6H_4(CH_3)_2$

3.4 **IMCO/United Nations Numerical Designation:** 3.2/1307

4. OBSERVABLE CHARACTERISTICS

4.1 **Physical State (as shipped):** Liquid

4.2 **Color:** Colorless

4.3 **Odor:** Like benzene; characteristic aromatic

5. HEALTH HAZARDS

5.1 **Personal Protective Equipment:** Approved canister or air-supplied mask; goggles or face shield; plastic gloves and boots.

5.2 **Symptoms Following Exposure:** Vapors cause headache and dizziness. Liquid irritates eyes and skin. If taken into lungs, causes severe coughing, distress, and rapidly developing pulmonary edema. If ingested, causes nausea, vomiting, cramps, headache, and coma; can be fatal. Kidney and liver damage can occur.

5.3 **Treatment for Exposure:** INHALATION: remove to fresh air; administer artificial respiration and oxygen if required; call a doctor. INGESTION: do NOT induce vomiting; call a doctor. EYES: flush with water for at least 15 min. SKIN: wipe off, wash with soap and water.

5.4 **Toxicity by Inhalation (Threshold Limit Value):** 100 ppm

5.5 **Short-Term Inhalation Limits:** 300 ppm for 30 min.

5.6 **Toxicity by Ingestion:** Grade 3; LD_{50} 50 to 500 g/kg

5.7 **Late Toxicity:** Kidney and liver damage.

5.8 **Vapor (Gas) Irritant Characteristics:** Vapors cause a slight smarting of the eyes or respiratory system if present in high concentrations. The effect is temporary.

5.9 **Liquid or Solid Irritant Characteristics:** Minimum hazard. If spilled on clothing and allowed to remain, may cause smarting and reddening of the skin.

5.10 **Odor Threshold:** 0.05 ppm

6. FIRE HAZARDS

6.1 **Flash Point:** 84°F C.C.

6.2 **Flammable Limits in Air:** 1.1% - 6.4%

6.3 **Fire Extinguishing Agents:** Foam, dry chemical, or carbon dioxide

6.4 **Fire Extinguishing Agents Not to be Used:** Water may be ineffective.

6.5 **Special Hazards of Combustion Products:** Not pertinent

6.6 **Behavior in Fire:** Vapor is heavier than air and may travel considerable distance to a source of ignition and flash back.

6.7 **Ignition Temperature:** 986°F

6.8 **Electrical Hazard:** Class I, Group D

6.9 **Burning Rate:** 5.8 mm/min.

7. CHEMICAL REACTIVITY

7.1 **Reactivity with Water:** No reaction

7.2 **Reactivity with Common Materials:** No reaction

7.3 **Stability During Transport:** Stable

7.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent

7.5 **Polymerization:** Not pertinent

7.6 **Inhibitor of Polymerization:** Not pertinent

8. WATER POLLUTION

8.1 **Aquatic Toxicity:** 22 ppm/96 hr/bluegill/TL_m/fresh water

8.2 **Waterfowl Toxicity:** Data not available

8.3 **Biological Oxygen Demand (BOD):** 0 lb/lb, 5 days; 0% (theor.), 8 days

8.4 **Food Chain Concentration Potential:** Data not available

9. SELECTED MANUFACTURERS

1. ARCO Chemical Co.
   260 South Broad St.
   Philadelphia, Pa. 19101
2. Chevron Chemical Co.
   Industrial Chemicals Division
   200 Bush St.
   San Francisco, Calif. 94120
3. Fallek Chemical Corp.
   460 Park Ave.
   New York, N. Y. 10022

10. SHIPPING INFORMATION

10.1 **Grades or Purity:** Research: 99.99+%; Pure: 99.9%; Technical: 99.2%

10.2 **Storage Temperature:** Ambient

10.3 **Inert Atmosphere:** No requirement

10.4 **Venting:** Open (flame arrester) or pressure-vacuum

11. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook, CG 446-3)

A-T-U

12. HAZARD CLASSIFICATIONS

12.1 **Code of Federal Regulations:** Flammable liquid

12.2 **NAS Hazard Rating for Bulk Water Transportation:**

Category	Rating
Fire	3
Health	
Vapor Irritant	1
Liquid or Solid Irritant	1
Poisons	2
Water Pollution	
Human Toxicity	1
Aquatic Toxicity	3
Aesthetic Effect	2
Reactivity	
Other Chemicals	1
Water	0
Self-Reaction	0

12.3 **NFPA Hazard Classifications:**

Category	Classification
Health Hazard (Blue)	2
Flammability (Red)	3
Reactivity (Yellow)	0

13. PHYSICAL AND CHEMICAL PROPERTIES

13.1 **Physical State at 15°C and 1 atm:** Liquid

13.2 **Molecular Weight:** 106.16

13.3 **Boiling Point at 1 atm:** 269.4°F = 131.9°C = 405.1°K

13.4 **Freezing Point:** −54.2°F = −47.9°C = 225.3°K

13.5 **Critical Temperature:** 650.8°F = 343.8°C = 617.0°K

13.6 **Critical Pressure:** 513.8 atm = 34.95 psia = 3.540 MN/m^2

13.7 **Specific Gravity:** 0.864 at 20°C (liquid)

13.8 **Liquid Surface Tension:** 28.6 dynes/cm = 0.0286 N/m at 20°C

13.9 **Liquid-Water Interfacial Tension:** 36.4 dynes/cm = 0.0364 N/m at 30°C

13.10 **Vapor (Gas) Specific Gravity:** Not pertinent

13.11 **Ratio of Specific Heats of Vapor (Gas):** 1.071

13.12 **Latent Heat of Vaporization:** 147 Btu/lb = 81.9 cal/g = 3.43×10^5 J/kg

13.13 **Heat of Combustion:** −17,554 Btu/lb = −9752.4 cal/g = -408.31×10^5 J/kg

13.14 **Heat of Decomposition:** Not pertinent

13.15 **Heat of Solution:** Not pertinent

13.16 **Heat of Polymerization:** Not pertinent

NOTES

REVISED 1978

ZCR	ZINC CHROMATE

Common Synonyms			
Zinc chromate(VI) hydroxide Zinc yellow Buttercup yellow	Solid	Yellow	Odorless
	Sinks in water.		

Avoid contact with solid and dust. Keep people away.
Stop discharge if possible.
Isolate and remove discharged material.
Notify local health and pollution control agencies.

Fire	Not flammable.
Exposure	CALL FOR MEDICAL AID. DUST Irritating to eyes, nose and throat. If inhaled will cause coughing or difficult breathing. If in eyes, hold eyelids open and flush with plenty of water. If breathing has stopped, give artificial respiration. If breathing is difficult, give oxygen. SOLID Irritating to skin and eyes. If swallowed will cause nausea and vomiting. Remove contaminated clothing and shoes. Flush affected areas with plenty of water IF IN EYES, hold eyelids open and flush with plenty of water. IF SWALLOWED and victim is CONSCIOUS, have victim drink water or milk and have victim induce vomiting. IF SWALLOWED and victim is UNCONSCIOUS OR HAVING CONVULSIONS, do nothing except keep victim warm.
Water Pollution	Effect of low concentrations on aquatic life is unknown. May be dangerous if it enters water intakes. Notify local health and wildlife officials. Notify operators of nearby water intakes.

1. RESPONSE TO DISCHARGE

(See Response Methods Handbook, CG 446-4)

Should be removed
Chemical and physical treatment

2. LABELS

No hazard label required by Code of Federal Regulations

3. CHEMICAL DESIGNATIONS

3.1 **Synonyms:** Buttercup yellow; Zinc chromate (VI) hydroxide; Zinc yellow

3.2 **Coast Guard Compatibility Classification:** Not listed

3.3 **Chemical Formula:** (approx.) $4ZnO \cdot K_2O \cdot 4CrO_3 \cdot 3H_2O$

3.4 **IMCO/United Nations Numerical Designation:** Not listed

4. OBSERVABLE CHARACTERISTICS

4.1 **Physical State (as shipped):** Solid

4.2 **Color:** Yellow

4.3 **Odor:** None

5. HEALTH HAZARDS

5.1 **Personal Protective Equipment:** Suitable respirator (for dust), rubber gloves, chemical goggles or face shield

5.2 **Symptoms Following Exposure:** Inhalation of dust causes irritation of nose and throat. Ingestion can cause irritation or corrosion of the alimentary tract, circulatory collapse, and toxic nephritis. Contact with eyes or skin causes irritation.

5.3 **Treatment for Exposure:** INHALATION: move to fresh air; if exposure has been severe, get medical attention. INGESTION: induce vomiting, followed by prompt and complete gastric lavage, catharsis, and demulceats. EYES, flush with water. SKIN, wash thoroughly with soap and water

5.4 **Toxicity by Inhalation (Threshold Limit Value):** 0.1 mg/m³

5.5 **Short-Term Inhalation Limits:** Data not available

5.6 **Toxicity by Ingestion:** Grade 2. LD_{50} 0.5–5 g/kg

5.7 **Late Toxicity:** Possible lung cancer.

5.8 **Vapor (Gas) Irritant Characteristics:** Data not available

5.9 **Liquid or Solid Irritant Characteristics:** Data not available

5.10 **Odor Threshold:** Odorless

6. FIRE HAZARDS

6.1 **Flash Point:** Not flammable

6.2 **Flammable Limits in Air:** Not flammable

6.3 **Fire Extinguishing Agents:** Not pertinent

6.4 **Fire Extinguishing Agents Not to be Used:** Not pertinent

6.5 **Special Hazards of Combustion Products:** Not pertinent

6.6 **Behavior in Fire:**

6.7 **Ignition Temperature:** Not pertinent

6.8 **Electrical Hazard:** Not pertinent

6.9 **Burning Rate:** Not pertinent

7. CHEMICAL REACTIVITY

7.1 **Reactivity with Water:** No reaction

7.2 **Reactivity with Common Materials:**

7.3 **Stability During Transport:** Stable

7.4 **Neutralizing Agents for Acids and Caustics:** Not pertinent

7.5 **Polymerization:** Not pertinent

7.6 **Inhibitor of Polymerization:** Not pertinent

8 WATER POLLUTION

8.1 **Aquatic Toxicity:** Data not available

8.2 **Waterfowl Toxicity:** Data not available

8.3 **Biological Oxygen Demand (BOD):** None

8.4 **Food Chain Concentration Potential:** Both chromium and zinc are concentrated by some organisms but are not considered to be bioconcentrative in a spill situation

9 SELECTED MANUFACTURERS

1 Mineral Pigments Corp
7011 Muirkirk Road
Beltsville, Md 20705

2 Fisher Scientific Co
711 Forbes Ave.
Pittsburgh, Pa 15219

3 Pfaltz and Bauer, Inc
375 Fairfield Ave
Stamford, Conn 06902

10. SHIPPING INFORMATION

10.1 **Grades or Purity:** Commercial, 100%

10.2 **Storage Temperature:** Ambient

10.3 **Inert Atmosphere:** No requirement

10.4 **Venting:** Open

11. HAZARD ASSESSMENT CODE

(See Hazard Assessment Handbook, CG 446-3)

SS

12. HAZARD CLASSIFICATIONS

12.1 **Code of Federal Regulations:** Not listed

12.2 **NAS Hazard Rating for Bulk Water Transportation:** Not listed

12.3 **NFPA Hazard Classifications:**

Category	Classification
Health Hazard (Blue)	1
Flammability (Red)	0
Reactivity (Yellow)	0

13. PHYSICAL AND CHEMICAL PROPERTIES

13.1 **Physical State at 15°C and 1 atm:** Solid

13.2 **Molecular Weight:** 874 (approx.)

13.3 **Boiling Point at 1 atm:** Not pertinent (decomposes)

13.4 **Freezing Point:** Not pertinent

13.5 **Critical Temperature:** Not pertinent

13.6 **Critical Pressure:** Not pertinent

13.7 **Specific Gravity:** 3.43 at 20°C (solid)

13.8 **Liquid Surface Tension:** Not pertinent

13.9 **Liquid-Water Interfacial Tension:** Not pertinent

13.10 **Vapor (Gas) Specific Gravity:** Not pertinent

13.11 **Ratio of Specific Heats of Vapor (Gas):** Not pertinent

13.12 **Latent Heat of Vaporization:** Not pertinent

13.13 **Heat of Combustion:** Not pertinent

13.14 **Heat of Decomposition:** Not pertinent

13.15 **Heat of Solution:** Not pertinent

13.16 **Heat of Polymerization:** Not pertinent

NOTES

16. CLOSURE PLANS
Part 264, Subpart G & 122.25(a)(13)

Closure:

Partial closure - The facility could be partially closed if one of the 4500 gallon storage tanks needed to be replaced or the still processing area needed to be upgraded. The tank and piping would be steam cleaned and the 450 gallons of water and hazardous residue from cleaning would be deep well injected at an EPA approved disposal site. If the still area needed to be upgraded the tanks and the piping that would not be used anymore would be steam cleaned and any obsolete equipment would be decontaminated by cleaning with solvent.

The facility would also undergo partial closure in the event that a new reclaiming facility would be built. This would neccessitate a total shut down of the storage and recycling operation to decontaminate the tanks, diked areas, and processing area. However, the solvents and the tanks would not need to be disposed of. This partial closure would require the same steps described in the following discussion of final closure except for disposal of all waste solvents rather than distilling some.

Final closure - This would occur if Reid Supply built a new TSD facility, if the facility was not profitable. In order to eliminate any threat to human health and the environment the following steps would be followed:

(1) All of the drum material and bulk storage material would have to be channeled through other TSD facilities.

   (a) 17H drums containing solid waste would be sent to Chemical Waste Management Hazardous Waste Landfill in Port Arthur, Texas.
   (b) Reclaimable chlorinated solvents would be sent to Hydrocarbon Recyclers in Tulsa, Oklahoma.
   (c) Non-reclaimable chlorinated solvents would be sent to the Chemical Waste Management Hazardous Waste Landfill in Emelle, Alabama.
   (d) Flammable liquids in tanks and drums would be blended and sent to Systech in Fredonia, Kansas.

(2) All diked areas including those for drums and tank storage would be scraped of any paint or other residue, swept and steam cleaned.

(3) All tanks,piping, and still would be steam cleaned by an oil field tank cleaning company

(4) All solid residue would be collected in 17H drums and landfilled at the Chemical Waste Management Landfill at Port Arthur, Texas.

(5) All water residues from steam cleaning will be deep-well injected through Chemical Resources, Inc. in Tulsa, Oklahoma.

(6) All equipment including pumps, blenders, drum openers, hoses, and tools would be decontaminated by steam cleaning or scraping the outside and cleaning the inside with solvent to remove any residue. The water and solvent left from the cleaning will be disposed of as hazardous waste.

(7) The independent, professional engineer will make site visits at least once every thirty days during closure to see that all areas involved in hazardous waste management are rendered harmless through the above steps.

Estimate of maximum inventory -

50 X 17H drums of solid flammable waste
25 X 17E drums of reclaimable chlorinated solvents
25 X 17E drums of non-reclaimable chlorinated solvent
400 X 17E drums of flammable liquids

Decontamination - These steps are covered in the section on the section above on final closure.

Expected year of closure - The year 1999 would be the approproximate year of closure should no major improvements in tanks and equipment be made. However, if the tanks, equipment, and drum storage area were either replaced or upgraded the facility's life would be extended.

Closure could be accomplished in 180 days. The facility would follow the schedule below:

1st 90 days - stop receiving waste and dispose of drum and tank material
2nd 90 days - clear diked areas, tanks, piping and equipment

Amendment of closure estimate - Reid Supply will amend its closure estimate according to CFR 264.112(b).

Notification - The facility will notify the Region VII Administrator and KDHE within 180 days prior to the projected beginning of closure.

Certification of closure - Upon completing closure the facility will submit to the Region VII Administrator and KDHE certificatior by the owner and an independent registered professional engineer that the facility has been closed in accordance with the specifications of the approved closure plan.

Post closure plan - Reid Supply is not a disposal facility. Therefore, post closure does not apply.

17. NOTICE TO LOCAL LAND AUTHORITY

264.119

Reid Supply Company is not a disposal facility. Therefore this section does not apply.

18. NOTICE IN DEED TO PROPERTY

264.120 & 122.25 (a) (14)

Reid Supply Company is not a disposal facility. Therefore this section does not apply.

19. CLOSURE COST ESTIMATE AND FINANCIAL ASSURANCE DOCUMENT
122.25(a)(15), 264.142(a), 264.143, 264.112-115

Cost Estimate:

The cost estimate can be broken down into four main parts. They are hazardous waste disposal, tank and piping cleanup, hazardous waste area cleanup, and disposal of tank cleaning residue. Sections a and d include freight in the individual costs for disposal.

a) Hazardous waste disposal (including labor)

17H drums of solid flammable waste	50 drums X $53.00 =	$2,650.
17E drums of reclaimable chlorinated solvents	25 drums X $5.00 =	$125.00
17E drums of non-reclaimable chlorinated solvents	25 drums X $84.25 =	$2,106.25
17E drums of flammable liquids	400 drums X 55 gal. @ $.295 gal =	$6,490.
Flammable liquids in tanks	7000 gallons X $.295 gal. =	$2,065.
	TOTAL	$13,436.25

b) Tank and piping cleaning (including labor)

2 X 4500 gallons	2 X $195. =	$390.
1 X 4000 gallons	1 X 195. =	195.
1 X 1200 gallons	1 X 110. =	110.
1 X 1000 gallons	1 X 110. =	110.
2 X 750 gallons	2 X 110.	220.
1 X 600 gallons	1 X 110. =	110.
1 X 500 gallons	1 X 110. =	110.
1 X 100 gallons	1 X 55. =	55.
Piping	100 feet =	200.
		$1,500.

c) Hazardous waste area cleanup

Drum storage area cleanup	2 men X 8 hours @ $7./hr. =	$112.
Drum processing area	2 men X 8 hours @ 7./hr. =	112.
Still processing area	1 man X 8 hours @ 7./hr. =	56.
	TOTAL	$280.

d) Disposal of tank cleaning residue

1000 gallons of water from steam @ $.35/gal. =		$350.
4 X 55 gallons sand from sand blasting @ $22./dr. =		88.
	TOTAL	$438.

e) Engineering costs for onsite inspections $300.

TOTAL $15,954.25

Closure financial assurance:

Reid Supply has chosen to acquire a closure letter of credit. A copy of the irrevocable letter of credit specifying a standby trust fund follows (Fig. 61).

Fig. 61

MID KANSAS FEDERAL

Copy

IRREVOCABLE STANDBY LETTER OF CREDIT

Kansas Department of Health and Environment
Building 321
Forbes Field
Topeka, Kansas 66600

Attention: John Paul Goetz

Dear Sir or Madam:

We hereby establish our Irrevocable Standby Letter of Credit [redacted] in your favor, at the request and for the account of Reid Supply Company up to the aggregate amount of sixteen thousand U.S. dollars, $16,000.00, available upon presentation of: Ex. 4

(1) Your sight draft, bearing reference to this letter of credit [redacted] and Ex. 4
(2) Your signed statement reading as follows: "I certify that the amount of the draft is payable pursuant to regulations issued under authority of the Resource Conservation and Recovery Act of 1976 as amended."

This letter of credit is effective as of 7-11-84, and shall expire on 7-11-85, but such expiration date shall be automatically extended for a period of one year on 7-11-85, and on each successive expiration date, unless, at least 120 days before the current expiration date, we notify both you and Reid Supply Company by certified mail that we have decided not to extend this letter of credit beyond the current expiration date. In the event you are so notified, any unused portion of the credit shall be available upon presentation of your sight draft for 120 days after the date of receipt by both you and Reid Supply Company, as shown on the signed return receipts.

Whenever this letter of credit is drawn on under and in compliance with the terms of this credit, we shall duly honor such draft upon presentation to us, and we shall deposit the amount of the draft directly into the Standby Trust fund of Reid Supply Company in accordance with your instructions.

We certify that the wording of this letter of credit is identical to the wording specified in 40 CFR 264.151 (d) as such regulations were constituted on the date shown immediately below.

Connie White

Connie White
Assistant Treasurer
7-11-84

The credit is subject to the Uniform Commercial Code.

20. POST-CLOSURE COST ESTIMATE

Reid Supply is not a disposal facility. Therefore this section does not apply.

21. LIABILITY INSURANCE POLICY SUDDEN AND ACCIDENTAL OCCURANCES - PROPERTY AND BODILY INJURY 264.147(a)(1)

Sudden and Accidental Occurances:

To demonstrate Reid Supply's financial responsibility for claims resulting from sudden and accidental occurances that cause injury to persons or property a RCRA Certificate of Insurance has been obtained (Fig. 62).

Non-Sudden Liability Insurance:

This does not apply to a storage facility that does not have a land fill or land treatment facility.

HAZARDOUS WASTE FACILITY
CERTIFICATE OF LIABILITY INSURANCE

COPY

1. TWIN CITY FIRE INSURANCE COMPANY
HARTFORD, CONNECTICUT

hereby certifies that it has issued liability insurance covering Bodily, Injury & Property Damage to REID SUPPLY COMPANY, INC. WICHITA, KANSAS
in connection with the insured's obligation to demonstrate Financial Responsibility under 40CFR264.147 or 265.147.

The coverage applies at REID SUPPLY CO., INC., EPA ID #KSD007246846, WICHITA, KANSAS

for sudden accidental occurrences.

The limits of liability are $2,000,000 each occurrence and $2,000,000 annual aggregate, exclusive of legal defense costs. The coverage is provided under policy number [redacted] issued on March 23, 1984. The effective date of said policy is March 23, 1984. Ex. 4

2. The Insurer further certifies the following with respect to the insurance described in Paragraph 1:

(a) Bankruptcy or insolvency of the insured shall not relieve the Insurer or its obligations under the policy.
(b) The Insurer is liable for the payment of amounts within any

deductible applicable to the policy, with a right of reimbursement by the Insured for any such payment made by the Insurer. This provision does not apply with respect to that amount of any deductible for which coverage is being demonstrated as specified in 40CFR 264.174 (f).

(c) Whenever requested by a Regional Administrator of the U.S. Environmental Protection Agency (EPA), the Insurer agrees to furnish to the Regional Administrator a signed duplicate original of the policy and all endorsements.

(d) Cancellation of the insurance, whether by the Insurer or the Insured will be effective only upon written notice and only after the expiration of sixty (60) days after a copy of such written notice is received by the Regional Administrator(s) of the EPA Region(s) in which the facility(ies) is (are) located.

(e) Any other termination of the insurance will be effective only upon written notice and only after the expiration of thirty (30) days after a copy of such written notice is received by the Regional Administrator(s) of the EPA Region(s) in which the facility(ies) is (are) located.

I hereby certify that the wording of this instrument is identical to the wording specified in 40CFR 264.151 (j) as such regulation was constituted on the date first above written, and that the Insurer is licensed to transact the business of insurance or eligible to provide insurance as an excess or surplus lines insurer, in one or more states.

NAME AND ADDRESS OF CERTIFICATE HOLDER:

Kansas Department of Health & Environment
Hazardous Waste Facility Mgmt. Section
Forbes Field
Topeka, Kansas 66620

Richard J. Barrett

Signature of authorized representative of Insurer

Authorized Representative of : Twin City Fire Insurance Company

Address of Representative : J.H. Blades & Co.
P.O. Box 3328
Tulsa, Oklahoma 74101

22. PROOF OF COVERAGE BY STATE FINANCIAL MECHANISM 122.25(a)(18)

This does not apply to Reid Supply.

23. MANIFEST SYSTEM, RECORDKEEPING, AND REPORTING Part 264, Subpart E

Use of Manifest System:

When hazardous waste is accompanied by a manifest at Reid Supply Company, the process engineer or other authorized employee signs and dates the manifest to certify that the hazardous waste list in the manifest was received. He also inspects the manifest for any errors or discrepancies which he must note on each copy of the manifest. He then gives a copy of the signed manifest to the transporter if it is other than Reid Supply Company, and within 30 days sends the original copy back to the generator. At the facility he retains a copy of each manifest for at least three years from the date of delivery.

Whenever a shipment of hazardous waste is initiated from Reid Supply the shipment will comply with the requirements of Part 262 of 40 CFR.

Manifest Discrepancies:

If there is a discrepancy with quantity or type of hazardous waste on the manifest, the process engineer is to attempt to reconcile the difference within 15 days after receiving the waste. If the discrepancy is not resolved in this time the process engineer is to submit to the Regional Administrator a letter describing the discrepancy and attempts to reconcile it, and a copy of the manifest or shipping paper.

Operating Record:

A written operating record will be kept at the facility until closure containing the following information:

(1) Description of the quantity of each waste received for storage.
(2) Location of each waste within the facility and the quantity at each location (for wastes accompanied by manifest numbers).
(3) Records and results of waste analyses performed.
(4) Summary reports and details of all incidents that require implementing the contingency plan.
(5) Records and results of inspections.
(6) Monitoring, testing, or analytical data.

(7) Notices to generators.
(8) Closure cost estimate.

Availability, Retention, and Disposition of Records:

Any representative of EPA who is designated by the Administrator is welcome to review Reid Supply's records relating to the above operating record. The three year retention period is automatically extended during an unresolved enforcement action or if the Administrator requests it. The facility will provide records of waste disposal locations and quantities to the Regional Administrator and local land authority upon closure.

Reports:

Reid Supply has and will submit an annual report in accordance with 40 CFR 264.75.

The facility will also report: releases, fires, explosions, and closure.

Reid Supply will not receive unmanifested waste. If it does, the Regional Administrator and KDHE will be notified within 15 days after receiving the waste.

Other Federal Laws:

We have no known interface or involvement with any of the laws referenced in 40 CFR Part 122.25(a)(20) and 122.12.

24. ENGINEER CERTIFICATION
122.25

The design drawings of the large 4500 gallon storage tanks (Fig.37) and of the drum storage area (Fig.31) have been certified by a registered professional engineer, Elbert Deforest. The other tank drawings are not certified but do provide the reviewer with a visual idea of the other smaller tanks and their function.

25. PERMIT APPLICATION CERTIFICATION 270.11(a) and (d)

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 for 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.

David G. Trombold

David G. Trombold
Vice-President

12/4/84

26. APPENDIX A

One industry that has just recently been affected by environmental regulations is the drycleaning industry. More and more drycleaners are looking for a way to dispose of their filter cartridges and waste perchloroethylene. With hazardous waste landfills becoming more restricted, economic alternatives are being sought. Reid Supply already sells filters and perchloroethylene to its customers and would like to help them with their disposal dilemma.

Reid Supply has determined a way of handling drycleaning waste which compelments what it is already doing with the wastestreams it presently receives from customers. Perchloroethylene still bottoms from drycleaning are already being blended with other high BTU/pound solvent to be used as a cement kiln fuel source. However, perchloroethylene still bottoms suitable for blending as fuel are generated only by plants that have efficient stills. Many plants for one reason or another cannot drive off enough perchloroethylene to raise the BTU/pound level above 8,000 which is required at the moment by the KDHE and EPA. But the real problem is disposing of the perchloroethylene filter cartridge. The perchloroethylene content must be reduced to .1 percent before the cartridge can be thrown away in a sanitary landfill. The problem is compounded by the fact that most filters used today have an activated carbon core to enhance filtering. This carbon core is very difficult to strip of perchloroethylene even with special equipment. Although the paper part of the cartridge may be below .10 percent the activated carbon core does not get much below 3.0 percent perchloroethylene.

In order to solve this problem, Reid Supply intends to purchase a unit that will strip perchloroethylene from cartridges and also distill waste perchloroethylene. A picture of one is included. This unit will allow perchloroethylene to be recycled and reduce the perchloroethylene content to below .10 percent for the paper part of the filter and to about 3.0 percent for the carbon core. The paper and metal part of the filter can be discarded but the carbon as well as any still bottoms still have to be treated as hazardous waste. The still bottoms will be distilled to the point that the BTU/pound level was at least 8,000 and then be blended for fuel at a cement kiln. The carbon can be removed and ground

to a size that will pass through the cement kiln's filter system. Reid Supply would acquire a suitable grinder for this. The carbon having a BTU/pound over 8,000 could then be blended with waste solvent and used as fuel at the cement kiln. This plan would solve the undesirable problems of drycleaning wastestreams while reducing energy consumption and reclaiming perchloroethylene for future use.

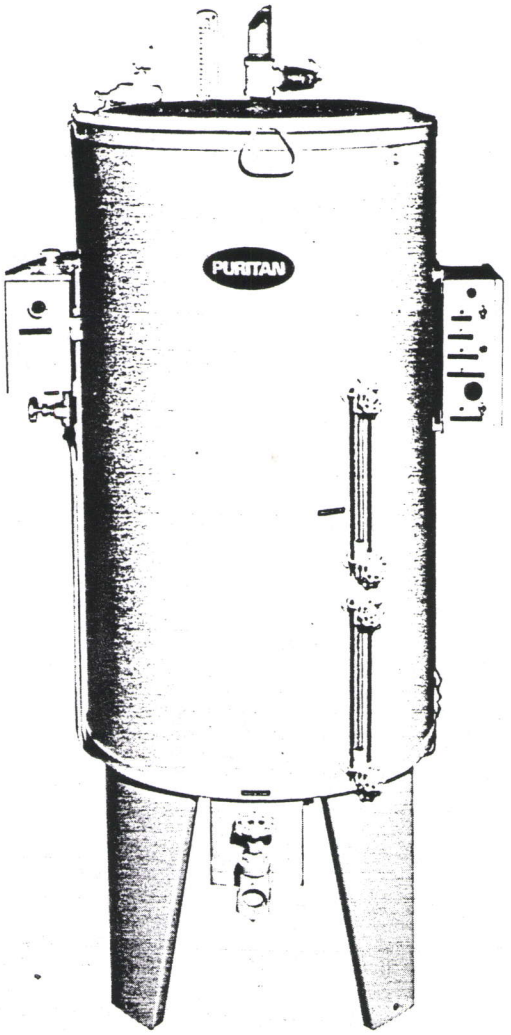
Since the drycleaning waste is relatively consistent industry wide and generated in a closed system, it should be simple to show that no involved analysis would be necessary to receive this specific type of waste. At this point Reid Supply needs to collect data to develop a responsible yet economic scheme for drycleaning waste disposal.

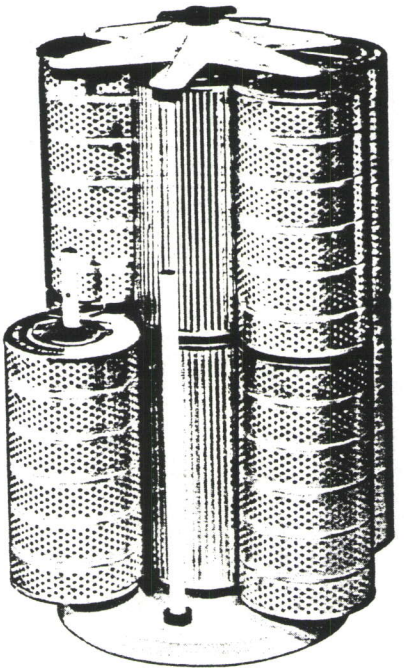
Additional considerations are that most drycleaners collect their perchloroethylene sludge in DOT 37B60 five gallon containers. This would be a new type of hazardous waste storage container for Reid Supply besides 17E and 17H drums. Training for opening filter cartridges, grinding carbon, and still operation would be necessary.

Drycleaning waste is a natural direction for Reid Supply to go. There would be minor adjustments to handle the waste and therefore, there would be minor changes to the present permit. Reid Supply would like to keep this avenue open for discussion and review with the KDHE and the EPA so that there would be flexibility within the Part B permit to handle drycleaning waste in the way previously described.

Puritan 4000
SOLVENT RECOVERY SYSTEM

for cost effective cartridge and still residue stripping and high performance distillation





Removable sparging unit for stripping perc from cartridges.

SEE OTHER SIDE FOR DETAILS . . .

CHEMICALS AND SUPPLIES FOR INDUSTRY — INSTITUTIONS DRY CLEANERS — LAUNDRIES MUNICIPALITIES
RESCO

The Reid Supply Company

911 E. Indianapolis
Wichita, Kansas 67211
267-1231
(AC 316)

950 Liberty
Kansas City, Missouri 64101
842-4440
(AC 816)

Mr. John Ramsey
KDHE Bureau of Waste Management
Forbes Field
Topeka, KS 66620

1/14/85

Reply to Wichita office

EPA-ARWM/PMTS

JAN 17 1985

Region VII K.C., MO

Dear John:

Enclosed are copies of the corrected page 83 of our Part B application. The correction is "degrees" from "feet" in section C.1. Please substitute each page for the original that you received on December 8, 1984.

I have also sent a copy to Karen Flournoy for her copy.

Yours truly,

David Trombold

David Trombold
Hazardous Waste Coordinator

cp: Karen Flournoy EPA

Enc.

DT/lt

B. Measurements shall be concentrated at areas on the tank shell which are most likely to be in frequent contact with stored liquid.

C. At minimum, measurements shall be made as follows:

1. For the tank wall, take measurements along three vertical rows spaced 120 degrees apart, at no less than two foot vertical intervals. At least one measurement in each row shall be taken within one foot of the bottom of the tank. Measurements shall be concentrated up to the most common liquid level of the tank.
2. For the tank bottom, take no fewer than four measurements, at least two feet from the center point of the tank bottom, spaced at 90 degrees intervals.
3. At least 25 percent of all measurements must be taken within one inch of a seam ("heat affected zone"), if possible.

The person operating the ultrasonic thickness meter was trained by Dupont Chemical Company during his employment there.

All tanks are vented to the atmosphere to assure that they do not collapse or rupture during regular filling and emptying procedures. In addition, the two 4500 gallon storage tanks have the upper parts that are 18 inches in diameter specially attached so that should there be a rapid increase in pressure due to an internal explosion the ports would be able to release pressure to accomodate the explosion. This would help prevent a severe rupture of the tank.

General Operating Requirements:

The cold steel tanks are compatible with the waste solvents and solids that are contained by them. The one potentially damaging variable in the hazardous waste contained by the steel tanks is pH. The pH, which is monitored by the fingerprint analysis of each incoming wastestream, is not allowed to be below 4 or above 11. This will prevent rapid corrosion of the tanks. No special lining, coating, or inhibitors are necessary.

The two 4500 gallon tanks have an automatic overfill prevention control. This control mechanism is fastened inside an open top 55 gallon drum and operates by means of a float and air valve. When either one of the 4500 gallon tanks is full, the liquid overflows through a pipe down into the drum with the overfill control mechanism. The float of the fastened mechanism will rise with the solvent level and activate a switch that

NAME OF FACILITY: Rei[redacted]

LOCATION: Wichita

EPA I.D. NO. KSD007246846

REVIEWED BY: Karen Flournoy

DEC. '84 REVISION

GENERAL FACILITY STANDARDS

ITEM	COMPLETENESS REVIEW	TECHNICAL REVIEW	COMMENTS	PERMIT COND. Ref. No.	Cond. No.
1. GENERAL DESCRIPTION OF FACILITY 270.14(b)(1) (Note: For new facilities, Part A of the permit application satisfies this requirement. For existing facilities, the Part A originally submitted (or the most recent revised Part A) satisfies this requirement, as long as the Part A remains complete and accurate.	Revised Part A OK Also waste flow diagram - OK				
2. TOPOGRAPHIC MAP 270.14(b)(19) A. One topographic map showing a distance of 1000 ft.* around the facility at a scale of 2.5 centimeters (1 inch) equal to not more than 61.0 meters (200 ft.). Contours must be shown on the map.	USGS only topo map available				
(*NOTE: For large HWMF review on case-by-case basis use of other scales)					
B. The contour interval must be sufficient to clearly show the pattern of surface water flow in the vicinity of and from each operational unit of the facility (e.g., 5 ft. contour intervals if relief greater than 20 ft. or 2 ft. intervals if relief less than 20 ft.).					
C. The map shall clearly show the following: (i) Map scale and date; (ii) 100 yr. floodplain area; (iii) Surface waters including intermittent streams; (iv) Surrounding land uses;					

EPA I.D. NO.:

ITEM	COMPLETENESS REVIEW	TECHNICAL REVIEW	COMMENTS	PERMIT COND. Ref. No.	Cond. No.
(v) Wind rose (prevailing windspeed and direction);					
(vi) North arrow;					
(vii) Legal boundaries of HWM site;					
(viii) Access control (fences, gates);					
(ix) Injection and withdrawal wells both on-site and off-site;					
(x) Buildings; treatment, storage or disposal operations or other structures;					
(xi) Barriers for drainage or flood control;					
(xii) Location of operational units within HWM site where hazardous waste will be treated, stored or disposed of.					
3. FACILITY LOCATION INFORMATION 270.14(b)(11) & 264.18(a)(b) and Appendix VI (Part 264)					
A. Seismic Standard - applicable only to new facilities. To determine applicability of seismic std. (264.18(a)) the owner/operator of a new facility must identify the political jurisdiction in which the facility is proposed to be located.	NA				
(i) If the county or election district is not listed in Appendix VI, Part 264, no further information is required to demonstrate compliance with 264.18(a). Not applicable to facilities in Region VII (see 11/23/82 Federal Register).					
(ii) If the county or election district is listed in Appendix IV, Part 264 see 264.18(a) and 270.14(b)(11) for further information requirements.					

[redacted] NO.:

ITEM	COMPLETENESS REVIEW	TECHNICAL REVIEW	COMMENTS	PERMIT COND. Ref. No.	Cond. No.
Floodplain Standard B. Owners/operators of all facilities shall provide an identification of whether facility is located within 100 year floodplain. (i) This identification must indicate the source of data for such determination and include a copy of Federal Insurance Administration (FIA) flood map, or calculations and maps used if FIA map is not available. Information shall also be provided identifying 100 year flood level and other special flooding factors which must be considered in designing, constructing, operating or maintaining the facility to withstand washout from a 100 year flood.	ok not in 100 yr floodplain per Flood Hazard Boundary Map				
C. Owners and operators of facilities located in the 100 year floodplain must provide the following information: (i) Engineering analysis to indicate the various hydrodynamic and hydrostatic forces expected to result at the site as a consequence of a 100 year flood. (ii) Structural or other engineering studies showing the design of operational units (e.g., tanks, incinerators) and flood protection devices (e.g., floodwalls, dikes) at the facility and how these will prevent washout. (iii) If applicable, and in lieu of paragraphs (i) and (ii) above, a detailed description of procedures to be followed to remove hazardous waste to safety before the facility is flooded, including:	NA				

ITEM	COMPLETENESS REVIEW	TECHNICAL REVIEW	COMMENTS	PERMIT COND. Ref. No.	Cond. No.
(a) timing of such movement relative to flood levels, including estimated time to move the waste, to show that such movement can be completed before floodwaters reach the facility, (b) a description of the location(s) to which the waste will be moved and demonstration that those facilities will be eligible to receive hazardous waste in accordance with the regulations under Parts 270 and 124, and 264 through 266 of this chapter, (c) the planned procedures, equipment, and personnel to be used and the means to ensure that such resources will be available in time for use. (d) the potential for accidental discharges of the waste during movement.					
D. Existing facilities NOT in compliance with Sec. 264.18(b) shall provide a plan showing how the facility will be brought into compliance and a schedule for compliance.					
4. TRAFFIC PATTERNS 270.14(b)(10)					
A. Describe: (i) Traffic pattern, (ii) Estimated volume (numbers and types of vehicles), (iii) Traffic control (turns across traffic lanes, stacking lanes), (iv) Access road surfacing, (v) Load bearing capacity, (vi) Traffic control signals.	(i) OK - shown on map OK (ii) OK pg. 21 (iii) & (vi) shown on map OK (iv) & (v) pg 21 OK				

ITEM	COMPLETENESS REVIEW	TECHNICAL REVIEW	COMMENTS	PERMIT COND. Ref. No.	Cond. No.
5. CHEMICAL AND PHYSICAL ANALYSES 264.13(a) & 270.14(b)(2) A. At a minimum these analyses shall contain all the information which must be known to treat, store, or dispose of the wastes properly in accordance with Part 264. The analyses may: (i) be conducted on a representative sample of each hazardous waste; (ii) include waste characterization data developed under Part 261; (iii) include existing published or documented data on the hazardous waste or on hazardous waste generated from similar processes (e.g., the facility's records of past analyses performed on the waste); and (iv) be based on information supplied by the generator of the wastes. (NOTE: The Part B application should contain examples of waste analyses representative of the type of waste handled at the facility.)					
6. WASTE ANALYSIS PLAN 264.13(b),(c) & 270.14(b)(3) A. The waste analysis plan describes the procedures which the facility will carry out to conduct required waste analyses. At a minimum, the plan must specify: (i) The parameters for which each hazardous waste will be analyzed and the rationale for the selection of these parameters; (ii) The test methods which will be used to test for these parameters;					

ITEM	COMPLETENESS REVIEW	TECHNICAL REVIEW	COMMENTS	PERMIT COND. Ref. No.	Cond. No.
(iii) The sampling method which will be used to obtain a representative sample of the waste to be analyzed. A representative sample may be obtained using either: (a) One of sampling methods described in Appendix of Part 261 of this Chapter; or (b) An equivalent sampling method. [Comment: See Sec. 260.21 for related discussion.] (iv) The frequency with which the initial analysis of the waste will be reviewed or repeated to ensure that the analysis is accurate and up to date. v. Where applicable, methods used to meet additional waste analysis requirements as specified in 264.17 and 264.341. B. For off-site facilities, the plan must also specify: (i) the waste analyses that hazardous waste generators have agreed to supply; and (ii) the procedures which will be used to inspect and if necessary, analyze each movement of hazardous waste received at the facility to ensure that it matches the identity of the waste designated on the accompanying manifest or shipping paper. At a minimum, the plan must describe: (a) the procedures which will be used to determine the identity of each movement of waste managed at the facility; and (b) the sampling method which will be used to obtain a representative sample of the waste to be identified, if the identification method includes sampling.					

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7. SECURITY PROCEDURES 264.14 & 270.14(b)(4) A description of the security procedures and equipment required by Sec. 264.14, or a justification demonstrating the reasons for requesting a waiver of this requirement. If a waiver is not requested, the facility must have: (1) A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel) which continuously monitors and controls entry onto the active portion of the facility; or (2)(i) An artificial or natural barrier (e.g., a fence in good repair or a fence combined with a cliff), which completely surrounds the active portion of the facility; and (ii) A means to control entry, at all times, through the gates or other entrances to the active portion of the facility (e.g., an attendant, television monitors, locked entrance, or controlled roadway access to the facility). These requirements are satisfied if the active portion of the facility is located within a facility or plant which has a surveillance system, or a barrier and a means to control entry, which complies with the above requirements.					

ITEM	COMPLETENESS REVIEW	TECHNICAL REVIEW	COMMENTS	PERMIT COND. Ref. No.	Cond. No.
If a waiver is not granted, the facility must also have a sign with the legend, "Danger-Unauthorized Personnel Keep Out" which must be posted at each entrance to the active portion of the facility, and at other locations, in sufficient numbers to be seen from any approach to this active portion. The legend must be written in English and in any other language predominant in the area surrounding the facility and must be legible from a distance of at least 25 feet. Existing signs with a legend other than "Danger-Unauthorized Personnel Keep Out" may be used if the legend on the sign indicates that only authorized personnel are allowed to enter the active portion, and that entry onto the active portion can be dangerous. If a waiver of these requirements is requested, the owner or operator must demonstrate that: (1) Physical contact with the waste, structures, or equipment within the active portion of the facility will not injure unknowing or unauthorized persons or livestock which may enter the active portion of a facility; and (2) Disturbance of the waste or equipment, by the unknowing or unauthorized entry of persons or livestock onto the active portion of a facility, will not cause a violation of the reqirements of Part 264.					

ITEM	COMPLETENESS REVIEW	TECHNICAL REVIEW	COMMENTS	Inspection Req. PERMIT COND. Ref. No.	Cond. No.
8. GENERAL INSPECTION REQUIREMENTS 264.15 & 270.14(b)(5)					
A. A copy of the general inspection schedule required by Sec. 264.15(b); (Note: include, where applicable, as part of inspection schedule, specific requirements in Sections 264.174, 264.194, 264.226, and 264.254. See attached checklists).					
The schedule must include inspections of monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment (such as dikes and sump pumps) that are important to preventing, detecting or responding to environmental or human health hazards.					
(i) The schedule must identify the types of problems which are to be looked for during the inspection (such malfunctions, deteriorations, operator errors, or discharges as inoperative sump pumps, leaking fitting, eroding , dikes, etc.).					
(ii) The frequency of inspection may vary for the items on the schedule. However, it should be based on the rate of possible deterioration of the equipment and the probability of an environmental or human health incident if the deterioration or malfunction or any operator error goes undetected between inspections. Areas subject to spills, such as loading and unloading areas, must be inspected daily when in use.					

EPA I.D. NO.:

ITEM	COMPLETENESS REVIEW	TECHNICAL REVIEW	COMMENTS	PERMIT COND. Ref. No.	Cond. No.
B. The owner/operator must remedy any deterioration or malfunction of equipment or structures, which the inspection reveals, on a schedule which ensures that the problem does not lead to an environmental or human health hazard. Where a hazard is imminent or has already occurred, remedial action must be taken immediately.					
C. The owner/operator must record inspections in an inspection log or summary. At a minimum, the record must include date and time of inspection, name of inspector, note of observations made and date and nature of repairs or remedial action. These records must be kept for three years from the date of inspection.					
9. WAIVER OF PREPAREDNESS AND PREVENTION REQUIREMENTS PART 264, SUBPART C					
A. A justification of any request for a waiver(s) of the preparedness and prevention requirements of Part 264, Subpart C.					
(i) Requests for a waiver from any of the equipment requirements must be accompanied by a demonstration that none of the hazards posed by waste handled at the facility could require the particular kind of equipment.					
(ii) Requests for a waiver of the aisle space requirement must be accompanied by a demonstration that aisle space is not needed to allow the					

ITEM	COMPLETENESS REVIEW	TECHNICAL REVIEW	COMMENTS	PERMIT COND. Ref. No.	Cond. No.
unobstructed movement of personnel, fire protection equipment, spill control equipment, or decontamination equipment to any area of facility operation in an emergency. B. Part 264, Subpart C requires the following preparedness and prevention measures: Required equipment 264.32: (i) internal communication or alarm system capable of providing immediate emergency instruction (voice or signal). (ii) Device, such as a telephone immediately available at the scene, or a hand-held two-way radio capable of summoning emergency assistance. (iii) Portable fire extinguishers, fire control equipment (e.g., equipment using foam, inert gas or dry chemicals), spill control equipment and decontamination equipment. (iv) Water at adequate volume and pressure to supply water hoses, automatic sprinklers or water spray systems. C. Testing and maintenance of equipment 264.33 - All required equipment must be tested and maintained as necessary to assure its proper operation in time of emergency. D. Access to communications or alarm system 264.34 - Whenever hazardous waste is being handled, all personnel involved in the operation must have immediate access to an internal alarm or emergency communication device, either directly or through voice or					

ITEM	COMPLETENESS REVIEW	TECHNICAL REVIEW	COMMENTS	PERMIT COND. Ref. No.	Cond. No.
visual contact with another employee. (ii) If there is ever just one employee on-site while the facility is operating, he must have immediate access to a device such as a telephone or hand-held two-way radio.					
E. Required aisle space 264.35 (i) Owner/operator must maintain aisle space to allow unobstructed movement of personnel, fire protection equipment, spill control and decontamination equipment to any area of facility operation in an emergency.					
F. Arrangements with local authorities 264.37 Owner/operator must attempt to make the following arrangements, as appropriate: (i) Arrangements to familiarize police, fire departments and emergency personnel with layout of facility, properties and hazards of hazardous waste handled, places where personnel will be working roads and evacuation routes. (ii) Where more than one police or fire department might respond, agreements designating primary authority and support to primary authority should be developed. (iii) Agreements with state emergency response teams, emergency response contractors and equipment suppliers (iv) Arrangements to familiarize hospitals with properties of hazardous waste handled and types of injuries or illnesses which could result from fires, explosions or releases.					

EPA I.D. NO.:

ITEM	COMPLETENESS REVIEW	TECHNICAL REVIEW	COMMENTS	PERMIT COND. Ref. No.	Cond. No.
(v) Where state or local authorities refuse to enter into such arrangements, the owner/operator must document the refusal in the operating record. (vi) Refer to 12B.					
10. PREVENTIVE PROCEDURES (PROCEDURES, STRUCTURES OR EQUIPMENT) 270.14(b)(8)					
A. A description of procedures, structures, or equipment used at the facility to: (i) Prevent hazards in unloading operations (for example, ramps, special forklifts); (ii) Prevent runoff from hazardous waste handling areas to other areas of the facility or environment, or to prevent flooding (for example, berms, dikes, trenches); (iii) Prevent contamination of water supplies; (Note: Check the map submitted with the Part B for evidence of nearby water supplies.) (iv) Mitigate effects of equipment failure and power outages; (v) Prevent undue exposure of personnel to hazardous waste (for example, protective clothing).					
11. GENERAL REQUIREMENTS FOR IGNITABLE, REACTIVE OR INCOMPATIBLE WASTES 264.17, 264.36 & 270.14(b)(9)					
A description of precautions to prevent accidental ignition or reaction of ignitable, reactive, or incompatible wastes as required to demonstrate compliance with Sec. 264.17 including					

ITEM	COMPLETENESS REVIEW	TECHNICAL REVIEW	COMMENTS	PERMIT COND. Ref. No.	Cond. No.
documentation demonstrating compliance with Section 264.17(c).					
A. Check Part A and waste analysis submitted with Part B to determine if facility handles ignitable, reactive, or incompatible wastes.					
B. Facilities handling ignitable, reactive or incompatible wastes must demonstrate compliance with the appropriate requirements listed below. This documentation may be based on references to published scientific or engineering literature, data from trial tests (e.g., bench scale or pilot scale tests), waste analyses (as specified in Sec. 264.13), or the results of the treatment of similar wastes by similar treatment processes and under similar operating conditions					
C. All facilities handling ignitable or reactive waste must meet these requirements: (i) This waste must be separated and protected from sources of ignition or reaction including but not limited to: open flames, smoking, cutting and welding, hot surfaces, frictional heat, sparks (static, electrical or mechanical), spontaneous ignition (e.g., from heat-producing chemical reactions), and radiant heat.					
(ii) While ignitable or reactive waste is being handled, the owner or operator must confine smoking and open flame to specially designated locations;					

ITEM	COMPLETENESS REVIEW	TECHNICAL REVIEW	COMMENTS	PERMIT COND. Ref. No.	Cond. No.
(iii) "No Smoking" signs must be conspicuously placed wherever there is a hazard from ignitable or reactive waste.					
D. Owners/operators of facilities handling ignitable, reactive or incompatible waste must meet the following requirements whenever 264.17(b) is referenced in the regulations for the appropriate type of facility: Where specifically required by other Sections of Part 264, the owner or operator of a facility that treats, stores or disposes ignitable or reactive waste, or mixes incompatible waste or incompatible wastes and other materials, must take precautions to prevent reactions which: (i) Generate extreme heat or pressure, fire or explosions, or violent reactions; (ii) Produce uncontrolled flammable fumes, dusts, or gases in sufficient quantities to threaten human health or the environment; (iii) Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions; (iv) Damage the structural integrity of the device or facility; (v) Through other like means threaten human health or the environment.					

ITEM	COMPLETENESS REVIEW	TECHNICAL REVIEW	COMMENTS	PERMIT COND. Ref. No.	Cond. No.
12. CONTINGENCY PLAN AND EMERGENCY PROCEDURES, PART 264, SUBPART D & 270.14(b)(7) A copy of the contingency plan as required by Part 264, Subpart D. A. The contingency plan must: describe the actions facility personnel must take to comply with Sections 264.51 and 264.56 in response to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water at the facility. (Note: If the owner or operator has already prepared a Spill Prevention, Control, and Counter-measures (SPCC) Plan in accordance with Part 172 or Part 151 of this Chapter, or some other emergency or contingency plan, he need only amend that plan to incorporate hazardous waste management provisions that are sufficient to comply with the requirements of this Part.) B. Describe arrangements agreed to by local police departments, fire departments,hospitals, contractors, and State and local emergency response teams to coordinate emergency services pursuant to Section 264.37. Refer to 9.F.					

ITEM	COMPLETENESS REVIEW	TECHNICAL REVIEW	COMMENTS	PERMIT COND. Ref. No.	Cond. No.
C. (i) List names, addresses, and phone numbers (office and home) of all persons qualified to act as emergency coordinator (see Sec. 264.55), and this list must be kept up to date. Where more than one person is listed, one must be named as primary emergency coordinator and others must be listed in the order in which they will assume responsibility as alternates. (ii) For new facilities, the information regarding emergency coordinator(s) must be supplied to the Regional Administrator at the time of certification, rather than at the time of permit application.					
D. Include a list of all emergency equipment at the facility (such as fire extinguishing systems, spill control equipment, communications and alarm systems (internal and external), and decontamination equipment), where this equipment is required. This list must be kept up to date. In addition, the plan must include the location of each item on the list, and a brief outline of its capabilities. (264.52)					
E. The plan must also include an evacuation plan for facility personnel where there is a possibility that evacuation could be necessary. This plan must describe signal(s) to be used to begin evacuation, evacuation routes, and alternate evacuation routes (in cases where the primary routes could be blocked by releases of hazardous waste or fire). (264.52)					

ITEM	COMPLETENESS REVIEW	TECHNICAL REVIEW	COMMENTS	PERMIT COND. Ref. No.	Cond. No.
EMERGENCY COORDINATOR (264.55)					
A. At all times, there must be at least one employee either on the facility premises or on call with the responsibility for coordinating all emergency response measures. This emergency coordinator must be thoroughly familiar with all aspects of the facility's contingency plan, all operations and activities at the facility, location and characteristics of waste handled, location of all records within the facility and facility layout. This person must have the authority to commit the resources needed to carry out the contingency plan.					
B. See 264.56 Emergency Procedures for detailed duties of the emergency coordinator. The emergency coordinator's duties include: activating alarms, notifying all appropriate authorities, identifying character, source, amount and extent of release, assessing hazards, preventing spread of release, monitoring site, site cleanup, reporting and preparing site to resume operations.					

EPA I.D. NO.:

ITEM	COMPLETENESS REVIEW	TECHNICAL REVIEW	COMMENTS	PERMIT COND. Ref. No.	Cond. No.
Coordination Agreements for Primary Authority (See 264.37)					
13. PERSONNEL TRAINING 264.16 & 270.14(b)(12)					
An outline of both the introductory and continuing training programs by owners or operators to prepare persons to operate or maintain the HWM facility in a safe manner as required to demonstrate compliance with Sec. 264.16. A brief description of how training will be designed to meet actual job tasks in accordance with requirements in Section 264.16(a)(3).					
(Note: on-the-job training may be used to comply with these requirements.)					
A. The outline should briefly: (i) indicate the job title and duties of each employee; (ii) Describe the content, schedule, and techniques used in training each employee; (iii) Describe both introductory and continuing training (including an annual review of the initial training; (iv) Show that the program is directed by a person trained in hazardous waste management; (v) Show that the program includes instruction which teaches facility personnel hazardous waste management procedures (including contingency plan implementation) relevant to the positions in which they are employed;					

ITEM	COMPLETENESS REVIEW	TECHNICAL REVIEW	COMMENTS	PERMIT COND. Ref. No.	Cond. No.
(vi) Show that the program is designed to ensure that facility personnel are able to respond effectively to emergencies by familiarizing them with emergency procedures, emergency equipment, and emergency systems, including where applicable: (a) Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment; (b) Key parameters for automatic waste feed cut-off systems; (c) Communications or alarm systems; (d) Response to fires or explosions; (e) Response to ground-water contamination incidents; and (f) Shutdown of operations.					
B. For existing facilities, the outline should indicate that training has been given to and successfully completed by facility personnel within six months after the effective date of these regulations or six months after the date of their employment or assignment to a facility, or to a new position at a facility, whichever is later. Employees hired after the effective date of these regulations must not work in unsupervised positions until they have completed the training requirements.					

ITEM	COMPLETENESS REVIEW	TECHNICAL REVIEW	COMMENTS	PERMIT COND. Ref. No.	Cond. No.
C. REQUIRED RECORDS 264.16(d) & (e) A. The permittee must maintain the following documents and records at the facility: (i) Job title for each position at facility related to hazardous waste management, and name of employee filling each job. (ii) Written job description for each position related to hazardous waste management. (iii) Written description of type and amount of both introductory and continuing training that will be given to each person filling a position related to hazardous waste management. (iv) Records documenting that the training or job experience required above has been given to and completed by facility personnel. B. Training records on current personnel must be kept until closure of the facility; training records on former employees must be kept for at least three years from the date the employee last worked at the facility. Personnel training records may accompany personnel transferred within the same company.					

EPA I.D. NO.:

ITEM	COMPLETENESS REVIEW	TECHNICAL REVIEW	COMMENTS	PERMIT COND. Ref. No.	Cond. No.
14. CLOSURE/POST-CLOSURE PLANS PART 264, SUBPART G & 270.14(b)(13) Closure Plan - All facilities: The plan must identify steps necessary to completely or partially close the facility at any point during its intended operating life and to completely close the facility at the end of its intended operating life. The plan should also describe all HWM activities at the site. A. The closure plan must include at least: (i) A description of how and when the facility will be partially closed, if applicable, and finally closed. The description must identify the maximum extent of the operation which will be unclosed during the life of the facility, and how the requirements of Sections 264.111, 264.113, 264.114, 265.115, and the applicable closure requirements of Sections 264.178, 264.197, 264.228 and 264.258 will be met; (ii) An estimate of the maximum inventory of wastes in storage and in treatment at any time during the life of the facility; (iii) A description of the steps needed to decontaminate facility equipment during closure; and (iv) An estimate of the expected year of closure and a schedule for final closure. The schedule must include, at a minimum, the total time required to close the facility and the time					

EPA I.D. NO:

ITEM	COMPLETENESS REVIEW	TECHNICAL REVIEW	COMMENTS	PERMIT COND. Ref. No.	Cond. No.
required for intervening closure activities which will allow tracking of the progress of closure. (For example, in the case of a landfill, estimates of the time required to treat and dispose of all waste inventory and of the time required to place a final cover must be included.)					
B. Disposal or Decontamination of Equipment (264.114)					
When closure is completed, all facility equipment and structures must have been properly disposed of, or decontaminated by removing all hazardous waste and residues. The plan should address disposal or decontamination of soils, as appropriate.					
C. CERTIFICATION OF CLOSURE (264.115)					
When closure is completed, the permittee must submit to EPA certification both by an independent registered professional engineer and the permittee that the facility has been closed in accordance with the approved closure plan.					
D. POST-CLOSURE PLAN (264.118)					
A disposal facility must have a written post-closure plan. In addition, certain piles and certain surface impoundments from which the owner or operator intends to remove all wastes at closure are required by 264.228 and 264.258 to have post-closure plans. The plan must identify the activities which will be carried on after closure and the					

ITEM	COMPLETENESS REVIEW	TECHNICAL REVIEW	COMMENTS	PERMIT COND. Ref. No.	Cond. No.
frequency of these activities and include at least: (i) Description of planned monitoring activities and frequencies at which they will be performed to comply with Subparts F,K,L,M and N during the post-closure care period. (ii) Description of planned maintenance activities, and frequencies at which they will be performed to ensure: (a) the integrity of the cap and final cover or other containment systems in accordance with the requirements of Subparts K,L,M and N; (b) function of the facility monitoring equipment in accordance with the requirements of Subparts F,K,L,M and N. (c) name, address and phone number of person or office to contact about facility during the post-closure period. This person or office must keep an updated post-closure plan during the post-closure period.					
15. <u>NOTICE TO LOCAL LAND AUTHORITY 264.119</u> Within 90 days after closure is completed, the owner or operator of a disposal facility must submit to the local zoning authority or the authority with jurisdiction over local land use and to the Regional Administrator a survey plat indicating the location and dimensions of landfill cells or other disposal areas with respect to permanently surveyed benchmarks. This plat must be prepared and certified by a professional land surveyor.					

EPA I.D. NO.:

ITEM	COMPLETENESS REVIEW	TECHNICAL REVIEW	COMMENTS	PERMIT COND. Ref. No.	Cond. No.
16. NOTICE IN DEED TO PROPERTY 264.120 & 270.14(b)(14) A. The owner of the property on which a disposal facility is located must record, in accordance with State law, a notation on the deed to the facility property--or on some other instrument which is normally examined during title search--that will in perpetuity notify any potential purchaser of the property that: (i) The land has been used to manage hazardous wastes; (ii) Its use is restricted under §264.117(c); and (iii) The survey plat and record of the type, location, and quantity of hazardous wastes disposed of within each cell or area of the facility required in §265.119 have been filed with the local zoning authority or the authority with jurisdiction over local land use and with the Regional Administrator of the Environmental Protection Agency .					
17. COST ESTIMATES AND FINANCIAL ASSURANCE DOCUMENTS FOR ALL TSDs A. Closure-Owner/Operator must have a written estimate of the cost of closing the facility. [Sections 270.14(b)(15, 264.142(a), 264.143, 264.112-115)] The estimate must equal the cost of closure at the point in the facility's operating life when the extent and manner of its closure is the most expensive. [Section 264.112(a)]					

ITEM	COMPLETENESS REVIEW	TECHNICAL REVIEW	COMMENTS	PERMIT COND. Ref. No.	Cond. No.
B. Facilities may choose among these options in establishing financial assurance. (See attachment 1 RCRA Subpart H Fin. Req. Checklist (i) Closure Trust Fund [264.143(a)] (ii) Surety Bond guaranteeing payment into a closure trust fund [264.143(b)] (iii) Surety Bond guaranteeing performance of closure [264.143(c)] (iv) Closure Letter of Credit (Standby Trust Fund) [264.143(d)] (v) Insurance Policy for Closure [264.143(e)] (vi) Financial Test/Corporate Guarantee for Closure [264.143(f)] (vii) Multiple Mechanisms [264.143(g)] (viii) State Required Mechanism determined equivalent [264.149] (NOTE: Required Identical Wording of Instruments, 264.151)					
18. <u>POST-CLOSURE FINANCIAL REQUIREMENTS</u> Applies to disposal facilities, certain piles and certain surface impoundment which are required by 264.228 and 264.258 to comply with the financial requirements. [270.14(b), 264.144 - 264.145]					
A. Post-Closure - Owner/Operator of disposal facility must have written estimate of annual cost of post-closure monitoring and maintenance of the facility. [264.144]					
B. Facilities may choose from among the following options in establishing financial assurance: (i) Post-Closure Trust Fund [264.145(a)]					

ITEM	COMPLETENESS REVIEW	TECHNICAL REVIEW	COMMENTS	PERMIT COND. Ref. No.	Cond. No.
(ii) Surety Bond guaranteeing payment into a post-closure trust fund. [264.145(b)]					
(iii) Surety Bond guaranteeing performance of post-closure care. [264.145(c)]					
(iv) Post-Closure Letter of Credit (Standby Trust Fund). [264.145(d)]					
(v) Insurance Policy for Post-Closure Care. [264.145(e)]					
(vi) Financial Test/Corporate Guarantee for Post-Closure Care. [264.145(f)]					
(vii) Multiple Mechanisms [264.145(g)]					
(viii) State required mechanism determined equivalent. [264.149]					
NOTE: Required Identical Wording of Instruments [264.151]					
19. LIABILITY INSURANCE POLICY SUDDEN & ACCIDENTAL OCCURRENCES - PROPERTY & BODILY INJURY - APPLIES TO ALL TSDs					
A. Owner/Operator of TSD must demonstrate financial responsibility for claims resulting from the operation of each such facility from sudden and accidental occurrences that cause injury to persons or property. (See Attachment 2 RCRA Subpart H Liab. Ins. Checklist)					
Minimum levels of insurance:					
Sudden - $1 million per occurrence with annual aggregate of at least $2 million exclusive of legal defense costs.					
Facilities may choose:					
(i) RCRA Certificate of Insurance [264.147(a)(1)]					
(ii) RCRA Endorsement of Insurance [264.147(a)(2)]					

ITEM	COMPLETENESS REVIEW	TECHNICAL REVIEW	COMMENTS	PERMIT COND. Ref. No.	Cond. No.
(iii) Financial Test/Corporate Guarantee for Liability Insurance [264.147(a)(3)					
Required Identical Wording for RCRA Certificate or Endorsement of Liability Insurance. [264.151]					
B. Non-Sudden Liability Insurance - [264.147(b)]					
Applies to surface impoundments, landfills or land treatment facility. Owner or operator must have and maintain liability insurance for non-sudden occurrences at minimum levels of $3 million per occurrence with an annual aggregate of at least $6 million exclusive of defense costs.* (See Attachment 2 RCRA Subpart H Liab. Ins. Checklist)					
Facilities may choose:					
(i) RCRA Certificate of Insurance [264.147(b)(1)					
(ii) RCRA Endorsements of Liability Insurance [264.147(b)(2)]					
(iii) Financial Test/Corporate Guarantee for Liability Insurance [264.147(b)(3)]					
Required Identical Wording of RCRA Certificate or Endorsement [264.151]					
*Non-Sudden Liability Insurance [264.147(b) - Phase-in period:					
(i) Facilities with annual sales (≥) greater than $10 million Effective: January 1983 [264.147(b)]					

ITEM	COMPLETENESS REVIEW	TECHNICAL REVIEW	COMMENTS	PERMIT COND. Ref. No.	Cond. No.
(ii) Facilities with annual sales (>) greater than $5 million but less than $10 million Effective: January 1984					
(iii) Facilities with annual sales (<) less than $5 million Effective: January 1985					
C. Requests for Variance or Adjustment of Financial Responsibility [270.14(b)(17), 264.147(d)(e)]					
20. PROOF OF COVERAGE BY STATE FINANCIAL MECHANISM [270.14(b)(18)] Use State financial requirements if determined equivalent to or greater than that provided by mechanisms of 264.143, 145, 147. Evidence of establishment of mechanism must be delivered by Certified Mail to Regional Administrator, EPA. [264.149]					
21. MANIFEST SYSTEM, RECORDKEEPING, AND REPORTING PART 264, SUBPART E A. Manifests - when permittee receives hazardous waste accompanied by a manifest he must meet the requirements outlined in 264.71 and for manifest discrepancies follow 264.72.					
B. The permittee must keep a written operating record at the facility. The record must be kept until closure and must contain the following information: (i) Description of quantity of each waste received and method and date of its treatment, storage or disposal at facility; (Appendix I, Part 264);					

ITEM	COMPLETENESS REVIEW	TECHNICAL REVIEW	COMMENTS	PERMIT COND. Ref. No.	Cond. No.
(ii) Location of each waste within facility and quantity at each location (for wastes accompanied by manifest cross-reference to specific manifest numbers). For disposal facilities, location and quantity of waste must be recorded on diagram;					
(iii) Records and results of waste analyses performed in 264.13, 264.17 and 264.341;					
(iv) Summary reports and details of all incidents that require implementing contingency plan [264.56(j)];					
(v) Records and results of inspections [264.15(d)];					
(vi) Monitoring, testing or analytical data [264.347];					
(vii) For off-site facilities, notices to generators [264.12(b)];					
(viii) Closure cost estimates [264.142] and post-closure cost estimates [264.144].					
C. Availability, Retention and Disposition of Records [264.74]					
(i) All records and plans required under Part 264 must be furnished upon request and made available at all reasonable times to any representative of EPA who is duly designated by the Administrator;					
(ii) Retention period for records required under Part 264 is extended automatically during any unresolved enforcement action or as requested by the Administrator.					
(iii) Records of waste disposal locations and quantities must be submitted to Regional Administrator and local land authority upon closure (see 264.73(b)(2) for disposal fac.).					

ITEM	COMPLETENESS REVIEW	TECHNICAL REVIEW	COMMENTS	PERMIT COND. Ref. No.	Cond. No.
D. Biennual Report 264.75 The Permittee must submit an annual report in accordance with 264.75					
E. Additional Reports 264.77 In addition to submitting annual report and unmanifested waste report the permittee must also report: (i) releases, fires and explosions [264.58(j)]; (ii) Closure [264.115]					
F. Unmanifested Waste Report 264.76 If the permittee accepts for treatment, storage or disposal hazardous waste from an off-site source without a manifest or shipping paper [264.20 (e)(2)] and if waste is not excluded from manifest requirements, the permittee must prepare and submit one copy of a report to the Regional Regional Administrator within 15 days after receiving the waste. (See Appendix II, Part 264 for form and instructions.)					
G. Other Federal Laws 270.14(b)(20) and 270.3 Permits issued shall be consistent with requirements of applicable Federal laws. These may include: (i) Wild and Scenic Rivers Act; (ii) National Historic Preservation Act of 1966; (iii) Endangered Species Act; (iv) Coastal Zone Management Act; (v) Fish and Wildlife Coordination Act.					

ITEM	COMPLETENESS REVIEW	TECHNICAL REVIEW	COMMENTS	PERMIT COND. Ref. No.	Cond. No.
22. ENGINEER CERTIFICATION 270.14 Certain technical data, such as design drawings and specifications and engineering studies shall be certified by a registered professional engineer. (NOTE: The information requiring certification may vary with the type of facility.) 23. SIGNATORY REQUIREMENTS 270.11 (Application Certification) Certification. Any person signing a document under paragraph (a) or (b) of 270.11 shall make the following certification: "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." See 270.11(a) or (b) for signatory requirements.					

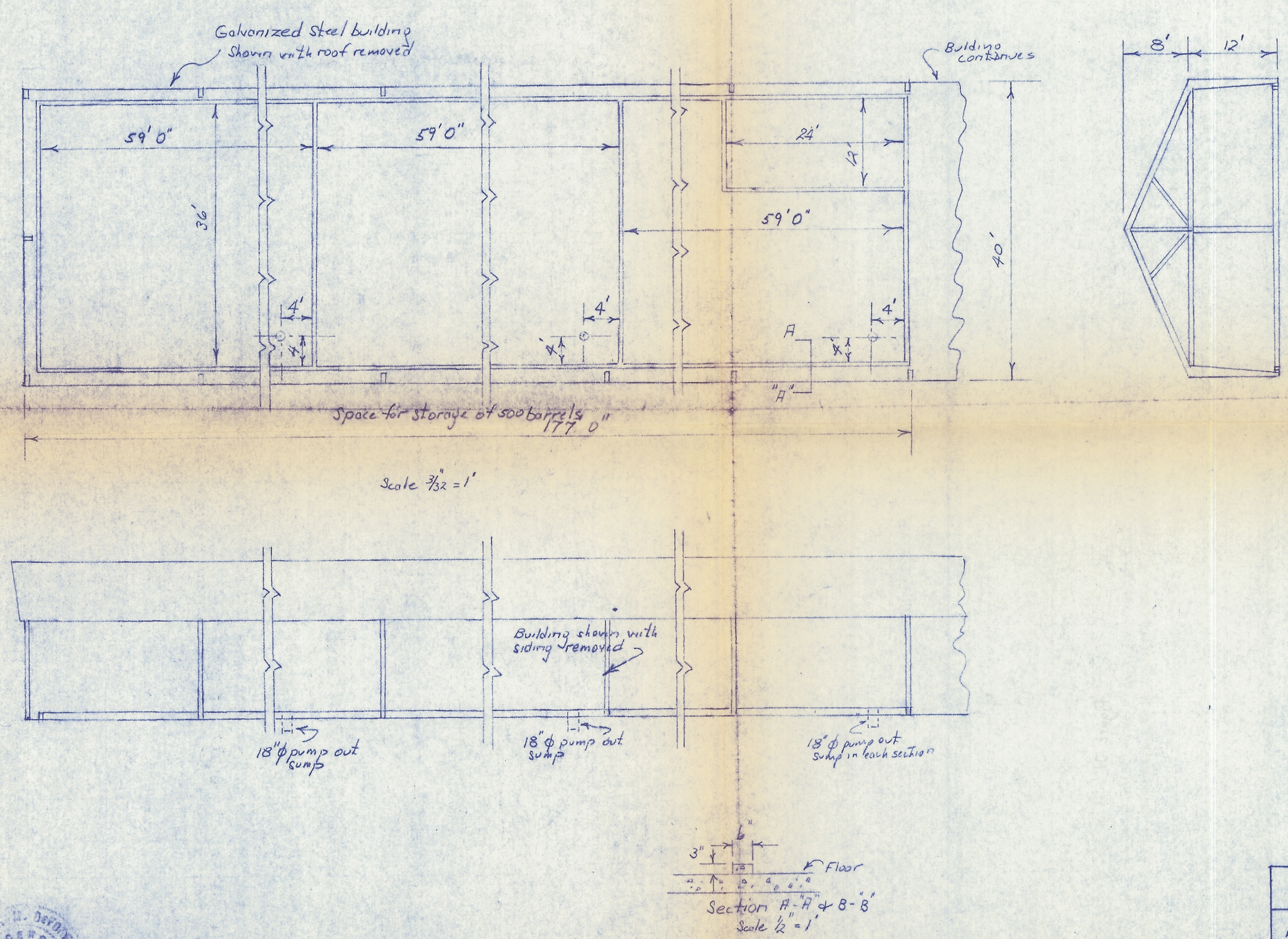

FIGURE 31

REID SUPPLY CO WICHITA KANSAS		
Drum Storage Chemicals Recovery Pt		
Scale As Shown	Drawn By EMD	Checked
Date 3-10-84		App
	Drawing No I-100	

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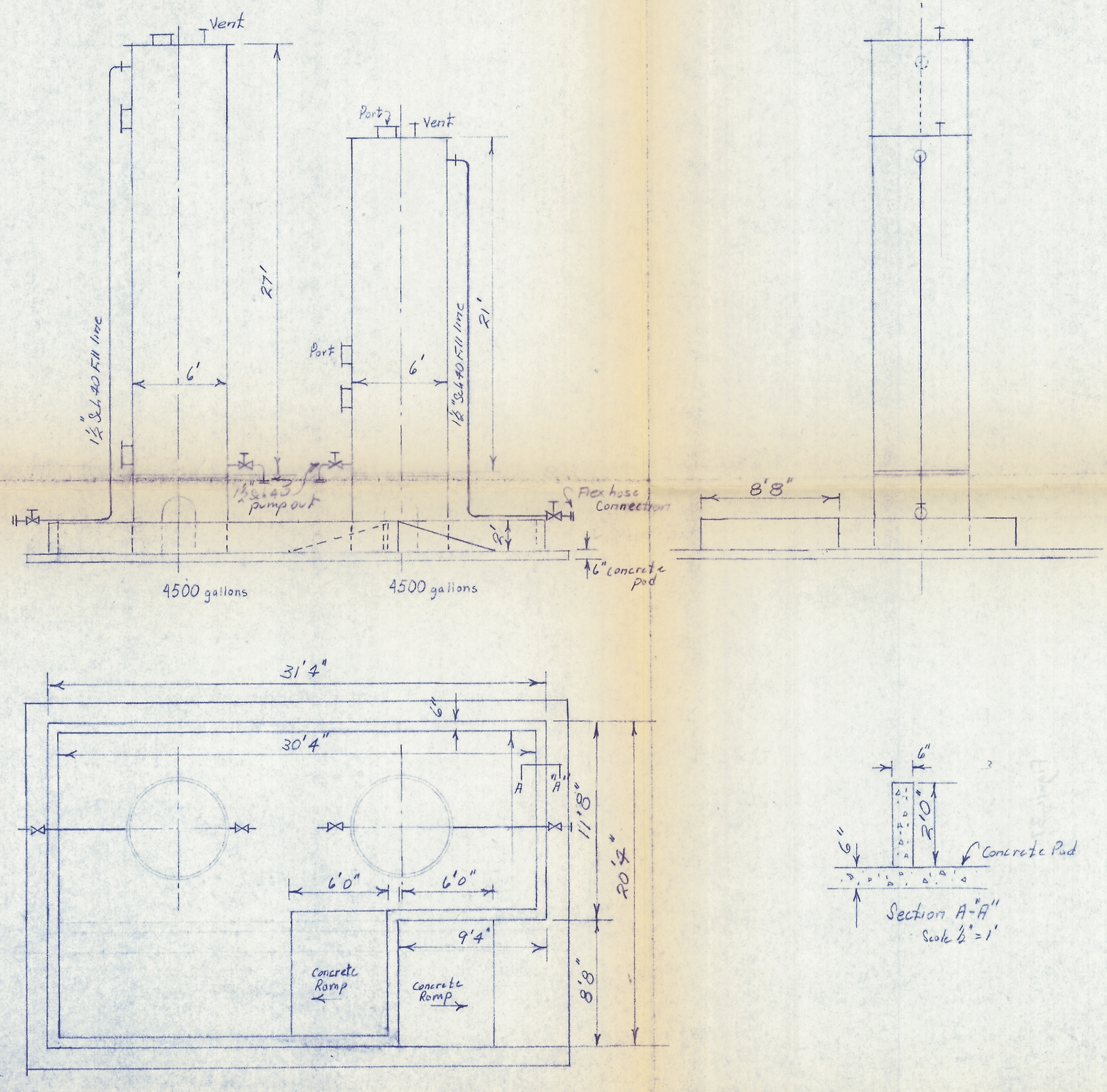

FIGURE 37

REID SUPPLY CO
Wichita Kansas

Chemical Storage Tanks

Scale	Drawn By	Checked
As Shown	EMO	
Date 3-15-83		
	Drawing No	I-101

(00)

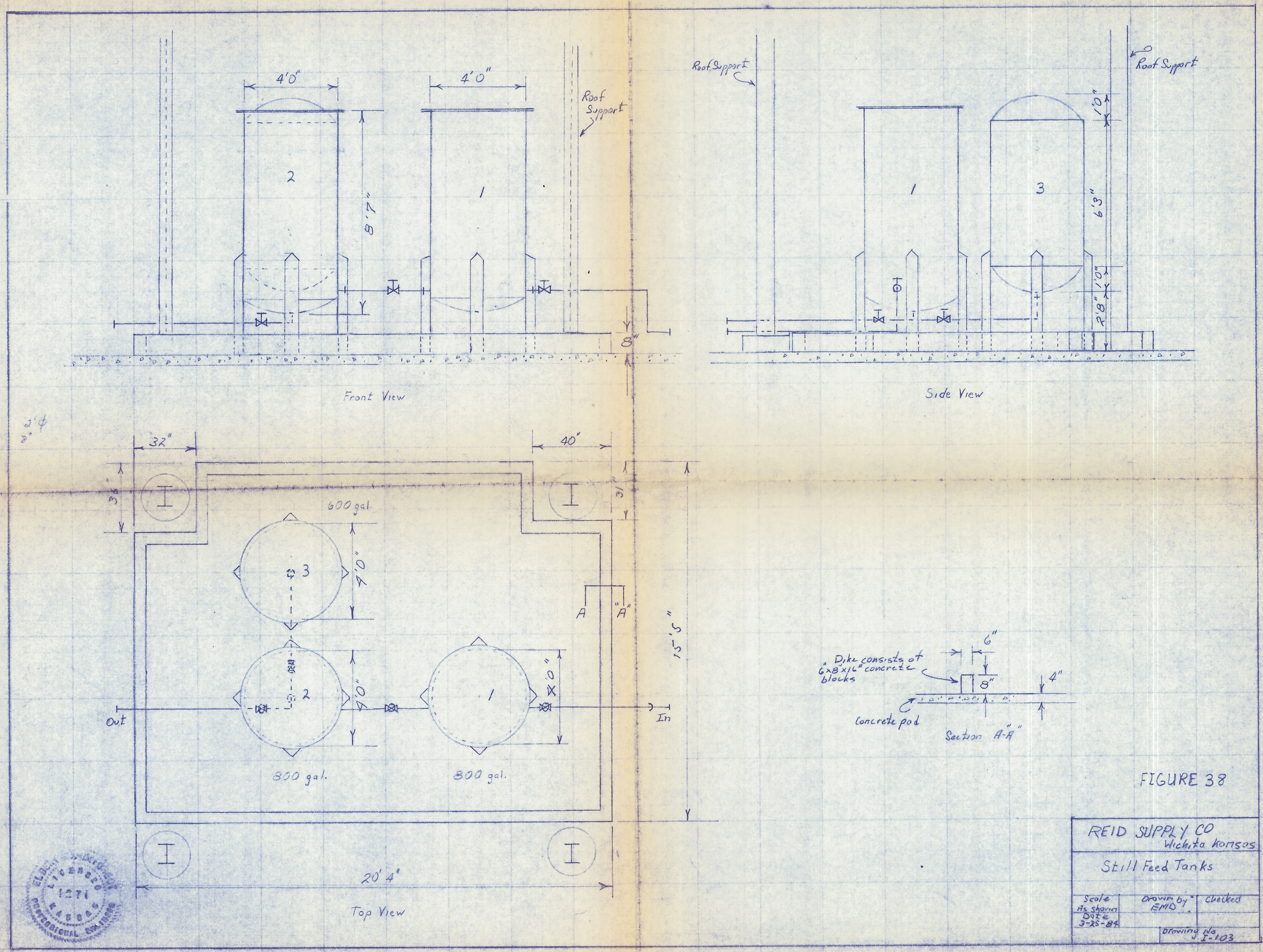

FIGURE 38

REID SUPPLY CO Wichita Kansas		
Still Feed Tanks		
Scale As shown	Drawn by EMD	Checked
Date 3-25-84		
	Drawing No. I-103	

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(10)