

**HAZARDOUS WASTE SECTION - COMPLIANCE BRANCH  
FILE TRANSMITTAL & DATA ENTRY FORM**

**Facility ID Number:** NCD089903983

**Facility Name:** Moreland McKesson Company

**Document Group:** Permit (P)

**Document Type:** Part B Application (PB)

**File Description/Comments:** Part B Permit Application

**Date of Document:** 5/4/1984

**Author(s) of Document:** Donald Black

**Inspector Name:** N/A

**Suborganization:**

**County (if not on report):** Guilford

**McKesson**

May 4, 1984

Mr. O. W. Strickland, Head  
Solid and Hazardous Waste Management Branch  
Environmental Health Section  
Department of Human Resources  
P. O. Box 2091  
Releigh, NC 27602

Re: Greensboro, North Carolina Branch, McKesson Chemical Company  
EPA I.D. No. NCD 089 903 983

Dear Mr. Strickland:

In response to your letter of November 2, 1983, to our Mr. Julian H. Foster, we are sending you under separate cover an original and three copies of a Part B application for the reference McKesson branch to act as a storer of hazardous waste. As suggested by your office, we have keyed the North Carolina regulations to the corresponding sections of 40 CFR 270.14 and CFR 270.15.

If additional information or clarification is required, please contact me at the letterhead address.

Sincerely,



Donald M. Black  
Regulatory Compliance Manager

DMB:jjt

cc: Mike Efting, Manager, Greensboro Branch



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**McKesson**

McKesson Chemical Company

Certification

(40 CFR Sec. 270.11 (d))

I certify under penalty of law that I have personally examined and am familiar with the information submitted on 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.

This statement applies to the filing in behalf of McKesson's branch in Greensboro, North Carolina.

Date May 1, 1984

Signature *Darwin H. Simpson*  
Darwin H. Simpson  
Regional Vice President.



<b>FORM</b> <b>1</b> <b>GENERAL</b>	<b>U.S. ENVIRONMENTAL PROTECTION AGENCY</b> <b>GENERAL INFORMATION</b> <i>Consolidated Permits Program</i> <i>(Read the "General Instructions" before starting.)</i>	<b>I. EPA I.D. NUMBER</b> F N C D 0 8 9 9 0 3 9 8 3
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**LABEL ITEMS**

**I. EPA I.D. NUMBER**

**III. FACILITY NAME**

**V. 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 from 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'			SPECIFIC QUESTIONS	MARK 'X'		
	YES	NO	FORM ATTACHED		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 store, use, 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**

1 SKIP MCKESSON CHEMICAL COMPANY

**IV. FACILITY CONTACT**

A. NAME & TITLE (last, first, & title) EFTING, MICHAEL E., MANAGER.

B. PHONE (area code & no.) 919 292 0624

**V. FACILITY MAILING ADDRESS**

A. STREET OR P.O. BOX POST OFFICE BOX 7321

B. CITY OR TOWN GREENSBORO

C. STATE NC

D. ZIP CODE 27420

**VI. FACILITY LOCATION**

A. STREET, ROUTE NO. OR OTHER SPECIFIC IDENTIFIER 3600 WEST WENDOVER AVENUE

B. COUNTY NAME GUILFORD

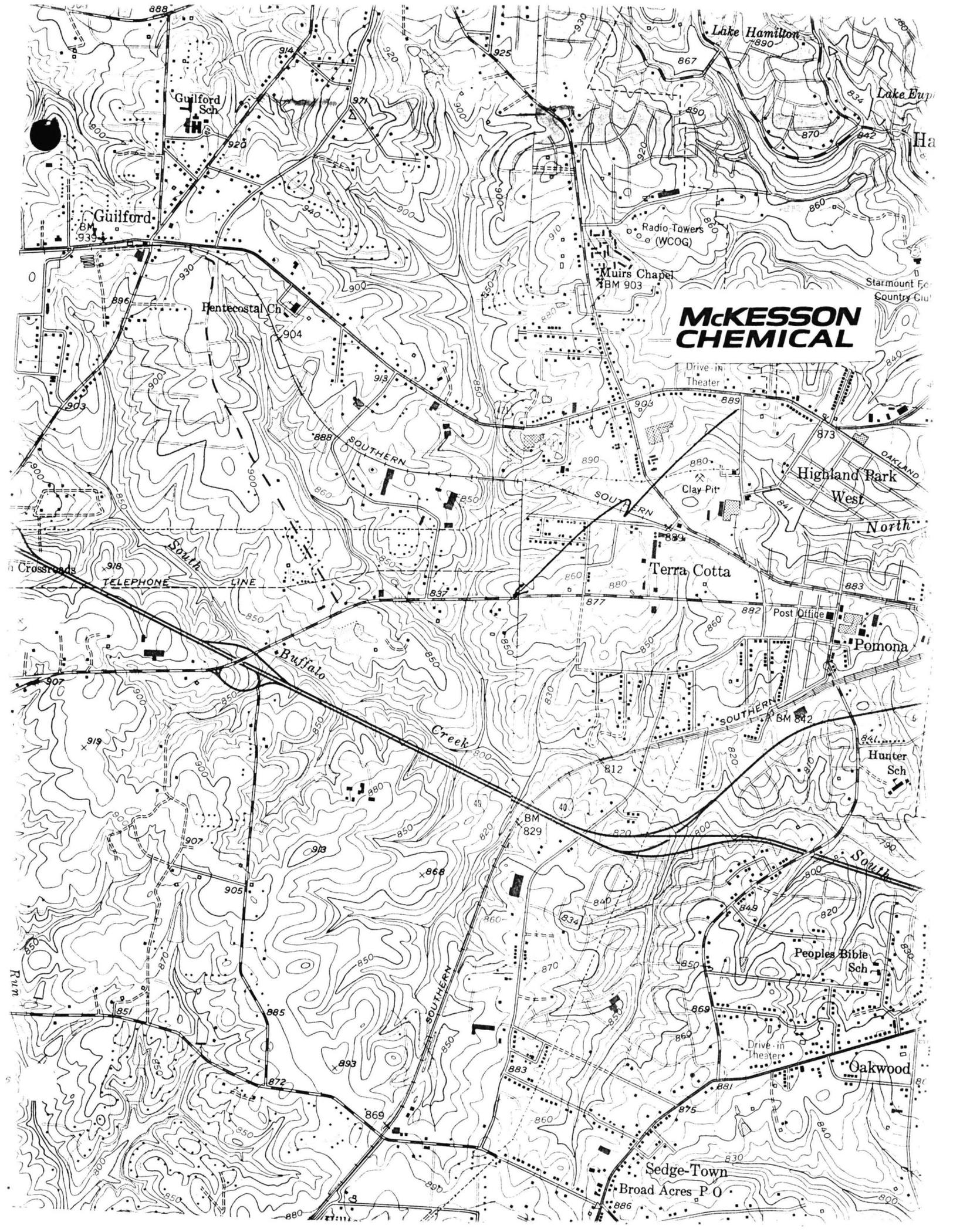
C. CITY OR TOWN GREENSBORO

D. STATE NC

E. ZIP CODE 27420

F. COUNTY CODE (if known)





**McKESSON  
CHEMICAL**

<b>FORM</b> <b>3</b> RCRA		<b>U.S. ENVIRONMENTAL PROTECTION AGENCY</b> <b>HAZARDOUS WASTE PERMIT APPLICATION</b> <i>Consolidated Permits Program</i> <small>(This information is required under Section 3005 of RCRA.)</small>	<b>I. EPA I.D. NUMBER</b> FNCDDB99039B3
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FOR OFFICIAL USE ONLY		COMMENTS
APPLICATION APPROVED	DATE RECEIVED (yr., mo., & day)	
22	24	

**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)

<input type="checkbox"/> 1. EXISTING FACILITY (See instructions for definition of "existing" facility. Complete item below.)	<input type="checkbox"/> 2. NEW FACILITY (Complete item below.)
--	---

FOR EXISTING FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR THE DATE CONSTRUCTION COMMENCED (use the boxes to the left)	FOR NEW FACILITIES, PROVIDE THE DATE (yr., mo., & day) OPERATION BEGAN OR IS EXPECTED TO BEGIN																
<table style="width:100%; border-collapse: collapse;"> <tr> <th style="width:10%;">C</th> <th style="width:10%;">YR.</th> <th style="width:10%;">MO.</th> <th style="width:10%;">DAY</th> </tr> <tr> <td style="text-align: center;">8</td> <td style="text-align: center;">73</td> <td style="text-align: center;">74</td> <td style="text-align: center;">77</td> </tr> </table>	C	YR.	MO.	DAY	8	73	74	77	<table style="width:100%; border-collapse: collapse;"> <tr> <th style="width:10%;">C</th> <th style="width:10%;">YR.</th> <th style="width:10%;">MO.</th> <th style="width:10%;">DAY</th> </tr> <tr> <td></td> <td style="text-align: center;">73</td> <td style="text-align: center;">74</td> <td style="text-align: center;">77</td> </tr> </table>	C	YR.	MO.	DAY		73	74	77
C	YR.	MO.	DAY														
8	73	74	77														
C	YR.	MO.	DAY														
	73	74	77														

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

<input type="checkbox"/> 1. FACILITY HAS INTERIM STATUS	<input checked="" type="checkbox"/> 2. FACILITY HAS A RCRA PERMIT
---	---

**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	PRO-CESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY	PROCESS	PRO-CESS CODE	APPROPRIATE UNITS OF MEASURE FOR PROCESS DESIGN CAPACITY
<b>Storage:</b>			<b>Treatment:</b>		
CONTAINER (barrel, drum, etc.)	S01	GALLONS OR LITERS	TANK	T01	GALLONS PER DAY OR LITERS PER DAY
TANK	S02	GALLONS OR LITERS	SURFACE IMPOUNDMENT	T02	GALLONS PER DAY OR LITERS PER DAY
WASTE PILE	S03	CUBIC YARDS OR CUBIC METERS	INCINERATOR	T03	TONS PER HOUR OR METRIC TONS PER HOUR; GALLONS PER HOUR OR LITERS PER HOUR
SURFACE IMPOUNDMENT	S04	GALLONS OR LITERS		T04	GALLONS PER DAY OR LITERS PER DAY
<b>Disposal:</b>			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.)		
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			

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

**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.

DUP									
LINE NUMBER	A. PRO-CESS CODE (from list above)	B. PROCESS DESIGN CAPACITY		FOR OFFICIAL USE ONLY	LINE NUMBER	A. PRO-CESS CODE (from list above)	B. PROCESS DESIGN CAPACITY		FOR OFFICIAL USE ONLY
		1. AMOUNT (specify)	2. UNIT OF MEASURE (enter code)				1. AMOUNT	2. UNIT OF MEASURE (enter code)	
X-1	S 0 2	600	G		5				
X-2	T 0 3	20	E		6				
1	S 0 1	4950	G		7				
					8				
					9				
					10				

**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:

<u>ENGLISH UNIT OF MEASURE</u>	<u>CODE</u>	<u>METRIC UNIT OF MEASURE</u>	<u>CODE</u>
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. WASTENO (enter code)	B. ESTIMATED ANNUAL QUANTITY OF WASTE	C. UNIT OF MEA- SURE (enter code)	D. PROCESSES	
				1. PROCESS CODES (enter)	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



**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	N	C
1	2	3
4	5	6
7	8	9
10	11	12
13	14	15

**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, &amp; seconds)

LONGITUDE (degrees, minutes, &amp; seconds)

3	6	0	3	0	3	7
65	66	67	68	69	70	71

0	7	9	5	2	0	0	7
72	73	74	75	76	77	78	79

**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 &amp; no.)

C	E	Morton and Jeanette Rude <sup>1</sup>	4	1	5	-	9	3	8	-	6	2	2	2
13	14		55	56	57	58	59	60	61	62	63	64	65	66

3. STREET OR P.O. BOX

4. CITY OR TOWN

5. ST.

6. ZIP CODE

C	F	Suite 832, 1255 Post Street	C	G	San Francisco	C	A	9	4	1	0	4
17	18		43	44	45	46	47	48	49	50	51	52

**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

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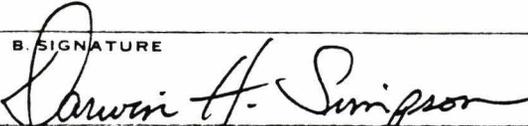
**X. OPERATOR CERTIFICATION**

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.

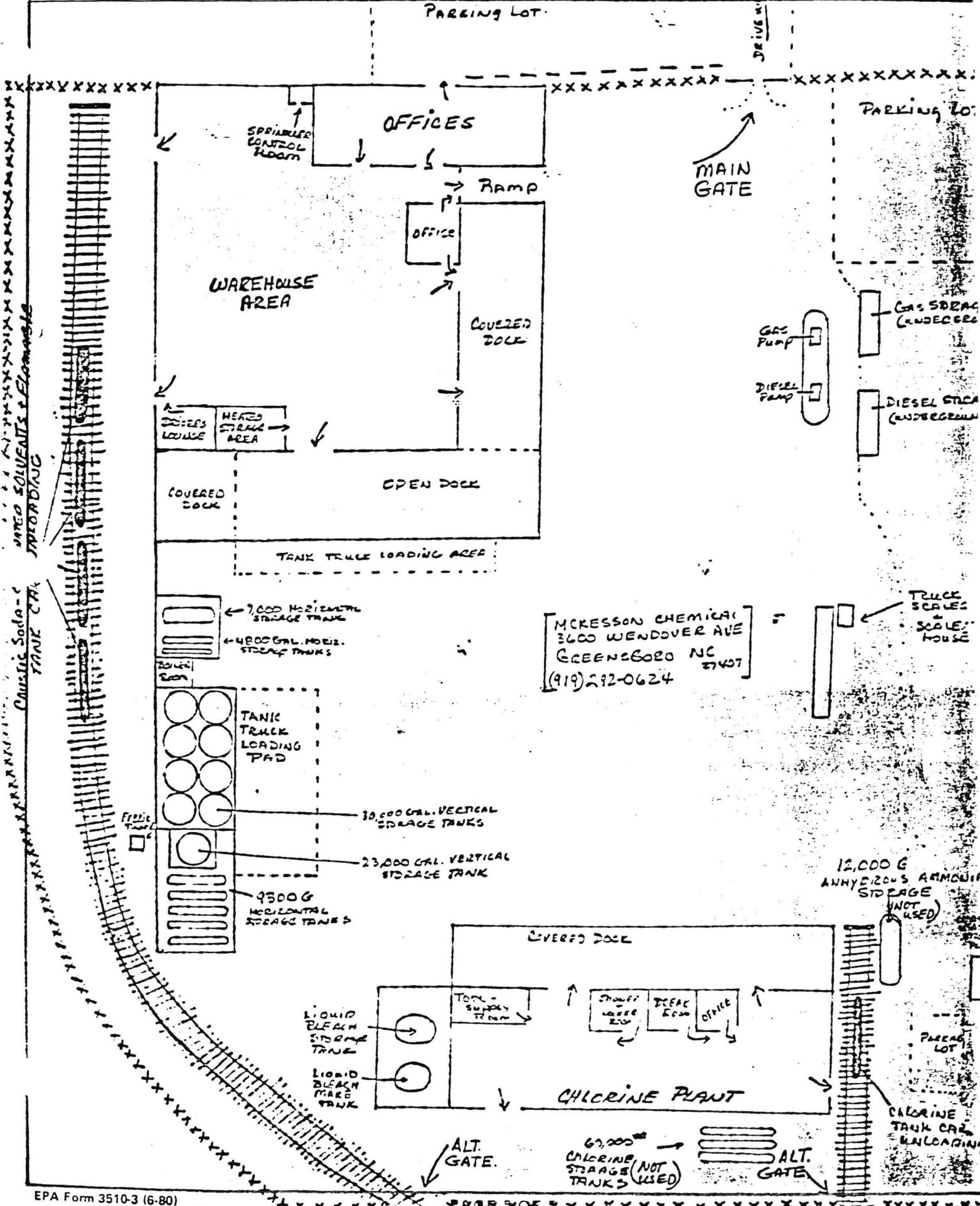
A. NAME (print or type)

B. SIGNATURE

C. DATE SIGNED

Darwin H. Simpson		2/2/84
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V. FACILITY DRAWING (see page 4)



McKesson Chemical Company

General Description of Facility

(40 CFR 270.14(b-1))

McKesson Chemical Company, a subsidiary of McKesson Corporation, a Maryland Corporation, based in San Francisco, California at One Post Street, operates a distribution facility in Greensboro, North Carolina, located at 3600 West Wendover Avenue. The legal description of the property is as follows:

"All that tract or parcel of land in Morehead Township, Guilford County, State of North Carolina, described as follows:

BEGINNING at the point of intersection of the westerly line of the land of North State Pyrophyllite Company, Inc. and the northerly line of Clifton Road as shown on plat entitled "Property of Pine Hall - Pomona Corporation" recorded in Plat Book 36, Page 98, in the Office of the Register of Deeds of Guilford County, North Carolina; and running thence with the northerly line of Clifton Road, North  $87^{\circ} 27' 30''$  West 300.17 feet to a concrete monument control corner; thence North  $4^{\circ} 27' 30''$  East 972.66 feet to a concrete monument control corner in the southwesterly right of way line of a proposed railway lead track; thence in a southeasterly direction with the westerly right of way line of said railway lead track, the following courses and distances: South  $18^{\circ} 32' 10''$  East 11.49 feet to a point; thence along a curve to the left, having a radius of 488.34 feet and an arc distance of 156.54 feet and the chord of which is South  $27^{\circ} 48'$  East 155.14 feet to a point; thence South  $36^{\circ} 52'$  East 112.43 feet to a point; thence along a curve to the right having a radius of 467.75 feet and an arc distance of 58.98 feet and the chord of which is South  $33^{\circ} 15' 10''$  East 58.98 feet to a point; thence leaving the westerly right of way line of said spur track, North  $60^{\circ} 21' 40''$  East 22 feet to a point in the easterly right of way line of a proposed railway spur track; thence with the easterly right of way line of said proposed railway spur track in a southeasterly direction along a curve to the right, having a radius of 489.75 feet and arc distance of 291.46 feet and the chord of which is South  $12^{\circ} 35' 25''$  East 287.17 feet to a point in a westerly line of the land of North State Prophyllite Company, Inc. land, South  $4^{\circ} 27' 30''$  West 427.56 feet to the POINT OF BEGINNING. Being all of Lot No. 5 as shown on the Plat referred to above and containing 5.118 acres, more or less."

McKesson Chemical Company is a nationwide distributor of various industrial chemicals. McKesson Envirosystems, another division of the McKesson Corporation

family, operates a number of recycling plants across the country and functions as a natural partner to the distribution network which McKesson Chemical Company maintains.

The recycling of spent solvents is but one of the services McKesson offers to its customers. Many customers who employ McKesson's reclaiming services are those who purchased the virgin product from McKesson in the first place. In this manner, McKesson Chemical Company provides a means for its customers to properly manage their wastes and to conserve resources.

The facility in Greensboro consists of a masonry, steel-framed building of approximately 20,000 square feet. Of this total area, approximately 1,000 square feet is office, and the remainder is warehouse storage. The area designated and designed for hazardous waste storage consists of 300 square feet, measuring 10 feet by 30 feet, located on the back dock area from the building, but accessible from the building for forklift handling of drums from the dock unloading area. Overall yard area is about 4.5 acres, essentially all of which is fenced in.

The facility will be utilized by McKesson Chemical Company as a temporary storage facility for various chemical solvents destined for recycling. The operation followed is one of picking up a customer's (generator's) spent material, bringing the material back to the McKesson facility, and placing it into temporary storage until a full truckload of various customers' materials is accumulated, and then reshipping the materials to the McKesson recycling

center. The containers in which these spent materials are shipped to the facility are of a 55 gallon capacity meeting all DOT specifications for the material being shipped in them. All materials are received, stored, and reshipped in the same container.

The designated storage area for waste materials is to be a bermed rectangle of concrete. The entire outside storage area lying adjacent to the building is surrounded by a 6 foot high chain link fence with the top arms of posts being set at a 45 degree angle from vertical and holding 3 strands of barbed wire extending 1 foot above the top of the chain link fencing.

All movements and handling of materials designated as hazardous wastes at the facility shall be undertaken in accordance with operational plans as outlined in this application. No treatment, processing, or disposal of hazardous wastes will take place at this location.

Experience at other branches handling these types of spent solvent streams indicate the following types of industries are served:

Paint and Coatings: A variety of solvents are used by this industry. Including aliphatic and aromatic hydrocarbons and other petroleum-based solvents.

Electronic: Circuit boards commonly require a de-oiling step to remove lubricants, solder fluxes, etc. Although the chlorinated solvents are

effective, the flourinated counterparts are generally preferred.

Ink, Adhesives: A wide variety of oxygen-containing solvents are used in cleaning out mixing vats, printing rolls, transfer containers, piping, etc.

Other Industries from which spent solvent streams have been obtained include pharmaceutical, photographic, electrical, textles, rubber and plastics.

An engineering drawing of this facility's physical layout, prepared by a North Carolina-licensed engineer, follows.

McKesson Chemical Company  
Chemical and Physical Analyses  
(40 CFR Sec. 270.14(b-2))

McKesson Chemical Company requires all generators who wish to employ the Company's recycling services to provide data defining the chemical make-up of the generator's waste stream before pick-up of the material is initiated.

The McKesson branch storing the spent solvents, is provided appropriate data from the information furnished by the customer (generator), which will have been reviewed and evaluated by the technical and management personnel at the recycler's facilities.

A full description of the procedures and sequence of events pertaining to the accumulation of data and analytical information made available and kept on file at the McKesson storage facility before approval to accept materials is outlined in the Waste Analysis Plan in the next section. This procedure describes fully the operation followed in developing and disseminating the necessary information to assure that all facilities handling the material have adequate information available to manage properly a given waste stream.

McKesson Chemical Company shall provide to off-site generators wishing to utilize its services any requested proof of appropriate permits to be allowed to handle their particular waste streams. Generators shall also be offered the opportunity to take a tour of any company facility, as well as the actual recycling plants, to allow them an opportunity to assure themselves of compliance of these facilities.

Wastes Anticipated To Be Handled in Drums At Facility

McKesson Chemical Company

<u>Chemical</u>	<u>Hazard</u>	<u>Basis For Hazard Designation</u>
Tetrachloroethylene	Toxic	Listed waste F001, F002
Trichloroethylene	Toxic	Listed waste F001, F002
Methylene Chloride	Toxic	Listed waste F001, F002
1,1,1 Trichloroethane	Toxic	Listed waste F001, F002
Carbon Tetrachloride	Toxic	Listed waste F001
Chlorinated Fluorocarbons	Toxic	Listed waste F001
Chlorobenzene	Toxic	Listed waste F002
Ortho-Dichlorobenzene	Toxic	Listed waste F002
Trichlorofluoromethane	Toxic	Listed waste F002
1,1,2-Trichloro-1,2,2-Trifluoroethane	Toxic	Listed waste F002
Xylene	Ignitable	Listed waste F003
Acetone	Ignitable	Listed waste F003
Ethyl Acetate	Ignitable	Listed waste F003
Ethyl Ether	Ignitable	Listed waste F003
Methyl Isobutyl Ketone	Ignitable	Listed waste F003
n-Butyl Alcohol	Ignitable	Listed waste F003
Cyclohexanone	Ignitable	Listed waste F003
Methanol	Ignitable	Listed waste F003
Toluene	Toxic, Ignitable	Listed waste F005
Methyl Ethyl Ketone	Toxic, Ignitable	Listed waste F005
Isobutanol	Toxic, Ignitable	Listed waste F005

The above will also be expected in the form of blends with each other, still in drums.

Other wastes that could be expected to be stored are mixtures of the preceding listed solvents. The EPA hazard bases are either "Ignitable," "Toxic," or both. The EPA waste number is F001, F002, F003, F005, or combinations. The basis for the hazardous designation is "listed waste." Typical examples of mixed spent solvents wastes are:

\* Waste solvent from the pharmaceutical industry -

Ortho-dichlorobenzene	90 Volume %
Methylene Chloride	7 Volume %
Water	3 Volume %

\* Waste solvent from the paint industry -

Methyl Ethyl Ketone	10 Volume %
Methyl Isobutyl Ketone	3 Volume %
Toluene	32 Volume %
Xylene	45 Volume %
n-Butyl Acetate	2 Volume %
Isopropyl Acetate	2 Volume %
Water	1 Volume %
Resins, Pigments, Adhesives	5 Volume %

\* Waste solvent from the electronics industry -

1,1,1-Trichloroethane	80 Volume %
Trichlorofluoromethane	15 Volume %
Resin, Flux, Pigments	5 Volume %

\* Waste solvent from the metal working industry -

Perchloroethylene	40 Volume %
Methylene Chloride	25 Volume %
Trichloroethylene	15 Volume %
Soil, Grime, Grit, Oil, Grease	20 Volume %

Still another group of wastes that could be received at this facility are those not listed as hazardous wastes, but do exhibit the characteristics of ignitability, the EPA hazard basis is "Ignitable", the EPA waste number is D001, and the basis for hazardous designation is a flashpoint of 140°F or less. The spent solvents can be received as individual chemicals or a mixtures thereof. Examples are:

<u>Chemical</u>	<u>Flashpoint (°F)</u>
Amyl Acetate	77
p-Amyl Acetate	77
Butyl Acetate	72
s-Butyl Alcohol	75
t-Butyl Alcohol	52
Cellosolve Acetate	117
Cyclohexane	-4
Cyclohexanone	111
Diisobutyl Ketone	120
Ethyl Alcohol	55
Ethyl Cellosolve	80
Heptane	25
Hexane	-7
Lactol Spirits	20
Methyl Acetate	14
Methyl Amyl Ketone	120
Methyl Cellosolve	115
Petroleum Naphtha	105
Propyl Acetone	58
iso-Propyl Acetate	40
Propyl Alcohol	77
iso-Propyl Alcohol	53
VMP&P Naphtha	105

Some waste generators prefer to identify their used solvents as "discarded commercial chemical products" rather than as "spent solvents." The EPA hazard codes, waste names, and EPA waste numbers for those expected at this McKesson facility follow. The basis for hazardous designation is "listed waste."

U002	Acetone	(I)
U075	Dichlorodifluoromethane	(T)
U080	Methylene Dichloride	(T)
U140	Isobutyl Alcohol	(I,T)
U154	Methanol	(I)
U159	Methyl Ethyl Ketone	(I,T)
U210	Tetrachloroethylene	(T)
U220	Toluene	(I,T)
U226	1,1,1-Trichloroethane	(T)
U228	Trichloroethylene	(T)
U239	Xylene	(I)

McKesson Chemical Company

Waste Analysis Plan

(40 CFR Sec. 270.14 (b-3))

This facility of McKesson Chemical Company is seeking a permit to function simply as a short-term (probably less than a month) storage facility for a limited variety of spent organic solvents. These will be handled only in DOT-approved drums, and will usually have been picked up in small numbers from customers who had previously purchased the virgin material. Once a sufficient number of drums have been accumulated at the facility to make transport economically feasible they will be moved out-of-state for re-claiming (probably in Kentucky).

Each branch of McKesson Chemical Company organizationally is a financial entity unto itself - in other words, it is a small chemical business. Typical of such small chemical distributorships, which carry out no manufacturing processes, the branch has no laboratory facilities. It would be uneconomic and financially impossible to employ technical personnel and to equip a laboratory for the limited amount of material being handled. Even the cost of outside analytical work would be prohibitive, especially in view of the fact that such analytical work would duplicate the effort subsequently carried out by the McKesson recycling facility.

On the other hand, the purpose of a profitable reclaiming business is thwarted unless the constituents of the spent solvent stream being handled are known accurately. To this end the McKesson reclaiming facility in New Castle, Kentucky (McKesson Envirosystems Company) maintains and operates a sophisticated analytical laboratory. Consequently, a McKesson distributor branch is assured of knowing exactly the content of each spent solvent stream being proffered

by a customer (generator). A sample of a preferred stream of uncertain content is sent to New Castle for analysis; in addition, a Spent Material/Waste Products Survey form (most recent revision appended) is prepared by the customer in connection with each preferred stream, and a copy of a formal chemical analysis is requested of the customer. Both are filed at the branch. The procedure followed is detailed in the accompanying Waste Analysis and Verification Procedure.

McKesson has an established policy that requires each customer to certify that recyclable solvents preferred to McKesson are only listed wastes (F001 through F005), and that they do not contain unacceptable materials. These unacceptable materials include such items as pesticides, radioactive materials and poisons. With these restrictions, it is felt unnecessary to test for these products - although, if they were, the procedures outlined in Publication SW-846, "Test Methods for Evaluating Solid Waste" usually including the process from which it derived (McKesson invariably knows the latter anyway because of its basic sales relationship with the customer). It should be noted McKesson has records of ongoing chemical and physical analyses of existing customers' materials resulting from its own analytical work at the recycling center.

In addition, all materials leaving the branch for recycling are shipped in the same container in which they arrived (unless, of course, container damage mandated a transfer).

The McKesson recycling facility and its predecessor organization has been carrying out these analyses for about twenty years, and is therefore competent in the techniques of sampling — the taking of representative samples. Each recycling facility is extremely careful to know exactly what it is handling in order to prevent damage to its equipment (as from corrosion) and to prevent accidents (such as would result from inadvertent handling of ignitable materials).

The parameters that are measured in order to handle the spent streams safely and to assure their economic potential follow.

PARAMETERS MEASURED IN EVALUATION OF SPENT SOLVENT STREAMS

<u>PARAMETER</u>	<u>TEST METHOD</u>	<u>PURPOSE</u>
Assay	Gas Chromatograph (appended)	To confirm identify and amount of recoverable component(s).
Specific Gravity	Weight of accurate volume (appended).	Useful in product identity; permits conversion of volume to weight.
Water	Titrimetric (appended)	Possible contamination.
Flash Point	Closed cup ASTM D-93-79 (SW-846 4.1-1)	Flammability danger.
pH	Electrometically (SW-846 5.2)	Danger of corrosion.

NOTE: All sampling carried out by appended procedure.

STANDARD PROCEDURE  
For  
SAMPLING WASTE CONTAINERS

Uniform Requirements for Sample Taking

Personnel Safety Precautions

Prior to opening the container for sample withdrawal, the employee who is to do the sampling must be wearing his hardhat, his safety glasses, and his solvent-impervious gloves.

The equipment required in order to obtain a sample consists of:

- A Coliwasa type sampling tube.
- A clean, dry glass sample bottle.
- A screw-cap for the sample bottle which is fitted with a polyethylene poly-cone seal.
- A label containing the following information:
  - The manifest number corresponding to the waste shipment.
  - The name of the waste being sampled.
  - The date on which the sample is taken.
  - The name of the employee withdrawing the sample.

CAUTION: Always leave about one-inch of free space in the sample bottle before it is closed. Never fill the sample bottle to the brim. Quite frequently the sample is withdrawn at a temperature which is less than the temperature in which the sample will be stored prior to analysis. As the temperature increases, the liquid expands. If the sample bottle is completely filled, the expanding liquid has no place to go and it will shatter the bottle.

### Sampling Procedure for Drums

1. Sampling is done through the bung on the drum. When removing the bung closure of the drum, first loosen it slightly without completely removing the bung in order to relieve any internal pressure which may have been built up because of change in temperature.
2. After you are sure that there is no pressure in the drum, remove the bung closure completely.
3. Open the bottom valve of the Coliwasa type sampler completely.
4. Lower the sampler slowly into the drum until the bottom of the sampler reaches the bottom of the drum.
5. Close the bottom valve of the Coliwasa type sampler completely.
6. Withdraw the sampler from the container.
7. Transfer the content of the sampler to the sample bottle.
8. Screw the cap tightly onto the bottle.
9. Affix the appropriate label to the bottle.
10. Wipe any spillage from the outside of the bottle.
11. Clean the Coliwasa sampler prior to using it on the next drum.
12. Inspect the gasket on the drum closure to make sure it is in good condition.

### Disposition of the Sample

After the samples have been taken, the sampling containers closed, the labels affixed, and the sample containers wiped off, take the samples to the laboratory and turn them over to the chemist for analysis.

## SELECTION OF CHROMATOGRAPHIC COLUMN PACKINGS

The chromatographic column packings used at this facility are selected to serve two purposes. The first purpose is to enable the verification analyses, which are required by the hazardous waste management regulations to be made. The second is to enable the facility to function as a resource recovery plant.

The volatile organic liquids which must be identified in order to meet the requirements of the verification procedure are those which are recovered in the processing operations of the facility or those which must be identified and controlled in the finished products. The verification procedure requires only that the presence or absence of the components which render the waste hazardous and which have been declared by the generator be verified. Quantitation is not required to meet the verification requirement.

Quantitation is required for production analysis; frequently of small quantities of constituents, often in fractions of percents. Many of the organic constituents detected and measured on the chromatograph are not hazardous constituents under the meaning of the RCRA regulations, but still must be detected and analyzed for productive purposes.

It is obvious that chromatographic columns which serve both purposes be selected in order to minimize costs without failing to meet both the regulatory and manufacturing objectives. Two column packings are used in this facility. Three sets of chromatographic operating conditions are employed. The operating parameters are listed on pages 27 through 29.

The current column substrates and liquid phases are those selected as a result of eighteen years of experience in this company with chromatographic analysis of waste organic liquids recovered in our kind of operation.

GAS CHROMATOGRAPH PROCEDURE NUMBER 1

New Castle

Chromatograph

Perkin-Elmer 3920B

Column Material	Stainless Steel
Column Length	6 Feet
Column Diameter	1/8 Inch
Column Packing	10% UC W982 on Chromasorb W 80/100
Detector	Thermal Conductivity
Detector Temperature	250°C
Injection Port Temperature	100°C
Column Temperature	Programmed, 45°C - One Minute, then 45-105°C at 4°C/Min.
Carrier Gas	Helium
Bridge Current	175 Milliamperes
Attenuation	1

Integrator (HP)

Hewlett-Packard 3380A

Attenuation	16
Chart Speed	0.5 Centimeters/Minute

Integrator (PE)

Perk-Elmer LCI-100

Attenuation	16
Chart Speed	0.5 Centimeters/Minute

Injection Sample Size

0.3 Microliter

GAS CHROMATOGRAPH PROCEDURE NUMBER 2

New Castle

<u>Chromatograph</u>	<u>Perkin-Elmer 3920B</u>
Column Material	Stainless Steel
Column Length	6 Feet
Column Diameter	1/8 Inch
Column Packing	10% UC W982 on HP Chromasorb W 80/100
Detector	Thermal Conductivity
Detector Temperature	250°C
Injection Port Temperature	100°C
Column Temperature	Programmed, 45°C - One Minute, then 45-77°C at 4°C/Minute, then 77-145°C at Max. Rate
Carrier Gas	Helium
Bridge Current	175 Milliamperes
Attenuation	1
<u>Integrator (HP)</u>	<u>Hewlett Packard 3380A</u>
Attenuation	16
Chart Speed	0.5 Centimeters/Minute
<u>Integrator (PE)</u>	<u>Perk-Elmer LCI-100</u>
Attenuation	16
Chart Speed	0.5 Centimeters/Minute
<u>Injection Sample Size</u>	0.3 Microliter

GAS CHROMATOGRAPH PROCEDURE NUMBER 3

New Castle

<u>Chromatograph</u>	<u>Perkin-Elmer</u>	<u>3920B</u>
Column Material	Stainless Steel	
Column Length	12 Feet	
Column Diameter	1/8 Inch	
Column Packing	80/100 Chromosorb, 7.5% Oronite NIW; 2.5% Carbowax 20M TPA	
Detector	Thermal Conductivity	
Detector Temperature	250°C	
Injection Port Temperature	100°C	
Column Temperature	Same as Procedure 1	
Carrier Gas	Helium	
Bridge Current	175 Milliamperes	
Attenuation	1	
<u>Integrator (HP)</u>	<u>Hewlett Packard</u>	<u>3380A</u>
Attenuation	16	
Chart Speed	0.5 Centimeters/Minute	
<u>Integrator (PE)</u>	<u>Perk-Elmer LCI-100</u>	
Attenuation	16	
Chart Speed	0.5 Centimeters/Minute	
<u>Injection Sample Size</u>	0.3 Microliter	

the Gravimetric Method is employed, as directed in the individual monograph, and the requirement is given under the heading, *Water*.

The heading, *Loss on drying* (see (731)), is used in those cases where the loss sustained on heating may be not entirely water.

## I—Titrimetric Method

**Principle**—The titrimetric determination of water is based upon the quantitative reaction of water with an anhydrous solution of sulfur dioxide and iodine dissolved in pyridine and an alcohol. The test specimen may be titrated with the *Reagent* directly, or the analysis may be carried out by a residual titration procedure. In the residual titration, excess *Reagent* is added to the test specimen, sufficient time is allowed for the reaction to reach completion, and the unconsumed *Reagent* is titrated with a standard solution of water in methanol. The residual titration procedure is applicable generally and avoids the difficulties that may be encountered in the direct titration of substances from which the bound water is released slowly.

The stoichiometry of the reaction is not exact, and the reproducibility of a determination depends upon such factors as the relative concentrations of the *Reagent* ingredients, the nature of the inert solvent used to dissolve the test specimen, and the technique used in the particular determination. Therefore, an empirically standardized technique is used in order to achieve the desired accuracy. Precision in the method is governed largely by the extent to which atmospheric moisture is excluded from the system. The titration of water is usually carried out with the use of anhydrous methanol as the solvent for the test specimen; however, other suitable solvents may be used for special or unusual test specimens.

**Apparatus**—Any apparatus may be used that provides for adequate exclusion of atmospheric moisture and determination of the end-point. In the case of a colorless solution that is titrated directly, the end-point may be observed visually as a change in color from canary yellow to amber. The reverse is observed in the case of a test specimen that is titrated residually. More commonly, however, the end-point is determined electrometrically with an apparatus employing a simple electrical circuit that serves to impress about 200 mv of applied potential between a pair of platinum electrodes (about 5 square mm in area and about 2.5 cm apart) immersed in the solution to be titrated. At the end-point of the titration a slight excess of the reagent increases the flow of current to between 50 and 150 microamperes for 30 seconds to 30 minutes, depending upon the solution being titrated. The time is shortest for substances that dissolve in the reagent. With some automatic titrators, the abrupt change in current or potential at the end-point serves to close a solenoid-operated valve that controls the buret delivering the titrant. Commercially available apparatus generally comprises a closed system consisting of one or two automatic burets and a tightly covered titration vessel fitted with the necessary electrodes and a magnetic stirrer. The air in the system is kept dry with a suitable desiccant such as phosphorus pentoxide, and the titration vessel may be purged by means of a stream of dry nitrogen or current of dry air.

**Reagent**—Add 125 g of iodine to a solution containing 670 ml of methanol and 170 ml of pyridine, and cool. Place 100 ml of pyridine in a 250-ml graduated cylinder and, keeping the pyridine cold in an ice bath, pass in dry sulfur dioxide until the volume reaches 200 ml. Slowly add this solution, with shaking, to the cooled iodine mixture. Shake well to dissolve the iodine, transfer the solution to the apparatus, and allow to stand overnight before standardizing. One ml of this solution when freshly prepared is equivalent to approximately 5 mg of water, but it deteriorates gradually; therefore, standardize it within 1 hour before use, or daily if in continuous use. Protect from light while in use. Store any bulk stock of the reagent in a suitably sealed, glass-stoppered container, fully protected from light, and under refrigeration. A commercially available, stabilized solution of Karl Fischer reagent may be used. The diluted *Reagent* called for in some monographs should be diluted as directed by the manufacturer. Either methanol or other suitable solvent, such as ethylene glycol monomethyl ether, may be used as the diluent.

**Standardization of the Reagent**—Place enough methanol in the titration vessel to cover the electrodes, and add sufficient *Reagent* to give the characteristic end-point color, or  $100 \pm 50$  microamperes of direct current at about 200 mv of applied potential.

For determination of trace amounts of water (less than 1%), sodium tartrate may be used as a convenient water reference sub-

stance. Quickly add 150 to 350 mg of sodium tartrate ( $C_4H_4Na_2O_6 \cdot 2H_2O$ ), accurately weighed by difference, and titrate to the end-point. The water equivalence factor  $F$ , in mg of water per ml of reagent, is given by the formula  $2(18.02/230.08)(W/V)$ , in which 18.02 and 230.08 are the molecular weights of water and sodium tartrate dihydrate, respectively.  $W$  is the weight, in mg, of sodium tartrate dihydrate, and  $V$  is the volume, in ml, of the *Reagent* consumed in the second titration.

For the precise determination of significant amounts of water (more than 1%), use purified water obtained by distillation as the reference substance. Quickly add between 25 mg and 250 mg of water, accurately weighed by difference, from a weighing pipet or from a pre-calibrated syringe or micropipet, the amount taken being governed by the reagent strength and the buret size, as referred to under *Volumetric Apparatus* (31). Titrate to the end-point. Calculate the water equivalence factor,  $F$ , in mg of water per ml of reagent, by the formula  $W/V$ , in which  $W$  is the weight, in mg, of the water, and  $V$  is the volume, in ml, of the reagent required.

**Standardization of Aqueous Methanol for Residual Titration**—Prepare a *Water-Methanol Solution* by diluting 2 ml of water with methanol to 1000 ml. Standardize this solution by titrating 25.0 ml with the *Reagent*, previously standardized as directed under *Standardization of the Reagent*. Calculate the water content, in mg per ml, of the *Water-Methanol Solution* by the formula  $V'F/25$ , in which  $V'$  is the volume of the *Reagent* consumed, and  $F$  is the water equivalence factor of the *Reagent*. Determine the water content of the *Water-Methanol Solution* weekly, and standardize the *Reagent* against it periodically as needed.

**Procedure**—Determine the water by *Method Ia*, unless otherwise specified in the individual monograph.

**Method Ia (direct titration)**—Unless otherwise specified, transfer 35 to 40 ml of methanol to the titration vessel, and titrate with the *Reagent* to the electrometric or visual end-point to consume any moisture that may be present. (Disregard the volume consumed, since it does not enter into the calculations.) Quickly add an accurately weighed or measured amount of the specimen under test estimated to contain 10 to 250 mg of water, unless otherwise specified in the individual monograph, mix, and again titrate with the *Reagent* to the electrometric or visual end-point. Calculate the water content of the specimen, in mg, by the formula  $SF$ , in which  $S$  is the volume, in ml, of the *Reagent* consumed in the second titration, and  $F$  is the water equivalence factor of the *Reagent*.

**Method Ib (residual titration)**—Where the individual monograph specifies that the water content is to be determined by *Method Ib*, the *residual titration* procedure, transfer 35 to 40 ml of methanol to the titration vessel, and titrate with the *Reagent* to the electrometric or visual end-point. Quickly add an accurately weighed or measured amount of the specimen under test estimated to contain 10 to 250 mg of water, mix, and add an accurately measured excess of the *Reagent*. Allow sufficient time for the reaction to reach completion, and titrate the unconsumed *Reagent* with standardized *Water-Methanol Solution* to the electrometric or visual end-point. Calculate the water content of the specimen, in mg, by the formula  $F(X' - XR)$ , in which  $F$  is the water equivalence factor of the *Reagent*,  $X'$  is the volume, in ml, of the *Reagent* added after introduction of the specimen,  $X$  is the volume, in ml, of standardized *Water-Methanol Solution* required to neutralize the unconsumed *Reagent*, and  $R$  is the ratio,  $V'/25$  (ml *Reagent*/ml *Water-Methanol Solution*), determined from the *Standardization of Aqueous Methanol for Residual Titration*.

## II—Azeotropic (Toluene Distillation) Method

**Apparatus**—Use a 500-ml glass flask *A* connected by means of a trap *B* to a reflux condenser *C* by ground glass joints (see illustration).

The critical dimensions of the parts of the apparatus are as follows: The connecting tube *D* is 9 to 11 mm in internal diameter. The trap is 235 to 240 mm in length. The condenser, if of the straight-tube type, is approximately 400 mm in length and not less than 8 mm in bore diameter. The receiving tube *E* has a 5-ml capacity and its cylindrical portion, 146 to 156 mm in length, is graduated in 0.1-ml subdivisions, so that the error of reading is not greater than 0.05 ml for any indicated volume. The source of heat is preferably an electric heater with rheostat control or an oil bath. The upper portion of the flask and the connecting tube may be insulated with asbestos.

Clean the receiving tube and the condenser with chromic acid cleansing mixture, thoroughly rinse with water, and dry in an oven.

rather than the theoretical maximum or peak channel rate, is of the order of 1.0% if  $a$  is 6 or greater.

**PHOTOPEAK EFFICIENCY CALIBRATION**—Radionuclides such as those listed in the accompanying table together with some of their nuclear decay data are available as certified reference standards.\* A sufficient number of radioactive standard reference sources should be selected in order to obtain the calibration curve over the desired range. Where possible, standard sources of those radionuclides that are to be assayed should be included.

Calculate the gamma-ray emission rate from the equation,

$$\Gamma = A_s b,$$

in which  $A_s$  is the activity, in disintegrations per second, of the standard used, and  $b$  is the number of gamma rays per disintegration at that energy. Accurately measure quantities of standard solutions of each radionuclide into identical containers, and determine the fractional photopeak area ( $F$ ) for each of the standards.

Using the equation  $\epsilon_p = F/\Gamma$ , calculate the photopeak efficiency,  $\epsilon_p$ , and construct a log-log plot of  $\epsilon_p$  versus the gamma-ray energy as shown in Figure 4.

**DETERMINATION OF SPECIMEN ACTIVITY**—In the same manner as in the preparation of the calibration curve, determine the fractional area ( $F$ ) of the principal photopeak of the specimen under assay or an accurately measured aliquot adjusted to the same volume in an identical container as used for the standards. From the calibration curve, find the value of  $\epsilon_p$  for this radionuclide. Using the equation  $\Gamma = F/\epsilon_p$ , calculate the gamma-ray emission rate ( $\Gamma$ ). Calculate the activity ( $A$ ), in disintegrations per second, of the specimen using the equation  $A = (\Gamma/b)(D)$ , in which  $b$  is the number of gamma rays per disintegration and  $D$  is the dilution factor. To obtain the activity, in  $\mu\text{Ci}$  or  $\text{mCi}$ , divide  $A$  by  $3.7 \times 10^4$  or  $3.7 \times 10^7$ , respectively. The above relationship is equally valid for obtaining the activity of an undiluted specimen or capsule; in this case, the dilution factor,  $D$ , is unity.

## (831) REFRACTIVE INDEX

The refractive index ( $n$ ) of a substance is the ratio of the velocity of light in air to the velocity of light in the substance. It is valuable in the identification of substances and the detection of impurities.

Although the standard temperature for Pharmacopeial measurements is 25°, many of the refractive index specifications in the individual monographs call for determining this value at 20°. The temperature should be carefully adjusted and maintained, since the refractive index varies significantly with temperature.

The values for refractive index given in this Pharmacopeia are for the D line of sodium (doublet at 589.0 nm and 589.6 nm). Most instruments available are designed for use with white light but are calibrated to give the refractive index in terms of the D line of sodium light.

The Abbé refractometer measures the range of refractive index for those Pharmacopeial materials for which such values are given. Other refractometers of equal or greater accuracy may be employed.

To achieve the theoretical accuracy of  $\pm 0.0001$ , it is necessary to calibrate the instrument against a standard provided by the manufacturer and to check frequently the temperature control and cleanliness of the instrument by determining the refractive index of distilled water, which is 1.3330 at 20° and 1.3325 at 25°.

## (841) SPECIFIC GRAVITY

Unless otherwise stated in the individual monograph, the specific gravity determination is applicable only to liquids, and, unless otherwise stated, is based on the ratio of the weight of a substance in air at 25° to that of an equal volume of water at the same temperature. When the substance is a solid at 25°, determine the specific gravity at the temperature directed in the respective monograph, and refer to water at 25°.

**Procedure**—Select a scrupulously clean, dry pycnometer that previously has been calibrated by determining its weight and the

weight of recently boiled water contained in it at 25°. Adjust the temperature of the substance to about 20°, and fill the pycnometer with it. Adjust the temperature of the filled pycnometer to 25°, remove any excess of the substance, and weigh. Subtract the tare weight of the pycnometer from the filled weight of the pycnometer.

The specific gravity of the substance is the quotient obtained by dividing the weight of the substance contained in the pycnometer by the weight of water contained, both determined at 25° unless otherwise directed in the individual monograph.

## (851) SPECTROPHOTOMETRY AND LIGHT-SCATTERING

### ULTRAVIOLET, VISIBLE, INFRARED, ATOMIC ABSORPTION, FLUORESCENCE, TURBIDIMETRY, NEPHELOMETRY, AND RAMAN MEASUREMENT

*Absorption spectrophotometry* is the measurement of an interaction between electromagnetic radiation and the molecules, or atoms, of a chemical substance. Techniques frequently employed in pharmaceutical analysis include ultraviolet, visible, infrared, and atomic absorption spectroscopy. Spectrophotometric measurement in the visible region was formerly referred to as *colorimetry*; however, it is more precise to use the term "colorimetry" only when considering human perception of color.

*Fluorescence spectrophotometry* is the measurement of the emission of light from a chemical substance while it is being exposed to ultraviolet, visible, or other electromagnetic radiation. In general, the light emitted by a fluorescent solution is of maximum intensity at a wavelength longer than that of the exciting radiation, usually by some 20 nm to 30 nm.

*Light-scattering* involves measurement of the light scattered because of submicroscopic optical density inhomogeneities of solutions and is useful in the determination of weight-average molecular weights of polydisperse systems in the molecular weight range from 1000 to several hundred million. Two such techniques utilized in pharmaceutical analysis are *turbidimetry* and *nephelometry*.

*Raman spectroscopy* (inelastic light-scattering) is a light-scattering process in which the specimen under examination is irradiated with intense monochromatic light (usually laser light) and the light scattered from the specimen is analyzed for frequency shifts.

The wavelength range available for these measurements extends from the short wavelengths of the ultraviolet through the infrared. For convenience of reference, this spectral range is roughly divided into the ultraviolet (190 nm to 380 nm), the visible (380 nm to 780 nm), the near-infrared (780 nm to 3000 nm), and the infrared (2.5  $\mu\text{m}$  to 40  $\mu\text{m}$  or 4000  $\text{cm}^{-1}$  to 250  $\text{cm}^{-1}$ ).

### Comparative Utility of Spectral Ranges

For many pharmaceutical substances, measurements can be made in the ultraviolet and visible regions of the spectrum with greater accuracy and sensitivity than in the near-infrared and infrared. When solutions are observed in 1-cm cells, concentrations of about 10  $\mu\text{g}$  of the specimen per ml often will produce absorbances of 0.2 to 0.8 in the ultraviolet or the visible region. In the infrared and near-infrared, concentrations of 1 to 10 mg per ml and up to 100 mg per ml, respectively, may be needed to produce sufficient absorption; for these spectral ranges, cell lengths of from 0.01 mm to upwards of 3 mm are commonly used.

The ultraviolet and visible spectra of substances generally do not have a high degree of specificity. Nevertheless, they are highly suitable for quantitative assays, and for many substances they are useful as additional means of identification.

The near-infrared region is especially suitable for the determination of —OH and —NH groups, such as water in alcohol, —OH in the presence of amines, alcohols in hydrocarbons, and primary and secondary amines in the presence of tertiary amines.

The infrared spectrum is unique for any given chemical compound with the exception of optical isomers, which have identical spectra. However, polymorphism may occasionally be responsible for a difference in the infrared spectrum of a given compound in the

Obviously, knowing the customer — the waste generator — is an important element of this process. The following page is an internal McKesson document depicting the sequence of approvals of a proposed customer (generator) by McKesson management personnel prior to acceptance of spent streams from that generator.

Following this document is the standard Waste Analysis and Verification Procedures now in effect at those McKesson Chemical branches already permitted in the storage of hazardous wastes. In most of these cases, the recycler is a sister division of McKesson Chemical Company — McKesson Envirosystems Company.

# WASTE GENERATOR APPROVAL

**McKESSON  
CHEMICAL**

Foremost-McKesson  
Chemical Group

McKesson Chemical Company

Vendor Information		
To: <b>Marketing &amp; Product Management Home Office</b>	From:	Date
		Region
Vendor Name		
Address		
City, State, Zip Code		
Telephone Number	Contact	
Request originated by		Date
Branch:		
<b>Approvals</b>		
Approved Yes <input type="checkbox"/> No <input type="checkbox"/>	District Manager	Date
Approved Yes <input type="checkbox"/> No <input type="checkbox"/>	Regional Mktg & Prod Manager	Date
Approved Yes <input type="checkbox"/> No <input type="checkbox"/>	Regional Vice President	Date
Approved Yes <input type="checkbox"/> No <input type="checkbox"/>	Vice President, Mktg & Prod Management	Date

McKesson Chemical Company

Waste Analysis and Verification Procedures

(40 CFR Sec. 270.14(b-3))

The following pages describes the standard Waste Analysis and Verification Procedures now in effect at those McKesson Chemical branches already permitted in the storage of hazardous wastes.

## WASTE ANALYSIS AND VERIFICATION PROCEDURES

### McKesson Chemical Company

1. Upon initial contact from a prospective customer who wishes to supply McKesson Chemical Company a spent stream for recycling, a McKesson representative is either sent to the customer's location or makes contact with him to acquire a prepared Spent Material/Waste Product Survey form (copy attached along with preparation instructions). McKesson strongly urges the customer (who is the generator) to provide it with a physical and chemical analysis which he has either performed or has obtained from an outside laboratory.
2. The completed Spent Material/Waste Product Survey form and any laboratory physical and chemical analysis are returned to the respective branch which will be handling the generator's waste stream. A copy of the Survey and any analyses are kept on file at the branch facility, while the original is mailed to the recycler, along with copies of any laboratory analysis.
3. The recycler will evaluate the data contained on the Spent Material/Waste Product Survey form and the analytical reports on the waste stream and determine if the recycling facility has sufficient information to properly manage the material. A sample may be required by the recycler before a decision is made as to whether to accept a particular waste stream and, if so, copies of the laboratory reports are forwarded to the McKesson Chemical branch facility before the material is picked up.

Waste Analysis and Verification Procedures

McKesson Chemical Company

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4. Once the recycler has determined that sufficient knowledge of a particular waste stream is on hand, and approval is given by the recycler, the McKesson branch is notified.
5. With this approval on hand, the McKesson branch will notify the generator that the branch is authorized to pick up the material in accordance with the following procedure:
  - A. The generator completes an appropriate Hazardous Waste Manifest based on the Survey form and accompanying analytical data.
  - B. A copy of the Manifest is supplied to the local McKesson branch and is checked.
  - C. A copy of the Manifest, after its approval by Branch Management, is given to the truck driver and is to be in his possession until delivery of the material to the branch.
  - D. The material to be picked up is compared to the listing on the Manifest by the driver. In addition, he:
    - a. Evaluates the container for condition - sealed, with no apparent leaks.
    - b. Locates the precautionary warning label, if required.
    - c. Ensures that no other labelling or stencilling is on the container other than the Hazardous Waste label, including trademarks, original vendor names, and the like.

Waste Analysis and Verification Procedures

McKesson Chemical Company

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- E. The driver also makes sure the Hazardous Waste label on the drum is complete:
    - a. Generator name and address.
    - b. Contents.
    - c. Manifest number.
    - d. Proper shipping name.
    - e. E.P.A. ID number.
    - f. Accumulation starting date.
  - F. The driver picks up only that quantity and class of hazardous waste appearing on the Manifest.
7. At the time a shipment is received at the recycling facility from the McKesson branch, a measurement and recording of the volume received of a particular generator's stream is made. Verification is made that the count contained on the accompanying shipment manifest document corresponds to the number of containers received and that the lot numbers assigned by the McKesson Chemical branch handling(storing) the spent stream are accurate. A sample is drawn from the various drum utilizing a sampling tube which will ensure a homogeneous (cross section) representation according to a set statistical schedule.

The container samples are then taken and an aliquot representation is composited, if necessary, for analytical verification. The sample taken at the recycling facility is labelled and identified with the following information:

- a. The Manifest number.
- b. The generator's E.P.A. identification number.
- c. The proper D.O.T. shipping name as it appears on the hazardous waste label on the drum.
- d. The E.P.A. hazardous waste code as it appears on the hazardous waste label on the drum.
- e. The date on which the shipment is received.
- f. The initials of the individual who took and composited the sample.

The drums are held in a specially designated and contained storage area where they are segregated according to generator and waste identification until the lab verification results are returned.

8. The composite sample of the received containers is taken to the on-site lab where gas chromatographic analysis is performed to ensure that the material is in fact one and the same as the description on the Spent Material/Waste Product Survey form, the Manifest, the drum label, and any lab reports which the generator may have provided. Based upon the results of the chromatographic

analysis, further tests will be conducted as warranted.

9. Should a discrepancy become apparent during the verification analysis, the recycling center will contact the McKesson Chemical branch who will in turn contact the generator to inform him of the discrepancy. Based upon the findings of the lab and the contact with the original generator, the shipment of the material having the evidence of a discrepancy may be refused, or an alternate means of handling the shipment will be arranged with the original generator.
10. A copy of the gas chromatographic analysis and other analytical data are returned to the McKesson Chemical branch. These data are placed into the customer's file (original generator), which also contains a copy of the original Spent Material/Waste Product Survey form, any laboratory analytical reports, and any and all correspondence between any of the parties involved regarding that particular generator's waste stream.

The net result of the preceding is that all shipments of recyclable materials sent to one of the recycling facilities are verified by the latter before they are processed. This step not only verifies the economic value of the spent stream but prevents damage to the equipment and hazard to personnel due to unexpected ingredients in the solvent.

McKesson Envirosystems Co.  
127 West Berry Street  
200 Commerce Building  
Fort Wayne, IN 46802  
219 424-1940

# Spent Material / Waste Products Survey



Please provide all information requested below,  
then return this form to your local McKesson Chemical Representative.

COMPANY <span style="float:right">①</span>				SIC NUMBER			
MAILING ADDRESS				PRODUCT CODE			
DESCRIPTION OF SPENT MATERIAL / WASTE PRODUCT <span style="float:right">②</span>				INDICATE PROCESS WHICH GENERATES THIS SPENT / WASTE (BE SPECIFIC)			
VOLUME		FREQUENCY			PACKING		
		PER MONTH	PER YEAR	ONE TIME	IN DRUMS	IN BULK	
PHYSICAL PROPERTIES: <span style="float:right">③</span>				HAZARDOUS PROPERTIES: <span style="float:right">④</span>			
PHYSICAL STATE AT 70°F _____ SOLID _____ LIQUID _____ FLASH POINT _____ SEMI-SOLID _____ PH _____ SPECIFIC GRAVITY _____ % CHLORINE _____ % SULFUR _____ BTU PER LB/GAL _____				(DATE OF LAB ANALYSIS _____) DESCRIBE— _____ _____ _____ _____			
EPA / DOT IDENTIFICATION: <span style="float:right">⑤</span>							
EPA HAZARDOUS WASTE NUMBERS _____				EPA HAZARD CODES _____			
DOT HAZARDOUS MATERIAL DESCRIPTION _____							
CHEMICAL COMPOSITION:							
SUBSTANCE	MIN	MAX	TYP	SUBSTANCE	MIN	MAX	TYP
⑥							
GENERAL:							
1. PLEASE PROVIDE LAB ANALYSIS IF HEAVY METALS, CYANIDES, PESTICIDES, CARCINOGENS OR OTHER TOXICS ARE INVOLVED. 2. PLEASE DISCUSS ANY OTHER INFORMATION WHICH MAY HELP MCKESSON BE OF SERVICE: <span style="float:right">⑦</span> _____ _____ _____							
PLEASE ATTACH ANY ADDITIONAL HAZARD AND HANDLING INFORMATION TO THIS SHEET.							
TO THE BEST OF MY KNOWLEDGE AND ABILITY TO DETERMINE THIS IS A COMPLETE AND ACCURATE DESCRIPTION OF THIS MATERIAL.							
SIGNATURE <span style="float:right">⑧</span>				TITLE			
PHONE NUMBER (INCLUDE AREA CODE)				DATE		EPA IDENTIFICATION NO.	



Section 1. General

Complete company name, address and zip code.  
If generating plant is in a different location, please note.  
Omit Product Code.

Section 2. Marketing

The accurate completion of this section has a direct effect on:

- A. Pricing
- B. Method of pick up
- C. The decision as to where the spent material will be processed
- D. The request for a sample.

Section 3. Physical Properties

Complete to your best ability  
If the generator has any other analysis i.e. WR&R or Independent laboratory, please attach.

Section 4. Hazardous Properties

Under RCRA hazardous waste will meet 4 basic properties:

- A. Ignitable Flash Point  $\leq 140^{\circ}\text{F}$  Actives, Hydrocarbons, Lacquer Thinners, and blends of these solvents.
- B. Toxic Chlorinated and Fluorocarbons
- C. Corrosive Acids, Caustics, PH  $\leq 2$  or  $> 12.5$
- D. Reactive TNT Waste water, Sodium Metal

Describe the property relative to the waste stream.

Section 5. EPA-DOT Identification

EPA hazardous waste numbers can be found by using the attached listing. (Taken from CFR #40, 5-19-80)  
Hazard codes describing the waste's properties listed in Section 4 can be found on the same listing.  
DOT hazardous material descriptions in addition to their hazard class and identification (UN or NA) numbers are found in the Hazardous Materials Table 5-22-80. A copy of this table should be on file at each McKesson branch.

Section 6. Chemical Composition

The basic components of the waste should be listed in this section along with their percentages of composition.  
Again any other analysis reports on the stream should be attached.

Section 7. General

Any other information relative to the stream, or customer specifications on reclaimed and returned material, ie. drying, addition of virgin material, packaging should be listed here.

Section 8.

The generator must sign this survey form. Failure to do so will cause immediate rejection by McKesson Envirosystems.  
Phone number, date filed, and federal EPA I.D. number must also be completed.

McKesson Chemical Company

Security

(40 CFR 270.14(b-4))

This McKesson Chemical facility employs a number of measures designed to assure adequate security in order to comply with government regulations and to assure the protection of Company assets.

This facility does not utilize a 24-hour entry surveillance system, but does have other means of control to provide adequate security. A manual fire alarm system is present at the facility as well as an automatic sprinkler system in warehouse and office area, monitored, inspected and maintained by the Engineered Systems Company.

The entire facility including the outside yard storage area, in which the designated waste storage area is included, is maintained in a secure manner. As will be observed from the facility diagram, the building walls act as a barrier on the southeast corner of the complex. At the southeast corner at the end of the building, enclosing the rail spur, fencing begins and surrounds the entire yard.

The fencing utilized to surround the outside areas of the facility where storage and hazardous waste loading/unloading activities are undertaken is constructed of a 6 foot high, fabric type 11 gauge, 2 inch mesh chain link fence. Above the mesh fencing, supported on the top of the steep

upright posts, are arms projecting 1 foot at a 45 degree angle from vertical, and holding 3 strands of barbed wire strung around the entire fence.

Access to the areas of the facility which are surrounded by the fence will be by one of only two gates. Vehicular traffic carrying hazardous wastes will have access to the hazardous waste unloading/loading dock area by way of a 24-foot double gate in the south stretch of fence.

The above-mentioned gates are maintained in a closed and padlocked condition during all periods of facility non-working hours. During working hours, the fence gates are observed at all times from either the general office or the working area and shipping/receiving office. All visitors must gain access to the facility by way of the main office located on the south side of the facility. A secured and attended vestibule area lies immediately inside the entrance door at which point a receptionist shall inquire as to the individual's identification and purpose of visit. While within the facility, it is McKesson Chemical Company's policy that no one shall be allowed to gain access to any part of the immediate facility without having a McKesson employee accompanying them at all times. Any visits and/or inspections which may be pertinent to the functioning of the facility as a hazardous waste management facility, are to be logged in the facility's operations log.

All doors, as well as the gates which were previously described, are maintained in a locked and secured condition during non-working hours.

Warning signs are posted at all gates and several other fence locations around the facility in such a manner to be visible from all angles of approach, and shall bear the legend "Danger-Unauthorized Personnel Keep Out". There shall also be "No Smoking" signs posted in prominent positions in the yard and loading areas, as well as other precautionary and safety signs, to assure that no ignition sources are present in these areas. The restriction of smoking only designated areas is again a standard McKesson Chemical Company working rule.

No materials, empty pallets, or drums are permitted to be stacked against the fence in order to prevent easy egress or concealment.

All critical locks are changed when a key holder leaves the Company, when a key is lost, or every two years, whichever occurs first.

All available lighting will be utilized to illuminate the buildings, fence, and yard, Photo electric timer switches are installed to control the lighting.

Inspection Schedules, Equipment Requirements,  
and Preventative Measures  
(40 CFR Sec. 270.14(b-5))

As a result of McKesson Chemical's being only a distributor of chemicals (no manufacturing, no processing), any of its facilities will employ only a limited variety of equipment in its daily business. Because of the type of activity undertaken, the inspection activity required is low in comparison to that required in a processing or manufacturing environment. However, a number of regular and routine inspections are carried out on that equipment involved in the day's business. Too, routine inspections are conducted on safety equipment which might be required in emergency situations to ensure that these items will be accessible and ready if a situation occurs. Inspections center upon evaluation of equipment for possible malfunctions, structural deterioration, operator errors, and unintentional discharges which could affect the environment or threaten human health.

The appended Table lists the items which are routinely inspected and the types of problems which could be present or cause an item to be non-functional. The items selected allow a worker to carry out tasks of both a routine and nonroutine nature in such a manner to ensure the employee's safety and to prevent any threat to the public and/or ecological systems.

Included in Table 1 is a listing of the frequency with which the items are inspected. It should be noted that in addition to these inspections which are routinely done by the branch personnel, McKesson Chemical has other

McKesson Chemical Company  
Inspection Schedules, Equipment Requirements,  
and Preventative Measures  
Page 2.

Company personnel not stationed at the facility conduct a "Safety Audit" of the operation on a quarterly basis. This policy has been in place since 1978 and entails either the facility's District Manager or a member of the Regional Operations Department Staff's visiting the branch for what typically is a full day to inspect and evaluate the facility in approximately 180 areas pertaining to safety and operating procedures. Examples of areas checked are:

- |  |   |
|--|---|
| 1. Office area   | 8. Warehouse & dock areas               |
| 2. Drivers' records  | 9. Yard area                            |
| 3. Fire protection   | 10. Transportation                      |
| 4. Maintenance   | 11. Physical layout & equipment         |
| 5. Compliance with OSHA, RCRA, DOT, and other rules and regulations. | 12. General recordkeeping and control   |
| 6. Security  | 13. Compatibilities of stored materials |
| 7. Safety practices  | 14. Waste management procedures         |

Inspections of the hazardous waste container storage area will be conducted as outlined in Table 1. McKesson Chemical has developed the form entitled "T/S/D Facility and Equipment Inspection Checklist", included after this narrative, for use in conducting inspections on specific items requiring monitoring. Results and documentation of any remedial actions which might be required will be recorded on an inspection log sheet such as the one found following this narrative, entitled

McKesson Chemical Company  
Inspection Schedules, Equipment Requirements,  
and Preventative Measures  
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"Inspection Log Form". Information included on the log sheet will include the item inspected, date and time of inspection, name of inspector, observations, remedial action (if necessary), date repair completed (if required), and supervisor's signature. McKesson Chemical has also developed the form entitled "In-House Container Inspection Checklist", which is also included following this section. This form is a listing of items which should be reviewed pertaining to container management. The inspector checks the status of each item and makes a decision as to its being acceptable or unacceptable. Supervisory personnel ensure that proper remedial action to remedy an unsafe situation is undertaken as soon as feasibly possible, based upon the severity of the condition, parts availability, scheduling, etc. Remedial actions are noted and are kept on file with appropriate reports made if necessary.

In addition to container inspections being logged, similar documentation is undertaken for Company quarterly safety inspections, sprinkler system inspections (weekly), fire extinguisher inspections (monthly), maintenance checklist (as designated by specific area), and governmental inspections (as performed), and results kept on file.

This facility of McKesson Chemical Company does not utilize tanks of any sort for the management of waste materials. Thus, the regulations pertaining to inspections and the logging of such inspections on this type of equipment is not applicable.

McKesson Chemical Company  
Inspection Schedules, Equipment Requirements  
and Preventative Measures  
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This facility likewise does not utilize waste piles, or surface impoundments, or incinerators as means of managing wastes, and the regulations pertaining to inspections and the logging of such inspections are not applicable.

If McKesson Chemical Company personnel during a routine inspection find that a condition of a non-emergency nature is present which requires some type of maintenance in order to bring that particular article into compliance with standards, it shall be that employee's responsibility either to bring the item into compliance or to bring it to the facility management's attention for correction of the deficiency. All remedial actions are undertaken at the earliest possible time in order to eliminate potential for further deterioration of equipment, and to resolve an unsafe condition.

If during an inspection a situation would be found which is of an emergency nature, or has the potential to become one, the employee shall immediately initiate remedial action, and will notify the Emergency Coordinator who shall carry out his/her actions as outlined in the Contingency Plan. As outlined within the Contingency Plan, in the event of a release of a hazardous material, it shall be the objective to contain, isolate, clean-up, and decontaminate the affected area with the utmost concern for minimizing risk to Company workers, the public, and the environment. The clean-up material must then be properly disposed of and necessary documentation and reporting undertaken.

McKesson Chemical Company  
Inspection Schedules, Equipment Requirements  
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Inspection logs are maintained and kept at the facility by the Operations Manager. The format of the inspection logs is included at the end of this narrative and is to be maintained at the facility for a minimum of 3 years from the date of inspection. Any extraordinary occurrences such as a waste release or fire requires a written report which shall be kept on file at the facility, as well as being forwarded to the appropriate agencies and Company personnel as outlined in the "Contingency Plan" section.

McKesson Chemical Company does not request a waiver of the preparedness and prevention requirements under 40 CFR 264 Subpart C. Requirements of this section of the regulations are to be complied with.

Specific discussion pertaining to internal and external communications capabilities, the internal alarm system, emergency equipment present on-site, fire control equipment present on-site and training in its use, is discussed either in this section or the accompanying "Contingency Plan".

The telephone system at this facility provides the main internal as well as external means of communication. A designated alarm system is utilized by branch personnel to act as an alert system for emergency situations with instruction and drills conducted on a routine basis.

Emergency equipment maintained at this facility is listed in the Contingency Plan.

Water pressure for the facility and its sprinkler system is supplied by city mains.

The section entitled "Secondary Containment System Design and Operations" describes the layout of the designated storage area for hazardous waste and how the pallets of drums of solvents are placed. With the spacing afforded by this arrangement, sufficient access is available to allow inspection of the containers for possible leaks. This arrangement would also facilitate efforts for fighting a fire should one break out in this area. All drummed material will be stored in a compatible manner. The number of ignitable waste materials stored at this facility will be minimal. Regardless, the storage of ignitable materials shall be in such a manner to remain below the maximum allowable limit of 40 drums (2,200 gallons) in one grouping, as dictated under OSHA (29 CFR Sec. 1910.106(6)(H-16)). As required under this section, once the storage of a material meeting this hazard has reached this limit, a 5 foot aisle or row of non-flammable materials must be present before another "pile" of flammables may be stored.

The activities undertaken at this facility insofar as hazardous waste management is concerned is limited to temporary storage of drummed spent solvents. There is but one location within the facility which is utilized

for loading and unloading of materials received from off-site generators. The loading/unloading area is designated on the facility plot plan.

This facility receives usually less-than-truckload quantities of waste materials from off-site generators and temporarily stores them in order to accumulate truckloads in order to make it economically feasible to travel the distances involved in reaching the recycling center to which these waste materials are destined.

The extent of physical handling of the drummed materials while at the facility is kept to an absolute minimum to reduce the likelihood of damage and possible release. Once trucks carrying waste materials are at the dock area and secured by means of wheel chocks, forklifts are utilized to transfer the drums from the truck into wooden pallets in the staging area at the loading and unloading area. Drums are placed four to a pallet, and once the necessary administrative procedures and verification checks have been made as outlined under "Container Management Practices", full pallets are carried by forklift to the designated storage area where they remain on the pallet. While in storage, the drums are inspected in accordance with the inspection schedule listed in Table 1.

Once a truckload quantity of material is accumulated, the drums are brought to the staging area at the dock, prepared for shipment, and placed onto the vehicle transporting them to the recycling center. Because of the minimal handling during the material's presence at the facility, the likelihood of spills is small; but should an incident occur, spilled material would be contained and picked up by use of Hazorb or other industrial absorbents which are readily available at the site. All clean-up material shall be picked up and placed in an open-head drum compatible with the material, and then sent to a properly permitted disposal facility.

As outlined in the section "Secondary Containment System Design and Operation", water runoff in the designated waste storage area and within the secondary containment units will not be a consideration because of the curb around the area. Should evidence of a spill be present in the secondary containment area, it will be absorbed by readily available inert absorbent material and the whole held until arrangements can be made for its proper disposition to an appropriately registered and equipped disposal site.

Ground water contamination is prevented at this facility by assuring that all containers of waste materials are stored in closed, good quality drums, which remain at all times in the designated hazardous waste storage area inside the main warehouse as described in the section entitled "Secondary Containment System Design and Operation."

Due to the absence of process operations at this facility, and given that the activity pertaining to hazardous waste management's being limited to warehousing, a power failure at the facility would not cause a threat to human health or the environment. However, should loading or unloading activities be under way during a power failure, and the available light were of an insufficient nature to safely complete the task, operations shall be ceased until the power company was notified and the cause of the failure discovered and repaired.

All McKesson Chemical Company facilities maintain a file of Material Safety Data Sheets (supplied by the manufacturer) for the products which they distribute. Examples of the appropriate Material Safety Data Sheets for specific virgin chemical materials subsequently handled in waste form follows the "Contingency Plan" section. These data sheets are kept on file and are kept up-to-date so that facility personnel have accurate information available regarding toxicity, fire and explosion hazards, protective equipment recommendations, and first aid. A listing of available protective emergency equipment kept at the facility is presented in the section entitled "Contingency Plan". Use of personal protective equipment is strictly enforced and is covered in the employee's initial training, as well as being reinforced on a routine basis in monthly safety meetings.

McKesson Chemical Company

In House Container Inspection Checklist

A. <u>Location</u>	<u>YES</u>	<u>NO</u>	<u>Recommended Action</u>
1. Waste materials properly segregated according to McKesson compatibility storage program.	_____	_____	_____
2. Ignitables (flammables, combustibles) located 50 feet from property lines.	_____	_____	_____
3. Aisles provided for emergency access.	_____	_____	_____
B. <u>Container Condition</u>			
1. All containers sealed.	_____	_____	_____
2. Any leaking containers.	_____	_____	_____
3. Any containers swollen or bulged.	_____	_____	_____
4. Any containers concaved due to vacuum building up.	_____	_____	_____
5. Any containers with extreme corrosion	_____	_____	_____
6. All containers properly labelled and identified.	_____	_____	_____
8. All containers have lot number	_____	_____	_____
9. All containers compatible with products stored in them.	_____	_____	_____

Inspector: \_\_\_\_\_ Date: \_\_\_\_\_

I have reviewed this report and certify all storage is in satisfactory condition.

Supervisor: \_\_\_\_\_ Date: \_\_\_\_\_

Recommended Action Codes

- A - Effect McKesson compatibility program
- B - Effect container receiving maintenance procedure
- C - Effect container transfer procedure
- D - Effect spill control procedure

I certify that the above recommended action has been taken on:

Date: \_\_\_\_\_ Storage is now satisfactory.

Supervisor: \_\_\_\_\_ Date: \_\_\_\_\_

Table 1

McKesson Chemical CompanyInspection Schedule  
(To be kept at Facility)

<u>Area/Equipment</u>	<u>Specific Items</u>	<u>Types of Problems</u>	<u>Frequency of Inspection</u>
<u>Container Storage Area</u> (Secondary Containment)	General Area	Leaks, spills	Daily
	Container placement and stacking	Aisle space	Weekly
	Sealing of containers	Open bungs, lids	Weekly
	Labelling of containers	Improper identification Date missing illegibility	Weekly
	Base	Cracks, erosion	Daily
	Pallets	Missing boards, broken, loose boards	Daily
	Warning signs	Damaged	Weekly
	Debris & refuse	Aesthetics	Weekly
	Berm	Cracks, deterioration	Daily
<u>Security Devices</u>	Facility fence	Corrosion, damage	Weekly
	Main Gate	Corrosion, damage, non-functioning	Weekly
<u>Loading, Unloading Areas</u>	Surface areas	Deterioration spills	Daily
	Dock bumpers	Damage	Daily

Inspection Schedule  
 McKesson Chemical Company  
 Page 2.

<u>Area/Equipment</u>	<u>Specific Items</u>	<u>Types of Problems</u>	<u>Frequency of Inspection</u>
<u>Safety &amp; Emergency Equipment</u>	Emergency shower & eye wash	Water pressure, leaks drainage	Weekly
	Industrial absorbent	Out of stock	Monthly/ as needed
	Overpack drums	Out of stock	Weekly
	Face shields	Broken or dirty	Monthly/ as needed
	Chemical cartridge respirators with cartridges for organic solvents	Spent solvent, seals	Monthly/ after each use
	Portable pump	Power, clogging	Monthly
	Fire extinguishers	Recharging	After each use
	Fire alarm systems	Power failure	Monthly
	Telephone system	Power failure	Per NFPA
	Emergency lighting system	Battery failure	Per NFPA
	First aid equipment and supplies	Items out of stock or inoperative	As used
	Protective clothing	Holes, wear & tear	As used
	Decontamination wash room	Water pressure, leaking drainage	As used
	Forklifts	Brakes (includes parking), tires (pressure), horn, lights, hoist, tilt, forks, steering, water level rad/batt., engine oil level, hydraulic oil leak	Daily
Pump Hoses	Cracks, holes.	Weekly	







McKesson Chemical Company

Preparedness and Prevention Requirements

40 CFR 270.14 (b-6)

1. Internal emergency communication at the McKesson branch in Greensboro, is additional to the conventional interoffice telephone, is based upon a "Teriphone" system. In this branch, a substantial number of input stations can be used to sound a verbal warning that can be heard at all points in the branch.
2. Fire extinguishers are located throughout the branch as noted in the Contingency Plan. A fire hydrant is located directly in front of the main building of the branch.
3. Testing and maintenance of equipment is covered in the section on "Inspection".
4. Copies of the branch's Contingency Plan has been distributed to local emergency authorities.

McKesson Chemical Company

Contingency Plan

(40 CFR Sec. 270.14(b-7))

McKesson Chemical Company is an established major distributor and repacker of a wide variety of industrial chemicals and solvents, many of which are hazardous (flammable, corrosive, toxic, oxidative). Consequently, the Company has long had in place a formal Emergency/Contingency Program designed to protect its employees, its property, and that of its neighbors and the general public in the event of an emergency. The expansion of the facility's business to include the temporary storage of a limited variety of spent solvents (all of which are sold as virgin grades by the facility) has required only a modest modification of the existing Plan to cover the additional requirements imposed by management of hazardous wastes.

Each branch of McKesson Chemical Company is only a distributor of industrial chemicals and solvents. No manufacturing or processing activities are carried out at this facility. The company purchases chemical commodities from various manufacturers and distributes them to customers which utilize these products in their manufacturing processes.

The owner of this facility is McKesson Corporation, the parent corporation of McKesson Chemical Company, located in San Francisco, California, (415-983-8300). All facility personnel involved with implementing emergency procedures are identified in the facility's

McKesson Chemical Company's fundamental involvement as it relates to hazardous waste management, is that of receiving back from off-site generators spent solvents, temporarily storing them in order to accumulate economic truckloads, and then reshipping these materials to a Company-owned recycling center at another location. Materials which may be deemed as hazardous wastes are stored in one location on the property. All materials are handled in drums of 55 gallon capacity or less as described in the section listed as "Containers Utilized Holding Free Liquids". The maximum number of drums will be as denoted in the Part A. The designated storage area is shown on the site plan. A description of this area may be found in the section entitled "Secondary Containment System Design and Operation". The section entitled "Closure and Post-Closure Plans" outlines the types of materials which are typically stored at this facility. A copy of the Contingency Plan, including a site plan locating various emergency facilities, has been distributed to local emergency authorities; copies of acknowledgments are included in the Contingency Plan in the Appendix.

In the event of an emergency situation, the individual making discovery of the occurrence is to immediately notify the emergency coordinator or his alternate, if neither is available, the next alternate listed on the Emergency Phone Number listing. The Emergency Coordinator, as do his alternates, have the authority to commit Company resources and initiate requests for assistance to any emergency agency.

The phone number listing and emergency procedures outlined in the Plan are posted within the facility and are kept readily available to the listed coordinator and his alternates.

The decision must be made by the coordinator or his alternate, whether a situation poses imminent threat to human life, health, or the environment to such an extent

Emergency Phone Number listing, and so on. The Emergency Coordinator, as do his alternates, has the authority to commit Company resources and to initiate requests for assistance to any emergency agency — several of the latter are listed in the Contingency Program.

The phone number listings and emergency agencies outlined in the Plan are prominently posted within the facility and are kept readily available by the Emergency Coordinator and his alternates.

The decision is made by the Coordinator or his alternate as to whether a given emergency situation poses imminent threat to human life, health, or the environment to an extent that implementation of the Contingency Plan is required.

In any emergency situation, it is important that the outline of actions and procedures to be followed be as concise as possible to allow the response to be so prompt as to minimize risk. For this reason, the Plan includes the Emergency Phone Number Listing and Emergency Procedures to be followed by this facility. For purposes of this Application, an elaboration of specific areas will be discussed for various considerations pertaining to the Contingency Program. This will also be used by facility management for reference.

The Contingency Plan will be implemented for any of the following situations:

1. Fire and/or Explosion - the Coordinator or his alternate must make an assessment as to the number of different potential problems or

situations which might occur in an emergency, and how to deal with them. Consideration must be given to items such as:

- Release of fumes and possible necessity for neighbor evacuation.
- Presence of materials which when exposed to fire could explode, resulting in flying debris which could spread fire to off-site areas or to previously unaffected areas at the facility.
- Explosions which could result in the release of materials from containers.
- Residues from fire fighting activities which may require containment, handling, and disposal in an appropriate manner if deemed hazardous.

2. Spills or Material Release - The Coordinator or his alternate must make an assessment and take necessary actions to alleviate risk in such a situation. Consideration must be given to the following potential threats:

- The potential for the released material's being a flammable liquid which would pose a fire hazard.
- The possibility of ground contamination which would require removal and proper disposal of soil so contaminated.

- Dealing with surface water which may become contaminated with the released material. Every effort is made to prevent such mixing.
- Awareness and guarding for potential ignition sources, and determination as to whether the release of fumes could pose a fire and/or explosion hazard which would necessitate neighbor evacuation.

3. Floods - Regardless whether a facility is or is not located in a floodplain, the Emergency Coordinator must remain cognizant of weather conditions and implement removal of materials to higher ground or to a safe, permitted facility if necessary. Contact with the National Weather Service would be initiated in the event that conditions are present which could bring about possible flooding.

It is a McKesson Chemical Company policy that emergency plans and procedures be kept available at the facility and that emergency drills be conducted at 6-month intervals in which all facility personnel participate.

As mentioned previously, in the event of an emergency situation the Emergency Coordinator must be notified, or in his absence, an Alternate in descending order as listed on the Emergency Coordinator listing. The Coordinator at that time determines the appropriate measures to be implemented (e.g., alarms, evacuation, etc.) and what Federal, state, or local agencies as well as fire and police departments, must be advised to render assistance.

In the event of a release or fire, the Coordinator will determine by observation, facility records, or analysis (if time permits), what the identity of the material involved is, its exact source, quantity, and extent of impact the released material could have from a health, safety, and environmental aspect.

An assessment of the situation must be made to determine possible hazards to human health and/or the environment due to the emergency. The Coordinator must look at all possible direct and indirect effects which might result from the emergency. The Coordinator must further determine whether facility personnel are adequately equipped to deal with the situation, or whether it is necessary to contact outside emergency agencies for assistance.

The potential incidents which are of highest priority for emergency planning at this facility are (1) fire and/or explosion, and (2) spills or material releases. Other natural disasters such as tornados, earthquakes, or floods, would be handled in similar response manners as outlined in the Contingency Plan as deemed appropriate by the Emergency Coordinator.

The outside storage yard, including the designated waste storage area, is accessible by means of entry through the loading area and the gates in the fence. This area is paved and remains unobstructed at all times.

Fire

Personnel at the facility have been provided instruction by the local fire department on use and application of various on-site fire extinguishers for fire fighting efforts until appropriate outside emergency teams arrive. The efforts of facility personnel shall center on extinguishing the fire or preventing its spread, without taking undue risks to themselves.

The Coordinator shall assure that, if appropriate, the evacuation signal is given, at which time all personnel who are not directly involved in the incident control efforts are to proceed to their designated congregation points which are indicated on the site diagram included in the Contingency Plan. All activities within the facility will cease and apparatus such as forklifts, trucks, and emergency equipment removed from the building proximity as time allows. Power sources are shut down. Traffic flow and outside observers are controlled and the area isolated to alleviate potential additional ignition sources. Should the materials which may be affected by the emergency be of such a nature as to pose a threat of conflagration, explosion, or fume release, the Coordinator shall advise emergency personnel, and render any assistance necessary to implement evacuation of the surrounding area within  $\frac{1}{4}$  mile. All employees are trained and partake in drills on evacuation procedures and are instructed not to leave the designated congregation point unless so directed by the party responsible for accounting for all employees.

### Spills

Spills or material releases upon discovery must be reported to the Emergency Coordinator or his alternate. Immediate response is required to minimize the impact of the release. The Coordinator must assess the proper actions and precautions to be taken to protect human health and the environment. He must also initiate appropriate activity to identify, contain, collect, and properly dispose of the material.

Because this facility deals with only containerized materials in waste form, the amount of material which has potential for release from one container is relatively small. However, prompt and safe procedures must be followed to deal with a situation in an appropriate manner.

The Coordinator must make continual assessments as to the potential impact the release may pose such as fire hazards, fume escapes which would necessitate evacuation of the facility and/or neighbors, need for clean-up (assuring the proper utilization of safety equipment to undertake this activity), determination of the necessity for calling in outside emergency agencies, and initiating the required reporting and documentation of the incident (i.e., materials designated by RQ quantities as listed under Superfund, Solid Waste Disposal Act, Clean Air Act, or TSCA; or which could be classified as a hazardous waste under RCRA).

The secondary containment devices will catch materials released from drums during storage, and upon discovery of leakage during inspections, the Coordinator is to be notified and will initiate appropriate clean-up

measures. Liquid material will be removed by means of a portable transfer pump, and placed into an appropriate specification drum for the material. Because the secondary containment units are tightly constructed, and the surface material on which the secondary containment area is placed while material is present is constructed of an impervious material (concrete or asphalt), there should be no risk of soil contamination. All accumulated liquids and collected clean-up materials will be labelled and marked as appropriate for the material. Samples of materials released shall be taken if for any reason a question arises as to composition or hazard due to multiple container releases, water or extinguishing material dilution, etc.

Should soil contamination somehow occur, a layer of soil shall be removed to an adequate depth to assure that all contamination is removed. The contaminated soil shall be placed into open-top drums and sealed for proper disposition.

Appropriate safety equipment usage shall be enforced during all transfer and clean-up activities. Proper documentation of the incident in the facility records shall be made. Reporting of the incident to Federal, state, local, and Company personnel shall be undertaken as appropriate. In the event that the Contingency Plan must be implemented and the incident is reportable as defined by 40 CFR 264.56(J), a written report shall be filed with the Regional office of the USEPA and the appropriate state office.

In addition to any reports required by government agencies, McKesson Chemical Company requires incidents to be reported within 48 hours to the appropriate Regional Operations Department.

If for some reason released material were to escape the secondary containment area, the Coordinator shall dispatch response personnel to contain the leakage by means of an inert material such as sandbags, Hazorb absorbent, or standard industrial absorbents (Zorb-All). The same procedures, efforts, clean-up, safety considerations, assessments, and documentation/reporting requirements shall be followed as was outlined previously.

All receipts of waste materials shall be ceased until clean-up proceedings are completed and activities are returned to normal.

Collected materials from a release situation will typically be disposed of through McKesson Envirosystems Company. In the event that they were unable to deal with the materials based on permits and/or technology, an outside disposal firm would be contracted with to make disposition of the material. In any event, the Coordinator shall be responsible to ensure that the firm handling the disposition of the material is properly permitted and has the resources to deal with the residue in a proper fashion.

All equipment used in clean-up which may have become contaminated during such activities shall be decontaminated using materials as appropriate to cause removal of the contaminant. The resulting material from the

decontamination process shall be placed within a residual clean-up container for disposal, unless it is deemed incompatible with materials already contained in such vessel.

During any emergency situation, the Emergency Coordinator will take all reasonable measures necessary to ensure that fires, explosions, and releases, do not occur, recur, or spread to other unaffected areas of the facility. These measures must include, where applicable, stopping processes and operations, collecting and containing released waste, and removing and/or isolating containers.

Immediately after an emergency, the Coordinator or his alternate must provide for treating, storing, or disposing of recovered waste, contaminated surface water, or any other material that results from a release, fire, or explosion at the facility. Assurances must be made that all of these endeavors are undertaken in the appropriate manner as governed by Federal, state, and local laws. Residual material from clean-up operations shall be properly stored, marked, labelled, and handled to prevent any further incident.

The Emergency Coordinator must ensure that in an emergency situation, no waste which might be of an incompatible nature with released material is stored within the affected area of the facility until clean-up procedures are completed.

All emergency equipment listed in the Contingency Plan present at the facility and which may have been utilized during the emergency situation must be cleaned, recharged, inspected, replaced, and made fit for use before resuming normal operations.

This McKesson Chemical Company facility has a wide assortment of emergency equipment present for use in different emergency situations. On-site emergency equipment is kept in various designated locations within the warehouse, as well as each truck's having driver kits which contain specific items which may be utilized in potential emergency situations while on the road. A list of equipment and the capabilities of each item present at the facility is included in the appended Contingency Plan.

Fire extinguishers of a dry chemical variety meeting Type ABC fire fighting capabilities are located throughout the warehouse facility in such a manner that no point within the building proper is further than 50 feet from an extinguisher. The facility diagram included in the Contingency Plan locates these units. All extinguishers comply with National Fire Code standards for portable fire extinguishers, and they are inspected after each use and on a routine monthly and annual basis. Records of inspections are maintained.

Emergency and safety equipment available for use in an emergency is kept in the warehouse in designated areas as shown on facility diagram in the Contingency Plan, and includes the following:

**BUTYL RUBBER ACID SUITS** - protection of the wearer from contamination during container transfers or other emergency situations.

**RUBBER BOOTS** - same as butyl rubber acid suits; foot protection.

**RUBBER GLOVES** - same as butyl rubber acid suits; hand protection.

**CHEMICAL GOGGLES** - eye protection from possible splashes during emergency activities.

**FACE SHIELDS** - face protection from possible splashes during emergency activities.

**HARD HATS** - head protection from possible blows or contact with hard objects. The wearing of these is standard McKesson policy.

**SELF-CONTAINED BREATHING APPARATUS** - a 30 minute self-contained air supply unit which allows the wearer to enter a severe environment to deal with an emergency situation. This unit is compatible with the local fire departments units.

**PORTABLE TRANSFER PUMP** - utilized for transfer of the contents of a leaking drum into another drum, or for evacuation of the containment area. This unit is explosion-proof so as to not act as a possible ignition source.

**EXTENSION CORDS** - power supply transfer; of a three-prong grounded variety.

**RECOVERY DRUMS** - placement of leaking containers into these oversize open top drums is undertaken to prevent further spillage and allow shipment to a facility for disposition; 85 gallon capacity; could be used for spill clean-up materials also.

**HAND TOOLS** - repairs of equipment.

**FIRE EXTINGUISHERS** - 10 lb. ABC variety for fire protection.

**REFLECTIVE TRIANGLES** - traffic control.

**FIRST AID KITS** - minor medical treatment.

**NEUTRALIZER SOLUTIONS** - to neutralize and flush the eyes of an individual who might have material come into contact with the eye.

**FLASHLIGHTS** - emergency and portable lighting.

**ABSORBENTS** - the collection and clean-up of spill residue; could also be used to construct a temporary containment dike in an emergency situation.

**SAND** - same as "Absorbents".

**BANDING TOOLS** - device can be used to apply  $\frac{1}{2}$  -  $1\frac{1}{2}$ " fiber banding around a container with a patching material to stop a leak.

**SAFETY SHOWER** - flushing of an individual with a constant water supply to remove any contamination with which an individual may have come into contact.

All pieces of equipment are routinely inspected to assure their readiness for use in an emergency situation. Review on the use of articles of safety equipment is undertaken periodically during the monthly safety meetings conducted at the facility with appropriate personnel. These meetings are documented.

McKesson Chemical Company has provided copies of the Contingency Plan, including site plot layout diagrams to the local emergency agencies which would be contacted for assistance in an emergency. Acknowledgements of the receipt of these materials from the appropriate agencies is on file at the facility. The contents were explained to the agencies and their input was accepted. The agencies receiving these materials are typically:

Local Fire Department

Local Police Department

Local Hospital and/or Emergency Center

All emergency equipment listed in the Contingency Plan present at the facility and which may have been utilized during the emergency situation must be cleaned, recharged, inspected, replaced, and made fit for use before resuming normal operations.

This McKesson Chemical Company facility has a wide assortment of emergency equipment present for use in different emergency situations. On-site emergency equipment is kept in various designated locations within the warehouse, as well as each truck's having driver kits which contain specific items which may be utilized in potential emergency situations while on the road. A list of equipment and the capabilities of each item present at the facility is included in the appended Contingency Plan.

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Emergency and safety equipment available for use in an emergency is kept in the warehouse in designated areas as shown on facility diagram in the Contingency Plan, and includes the following:

The Emergency Coordinator shall decide whether to evacuate the facility in any emergency situation. In the event a determination is made that a situation is present which warrants facility evacuation, the Coordinator must assure that the following actions are carried out:

- Signal for plant evacuation.
- All individuals shall vacate the facility in an orderly manner to the congregation point designated on the site diagram included in the section "Topographic Maps".
- All persons which have not been assigned to render assistance in the control of the emergency situation by the Coordinator shall remain at the congregation point to be accounted for by the designated person(s). Reentry into the building, or permission to leave the site may only be granted by the Coordinator so as to assure all persons' being accounted for.
- In the event that an individual is determined to be missing at the congregation point the assigned individual whose responsibility it is to take a head count, shall notify the Coordinator of the missing person's identity. The Coordinator shall assess the conditions present and take appropriate actions to conduct a search.
- Drills shall be conducted at 6-month intervals in order to reinforce evacuation procedures.

As required under the regulations, a written report of emergency events shall be made within 15 days to the USEPA Regional Office and the appropriate state agency. The following information shall be provided in such report:

1. Name, address, and phone number of the owner or operator.
2. Name, address, and phone number of the facility.

3. Date, time, and type of incident
4. Name and quantity of material(s) involved.
5. Extent of injuries (if any).
6. An assessment of actual or potential hazards to human health or the environment, where applicable.
7. Estimated quantity and disposition of recovered material that resulted from the incident.

These reporting requirements are above and beyond all McKesson Chemical Company reporting procedures which shall be adhered to and forwarded within 48 hours or less to the appropriate Regional Office of McKesson Chemical Company.

The Contingency Plan will be reviewed and immediately amended whenever:

1. The facility permit is revised.
2. The plan fails in an emergency.
3. The facility changes in its design, construction, operation, maintenance, or other circumstances in a way that significantly increases the potential for fires, explosions, or releases, or changes in the response necessary in any emergency.
4. The list of Emergency Coordinators change.
5. The list of emergency equipment changes.

Because this facility has no tanks present containing waste materials, the Contingency Plan does not address spills or leaks from such vessels.

This facility likewise does not have waste piles present, and thus requirements under the regulations regarding planning for emergency situations for such waste management techniques are not applicable.

This facility does not utilize surface impoundments as a means of managing hazardous waste. Therefore regulations under this section which address this type of storage and the necessary emergency planning for such are not applicable.

This facility does not utilize any type of incinerator as a means of handling hazardous waste. Therefore regulations under this section which address this type of disposal and the necessary emergency planning for such, are not applicable.

EFFECTIVE DATE: 02 JUN 77 DATE PRINTED: 6 OCT 77 PRODUCT CODE: 55590

PRODUCT NAME: METHYLENE CHLORIDE, TECH. MSD: 0009

INGREDIENTS (TYPICAL VALUES-NOT SPECIFICATIONS) : % :  
METHYLENE CHLORIDE, ESSENTIALLY : 100 :

SECTION 1 PHYSICAL DATA

BOILING POINT: 104F (39.8C) : SOL. IN WATER: 2.0G/100G @ 25C  
VAP PRESS: 340 MMHG @ 20C : SP. GRAVITY: 1.320 @ 25/25C  
VAP DENSITY (AIR=1): 2.93 : % VOLATILE BY VOL: 100 (ESSEN1.)  
APPEARANCE AND ODOR: COLORLESS LIQUID

SECTION 2 FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: NONE : FLAMMABLE LIMITS (STP IN AIR)  
METHOD USED: TOC, TCC, COC : LFL: SEE SEC. 3+ UFL: SEE SEC. 3+  
EXTINGUISHING MEDIA: WATER FOG, NON-FLAMMABLE.  
SPECIAL FIRE FIGHTING EQUIPMENT AND HAZARDS: SELF-CONTAINED RESPIRATORY  
EQUIPMENT.

SECTION 3 REACTIVITY DATA

STABILITY: STABLE.

+SEE JOURNAL OF CHEMICAL AND ENGINEERING DATA 17 (1) 69-93  
(1972) FOR FLAMMABILITY LIMITS AT OTHER THAN STANDARD  
TEMPERATURE AND PRESSURE.

INCOMPATIBILITY: ----

HAZARDOUS DECOMPOSITION PRODUCTS: OPEN FLAMES AND WELDING ARCS CAN CAUSE  
THERMAL DEGRADATION WITH THE EVOLUTION OF HYDROGEN CHLORIDE AND VERY  
SMALL AMOUNTS OF PHOSGENE AND CHLORINE.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

SECTION 4 SPILL, LEAK, AND DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS (USE APPROPRIATE SAFETY EQUIPMENT): SMALL SPILLS:  
MUP UP, WIPE UP OR SOAK UP IMMEDIATELY. REMOVE TO OUT OF DOORS.

LARGE SPILLS: EVACUATE AREA. CONTAIN LIQUID; TRANSFER TO CLOSED  
METAL CONTAINERS. KEEP OUT OF WATER SUPPLY.

DISPOSAL METHOD: SEND SOLVENT TO A RECLAIMER. IN SOME CASES IT CAN BE

(CONTINUED ON PAGE 2 )

SECTION 4 SPILL, LEAK, AND DISPOSAL PROCEDURES (CONTINUED)  
DISPOSAL METHOD: (CONTINUED)

TRANSPORTED TO AN AREA WHERE IT CAN BE PLACED ON THE GROUND AND ALLOWED TO EVAPORATE SAFELY. REFER TO CHEMICAL SAFETY DATA SHEET SD-86, MANUFACTURING CHEMISTS ASSOCIATION, 1825 CONNECTICUT AVENUE, WASHINGTON, D.C., 20009

SECTION 5 HEALTH HAZARD DATA

INGESTION: LOW SINGLE DOSE ORAL TOXICITY. LD50 (RATS) IS 1.6 G/KG.  
EYE CONTACT: PAINFUL AND SLIGHT IRRITATION. CORNEAL INJURY UNLIKELY.  
SKIN CONTACT: SHORT CONTACT - NO IRRITATION. PROLONGED OR FREQUENTLY REPEATED CONTACT - POSSIBLE IRRITATION. IF CONFINED TO SKIN - MAY CAUSE A BURN.

SKIN ABSORPTION: VERY LOW. HAZARD NOT SIGNIFICANT.

INHALATION: TENTATIVE TLV 200 PPM (1975).

EFFECTS OF OVEREXPOSURE: INCREASING SIGNS OF ANESTHESIA ABOVE 900 PPM IN THE ATMOSPHERE. CARBOXYHEMOGLOBIN LEVELS MAY BE ELEVATED.

SECTION 6 FIRST AID--NOTE TO PHYSICIAN

FIRST AID PROCEDURES: CAUTION - NEVER GIVE FLUIDS OR INDUCE VOMITING IF PATIENT IS UNCONSCIOUS OR HAVING CONVULSIONS.

EYES: FLUSH WITH PLENTY OF WATER. GET MEDICAL ATTENTION IF IRRITATION DEVELOPS.

SKIN: FLUSH WITH PLENTY OF WATER. GET MEDICAL ATTENTION IF IRRITATION DEVELOPS.

INHALATION: IF ILLNESS OCCURS, REMOVE PATIENT TO FRESH AIR, KEEP HIM QUIET AND WARM. GET MEDICAL ATTENTION. IF BREATHING STOPS, START ARTIFICIAL RESPIRATION.

INGESTION: INDUCE VOMITING. CALL A PHYSICIAN IMMEDIATELY.

NOTE TO PHYSICIAN: CAUTION: WITH SOME SOLVENTS, DRINKING ALCOHOL BEFORE, DURING OR AFTER EXPOSURE MAY CAUSE UNDESIRABLE EFFECTS. OVEREXPOSURE TO MANY OF THE CHLORINATED SOLVENTS, ESPECIALLY IF ACCOMPANIED BY ANOXIA, MAY TEMPORARILY INCREASE CARDIAC IRRITABILITY. MAINTAIN ADEQUATE OXYGENATION UNTIL RECOVERY. AVOID SYMPATOMIMETIC AMINES, SUCH AS EPINEPHRINE, WHICH MAY PRECIPITATE ARRHYTHMIAS. EXPOSURE TO METHYLENE CHLORIDE PRODUCES CARBOXYHEMOGLOBIN WHICH MAY PERSIST SOMEWHAT LONGER THAN THAT DUE TO CARBON MONOXIDE EXPOSURE.

SECTION 7 SPECIAL HANDLING INFORMATION

VENTILATION: LIMIT CONCENTRATION IN AIR TO TLV.

RESPIRATORY PROTECTION: BELOW 200 PPM - NONE; RESPIRATORY PROTECTION REQUIRED IN THE ABSENCE OF ENVIRONMENTAL CONTROL. FOR LEVELS UP TO 2%

(CONTINUED ON PAGE 3 )

SECTION 7 SPECIAL HANDLING INFORMATION (CONTINUED)  
RESPIRATORY PROTECTION: (CONTINUED)  
FOR 1/2 HOUR OR LESS, A SUITABLE FULL-FACE MASK WITH ORGANIC CANISTER  
SHOULD BE USED. ABOVE 2% AND FOR EMERGENCIES, USE A SELF-CONTAINED  
BREATHING APPARATUS.  
PROTECTIVE CLOTHING: NO SPECIAL PROTECTIVE CLOTHING NEEDED.  
EYE PROTECTION: SAFETY GLASSES WITHOUT SIDE SHIELDS. EYE WASH STATIONS  
AND SAFETY SHOWERS SHOULD BE READILY AVAILABLE.

SECTION 8 SPECIAL PRECAUTIONS AND ADDITIONAL INFORMATION  
PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: EXERCISE REASONABLE  
CARE AND CAUTION. AVOID BREATHING VAPORS. STORE IN COOL PLACE.

ADDITIONAL INFORMATION, IF ANY: ----

LAST PAGE

THE INFORMATION HEREIN IS GIVEN IN GOOD FAITH, BUT NO WARRANTY,  
EXPRESS OR IMPLIED, IS MADE.

# U.S. DEPARTMENT OF LABOR

WAGE AND LABOR STANDARDS ADMINISTRATION  
 Bureau of Labor Standards

## MATERIAL SAFETY DATA SHEET

SECTION I	
MANUFACTURER'S NAME PPG Industries, Inc.	EMERGENCY TELEPHONE NO. (318) 882-1200
ADDRESS (Number, Street, City, State, and ZIP Code) No. 1 Gateway Center, Pittsburgh, Pa. 15222	
CHEMICAL NAME AND SYNONYMS 1,1,1-trichloroethane, methylchloroform	TRADE NAME AND SYNONYMS TRI-ETHANE
CHEMICAL FAMILY Chlorinated Hydrocarbons	FORMULA CH <sub>3</sub> CCl <sub>3</sub>

SECTION II HAZARDOUS INGREDIENTS					
PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS			BASE METAL		
CATALYST			ALLOYS		
VEHICLE			METALLIC COATINGS		
SOLVENTS	100	350	FILLER METAL PLUS COATING OR CORE FLUX		
ADDITIVES			OTHERS		
OTHERS					
HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES				%	TLV (Units)

SECTION III PHYSICAL DATA			
BOILING POINT (°F.)	165.4	SPECIFIC GRAVITY (H <sub>2</sub> O = 1)	1.31
VAPOR PRESSURE (mm Hg.)	120	PERCENT VOLATILE BY VOLUME (%)	100
VAPOR DENSITY (AIR = 1)	4.54	EVAPORATION RATE ( <u>ether</u> = 1)	0.35
SOLUBILITY IN WATER	Negligible		
APPEARANCE AND ODOR	Colorless appearance, ethereal odor		

SECTION IV FIRE AND EXPLOSION HAZARD DATA			
FLASH POINT (Method used) None (Tag, open or closed)	FLAMMABLE LIMITS	Lel	Uel
EXTINGUISHING MEDIA			
SPECIAL FIRE FIGHTING PROCEDURES			
UNUSUAL FIRE AND EXPLOSION HAZARDS Vapors can be ignited only by high intensity source of ignition. Combustion forms HCl and possible traces of phosgene.			

### SECTION V. HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE	350 ppm
EFFECTS OF OVEREXPOSURE	Loss of co-ordination and equilibrium to actual unconsciousness, and even death, in unventilated areas (such as tanks).
EMERGENCY AND FIRST AID PROCEDURES	Move to fresh air, use artificial respiration if breathing has stopped. Administer oxygen after breathing has been restored. (Never administer adrenalin!) Call physician (he should not administer adrenalin).

### SECTION VI. REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	
INCOMPATIBILITY (Materials to avoid)			
Avoid mixing with caustic soda and caustic potash.			
HAZARDOUS DECOMPOSITION PRODUCTS			
HCl and possible traces of phosgene.			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

### SECTION VII. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
Adequate ventilation must be provided. Workmen should be provided with fresh air mask or sent to fresh air.	
WASTE DISPOSAL METHOD	Forced ventilation or evaporation.

### SECTION VIII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (Specify type)			Fresh air masks
VENTILATION	LOCAL EXHAUST	Sufficient to maintain TLV	SPECIAL
	MECHANICAL (General)		OTHER
PROTECTIVE GLOVES		Neoprene or Viton	EYE PROTECTION
			Glasses or goggles
OTHER PROTECTIVE EQUIPMENT			
Neoprene apron			

### SECTION IX. SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING	
OTHER PRECAUTIONS	



# MATERIAL SAFETY DATA SHEET

MSDS NUMBER ▶ 5,390-3

PAGE 1 OF 1

97002 (1-81)

SECTION I		NAME	24 HOUR EMERGENCY ASSISTANCE																	
PRODUCT ▶	Methyl Ethyl Ketone		SHELL	713-473-9461																
CHEMICAL/ SYNONYMS ▶	MEK, 2-butanone		CHEMTREC	800-424-9300																
CHEMICAL FAMILY ▶	Ketone		<table border="1"> <tr> <td>HAZARD RATING</td> <td>HEALTH</td> <td>1</td> </tr> <tr> <td>LEAST 0</td> <td>FIRE</td> <td>3</td> </tr> <tr> <td>MODERATE 2</td> <td>REACTIVITY</td> <td>0</td> </tr> <tr> <td>HIGH 3</td> <td></td> <td></td> </tr> <tr> <td>EXTREME 4</td> <td></td> <td></td> </tr> </table>			HAZARD RATING	HEALTH	1	LEAST 0	FIRE	3	MODERATE 2	REACTIVITY	0	HIGH 3			EXTREME 4		
HAZARD RATING	HEALTH	1																		
LEAST 0	FIRE	3																		
MODERATE 2	REACTIVITY	0																		
HIGH 3																				
EXTREME 4																				
SHELL CODE ▶	31210	C.A.S. NUMBER ▶	78-93-3																	

SECTION II		INGREDIENTS	
COMPOSITION	%	TOXICITY DATA	
Methyl Ethyl Ketone	100	Oral LD <sub>50</sub> (rat) = 3.3g/kg Dermal LD <sub>50</sub> (rabbit) =>8ml/kg Inhalation LC <sub>50</sub> (rat) = >2,000ppm/2 hours	

**SECTION III HEALTH INFORMATION**

Eye Contact: liquid is highly irritating to the eyes; vapors are also irritating.

Skin Contact: liquid is moderately irritating to the skin. Repeated, prolonged contact can result in defatting and drying of the skin which may lead to dermatitis.

Inhalation: breathing high vapor concentrations or prolonged breathing of lower concentrations can cause nose and throat irritation and may cause headache, dizziness and loss of consciousness.

Note: Minor embryotoxic/fetotoxic effects have been observed in laboratory rats exposed to over 1000 ppm of MEK for most of the gestation period by the inhalation route (5X the OSHA-PEL/TWA).

SECTION IV	OCCUPATIONAL EXPOSURE LIMITS
ACGIH-TLV/TWA = 200 ppm	
-TLV/STEL = 300 ppm	
OSHA-PEL/TWA = 200 ppm	



97003 (1-81)

**SECTION V EMERGENCY AND FIRST AID PROCEDURES**

**EYE CONTACT:** Flush with water for 15 minutes while holding eyelids open. Get medical attention.

**SKIN CONTACT:** Wash with soap and water. Remove contaminated clothing and shoes; do not reuse until cleaned. If persistent irritation occurs, get medical attention.

**INHALATION:** Remove victim to fresh air and provide oxygen if breathing is difficult. Give artificial respiration if not breathing. Get medical attention.

**INGESTION:** Do not give liquids if victim is unconscious or very drowsy. Otherwise, give no more than 2 glasses of water and induce vomiting by giving 30cc (2 tablespoons) Syrup of Ipecac. If Ipecac is unavailable, give 2 glasses of water and induce vomiting by touching finger to back of victim's throat. Keep victim's head below hips while vomiting. Get medical attention.

**SECTION VI PHYSICAL DATA**

BOILING POINT (°F) ▶ 175	MELTING POINT (°F) ▶ -125	VAPOR PRESSURE (mmHg) ▶ 75@68°F
SPECIFIC GRAVITY (H <sub>2</sub> O=1) ▶ 0.81@60/60°F	% VOLATILE BY VOLUME ▶ 100	VAPOR DENSITY (AIR=1) ▶ 2.5
SOLUBILITY IN WATER ▶ Appreciable	EVAPORATION RATE (BUTYL ACETATE=1) ▶ 3.8	

**APPEARANCE AND ODOR**

Colorless, mobile liquid. Pungent odor.

**SECTION VII FIRE AND EXPLOSION HAZARDS**

FLASH POINT AND METHOD USED	FLAMMABLE LIMITS/% VOLUME IN AIR	LOWER	UPPER
23°F (TCC)		1.8	11.5
EXTINGUISHING MEDIA			

Use water fog, "alcohol" foam, dry chemical or CO<sub>2</sub>.**SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS**

Evacuate hazard area of unprotected personnel. Wear proper protective clothing including a NIOSH approved self-contained breathing apparatus. Cool fire-exposed containers with water.

**UNUSUAL FIRE AND EXPLOSION HAZARDS**

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# MATERIAL SAFETY DATA SHEET

MSDS NUMBER ▶

5,390-3  
PAGE 3 OF 4

97004 (10-79)

SE  
EYE  
SK  
I**SECTION VIII****REACTIVITY**STABILITY ▶  UNSTABLE  STABLEHAZARDOUS POLYMERIZATION ▶  MAY OCCUR 

## CONDITIONS AND MATERIALS TO AVOID

Avoid heat, sparks, open flame and contact with strong oxidizing

## HAZARDOUS DECOMPOSITION PRODUCTS

Carbon monoxide and unidentified organic compounds may be formed during combustion.

**SECTION IX****EMPLOYEE PROTECTION**

## RESPIRATORY PROTECTION

If exposure may or does exceed occupational exposure limits (Sec. IV) use a NIOSH-approved respirator to prevent overexposure. In accord with 29 CFR 1910.134 use either an atmosphere-supplying respirator or an air-purifying respirator for organic vapors.

## PROTECTIVE CLOTHING

Wear impervious gloves and protective clothing as required to prevent skin contact. Wear chemical goggles to prevent eye contact.

## ADDITIONAL PROTECTIVE MEASURES

Use explosion-proof ventilation as required to control vapor concentrations.

**SECTION X****ENVIRONMENTAL PROTECTION**

## SPILL OR LEAK PROCEDURES

**WARNING.** Flammable. Eliminate all ignition sources. Handling equipment must be grounded to prevent sparking.**Large spills:** Evacuate the hazard area of unprotected personnel. Wear appropriate respirator and protective clothing. Shut off source of leak only if safe to do so. Dike and contain. If vapor cloud forms, water fog may be used to suppress; contain run-off. Remove with vacuum trucks or pump to storage/salvage vessels. Soak up residue with an absorbent such as clay, sand or other suitable material; place in non-leaking containers for proper disposal. Flush area with water to remove trace residue; dispose of flush solutions as above.**Small spills:** take up with an absorbent material and place in non-leaking containers; seal tightly for proper disposal.

## WASTE DISPOSAL

Place in a disposal facility approved under RCRA regulations for hazardous waste (See Sec. XIII). Use non-leaking containers, seal tightly and label properly.

## ENVIRONMENTAL HAZARDS

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# MATERIAL SAFETY DATA SHEET

MSDS NUMBER ▶

5,390-3  
PAGE 4 OF 4

97005 (1-81)

**SECTION XI****SPECIAL PRECAUTIONS**

**WARNING.** Flammable Liquid.

Keep away from heat, sparks and open flames. Keep containers tightly closed. Store away from strong oxidizing agents in a cool, dry place with adequate explosion-proof ventilation. Ground equipment to prevent accumulation of static charge. If pouring or transferring materials, containers must be bonded and grounded.

Do NOT weld, heat or drill on or near container; even emptied containers can contain explosive vapors.

Wash with soap and water before eating, drinking, smoking or using toilet facilities. Launder contaminated clothing before reuse.

**SECTION XII****TRANSPORTATION REQUIREMENTS**

DEPARTMENT OF TRANSPORTATION CLASSIFICATION	<input checked="" type="checkbox"/>	FLAMMABLE LIQUID	<input type="checkbox"/>	COMBUSTIBLE LIQUID	<input type="checkbox"/>	OXIDIZING MATERIAL	<input type="checkbox"/>	NON-FLAMMABLE GAS
	<input type="checkbox"/>	FLAMMABLE SOLID	<input type="checkbox"/>	POISON CLASS A	<input type="checkbox"/>	CORROSIVE MATERIAL	<input type="checkbox"/>	NOT HAZARDOUS E D.O.T. REGULATIONS
	<input type="checkbox"/>	FLAMMABLE GAS	<input type="checkbox"/>	POISON CLASS B	<input type="checkbox"/>	IRRITATING MATERIAL	<input type="checkbox"/>	OTHER—Specify below

D.O.T. PROPER SHIPPING NAME

Methyl Ethyl Ketone

OTHER REQUIREMENTS

D.O.T. ID.# = UN1193. Guide Sheet 26.

**SECTION XIII****OTHER REGULATORY CONTROLS**

EPA, FDA, OSHA, USDA, CPSC, etc.

EPA - Resource Conservation and Recovery Act (RCRA) Regulations  
This product has been designated by the EPA (RCRA 40 CFR 261.33) as a hazardous waste if it is spilled, discarded or intended to be discarded as is. The EPA hazardous waste number for methyl ethyl ketone is U159.

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof.

Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.

Come to  
  
Shell for answers

  
Manager

SHELL OIL COMPANY  
PRODUCT SAFETY AND COMPLIANCE  
OIL AND CHEMICAL PRODUCTS  
P.O. BOX 4320  
HOUSTON, TEXAS 77210

DATE PREPARED

March 16, 1982

McKesson Chemical Company

Procedures, Structures, Equipment

(40 CFR Sec. 270.14(b-8))

The hazardous waste management activities undertaken at this facility of McKesson Chemical Company is that only of temporary storage of drummed solvents which are defined as hazardous wastes. There is but one location at the facility which is utilized for loading and unloading of materials received from off-site generators. The loading/unloading area is designated on the facility diagram.

This facility receives less than truckload quantities of waste materials from off-site generators and temporarily stores them in order to accumulate economical truckloads of these materials to warrant the distances involved in reaching the recycling centers to which these waste materials are ultimately destined.

The amount of handling of the drummed materials while at the facility is kept to an absolute minimum to minimize the likelihood of damage and possible release. Once trucks carrying waste materials are at the dock area and secured by means of wheel chocks, forklifts are utilized to transfer the drums from the truck onto wooden pallets in the staging area at the loading and unloading area. Drums are placed four to a pallet, and once the necessary administrative procedures and verification counts have been made as outlined under "Containment Management Practices", full pallets are carried by forklift to the designated storage area where they remain on the pallet. While in storage, the drums are inspected in accordance with the inspection schedule listed in Table 1. Sufficient spacing around each pallet of drums is maintained to ensure the avoidance of damaging drums while placing pallets adjacent to another.

Once an economic truckload quantity of material is accumulated, the full pallets of drums are brought to the staging area at the dock, prepared for shipment, and placed onto the vehicle transporting them to the recycling center. Because of the minimal handling during the materials presence at the facility site, the likelihood of spills is minimal, but should an incident occur, spilled material would be contained and picked up by use of Hazorb or other industrial absorbents which are readily available at the site. Any contaminated material shall be picked up and placed in an open-head drum compatible with the material, and sent to a properly permitted disposal facility.

Ground water contamination is prevented at this facility by assuring that all containers of waste materials are stored in a closed, good quality drum, and remain at all times in the designated hazardous waste storage area which has the secondary containment system protection described in detail in the section entitled "Secondary Containment System Design and Operation". The design, operation, inspection, and construction of this area is such as to minimize the threat of possible ground water contamination.

Because of the absence of process operations at this facility in which an equipment or power failure could cause a threat to human health or the environment, the impact of such an occurrence would be negligible. However, in the event that loading or unloading activities might be under way during a power failure, and the available light were of an insufficient nature to safely complete the task, operations shall be

ceased until the power company is notified and the cause of the failure discovered and repaired. Any problems which might be isolated to a specific area of the facility or a particular machine shall be brought to the manager's attention for corrective actions with support from Regional Operations if required.

McKesson Chemical Company facilities maintain on-site Material Safety Data Sheets for the products which they distribute. Copies of the appropriate Material Safety Data Sheets for specific chemical materials handled in waste form follows the "Contingency Plan" section. These data sheets are kept on file and are updated routinely so that facility personnel have accurate information available regarding toxicity, fire and explosion hazards, protective equipment recommendations, and first aid. Available protective and emergency equipment which is kept at the facility is presented in the section entitled "Contingency Plan". Use of personal protective equipment is strictly enforced and is covered in the employees initial training, as well as being reinforced on a routine basis in monthly safety meetings which are conducted by the facility management.

McKesson Chemical Company

Prevention of Reaction of Ignitable, Reactive, or Incompatible Wastes

(40 CFR Sec. 270.14(b-9))

A McKesson Chemical Company storage facility handles materials in waste form from off-site generators who wish to employ the Company's recycling capabilities. This site functions as a temporary storage and transfer point for accumulating economic truckloads to make it economically feasible to reship these materials the distance involved in getting to the recycling centers.

Some of the materials handled in waste form at this facility are expected to fall into the category of an ignitable. This facility will not handle any materials which would be classified as a reactive waste and for which special precautions would be required. All waste materials are stored in the designated waste storage area indicated on the facility diagram.

All containers (drums) utilized for shipments of waste materials are of proper specifications as outlined in the section entitled "Containers Utilized Holding Free Liquids", to contain, store, and transport the materials handled. All containers of waste material are tightly closed while in storage. The waste storage area is isolated from vehicle traffic pattern, and the activities conducted in the yard area are limited. It is McKesson Chemical Company's policy that no smoking is allowed in any areas of the facility other than office and breakroom areas. "No Smoking" and "Danger-Unauthorized Personnel Keep Out" signs are prominently posted. Personnel are instructed and familiar with the required precautions which must be exercised when working around ignitable materials such as the use of spark proof tools, elimination of possible ignition sources, etc.

McKesson Chemical Company  
Prevention of Reaction of Ignitable, Reactive  
or Incompatible Wastes  
Page 2

In the event that a leaking container is discovered and requires transfer while in storage at this site, only clean, new or reconditioned containers of the proper specification for the material will be utilized.

Containers of ignitable wastes while present at this facility are handled with the respect they deserve in order to minimize the possibility for fire or explosion. All containers must be kept tightly sealed and be in good condition (including proper labelling and marking) prior to the driver's accepting them at the generator's facility. Drums are placed on wooden pallets and remain on these pallets while in storage to reduce handling. Pallets of waste materials while in storage in the designated hazardous waste storage area are typically stacked two, but in no case more than three high. Space is maintained around stacks of pallets to facilitate inspection of the drums. Stacks will be maintained in a neat manner with no overhang or leaning. Only good quality wooden pallets shall be used. The designated hazardous waste storage area is more than 50 feet from the facility property lines as required.

Containers of waste materials destined for recycling which are received at this facility are already sealed by the generator and shall remain sealed unless a leaking container were discovered, in which case it is transferred to a different container - a clean drum meeting the proper specification for the material involved. Customers (generators) who employ our services are encouraged to use the same container for the waste material which originally held the virgin product, unless another commodity which is not compatible with that container has been introduced into the waste stream. This minimizes the likelihood of container incompatibility with the material, as well as the solvents'

McKesson Chemical Company  
Prevention of Reaction of Ignitable, Reactive  
or Incompatible Wastes  
Page 3

(residue vs. waste) possibly being incompatible and causing a reaction or the loss of the reclaim value of the material. Materials typically handled by this facility for recycling are compatible with each other in that when combined they do not cause a reaction. Attention is given to having customers avoid these practices because of the potential problems which could result, and the rendering of the materials as of no value because of the inability to recycle the material.

This facility does not utilize tanks for the management of waste materials of any kind so the regulations pertaining to the management of ignitable, reactive, or incompatible wastes in such vessels is not applicable.

This facility does not utilize waste piles for the management of waste materials of any kind so the regulations pertaining to the management of ignitable, reactive, or incompatible wastes by this means is not applicable.

McKesson Chemical Company

Traffic Patterns

(ro CFR Sec. 270.14(b-10))

The McKesson Chemical facility in Chattanooga, Tennessee, has the following power units assigned to it which can be utilized in the transportation of hazardous wastes:

3 - Tandem Axle Tractors

1 - Two-Axle Tractor

In addition, the branch utilized on a rotating, as needed basis, 5-6 trailer vans for use with these units. The maximum gross weight of the largest combined unit fully loaded is 80,000 pounds.

Access to this facility from any direction must be by Amnicola Highway, Tennessee Route 58. Amnicola is a limited-access highway, varying from four to six traffic lanes.

Facility traffic going east or west usually follows Amnicola southward, turning south on Broad Street to East 4th Street and following it to its intersection with Interstate 124. This highway heads southward and intersects with I-24 at the second intersection below 4th Street.

Facility traffic going north or south follows Amnicola north to Tennessee Route 153, encountering traffic lights at the three major intersections crossed. At Route 153, traffic turns to Interstate 75, which can be taken in a north or south direction.

These routes are depicted on the appended map.

All roads travelled are of either bituminous or concrete construction with load-bearing capacities to withstand the largest and heaviest vehicle combination used by this facility. The same holds true of the yard area used by vehicles within the facility yard.

The great majority of transport will be made on Company-owned and permitted trucks based at this facility although a customer that has a properly-permitted vehicle may occasionally make a similar delivery of spent material.

Once a truck has entered the facility and backed into the loading dock area, the branch warehouse personnel will utilize one of the LPG forklifts currently assigned to this location, having a lifting capacity of at least 4000 pounds, to remove the drums from the vehicle. The drums will be placed on wooden pallets of sufficient size to accommodate a maximum of four 55 gallon drums per pallet if they have not arrived on such pallets.

After inspection of the shipment and assignment and stencilling of the lot number onto the drum, the full pallets of drums will be carried by forklift approximately 50 feet from the truck loading and unloading area to the nearby designated hazardous waste storage area just inside the warehouse.

While in the storage area, the drums will remain on the wooden pallets. Full pallets of drums will be normally stacked a maximum of three high, and shall be segregated and stored in a compatible manner. Once a quantity of drums has been accumulated to form an economic truckload for reshipment to the recycling plant, the drums shall be brought back to the loading dock area from the hazardous waste storage location just prior to shipment. This again will be accomplished by forklift. Once in the loading dock area, the drums will be prepared for shipment and loaded onto the truck.

Full compliance for receipt and reshipment of materials as it applies to manifesting and administrative procedures will be undertaken. All applicable DOT regulations pertaining to the highway transit of hazardous materials and hazardous wastes will be complied with.

Detail will be given to manifest control and administrative procedures as described in the section entitled "Container Management Practices".

No additional traffic is expected to be generated along these routes because of hazardous waste transport activity. This is because essentially all deliveries of drums of spent solvents to the facility will be by McKesson trucks returning from their normal day's deliveries.

McKesson Chemical Company

Traffic Patterns

(40 CFR Sec. 270.14(b-10))

The McKesson Chemical Company branch in Greensboro, North Carolina has the following trucking fleet available for the transport of hazardous wastes:

Four - 3-axle tandem tractors

One - 32-foot van trailer

Four - 40-foot van trailers

One - 24-foot tandem straight truck

These units are registered with the North Carolina Department of Environmental Resources and are permitted to transport hazardous waste. The maximum gross vehicle weight of the largest tractor/trailer combination at this facility is 80,000 pounds.

Access of this facility from any direction involves Wendover Avenue, which passes in front of the Greensboro branch. To the west on Wendover Avenue approximately two miles (three traffic lights) is Interstate 40 (running east/west). Wendover Avenue has proved to have load-bearing capacities to withstand even the largest and heaviest vehicle combination used by this facility.

The great majority of transport will be made on Company-owned and -permitted trucks based at this facility, although a customer that has

a property-permitted vehicle may occasionally make a similar delivery of spent materials.

Once a truck has entered the facility and backed into the loading dock area, the branch warehouse personnel will utilize one of three LPA forklifts currently assigned to this location, each having a lifting capacity of at least 4000 pounds, to remove the drums from the vehicle. The drums may be placed on wooden pallets of sufficient size to accommodate a maximum of four 55 gallon drums per pallet if they have not arrived on such pallets or readied for transport to the secondary containment area by means of drum grabbers (two at a time).

After inspection of the shipment and stencilling of the lot number onto each drum, the drums will be carried by the forklift approximately 180 feet from the truck loading and unloading area. While in the storage area, the drums will remain on wooden pallets. Full pallets of drums will be normally stacked a maximum of two high (three occasionally), and will be segregated and stored in a compatible manner. Once a quantity of drums has been accumulated to form an economic truckload for reshipment to the recycling plant, the drums shall be brought back to the loading dock area from the hazardous waste storage location just prior to shipment. This again will be accomplished by forklift. Once in the loading dock area, the drums will be prepared for shipment and loaded onto the truck.

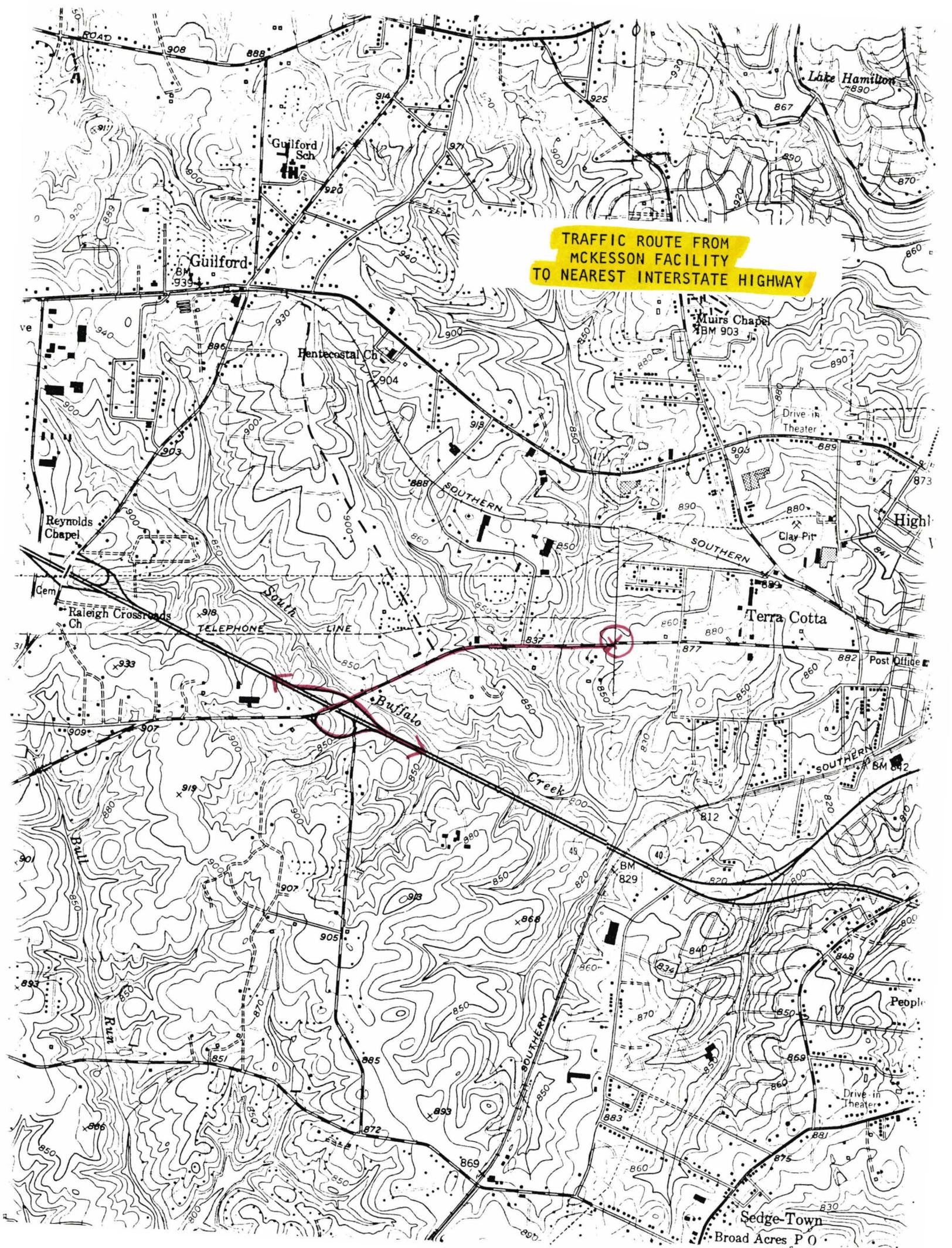
As noted previously, the entire yard area paved with bituminous material of sufficient strength to permit loaded truck traffic-estimated compressive strength is 3000 psi. There are no traffic routes as such in the yard, but a pattern of sorts does exist that permits partial turn-arounds of vehicles to allow them to back up to the loading/unloading doors of the warehouse. The location of the proposed secondary containment area is such to isolate it effectively from moving vehicular traffic.

Full compliance for receipt and reshipment of materials as it applies to manifesting and administrative procedures will be undertaken. All applicable DOT regulations pertaining to the highway transit of hazardous materials and hazardous wastes will be complied with.

Detail will be given to manifest control and administrative procedures as described in the section titled "Container Management Practices".

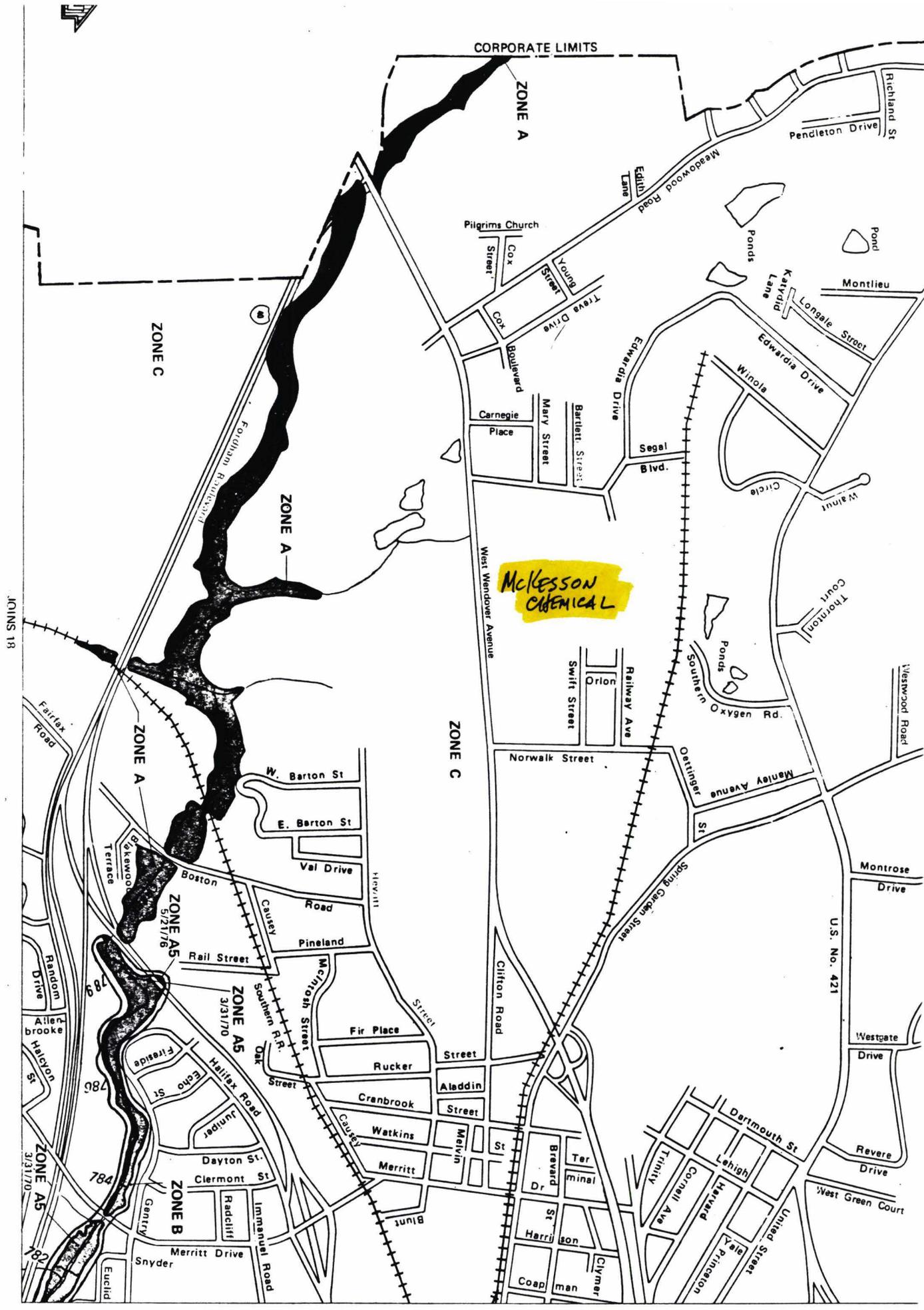
No additional traffic is expected to be generated along these routes because of hazardous waste transport activity. This is because essentially all deliveries of drums of spent solvents to the facility will be by McKesson trucks returning from their normal day's deliveries.

TRAFFIC ROUTE FROM  
MCKESSON FACILITY  
TO NEAREST INTERSTATE HIGHWAY



McKesson Chemical Company  
Facility Location Information  
(40 CFR 270.14(b-11))

1. The Flood Hazard Boundary map prepared by the Federal Insurance Administration indicates that the Greensboro facility of McKesson Chemical Company does not lie on a 100-year floodplain; see appended map.
2. There are no seismic considerations involved; see appended except from the Federal Register.
3. A copy of the wind rose for the Greensboro area follows.



**PART 52—APPROVAL AND PROMULGATION OF IMPLEMENTATION PLANS**

Part 52 of Title 40, Code of Federal Regulations is amended as follows:

**Subpart VV—Virginia**

1. In § 52.2420, *Identification of plan*, paragraph (c)(47) is added as follows:

§ 52.2420 *Identification of plan.*

(c) \* \* \*

(47) Amendments to Chapter 1 of all nonattainment plans; amendments to Chapter 11 of the Richmond, Northern Virginia, Peninsula and Southeastern plans; amendments to Chapter 9 of the Roanoke and Stafford plans; addition of Appendices A and B to all plans; amendments to Chapter 3 of the Northern Virginia, Peninsula, Southeastern, Roanoke and Stafford plans; amendments to Chapter 10 of the Richmond, Peninsula and Southeastern plans; addition of Appendix C to the Northern Virginia Plan; and, certain revisions to Chapter 5 of all plans were submitted by the Secretary of Commerce and Resources on April 12, 1981. Revision of Chapter 10 of the Northern Virginia plan submitted on July 23, 1981.

§ 52.2431 [Amended]

2. In § 52.2431, *Control Strategy*: Carbon monoxide and ozone, remove paragraph (e).

[FR Doc. 81-33028 Filed 11-20-81 2:45 am]  
BILLING CODE 5530-01-01

**40 CFR Part 264**

[SWH-FRL 1903-1]

**Standards Applicable to Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities**

AGENCY: Environmental Protection Agency (EPA).

ACTION: Interim rule.

**SUMMARY:** EPA is today revising Appendix VI to 40 CFR Part 264. Appendix VI lists political jurisdictions within which the probability of Holocene fault displacement and deformation warrants a geologic investigation in order to demonstrate compliance with the seismic location standard for hazardous waste management facilities in § 264.18(a). Facilities not located in these areas are presumed to be in compliance with the standard. This amendment deletes from Appendix VI those areas where the risk of facility damage due to fault

displacement and deformation does not warrant a geological investigation. This amendment is the result of EPA's review of public comments and new information received after January 12, 1981.

**DATE:** This interim final amendment is effective on November 23, 1981. Comments are due on or before December 23, 1981.

**ADDRESSER:** Comments should be addressed to Deneen Shrader, Docket Clerk, Office of Solid Waste (WH-562), U.S. Environmental Protection Agency, 401 M Street, SW, Washington, D.C. 20460. Commenters should identify this rulemaking as follows: "Docket No. 3004, Appendix VI to Part 264". The public docket for this regulation is located in Room 2711, U.S. Environmental Protection Agency, 401 M Street, SW, Washington, D.C., and is available for viewing from 8:30 a.m. to 4:00 p.m., Monday through Friday, excluding holidays.

**FOR FURTHER INFORMATION CONTACT:** Cindy Hoppmann, Office of Solid Waste (WH-565), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, D.C. 20460, (202) 755-8201.

**SUPPLEMENTARY INFORMATION:**

**I. Authority**

This amendment is issued under the authority of Sections 2002(a) and 3004 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended, 42 U.S.C. 6912(a) and 6924.

**II. Background of and Basis for Amendment**

On January 12, 1981 (46 FR 2802), EPA promulgated permitting standards for new and existing hazardous waste management facilities. Section 264.18(a) of these standards prohibits the issuance of a permit to a new facility which is located within 200 feet of a fault which has had displacement in Holocene time. Compliance with this standard must be demonstrated by a geologic investigation. See § 122.25(a)(11).

The January 12 standards do not require a geologic investigation in all areas, however. As noted in the preamble to the standards, not all areas of the United States are affected by Holocene faulting (46 FR 2810-2813). EPA concluded that requiring a geological investigation in areas known not to have Holocene faults would impose an unnecessary regulatory burden and cost on a hazardous waste management facility. Thus, a geological investigation is required only for those areas which have some historical

evidence of faulting or potential for such faulting. These areas are listed in Appendix VI to Part 264.<sup>1</sup> EPA based its selection of those areas on two maps: The "Map for Coefficient A<sub>s</sub>" (coefficient A<sub>s</sub> is a measure of ground motion) by the Applied Technology Council (1978), and the "Preliminary Map of Young Faults in the United States as a Guide to Possible Fault Activity" by Howard and others of the United States Geological Survey (1978) (hereinafter "USGS Map").

EPA also stated in the January 12 preamble that Holocene deposits and landforms (e.g., fault scarps, offset streams) are either nonexistent or incomplete in some areas of the United States. In such areas, an inspection of the geologic strata does not yield enough evidence to conclusively determine when the most recent displacement occurred (see 46 FR 2812). An example was given of areas where glacial activity stripped the surficial ground cover and left highly resistant rock. It was stated that in situations of this sort, indirect methods such as a review of records of the location of epicenters of historic earthquakes, and an examination of possible fault-related features expressed in Pleistocene and older deposits would have to be conducted to determine if Holocene faults are present within 200 feet of the facility.

Since this standard was promulgated, EPA has learned that there are no faults east of the front range of the Rocky Mountains which have been conclusively identified as having had displacement during Holocene time. Geologists at the U.S. Geological Survey working on updated versions of the USGS Map confirm this finding.

Moreover, information obtained from the U.S. Geological Survey suggests important differences in the geology of the areas east and west of the eastern front of the Rocky Mountains. In the Eastern United States, there is a general lack of usable stratigraphic horizons upon which to base age dates of faulting. In addition, faults in the East do not break the surface as frequently as they do in the West. In the relatively few instances where faults are visible at the surface in the East, the exposed deposits are usually either older than Holocene age or they cannot be precisely dated. Under these geologic conditions, geologists cannot determine with certainty whether a fault has had displacement in Holocene time. The

<sup>1</sup> Facilities located in areas not listed in Appendix VI are presumed to be in compliance with the standard.

geologist can state with certainty only that the fault moved after the uppermost deposits that are displaced were laid down.

More importantly, in the Eastern United States the risk of any fault displacing and deforming the earth's surface is very low (e.g., the risk is two to three orders of magnitude lower than the risk of a 100-year flood). Even the largest historical shocks (e.g., New Madrid, Missouri and Charleston, South Carolina) have not broken the ground to form the obvious fault traces typical of West Coast faulting. Therefore, the probability is very low that displacement and deformation along Holocene faults, the very processes that the seismic standard was intended to protect against, would occur in the near future in the East.

Furthermore, it is dubious whether or not an investigation conducted in the East would turn up useful information about Holocene faulting. EPA stated in the January 12 preamble that where Holocene deposits are scarce, indirect methods can be used to determine if Holocene faults are present within 200 feet of the facility. EPA now realizes that it is doubtful whether these indirect methods would indicate the presence of a fault, much less a Holocene fault, in the East. This is because, whereas some areas in the East have experienced repeated earthquakes, a surface fault has not been identified as being associated with the earthquakes even after extensive study.

EPA received comments on the interim final seismic standard which argued that we should not require a potentially costly demonstration where no documented evidence of Holocene fault displacement exists. Some commenters suggested that where the USGS Map does not indicate the existence of Holocene faults, the seismic standard should not apply.

EPA agrees that a potentially costly demonstration should not be required where available evidence indicates that the presence of Holocene faults is unlikely. Furthermore, EPA believes that the USGS Map should only be used as a definitive guide insofar as it represents the best and most recent geological information available. Because no Holocene faults have been identified east of the front range of the Rocky Mountains, and because the risk of fault displacement and deformation is low in the East, EPA has decided to limit the requirement for a geological investigation to political jurisdictions which are west of the front range of the Rocky Mountains. Accordingly, Appendix VI to Part 264 is today being revised so that only owners and

operators of facilities which are located in the following states (or identified portions thereof) will be required to conduct a geologic investigation: Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Utah, Washington, and Wyoming. The seismic standard in § 264.18(a) and the information requirements for permit applications in § 122.25(a)(11) remain unchanged.

Although EPA does not believe that fault displacement and deformation represent a significant risk for location of hazardous waste facilities east of the front range of the Rocky Mountains, the Agency continues to be concerned about possible damage to facilities due to ground motion and ground failure in these areas. EPA is continuing to consider the need for a location standard which addresses ground motion and ground failure (see 46 FR 2811 for discussion).

### III. Economic and Regulatory Impact

EPA has determined, pursuant to Executive Order 12291, that the amendment promulgated here today does not constitute a major rule and therefore, that no Regulatory Impact Analysis is required. This amendment results in a net reduction in regulatory burden and compliance costs for the regulated community. Geological investigations will no longer be required for hazardous waste management facilities located in those portions of the United States, east of the front range of the Rocky Mountains, which were listed in the original Appendix VI.

In compliance with Executive Order 12291, EPA submitted this notice to the Office of Management and Budget (OMB) for review.

The Regulatory Flexibility Act requires all Federal agencies to consider the effects of their regulations on small entities (i.e., small businesses, small organizations and small governmental jurisdictions). As this amendment reduces the net regulatory burden on new hazardous waste management facilities, regardless of their size, it will not have a significant economic impact on a substantial number of small entities. Therefore, a regulatory flexibility analysis is not necessary.

### IV. Effective Date

Section 3010(b) of RCRA provides that EPA's hazardous waste regulations and revisions thereto take effect six months after their promulgation. The purpose of this statutory requirement is to allow persons affected by the regulations sufficient lead time to prepare to comply with major new regulatory requirements. Because this amendment eliminates an

existing regulatory requirement for some facilities, EPA believes that a six-month effective date is not needed to serve the purpose of Section 3010(b). Moreover, the Agency believes that an effective date six months after promulgation would defeat the purpose of this amendment. EPA is therefore making this amendment effective on November 23, 1981.

Dated: November 17, 1981.

Anne M. Gorsuch,  
Administrator.

## PART 264—STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

For the reasons set forth in the preamble, Appendix VI to Part 264 of Title 40 of the Code of Federal Regulations is revised to read as follows:

### Appendix VI to Part 264—Political Jurisdictions<sup>1</sup> in Which Compliance With § 264.18(a) Must Be Demonstrated

<b>Alaska</b>	
Aleutian Islands	Kodiak
Anchorage	Lynn Canal-Icy Straits
Bethel	Palmer-Wasilla-Talkeena
Bristol Bay	Seward
Cordova-Valdez	Sitka
Fairbanks-Port Yukon	Wade Hampton
Judeau	Wrangell Petersburg
Kenai-Cook Inlet	Yukon-Kuskokwim
Ketchikan-Prince of Wales	
<b>Arizona</b>	
Cochise	Greenlee
Graham	Yuma
<b>California</b>	
All	
<b>Colorado</b>	
Archuleta	Mineral
Conejos	Rio Grande
Hinsdale	Saguache
<b>Hawaii</b>	
All	
<b>Idaho</b>	
Bannock	Franklin
Bear Lake	Fremont
Bingham	Jefferson
Bonneville	Madison
Caribou	Oneida
Cassia	Power
Clark	Teton
<b>Montana</b>	
Beaverhead	Cascade
Broadwater	Deer Lodge

<sup>1</sup> These include counties, city-county consolidations, and independent cities. In the case of Alaska, the political jurisdictions are election districts, and, in the case of Hawaii, the political jurisdiction listed is the island of Hawaii.

Flintland  
Gallatin  
Granite  
Jefferson  
Lake  
Lewis and Clark  
Madison  
Meagher  
Missoula

Bart  
Burrill  
Sanders  
Silver Bow  
Stillwater  
Sweet Grass  
Teton  
Wheatland

**Nevada**

All

**New Mexico**

Bernalillo  
Catron  
Grant  
Hidalgo  
Los Alamos  
Rio Arriba  
Sandoval

Sante Fe  
Sierra  
Socorro  
Tara  
Torrance  
Valencia

**Utah**

Beaver  
Box Elder  
Cache  
Carbon  
Davis  
Duchesne  
Emery  
Garfield  
Iron  
Juab  
Millard  
Morgan

Piute  
Rich  
Salt Lake  
Sanpete  
Sevier  
Summit  
Tooele  
Utah  
Wasatch  
Washington  
Wayne  
Weber

**Washington**

Chelan  
Clallam  
Clark  
Cowlitz  
Douglas  
Ferry  
Grant  
Gray Harbor  
Jefferson  
King  
Kitsap  
Kittitas  
Lewis

Mason  
Okanogan  
Pacific  
Pierce  
San Juan Islands  
Skagit  
Skamania  
Snohomish  
Thurston  
Wahkiakum  
Whatcom  
Yakima

**Wyoming**

Fremont  
Lincoln  
Park  
Sublette

Teton  
Dinta  
Yellowstone National  
Park

[FR Doc. 81-33788 Filed 11-22-81; 845 am]  
BILLING CODE 6560-08-01

**40 CFR Part 429**

**[WH-FRL 1036-2]**

**Timber Products Processing Point Source Category Effluent Limitations Guidelines, New Source Performance Standards and Pretreatment Standards**

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Final Rule; Technical Amendment and Correction.

**SUMMARY:** On January 26, 1981, EPA promulgated effluent guidelines and standards under the Clean Water Act for pollution discharges from the timber products industry. Shortly afterwards,

the American Hardboard Association (AHA) expressed concerns about the new source performance standard promulgated for the wet process hardboard subcategory. AHA also brought to EPA's attention an error in the definition of process wastewater for the dry process hardboard, veneer, finishing, particleboard, and sawmills and planing mills subcategories.

In response to AHA's concerns, EPA is today limiting the applicability of the new source performance standards for the wet process hardboard subcategory. It is also correcting the inadvertent error in the definition of process wastewater for the dry process hardboard and other subcategories.

**EFFECTIVE DATE:** These amendments will become effective December 23, 1981. In accordance with 40 CFR 100.01 (45 FR 20048), these amendments shall be considered issued for purpose of judicial review at 1:00 p.m. Eastern time on December 7, 1981.

**ADDRESS:** The record for this rulemaking is available for public inspection and copying at EPA's Public Information Reference Unit, Room 2404 (Rear) PM-213 (EPA Library), 401 M St., S.W., Washington, D.C. 20460. The EPA information regulation (40 CFR Part 2) provides that a reasonable fee may be charged for copying.

**FOR FURTHER INFORMATION CONTACT:** Richard E. Williams, Environmental Protection Agency, Effluent Guidelines Division (WH-552), 401 M St., S.W., Washington, D.C. 20460, (202) 428-2554.

**SUPPLEMENTARY INFORMATION:**

**I. New Source Performance Standards—Wet Process Hardboard Subcategory**

On January 26, 1981, EPA promulgated effluent guidelines and standards for various subcategories in the timber products industry. These standards included a new source performance standard for the wet process hardboard subcategory, which required new sources to achieve no discharge of process wastewater pollutants (see 40 CFR 429.64, 46 FR 8290). Shortly after promulgation, the AHA requested EPA to rescind the wet process hardboard new source performance standard. AHA based its request on concerns about the Agency's proposed criteria for identifying "new sources." These criteria define "new source" to include not only sources which are constructed where no other industrial sources presently exist (i.e., "greenfield" sites) but also sources which are constructed at the site of an existing source and either totally replace the processes causing the discharge at the existing source or are substantially independent

of the processes causing the discharge at the existing source (see 45 FR 59343-59344, September 9, 1980). AHA pointed out that, in promulgating the new source performance standard for the wet process hardboard subcategory, EPA only evaluated the impact of this no discharge requirement on new sources constructed at "greenfield" sites—not on new sources created by the modification of existing sources. AHA suggested that, without undertaking further analysis, it was improper for EPA to require new sources other than "greenfield" facilities to meet the no discharge limitation.

EPA agrees that AHA's concerns have merit. Achievement of the no discharge new source performance standard for the wet process hardboard subcategory depends, to a large extent, on the application of spray irrigation—a particularly land-intensive treatment technology. It was appropriate for EPA to assume that "greenfield"-type new sources have the flexibility to obtain the land required for spray irrigation. Without engaging in further analysis, however, it was inappropriate for EPA to assume that non-"greenfield" new sources would always have the ability to obtain the land required for spray irrigation. Consequently, EPA is amending the new source performance standard for the wet process hardboard subcategory to make it applicable only to "greenfield" facilities. As a result of this amendment, substantial modifications of existing sources, which might possibly qualify as new sources under the previous definition, will only be required to comply with the limitations applicable to existing sources. This change will be restricted to the wet process hardboard subcategory and will not affect the Agency's general definition of "new source" or the criteria for identifying the sources which fit within this definition. That definition and the accompanying criteria, once finalized, will be generally applicable to all other industrial subcategories.

**II. Process Wastewater Definition—Dry Process Hardboard, Veneer, Finishing, Particleboard, and Sawmills and Planing Mills Subcategories**

In its January 26, 1981 promulgation of effluent guidelines and standards for the timber industry, EPA included, for the sake of completeness, a number of timber effluent guidelines and standards which had been previously promulgated in 1974-1978 and were not substantively amended by the 1981 promulgation. Among these were the effluent guidelines and standards for the dry process hardboard, veneer, finishing,



McKesson Chemical Company

Personnel Training

(40 CFR Sec. 270.14(b-12))

McKesson Chemical is an established major distributor and repacker of a wide variety of industrial chemicals and solvents, many of which are hazardous (flammable, corrosive, toxic, oxidative) consequently; the Company has long had in place a training program designed to acquaint its employees with the dangers of these hazardous materials and to train them in their safe handling. The expansion of the facility's business to include the temporary storage of a limited variety of spent solvents, therefore, has had a solid foundation upon which to build the additional training needed for the handling of these hazardous wastes.

The approximately 75 branches of McKesson Chemical Company are divided into five Regions headquartered in:

Montvale, New Jersey

Oak Brook (Chicago), Illinois

Spartanburg, South Carolina

Metairie (New Orleans), Louisiana

Santa Fe Springs (Los Angeles), California

The management structure of a typical McKesson Chemical branch is headed by a Branch Manager, to whom report a Branch Operations Manager and a Branch Administrative Manager. The last two positions have staff manager counterparts at the Regional Office, who provide formal training for new

employees and refresher training for present employees in their respective disciplines. Thus, in addition to the on-the-job training/experience acquired by an employee, he/she is assured a formal teaching exposure which is then documented in his/her record.

The Branch Manager and Branch Administrative Manager are involved in compliance with RCRA regulations, but typically are not involved in the actual supervision of handling the materials. That responsibility lies with the Branch Operations Manager, who is primarily involved with the handling and maintenance of waste materials in an appropriate manner while in storage at the site. This position carries the responsibility of assuring that the routine inspections and physical handling procedures are adhered to. The Administrative Manager is involved with the paperwork associated with in-and-out shipments, inventory control, maintenance of records, and the like related to hazardous wastes.

None of these individuals is required to be trained prior to employment in hazardous waste management situations. On-the-job training is accomplished within six months of employment by the Branch Manager and the Regional RCRA Coordinator on all facets of hazardous waste management. Responsibilities for hazardous waste management would not be delegated until such training is completed.

The duties, responsibilities, and qualifications for these three management positions follow.

Position: Branch Manager

Responsibilities and Duties:

- Functions as Emergency Coordinator in the absence of appointed individual.
- Has overall responsibility for selection of personnel and supervision of training programs, including proper use of equipment, fire fighting equipment, alarm systems, emergency procedures, material management (including waste items), maintenance, Contingency Plan implementation, etc. The actual conducting of training in these areas may be delegated to other supervisory personnel, although the responsibility to assure its adequate completion remains the Branch Manager's.
- Supervises and oversees facility's ongoing safety program, which includes the assurance of the conducting of monthly safety meetings.
- Works in conjunction with Regional Office personnel in assuring the proper attainment of permits and licenses from local, state, and Federal agencies.
- Supervises branch sales personnel and the profitability of the facility. Works in resolving problems arising with potential customers wishing to utilize the Company's waste handling capabilities. Assures that customers and branch have appropriate permits and that all necessary and required data as set forth in the regulations and Company procedures are adhered to and

present at the location for proper management of materials.

- Addresses, and takes appropriate actions on problems brought to his attention by subordinates.
- Makes proper notification of emergency situations and/or implementation of the Contingency Plan to appropriate Company and government authorities as outlined in other sections.

Experience and Qualifications:

- High school graduate - college desirable
- 3-5 years sales or sales management experience with supervisory responsibilities.

Position: Branch Operations Manager

Responsibilities and Duties:

- Is usually the facility's Emergency Coordinator.
- Supervises overall operation and maintenance of the physical aspects of the facility in compliance with all applicable government regulations and Company operating procedures.
- Maintains facility compliance with RCRA and other governmental agency regulations specific to waste management practices.
- Maintains operational logs, maintenance records, inspection records, and conducts monthly safety meetings with branch operations personnel.
- Supervises loading/unloading of all materials (include wastes), placement of material, and required paperwork as required by Company procedures.
- Is involved in the training and indoctrination of new personnel at the branch facility.
- Notifies Branch Manager of emergency situations.
- Schedules all maintenance and repair of equipment and facility structure of both a routine and non-routine nature.
- Oversees the drivers' activities to assure compliance with all appropriate procedures for transporting of materials, accepting waste materials, response to emergency situations, and equipment maintenance.

- Monitors and approves the findings of waste container and emergency equipment inspections, and implements any necessary remedial activities if inspection reports warrant.
- Reports to the Branch Manager.

Experience and Qualifications:

- High school graduate
- 1-2 years of experience or training in transportation, handling of hazardous materials, and warehousing activities. Supervisory experience desirable.

Position: Branch Administrative Manager

Responsibility and Duties:

- Supervises general office activities, including proper handling of paperwork involved in waste receipts and shipments as outlined by Company procedures.
- Notifies Branch Manager of emergency situations and may act as an alternate Emergency Coordinator in his or the Branch Operation Manager's absence.
- Assures that necessary reports, records, notifications, etc., are prepared to comply with RCRA, as well as all other government regulations. This include routine activities as well as non-routine occurrences, such as implementation of the facility Contingency Plan.
- Reports to the Branch Manager.

Experience and Qualifications:

- High school graduate
- 1-2 years in office related work with supervision experience desirable.

Training sessions conducted with branch management personnel typically involve a full day's session of classroom instruction. The topics reviewed at these sessions are designed to give a broad overview of the intent of the regulations, as well as explaining and training the employees in specific company procedures which had been developed for facilities to follow in order to comply with the requirements set forth in the regulations. Review is provided to the employees on registration of their particular branch for specific types of wastes. Frequent updates and advisories are forwarded from the Regional Office to keep employees current on hazardous waste regulations which might impact their facility's operations. As mentioned in the section entitled "Inspection Schedules, Equipment Requirements, and Preventative Measures", a quarterly Safety Audit is performed by Company personnel who do not work at the facility. Contained within the approximately 180 areas for review during this session, 20 pertain specifically to hazardous waste management, and a minimum of 60 additional items pertain to emergency procedures, safety, training, etc. These audits are reviewed with facility management at the time the audit is completed in order to develop an action plan for upgrading of any items requiring attention.

McKesson Chemical Company has developed the appended training outlines for warehousemen and truck drivers. Copies of these training outlines are on file at the facility for use in the training or review of the actual employees filling these positions. Background and educational

requirements for these "hands-on" positions are spelled out in the Position Guides (job descriptions and qualifications) for warehousemen and truck drivers which follow the training program outlines.

The employee training program includes sections providing instruction and indoctrination in all areas appropriate for the individual's job responsibilities. Specific sections are included in these guides which address the use, repair, inspection and monitoring of safety equipment which may require utilization in routine job functions, as well as in emergency situations. Maintenance of facility equipment is also covered in these outlines. Emergency and Contingency Plans are reviewed, as are all necessary operating procedures in order to comply with Company and regulatory standards.

Branch management personnel are trained in similar areas of McKesson's business depending upon their area of responsibility. The training of such personnel is supplemented by staff training sessions at the facility, Company-conducted seminars, or visits to another Company location in order to work with experienced personnel holding a similar job position.

New employees filling a position at the facility and who will be involved in hazardous waste management and/or handling activities shall be trained in all necessary facets of hazardous waste management as outlined in 40 CFR 264.14 within six months after their employment or assignment to the facility. Employees not fully trained in all appropriate sections pertaining to hazardous waste management shall not be allowed to work unsupervised until such training is completed.

McKesson Chemical Company's policy requires monthly safety meetings at all facilities. Topics discussed typically include appropriate use of safety equipment, safe material handling and transport, emergency procedures, and housekeeping. Emergency drills are conducted at least every six months to reinforce job assignments and procedures. Annual hazardous waste handling review sessions are conducted as required under the regulations.

The Branch Manager of this facility is responsible for supervision and review of appropriate training of new personnel.

Incorporated into the employees' training program is indoctrination to ensure that the personnel will be knowledgeable in not only their routine job functions, but also in how to respond properly to emergency situations. Training shall include review of the Contingency Plan as well as specific discussion on the following:

- Proper utilization, location, inspection, repairing, and replacing of facility safety and emergency equipment.

- The designated alarm signals which shall be used to set in motion the evacuation of the facility, as well as the location of the designated congregation point for the accounting of facility personnel as included in the Contingency Plan.
- Proper response to a facility fire or explosion which might necessitate facility implementation of the Contingency Plan.
- Proper response and remedial action upon the discovery of a spill which could result in ground water contamination, including the containment, control, and effect of the material as outlined in the Contingency Plan.
- Job assignments of facility personnel in an emergency situation and how safe and orderly evacuation of the facility is to be accomplished in a shutdown situation.

This facility does not have present any processes which might necessitate the training of employees in automatic waste feed cutoff procedures.

All current employees of this facility have satisfactorily completed training as outlined. New employees in the future shall complete the required training for their particular position with 6 months of employment or assignment to the facility. No employee shall work unsupervised prior to completing training. Review sessions will be held

at least annually to discuss pertinent subjects regarding hazardous waste activities including, but not limited to the following:

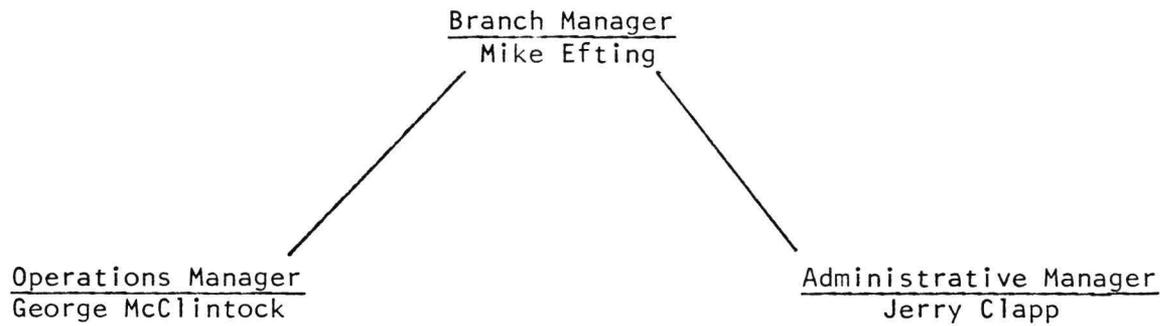
- Waste materials currently being handled by the facility and the potential problems and hazards each might present.
- Any problems with structures, equipment, off-site accounts shipping materials to us, etc. Employees will be encouraged to offer suggestions to management on improved means of handling potential problems.
- Changes in facility permits or problems which have developed which by group discussion might be corrected.
- Incidents involving Contingency Plan implementation and how the plan worked to minimize hazards. Review of the Plan shall be conducted and suggestions accepted for possible improvements.

Records herein outlined shall be maintained at the facility location. These records shall be kept until closure of the facility for current employees, and for a minimum of 3 years from the date of an individual employee's separation from the Company.

McKesson Chemical Company

Personnel Training

The management personnel at the Greensboro branch are organized as follows:



All three management personnel have attended a McKesson Chemical hazardous waste training session led by Hal E. Brown, the Regional Warehousing manager, who is the Training Director for the Southeastern Region of the company.

Mr. Brown holds science degrees from the University of Pennsylvania and from Yale (Master's). He has been a McKesson employee for six years and has held his current position almost four years. In this capacity, he is responsible for all warehousing and related functions for the eleven branches comprising the Southeastern Region. This includes the drawing up of formal safety programs (training, safety meetings, direct mailing of safety literature, quarterly safety audits of each branch, analysis of each accident or near-accident with subsequent dissemination of details to the branches, accident investigations, application of disciplinary acts) as well as responsibility for purchasing, maintenance and training in the use of all warehouse and repacking machinery, specifying and purchasing containers and storage vessels used by the branch, as well as the repair and maintenance of the warehouse, yard, and repacking installation of each branch. It was only a short, logical step from these comprehensive responsibilities involving hazardous materials to the responsibilities required for the safe handling of hazardous wastes, which are essentially a "used" version of the materials routinely handled by each McKesson Branch.

He has attended a number of related seminars and training courses, such as the Hazardous Material/Wastes Management Compliance Seminar conducted by Transportation Skills Program, Inc.

The overall training programs receive input and updating from the Technical Director, Legal Department, Finance and Insurance support groups in the Corporation's Home Office in San Francisco, as well as from McKesson Environmental Services Laboratory in Dublin, California.

McKesson Chemical Company

Personnel Training

McKesson Chemical Company has developed the appended training outlines. Warehousemen and truck drivers attend hazardous waste training programs together. Copies of these training outlines are on file at the facility for use in the training or review of the actual employees which fall into the appropriate classification.

Included in the employees training program are sections providing instruction and indoctrination of all areas as outlined in these training guides as appropriate for the individuals job responsibilities. Specific sections are included in these guides which address the use, repair, inspection, and monitoring of safety equipment which may be required to be utilized in routine job functions as well as in emergency situations. Maintenance of other facility equipment is also covered in these outlines. Emergency plans and Contingency Plans are reviewed as well as necessary operating procedures to comply with Company and regulatory standards.

Key personnel are trained in similar areas of McKesson's business depending upon their area of responsibility. The training of such personnel is supplemented by staff personnel training sessions at the facility, Company-conducted seminars, or visits to another Company site to work with experienced personnel holding a similar job position.

New employees filling a position at the facility which will be involved in hazardous waste management and/or handling shall be trained in all necessary facets hazardous waste management as outlined in 40 CFR 264.14 within six months of their employment or assignment to the facility. Employees which have not been fully trained in all appropriate sections pertaining to hazardous waste management shall not be allowed to work unsupervised until such

McKesson Chemical Company  
Personnel Training

training is completed. The overall training protocol is included in this section for both drivers and warehousement, as are the details of hazardous waste transport and handling directed at both management and "hands-on" personnel. McKesson Chemical Company's policy is to conduct monthly safety meetings at all facilities. Topics included typically revolve around appropriate use of safety equipment, safe material handling and transport, emergency procedures, etc. Emergency drills are conducted on a six month interval to reinforce job assignments and procedures. Annual hazardous waste handling review sessions shall be conducted as required under the regulations.

Background and educational requirements for these "hands-on" positions are numeral, except that a potential driver for McKesson prior to employment must

1. Pass a DOT — prescribed physical examination.
2. Pass a DOT — prescribed written examination.
3. Pass a driving test on the road.
4. Passes a satisfactory driving record for the last  
3 years.
5. Pass a general background check for the last 3 years.

TRAINING GUIDE AND DOCUMENTATION  
TRUCK DRIVER

Employee Name \_\_\_\_\_

Instructor(s) \_\_\_\_\_

Date Hired \_\_\_\_\_

Original Training

Review

PRELIMINARY: Before actual training and work activity is undertaken by the new employee, management should be certain that all areas contained on PER-85 "Employment Checklist" have been completed and reviewed with the employee, and the appropriate signatures have been acquired.

I. Employee General Orientation

The instructor shall review with the employee all items contained on PER-89, "Employee Orientation Checklist" as a general overview of basic Company and location policy. As required on PER-89, a six day follow-up/review should be conducted with the individual. See also the Chemical Operations Manual, Ref. 70.05 and 70.10.

II. Safety

NOTE: The instructor should refer to the Chemical Operations Manual, Ref. 10.06, "Training Employees", prior to starting training.

A. Company Safety Program (Ch. Op. Ref. 10.07)

1. Accident and Loss Prevention Policy (Ch.Op.Ref. 10.05).
2. Safety Audits. (Ch. Op. Ref. 10.90)
3. Safety Committees (Ch. Op. Ref. 10.06).
4. Safety Meetings.
5. Required reporting of incidents or unsafe situations to supervisor.
6. Trained first aid personnel.
7. Smoking areas.

B. Emergency Response

1. Review of branch Emergency/Contingency Plans for various emergency situations. Show where plans are located throughout facility. Discuss evacuation signals, evacuation procedures, job

(Continued)

B. Emergency Response (Continued)

assignments in emergency situations; all as it applies to the trainee.

2. Review of procedure to be followed if trainee were to become involved in an emergency regarding an off-site incident (Ch. Op. Ref. 10.20 page 5).
3. Review of Material Safety Data Sheets--information contained on form, location, etc.
4. Proper handling of hazardous chemicals (Ch.Op.Ref. 10.70).
5. CHEMTREC - review of organization and when contact appropriate (Ch. Op. Ref. 10.22).

C. Safety Equipment - Use and Maintenance

1. Discuss the appropriate conditions under which certain pieces of equipment must be used.
2. Review and demonstration of safety and emergency equipment present at branch. Instruction on appropriate use, inspection, maintenance, storage location, etc. A list of items to be reviewed should include but may not be limited to:
  - a) Rubber Suits
  - b) Rubber Boots
  - c) Rubber Gauntlet Gloves
  - d) Canvas Gloves
  - e) Chemical Goggles
  - f) Face Shields
  - g) Hard Hats
  - h) Fire Extinguishers (different types, sizes, locations, inspections, etc.)(Ch.Op.Ref. 80.01)
  - i) First Aid Kits
  - j) Neutralizer (limitations, locations)
  - k) Safety Shower

(Continued)

C. Safety Equipment - Use and Maintenance (Continued)

- l) Recovery Drums (review the need for labeling, marking)
- m) Chlorine Kit
- n) Assorted tools which may be used in emergency situations. Review spark-proof tool usage in appropriate situations.
- o) Hazorb, absorbents
- p) Other articles at location

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3. Review and demonstration of the various types of respiratory protective equipment present at your location. Discuss the proper selection, inspection, capabilities and limitations, maintenance, storage, etc., of a particular unit. (Ch. Op. Ref. 10.80)  
Review those appropriate to location:

- a) Self-contained units (Air Packs)
- b) Canister type respirators -- review various canisters, shelf life of canisters, etc.
- c) Gas masks
- d) Dust masks
- e) Other

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4. Review the documentation of inspection of all safety equipment and the importance of notification to supervisor of use of air packs, extinguishers, etc., so that recharging or replacement is made.

### III. Requirements of Truck Drivers

#### A. Company requirements

1. Successful completion of all governmental requirements for licensed operation of assigned vehicle.
2. Traffic and driving knowledge test.
3. Physical lifting test.
4. Reading and matching ability test.
5. 25 years of age.
6. Annual defensive driving course.
7. Annual checkride by supervisor.
8. Compliance with Company work rules.
9. Working knowledge of paperwork, pick-up notices, empty container receipts, C.O.D. procedures, etc.

#### B. Governmental requirements

1. Required compliance with all Federal, State, and local regulations.
  - a) D.O.T. Hazardous Materials Regulations
    - (1) Qualifications file/documents on person.
    - (2) Knowledge of Hazardous Materials Regulations.
    - (3) Documents, bill of lading, accessibility.
    - (4) Recordkeeping, driver's daily logs, driver's daily reports, driver's inspection reports, maintenance files -- availability for inspection/retention time.
    - (5) Accident reporting, MCS-50T, Hazardous Materials Incident Report, immediate notification requirements.
  - b) EPA
    - (1) Knowledge of EPA regulations
  - c) O.S.H.A., F.D.A., etc.

(Continued)

#### IV. Requirements of Equipment

##### A. Company requirements

1. Equipment must be in full compliance with all governmental requirements.
2. Efficient and proper use of equipment.
3. Proper inspection, preventative maintenance, and repair of equipment/authorization for repairs.
4. Tachographs and hubdometers are used to track vehicle operation and supplement maintenance recordkeeping.
5. Special operating procedures, winter starting, fuel considerations (Ch.Op.Ref. 30.75).
6. Gelco maintenance procedure.
7. Vehicle appearance.
8. Vehicle security (Ch.Op.Ref. 60.01).

##### B. Governmental requirements

1. Required compliance with all Federal, State, and local regulations.
2. Proper vehicle registration as required.
  - a) D.O.T. regulations.
    - (1) Compliance with equipment inspection, maintenance, and maintenance recordkeeping requirements.
    - (2) Compliance with "Out of Service" criteria.
    - (3) Operation of equipment in safe and proper manner.

#### V. Material Handling - Warehouse/Loading/Unloading

- A. General review of types of packages handled at facility (bags, drums, cylinders, portable tanks, etc.).
- B. Review of hazardous materials - identification by D.O.T. labels on packages, types of hazards, designated inside and outside storage areas for particular hazard groups, etc. (ch. Op. Ref. 10.70 and 30.55, Exhibit I).
- C. Review of D.O.T. loading restrictions on trailers (Ref. Wall Loading Charts. See also Section VII, "Compatibility..."). Review requirements of hazardous material accessibility.

(Continued)

- D. Placarding requirements of trucks hauling hazardous materials. Requirement for shippers to offer carriers appropriate placards.
- E. Review wheel chocking requirement on trucks and trailers. Dropped trailers should also have trailer jacks under frame at nose.
- F. Proper action to be implemented in the event of package damage. Immediate use of:
  - 1. Tape
  - 2. Overbags
  - 3. Salvage Drums
  - 4. Container transfer by appropriate personnel if branched approved.
- G. Disposition of damaged materials (dumpster off limits unless authorized).
- H. Requirement to notify the supervisor when a shipment is received having damage contained. (Freight Claims). (Ch.Op. Ref. 40.10).
- I. Segregation and compatibility of freight claim and damaged materials (Also see Section VII, "Compatibility ...")
- J. Detention and demurrage.
- K. Cleaning of trailers and railcars.
- L. Weight distribution on trucks/trailers.
- M. Required loading and bracing techniques on trucks/trailers.
- N. Palletizing techniques--review of crosstie techniques for bags. Some basic parameters to be reviewed but not necessarily limited to include:

Bags

- 1. Crosstie 24 x 100# bags on 48" x 48" pallets.
- 2. Crosstie 21 x 100# bags on 42" x 48" pallets.
- 3. Short 100# bags can be palletized six across and five high (30 bags).
- 4. 50# bags -- 40 per pallet.

(Continued)

### Drums

1. Drum size to dictate number contained on pallet- no overhang should be present.
2. 15 gallon deldrums and S.S. drums when palletized should have one strap of banding around belly when shipping (not necessary for storage).

Note: Height of palletized bags and drums will dictate stacking height in the warehouse and yard. Typically it is acceptable to stack three high but the weight of the material contained in the package and the package itself may dictate stacking only two high (i.e. Plasti-drums, sludge drums, powdery bagged materials). Bags must be palletized flat and neatly for safety so that the stacks are free standing. The adherence to a standardized palletizing and stacking procedure will aid in perpetual inventory control as well as shipping and receiving flow.

### Cylinders

1. Standard number of 150# empty or full chlorine cylinders per pallet is 16 and requires 3 bands. Partial pallets of cylinders in storage are required to be secured in an upright position. Cylinders are to be palletized on special cylinder pallets only.
2. Ammonia cylinders require 3 bands and should be loaded with 12 cylinders per pallet.

## VI. Material Handling - Bulk Loading/Unloading

- A. General review of types of bulk delivery equipment handled at facility.
- B. Review of proper operating procedures for bulk delivery equipment assigned.
- C. Review of emergency procedures for bulk delivery equipment assigned.
- D. Review of D.O.T. requirements concerning attendance, certification, and retest requirements.
- E. Review of Company procedures concerning repackaging/sampling/label order procedure (Ch.Op.Ref. 20.10, 20.20, 20.30).
- F. Review of Small Bulk "Customer Tank Inspection/Approval" form and its proper usage.

(Continued)

- G. Loading and bracing requirements for portable tanks.
  - H. Marking, placarding, UN and NA four digit numbers on portable tanks and cargo tanks.
  - I. Review of requirements as they apply to empty portable tanks/cargo tanks with residue.
- VII. Compatibility Program (Ch. Op. Ref. 40.01)
- A. Company Compatibility Program and branch binder -- review of binder location and its use.
  - B. USP/Food Grade dedicated pallet program (Ch. Op. Ref. 40.61).
  - C. Available reference materials.
    - 1. MSDS's.
    - 2. Dow Stewardship (Ch. Op. Ref. 10.65).
    - 3. Suppliers.
    - 4. Company Staff Personnel.
- VIII. Hazardous Waste Handling Procedures (As required under 40 CFR, Section 265.16) Required areas of training are the following:
- A. McKesson general safety - covered under Section II, "Safety".
  - B. Hazardous Waste Manifest Procedures - to include: (Ref. "Manifesting Procedures") Contained in RCRA - Administrative Procedures.
    - 1. Review of incoming shipments (See hazardous waste pick up checklist).
      - a) Count verification.
      - b) Proper labels.
      - c) Proper containers.
      - d) Proper data filled in on manifest forms.
    - 2. Preparation of reshipments.
      - a) Count verification.
      - b) McKesson "add-on" labels to indicate manifest number, lot number, etc.
  - C. Emergency/Contingency Plan - covered under Section II, "Safety".

- D. Container Receiving and Maintenance Procedures.
- E. Container Transfer Procedures in event of a "leaker"  
- review documentation requirements.
- F. Emergency Response procedures to be reviewed as it  
pertains to Hazardous Waste incidents.
- G. Evacuation Plan - covered under Section II, "Safety".
- H. Compatibility - covered under Section VII, "Compati-  
bility..."
- I. Emergency Equipment - covered under Section II, "Safety".
- J. Review the need for management to make the determination  
as to whether a virgin material which may have to be  
scrapped must be handled as a hazardous waste, and the  
proper means of accomplishing such.

NOTE: It is required that the individual be given an  
annual review of their training as it applies  
to H/W procedures - and be documented.

- IX. Housekeeping, Sanitation, and General Facility Maintenance  
(Ch. Op. Ref. 10.72 and 40.60).
  - A. Accountability of the employee for assigned work area.  
Responsibility for tools, equipment, cleanliness, safety,  
etc.
  - B. Clean up of work areas. Stress the importance of  
immediate clean up.
  - C. Importance of nonobstruction of aisleways, stairs,  
ramps, and walkways.
  - D. Dumpster location, nightly waste receptacle emptying.
  - E. Good Manufacturing Practices (Ref. 40.62).
  - F. Snow conditions. Necessity for shoveling and salting/  
sanding of work and pedestrian travel areas.
  - G. Replacement of light bulbs means of access in warehouse  
area.
  - H. Rodents, birds, and insects. Means of control and  
reason for 4" spacing from walls with goods.

Additional Specific Locational Training Requirements.

TRAINING GUIDE AND DOCUMENTATION  
WAREHOUSEMEN

Employee Name \_\_\_\_\_

Instructor(s) \_\_\_\_\_

Date Hired \_\_\_\_\_

Original Training

Review

**PRELIMINARY:** Before actual training and work activity is undertaken by the new employee, management should be certain that all areas contained on PER-85 "Employment Checklist" have been completed and reviewed with the employee, and the appropriate signatures have been acquired.

I. Employee General Orientation

The instructor shall review with the employee all items contained on PER-89, "Employee Orientation Checklist" as a general overview of basic Company and location policy. As required on PER-89, a six day follow-up/review should be conducted with the individual. See also the Chemical Operations Manual, Ref. 70.05 and 70.10.

II. Safety

NOTE: The instructor should refer to the Chemical Operations Manual, Ref. 10.06, "Training Employees", prior to starting training.

A. Company Safety Program (Ch. Op. Ref. 10.07)

1. Accident and Loss Prevention Policy (Ch.Op.Ref. 10.05).
2. Safety Audits.
3. Safety Committees (Ch. Op. Ref. 10.06).
4. Safety Meetings.
5. Required reporting of incidents or unsafe situations to supervisor.
6. Trained first aid personnel.
7. Smoking areas.

B. Emergency Response

1. Review of branch Emergency/Contingency Plans for various emergency situations. Show where plans are located throughout facility. Discuss evacuation signals, evacuation procedures, job

B. Emergency Response (Continued)

assignments in emergency situations; all as it applies to the trainee.

2. Review of procedure to be followed if trainee were to receive an emergency call regarding an off-site incident.
3. Review of Material Safety Data Sheets--information contained on form, location, etc.
4. CHEMTREC - review of organization and when contact appropriate (Ch. Op. Ref. 10.22).

C. Safety Equipment - Use and Maintenance

1. Discuss the appropriate conditions under which certain pieces of equipment must be used.
2. Review and demonstration of safety and emergency equipment present at branch. Instruction on appropriate use, inspection, maintenance, storage location, etc. A list of items to be reviewed should include but may not be limited to:
  - a) Rubber Suits
  - b) Rubber Boots
  - c) Rubber Gauntlet Gloves
  - d) Canvas Gloves
  - e) Chemical Goggles
  - f) Face Shields
  - g) Hard Hats
  - h) Fire Extinguishers (different types, sizes, locations, inspections, etc.) (Ch. Op. Ref. 80.01)
  - i) First Aid Kits
  - j) Neutralizer (limitations, locations)
  - k) Safety Shower

(Continued)

C. Safety Equipment - Use and Maintenance (Continued)

- l) Recovery Drums (review the need for labeling, marking)
- m) Chlorine Kit
- n) Assorted tools which may be used in emergency situations. Review spark-proof tool usage in appropriate situations.
- o) Hazorb, absorbents
- p) Other articles at location

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3. Review and demonstration of the various types of respiratory protective equipment present at your location. Discuss the proper selection, inspection, capabilities and limitations, maintenance, storage, etc., of a particular unit. (Ch. Op. Ref. 10.80)  
Review those appropriate to location:

- a) Self-contained units (Air Packs)
- b) Canister type respirators -- review various canisters, shelf life of canisters, etc.
- c) Gas masks
- d) Dust Masks
- e) Other

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4. Review the documentation of inspection of all safety equipment and the importance of notification to supervisor of use of air packs, extinguishers, etc., so that recharging or replacement is made.

III. Utilization and Maintenance of Warehouse Equipment

A. Review various warehouse equipment which is present at location. Discussion should be included on selection, use, load limitations, and maintenance of all items. A partial listing would include but not be limited to the following:

1. Sweeper
2. Scrubber

NOTE: Regarding the above items, if battery powered units are present, demonstration should be given on how to properly connect unit to charger, along with routine maintenance procedures such as filter checks, brush replacement, cleaning, cleaner usage, etc.

3. Lift-O-Matic
4. Pallets - different sizes and uses. Do not allow overhang if possible. Discuss maintenance and out of service conditions for pallets. Review the dedication of pallets for USP and Poison material.
5. Pallet Pullers
6. Pallet Trucks
7. Dock Plates, Levelers, Bumpers, Seals
8. Pallet Racks - discuss the importance of compatibility of materials in racks, load limits (typically 6000#/shelf), maintaining of heavier load low, use of good quality pallets and appropriately sized, keeping of liquid items from being stored above dry materials to guard against ruining of dry materials in the event of leaks.
9. Wheel chocks (truck and rail)
10. Trailer jacks
11. Derails and warning signs
12. Car movers
13. Rail car door pullers
14. Trailer straps, load bars, blocking and bracing materials.

(Continued)

15. Drum trucks and Hand trucks
16. Air compressors
17. Boilers
18. Heaters
19. Sprinklers
20. Banders
21. Stretch Wrap
22. Others as appropriate to location

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#### IV. Forklifts

##### A. Certification

1. Written Exam - administered and reviewed
2. Skill Demonstration Exam - administered and reviewed.

NOTE: Upon satisfactory completion and review of the above items, the trainee is to be issued an operators card.

##### B. Review of branch forklift(s) load capacities.

##### C. Care and Maintenance

1. Daily inspection sheets - review of how to prepare and demonstration of conducting a proper inspection.
2. Review of proper start-up and shut-down procedures. Fuel shut-off, removal of keys, forks at floor, etc.
3. Fuel storage and control requirements. Demonstration of the proper means of changing tanks.
4. Preventative Maintenance - frequency, responsibility.

#### V. Paperwork

(Continued)

A. Forms - review the various forms which the trainee may be exposed to in his/her daily job functions. Discuss the appropriate use, review, preparation of forms. The forms reviewed may include but not be limited to:

1. Bill of Lading
  - a) McKesson prepared
  - b) Outside carrier, supplier
2. Purchase Orders
3. Receiving Tickets
4. Pick up notices
5. Hazardous Waste manifests
6. Empty Container Receipts
7. C.O.D. procedures
8. Material Scrap Reports
9. Fuel tickets
10. Empty Container Scrap Reports
11. Job Tickets and Supplemental Job Tally cards.
12. Product meter tickets
13. Scale Tickets
14. Others as appropriate

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Note: It is unlikely that the trainee will be totally familiar with the preparation and routing of the forms immediately after training. Continued follow-up and review is required to allow the trainee to become self-sufficient.

(Continued)

- B. Discuss the necessity for review of paperwork to assure that errors are not allowed to go unnoticed. The importance of continual double-checks should be stressed.

VI. Material Handling - Warehouse and Loading

- A. General review of types of packages handled at facility (bags, drums, cylinders, portable tanks, etc.)
- B. Review of hazardous materials - identification by DOT labels on packages, types of hazards, designated inside and outside storage areas for particular hazard groups, etc. (Ch. Op. Ref. 10.70 and 30.55, Exhibit I).
- C. Review of DOT loading restrictions on trailers (Ref.- Wall Loading Charts. See also Section VII, "Compatibility...")
- D. Placarding requirements of trucks hauling hazardous materials. Requirement for shippers to offer carriers appropriate placards.
- E. First-In/First-Out inventory usage and maintenance.
- F. Proper action to be implemented in the event of package damage. Immediate use of:
  - 1. Tape
  - 2. Overbags
  - 3. Salvage drums
  - 4. Container transfer by appropriate personnel if branched approved.
- G. Disposition of damaged materials (dumpster off limits unless authorized)
- H. Requirement to notify the supervisor when a shipment is received having damage contained. (Freight Claims). (Ch. Op. Ref. 40.10).
- I. Segregation and compatibility of freight claim and damaged materials (Also see Section VII, "Compatibility ...")
- J. Detention and demurrage
- K. Cleaning of trailers and railcars.
- L. Weight distribution on trucks/trailers.

(Continued)

- M. Required loading and bracing techniques on trucks/trailers.
- N. Palletizing techniques--review of crosstie techniques for bags. Some basic parameters to be reviewed but not necessarily limited to include:

Bags

1. Crosstie 24 x 100# bags on 48" x 48" pallets.
2. Crosstie 21 x 100# bags on 42" x 48" pallets.
3. Short 100# bags can be palletized six across and five high (30 bags).
4. 50# bags -- 40 per pallet.

Drums

1. Drum size to dictate number contained on pallet - no overhang should be present.
2. 15 gallon deldrums and S.S. drums when palletized should have one strap of banding around belly when shipping (not necessary for storage).

Note: Height of palletized bags and drums will dictate stacking height in the warehouse and yard. Typically it is acceptable to stack three high but the weight of the material contained in the package and the package itself may dictate stacking only two high (i.e. Plasti-drums, sludge drums, powdery bagged materials). Bags must be palletized flat and neatly for safety so that the stacks are free standing. The adherence to a standardized palletizing and stacking procedure will aid in perpetual inventory control as well as shipping and receiving flow.

Cylinders

1. Standard number of 150# empty or full chlorine cylinders per pallet is 16 and requires 3 bands. Partial pallets of cylinders in storage are required to be secured in an upright position. Cylinders are to be palletized on special cylinder pallets only.
2. Ammonia cylinders require 3 bands and should be loaded with 12 cylinders per pallet.

(Continued)

3. Ton containers must be properly braced/chocked when in transit. In storage they should be placed on 4 x 4's (or similar method to raise them off ground) and chocked to prevent rolling.
  - O. Hazardous Waste - discussion of designated storage area and secondary containment system.
  - P. Review of proper lifting techniques.
- VII. Compatibility and Storage Techniques (Ch. Op. Ref. 40.01)
- A. Review of designated warehouse/yard storage areas for materials of given hazardous nature.
  - B. Maintaining of clear, clean, and marked aisleways.
  - C. Company Compatibility Program and branch binder -- review of binder location and its use.
  - D. Storage of drummed Flammable Liquids in quantities per OSHA standards (40 drum limit - 2200 gallons per group).
  - E. USP/Food Grade dedicated pallet program (Ch. Op. Ref. 40.61).
  - F. Hazardous Waste designated storage area and the compatibility requirements of materials stored within area.
  - G. Available reference materials.
    1. MSDS's
    2. Dow Stewardship (Ch. Op. Ref. 10.65).
    3. Suppliers
    4. Company Staff Personnel
- VIII. Hazardous Waste Handling Procedures (As required under 40 CFR, Section 265.16) Required areas of training are the following:
- A. McKesson general safety - covered under Section II, "Safety".
  - B. Hazardous Waste Manifest Procedures - to include: (Ref. "Manifesting Procedures") Contained in RCRA - Administrative Procedures.
    1. Review of incoming shipments
      - a) Count verification
      - b) Proper labels

(Continued)

- c) Proper containers
  - d) Proper data filled in on manifest forms.
  - 2. Preparation of reshipments
    - a) Count verification
    - b) McKesson "add-on" labels to indicate manifest number, lot number, etc.
  - C. Emergency/Contingency Plan - covered under Section II, "Safety".
  - D. Container Receiving and Maintenance Procedures.
  - E. Weekly Container Inspection - review of inspection form and logging requirements.
  - F. Container Transfer Procedures in event of a "leaker" - review documentation requirements.
  - G. Emergency Response procedures to be reviewed as it pertains to Hazardous Waste incidents.
  - H. Evacuation Plan - covered under Section II, "Safety".
  - I. Forklift Certification - covered under Section IV, "Forklifts".
  - J. Compatibility - covered under Section VII, "Compatibility..."
  - K. Emergency Equipment - covered under Section II, "Safety".
  - L. Review the need for management to make the determination as to whether a virgin material which may have to be scrapped must be handled as a hazardous waste, and the proper means of accomplishing such.
- NOTE: It is required that the individual be given an annual review of their training as it applies to H/W procedures - and be documented.
- IX. Housekeeping, Sanitation, and General Facility Maintenance (Ch. Op. Ref. 10.72 and 40.60)
    - A. Accountability of the employee for assigned work area. Responsibility for tools, equipment, cleanliness, safety, etc.
    - B. Clean up of work areas. Stress the importance of immediate clean up.

(Continued)

- C. Importance of nonobstruction of aisleways, stairs, ramps, and walkways.
- D. Dumpster location, nightly waste receptacle emptying.
- E. Good Manufacturing Practices (Ref. 40.62).
- F. Snow conditions. Necessity for shoveling and salting/sanding of work and pedestrian travel areas.
- G. Replacement of light bulbs means of access in warehouse area.
- H. Rodents, birds, and insects. Means of control and reason for 4" spacing from walls with goods.

Additional Specific Locational Training Requirements.

**Foremost-McKesson, Inc.**

**POSITION GUIDE**

(INSTRUCTIONS ON PAGE FOUR)

INCUMBENT	<b>A.</b>		
	TITLE Warehouseman		NAME
	CORPORATE STAFF/COMPANY McKesson Chemical Company		DIVISION
	DEPARTMENT	LOCATION "Your Branch"	DATE
	<b>B. GENERAL STATEMENT OF POSITION FUNCTION</b>		
	A McKesson Chemical warehouseman is responsible to the Branch Operations		
	Manager/Branch Manager for the safe, efficient performance of the functions		
	assigned him. In order to carry out these responsibilities he must have		
	completed the required written and driving tests and be qualified to operate		
	a forklift truck. Upon completion of indoctrination and training he will		
TITLE	perform his work in strict accordance with all safety, storage, and handling		
	practices as required under O.S.H.A., the National Fire Protection Agency,		
	the Environmental Protection Agency, the Food and Drug Administration, the		
	Department of Transportation, and Company policy. All functions of loading,		
	unloading, stacking, palletizing, storage and movements of material are to		
	comply with Company standards. He will maintain cordial relationships with		
	both internal and external sources in the best interest of the Company and		
	perform his work to protect the public, his fellow workers, and the environ-		
	ment.		
<b>C. APPROVALS</b> (Must be completed prior to recruiting, hiring, transfer or promotion into position - if used as personnel requisition)			
MANAGER		DATE	
PERSONNEL DEPARTMENT		DATE	
ORGANIZATION AND MANAGEMENT PLANNING (GRADE 15 AND ABOVE)		DATE	
<b>COMPENSATION</b> (To be completed by Personnel Department)			
GRADE LEVEL	DATE	BY	

D. POSITION SCOPE			
REPORTS TO	NAME "Supervisor"	TITLE "	"
SUPERVISES DIRECTLY	TITLE	NO. OF EMPLOYEES	
	TITLE	NO. OF EMPLOYEES	
	TITLE	NO. OF EMPLOYEES	
SUPERVISES INDIRECTLY (NUMBER OF EMPLOYEES)		EXEMPT 0	NON-EXEMPT 0
FINANCIAL			
SALES/BUDGETS/PROFITS \$		ASSETS \$	
RELATIONSHIPS			
INTERNAL		EXTERNAL	
Branch Manager		Customer	
Administrative - Operations Manager		Other Branch's Employees	
Truck Drivers			
E. POSITION SPECIFICATIONS (Qualifications for job)			
EDUCATION/ KNOWLEDGE	Min. -- High School graduate or equivalent		
EXPERIENCE	Min. -- 18 years of age. -- 6 months experience operating forklift.		
SKILLS	--Capable of operating assigned forklift. --Successful completion of forklift written and skills exam. --Successful completion of lifting exam. --Successful completion of matching exam. --Complete training requirements of EPA regulations regarding loading/unloading, storing, and shipment of hazardous wastes. --Knowledgeable of D.O.T. regulations regarding loading, bracing, shipping, etc.		

F. MAJOR RESPONSIBILITIES	WEIGHT (Importance)	STANDARDS OF PERFORMANCE (How responsibilities are measured)
Warehousing	40-50%	<p>--Responsible for all safety guidelines as outlined by Company policy and training (i.e. use of safety equipment, proper modes of operation and procedures, equipment inspections-- maintenance, etc.)</p> <p>--Full compliance with all DOT/EPA regulations as outlined in training sessions. All incidents of a nature requiring management attention are to be immediately reported to management for thorough investigation and necessary action.</p> <p>--Compatible storage of all materials at facility as dictated by Company standards and regulatory agencies.</p> <p>--Compliance with requirements for proper storage and monitoring of waste materials as outlined in EPA 40 CFR.</p>
Loading/Shipping/Receiving	30-40%	<p>--Full compliance with DOT/EPA (governing waste and "virgin" material movements) and Company procedures for loading, bracing, offering appropriate placards, reviewing shipping papers (including manifests), handling internal paperwork, etc.; to effect legal and efficient movements of material.</p>
Maintenance	5-10%	<p>--Adherence to forklift and other warehouse equipment P.M. programs as outlined by management.</p> <p>--Housekeeping within the branch facility to meet Company standards to protect the branch's assets from deterioration other than that of normal wear and tear.</p>
	100 %	

(INSTRUCTIONS ON PAGE FOUR)

INCUMBENT	<b>A.</b>		
	TITLE Truck Driver		NAME
	CORPORATE STAFF/COMPANY McKesson Chemical Company		DIVISION
	DEPARTMENT	LOCATION "Branch"	DATE
TITLE	<b>B. GENERAL STATEMENT OF POSITION FUNCTION</b>		
	A McKesson Chemical driver is responsible to the Branch Operations Manager/Branch		
	Manager for the safe, efficient, and legal operation of his vehicle and the		
	transporting of materials to/from customers and suppliers. In carrying out these		
	responsibilities, he is required to operate and maintain his/her vehicle and		
	transport such goods in full compliance with all applicable Federal, State, and		
	Local regulations, as well as within Company policy. Each driver is required		
	to meet all the requirements of Part 391 of Title 49 D.O.T. regulations "Quali-		
	fications of Drivers", prior to and during his/her employment with McKesson		
	Chemical Company. Upon completion of indoctrination and introductory training		
he will perform his work in strict accordance with the requirements of Department			
of Transportation (Title 49) and Environmental Protection Agency (Title 40)			
regulations, and Company policy. He will maintain cordial relationships with			
both internal and external sources in the best interest of the Company and			
perform his work to protect the public and environment.			
<b>C. APPROVALS</b> (Must be completed prior to recruiting, hiring, transfer or promotion into position - if used as personnel requisition)			
MANAGER		DATE	
PERSONNEL DEPARTMENT		DATE	
ORGANIZATION AND MANAGEMENT PLANNING (GRADE 15 AND ABOVE)		DATE	
<b>COMPENSATION</b> (To be completed by Personnel Department)			
GRADE LEVEL	DATE	BY	

**D. POSITION SCOPE**

REPORTS TO	NAME "Supervisor"	TITLE "	"
SUPERVISES DIRECTLY	TITLE	NO. OF EMPLOYEES	
	TITLE	NO. OF EMPLOYEES	
	TITLE	NO. OF EMPLOYEES	
SUPERVISES INDIRECTLY (NUMBER OF EMPLOYEES)		EXEMPT	NON-EXEMPT

**FINANCIAL**

SALES/BUDGETS/PROFITS	\$	ASSETS	\$
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**RELATIONSHIPS**

INTERNAL	EXTERNAL
Branch Manager	Customers
Administrative - Operations Manager	Other Branch's Employees
Warehousemen	

**E. POSITION SPECIFICATIONS (Qualifications for job)**

EDUCATION/ KNOWLEDGE	Min. -- High school graduate or equivalent
EXPERIENCE	Min. -- Minimum 25 years of age. -- Recent graduate from truck driving school with no experience.
SKILLS	--Capable of operating assigned vehicle. --Successful completion of required D.O.T. Drivers Road Test. --Knowledgeable of all applicable D.O.T. regulations. --Complete training requirements of EPA regulations regarding loading, transporting and unloading of hazardous wastes.

F. MAJOR RESPONSIBILITIES	WEIGHT (Importance)	STANDARDS OF PERFORMANCE (How responsibilities are measured)
Driving	80-90%	<ul style="list-style-type: none"> <li>--Deliveries and pick-ups made on a timely basis.</li> <li>--Logs will be received the following morning with no deviations from regulations, and in a neat manner.</li> <li>--Adherence to tachograph program and the standards of performance expected under that program.</li> <li>--Responsible for all safety guidelines as outlined by Company policy and training (use of safety equipment, proper modes of operation and procedure, equipment inspections - maintenance, etc.)</li> <li>--Full compliance with all D.O.T./E.P.A. regulations as outlined in training sessions. All incidents of a nature requiring management attention to be immediately reported to management for thorough investigation and necessary action.</li> </ul> <p>In addition to H/M and H/W regulatory adherence; full compliance with all traffic laws, speed limits, weight limits, placarding requirements, etc., in effect.</p>
Maintenance and Delivery	10-20%	<ul style="list-style-type: none"> <li>--Truck will be kept in neat, safe, and orderly manner. Inspections to be made daily on vehicle; maintenance schedule adhered to as outlined by management.</li> <li>--Render any necessary assistance at customer or branch location to warehousemen, to prepare for loading or delivery (i.e. assisting w/unloading, cleaning trailers, checking count, etc.)</li> </ul>
	100 %	

McKesson Chemical Company

Personnel Training

Relevance of Training to Job Position -

All operating and management personnel at all McKesson branches have always been formally trained in the aspects of the handling and management of hazardous materials their positions impinge upon. With the advent of McKesson's entry into the recycling of hazardous wastes, such formal training has required only an extension of subject matter to include hazardous wastes, since the latter are invariably only used ("spent") versions of the original hazardous materials already received, stored, and distributed.

Examples are McKesson's truck drivers, who receive formal periodic training on truck inspection, maintenance, DOT rules and procedures, emergency and clean-up procedures, and so on. Branch management is trained on requirements of hazardous waste containment, inspections, logs, inventory control, and so on. In other words, training is tiered toward the specifics of the position and its interface with hazardous waste.

McKesson Chemical Company

Closure and Post-Closure Plans

(40 CFR Sec. 270.14(b-13))

This section outlines the steps which the subject McKesson Chemical Company storage facility will follow in a closure situation in order to comply with applicable sections as outlined in the Resource Conservation and Recovery Act.

Because this facility functions as only an accumulation and transfer point for containerized spent solvents destined for recycling at an off-site facility, partial closure is not relevant. Because the accumulation and transfer of materials which may be classified as hazardous wastes is but a small portion of the total business at this facility, and due to the fact that this hazardous wastes activity is the sole reason for McKesson's being involved in the requirements of this legislation, there exist no partial closure situations. This facility, as it pertains to hazardous waste management activities, is either active or totally inactive as a storage facility. For this reason, partial closure will not be addressed.

It should be further noted that because of the nature of the hazardous wastes activity at this facility — the accumulation and temporary storage of spent solvents in drums until economic truckloads can be shipped to a recycling facility — a post-closure plan is not required because materials are being continually removed from this facility; in a closure situation, all materials would be removed in a similar fashion as practiced in routine day-to-day business.

McKesson Chemical Company will maintain a copy of this closure plan at the facility. The Company is aware that should this facility contemplate closure of the site, the

EPA Regional Administrator and the comparable state agency must be notified at least 180 days prior to the date that the Company closes the facility.

McKesson Chemical Company will continue to operate a business at this facility as long as it is deemed economically viable by the Company, and so long as its operation is otherwise permitted by applicable law. The company, therefore, at this time cannot specify an anticipated date of closure.

The Company is aware that upon completion of closure, it shall be required to submit to the Regional EPA Administrator and the comparable state agency a certification by both McKesson Chemical Company and an independent registered professional engineer that the facility has been closed in accordance with the outlined proceedings contained in the approved closure plan.

Procedures developed by McKesson Chemical Company for managing waste materials are designed to ensure the facility's compliance with applicable laws, and to eliminate any necessity for further maintenance or control to prevent threats to human health or the environment. As outlined in the section entitled "Secondary Containment System Design and Operation", any evidence of unintentional leakage and subsequent containment will be sampled and analyzed to determine the specific contaminant and degree of cleanup necessary. All contaminated materials will be removed and disposed of at a permitted disposal facility. The containment area shall be regraded to the original design in the event of surface material removal. The container(s) which indicate release of material shall be found, segregated, and handled in the proper manner to alleviate further release of

Because McKesson Chemical Company at this location functions only as a hazardous waste storage facility, notation is not necessary in the deed to inform potential purchasers of restrictions.

No pretreatment would be required before material were readied for shipment. Prior to loading, all drums would be inspected for leakage, damage, and proper labelling. Proper manifest forms will be completed for the movement.

None of the equipment utilized at this facility would be required to be disposed of due to its utilization in waste management. Since McKesson company policy would have required all traces of contamination resulting from a leakage or spill of hazardous waste from a container would have been cleaned up at the time of the incident, no such cleanup or decontamination is expected to be required at the time of closure. If, for the sake of extra certainty, some material was discarded — for example, any wood pallets remaining from hazardous waste service — it would be considered as and treated as a hazardous waste in its own right. This manipulation would involve manifesting and transporting it to an accredited hazardous waste disposal site.

It should be noted that McKesson Chemical Company at this location does not have tanks which are utilized for the management of waste materials and should not be required to provide details of closure for such.

McKesson Chemical Company likewise does not have waste piles present at this location and is not required to provide details of closure.

This closure plan and cost estimate will be kept on file at the McKesson facility. It shall be revised and resubmitted whenever a change in the closure plan affects the cost of closure. It shall be reviewed and adjusted annually to reflect changes in closure cost brought about by inflation, utilizing published index's available.

In the event that McKesson Chemical Company decided to close this site as a hazardous waste storage facility, the required 180-day notice period required by the EPA is recognized. If the closure of this facility were to be undertaken, notices would be sent to present generators employing McKesson's services to inform them of the pending discontinuation of receiving their waste materials. All materials would be removed from the site within 90 days of receipt of the final volume of waste and total closure activities will be completed with 180 days as required as a maximum.

Once formal approval of the planned closure procedures are received from the Agency, the anticipated total time required to schedule trucks into the facility, to load up all drummed material, and clean (if required) the containment area is a maximum of three days. All inventory in storage at the time of closure would be expected to be material destined for recycling. Therefore, the cost of closure is expected to be an absolute minimum.

McKesson Chemical Company does not foresee nor anticipate the need for requesting any extensions for closure time for this facility.

Because this facility functions strictly as a storage facility, with no treatment or disposal at this location, decontamination activities would not be anticipated to be necessary.

All waste and waste containers will be disposed of through McKesson EnviroSystems. As mentioned earlier, it is fully anticipated that all waste items in storage at closure would be capable of being recycled, and for purposes of this calculation it is assumed that all materials would be transferred to McKesson EnviroSystems.

material in accordance with established Company procedures. The incident shall be reported and documented as appropriate based upon severity and circumstances.

Due to the nature of McKesson Chemical Company's involvement in hazardous waste management, it becomes extremely difficult to be specific on the maximum quantities and types of material which would be on hand in a closure situation. Because of McKesson Chemical Company is involved in the commercial recycling of various halogenated and non-halogenated solvents from off-site generators, the make-up and quantity of the materials which would be on hand at any time at this facility is difficult to predict with accuracy. Factors such as economic conditions, seasonal trends, and market growth will impact a particular generator's rate of use of materials, and thus affect the amount of materials shipped to this location for temporary storage and eventual recycling.

In no case, will this facility store more than 90 55-gallon drums of hazardous waste at any one time. In the majority of cases, the maximum number of containers held at any given time will be below this quantity. Under the typical mode of operation at this facility, when a full truckload quantity of material is accumulated (typically 70 - 80 drums, depending upon the specific gravity of the solvent), it will be shipped to the recycling center. The reason for the higher maximum quantity is to facilitate peaks in shipments of spent materials from generators, scheduling requirements, and so on.

## CLOSURE PLAN

Facility I.D. Number: NCD089903983  
Owner or Operation: McKesson Chemical Company  
Division of McKesson Corporation  
Address: 3600 West Wendover Avenue  
Greensboro, NC 27420  
Telephone: (919) 292-0624

McKesson Chemical Company's major business is that of nationwide distribution of organic and inorganic chemicals. It also provides various services to its customers, which may include picking up and transporting drummed materials of wastes to McKesson-owned recycling facilities. This may, at times, require temporary storage at the facility of some drummed materials in order to accumulate full truckloads.

### 1. Facility Conditions

#### A. General Information:

The facility size at this location is 4.5 acres, essentially all of which is fenced in. Only a small area inside the warehouse is used for handling of waste products which are accumulated from outside generators, destined for recycling once full truckloads are acquired. Waste storage is to be accumulated inside the warehouse as indicated on the plbt plan. All loading and unloading area floors are of impervious concrete.

The designated storage area is made of impervious concrete. Total area utilized for waste storage is approximately 300 square feet.

Fifty-five (55) gallon drums are the major containers used for storage. Drums are placed on wooden pallets (four(4) per pallet) and set within the containment area on the pallet to minimize handling and potential spills.

The types of waste stored at this facility fall into the categories listed on the following page. It should be noted that this facility accumulates these items only for storage until a truckload can be built up to make it economically feasible to ship to a recycling facility.

- B. Maximum amount of waste inventory is 90 55-gallon drums.
- C. Equipment:
  - 1. Forklift
  - 2. Pallets
- D. Closure Schedule:
  - 1. Removal of Inventory - total time to schedule trucks into facility, load drummed material, and clean (if necessary), and remove containment are is anticipated at a maximum of ten days.

Because this facility functions strictly as a storage facility with no transferring or treatment at this location, decontamination activities would not be anticipated to be necessary. If for some unforeseeable reason it were discovered that decontamination was necessary, this would be accomplished simultaneously with other closure preparation so that shipment of decontaminated material could be shipped with inventory for recycling.

2. Removal of Inventory:

All waste and waste containers will be sent to an off-site permitted facility -- probably the McKesson-owned recycling facility in New Castle, Kentucky. All materials in inventory at the facility should be capable of being recycled, but in the event materials are required to be disposed of, the disposer would have access to an EPA-authorized site. No pretreatment would be required before materials were readied for shipment. No treatment or disposal will occur at this location. Prior to being loaded, all drums are to be inspected for leakage, damage, and proper labeling. Proper manifest forms will be completed for the movement.

3. Facility Decontamination if Necessary:

A. The floor of the containment area will be steam cleaned using water and the resulting residual placed in a 55 gallon drums(s) for disposal.

- B. Amount of waste generated from decontamination, if required, would not be expected to exceed two (2) 55-gallon drums.
- C. All wooden pallets used with waste storage would be shipped at the same time as inventory to be land-filled if they were found to be unfit for further usage.

WASTES EXPECTED TO BE  
STORED AT FACILITY

<u>EPA WASTE NO.</u>	<u>DESCRIPTION</u>
F001	Spent halogenated solvents
F002	Spent halogenated solvents
F003	Spent non-halogenated solvents
F005	Spent non-halogenated solvents
U002	Acetone
U075	Dichlorodifluoromethane
U080	Methylene dichloride
U140	Isobutyl alcohol
U154	Methanol
U159	Methyl ethyl ketone
U210	Tetrachlorethylene
U220	Toluene
U226	1,1,1-Trichloroethane
U228	Trichloroethylene
U239	Xylene
D001	Ignitable

McKesson Chemical Company  
Closure Cost Estimate  
Greensboro, North Carolina Branch  
(40 CFR 270.14(b-15))

The closure cost for this branch presented in the following section on financial assurance was based simply on disposing of a maximum of 90 drums at a cost of about \$61 a drum. It is realized more detail is required (transportation costs, decontamination expenses, engineer-certification, etc.). Since the fiscal year for the McKesson Chemical Company and the McKesson Corporation ended on March 31, 1984, and because statutorily a revised closure cost must be prepared immediately after that date, it is requested that this section be held open with the understanding that a revised, detailed closure cost for the coming fiscal year will be prepared as soon as possible.

McKesson Chemical Company

Financial Assurance Mechanism for Closure and Liability Requirements

(40 CFR Sec. 270.14(b-16))

McKesson Chemical Company, through its parent corporation Foremost-McKesson, Incorporated of One Post Street, San Francisco, California in a letter dated June 27, 1983, provided the Office of the Regional Administrator, Region IV, the necessary financial tests and assurances, as well as the required guarantee for subsidiaries, for closure and liability assurance requirements.

Immediately following this narrative will be found a copy of our Corporate Senior Counsel's letter dated June 27, 1983, submitting necessary information to fulfill this financial test and assurance. Included also are the following as outlined in his letter:

1. The letter of Neil E. Harlan, Chairman of the Board and Chief Financial Officer of Foremost-McKesson, Incorporated.
2. The Annual Report of Foremost-McKesson, Incorporated for the fiscal year ended March 31, 1983, which report contains the independent certified public accountant's report on the financial statements of the Foremost Group.
3. The special report of DeLoitte, Haskins & Sells to the effect specified in the regulations.

It should be noted in the included materials that these assurances are being presented for closure, post-closure, and liability requirements. The post-closure cost estimate and Financial Assurances for such do not apply to a temporary storage facility. Both closure and liability requirements should be adequately met by the included information.

June 27, 1983

FOREMOST  
McKESSON

Office of the Regional Administrator  
Environmental Protection Agency  
Region IV  
345 Courtland Street, N.E.  
Atlanta, Georgia 30308

Re: Federal Financial Requirements  
Hazardous Waste TSD Facilities

Dear Sir/Madam:

On behalf of Foremost-McKesson, Inc. and its wholly-owned subsidiaries (the "Foremost Group") we hereby submit the enclosed documents to meet the financial test and to demonstrate the financial responsibility of the Foremost Group under the standards of the Environmental Protection Agency applicable to owners and operators of hazardous waste treatment, storage and disposal facilities.

1. The letter of Neil F. Harlan, Chairman of the Board and Chief Financial Officer of Foremost-McKesson, Inc. ("Foremost");

2. The Annual Report of Foremost-McKesson, Inc. for the fiscal year ended March 31, 1983, which report contains the independent certified public accountants' report on the financial statements of the Foremost Group; and

3. The special report of Deloitte Haskins & Sells to the effect specified in the regulations.

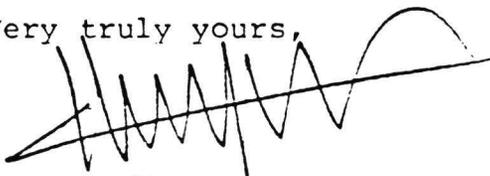
The facilities owned by the Foremost Group are either operated by McKesson Chemical Company (a division of Foremost) or McKesson Envirosystems Company (a wholly-owned subsidiary of Foremost). Please note that we are submitting this material to satisfy both the requirements for liability coverage, and closure care. Note further that the figure indicating the sum of closure cost estimates is an aggregate of the estimates for the facilities in all EPA regions -- although only the specific facilities in your region are listed in Mr. Harlan's letter.

Office of the Regional Administrator  
Environmental Protection Agency  
June 27, 1983  
Page Two

4. Copy of our policy of environmental impairment insurance to demonstrate liability coverage for the facilities owned or operated by McKesson Envirosystems Company, a wholly-owned subsidiary of Foremost. Those facilities are set forth on Exhibit "C" to Mr. Harlan's letter. We have requested the appropriate certificate of insurance from the carrier, and will forward it to you as soon as it is received in our office.

I trust that you will find all of the enclosed material to be in order; however, should you have questions or require further information or details, kindly address all inquiries on this matter to me. Thank you very much.

Very truly yours,

A handwritten signature in black ink, appearing to be 'Ivan D. Meyerson', written over a horizontal line. The signature is stylized with a large initial 'I' and a long, sweeping tail that curves upwards and then back down.

Ivan D. Meyerson  
Assistant General Counsel

IDM/smc

Encl.

June 27, 1983

Office of the Regional Administrator  
Environmental Protection Agency  
Region IV  
345 Courtland Street, N.E.  
Atlanta, Georgia 30308



Re: Foremost-McKesson, Inc. Financial Tests  
for Liability Coverage and Closure Cost Care

Dear Sir or Madam:

I am the Chief Financial Officer of Foremost-McKesson, Inc. ("Foremost") located at One Post Street, San Francisco, California 94104. This letter is in support of the use of the financial test to demonstrate financial responsibility for liability coverage and closure care as specified in Subpart H of 40 CFR Parts 264 and 265.

Foremost is the owner or operator of the following facilities for which liability coverage is being demonstrated through the financial test specified in Subpart H of 40 CFR Parts 264 and 265:

\*See Exhibit "A" attached hereto and fully incorporated herein by reference.

1. Foremost owns or operates the following facilities for which financial assurance for closure care is demonstrated through the financial test specified in Subpart H of 40 CFR Parts 264 and 265. The current closure cost estimates covered by the test are shown for each facility:

\*See Exhibit "B" attached hereto and fully incorporated herein by reference.

2. Foremost guarantees through the corporate guarantee specified in Subpart H of 40 CFR Parts 264 and 265, the closure care of the following facilities owned or operated by its subsidiaries. The current cost estimates for the closure care so guaranteed are shown for each facility.

\*See Exhibit "C" attached hereto and fully incorporated herein by reference.

3. In states where EPA is not administering the financial requirements of Subpart H of 40 CFR Parts 264 and 265, Foremost is demonstrating financial assurance for the closure care of the following facilities through the use of a test equivalent or substantially equivalent to the financial test specified in Subpart H of 40 CFR Parts 264 and 265. The current closure cost estimates covered by such a test are shown for each facility:

\*None.

4. Foremost owns or operates the following hazardous waste management facilities for which financial assurance for closure or, if a disposal facility, post-closure care, is not demonstrated either to EPA or a state through the financial test or any other financial assurance mechanism specified in Subpart H or 40 CFR Parts 264 and 265 or equivalent or substantially equivalent state mechanisms. The current closure and/or post-closure cost estimates not covered by such financial assurance are shown for each facility:

\*None.

Foremost is required to file a Form 10K with the Securities and Exchange Commission ("SEC") for the latest fiscal year.

The fiscal year of Foremost ends on March 31. The figures for the following items marked with an asterisk are derived from Foremost's independently audited, year-end financial statements for the latest completed fiscal year ended March 31, 1983:

ALTERNATIVE II

1. Sum of current closure cost estimates. (EPA Regions I-X)	\$4,635,930
2. Amount of annual aggregate liability coverage to be demonstrated.	\$2,000,000
3. Sum of lines 1 and 2.	\$6,635,930
4. Current bond rating of most recent issuance and name of rating service:	Moody's - A
5. Date of issuance of bond.	April 1, 1982

Office of the Regional Administrator  
Environmental Protection Agency  
June 27, 1983  
Page Three

6. Date of maturity of bond.	April 1, 2012
*7. Tangible Net Worth.	\$417,283,000
8. Total assets in the U.S.	Not Applicable
9. Is line 7 at least \$10 Million?	Yes
10. Is line 7 at least 6 times line 3?	Yes
11. Are at least 90% of assets located in the U.S.?	Yes

I hereby certify that the wording of this letter is identical to the wording specified in 40 CFR 264.157(g) as such regulations were constituted on the date shown immediately below.

  
\_\_\_\_\_  
Neil E. Harlan  
Chairman of the Board  
Foremost-McKesson, Inc.

NEH/smc

June 27, 1983

EPA REGION IV

<u>Facility Address</u>	<u>EPA #</u>
Louisville - P.O. Box 19409 Louisville - Kentucky 40219	#KYDO42593368
Memphis - 3909 Outland Road Memphis, Tennessee 38118	#TND096074901
2500 Paper Mill Road Mobile, Alabama 36610	#ALD000737478
Wendover Avenue Greensboro, North Carolina 27420	#NCD089903983
4901 Brookshire Blvd. Charlotte, North Carolina 28208	#NCD024481848
Camp Croft Industrial Park Spartanburg, South Carolina 29302	#SCD008941619
Ridgefield's Industrial Park Kingsport, Tennessee 37662	#TND000822973
One Riverside Lane Chattanooga, Tennessee 37421	#TND000737445
Interchange City Industrial Park 1634 J.P. Hennessey Drive Nashville, Tennessee 37211	#TND000737437
2180 Irvindale Drive Chamblee Atlanta, Georgia 30366	#GAD072472707

EPA REGION IV CONTINUED:

Columbia Nitrogen Drive  
Augusta, Georgia 30903

#GAD000828269

Route 3, Box 498A  
Tampa, Florida 33619

#FLD020985727

## EPA REGION IV

<u>Facility Address</u>	<u>EPA #</u>	<u>Closure/Post-Closure Cost Estimates</u>
Louisville - P.O. Box 19409 Louisville - Kentucky 40219	#KYDO42593368	\$ 10,307
Memphis - 3909 Outland Road Memphis, Tennessee 38118	#TNDO96074901	\$ 3,225
2500 Paper Mill Road Mobile, Alabama 36610	#ALDO00737478	\$ 1,290
Wendover Avenue Greensboro, North Carolina 27420	#NCD089903983	\$ 5,515
4901 Brookshire Blvd. Charlotte, North Carolina 28208	#NCD024481348	\$ 5,515
Camp Croft Industrial Park Spartanburg, South Carolina 29302	#SCDO08941619	\$ 5,515
Ridgefield's Industrial Park Kingsport, Tennessee 37662	#TND000822973	\$ 5,515
One Riverside Lane Chattanooga, Tennessee 37421	#TND000737445	\$ 5,515
Interchange City Industrial Park 1634 J.P. Hennessey Drive Nashville, Tennessee 37211	#TND000737437	\$ 5,515
2180 Irvindale Drive Chamblee Atlanta, Georgia 30366	#GADO72472707	\$ 16,981

EPA REGION IV CONTINUED:

Columbia Nitrogen Drive  
Augusta, Georgia 30903

#GADC00828269

\$ 5,515

Route 3, Box 498A  
Tampa, Florida 33619

#FLD020985727

\$ 1,290

TOTAL: \$ 71,698

EPA REGION IV

<u>Facility Address</u>	<u>EPA #</u>	<u>Closure/Post-Closure Cost Estimate</u>
State Highway #146 New Castle, Kentucky	KYDO53348108	\$185,000

The above facility is owned and operated by McKesson EnviroSystems Company, a California corporation and wholly-owned subsidiary of Foremost-McKesson, Inc.

# Deloitte Haskins-Sells

44 Montgomery Street  
San Francisco, California 94104  
(415) 393-4300  
Telex 340336

Foremost-McKesson, Inc.:

We have examined the consolidated financial statements of Foremost-McKesson, Inc. for the year ended March 31, 1983, and have issued our report thereon dated May 23, 1983. Our examination was made in accordance with generally accepted auditing standards and, accordingly, included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances. We have not performed any auditing procedures beyond the date of our opinion on the consolidated financial statements; accordingly, this letter is based on our knowledge as of that date and should be read with that understanding.

At your request, we have performed the procedures described below with respect to the accompanying letter from Mr. Neil E. Harlan, Chairman of the Board, Foremost-McKesson, Inc. to the Regional Administrator - Environmental Protection Agency dated June 27, 1983. It is understood that this report is solely for filing with the Environmental Protection Agency in accordance with requirements of the Resource Conservation and Recovery Act, and is not to be used for any other purpose. The procedures that we performed are summarized as follows:

We recomputed from, or reconciled to, the consolidated financial statements referred to in the first paragraph the information included in items 7 and 11 under the caption Alternative II in the letter referred to above.

Because the procedures referred to in the preceding paragraph were not sufficient to constitute an examination made in accordance with generally accepted auditing standards, we do not express an opinion on any of the information or amounts listed under the caption Alternative II in the aforementioned letter. In performing the procedures referred to above, however, no matters came to our attention that caused us to believe that the information or amounts included in items 7 and 11 should be adjusted.



June 27, 1983

McKesson Chemical Company

Topographic Maps

(40 CFR Sec. 270.14(b-19))

The following maps should suffice in identifying the several aspects of the physical location, surrounding land use, and physical characteristics of the simple transfer station projected for the McKesson Greensboro, North Carolina facility:

1. The U.S.G.S. 7.5 minute topographic map composed of the Greensboro and Guilford Quadrangles in which this McKesson facility is located is included in the Part A Application in the front of this volume.
2. A copy of a plot plan of the Greensboro facility prepared by a North Carolina-licensed engineer was included in Section 270.14(b-1). It shows the proposed hazardous waste storage area and the loading and unloading sites.
3. In order to identify the neighborhood of the McKesson facility, a section of the U.S.G.S. map has been enlarged to a scale of 1 inch per 200 feet to show the necessary detail; the map follows.

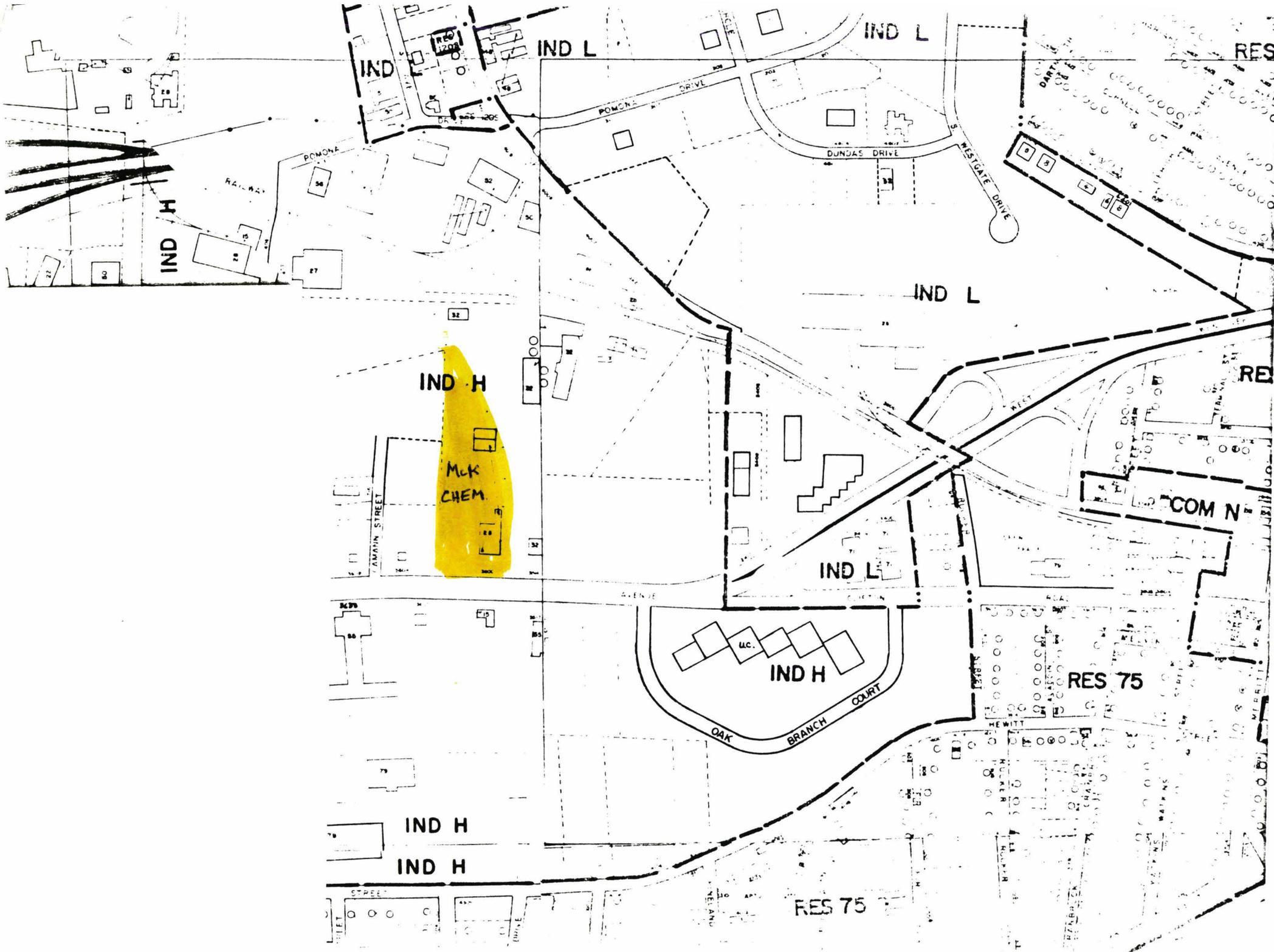
This map also shows contour lines; the wind rose was submitted under 270.14(b-11); according to the Greensboro Sewer and Water Department this whole area is on city water and there are no withdrawal or injection wells. There are no barriers for drainage or flood control. All details within the site area are located on the general plot plan under 270.14(b-1) and in the facility drawing included under Part A.

McKesson Chemical Company

Topographic Maps

Page 2.

4. A segment of the Land Use Directory prepared by the City of Greensboro describing the area surrounding the McKesson branch is appended.



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RES

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MCK  
CHEM

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IND H

RES 75

IND H

IND H

RES 75

# LAND USE DIRECTORY

115  
114

Code No.	Category
10	Metal Mining
11	Anthracite Mining
12	Bituminous Coal and Lignite Mining
13	Oil and Gas Extraction
14	Mining and Quarrying of Nonmetallic Minerals, except fuels
15	Building Construction - General Contractors and Operative Builders
16	Construction Other Than Building Construction - General Contractors
17	Construction - Special Trade Contractors
20	Food and Kindred Products
21	Tobacco Manufactures
22	Textile Mill Products
23	Apparel and Other Finished Products Made from Fabrics and Similar Materials
24	Lumber and Wood Products, Except Furniture
25	Furniture and Fixtures
26	Paper and Allied Products
27	Printing Publishing, and Allied Industries
28	Chemicals and Allied Products
29	Petroleum Refining and Related Industries
30	Rubber and Miscellaneous Plastics Products
31	Leather and Leather Products
32	Stone, Clay, Glass, and Concrete Products
33	Primary Metal Industries
34	Fabricated Metal Products, Except Machinery and Transportation Equipment
35	Machinery, Except Electrical
36	Electrical and Electronic Machinery, Equipment, and Supplies
37	Transportation Equipment
38	Measuring, Analyzing, and Controlling Instruments; Photographic, Medical, and Optical Goods; Watches and Clocks
39	Miscellaneous Manufacturing Industries
40	Railroad Transportation
41	Local and Suburban Transit and Interurban Highway Passenger Transportation
42	Motor Freight Transportation and Warehousing
43	U.S. Postal Service
44	Water Transportation
45	Transportation By Air
46	Pipe Lines, Except Natural Gas
47	Transportation Services
48	Communication
49	Electric, Gas, and Sanitary Services
50	Wholesale Trade - Durable Goods
51	Wholesale Trade - Nondurable Goods
52	Building Materials, Hardware, Garden Supply, and Mobile Home Dealers
53	General Merchandise Stores
54	Food Stores
55	Automobile Dealers and Gasoline Service Stations
56	Apparel and Accessory Stores
57	Furniture, Home Furnishings, and Equipment Stores

Code No.	Category
58	Eating and Drinking Places
59	Miscellaneous Retail
60	Banking
61	Credit Agencies Other Than Banks
62	Security and Community Brokers Dealers, Exchanges, and Services
63	Insurance
64	Insurance Agents, Brokers, and Service
65	Real Estate
66	Combination of Real Estate, Insurance, Loans, Law Offices
67	Holding and Other Investment Offices
70	Hotels, Rooming Houses, Camps, and Other Lodging Places
71	Office Building Renting to the General Public and Containing 2 or More Separate Business Establishments
72	Personal Services
73	Business Services
75	Automotive Repair, Services and Garages
76	Miscellaneous Repair Services
78	Motion Pictures
79	Amusement and Recreation Services, Except Motion Pictures
80	Health Services
81	Legal Services
82	Educational Services
83	Social Services
84	Museums, Art Galleries, Botanical and Zoological Gardens
86	Membership Organizations
89	Miscellaneous Services
91	Executive Legislative, and General Government, Except Finance
92	Justice, Public Order, and Safety
93	Public Finance, Taxation, and Monetary Policy
94	Administration of Human Resources Programs
95	Administration of Environmental Quality and Housing Programs
96	Administration of Economic Programs
97	National Security and International Affairs
99	Nonclassifiable Establishments
Apt.	Apartments
T	Townhouse
C	Condominium
OT	Mobile Homes

## STANDARD SYMBOLS USED

	Streams		Household Unit (Single Family House)
	Lakes		Two Family Residential
	Railroads		Private driveway
	Transmission Lines (electrical, gas)		V Vacant building
	Raw Water Lines		UC Under construction

McKesson Chemical Company

Other Federal Laws

(40 CFR Sec. 270.14(b-20))

Information will be provided in accordance with the requirements of 40 CFR Sec. 270.14(b-20) at the request of the Environmental Protection Agency Regional Office. At this time, we believe this facility is in compliance with the following Federal laws:

Wild and Scenic Rivers Act

National Historic Preservation Act of 1966

Endangered Species Act

Coastal Zone Management Act

Fish and Wildlife Coordination Act

McKesson Chemical Company

Container Management Practices

(40 CFR Sec. 270.15)

Once materials have been approved for handling by this McKesson Chemical Company facility, in accordance with the procedure listed in items 1 through 5 contained in the "Waste Analysis and Verification Procedures" (see Section 270.14(b-3)), the facility may then proceed to accept these specific materials.

A number of measures are taken by facility personnel to ensure proper management of containers of waste materials. Specific procedures and forms utilized pertaining to container management are referred to later in this section.

Container management begins by McKesson Chemical Company employees even prior to receipt of drummed materials at the facility. Customers wishing to utilize McKesson's services for handling their waste streams are informed of the requirement of utilizing proper DOT-authorized containers as outlined in the previous section, "Containers Utilized Holding Free Liquids", if they are not previously aware of such requirements.

Waste materials which have been approved internally for handling may be accepted by a Company driver only if they have received a pick-up notice from the facility office. The facility office, even prior to issuing such notice, required the customer (generator) to provide a photocopy of its manifest containing the pertinent information. This information would include all items pertaining to generator, transporter, TS&D, material description, ID numbers, etc. Some items, such as number of drums/packages, dates, signatures, and weights are allowed to be left uncompleted

until the actual day of pick-up of the material. A copy of the customer's original manifest is provided to the driver along with the pick-up notice.

This mode of operation is followed for a number of reasons. First, it allows personnel an opportunity to review the generator's manifest for compliance and proper information. Secondly, it allows McKesson office personnel a chance to verify that a Spent Material/Waste Product Survey form and supporting data are on file at the facility to comply with such requirements, and to verify that internal approvals have been given to accept a given waste item. Lastly, it gives McKesson's drivers making pick-ups of such materials more accurate information on what to look for due to the fact that McKesson's office personnel have screened and advised the generator of any problems that may have been present.

Once a pick-up of material has been scheduled into a particular driver's routing, further assurances and checks must be undertaken by the driver upon arrival. At the time of arrival, the driver must be presented with the original manifest by the generator's shipping personnel. The McKesson driver compares the photocopy of the generator's manifest, which was included with the pick-up notice, to the original presented. All items on the original must be complete with no modifications when compared with the photocopy sent to the McKesson Chemical Company office, other than quantity listing, dates, signatures, weights, etc. Any alterations such as an addition of different materials, or questionable variations, results in the driver's refusing acceptance of the material, unless such modifications are approved by phone conversation with McKesson Chemical management at the storage facility.

Once the manifest(s) are checked and approved by the driver, the containers are checked for compliance before being loaded onto Company vehicles.

McKesson Chemical Company encourages generators to utilize Labelmasters, Hazardous Waste Label, style WM-6, which complies with all requirements of 40 CFR 262.32. Other labels are allowed to be utilized by the generator as long as they contain all appropriate information. All Department of Transportation regulations pertaining to labeling and marking contained in 49 CFR 172 must also be followed.

The appended checklist entitled "Hazardous Waste Pick-up Checklist" has been developed for use in training of drivers for picking up of waste materials from customers. This form is used primarily for training purposes, but in some instances is utilized by new and inexperienced drivers until a comfort level of knowing what items must be reviewed in accepting a waste shipment is attained.

Upon the return of the McKesson Chemical Company truck that picked up the waste material from the generator to the storage site, McKesson warehouse personnel unload the material and follow the appended "Container Receiving and Maintenance Procedure". This procedure pertains strictly to the warehouse personnel who will be responsible for physical verification, off-loading, preparation and final placement in the designated storage area.

In addition to the warehouse personnel procedures, the activities outlined in "RCRA Compliance - Administrative" are undertaken. This procedure bulletin, specifically Section VI through and including Section VIII, describes the internal paper flow and controls exercised to provide the necessary information

and data necessary to properly manage and account for all waste material received at this facility.

Containers holding waste are maintained in a closed condition while being stored at this facility. Due to the fact that this facility functions as only an accumulation and transfer point, no opening of containers is required unless a leaking container were found and transfer to another drum was required to alleviate an unsafe condition. Procedures are in place for such occurrences and are undertaken under management supervision with such incidents being noted and documented in the appropriate logs.

Waste containers while in storage at a McKesson Chemical Company facility such as the one for which this application is prepared for are subject to a weekly inspection for specific defects as outlined in the "In House Container Inspection Checklist". Once the container inspection has been conducted, such inspection, as are all other inspections which are conducted, are recorded in the facility "Inspection Log".

All containers stored at this facility will be held in the designated secondary containment area which is detailed in the following section.

HAZARDOUS WASTE PICK-UP CHECKLIST

I. Manifest

	<u>YES</u>	<u>NO</u>
1) Manifest Document Number	—	—
2) Generator Name, Address, Phone Number	—	—
3) Federal EPA Identification Number (Small Generator Exemption)	—	—
4) McKesson Chemical Listed As Transporter (Showing McKesson Branch EPA Identification No.) IF MATERIAL IS BEING TAKEN BACK TO MCKESSON LOCATION THEN:	—	—
5) (a) McKesson Chemical Listed as Designated T.S.D.F. (Showing McKesson Branch EPA Identification No.) IF MATERIAL IS BEING TAKEN DIRECTLY TO ANOTHER T.S.D.F. THEN:	—	—
5) (b) T.S.D.F. Name, Address, Phone, and EPA Identification Number	—	—
6) Federal EPA Waste Code Number	—	—
7) Proper Shipping Name  <u>NOTE:</u> IF MATERIAL IS SHOWN AS A N.O.S. SHIPPING NAME (i.e. WASTE FLAMMABLE LIQUID N.O.S.) THEN IT MUST BE FOLLOWED BY A DESCRIPTION OF THOSE CONSTITUENTS WHICH COMPRISE THE HAZARD (i.e. WASTE FLAMMABLE LIQUID N.O.S. - ACETONE/TOLUOL MIXTURE)	—	—
8) Total Quantity of Waste by Weight	—	—
9) Number and Type of Containers	—	—
10) Required Certification Statement on Manifest	—	—
11) Generator's Signature	—	—

ADDITIONAL STATE REQUIREMENTS

HAZARDOUS WASTE PICK-UP CHECKLIST  
Page 2.

II. Packaging	<u>YES</u>	<u>NO</u>
1) Container is sealed with no apparent leaks.	—	—
2) Proper DOT shipping name on container.	—	—
3) "WASTE" precedes proper DOT shipping name.	—	—
4) Generator's name and address on container.	—	—
5) Manifest number on container.	—	—
6) Applicable DOT Hazardous Warning Label.	—	—
7) Date accumulation began.	—	—

ADDITIONAL STATE REQUIREMENTS

## CONTAINER RECEIVING AND MAINTENANCE PROCEDURE

When a shipment of hazardous waste is being received by our branch, the following procedure will be followed:

Receiving tickets must be issued upon receipt. In addition to the normal information required on the receiving ticket, be sure to indicate:

1. "Hazardous Waste Material".
2. The hazardous waste manifest number.

The receiving clerk will be presented with a minimum of three copies of the Hazardous Waste Manifest. The receiving clerk will:

1. Verify that all required information is included on the manifest.
2. Verify that all items are received and initial each item on the manifest.
3. Enter the date received and the receiving ticket number in the identification Section for the TSDF.
4. If all items are in order, sign the manifest in the space provided for the TSDF.
5. Any discrepancies should be brought to the transporter and Operations Manager's attention. If the discrepancy cannot be resolved, the load is to be refused.
6. Return a signed copy to the transporter (other than McKesson).
7. Attach white and yellow copies of the receiving ticket to the TSDF copy.
8. Turn in all manifest copies and attached receiving ticket to the office at the end of each work day.

CONTAINER RECEIVING AND MAINTENANCE PROCEDURE

Page 2.

Immediately stencil the receiving ticket number on each drum.

Physically check all bungs and openings to insure tightness.

Inspect each drum for leaks, bulges, extreme corrosion;

NOTE: If any deficiencies are found, effect container transfer procedure.

Remove to storage location in accordance with McKesson

Compatibility Storage program.

All containers are now subject to weekly inspections.

IN HOUSE CONTAINER INSPECTION CHECKLIST

A. Location	<u>YES</u>	<u>NO</u>	<u>RECOMMENDED ACTION</u>
1) Waste materials properly segregated according to McKesson compatibility storage program.	_____	_____	_____
2) Ignitables (flammables, combustables) located 50 feet from property lines.	_____	_____	_____
3) Aisles provided for emergency access.	_____	_____	_____
<b>B. Container Condition</b>			
1) All containers sealed.	_____	_____	_____
2) Any leaking containers.	_____	_____	_____
3) Any containers swollen or bulged.	_____	_____	_____
4) Any containers concaved due to vacuum build up.	_____	_____	_____
5) Any containers with extreme corrosion.	_____	_____	_____
6) All containers properly labeled and identified.	_____	_____	_____
7) All containers have lot number.	_____	_____	_____
8) All containers compatible with products stored in them.	_____	_____	_____

INSPECTOR \_\_\_\_\_ DATE \_\_\_\_\_

I have reviewed this report and certify all storage is in satisfactory condition.

SUPERVISOR \_\_\_\_\_ DATE \_\_\_\_\_

Recommended Action Codes.

- A - Effect McKesson Compatibility program.
- B - Effect container receiving maintenance procedure.
- C - Effect container transfer procedure.
- D - Effect spill control procedure.

I CERTIFY THAT THE ABOVE RECOMMENDED ACTION HAS BEEN TAKEN ON:

DATE \_\_\_\_\_ STORAGE IS NOW SATISFACTORY.

SUPERVISOR \_\_\_\_\_ DATE \_\_\_\_\_

RCRA COMPLIANCE - ADMINISTRATIVE

I. Purpose

To provide control of all federally required forms relative to the receipt, storage, and transfer of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Also, to facilitate accumulation of data for annual filing requirements.

II. Forms

Hazardous Waste Manifests - Due to the fact that there is not a federal manifest form, the branch should use the appropriate state form if such a form is mandatory in a given state. As late as November 15, 1980, we received word from the EPA Region 5 office, that those states presently under a manifest system, the state form may be used provided it contains all of the following information contained in Sec. 262.21 of the May 19, 1980 register:

- (1) Manifest document number
- (2) The generator's name, mailing address, telephone number, and EPA identification number (Federal in addition to state numbers).
- (3) The name and EPA identification number of each transporter.
- (4) The name, address and EPA identification number of the designated facility and an alternate facility, if any.
- (5) The description of the waste(s), (e.g. proper shipping name, etc.) required by regulations of the U.S. Department of Transportation in 49CFR 172.101, 172.202, and 172.203.
- (6) The total quantity of each hazardous waste by units of weight or volume, and the type and number of containers as loaded into or onto the transport vehicle.
- (7) The following certification must appear on the manifest:  
"This is to certify that the above named materials are properly classified, described, packaged, marked and labeled and are in proper condition for transportation according to the applicable regulations of the Department of Transportation and the EPA."

If your state is under a manifest system presently, you must use that state form and make any necessary modifications to meet the above standards. If a state form is so inadequate as to make modification inappropriate, you will be required to double manifest using the state form in addition to a complying form such as the Labelmaster F-50 form. A hazardous waste manifest must accompany all movements of hazardous waste to, from, and between McKesson locations.

### III. General

The concepts of this procedure are based on inventory management methods. An inventory subsystem for hazardous waste requiring its own hazardous waste manifest, filing, follow-up, and retention schedule will be necessary to provide adequate control.

### IV. Registration

All locations that generate, receive, store, or ship hazardous waste must be registered with the EPA. An EPA I.D. number will be issued for each location. Regional and Home Office have filed the appropriate forms necessary to register your branch under the federal program. Again, the branch should be aware of any state EPA requirements which will be necessary to comply with.

### V. Definition

Hazardous Waste Materials have been identified by the EPA in a booklet entitled "Identification and Listing of Hazardous Waste Materials" (EPA 8700-1). A copy of this booklet was distributed on August 18, 1980 by George Butter to all branch managers.

McKesson Chemical may become involved in the handling of hazardous waste in any of the following manners:

Generator/Shipper - 1. Material damaged, spilled, or residual from branch operations such as repack or material movement that must be disposed of. 2. Accumulation of sludge from customers that must be shipped to a disposal site or to a recycling plant.

Transporter - Hauling hazardous waste on McKesson owned, leased, or rented vehicles.

TSDF - Treatment, Storage, or Disposal Facility. Whenever hazardous waste is stored or accumulated at a McKesson location (Usually for shipment to a recycling center), we are acting as a storage facility.

## VI. Receipt of Hazardous Waste

- A. Source - McKesson Customers.
- B. Reason - Recycling or disposal.
- C. Documentation - Hazardous waste must be accompanied by a hazardous waste manifest which includes the following information (See Exhibit I):
  1. Manifest document number.
  2. Shipper EPA I.D. number.
  3. Carrier name.
  4. Carrier EPA I.D. number.
  5. Generator/Shipper information:
    - a. EPA I.D. number
    - b. Name, address, and phone number.
    - c. Date shipped.
  6. Transporter information:
    - a. Same as 5a., b., c.
    - b. If Generator/Shipper also is the Transporter, this line still must be completed.
  7. TSDF (McKesson Chemical):
    - a. Same as 5a., b., c.
  8. Number of units and container type.
  9. Identification of the waste as a hazardous material (HM) if applicable.
  10. EPA Hazardous Waste I.D. number for each item. Obtainable in the "Identification and Listing of Hazardous Wastes" (EPA 8700-12).
  11. Proper shipping name and class per DOT publication 172.101. When shipping a blended material which carries a N.O.S. shipping name, the hazardous components of said blend should be listed after the shipping name.

12. Per unit weight.
13. Total weight for each item.
14. The generator signature and date. The manifest must be hand signed. Facsimile signatures cannot be accepted.
15. All transporter signatures and date. No facsimile signatures. If a generator is also the transporter, he must sign as both.
16. TSDF signatures must be signed by McKesson receiving clerks and dated.

Except for signature requirements, all of the above must be provided by the generator.

NOTE: A McKesson driver should not pick up any sludge or other waste unless he has a pick up notice. It becomes extremely important for our truck drivers to be aware of the necessity for a manifest to accompany H/W shipments, and how a properly prepared manifest should appear. If the above mentioned items are not present or are not prepared properly, our drivers must refuse shipment. Our shipping receiving personnel should be aware of the same requirements in the event a customer brings sludge in on his truck to our location, and again, if any items are absent as outlined above, the shipment should be refused.

- D. Receiving tickets must be issued upon receipt. In addition to the normal information required on the receiving ticket, be sure to indicate:
  1. "Hazardous Waste Material".
  2. The hazardous waste manifest number.
  3. The receiving ticket number will be used as the lot number for future reference and will be stenciled on each drum received.

The white and yellow copies of the receiving ticket will be sent to the office with the Hazardous Waste Manifest.

E. Hazardous Waste Manifest Routing

1. The receiving clerk will be presented with a minimum of three copies of the Hazardous Waste Manifest. The receiving clerk will:
  - a. Verify that all required information is included on the manifest (Sec. C).

- b. Verify that all items are received and initial each item on the manifest.
  - c. Enter the date received and the receiving ticket number in the identification section for the TSDF.
  - d. If all items are in order, sign the manifest in the space provided for the TSDF.
  - e. Any discrepancies should be brought to the transporter and Operations Manager's attention. If the discrepancy cannot be resolved, the load is to be refused.
  - f. Return a signed copy to the transporter (other than McKesson).
  - g. Attach white and yellow copies of the receiving ticket to the TSDF copy.
  - h. Turn in all manifest copies and attached receiving ticket to the office at the end of each work day.
2. The inventory clerk (or other individual designated by the branch administrative manager) will be responsible for the following:
- a. Upon receipt of hazardous waste manifests from warehouse personnel, review manifests to insure proper completion including hand written signatures and cross referencing of receiving ticket numbers on manifests and manifest numbers on receiving tickets.
  - b. Return the original hazardous waste manifest to the generator. This should be done on a daily basis.
  - c. Detach and submit the white copy of receiving ticket to accounting.
  - d. Maintain a "pending shipment" file for the TSDF manifest copy and attached copy of receiving ticket. This pending file will be all manifests covering sludge in stock (from customers) awaiting shipment to recycling facility
  - e. Maintain a perpetual inventory card for every type of hazardous waste material received. These cards will be maintained separately from all other inventory cards.

A separate card should be kept for each type of product waste stream. The inventory card should show the following:

1. Date
2. Lot Number
3. Manifest number received or shipped on
4. Customer name received from or location shipped to
5. Units received or shipped
6. Balance

#### VII. Shipment of Hazardous Waste

Shipments of hazardous waste are to be determined by the branch administrative manager/assistant or designee. Under NO circumstances can a lot be split. Review of the TSDf manifest copies in the "pending shipment" file should be an integral part in determining shipments.

##### A. Manifest Preparation (Labelmaster F-50 or appropriate state manifest form):

1. Review Section VI-C and Exhibit I. McKesson must supply the same basic information on shipments to the recycling center that customers provided on their manifests.
2. Accumulate the TSDf manifest copies from the "pending shipment" file that will comprise the shipment.
3. Complete the manifest:
  - a. Manifest Document Number (Item -1). Most state forms will have a preprinted number sequence already on the manifest form. If you should happen to be utilizing a form which is not prenumbered, you are to use your SDM number preceded by your branch location code number and the initials HWM. For example: 534 HWM000. You may want to designate in one column of your ledger for SDM numbers, the initials HW to designate those numbers used as a manifest number, if again your state form is not preprinted.
  - b. 12 digit EPA I.D. numbers must be obtained in advance for items 4, 6, and 7. Maintenance of an EPA I.D. number file for customers, transporters, and TSDf's will facilitate future shipments.

- c. Waste Description and Classification (Item 11) will be available directly from the TSDf manifest copies being used to put the shipment together. The word "Waste" must precede the description. Immediately below the description, cross reference applicable lot numbers and the number of containers from each lot. If more space is needed, use the comment section.
- d. Unit weight and total quantity should be stated in pounds.
- e. "Placards Tendered", item 17, must be completed (shipping department).
- f. The completed manifest must be signed by the branch manager or his appointed designee.

#### B. Manifest Routing

1. Remove the number 4 Generator's Copy. Attach the TSDf copy (s) from the original customers and file in another manifest file titled "pending notification". It should be noted that the copy retained may vary on different forms.
2. The remaining copies should be routed to the shipping department.
3. When shipment is made, the transporter must sign the manifest. If via a McKesson truck, the driver must sign. Remove number 6, File Copy, and return to the office.
4. Match number 6 to number 4 copy in the "pending notification" file. This file should be set up as a "tickler" file which insures follow-up in 35 days if the number 1, Original, is not returned from the TSDf.

THIS IS THE LAW - - INITIAL FOLLOW-UP MUST BE MADE AT 35 DAYS. EPA NOTIFICATION MUST BE MADE AT 45 DAYS

5. When the hand signed number 1, Original, is returned, it should be matched to the number 4, Generator Copy and receiving tickets. The "cycle" is not completed; manifest can be closed and filed. These should be filed separately from all other records.

#### VIII. EPA Notification

If the Original, number 1 copy of the hazardous waste manifest is not received in 45 days, the Regional Office of the Solid Waste Program must be notified. A list of Regional Offices is shown in Exhibit II. Such notification requires:

- A. Legible copy of the Hazardous Waste Manifest covering the shipment that is missing.
- B. A detailed letter explaining McKesson's efforts to locate the material and obtain the signed manifest.
- C. Notification should be by registered mail.

NOTE: A copy of your notification should be submitted to our Regional Operations Department.

#### IX. Hazardous Waste Manifest Control Ledger

Every Hazardous Waste shipment must be assigned a SDM number and have this form accompany the shipment and be recorded in the Control Ledger. The ledger will show the date shipped, the manifest document number, ship to, and the date confirmation manifest received, number 1 copy.

#### X. Annual Reporting

An annual report of hazardous waste activity is required under the RCRA law. The report will cover Hazardous Waste activity for a calendar year and is due at the appropriate EPA Regional Office no later than March 1 of the following year.

#### XI. Retention Schedule

Twenty (20) years for all records, manifests, and reports.



McKesson Chemical Company

Containers Utilized Holding Free Liquids

(40 CFR Sec. 270.15)

Hazardous waste materials stored at this McKesson Chemical Company facility will be received from outside generators. This facility is used as an accumulation and transfer point of drummed materials received from generators in small lots, and reshipped in economic truckloads to an off-site recycling location.

The solvents typically handled by McKesson Chemical Company fall into the halogenated and non-halogenated chemical families. The containers which are utilized by customers to ship spent material to the McKesson facility are of a 55 gallon capacity or less. Containers typically utilized are constructed of steel, meeting DOT specification 17E for the most part; some 17H and 5B drums may occasionally be encountered. The customer is required to provide the spent material in a container authorized for the commodity as set forth by the Department of Transportation in 49 CFR 172.101.

Reuse of containers for waste materials by customers is allowed as authorized by the Department of Transportation, 49 CFR 173.28 ("Reuse of Packaging (containers)"). McKesson Chemical Company does request of its customers that if they are reusing containers, they place spent material back into a container which held the same virgin material. This practice is encouraged to ensure that there is no risk of incompatible materials being introduced into the container which might result in container failure, or cause cross-contamination which may result in problems relating to the reclamation of the material.

McKesson Chemical Company  
Container Utilized Holding Free Liquids  
Page 2.

While the containers of waste materials are in storage at this facility, all closures are maintained in a secure manner. No treatment or disposal of waste materials is undertaken at this location. Contents of a container of material would be transferred if a leaking container were discovered, in which case the material would be transferred to another container meeting appropriate container specifications in order to avoid further release of the material. Such a transfer of leaking container shall be accomplished as set forth in written procedures on hand at the facility, and under the direct supervision of the Emergency Coordinator.

McKesson Chemical Company does not currently manage containers without free liquids.

This facility of McKesson Chemical Company does not utilize any tanks for hazardous waste storage.

This facility of McKesson Chemical Company does not have present any waste piles of material, with or without free liquids.

This facility of McKesson Chemical Company does not utilize any type of surface impoundment as a means of handling hazardous waste.

This facility of McKesson Chemical Company does not utilize any type of incinerators as a means of handling hazardous waste.

Most, if not all, the halogenated and non-halogenated solvents McKesson will be handling as spent streams are controlled; as such, the solvents are either purchased from vendors (Dow, Union Carbide, PPG, Monsanto) or packaged at a McKesson facility in containers (usually 55 - gallon drums) approved by the U.S. Department of Transportation for that particular solvent. McKesson has handled these solvents both as virgin material and as hazardous wastes in these drums under similar conditions for years with no problem.

McKesson Chemical Company

Secondary Containment System Design and Operation

(40 CFR Sec. 270.15)

All 55-gallon steel containers which will be utilized to store off-site generators' waste materials at a McKesson Chemical Company storage facility will be held pending reshipment in a designated secondary containment area.

The waste storage containment area at the McKesson Charlotte branch is planned to be a bermed rectangle 9 inches high, 10 feet by 30 feet. It will be located in the rear yard behind the warehouse, about 150 feet from the ramp - providing forklift access via a concrete runway from the warehouse to the yard. The base of the bermed area is existing concrete with a compressive strength of at least 3000 psi. The 9 inch berm is also concrete. The heaviest drum of waste material to be handled at this facility would not exceed 700 pounds; maximum load on the concrete surface would be four such drums stacked two-high. The rectangular design of the containment area permits two rows of seven pallets, each pallet being about 5 inches thick. A permanent layer of pallets will be placed inside the rectangle. Enough space is available on both long sides of the rectangle (30 feet) so that pallets of drums of waste material can easily be placed onto or taken off the permanent pallet layer over the berm by conventional forklift maneuvering. The arrangement of containers also facilitates inspection of individual drums for any leakage. The concrete base and its junction with the berm are integral and no leakage outside the containment area can occur.

The anticipated maximum number of 55-gallon drums of material to be stored within the 10 foot by 30 foot storage area at any one time is 90. Given a minimum outage in a given drum of 1 gallon, at the maximum anticipated storage quantity of drums, a total of 4860 gallons of material would be present. Utilizing the required 10% containment ratio of the total volume of the maximum number of containers of material stored, the concrete bermed containment area would be required to hold 486 gallons.

The permanent layer of pallets in the containment area will occupy a certain volume. This can be calculated as follows, based on a typical pallet four feet square with four 1-inch by 6-inch deckboards on both the top and bottom separated by three 2-inch by 4-inch stringers:

<u>Component</u>	<u>Dimensions(in.)</u>	<u>Quantity</u>	<u>Cubic Inches</u>	<u>Cubic Feet</u>
Deckboards	48 x 4 x 3/4	8	1152	0.67
Stringers	48 x 1 3/4 x 3 1/2	3	882	<u>0.51</u>
Total Cubic Feet Per Pallet				1.18

$$1.18 \times 7.48 \text{ gal./cu. ft.} \times 14 \text{ pallets} = 123.6 \text{ gallons}$$

The sum of 486 gallons plus 124 gallons (610 gallons) requires only about 2.7-inch curb:

$$30 \text{ feet} \times 10 \text{ feet} \times 2.7 \text{ inches} = 68.2 \text{ cubic feet}$$

$$1 \text{ cubic foot} = 7.48 \text{ gallons}$$

$$68.2 \times 7.48 = 786 \text{ gallons}$$

In addition, because of the location of this storage area in the open yard, provision must be made for a maximum rainfall. The Rainfall Frequency Atlas of the United States (Technical Paper No. 40) prepared by the Hydrologic Services Division of the U.S. Weather Bureau defines a 25 year, 24-hour rainfall for this area of North Carolina as being about 6.5 inches. The increase of the height of the curb of the secondary containment area to 9 inches, therefore, allows for the 10% containment requirement for the stored hazardous wastes and the pallet volume plus this extraordinary rainfall.

The preceding calculations have implemented good hazardous waste management in their providing the dimensions of the secondary containment area required for the safe storage of the number of drums of spent solvent expected to be stored temporarily by this McKesson branch. As noted, provision is made for containment of (1) accidental spill, (2) drum leakage, (3) volume required by pallets and (4) stormwater.

A second concern of good hazardous waste management at this McKesson branch relates to stormwater, since the projected hazardous waste storage area is out in the open. In addition to providing sufficient volume for an extraordinary accumulation - calculated and designed for above - management will (1) determine whether an accumulated stormwater is not contaminated from a spill or leak before it is discharged from the containment area and (2) if it is, what to do to minimize the threat posed by by contaminated water.

Stormwater collected within the curbed containment area after a rainfall or from melted snow will be evaluated by an operator or his supervisor for indication of contamination by examining a sample for layering, discoloration, foreign matter (paint pigment, iron particles, etc.) or odor. The variety of spent solvents to be stored at this facility is limited (270.14(b-2)); and because many will have become discolored in the course of their being physically used, and because most are insoluble in water, it is felt that their presence in collected stormwater because of a spill or a leaking drum occurring simultaneously with a rainfall can be detected.

Before any such collected stormwater is discharged, an operator will evaluate the possibility of any contamination by use of the appended "Secondary Containment Area Discharge of Precipitation Checklist". If any question of possible contamination is raised, the operator will pump out the entire contents of the containment area by use of a portable pump kept on the premises at all times. The presence of a sump facilitates both inspection and pumping out. The water so collected will be stored in 55-gallon drums, always available at this facility, until their contents can be analyzed.

Unless it is obvious from the condition of a leakage drum or from the observance of a spill, the water will be sampled and subjected to a GC scan for organic carbon. With the culprit species identified as hazardous, the handling and disposal of the total volume of contaminated water will follow the rules and regulations controlling hazardous waste.

Concrete is acknowledged to be resistant to all neutral organic solvents, both halogenated and non-halogenated. This has been verified in recent discussions with McKesson's largest vendor of such products. As a matter of fact, McKesson over the past few years has steadily replaced asphalt paving with concrete in its regular yard storage areas (and has installed concrete in all new yard areas) because of concrete's resistance to organic solvents compared to that of bituminous materials. An unlikely problem can be envisioned in the sense that an aged halogenated solvent containing water (in the absence of the inhibitors normally added to such solvents) could generate hydrochloric acid which can attack concrete, but any significant or perhaps even observable deterioration

would require a substantial time period (months). This situation would not be expected to arise at a waste storage area such as is being considered in these pages because of the short time (days) any container of spent solvent would be expected to remain at the branch and the constant inspection of the integrity of the secondary containment area. Moreover, a sufficient acidity to be considered corrosive (less than pH of 2 as defined in 40 CFR 261.22) would be caught at the time of the submission of the generator's analytical data and McKesson's Spent Material/Waste Product Survey Form which calls for the pH of the proffered material. It is to McKesson's advantage not to accept corrosive materials for reclaiming because of potential damage to its processing equipment.

SECONDARY CONTAINMENT AREA DISCHARGE OF PRECIPITATION CHECKLIST

The following inspection shall be undertaken whenever precipitation has accumulated within the waste storage area. A "yes" answer to any item shall necessitate the handling of accumulated liquid as a waste, or a sample be taken for testing to verify contamination if a question arises.

Date \_\_\_\_\_

A. Containers	<u>YES</u>	<u>NO</u>
1) Indication of leakage on sides or ends of drums.	___	___
2) Noticeable solvent odor around area.	___	___
B. Containment Area		
1) Accumulated water shows signs of discoloration.	___	___
2) Discoloration of pallets or concrete in area.	___	___
3) Layering of solvent on surface of water or underneath it.	___	___

NOTE: A beaker or other clear container is to be filled with a sample taken via a sampling tube from the lowest point or sump in the containment area. The sample is to rest motionless for a few moments before the operator checks for the following:

4) Discoloration.	___	___
5) Layering.	___	___
6) Solvent odor.	___	___
7) Sediment associated with a process residue (i.e. metal filings, paint pigment, ink color, etc.).	___	___

and during Winter Months:

8) Discoloration indicated on snow in area.	___	___
9) Liquid present under snow cover which because of temperature would expect to be frozen.	___	___

INSPECTOR \_\_\_\_\_

DATE \_\_\_\_\_

If different than above,

SUPERVISOR \_\_\_\_\_

DATE \_\_\_\_\_

APPROVED FOR DISCHARGE

UNACCEPTABLE

Action Code \_\_\_\_\_

Recommended Action Codes - documentation of activities required.

A - Sample to laboratory to verify contamination.

B - Drum and handle material as waste for shipment ot treatment facility.

COMMENTS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

MCKESSON CHEMICAL COMPANY  
3600 WEST WENDOVER AVENUE  
GREENSBORO, NORTH CAROLINA 27407

Division Of

FOREMOST-MCKESSON CHEMICAL GROUP  
ONE POST STREET  
SAN FRANCISCO, CALIFORNIA 94104

FACILITY CONTINGENCY/EMERGENCY RESPONSE PLAN

FOR:

McKESSON CHEMICAL COMPANY  
3600 W. Wendover Avenue  
Greensboro, North Carolina 27407

Submitted To:

Greensboro/Guilford County

EMERGENCY MANAGEMENT ASSISTANCE AGENCY

For Distribution To:

All Local Police Departments, Fire Departments,  
Hospitals, and State and Local Emergency Response  
Teams that may be called upon to provide emergency  
services

As Per:

RCRA - 40 CFR - Subpart D. Paragraph 265.53 - Part B.

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  - E. Location of Chlorex Equipment/Cylinder Capping Kits
  - F. Location of Hazardous Materials/Waste Storage
- V. Bulk Tank Storage
- VI. Emergency Equipment
  - A. Location of Emergency Equipment
  - B. Equipment/Capabilities/General Information
    - Internal - External
  - C. MSDS - (Material Safety Data Sheets)
    - Products normally handled in bulk
- VII. Implementation of the Contingency Plan
- VIII. Emergency Response Procedures
  - A. Fire
  - B. Spills

Emergency Response Procedures, continued

- C. Toxic Gas Release
- D. Vehicle Emergency
- E. First Aid Plan
- F. Neighborhood Alert Plan

IX. Evacuation Plan

- A. General
- B. Notification
- C. Assembly/Accountability
- D. Rescue

X. Coordination Agreements

XI. Media Relations

- A. General
- B. Action Plan

Facility Contingency/Emergency Response Plant

I. Facility Identification/General Information

- A. Name: McKesson Chemical Company
- B. Location: 3600 W. Wendover Ave.  
Greensboro, NC 27407
- C. Type Business: Chemical Distributor
- D. Normal Business Hours: 8:00 AM - 5:00 PM (Mon. - Fri.)
- E. Management Personnel:

Branch Manager	Mike E. Efting 1711 Dunleith Way Greensboro, NC 27408 Phone - 282-2524
Asst. Branch Manager	Sarah A. Austin 1604 Bonaventure Circle Greensboro, NC 27408 Phone - 288-9223
Administrative Manager	Jerry D. Clapp 2623 Walker Avenue Greensboro, NC 27403 Phone - 292-3277
Operation Manager	George M. McClintock 2603 Westmoreland Drive Greensboro, NC 27408 Phone - 288-6706
Warehouse/Bulk Liquids Supervisor	Joe B. Frye 3104 Ulster Avenue Greensboro, NC 27406 Phone - 272-6297
Chlorine Plant Supervisor	Jimmy R. Wadford Rt. 1, Box 125-B Summerfield, NC 27358 Phone - 643-4256

- F. EPA Identification Number - NCD089903983  
(Generator - Transporter)

G. Description of Hazardous Waste Activity:

Hazardous Waste Products handled at this location are restricted to:

- 1) Drummed hazardous waste products in sound containers, and
- 2) Products which are normally stocked and sold in their virgin form at this facility.

H. Address for Correspondence:

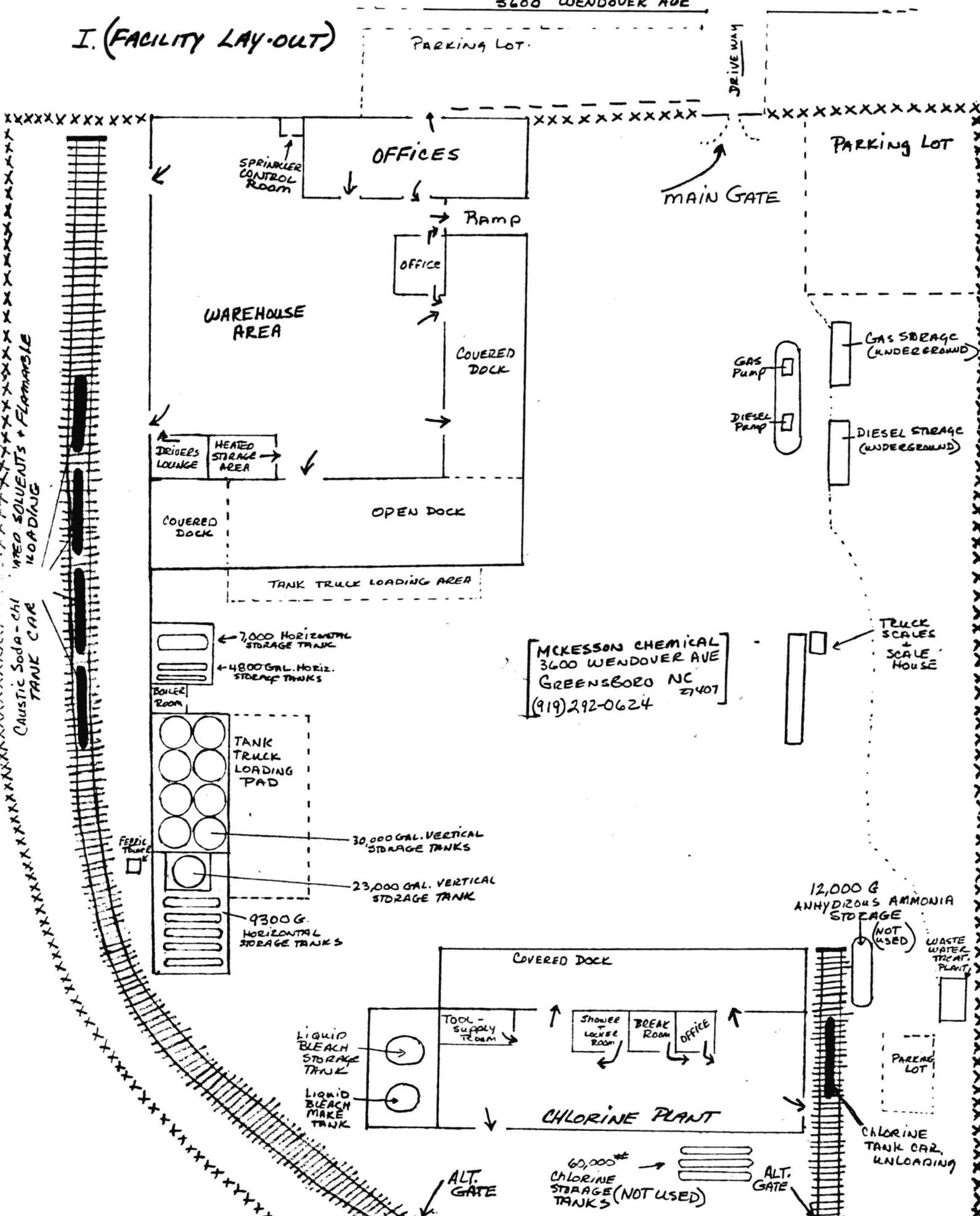
Any questions with regard to this plan should be addressed to:

McKesson Chemical Company  
P. O. Box 18805  
Greensboro, NC 27419

I. Facility Lay Out - See following page

3600 WENDOVER AVE

# I. (FACILITY LAY-OUT)



PARKING LOT

DRIVEWAY

OFFICES

SPRINKLER CONTROL ROOM

Ramp

OFFICE

WAREHOUSE AREA

COVERED DOCK

DRIVERS LOUNGE

HEATED STORAGE AREA

COVERED DOCK

OPEN DOCK

TANK TRUCK LOADING AREA

7,000 HORIZONTAL STORAGE TANK

4800 GAL. HORIZ. STORAGE TANKS

BOILER ROOM

TANK TRUCK LOADING PAD

30,000 GAL. VERTICAL STORAGE TANKS

23,000 GAL. VERTICAL STORAGE TANK

9300 G. HORIZONTAL STORAGE TANKS

FEDIC TOWER

MCKESSON CHEMICAL  
 3600 WENDOVER AVE  
 GREENSBORO NC 27407  
 (919) 292-0624

PARKING LOT

MAIN GATE

GAS STORAGE (UNDERGROUND)

GAS PUMP

DIESEL STORAGE (UNDERGROUND)

DIESEL PUMP

TRUCK SCALES + SCALE HOUSE

CAUSTIC SODA - CHLORINE SOLVENTS + FLAMMABLE TANK CAR LOADING

12,000 G ANHYDRIOUS AMMONIA STORAGE (NOT USED)

WASTE WATER TREAT. PLANT

COVERED DOCK

LIQUID BLEACH STORAGE TANK

LIQUID BLEACH MAKE TANK

TOOL-SUPPLY ROOM

SHOWER + LOCKER ROOM

BREAK ROOM

OFFICE

CHLORINE PLANT

PARKING LOT

CHLORINE TANK CAR UNLOADING

60,000\* CHLORINE STORAGE TANKS (NOT USED)

ALT. GATE

ALT. GATE

## II. Emergency Coordinators

A. Primary - George McClintock, Operations Manager  
2603 Westmoreland Drive  
Greensboro, NC 27408  
Phone - 288-6706 (home)  
292-0624 (office)

### B. Alternates

1) Joe Frye, Warehouse/Bulk Liquids Supervisor  
3104 Ulster Drive  
Greensboro, NC 27406  
Phone - 272-6297 (home)  
292-0624 (office)

2) Jimmy Wadford, Chlorine Plant Supervisor  
Rt. 1, Box 125-B  
Summerfield, NC 27358  
Phone - 643-4256 (home)  
292-0624 (office)

3) Jerry Clapp, Administrative Manager  
2623 Walker Avenue  
Greensboro, NC 27403  
Phone - 292-3277 (home)  
292-0624 (office)

### C. Personnel/Responsibilities - General and Specific

1. Primary and Alternates listed above
2. The Primary Coordinator bears overall responsibility (along with facility manager) for emergency actions and specific responsibility for personnel functions such as notification, evaluation, first-aid, head counts, media relations, reports, etc.
3. The Alternate Coordinator is second-in-command, and stands ready to take over all functions of the primary coordinator. Additionally, the alternate coordinator (s) has/have the specific responsibilities for physical functions such as attack of incipient stage fires, utility shut down, foul weather protection, containment, control, and clean up of chemical release, physical security, etc.
4. The Branch (facility) Manager nevertheless continues to bear overall responsibility for the safe, legal, and resource-conserving operation of the branch.
5. Specific Duties - Primary Emergency Coordinator:
  - A. Responsible for all emergency operation functions
  - B. Appoint one or more alternate coordinators to assume responsibility if he is not present or is otherwise unable to perform his duties.
  - C. Appoint, train, equip response positions
  - D. Arrangements with local authorities
  - E. Conduct emergency drills to test readiness

## Emergency Coordinators, continued

- F. Supervise facility training and document
  - G. Publication, Distribution, and Systematic Revision of a complete and effective Contingency/ Emergency Response Plan.
  - H. Continued, effective maintenance of the facility, its vehicles and equipment, and document.
  - I. During an emergency, responsible for supervising or actually performing the following:
    - 1) Employee notification
    - 2) Rescue, evacuation, assembly/accountability
    - 3) First Aid
    - 4) Emergency services and regulatory agencies' notification
    - 5) Neighborhood alert
    - 6) Regional office notification
    - 7) Required reports
    - 8) Media reports
    - 9) Any other functions to insure prompt, effective emergency response.
6. Specific Duties: Alternate Coordinator (s)
- A. Assist Primary Coordinator in above duties
  - B. During an emergency is responsible for supervising or actually performing the following specific duties:
    - 1) Attacking/controlling incipient stage fires, Chlorex, on-the-road emergencies, or responding to customer emergency requests
    - 2) Shutting off facility electrical service, closing all process valves, plugging/repairing mechanical leaks or failures, isolating the area.
    - 3) Controlling/restricting access to certain areas of the facility.
    - 4) Interrupting loading operations and removing trucks from the danger area, in this order and as time permits:
      - a. Tankers loaded or partially loaded with flammables, oxidizers, and/or corrosives.
      - b. Trailers or trucks loaded or partially loaded with poisons, flammables, oxidizers, and/or corrosives.
      - c. Other loaded or partially loaded tankers.
      - d. Other loaded or partially loaded trucks or trailers.
      - e. Empty units.
    - 5) Removing packaged stock from, or rearranging within the warehouse away from the danger area, in this order as time permits:
      - a. Poisons
      - b. Oxidizers
      - c. Flammables
      - d. Combustibles and/or
      - e. Other items of product or equipment.
    - 6) If time permits during a severe storm/flood/natural disaster: erect barricades, dikes, boarding over windows, securing doors, shutting off electrical service, etc.

Specific Duties, Alternate Coordinators, continued

- 7) Controlling, containing, cleaning up of regulated hazardous chemicals or hazardous waste releases, on or off the facility site.
- 8) After the emergency at the facility, provide physical security, restore/repair sprinkler protection, electrical and other services.
- 9) Inspect, clean, repair, refill and replace emergency response equipment as needed.
- 10) And any other functions to insure prompt, effective emergency response.

III. Emergency Phone Numbers:

A. Internal

\*Office Number for persons listed below: (919)292-0624

POSITION	NAME	Phone #
Facility Manager	Mike Efting	282-2524
Asst. Facility Manager	Sarah Austin	288-9223
Administrative Manager	Jerry Clapp	292-3277
Operations Manager	George McClintock	288-6706
Warehouse/Bulk Liquids Supervisor	Joe Frye	272-6297
Chlorine Plant Supervisor	Jimmy Wadford	643-4256

\*Southeast Regional Office Number for persons listed below:

	1-803-583-8481	
Regional Operations Safety Mgr.	Julian H. Foster	(803)582-4160
Regional Fleet Manager	Garland Walker	(803)573-8655
Regional Warehouse Manager	Hal E. Brown	(803)583-1999
Regional Vice President	Darwin Simpson	(803)582-2589
District Manager	Norm Oost	(803)579-0425

B. External

(See attached checklist for reporting incidents or requesting assistance.)

1. Emergency Services

a. Greensboro Fire Department	373-2222
b. Guilford County Fire Department	292-6121
c. Ambulance and Rescue	292-6121
d. Greensboro Police	373-2222
e. Guilford County Sheriff	373-3327
f. North Carolina Highway Patrol	379-5500
g. Southern Railway	852-1550
h. CHEMTREC	1(800)424-9300
i. Wesley Long Hospital	299-6815
j. Moses Cone Hospital	379-4040
k. Humana Hospital	373-8555

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Guilford County Environmental Health	373-3771	(Tom Owens)
NC Dept. of Human Resources	733-2178	(Bill Meyer)
Solid & Hazardous Waste Division		
Federal EPA	(404)881-3446	(Paul Keith)
State DOT	275-4544	(Ron Willis)
Greensboro Water & Sewer	373-2033	

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Emergency Support Suppliers:

Clean Up/Disposal

SCA Services	(803)452-5003	(Charlie Roundtree)
Shenandoah Environmental Services	(703)563-4072	(Louis Brinkman)
	or (704)865-3128	

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Emergency Phone Number, External, continued

2. Adjoining Property Owners (Neighborhood Alert - Sec. VIII - B)

North State Pyrophyllite	299-1441
Crown Porsche Audi	292-5510
Brad Ragan, Inc.	294-4685
Engineers-Constructors, Inc.	292-9231
Fasteners of Carolina	855-9090
Crown Pontiac	292-9231
MAACO Auto Painting & Bodywork	294-3243

3. Suppliers Emergency Phone Numbers/Industrial Associations and Institutions

See following pages.

Supplier Emergency Phone Numbers: cont'd.

FMC Corp.	716-876-8300 201-541-4171 304-744-5992 215-564-1600	Monsanto	413-788-4521 713-945-4431 314-694-1000
Federated Mills	516-231-5805	Morton Salt	312-621-5269
Foremost-McKesson Foods	415-983-8458	Morton Chemical	312-621-5200
Gardinier, Inc.	813-677-9111	Nalco Chemical	312-920-1510
W. R. Grace	901-522-2142	Norsk Hydro	212-688-6606 203-348-0492
Harshaw Chemical	216-721-8300	Noury Chemical	716-778-8554
Harwick Chemical	404-934-4235 404-934-4236	Occidental Chemical	713-477-8811
Hercofina	302-575-6749	Oil-Dri	312-321-1515
Hercules, Inc.	302-654-8900	Olin Corp.	203-356-2345
Hooker Chemical	716-278-7777 716-278-7796 716-285-6655	PPG Industries	304-843-1300 412-434-3131 318-882-1200
Husky Industries	904-489-3336	P O Corp.	215-293-7200
ICI	302-575-3000	Penick	201-935-6600
IMC Chemical	132-362-8100 601-636-1232	Penreco	412-287-2781
Johns-Manville	303-979-1000 Ext. 3119	Pennwalt Corp	206-627-9101 215-587-7695 215-587-7710 502-395-7121
Kalama Chemicals	206-673-255-	Pennsylvania Glass	304-258-2500
Lithium Corp	704-629-2282	Pfizer	212-573-2816 212-573-1200 212-573-1456
Longview Lime	205-428-7346	Phelps Dodge Ref.	212-751-3200
M & T Chemicals	800-631-5680	Phillips Chem.	918-661-5786
Mallinckrodt	314-895-0123	Pilot Chemical	213-723-0036
Marathon Morco	713-337-1534	Potash Co of Amer.	404-634-6161
Mineral Research	704-455-2161	Premier Malt Prod	414-271-4272
Mobay Chemical	412-923-1800	Procter & Gamble	513-562-5331 513-562-5031 513-562-5089
Mobil Chemical	804-798-4291		

Supplier Emergency Phone Numbers: cont'd.

Reichhold Chem	914-948-6200 914-271-5451
Rohm & Haas	215-592-3000
Royce Chemical	201-438-5200
St. Joe Zinc	412-774-1020
Shell Chemical	713-473-9461
Southland Corp	800-527-2556
Stauffer Chemical	713-233-3555 304-675-1150 304-675-1154
Tenneco Oil	504-279-9481 713-757-3451 800-231-3022
Thompson-Hayward	204-351-0654
U. S. Borax	213-381-5311
Union Camp Corp	912-236-8178
Union Carbide	304-774-3487
Union Oil (Amsco)	312-885-5467
UOP Process	201-438-7800
Velsicol Chem	312-467-5700
Virginia Chem	804-483-7000
Virginia Lime	703-626-7186
Vistron Corp	800-537-1031 216-575-5801
Vulcan Materials	800-835-2720 205-877-3000
West-Agro Chem	913-384-1660
Whittaker Oil	404-355-8220
Westvaco Corp	404-867-7471
Whitestone Chem	803-585-3411

INDUSTRIAL ASSOCIATIONS AND INSTITUTES

American Insurance Assoc. 85 John Street New York, NY 10038 212/433-4400	Chlorine Institute 342 Madison Avenue New York, NY 10173 212/682-4324	Institute Makers Explosives 1575 I St. N.W., Suite 550 Washington, D.C. 20005 202/789-0310 ..
American Nat. Standards Institute 1430 Broadway New York, NY 10018 212/354-3300	Compressed Gas Assoc. 500 Fifth Ave. New York, NY 10036 212/354-1130 * EMERGENCY 800/424-9300	J.T. Baker Chemical Co. 222 Red School Lane Phillipsburg, N.J. 08865 201/859-2151
American Petroleum Institute 2101 L Street N.W. Washington, D.C. 20037 202/457-7000	National Bureau Standards Washington, D.C. 20234 301/921-1000	Kerr-McGee Chemical P.O. Box 25861 Oklahoma City, Ok. 73125 405/270-1313
American Soc. of Mech. Engineers 345 E. 47th Street New York, NY 10017 212/644-7722	National Fire Protection Association 470 Atlantic Avenue Boston, Mass. 02210 617/482-8755	Mallinckrodt, Inc. P.O. Box 5840 St. Louis, Mo. 63134 314/895-0123 ATTN: Robert R. Brett
Assoc. of American Railroads 59 East Van Buren Street Chicago, Ill. 60605 312/939-0770 * EMERGENCY 202/293-4048	Dow Chemical Company Midland, Mich. 48640 * EMERGENCY 517/636-4400	Nat. Fire Prot. Assoc. 470 Atlantic Avenue Boston, Mass. 02210 617/482-8755
Ashland Chemical Co. 3849 Risher Road Columbus, Ohio 43228 614/276-6143 * EMERGENCY 800/424-9300	DuPont Company 1007 Market Street Wilmington, Del. 19898 EMERGENCY 302/774-7500	
Bureau of Explosives (AAR) American Railroads Bldg. 1920 L Street N.W. Washington, D.C. 20036 * EMERGENCY 202/930-4048	The National Response Center - DOT 407th Street, N.W. Washington, D.C. 20590 202/426-4000 202/426-1830 * EMERGENCY 800/424-8802 **	
Chemical Transportation Emergency Center (CHEMTREC) 1825 Connecticut Ave. N.W. Washington, D.C. 20009 * EMERGENCY 800/424-9300	Energy Research Dev. Admin. Savannah River Operation Office Aiken, SC * EMERGENCY 803/725-3333	
Chevron Chemical Co. 940 Hensley Street Richmond, Cal. 94802 * EMERGENCY 415/233-3737	Fertilizer Institute 1015 18th St. N.W. Washington, D.C. 20036 202/861-4900	

\* "EMERGENCY" numbers shown above operate 24 hours a day.

\*\* Oil and Hazardous Chemical Spills

- CHECKLIST FOR REPORTING INCIDENTS OR REQUESTING ASSISTANCE

Provide as much of the following as possible:

1. Identify the fact that you are calling about a hazardous materials incident and give your name, title and call-back number: \_\_\_\_\_  
\_\_\_\_\_
2. Describe the nature of the incident and location (example: train wreck on Seaboard Coastline Railroad about two miles east of Rockingham, North Carolina): \_\_\_\_\_  
\_\_\_\_\_
3. Give the reasons why you believe hazardous materials are involved: \_\_\_\_\_  
\_\_\_\_\_
4. Give the name(s) of the product(s) or characteristic(s) if known: \_\_\_\_\_  
\_\_\_\_\_
5. Give the Guide Number you are using, if any:\* \_\_\_\_\_  
\_\_\_\_\_
6. Report the number of persons injured, if any: \_\_\_\_\_;  
and the number of persons exposed or contaminated, if any: \_\_\_\_\_;  
and the persons subject to potential exposure: \_\_\_\_\_
7. Describe any spill or leak observed and estimate the size of the spill in square feet if possible: \_\_\_\_\_;  
and how close to rivers, streams, lakes, etc: \_\_\_\_\_
8. Report the presence of fire if any: \_\_\_\_\_
9. Describe the weather: \_\_\_\_\_;  
and type of environment (example: populated, rural, business, etc.): \_\_\_\_\_  
\_\_\_\_\_

#### IV. Facility Schematics

- A. Location of Emergency Exits - Assembly Points.
- B. Location of Sprinkler Controls - Electrical Controls
- C. Location of First Aid Kits, Scott Air Pack, and Oxygen w/Mask.
- D. Location of Fire Extinguishers and Emergency Response Pallets.
- E. Location of Chlorex equipment/Cylinder Capping Kits
- F. Location of Hazardous Materials/Waste Storage

Facility Schematics (see following pages)

EMERGENCY EXITS = →  
ASSEMBLY POINT PERSONNEL = ○  
ASSEMBLY POINT EQUIPMENT = ●

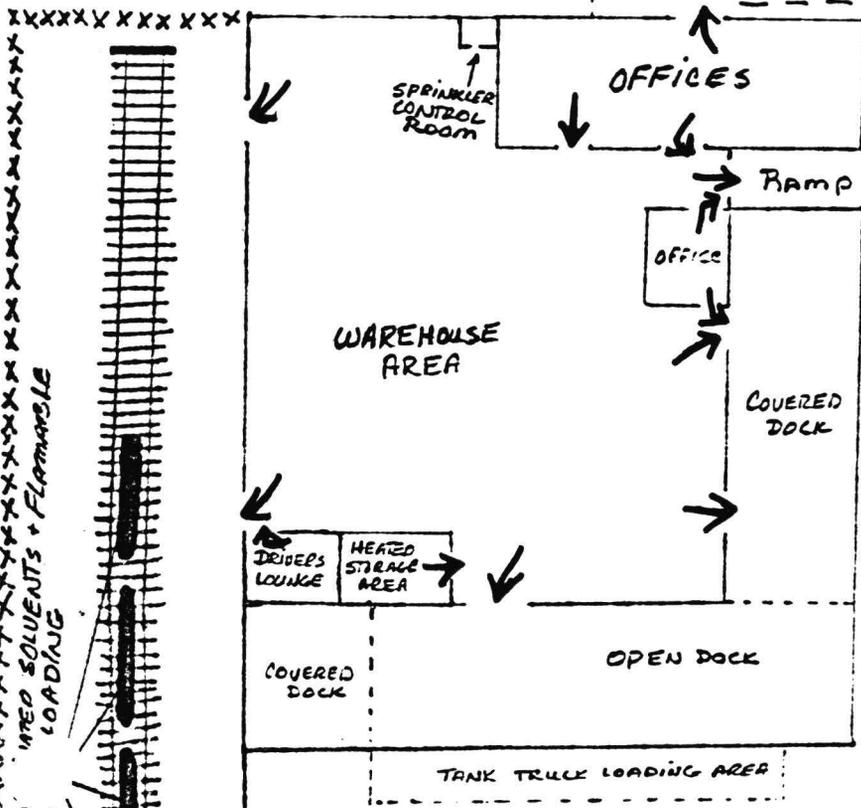
3600 WENDOVER AVE

PARKING LOT

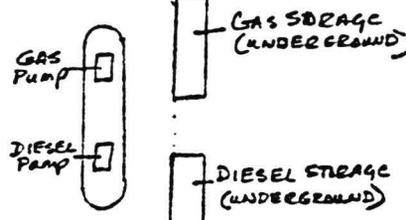


DRIVEWAY

MAIN GATE

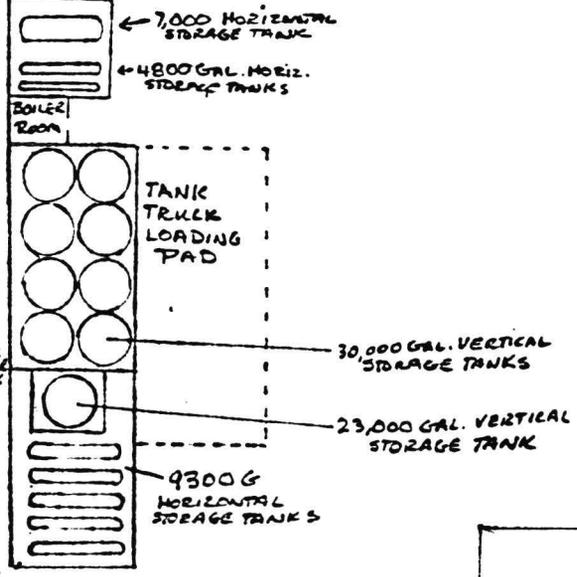


CAUSTIC Soda - ch  
TANK CAR  
LOADING  
MED SOLVENTS + Flammable

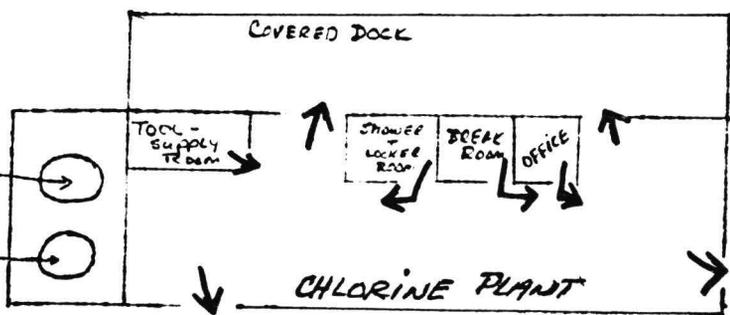


MCKESSON CHEMICAL  
3600 WENDOVER AVE  
GREENSBORO NC 27407  
(919) 292-0624

TRUCK SCALES + SCALE HOUSE



12,000 G ANHYDROUS AMMONIA STORAGE (NOT USED)

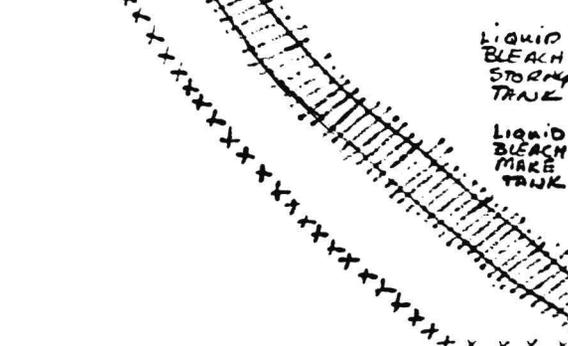


CHLORINE TANK CAR UNLOADING

67,000\* CHLORINE STORAGE (NOT USED) TANKS

ALT. GATE

ALT GATE

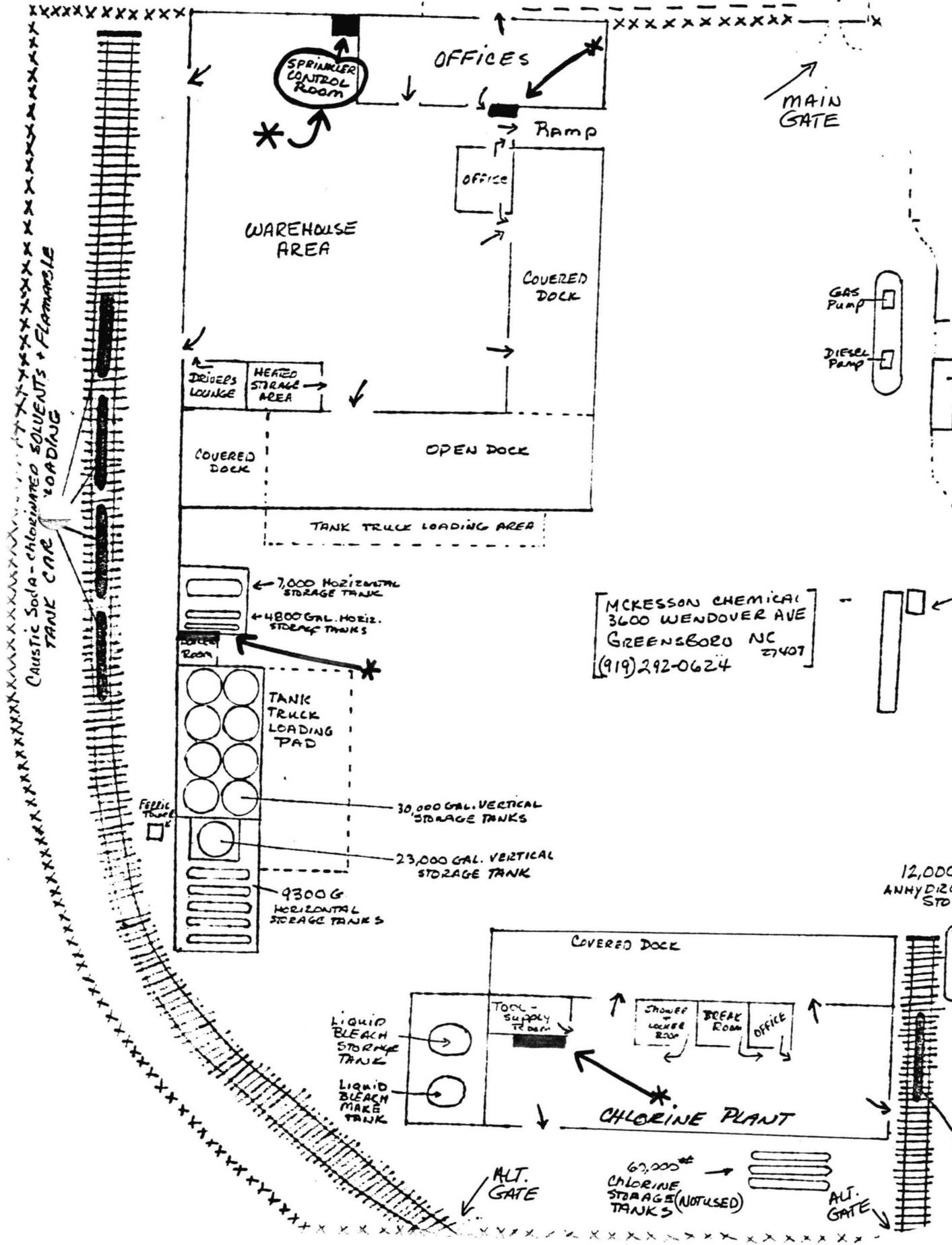


CONTROLS = [ ]

PARKING LOT.

DRIVEWAY

MAIN GATE



CAUSTIC SODA - CHLORINATED SOLVENTS + FLAMMABLE TANK CAR

MCKESSON CHEMICAL  
3600 WENDOVER AVE  
GREENSBORO NC 27407  
(919) 292-0624

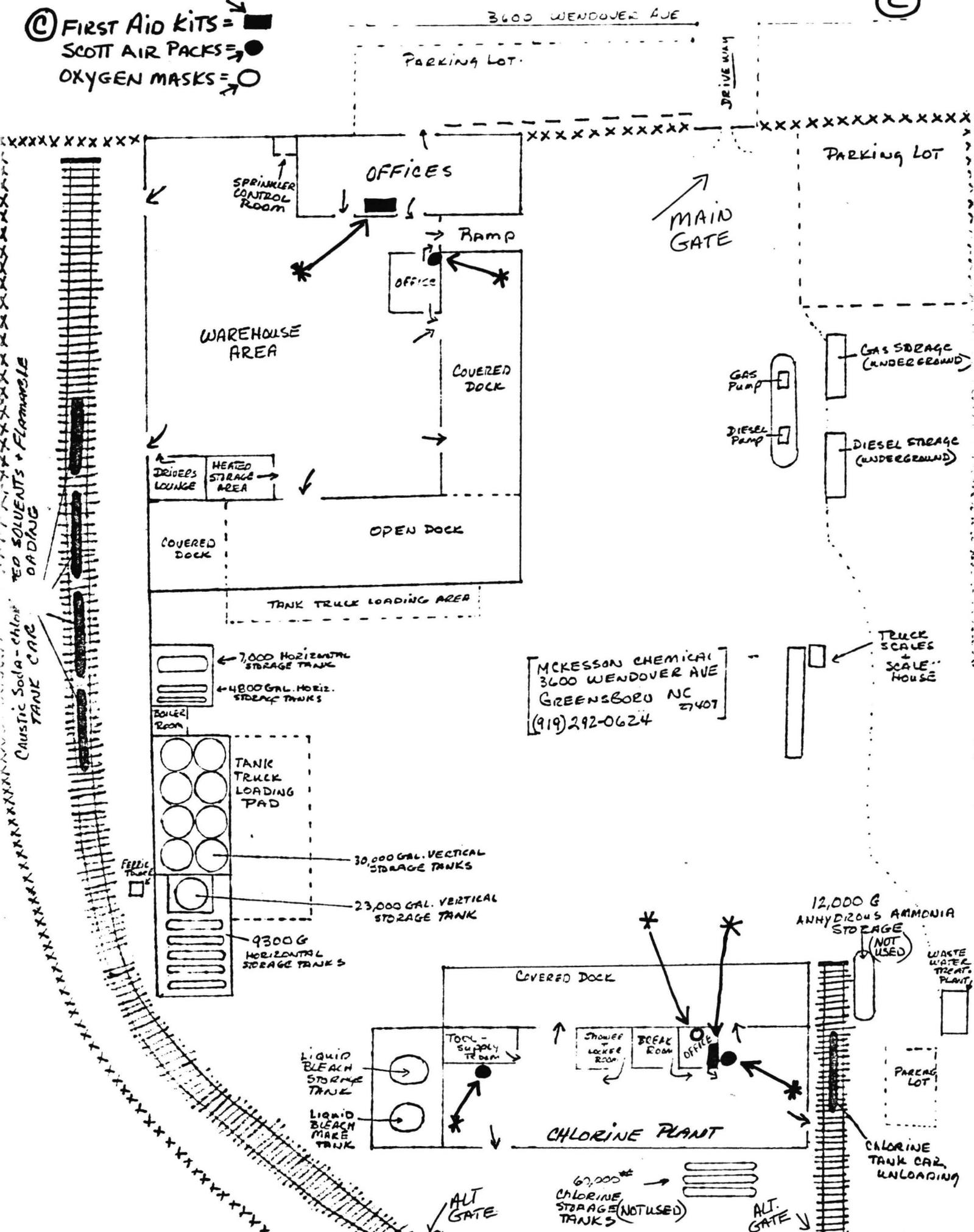
12,000 G ANHYDROUS AM STORAGE (NOT USED)

67,000 CHLORINE STORAGE (NOT USED) TANKS

CHLORINE TANK UNLO

(C) FIRST AID KITS = ■  
 SCOTT AIR PACKS = ●  
 OXYGEN MASKS = ○

(C)



CAUSTIC SOLVENTS + FLAMMABLE OILING  
 TANK CAR  
 CAUSTIC Soda - Chlorine

① FIRE EXTINGUISHERS = X

EMERGENCY RESPONSE

PALLET = ☒

3600 WENDOVER AVE

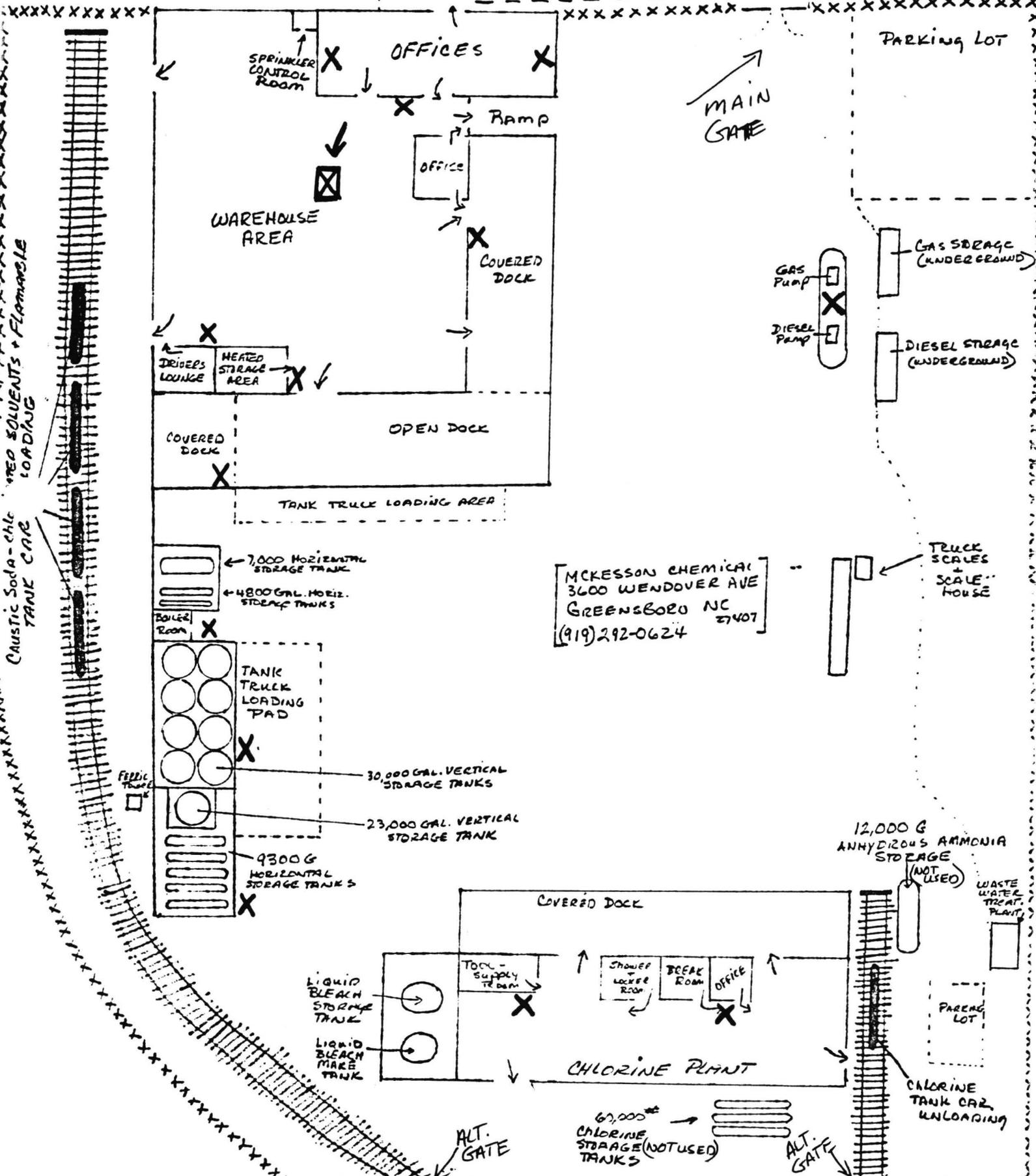
②

Parking Lot

DRIVE WAY

Parking Lot

MAIN GATE



CAUSTIC SODA - CHLORINE SOLVENTS + FLAMMABLE TANK CAR LOADING

CAUSTIC SODA - CHLORINE TANK CAR

SPRINKLER CONTROL ROOM

OFFICES

Ramp

OFFICE

WAREHOUSE AREA

COVERED DOCK

DRIVER'S LOUNGE

HEATED STORAGE AREA

COVERED DOCK

OPEN DOCK

TANK TRUCK LOADING AREA

7,000 HORIZONTAL STORAGE TANK

4,800 GAL. HORIZ. STORAGE TANKS

BOILER ROOM

TANK TRUCK LOADING PAD

30,000 GAL. VERTICAL STORAGE TANKS

23,000 GAL. VERTICAL STORAGE TANK

9,300 G. HORIZONTAL STORAGE TANKS

FERRIC TANK

McKesson Chemical  
3600 WENDOVER AVE  
GREENSBORO NC 27407  
(919) 292-0624

TRUCK SCALES + SCALE HOUSE

12,000 G ANHYDROUS AMMONIA STORAGE (NOT USED)

WASTE WATER TREAT. PLANT

COVERED DOCK

LIQUID BLEACH STORAGE TANK

LIQUID BLEACH MAKE TANK

TOOLS SUPPLY ROOM

SHOWER + LOCKER ROOM

BEAK ROOM

OFFICE

CHLORINE PLANT

67,000 G. CHLORINE STORAGE (NOT USED) TANKS

ALT. GATE

ALT. GATE

CHLORINE TANK CAR UNLOADING

PARKING LOT



3600 WENDOVER AVE

(F) FLAMMABLE = (F)

CORROSSIVE = (C)

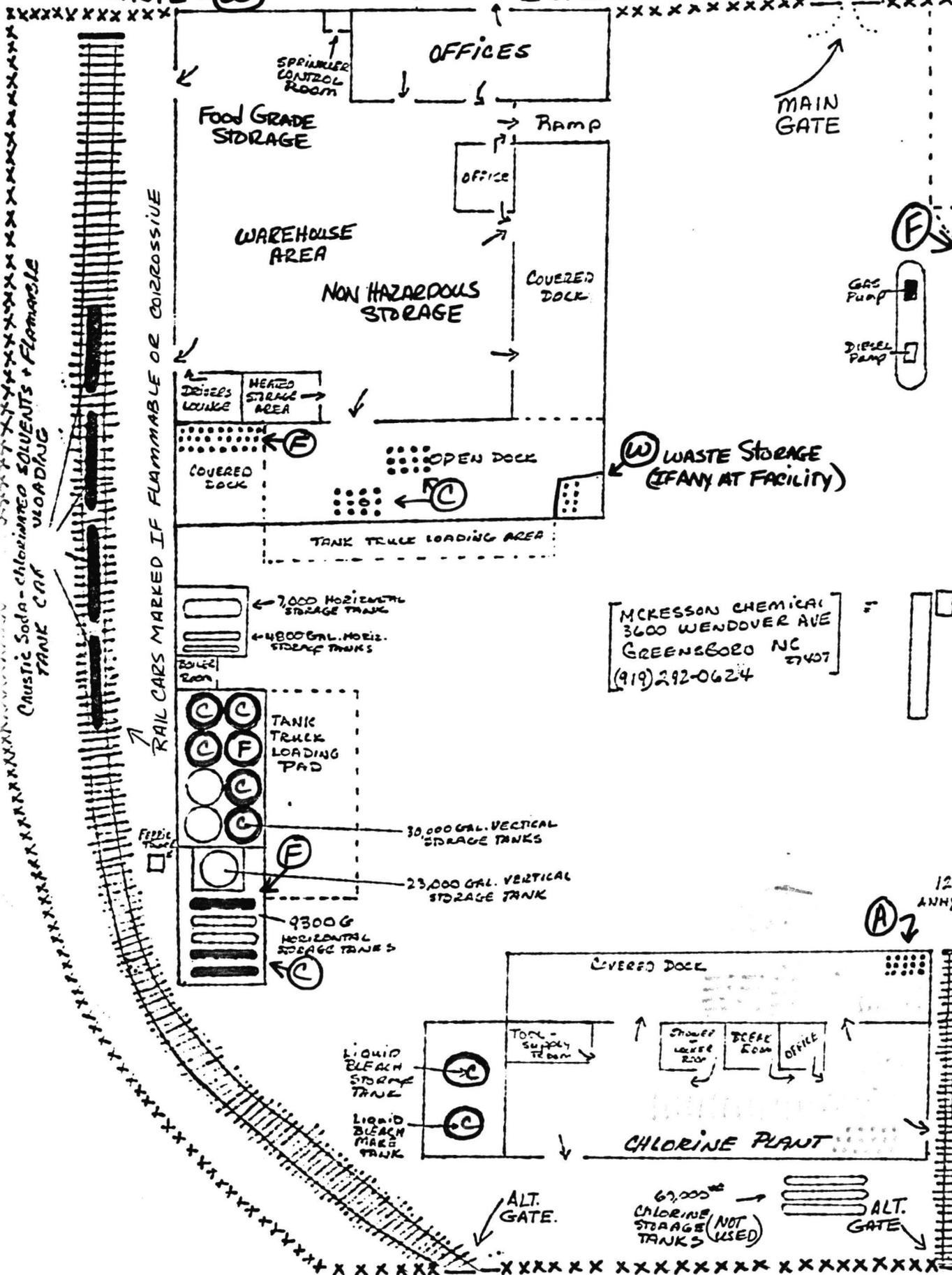
AMMONIA = (A)

WASTE = (W)

PARKING LOT

DRIVE WAY

MAIN GATE



CAUSTIC SODA - CHLORINATED SOLVENTS + FLAMMABLE TANK CAR LOADING

RAIL CARS MARKED IF FLAMMABLE OR CORROSSIVE

McKESSON CHEMICAL  
3600 WENDOVER AVE  
GREENSBORO NC 27407  
(919) 292-0624

(A) 12.0 ANHYD S

67,000 CHLORINE STORAGE (NOT USED) TANKS

V. Bulk Tank Storage

<u>Capacity</u>	<u>Product</u>
30,000 Gal.	Trichloroethane
"	Perchloroethylene
"	Acetic Acid Glacial
"	Isopropanol 99%
"	Caustic Soda 50%
"	Caustic Soda 25%
"	MCJS (Caustic Blend)
"	MCJS (Caustic Blend)
9,300 Gal.	Acetone
"	Methylene Chloride
"	Caustic Soda 25%
"	Caustic Soda 25%
6,000 Gal.	Liquid Bleach 15%
3,000 Gal.	Liquid Bleach 15%
4,800 Gal.	Phosphoric Acid 75%
4,800 Gal.	Neodol 25-3A
"	Neodol 25-2.5
8,000 Gal.	Diesel Fuel - For Fleet Use
3,000 Gal.	Gasoline - "

## VI. Emergency Equipment

A. Location of Emergency Equipment:  
(Ref. SCHEMATICS - Section IV)

B. Equipment/Capabilities - General Information

- Offices, warehouse and covered dock storage areas are protected by an Automatic Sprinkler System. The system is connected to a 24-hour switchboard (Engineered Systems Company) so that any problems with the system are immediately caught and corrected. Engineered Systems Company also inspects and maintains the sprinkler system.
- Each work area is equipped with a Chemical Fire Extinguisher suitable for use on materials in that area. (20 lb. A,B,C, or BC type extinguishers, depending on the area) Also, the forklifts are equipped with 2½ lb. B. C. Type extinguishers and the trucks with 5 lb. BC Type extinguishers. (Charts attached show capabilities of the different type extinguishers)
- Each work area is equipped with Emergency Eye Wash and Shower for use in the event product is splashed or spilled on an employee.
- All employees are provided with steel-toed boots, complete protective suits, gloves, goggles, and hats to be worn when handling products that require their use.
- Each work area is equipped with 1", 1½", or 2" water hoses for use in fire, if needed, or for other uses, such as clean up.
- Scott Air Packs are located in the warehouse and chlorine plant. They are capable of providing normal air and face protection for 30 minutes.
- Compressed Oxygen tank and mask is located in the chlorine plant for first aid purposes.
- Emergency Chlorine Capping Equipment is located in chlorine plant. Kits are:
  - "A" Kit - For use on 100 lb. and 150 lb. chlorine cylinder for leaks in valves, fuse plugs on side of container
  - "B" Kit - For use on 2,000 lb. cylinder--valves, plugs on side of container
  - "C" Kit - For use on rail cars - valves and plugs
- Chlorine plant is equipped with a siren to alert employees of any emergency situation in the area.
- Warehouse and office building are equipped with a fire alarm bell.

## Emergency Equipment, continued

### Equipment/Capabilities, continued

- Each work area is equipped with a Terry Phone (Intercom System) for use in reporting on or warning of any emergency situation
- Forklifts - In warehouse area to move products away from emergency situation, if possible, do so safely.
- Emergency telephone numbers are displayed on all telephones
- Emergency Response Pallet located in warehouse area. Includes at least:
  - 1) 500# lime, soda ash, or bicarb for use on acid spills
  - 2) 500# citric or sulfamic acid for use on caustic spills
  - 3) 1,000# hazorb, floor dry, or oil dry for use on general spills
  - 4) 2 shovels, 2 rakes, an axe, a pick, plus 100 feet of heavy rope
  - 5) Large flashlight with extra batteries
  - 6) 2 sets protective pants and boots
- Bulk storage tanks are surrounded by Concrete Dike Walls designed to contain liquid products in the event of leaks on spills.
- All drains in the tank truck loading pads, drumming stations, and storage areas for liquid products are connected to the facility holding tank for testing and Ph adjustment in the event of any leaks or spills.
- Greensboro Fire Station #8 located at 2201 Chapman St., (approximately 4 miles from facility location) is equipped with a hazardous materials unit on call 24 hours a day.
- Greensboro Fire Station #16 is closest station to the facility located at 1000 Meadowood Road (just off Wendover Avenue - approximately 1 mile west of the facility).
- MSDS (Material Safe Data Sheets) are maintained at the facility for all products handled. Describe any health hazards or safety precautions needed when handling a product.
- RIS (Repack Instruction Sheets) are used each time a product is handled in bulk or repackaged. (Refreshes personnel as to safety precautions exactly what safety equipment and clothing are required during the handling of the product.
- Monthly Safety Meetings are held with members of the various departments of the facility to discuss general or specific areas of safety pertinent to their jobs.

## C. MSDS (Material Safety Data Sheets)

Products normally handled at this facility  
(In bulk quantities)  
(attached)

Note: Facility files are set up with MSDS for all products that are repacked or handled at this location.

FIRE EXTINGUISHER CHART

CLASS OF FIRE:	TYPE OF EXTINGUISHER:						
	CARBON DIOXIDE	DRY CHEMICAL	VAPORIZING LIQUID	FOAM	SODA ACID	WATER	LOADED STREAM
CLASS A	YES	YES	YES	YES	YES	YES	YES
Paper, wood, excelsior, rubber and general combustible fires require cooling and quenching	Small surface fires only	Small surface fires only	Do not use in enclosed areas as vapor is very toxic and can quickly cause unconsciousness	Foam clings to verticle surfaces, wets and smothers	Is economical protection; cools and quenches	Excellent protection; cools and quenches	Water with chemical additive; good protection
CLASS B	YES	YES	YES	YES	NO	NO	YES
Flammable liquids (gasoline, paint, grease, etc.) demand a smothering action for quick extinguishment	Has no ill effects on food and leaves no residue	Chemical smothers fires	Vaporizing liquid is converted into a gas which smothers the fire	Heavy foam blanket on surface of burning liquids smothers	Basic water content will spread liquid fires	Water will spread fire, not put it out	Provides smothering action on very small fires
CLASS C	YES	YES	YES	NO	NO	NO	NO
Live electrical fires (motors, switches, appliances, etc.) A nonconducting extinguishing agent must be used	Is nonconductor; will not damage costly electrical equipment or leave residue	Is nonconductor of electricity; leaves a heavy residue	Is nonconductor; will not damage equipment	Is conductor and should not be used	Should not be used on live electrical equipment; basic water content will conduct	Conductor and should not be used	Should not be used on live electrical equipment
RANGE	5-10 feet	10-26 feet	20-30 feet	26-36 feet	30-40 feet	36-50 feet	45-50 feet
CLASS D	NO	NO	NO	NO	NO	NO	NO

Class D is flammable metals. Use only those dry compounds that have been made available for this specific use. Do NOT use any of the above extinguishers unless they are specifically marked for use on Class D fires.

# 2½ lb and 5 lb stored pressure

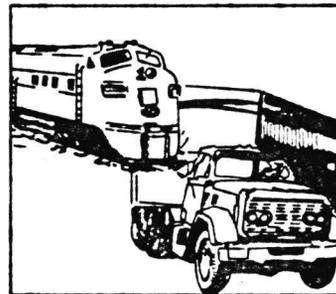
Chem Op 80.01  
EXHIBIT II  
Issued 12/18/78

# fire extinguishers



## FEATURES:

- Improved Heavy Duty Design "J" Valve
- Highest Ratings in the Industry
- Durable Rugged Construction
- All Metal Handles
- High Gloss Red Enamel Finish
- Visual Steel Pressure Gauge
- Meets New U.L. Standard 299
- Simple and Economical Maintenance



TRANSPORTATION

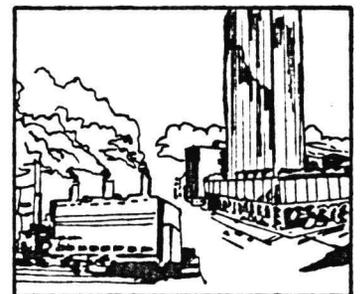


BOATING and CAMPING

## 2 MODEL SIZES AVAILABLE

TCP-2 1/2 J  
(1A-10B:C)

TCP-5 J  
(2A-10B:C)



INDUSTRIAL and COMMERCIAL BUILDINGS

HOME and AUTO  
RECREATIONAL VEHICLE  
SMALL OFFICES and STORES



DISTRIBUTED BY:

Think of



Fire Extinguisher Corporation

1685 SHERMER ROAD • NORTHBROOK, ILL. 60062

Relax. Fire Starts



## SPECIFICATIONS

MODEL NUMBER PART NUMBER	TCP-2½ J 34983	TCP-5J 35024	TCP-5JH 35025	KCP-2½ J 34982	CP-2½ J 34981	CP-5J 35022
U/L Classification .....	1A-10B:C	2A-10B:C	2A-10B:C	10B:C	10B:C	20B:C
Capacity .....	2 1/2 lbs.	5 lbs.	5 lbs.	2 1/2 lbs.	2 1/2 lbs.	5 lbs.
Contents .....	Triplex	Triplex	Triplex	Purple "K"	Quick Aid	Quick Aid
Suitable From .....	-40° to +120°F	-40° to +120°F	-40° to +120°F	-40° to +120°F	-40° to +120°F	-40° to +120°F
Discharge Range .....	10 - 15 ft	10 - 15 ft.	10 - 15 ft.	10 - 15 ft.	10 - 15 ft.	10 - 15 ft.
Discharge Time .....	10 sec.	10 sec.	9.5 sec.	9.0 sec.	9.0 sec.	8.5 sec.
Operating Pressure .....	195 psi	195 psi	195 psi	195 psi	195 psi	195 psi
Test Pressure .....	585 psi	585 psi	585 psi	585 psi	585 psi	585 psi
Shell Construction .....	Steel	Steel	Steel	Steel	Steel	Steel
U.S.C.G. Approved .....	Yes	Yes	Yes	Yes	Yes	Yes
Weight Charged .....	5 lbs.	9 lbs. 8 oz.	9 lbs. 12 oz.	5 lbs.	5 lbs.	9 lbs. 8 oz.
Height (Overall) .....	15 5/8"	16 1/2"	16 1/2"	15 5/8"	15 5/8"	16 1/2"
Width (Overall) .....	5 1/4"	5 5/8"	7 1/4"	5 1/4"	5 1/4"	5 5/8"
Depth (Overall) .....	3"	4 1/4"	4 1/4"	3"	3"	4 1/4"

Maintenance .....

Inspect monthly (or at more frequent intervals when circumstances require) For further maintenance instructions, refer to nameband on extinguisher.

### POWDER OPTION

#### TRIPLEX DRY CHEMICAL

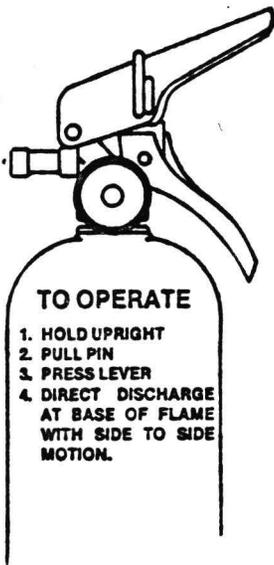
This multi-purpose dry chemical agent is effective in extinguishing Class A, B and C fires.

#### QUICK AID DRY CHEMICAL

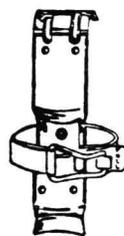
This specially treated sodium bicarbonate dry chemical agent is moisture resistant and free-flowing. It is effective and approved for use on Class B and C fires.

#### PURPLE "K" DRY CHEMICAL

This specially treated potassium bicarbonate dry chemical agent provides more effective protection against Class B and C fires.



VEHICLE BRACKET  
MVCP-2½  
for all 2½ lb.



VEHICLE BRACKET  
MVCP-5  
for all 5 lb.

General's line of hand portable stored pressure dry chemical extinguishers offers a choice of capacity and type of agent to satisfy a variety of fire protection requirements. They find wide use around the home, in boating, camping and other recreational activities and in industrial, commercial, marine and transportation applications. All models are Underwriters' Laboratories listed.

Models are available with standard Quick Aid, Purple K, or the universal Triplex dry chemicals offering the opportunity to select the extinguisher that will most efficiently and economically provide protection against a particular hazard. Standardized, easy operation (pull pin, squeeze lever) and durable construction make them the choice of safety directors and fire chiefs.

Mounting brackets are supplied with the 2½ pound units. The 5 pound units are available with either mounting brackets or wall hanger hooks.

General is your one complete source for portables and systems.

### CORPORATE HEADQUARTERS

General Fire Extinguisher Corporation  
1685 Shermer Road  
Northbrook, Illinois 60062  
312/272-7500

### REGIONAL SALES OFFICES/WAREHOUSES

ATLANTA, GA.: 1033 La Grange Ave., Atlanta, Ga. 30336 404/349-7850  
CHICAGO, ILL.: 1685 Shermer Road, Northbrook, Ill. 60062 312/272-7500  
HOUSTON, TEXAS: 713/497-1570  
LOS ANGELES, CA.: 213/870-6644  
NEW YORK CITY AREA: 201/225-3800  
RENO, NEV.: 4969 Energy Way, Reno, Nevada 89502 702/322-0666  
SAN FRANCISCO, CA.: 415/462-1050

**portables**

**EXTINGUISHING AGENTS**  
Dry Chemical  
Carbon Dioxide  
Water  
Halon (211)

**OPERATIONAL FEATURES**  
Extreme mobility  
Simple operation and easy to service  
Sizes from 2 1/2 lb. hand portable fire extinguishers to 350 lb. wheeled units

**systems**

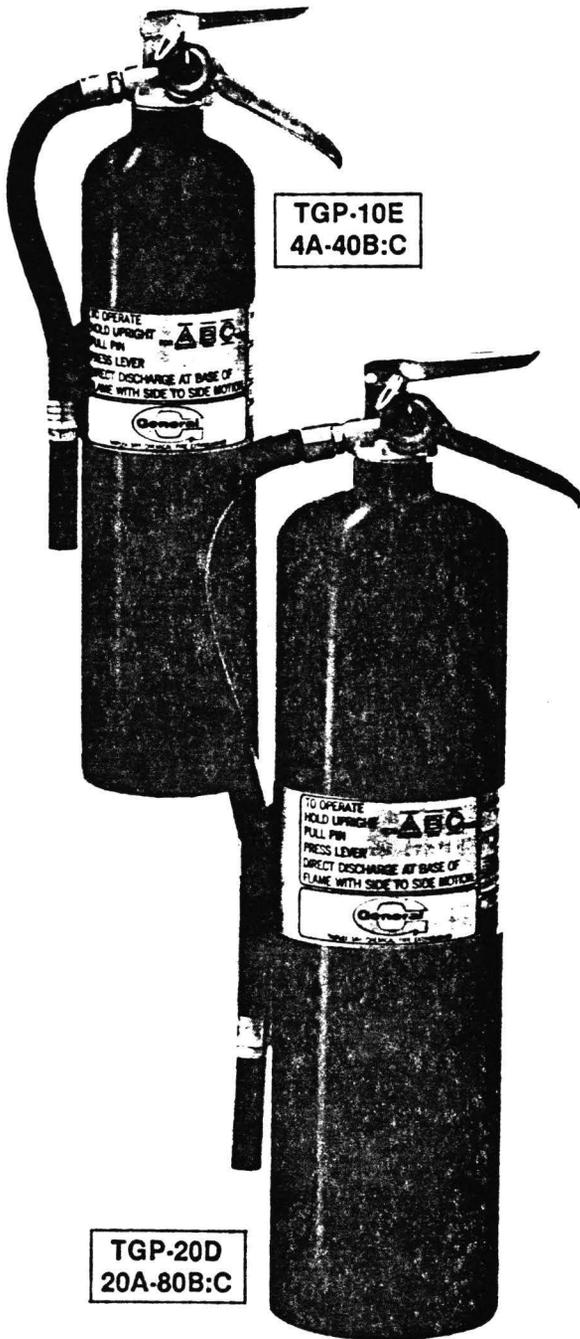
**EXTINGUISHING AGENTS**  
Dry Chemical  
Carbon Dioxide  
Halon (201)

**OPERATIONAL FEATURES**  
24 hour fire extinguishing  
Completely automatic or manual activation  
Designed to fulfill specific requirements

# 10 and 20 lb. stored pressure

Chem Op 80.01  
EXHIBIT III  
Issued 12/18/78

## fire EXTINGUISHERS

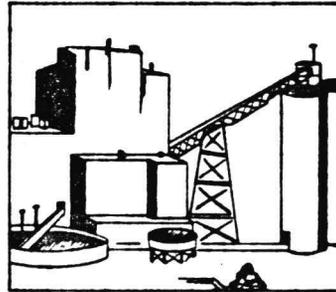


TGP-10E  
4A-40B:C

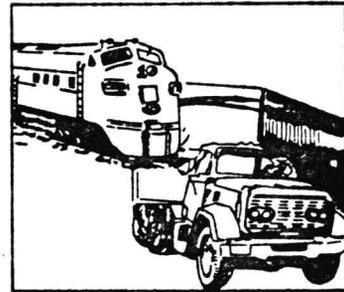
TGP-20D  
20A-80B:C

### FEATURES:

- Durable Rugged Construction
- Industrial Quality Metal Valves
- All Metal Handles
- High Gloss Red Enamel Finish
- Visual Steel Pressure Gauge
- Meets New U.L. Standard 299
- Simple and Economical Maintenance



UTILITIES

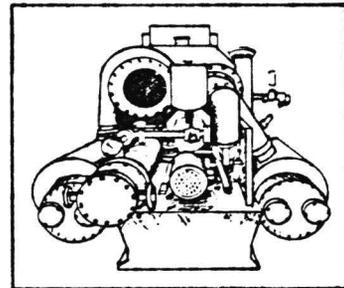


TRANSPORTATION

### 2 MODEL SIZES AVAILABLE

TGP-10 E  
(4A-40B:C)

TGP-20 D  
(20A-80B:C)



MANUFACTURING EQUIPMENT



DISTRIBUTED BY:

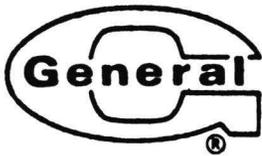
COMMERCIAL BUILDINGS  
REFINERIES  
MINING  
TRACTORS  
BOATS

Think of



Fire Extinguisher Corporation

1685 SHERMER ROAD • NORTHBROOK, ILL. 60062



## SPECIFICATIONS

MODEL NUMBER PART NUMBER	GP-10E 34021	GP-20D 34022	TGP-10E 34027	TGP-20D 34028
U/L Classification .....	60B:C	120B:C	4A-40B:C	20A-80B:C
Capacity .....	10 lbs.	20 lbs.	9 1/2 lbs.	18 lbs.
Contents .....	Quick Aid	Quick Aid	Triplex	Triplex
Suitable From .....	-40° to +120°F	-40° to +120°F	-40° to +120°F	-40° to +120°F
Discharge Range .....	15 - 20 ft.	15 - 25 ft.	15 - 20 ft.	15 - 25 ft.
Discharge Time .....	18.5 sec.	27	15 sec.	22 sec.
Operating Pressure .....	195 psi	195 psi	195 psi	195 psi
Test Pressure .....	585 psi	585 psi	585 psi	585 psi
Shell Construction .....	Steel	Steel	Steel	Steel
U.S.C.G. Approved .....	Yes	Yes	Yes	Yes
Weight Charged .....	20 lbs.	36 1/4 lbs.	19 1/2 lbs.	34 1/4 lbs.
Height (Overall) .....	22"	26 1/2"	22"	26 1/2"
Width (Overall) .....	8 3/4"	9 1/2"	8 3/4"	9 1/2"
Depth (Overall) .....	5"	6 9/32"	5"	6 9/32"

Maintenance .....

Inspect monthly (or at more frequent intervals when circumstances require). For further maintenance instructions, refer to nameband on extinguisher.

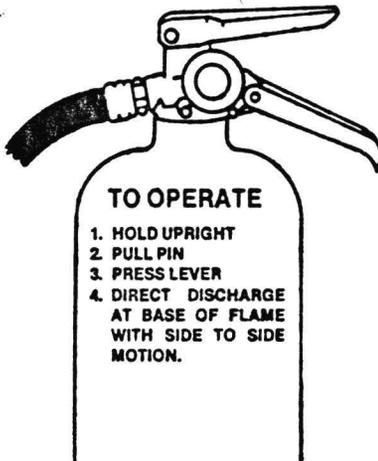
### POWDER OPTION

#### TRIPLEX DRY CHEMICAL

This multi-purpose dry chemical agent is effective in extinguishing Class A, B and C fires.

#### QUICK AID DRY CHEMICAL

This specially treated sodium bicarbonate dry chemical agent is moisture resistant and free-flowing. It is effective and approved for use on Class B and C fires.



HANGER BRACKET  
for all 10 lb.



HANGER BRACKET  
for all 20 lb.

General's line of hand portable stored pressure dry chemical extinguishers offers a choice of capacity and type of agent to satisfy a variety of fire protection requirements. They find wide use around the home, in boating, camping and other recreational activities and in industrial commercial, marine and transportation applications. They range in capacity from 10 to 20 pounds, all models are Underwriters' Laboratories listed.

Models are available with standard Quick Aid or the universal Triplex dry chemicals, offering the opportunity to select the extinguisher that will most efficiently and economically provide protection against a particular hazard. Standardized, easy operation (pull pin, squeeze lever) and durable construction make the choice of safety directors and fire chiefs.

Large, easy-to-read pressure gauges and simplified recharging (no special tools required) earn praises from maintenance and servicing personnel.

Wall hanger hooks are provided with all other models. Mounting brackets for the 10 and 20 pound models are available as optional equipment.

### CORPORATE HEADQUARTERS

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1685 Shermer Road  
Northbrook, Illinois 60062  
312/272-7500

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RENO, NEV.: 4969 Energy Way, Reno, Nevada 89502 702/322-0666  
SAN FRANCISCO, CA.: 415/469-1950

General is your one complete source for portables and systems.

**portables**

**EXTINGUISHING AGENTS**  
Dry Chemical  
Carbon Dioxide  
Water  
Halon 1211

**OPERATIONAL FEATURES**  
Extreme mobility  
Simple operation and easy to service  
Sizes from 2 1/2 lb. hand portable fire extinguishers to 350 lb. wheeled units

**systems**

**EXTINGUISHING AGENTS**  
Dry Chemical  
Carbon Dioxide  
Halon 1301

**OPERATIONAL FEATURES**  
24 hour fire extinguishing  
Completely automatic or manual activation  
Designed to fulfill specific requirements



# MATERIAL SAFETY DATA SHEET

(Approved by U.S. Department of Labor "Essentially Similar" to Form LSB-OOS-4)



PRODUCT NAME: ACETIC ACID, GLACIAL

CHEMICAL NAME: Acetic Acid

CHEMICAL FAMILY: Acids

FORMULA: CH<sub>3</sub>COOH

MOLECULAR WEIGHT: 60.05

SYNONYMS: Ethanoic Acid; Methane Carboxylic Acid

## I. PHYSICAL DATA

BOILING POINT, 760 mm. Hg	117.9 °C. (244.2 °F.)	FREEZING POINT	16.7 °C.
SPECIFIC GRAVITY (H <sub>2</sub> O = 1)	1.0512 at 20/20 °C.	VAPOR PRESSURE AT 20°C.	11 mm. Hg
VAPOR DENSITY (air = 1)	2.1	SOLUBILITY IN WATER, % by wt.	Complete
PER CENT VOLATILES BY VOLUME	100	EVAPORATION RATE (Butyl Acetate = 1)	0.97
APPEARANCE AND ODOR	Water-white liquid; sharp odor.		

## II. HAZARDOUS INGREDIENTS

MATERIAL	%	TLV (Units)
Acetic Acid	~ 100	10 ppm.
(See Sections III through VIII)		

## III. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT [test method(s)]	106 °F., Tag closed cup ASTM D 56			
FLAMMABLE LIMITS IN AIR, % by volume	LOWER	5.4	UPPER	16.0

EXTINGUISHING MEDIA	Use carbon dioxide or dry chemical for small fires. Use alcohol foam or water spray for large fires.
SPECIAL FIRE FIGHTING PROCEDURES	Fire fighting personnel should be cautious of irritating vapors that may be evolved from an acetic acid fire. Personnel should be protected by self-contained breathing apparatus and complete protective clothing as needed.
UNUSUAL FIRE AND EXPLOSION HAZARDS	None

## IV. ADDITIONAL INFORMATION

304/744-3487

This number is available days, nights, weekends, and holidays.

While Union Carbide Corporation believes that the data contained herein are factual and the opinions expressed are those of qualified experts regarding the results of the tests conducted, the data are not to be taken as a warranty or representation for which Union Carbide Corporation assumes legal responsibility. They are offered solely for your consideration, investigation and verification. Any use of these data and information must be determined by the user to be in accordance with applicable Federal, State and local laws and regulations.

## IV. HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE	10 ppm. ACGIH (1977) OSHA CFR 29 § 1000 Table G1
EFFECTS OF OVEREXPOSURE	Contact with skin and eye causes burns. Breathing of vapors causes coughing, chest pain, and irritation of nose and throat. May cause nausea and vomiting.
EMERGENCY AND FIRST AID PROCEDURES	Immediately flush skin and eye contact with plenty of water for at least 15 minutes. Get medical care for eyes. If inhaled, remove to fresh air. Give oxygen if breathing is difficult. Call a physician.

## V. REACTIVITY DATA

STABILITY		CONDITIONS TO AVOID	None
UNSTABLE	STABLE		
--	✓		
INCOMPATIBILITY (materials to avoid)		Avoid contamination with alkalis, amines, and nitric acid.	
HAZARDOUS DECOMPOSITION PRODUCTS		Burning can produce carbon monoxide and/or carbon dioxide.	
HAZARDOUS POLYMERIZATION		CONDITIONS TO AVOID	None
May Occur	Will not Occur		
--	✓		

## VI. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED	Wear suitable protective equipment. Collect for disposal. See Section VIII. Toxic to fish! Avoid discharge to natural waters.
WASTE DISPOSAL METHOD	Incinerate in a furnace where permitted under appropriate Federal, State, and local regulations. Some supplementary fuel may be required for burning.

## VII. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (specify type)	Fresh-air mask in confined areas		
VENTILATION	LOCAL EXHAUST	Preferable	SPECIAL      --
	MECHANICAL (general)	May not be sufficient	OTHER          --
PROTECTIVE GLOVES	Rubber gloves	EYE PROTECTION	Vapor-proof goggles
OTHER PROTECTIVE EQUIPMENT	Full face mask, impervious apron, eye bath, and safety shower		

## VIII. SPECIAL PRECAUTIONS

<p>PRECAUTIONARY LABELING</p>	<p style="text-align: center;"><b>ACETIC ACID, GLACIAL</b></p> <p><b>DANGER!</b> CAUSES BURNS HARMFUL IF INHALED COMBUSTIBLE</p> <p>Do not get in eyes, on skin, on clothing. Avoid breathing vapor. Keep away from heat and open flame. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.</p> <p><b>FIRST AID:</b>      In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician. Wash clothing before reuse.</p> <p style="padding-left: 40px;">If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.</p> <p style="text-align: center;"><b>FOR INDUSTRY USE ONLY</b></p>
<p>OTHER HANDLING AND STORAGE CONDITIONS</p>	<p>Waste streams containing acetic acid could be diluted and neutralized with caustic. The neutralized solutions containing sodium acetate salt should be amenable to biological degradation. Aqueous solutions containing 500 ppm. of sodium acetate have been degraded in acclimated laboratory biological systems.</p>

EFFECTIVE DATE: 25 JUL 79

PRODUCT CODE: 00259

PRODUCT NAME: ACETONE, SYNTHETIC

MSD: 0010

INGREDIENTS (TYPICAL VALUES-NOT SPECIFICATIONS) : % :

ACETONE, MINIMUM : 99.5 :

SECTION 1

PHYSICAL DATA

BOILING POINT: 133F, 45C : SOL. IN WATER: COMPLETELY MISCIBLE  
VAP PRESS: 181.7 MMHG @ 20C : SP. GRAVITY: 0.7880 @ 25/25C  
VAP DENSITY (AIR=1): 2.00 : % VOLATILE BY VOL: 100

APPEARANCE AND ODOR: COLORLESS, SWEETISH LIQUID

SECTION 2

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: 0F, -18C : FLAMMABLE LIMITS  
METHOD USED: TCC : LFL: 2.6 % UFL: 12.6 %

EXTINGUISHING MEDIA: ALCOHOL FOAM, CARBON DIOXIDE, AND DRY CHEMICAL.

SPECIAL FIRE FIGHTING EQUIPMENT AND HAZARDS: FIREMAN SHOULD WEAR NORMAL PROTECTIVE EQUIPMENT AND BREATHING APPARATUS. WATER CAN BE USED TO COOL FIRE-EXPOSED CONTAINERS, TO PROTECT PERSONNEL AND TO DISPERSE VAPORS AND SPILLS.

SECTION 3

REACTIVITY DATA

STABILITY: KEEP AWAY FROM FLAMES AND SPARK-PRODUCING EQUIPMENT.

INCOMPATIBILITY: NITRIC PLUS ACETIC ACIDS AND NITRIC PLUS SULFURIC ACIDS.

HAZARDOUS DECOMPOSITION PRODUCTS: ----

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR

SECTION 4

SPILL, LEAK, AND DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS (USE APPROPRIATE SAFETY EQUIPMENT): SMALL SPILL - ALLOW TO EVAPORATE IF IT CAN BE DONE SAFELY. OTHERWISE SOAK UP WITH ABSORBENT MATERIAL AND SCOOP INTO DRUMS. LARGE SPILL - DIKE AND PUMP INTO DRUMS USING AIR-OPERATED OR OTHER NON-SPARK-PRODUCING PUMP.

(CONTINUED ON PAGE 2 )

(R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

EFFECTIVE DATE: 25 JUL 79  
PRODUCT (CONT'D): ACETONE, SYNTHETIC

PRODUCT CODE: 00259  
MSD: 0010

SECTION 4            SPILL, LEAK, AND DISPOSAL PROCEDURES (CONTINUED)

ACTION TO TAKE FOR SPILLS (USE APPROPRIATE SAFETY EQUIPMENT): (CONTINUED)  
PREVENT ACETONE FROM ENTERING DRAINS OR SEWERS.

DISPOSAL METHOD: SMALL AMOUNT - CHOOSE A SAFE LOCATION. IGNITE ABSORBED MATERIAL OR POUR ACETONE ON SAND AND IGNITE. LARGE AMOUNT - BURN IN AN APPROVED COMBUSTION CHAMBER.

SECTION 5            HEALTH HAZARD DATA

INGESTION: LOW SINGLE DOSE ORAL TOXICITY; LD50 (RAT) 9750 MG/KG.

EYE CONTACT: UP TO MODERATE IRRITATION, POSSIBLY SOME TRANSIENT CORNEAL INJURY.

SKIN CONTACT: SHORT SINGLE EXPOSURE NOT LIKELY TO CAUSE SIGNIFICANT IRRITATION. DEFATTING OF SKIN WITH RESULTING DERMATITIS UPON REPEATED PROLONGED CONTACT.

SKIN ABSORPTION: NOT A PROBLEM; CONSIDERED VERY LOW IN TOXICITY BY THIS ROUTE.

INHALATION: OSHA GUIDE AND ACGIH TLV IS 1000 PPM FOR ACETONE.

EFFECTS OF OVEREXPOSURE: NARCOSIS, VAPORS LIKELY TO BE IRRITATING AT HIGH LEVELS.

SECTION 6            FIRST AID

EYES: IRRIGATE WITH FLOWING WATER IMMEDIATELY AND CONTINUOUSLY FOR FIFTEEN MINUTES. REFER TO MEDICAL PERSONNEL.

SKIN: IN CASE OF CONTACT, IMMEDIATELY FLUSH SKIN WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES WHILE REMOVING CONTAMINATED CLOTHING. CALL A PHYSICIAN. WASH CLOTHING BEFORE REUSE.

INHALATION: REMOVE TO FRESH AIR IF EFFECTS OCCUR. CALL PHYSICIAN AND/OR TRANSPORT TO MEDICAL FACILITY. IF RESPIRATION STOPS, GIVE MOUTH-TO-MOUTH RESUSCITATION.

INGESTION: LOW IN TOXICITY. INDUCE VOMITING IF LARGE AMOUNTS ARE INGESTED.

NOTE TO PHYSICIAN:

EYES: MAY CAUSE TRANSIENT CORNEAL INJURY OR BURN. STAIN FOR EVIDENCE OF CORNEAL INJURY. IF CORNEA IS BURNED, INSTILL ANTIBIOTIC STEROID PREPARATION FREQUENTLY. CONSULT OPHTHALMOLOGIST.

SKIN: MAY CAUSE MILD IRRITATION. CHRONIC EXPOSURE MAY CAUSE

(CONTINUED ON PAGE 3 )

(R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

EFFECTIVE DATE: 25 JUL 79  
PRODUCT (CONT'D): ACETONE, SYNTHETIC

PRODUCT CODE: 00259  
MSD: 0010

SECTION 6                      FIRST AID (CONTINUED)

NOTE TO PHYSICIAN: (CONTINUED)

DEFATTING TYPE OF DERMATITIS. TREAT AS ANY CONTACT DERMATITIS.

RESPIRATORY: MAY CAUSE MODERATE IRRITATION. MAY CAUSE DRUNKENNESS. ANESTHETIC OR NARCOTIC EFFECT MAY OCCUR. ADMINISTER OXYGEN IF AVAILABLE. BRONCHODILATORS, EXPECTORANTS, AND ANTITUSSIVES MAY BE OF HELP. GOOD WARNING PROPERTIES.

SYSTEMIC: MAY CAUSE KETOSIS. CONSULT STANDARD LITERATURE. NO SPECIFIC ANTIDOTE. TREATMENT BASED ON THE SOUND JUDGMENT OF THE PHYSICIAN AND THE INDIVIDUAL REACTIONS OF THE PATIENT.

SECTION 7                      SPECIAL HANDLING INFORMATION

VENTILATION: RECOMMEND CONTROL OF VAPORS TO SUGGESTED GUIDE.

RESPIRATORY PROTECTION: NIOSH APPROVED RESPIRATORY PROTECTION REQUIRED IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL. FOR EMERGENCIES, A SELF-CONTAINED BREATHING APPARATUS OR A FULL-FACE RESPIRATOR AS APPROVED BY NIOSH IS RECOMMENDED.

PROTECTIVE CLOTHING: CLEAN, BODY-COVERING CLOTHING. IN ADDITION, IMPERVIOUS GLOVES, BOOTS, APRON DEPENDING UPON THE EXTENT AND SEVERITY OF EXPOSURE LIKELY.

EYE PROTECTION: SAFETY GLASSES WITHOUT SIDE SHIELDS.

SECTION 8                      SPECIAL PRECAUTIONS AND ADDITIONAL INFORMATION

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: PRACTICE REASONABLE CARE TO AVOID EYE AND SKIN CONTACT AND TO AVOID BREATHING VAPORS USE SPARK-RESISTANT TOOLS; NO SMOKING AREA FOR HANDLING AND STORAGE. REFER TO THE ACETONE PRODUCT DATA BULLETIN.

ADDITIONAL INFORMATION: REVISIONS 7/25/79 -- FLASH POINT, METHOD USED; INHALATION, SECTION 7.

LAST PAGE

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CONSULT THE DOW CHEMICAL COMPANY FOR FURTHER INFORMATION.

THE INFORMATION HEREIN IS GIVEN IN GOOD FAITH, BUT NO WARRANTY, EXPRESSED OR IMPLIED, IS MADE.

EFFECTIVE DATE: 07 NOV 79

PRODUCT CODE: 15216

PRODUCT NAME: CAUSTIC SODA SOLUTION 50%

MSD: 0101

INGREDIENTS (TYPICAL VALUES-NOT SPECIFICATIONS) : % :  
SODIUM HYDROXIDE : 50 :  
WATER : BALANCE:

SECTION 1

PHYSICAL DATA

BOILING POINT: 293F, 145C APPROX. : SOL. IN WATER: WATER SOLUTION  
VAP PRESS: 1.5 MMHG, 0.2 KPA @ 20C: SP. GRAVITY: @ 20C (DENS.) 1.52 G/ML  
VAP DENSITY (AIR=1): ---- : % VOLATILE BY VOL: LOW (WATER)

APPEARANCE AND- ODOR: COLORLESS TO SLIGHTLY COLORED LIQUID, NO ODOR.

SECTION 2

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: NONE : FLAMMABLE LIMITS  
METHOD USED: NOT APPLICABLE : LFL: NOT APPLIC. UFL: NOT APPLIC.

EXTINGUISHING MEDIA: NON-COMBUSTIBLE.

SPECIAL FIRE FIGHTING EQUIPMENT AND HAZARDS: IN WATER SOLUTION  
CAUSTIC CAN REACT WITH AMPHOTERIC METALS (SUCH AS ALUMINUM)  
GENERATING HYDROGEN WHICH IS FLAMMABLE AND/OR EXPLOSIVE WHEN IGNITED.

SECTION 3

REACTIVITY DATA

STABILITY: PRODUCT ABSORBS CARBON DIOXIDE FROM THE AIR.

INCOMPATIBILITY: WATER AND ACID. PRODUCT IS STRONG CAUSTIC ALKALI.  
MAY REACT VIOLENTLY OR EXPLOSIVELY WITH ACID, A NUMBER OF  
ORGANIC COMPOUNDS, AMPHOTERIC METALS (SUCH AS ALUMINUM), AND HEATED  
WATER.

HAZARDOUS DECOMPOSITION PRODUCTS: NONE.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

SECTION 4

SPILL, LEAK, AND DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS (USE APPROPRIATE SAFETY EQUIPMENT): ONLY TRAINED  
AND PROPERLY PROTECTED PERSONNEL SHOULD UNDERTAKE SPILL CLEAN UP.  
ACTING CAUTIOUSLY, DILUTE AND NEUTRALIZE WITH DILUTE ACID.

(CONTINUED ON PAGE 2 )

(R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

EFFECTIVE DATE: 07 NOV 79  
PRODUCT (CONT'D): CAUSTIC SODA SOLUTION 50%

PRODUCT CODE: 15216  
MSD: 0101

SECTION 4            SPILL, LEAK, AND DISPOSAL PROCEDURES (CONTINUED)

ACTION TO TAKE FOR SPILLS (USE APPROPRIATE SAFETY EQUIPMENT): (CONTINUED)  
PREFERABLY ACETIC ACID.

DISPOSAL METHOD: DISPOSAL OF CAUSTIC SODA MUST MEET ALL FEDERAL,  
STATE AND LOCAL REGULATIONS. CONTACT THE DOW CHEMICAL COMPANY  
FOR ADDITIONAL INFORMATION.

SECTION 5                            HEALTH HAZARD DATA

INGESTION: MOST SERIOUS EFFECT IS CORROSION OF TISSUES. LOWEST  
LETHAL DOSE IN RABBIT IS 500 MG/KG CAUSTIC.

EYE CONTACT: SEVERE BURN AND POSSIBLE BLINDNESS.

SKIN CONTACT: BURNS, FREQUENTLY DEEP ULCERATION AND ULTIMATE  
SCARRING.

SKIN ABSORPTION: NOT LIKELY A PROBLEM.

INHALATION: ACGIH TLV AND OSHA GUIDE IS 2 MG/CU METER DUSTS AND  
MISTS, BASED ON SODIUM HYDROXIDE.

EFFECTS OF OVEREXPOSURE: DUSTS OR CONCENTRATED MIST MAY CAUSE DAMAGE TO  
UPPER RESPIRATORY TRACT & EVEN TO THE LUNGS PROPER, RANGES FROM MILD  
IRRITATION TO SEVERE PNEUMONITIS. MAIN EFFECT-TISSUE DAMAGE.

SECTION 6                            FIRST AID

EYES: IMMEDIATE AND CONTINUOUS IRRIGATION WITH FLOWING WATER AT  
LEAST 30 MINUTES IS IMPERATIVE. PROMPT MEDICAL CONSULTATION  
ESSENTIAL.

SKIN: SKIN BURN LIKELY. IMMEDIATE AND CONTINUOUS AND THOROUGH  
WASHING IN FLOWING WATER FOR 30 MINUTES IS INDICATED. REMOVE CLOTHING  
IMMEDIATELY. CALL PHYSICIAN AND/OR TRANSPORT TO MEDICAL FACILITY.  
DESTROY CONTAMINATED SHOES. WASH CLOTHING BEFORE REUSE.

INHALATION: REMOVE TO FRESH AIR IF EFFECTS OCCUR. CALL PHYSICIAN  
AND/OR TRANSPORT TO MEDICAL FACILITY.

INGESTION: CORROSIVE. DO NOT INDUCE VOMITING. GIVE LARGE  
AMOUNTS OF WATER OR MILK IF IMMEDIATELY AVAILABLE AND TRANSPORT TO  
MEDICAL FACILITY.

NOTE TO PHYSICIAN:

EYES: MAY CAUSE SEVERE CORNEAL INJURY OR BURN. MAY CAUSE IMPAIR-  
MENT OF VISION. STAIN FOR EVIDENCE OF CORNEAL INJURY. IF CORNEA IS  
BURNED, INSTILL ANTIBIOTIC STEROID PREPARATION FREQUENTLY. CONSULT

(CONTINUED ON PAGE 3 )

(R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

EFFECTIVE DATE: 07 NOV 79  
PRODUCT (CONT'D): CAUSTIC SODA SOLUTION 50%

PRODUCT CODE: 15216  
MSD: 0101

SECTION 6                      FIRST AID (CONTINUED)

NOTE TO PHYSICIAN: (CONTINUED)

OPHTHALMOLOGIST.

SKIN: MAY CAUSE SEVERE BURNS. IF BURN IS PRESENT, TREAT AS ANY THERMAL BURN.

RESPIRATORY: MAY CAUSE SEVERE IRRITATION. ADMINISTER OXYGEN IF AVAILABLE. BRONCHODILATORS, EXPECTORANTS, AND ANTITUSSIVES MAY BE OF HELP.

ORAL: MAY CAUSE STRICTURE. IF LAVAGE IS PERFORMED, SUGGEST ENDO-TRACHEAL AND/OR ESOPHAGOSCOPIC CONTROL.

GENERAL: CONSULT STANDARD LITERATURE. TREATMENT BASED ON THE SOUND JUDGMENT OF THE PHYSICIAN AND THE INDIVIDUAL REACTIONS OF THE PATIENT.

SECTION 7                      SPECIAL HANDLING INFORMATION

VENTILATION: RECOMMEND CONTROL OF MISTS TO SUGGESTED GUIDE.

RESPIRATORY PROTECTION: NIOSH APPROVED RESPIRATORY PROTECTION REQUIRED IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL. IF REQUIRED USE AN APPROVED DUST OR MIST RESPIRATOR.

PROTECTIVE CLOTHING: CLEAN, BODY-COVERING CLOTHING. IN ADDITION, IMPERVIOUS GLOVES, BOOTS, APRON, GAUNTLETS, FACE SHIELD AND A WIDE-HAT IN ADDITION TO RECOMMENDED EYE PROTECTION DEPENDING UPON THE EXTENT AND SEVERITY OF EXPOSURE LIKELY.

EYE PROTECTION: CHEMICAL WORKERS GOGGLES. FULL FACE SHIELD TO PROTECT FACE. MAINTAIN EYE WASH FOUNTAIN AND SAFETY SHOWER AT OR NEAR STATION.

SECTION 8                      SPECIAL PRECAUTIONS AND ADDITIONAL INFORMATION

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: PREVENT EYE AND SKIN CONTACT. DO NOT BREATHE DUSTS OR MISTS. AVOID STORING NEXT TO STRONG ACIDS. DISSOLVING IN WATER AND OTHER SUBSTANCES GENERATES EXCESSIVE HEAT, SPATTERING, AND MISTS. SOLUTIONS OF GREATER THAN 45% ARE VISCOUS AND VERY SLIPPERY.

ADDITIONAL INFORMATION: REVISIONS 11/7/79 -- CONSISTENCY PROGRAM - ALL SECTIONS CHANGED SLIGHTLY.

LAST PAGE

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EFFECTIVE DATE: 09 SEP 81

PRODUCT CODE: 15295

PRODUCT NAME: CHLORINE, LIQUID

MSD: 1122

INGREDIENTS (TYPICAL VALUES-NOT SPECIFICATIONS) : % :  
CHLORINE : 99.5 :

SECTION 1

PHYSICAL DATA

BOILING POINT: -29.3F (-34C) : SOL. IN WATER: 0.73G/100G H2O @ 20C  
VAP PRESS: 82 PSIG @ 68F, 20C : SP. GRAVITY: 1.47@32F,0C; 53.2 PSIA  
VAP DENSITY (AIR=1): 2.49 @32F,0C : % VOLATILE BY VOL: 99.0

APPEARANCE AND ODOR: AMBER COLOR - PUNGENT ODOR; LIQUIFIED GAS  
UNDER PRESSURE; VAPORIZES TO GREENISH - YELLOW GAS.

SECTION 2

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: NONE : FLAMMABLE LIMITS  
METHOD USED: NOT APPLICABLE : LFL: NOT APPLIC. UFL: NOT APPLIC.

EXTINGUISHING MEDIA: DO NOT USE WATER DIRECTLY ON A CHLORINE LEAK.  
A FOG NOZZLE IN AREA CAN BE USED TO ABSORB GAS.

SPECIAL FIRE FIGHTING EQUIPMENT AND HAZARDS: A POSITIVE-PRESSURE  
BREATHING APPARATUS FOR RESPIRATORY PROTECTION AND PROTECTIVE  
CLOTHING. MAY REACT TO CAUSE FIRE AND/OR EXPLOSION UPON CONTACT  
WITH MANY ORGANIC COMPOUNDS, AMMONIA, HYDROGEN, OR FINELY DIVIDED  
METALS, OR WITH STEEL AT ELEVATED TEMPERATURES.

SECTION 3

REACTIVITY DATA

STABILITY: AVOID PROXIMITY TO FLAMMABLE MATERIALS INCLUDING  
CHEMICALS.

INCOMPATIBILITY: MANY ORGANIC COMPOUNDS, AMMONIA, HYDROGEN, MOIST  
OR HOT STEEL, AND MANY FINELY DIVIDED METALS. MAY REACT EXPLOSIVELY  
WITH SOME ORGANICS UNDER CONFINEMENT.

HAZARDOUS DECOMPOSITION PRODUCTS: NONE.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

(CONTINUED ON PAGE 2 )

(R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

EFFECTIVE DATE: 09 SEP 81  
PRODUCT (CONT'D): CHLORINE, LIQUID

PRODUCT CODE: 15295  
MSD: 1122

SECTION 4            SPILL, LEAK, AND DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS (USE APPROPRIATE SAFETY EQUIPMENT): MOVE UNPROTECTED PERSONNEL CROSS-WIND. CLOSE NECESSARY VALVES WITH TRAINED PERSONNEL USING PRESCRIBED PROTECTIVE EQUIPMENT.

DISPOSAL METHOD: PRIOR TO DISPOSAL, THE ACTIVE CHLORINE MUST BE REDUCED OR DESTROYED. CHLORINE MAY BE ABSORBED IN DILUTE SOLUTIONS OF CAUSTIC (NAOH), SODA ASH (NA<sub>2</sub>CO<sub>3</sub>), OR HYDRATED LIME (CA(OH)<sub>2</sub>). CAUSTIC AND SODA ASH SOLUTIONS SHOULD CONTAIN APPROXIMATELY 3 POUNDS PER GALLON, LIME 1 POUND PER GALLON, FOR 1 POUND CHLORINE. LOCAL, MUNICIPAL OR STATE AUTHORITIES SHOULD BE CONTACTED FOR DISPOSAL OF RESULTANT PRODUCT.

SECTION 5            HEALTH HAZARD DATA

INGESTION: NOT A PROBLEM, AS CHLORINE IS A GAS AT ROOM TEMPERATURE.

EYE CONTACT: LIQUID AND GAS - CAPABLE OF CAUSING A BURN AND IRRITATION.

SKIN CONTACT: LIQUID AND GAS - CAPABLE OF CAUSING A BURN OR BLISTERS.

SKIN ABSORPTION: NOT LIKELY A PROBLEM BECAUSE OF BURN AND BECAUSE IT IS A GAS.

INHALATION: OSHA CEILING AND ACGIH TLV IS 1 PPM.

EFFECTS OF OVEREXPOSURE: MARKED IRRITATION: EYES, NASAL & THROAT LININGS. LUNG INJURY. SO IRRITATING, IT MAY BE DIFFICULT OR IMPOSSIBLE TO BREATHE.

SECTION 6            FIRST AID

EYES: EXPOSURE TO LIQUID CHLORINE - IMMEDIATE AND CONTINUOUS IRRIGATION WITH FLOWING WATER FOR AT LEAST 15 MINUTES IS IMPERATIVE. PROMPT MEDICAL CONSULTATION ESSENTIAL. EXPOSURE TO CHLORINE GAS - IRRIGATE WITH FLOWING WATER IMMEDIATELY AND CONTINUOUSLY FOR 15 MINUTES. REFER TO MEDICAL PERSONNEL.

SKIN: EXPOSURE TO LIQUID CHLORINE - SKIN BURN LIKELY. IMMEDIATE CONTINUOUS AND THOROUGH WASHING IN FLOWING WATER FOR 15 MINUTES IS INDICATED. REMOVE CLOTHING IMMEDIATELY. DISCARD ALL CONTAMINATED CLOTHING AND ACCESSORIES.

INHALATION: REMOVE TO FRESH AIR IF EFFECTS OCCUR. IF RESPIRATION STOPS GIVE MOUTH TO MOUTH RESUSCITATION. ADMINISTER OXYGEN IF AVAILABLE. CALL PHYSICIAN AND/OR TRANSPORT TO MEDICAL FACILITY.

(CONTINUED ON PAGE 3 )

R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

EFFECTIVE DATE: 09 SEP 81  
PRODUCT (CONT'D): CHLORINE, LIQUID

PRODUCT CODE: 15295  
MSD: 1122

SECTION 6                      FIRST AID (CONTINUED)

INGESTION: NOT A PROBLEM AS CHLORINE IS A GAS AT ROOM TEMPERATURE.

NOTE TO PHYSICIAN:

EYES: LIQUID VERY CORROSIVE. MAY CAUSE CORNEAL INJURY OR BURN.  
STAIN FOR EVIDENCE OF CORNEAL INJURY. IF CORNEA IS INJURED,  
INSTILL ANTIBIOTIC STEROID PREPARATION FREQUENTLY. CONSULT  
OPHTHALMOLOGIST. GAS - INJURY IS UNLIKELY.

SKIN: LIQUID VERY CORROSIVE. MAY CAUSE BURN. IF BURN IS PRESENT,  
TREAT AS ANY THERMAL BURN.

RESPIRATORY: MAY CAUSE SEVERE IRRITATION. MAY CAUSE PULMONARY EDEMA.  
ADMINISTER OXYGEN IF AVAILABLE. BRONCHODILATORS, EXPECTORANTS,  
AND ANTITUSSIVES MAY BE OF HELP. MECHANICAL SUPPORT OF RESPIR-  
ATION MAY BE NEEDED.

SYSTEMIC: HIGHLY TOXIC. CONSULT STANDARD LITERATURE. TREATMENT BASED  
ON SOUND JUDGMENT OF PHYSICIAN AND THE INDIVIDUAL REACTIONS OF  
THE PATIENT.

SECTION 7                      SPECIAL HANDLING INFORMATION

VENTILATION: RECOMMEND CONTROL OF VAPORS TO SUGGESTED GUIDE.

RESPIRATORY PROTECTION: APPROVED ACID GAS-TYPE RESPIRATOR REQUIRED  
IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL. FOR ENTRY INTO  
EMERGENCY AREAS, USE ONLY A POSITIVE PRESSURE BREATHING APPARATUS. FOR  
ESCAPE FROM EMERGENCY AREA USE AN APPROVED ESCAPE-TYPE MASK.

PROTECTIVE CLOTHING: RUBBER GLOVES, APRON AND BOOTS AND FULL FACE  
SHIELD OVER EYE PROTECTION.

EYE PROTECTION: GAS TIGHT GOGGLES OR EQUIVALENT. SUGGEST SEVERAL EYE  
FOUNTAINS AND SAFETY SHOWERS READILY AVAILABLE, SO AT LEAST ONE IS  
AVAILABLE IN AN EMERGENCY.

SECTION 8                      SPECIAL PRECAUTIONS AND ADDITIONAL INFORMATION

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: NO ATTEMPT SHOULD BE  
MADE TO HANDLE OR STORE CHLORINE WITHOUT A COMPLETE REVIEW OF THE  
CHLORINE MANUAL, AVAILABLE FROM THE CHLORINE INSTITUTE, INC.,  
NEW YORK.

ADDITIONAL INFORMATION: 09 SEP 81 REVISED FROM 23 OCT 79 --  
INGREDIENT SECTION AND SECTIONS 1,6,7. CONSOLIDATED MSDS 105,  
809, 810, AND 1123.

(CONTINUED ON PAGE 4 )

(R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

M A T E R I A L   S A F E T Y   D A T A   S H E E T   P A G E : 1  
DOW CHEMICAL U.S.A. MIDLAND MICHIGAN 48640 EMERGENCY PHONE: 517-636-4400

EFFECTIVE DATE: 15 JUN 81

PRODUCT CODE: 15822

PRODUCT NAME: CHLOROTHENE (R) VG SOLVENT

MSD: 0110

INGREDIENTS (TYPICAL VALUES-NOT SPECIFICATIONS) : % :

1,1,1-TRICHLOROETHANE (NOMINAL) : 95.8 :

SECTION 1

PHYSICAL DATA

BOILING POINT: 165F (74C) : SOL. IN WATER: 0.07G/100G @ 25C  
VAP PRESS: 100 MMHG @ 20C : SP. GRAVITY: 1.320 @ 25/25C  
VAP DENSITY (AIR=1): 4.55 : % VOLATILE BY VOL: 100 (ESSEN.)

APPEARANCE AND ODOR: COLORLESS LIQUID.

SECTION 2

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: NONE : FLAMMABLE LIMITS  
METHOD USED: T.O.C., T.C.C., C.O.C. : LFL: 7.5% @ 25C UFL: 15% @ 25C

EXTINGUISHING MEDIA: WATER FOG.

SPECIAL FIRE FIGHTING EQUIPMENT AND HAZARDS: SELF-CONTAINED  
RESPIRATORY EQUIPMENT. NOT CONSIDERED A FLAMMABLE LIQUID HAZARD  
UNDER AMBIENT TEMPERATURE USE CONDITIONS.

SECTION 3

REACTIVITY DATA

STABILITY: AVOID OPEN FLAMES, WELDING ARCS OR OTHER HIGH  
TEMPERATURE SOURCES WHICH INDUCE THERMAL DECOMPOSITION.

INCOMPATIBILITY: WATER - SLOW HYDROLYSIS PRODUCES CORROSIVE ACID.

HAZARDOUS DECOMPOSITION PRODUCTS: HYDROGEN CHLORIDE AND VERY SMALL  
AMOUNTS OF PHOSGENE AND CHLORINE.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

SECTION 4

SPILL, LEAK, AND DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS (USE APPROPRIATE SAFETY EQUIPMENT): SMALL LEAKS:  
MOP UP, WIPE UP OR SOAK IMMEDIATELY. REMOVE TO OUT OF DOORS. LARGE  
SPILLS: EVACUATE AREA. CONTAIN LIQUID; TRANSFER TO CLOSED METAL  
CONTAINERS. KEEP OUT OF WATER SUPPLIES.

(CONTINUED ON PAGE 2 )

(R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

EFFECTIVE DATE: 15 JUN 81  
PRODUCT (CONT'D): CHLOROTHENE (R) VG SOLVENT

PRODUCT CODE: 16822  
MSD: 0110

SECTION 4            SPILL, LEAK, AND DISPOSAL PROCEDURES (CONTINUED)

DISPOSAL METHOD: (IN ORDER OF PREFERENCE) SEND SOLVENT TO LICENSED RECLAIMER, INCINERATION, EVAPORATION OF VERY SMALL QUANTITIES, OR APPROVED LANDFILL BURIAL IN COMPLIANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS. DUMPING INTO SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER IS STRONGLY DISCOURAGED, AND MAY BE ILLEGAL.

SECTION 5            HEALTH HAZARD DATA

INGESTION: VERY LOW TOXICITY. LD50 (LABORATORY ANIMALS) RANGES FROM 8.6 TO 15.0 G/KG.

EYE CONTACT: MILD IRRITATION, BUT NO CORNEAL INJURY LIKELY.

SKIN CONTACT: SHORT CONTACT - NO IRRITATION. PROLONGED OR FREQUENT EXPOSURE - MINOR IRRITATION.

SKIN ABSORPTION: VERY LOW TOXICITY. LD50 (RABBITS) - 24 HOUR EXPOSURE - GREATER THAN 15 G/KG.

INHALATION: OSHA STANDARD AND ACGIH TLV IS 350 PPM.

EFFECTS OF OVEREXPOSURE: ANESTHETIC EFFECTS - MAY OCCUR IN THE RANGE OF 1000 PPM. CAN CAUSE DEATH IF TOO MUCH IS BREATHED.

SECTION 6            FIRST AID

EYES: IRRIGATION OF THE EYE IMMEDIATELY WITH WATER FOR FIVE MINUTES IS GOOD SAFETY PRACTICE.

SKIN: CONTACT WILL PROBABLY CAUSE NO MORE THAN IRRITATION. WASH OFF IN FLOWING WATER OR SHOWER. WASH CLOTHING BEFORE REUSE.

INHALATION: REMOVE TO FRESH AIR IF EFFECTS OCCUR. IF RESPIRATION STOPS, GIVE MOUTH-TO-MOUTH RESUSCITATION. ADMINISTER OXYGEN IF AVAILABLE. CALL PHYSICIAN AND/OR TRANSPORT TO MEDICAL FACILITY.

INGESTION: DO NOT INDUCE VOMITING. CALL A PHYSICIAN AND/OR TRANSPORT TO EMERGENCY FACILITY.

NOTE TO PHYSICIAN:

EYES: MAY CAUSE CONJUNCTIVITIS. STAIN FOR EVIDENCE OF CORNEAL INJURY.

SKIN: MAY CAUSE MILD IRRITATION. CHRONIC EXPOSURE MAY CAUSE DEFATTING TYPE OF DERMATITIS. TREAT AS ANY CONTACT DERMATITIS. NOT LIKELY TO BE ABSORBED IN ACUTELY TOXIC AMOUNTS.

RESPIRATORY: ANESTHETIC OR NARCOTIC EFFECT MAY OCCUR. ADMINISTER OXYGEN IF AVAILABLE. BRONCHODILATORS, EXPECTORANTS, AND ANTITUSSIVES MAY BE OF HELP.

(CONTINUED ON PAGE 3 )

(R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

EFFECTIVE DATE: 15 JUN 81  
PRODUCT (CONT'D): CHLOROTHENE (R) VG SOLVENT

PRODUCT CODE: 16822  
MSD: 0110

SECTION 6                      FIRST AID (CONTINUED)

NOTE TO PHYSICIAN: (CONTINUED)

ORAL: LOW IN TOXICITY. MAY CAUSE REACTION SIMILAR TO PETROLEUM OR PETROLEUM-LIKE SOLVENT. DANGER OF CHEMICAL PNEUMONIA MUST BE WEIGHED AGAINST TOXICITY WHEN CONSIDERING EMPTYING THE STOMACH. IF LAVAGE IS PERFORMED, SUGGEST ENDOTRACHEAL AND/OR ESOPHAGOSCOPIC CONTROL.

SYSTEMIC: MAY INCREASE MYOCARDIAL IRRITABILITY. AVOID EPINEPHRINE OR SIMILAR ACTING DRUGS IF AT ALL POSSIBLE. CONSULT STANDARD LITERATURE. NO SPECIFIC ANTIDOTE. TREATMENT BASED ON THE SOUND JUDGMENT OF THE PHYSICIAN AND THE INDIVIDUAL REACTIONS OF THE PATIENT.

SECTION 7                      SPECIAL HANDLING INFORMATION

VENTILATION: RECOMMEND CONTROL OF VAPORS TO SUGGESTED GUIDE.

RESPIRATORY PROTECTION: NONE NORMALLY NEEDED. APPROVED RESPIRATORY PROTECTION REQUIRED IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL. FOR EMERGENCIES, A SELF-CONTAINED BREATHING APPARATUS OR A FULL-FACE RESPIRATOR IS RECOMMENDED. CARTRIDGE RESPIRATORS ARE NOT RECOMMENDED EXCEPT FOR EVACUATION.

PROTECTIVE CLOTHING: NO SPECIAL PROTECTIVE CLOTHING NEEDED.

EYE PROTECTION: SAFETY GLASSES WITHOUT SIDE SHIELDS.

SECTION 8                      SPECIAL PRECAUTIONS AND ADDITIONAL INFORMATION

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: HANDLE WITH REASONABLE CARE. AVOID BREATHING VAPORS. STORE IN A COOL DRY PLACE. VAPORS OF THIS PRODUCT ARE HEAVIER THAN AIR AND WILL COLLECT IN LOW AREAS SUCH AS PITS, DEGREASERS, STORAGE TANKS, AND OTHER CONFINED AREAS. DO NOT ENTER THESE AREAS WHERE VAPORS OF THIS PRODUCT ARE SUSPECTED UNLESS SPECIAL BREATHING APPARATUS IS USED AND AN OBSERVER IS PRESENT FOR ASSISTANCE.

1,1,1-TRICHLOROETHANE PRODUCTS SHOULD NOT BE PACKAGED IN ALUMINUM AEROSOL CANS OR WITH FINELY DIVIDED ALUMINUM OR ITS ALLOYS IN AN AEROSOL CAN.

ALUMINUM IS NOT AN ACCEPTABLE MATERIAL OF CONSTRUCTION FOR PUMPS, MIXERS, FITTINGS, STORAGE TANKS FOR 1,1,1-TRICHLOROETHANE PRODUCTS OR FORMULATIONS.

ADDITIONAL INFORMATION: 23 SEP 81 REVISED FROM 28 MAY 81 -- SECTION 8.

(CONTINUED ON PAGE 4 )

(R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

M A T E R I A L   S A F E T Y   D A T A   S H E E T   P A G E : 4  
DOW CHEMICAL U.S.A. MIDLAND MICHIGAN 48640 EMERGENCY PHONE: 517-636-4400

EFFECTIVE DATE: 15 JUN 81  
PRODUCT (CONT'D): CHLOROTHENE (R) VG SOLVENT

PRODUCT CODE: 16822  
MSD: 0110

LAST PAGE

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# MATERIAL SAFETY DATA SHEET

(Approved by U.S. Department of Labor "Essentially Similar" to Form LSB-OOS-4)



8

**CHEMICAL NAME:** FORMALDEHYDE, 37% (Uninhibited)

**SYNONYMS:** Aqueous Formaldehyde, formalin solution      **CHEMICAL FAMILY:** Aldehydes

**FORMULA:** HCHO + Polymers in Solution      **MOLECULAR WEIGHT:** 60, average

**TRADE NAME AND SYNONYMS:** Formaldehyde

## I. PHYSICAL DATA

BOILING POINT, 760 mm. Hg	98°C. (210°F.)	PRECIPITATION TEMPERATURE	20°C.
SPECIFIC GRAVITY (H <sub>2</sub> O = 1)	1.110 at 25/25°C.	VAPOR PRESSURE AT 20°C. (HCHO PARTIAL PRESSURE)	1.0 mm. Hg
VAPOR DENSITY (air = 1)	1.01 (Vapor over solution)	SOLUBILITY IN WATER, % by wt.	Complete
PER CENT VOLATILES BY VOLUME	100	EVAPORATION RATE (WATER = 1)	1
APPEARANCE AND ODOR	Clear, colorless liquid; pungent, characteristic odor.		

## II. HAZARDOUS INGREDIENTS

MATERIAL	%	TLV (Units)
Formaldehyde	37	2 ppm. (as HCHO)

## III. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (test method)	185°F., Tag closed cup	AUTOIGNITION TEMPERATURE (HCHO)	806°F.
FLAMMABLE LIMITS IN AIR, % by volume (HCHO)	LOWER	7.0	UPPER
			73.0

EXTINGUISHING MEDIA	Use carbon dioxide or dry chemical for small fires. Use water and alcohol-type foam for large fires.
SPECIAL FIRE FIGHTING PROCEDURES	None
UNUSUAL FIRE AND EXPLOSION HAZARDS	None

## EMERGENCY PHONE NUMBERS

Dr. C. U. Dernehl, 212/551-4785; 914/946-0646 (night)  
 Dr. K. S. Lane, 212/551-4787; 914/666-3656 (night)  
 C. P. Carpenter, Ph.D., 412/327-1020; 412/241-7896 (night)

Legal responsibility is assumed only for the fact that all studies reported here and all opinions are those of qualified experts.

### IV. HEALTH HAZARD DATA

<b>THRESHOLD LIMIT VALUE</b>	2 ppm.
<b>EFFECTS OF OVEREXPOSURE</b>	If inhaled, vapors are irritating and will cause coughing, chest pain, nausea, and vomiting. If swallowed, will cause nausea, vomiting, abdominal pain, and collapse. Contact with skin and eyes causes severe irritation.
<b>EMERGENCY AND FIRST AID PROCEDURES</b>	If inhaled, remove to fresh air. Give oxygen if breathing is difficult. Call a physician. If swallowed, induce vomiting at once and repeat until vomit is clear. Then give milk or raw egg, and call a physician. Immediately flush skin and eye contact with plenty of water for at least 15 minutes while removing contaminated clothing. Call a physician for eyes.

### V. REACTIVITY DATA

<b>STABILITY</b>		<b>CONDITIONS TO AVOID</b>	None
<b>UNSTABLE</b> --	<b>STABLE</b> ✓		
<b>INCOMPATIBILITY (materials to avoid)</b>		Avoid contamination with strong alkalis or mineral acids.	
<b>HAZARDOUS DECOMPOSITION PRODUCTS</b>		Thermal decomposition may produce carbon monoxide and/or carbon dioxide.	
<b>HAZARDOUS POLYMERIZATION</b>		<b>CONDITIONS TO AVOID</b>	Avoid strong alkalis or mineral acids.
<b>May Occur</b> ✓	<b>Will not Occur</b> --		

### VI. SPILL OR LEAK PROCEDURES

<b>PRECAUTIONS TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED</b>	Flush with copious amounts of water. Can be neutralized with dilute ammonia, then rinsed with water.
<b>WASTE DISPOSAL METHOD</b>	Mix in small proportions with burnable liquids and incinerate.

### VII. SPECIAL PROTECTION INFORMATION

<b>RESPIRATORY PROTECTION (specify type)</b>		Air-supplied mask	
<b>VENTILATION</b>	<b>LOCAL EXHAUST</b>	Preferred	<b>SPECIAL</b> Handle large volumes in completely closed equipment.
	<b>MECHANICAL (general)</b>	--	
<b>PROTECTIVE GLOVES</b>		Plastic or rubber	<b>OTHER</b> --
<b>OTHER PROTECTIVE EQUIPMENT</b>		<b>EYE PROTECTION</b> Safety goggles, vapor tight	
		Rubber boots, apron, eye bath, and safety shower	

## VIII. SPECIAL PRECAUTIONS

FORMALDEHYDE, 37% (Uninhibited)

**DANGER!**  
VAPOR OR LIQUID  
CAUSES SKIN, EYE, NOSE,  
AND THROAT IRRITATION.

 **POISON**   
FIRST AID TREATMENT  
ANTIDOTES

### PRECAUTIONARY LABELING

Avoid contact with skin, eyes, nose, or throat.  
Avoid prolonged or repeated breathing of vapor.  
Use with adequate ventilation.  
Do not take internally.

CALL A PHYSICIAN AT ONCE.

IF SWALLOWED — Give a tablespoonful of salt in a glass of warm water, and repeat until vomit fluid is clear. Give milk, or white of egg, beaten with water.

FOR INDUSTRY USE ONLY

### OTHER HANDLING AND STORAGE CONDITIONS

## MATERIAL SAFETY DATA SHEET

page 1 of 4

### IDENTIFICATION

Name Hydrogen Peroxide (30-52% peroxide)

Synonyms Peroxide; Albone® 35, 50; Albone® 35, 50 (CG); Albone® DS; Kastone® 41; Chemical Family Inorganic peroxide

CAS Name Perone® 30 EG, 35, 50; Tysul® WW 35, 50 CAS Registry No. 7722-84-1

Hydrogen Peroxide

I.D. Nos./Codes

Chemical formula H<sub>2</sub>O<sub>2</sub>

NIOSH Access No. = MX 09000  
Manufacturer/Distributor

Product Information and Emergency Phone

E. I. du Pont de Nemours & Co., (Inc.)  
Address

(302) 774-2421

Wilmington, DE 19898

Transportation Emergency Phone  
(800) 424-9300

### HAZARDOUS COMPONENTS

Material(s)

Approximate % (Hydrogen Peroxide)

Albione® 35, 50, 50 (CG) & DS

35, 50

Kastone® 41

41

Perone® 30 EG, 35, 50

30, 35, 50

Tysul® WW 35, 50

35, 50

### PHYSICAL DATA

Boiling Point, 760 mm Hg

Freezing Point

106-114 °C (223-237 °F)

-26 to 52 °C (-15 to -62 °F)

Specific Gravity

Vapor Pressure mm Hg @ 25 °C = 18 to 13;

1.1-1.2

@ 40 °C = 42 to 32

Vapor Density (Air = 1)

Solubility in H<sub>2</sub>O

1.17 (as 100%)

Complete

% Volatiles by Wt. @ 70 °F = (100% H<sub>2</sub>O<sub>2</sub>)

Evaporation Rate (Butyl Acetate = 1) <1

Form

Appearance

Color

Odor

Liquid

Clear

Colorless

Slightly pungent

pH Information

Octanol/Water Partition Coefficient

3.3 (30%) to 1.8 (50%)

### FIRE AND EXPLOSION DATA

Flash Point

Method

Autoignition Temperature

Will not burn

Flammable Limits in Air, % by Vol.

Lower

Upper

Fire and Explosion Hazards Strong oxidizer. Evaporation or drying of this material on clothing or combustibles may cause fire. Contact with combustible liquids or vapors may cause fire or explosion, especially if heated.

Extinguishing Media

Water only.

Special Fire Fighting Instructions Flood with water. Cool tanks or containers. Wear full protective clothing, including chemical splash goggles and self-contained breathing apparatus in emergencies.

## HAZARDOUS REACTIVITY

page 2 of 4

Instability Instable with heat; may result in dangerous pressures. Contamination from any source may cause rapid decomposition & dangerous pressures. May react dangerously with heavy metals or heavy metal salts, organic materials (especially vinyl monomers) and dust. Incompatible with cyanides, hexavalent chromium compounds, nitric acid, potassium permanganate, reducing agents.

Decomposition

Polymerization

Will not occur.

## HEALTH HAZARD INFORMATION

Exposure Limits

OSHA 8-hour time weighted average (TWA), ACGIH TLV<sup>®</sup> = 1 ppm 1.4 mg/m<sup>3</sup> (as 90%)

Routes of Exposure and Effects

Causes eye injury; effects may be delayed.

Causes skin irritation.

First Aid

(SEE ATTACHED PAGE FOR ADDITIONAL INFORMATION)

## PROTECTION INFORMATION

Ventilation

Personal Protective Equipment

Other

## DISPOSAL PROCEDURES

Aquatic Toxicity

Spill, Leak or Release

Waste Disposal

## SHIPPING PRECAUTIONS

Transportation

Shipping Containers

Storage Conditions

## REFERENCES AND ADDITIONAL INFORMATION

DATE: 10/79



HYDROGEN PEROXIDE MATERIAL SAFETY DATA SHEET ATTACHMENT

Shipping Containers

Railroad tank cars, tank trucks, drums, sample bottles.

Storage Conditions

Protect drums from weather. Store in properly vented container in dry location. Do not block vent in bung cap. Keep container out of sun and away from heat, sparks, and flame. Do not add any other product to container. Do not store with reducing agents, combustible materials or heavy metal salts. Have water source available for diluting. Never return unused peroxide to container - dilute with plenty of water and discard. Rinse empty drums thoroughly with clean water before discarding.

REFERENCES AND ADDITIONAL INFORMATION

Do not get in eyes. Avoid contact with skin.

Avoid contact with combustible materials. Drying of this product on clothing or combustible materials may cause fire.

Avoid contamination from any source, including metals, dust and organic materials.

Never use pressure to empty drums - container is not a pressure vessel.

Wash thoroughly after handling.

Before using, read: Du Pont Hydrogen Peroxide Data Sheet

Du Pont Hydrogen Peroxide Storage & Handling Bulletin.

For additional information see National Fire Protection Guide, Section 49.

HYDROGEN PEROXIDE MATERIAL SAFETY DATA SHEET ATTACHMENTFirst Aid

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Call a physician. Flush skin with water. Remove and wash contaminated clothing and shoes promptly and thoroughly.

If swallowed, give water freely to dilute the stomach contents. Call a physician. (NOTE TO PHYSICIAN: insert a gastric tube to prevent increased pressure that may result from the rapid evolution of oxygen.)

If inhaled, remove patient to fresh air. If irritation of throat or nose is apparent, refer patient to a physician.

PROTECTION INFORMATIONVentilation

Use only with adequate ventilation. Store in original vented container. Keep in well ventilated room.

Personal Protective Equipment

Chemical splash goggles; neoprene, butyl or vinyl rubber boots and gloves; clean DACRON\* outer clothing; chemical suit, face shield.

\*Reg. U.S. Pat. & T.M. Off., Du Pont Co.

DISPOSAL PROCEDURESAquatic Toxicity

40 ppm toxic to fingerling trout.

Spill, Leak or Release

Flood area with water and drain to approved chemical sewer to wastewater treatment system. May be neutralized with sodium metabisulfite or sodium sulfite (1.9 lbs SO<sub>2</sub> equivalent per lb of peroxide) after diluting to 5-10% peroxide.

Waste Disposal

Dispose of in accordance with federal, state and local regulations. Refer to Du Pont Hydrogen Peroxide Storage & Handling Bulletin for additional information.

SHIPPING PRECAUTIONSTransportation

DOT Shipping Name = hydrogen peroxide solution (8-40% peroxide) or (40-52% peroxide). Bulk (tank car, truck) shipments are not regulated. DOT Hazard Class - oxidizer. STC Code = 4918775 (8-40%) or 4918776 (40-52%). UN Number = NA 2014. IMCO Class = 5.1.



Shell

# MATERIAL SAFETY DATA SHEET

MSDS NUMBER ▶ 5,120-4

PAGE 1 OF 4

97002 (1-81)

SECTION I NAME		24 HOUR EMERGENCY ASSISTANCE													
PRODUCT ▶	Isopropyl Alcohol	SHELL 713-473-9461	<table border="1"> <tr> <td></td> <td>HEALTH</td> <td>1</td> </tr> <tr> <td></td> <td>FIRE</td> <td>3</td> </tr> <tr> <td></td> <td>REACTIVITY</td> <td>0</td> </tr> </table>		HEALTH	1		FIRE	3		REACTIVITY	0			
	HEALTH	1													
	FIRE	3													
	REACTIVITY	0													
CHEMICAL/ SYNONYMS ▶	IPA, Isopropanol, propanol-2	CHEMTREC 800-424-9300													
CHEMICAL FAMILY ▶	Alcohol	HAZARD RATING													
SHELL CODE ▶	31105	C.A.S. NUMBER ▶	67-63-0												
		<table border="0"> <tr> <td>LEAST</td> <td>0</td> <td>SLIGHT</td> <td>1</td> </tr> <tr> <td>MODERATE</td> <td>2</td> <td>HIGH</td> <td>3</td> </tr> <tr> <td></td> <td></td> <td>EXTREME</td> <td>4</td> </tr> </table>		LEAST	0	SLIGHT	1	MODERATE	2	HIGH	3			EXTREME	4
LEAST	0	SLIGHT	1												
MODERATE	2	HIGH	3												
		EXTREME	4												

SECTION II INGREDIENTS		TOXICITY DATA
COMPOSITION	%	
Isopropyl Alcohol	100	Oral LD <sub>50</sub> (rat) = 5.84g/kg Dermal LD <sub>50</sub> (rabbit) = 16.4ml/kg Inhalation LC <sub>50</sub> (rat) = 12,000ppm/8hr

**SECTION III HEALTH INFORMATION**

Liquid is irritating to the eyes.

Vapors may cause irritation of eyes, nose and throat.

High vapor concentrations or prolonged breathing of vapors may cause headache, dizziness, nausea, incoordination, drowsiness and unconsciousness.

**SECTION IV OCCUPATIONAL EXPOSURE LIMITS**

OSHA PEL and ACGIH TLV = 400ppm or 980mg/m<sup>3</sup> TWA (skin) (8-hour workday)  
 ACGIH STEL = 500ppm or 1225mg/m<sup>3</sup>



# MATERIAL SAFETY DATA SHEET

MSDS NUMBER ▶

5,120-4  
PAGE 2 OF 4

97003 (1-81)

**SECTION V****EMERGENCY AND FIRST AID PROCEDURES**

**INHALATION:** Remove victim to fresh air. Give artificial respiration if not breathing. Get medical attention.

**EYE CONTACT:** Flush eyes immediately with large amounts of water for at least 15 minutes. Get medical attention.

**SKIN CONTACT:** Wash with soap and water. Remove contaminated clothing and do not reuse until they have been laundered.

**INGESTION:** Give large amounts of water, then induce vomiting by touching back of throat with finger. Get medical attention.

**SECTION VI****PHYSICAL DATA**

BOILING POINT (°F) ▶ 180	MELTING POINT (°F) ▶ -127	VAPOR PRESSURE (mmHg) ▶ 33@68°F
SPECIFIC GRAVITY (H <sub>2</sub> O=1) ▶ 0.79@60/60°F	% VOLATILE BY VOLUME ▶ 100	VAPOR DENSITY (AIR=1) ▶ 2.1
SOLUBILITY IN WATER ▶ complete	EVAPORATION RATE (BUTYL ACETATE=1) ▶ 1.4	

**APPEARANCE AND ODOR**

Colorless, mobile liquid. Mild odor.

**SECTION VII****FIRE AND EXPLOSION HAZARDS**

FLASH POINT AND METHOD USED	FLAMMABLE LIMITS/% VOLUME IN AIR	LOWER	UPPER
53°F TCC		2	12

**EXTINGUISHING MEDIA**Dry chemical, "alcohol" foam, CO<sub>2</sub>, water spray or fog.**SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS**

Do not enter fire area without proper protective equipment including NIOSH approved self-contained breathing apparatus.

**UNUSUAL FIRE AND EXPLOSION HAZARDS**

Treat as a flammable liquid.



# MATERIAL SAFETY DATA SHEET

MSDS NUMBER ▶

5,120-4  
PAGE 3 OF 4

97004 (10-79)

SECTION VIII		REACTIVITY	
STABILITY ▶ <input type="checkbox"/> UNSTABLE <input checked="" type="checkbox"/> STABLE	HAZARDOUS POLYMERIZATION ▶ <input type="checkbox"/> MAY OCCUR <input checked="" type="checkbox"/> WILL NOT OCCUR		
CONDITIONS AND MATERIALS TO AVOID			
Keep away from heat, sparks and open flames. No smoking. Reacts with strong oxidizing agents.			
Will attack aluminum if the surface oxide film is penetrated (e.g., by abrasion or high temperature).			
HAZARDOUS DECOMPOSITION PRODUCTS			
Carbon monoxide can form upon incomplete combustion.			

SECTION IX		EMPLOYEE PROTECTION	
RESPIRATORY PROTECTION			
Use NIOSH approved respiratory protection equipment as required to prevent overexposure.			
PROTECTIVE CLOTHING			
Wear goggles if material can be sprayed or splashed into the eyes. Wear impervious gloves and appropriate protective clothing to prevent skin contact.			
ADDITIONAL PROTECTIVE MEASURES			
Use in well ventilated areas.			

SECTION X		ENVIRONMENTAL PROTECTION	
SPILL OR LEAK PROCEDURES			
Eliminate all sources of ignition immediately and evacuate the area. Be prepared for fire.			
Wear appropriate protective clothing and respiratory protection equipment when entering the spill area. Shut off leak if it can be done safely. Ventilate the area. Dike and pump off large spills into salvage or storage containers. Take up residue or small spills with absorbent material such as clay or vermiculite. Scoop up all contaminated soil and dispose of in same manner as the product. See Section XIII.			
WASTE DISPOSAL			
Handle waste material in accordance with RCRA requirements. See Section XIII.			
ENVIRONMENTAL HAZARDS			
Do not allow product to enter storm or sanitary sewers, lakes, rivers, streams or public water supplies. Notify local authorities if this happens or is threatened.			



# MATERIAL SAFETY DATA SHEET

MSDS NUMBER ▶

5,120-4  
PAGE 4 OF 4

97005 (1-81)

**SECTION XI****SPECIAL PRECAUTIONS**

IPA is a volatile, flammable liquid.

Aluminum containers not recommended for storage.

Keep away from any source of ignition such as heat, sparks and open flame. Ground all containers when pouring or transferring liquid.

Store in tightly closed containers in a cool, well ventilated area.

Do not eat or smoke in areas where this product is handled, processed or stored. Wash up with soap and water before eating, smoking, or using toilet facilities.

**SECTION XII****TRANSPORTATION REQUIREMENTS**

DEPARTMENT OF TRANSPORTATION CLASSIFICATION	<input checked="" type="checkbox"/> FLAMMABLE LIQUID	<input type="checkbox"/> COMBUSTIBLE LIQUID	<input type="checkbox"/> OXIDIZING MATERIAL	<input type="checkbox"/> NON-FLAMMABLE GAS
	<input type="checkbox"/> FLAMMABLE SOLID	<input type="checkbox"/> POISON, CLASS A	<input type="checkbox"/> CORROSIVE MATERIAL	<input type="checkbox"/> NOT HAZARDOUS B D.O.T. REGULATIONS
	<input type="checkbox"/> FLAMMABLE GAS	<input type="checkbox"/> POISON, CLASS B	<input type="checkbox"/> IRRITATING MATERIAL	<input type="checkbox"/> OTHER—Specify below

D.O.T. PROPER SHIPPING NAME

Isopropanol

OTHER REQUIREMENTS

D.O.T. I.D. Number 1219. Guide Sheet 26.

**SECTION XIII****OTHER REGULATORY CONTROLS**

EPA, FDA, OSHA, USDA, CPSC, etc.

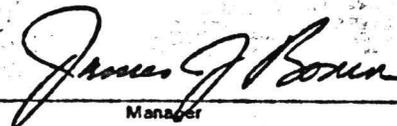
EPA - Resource Conservation and Recovery Act (RCRA)

As produced, this material is a product and not a waste. If discarded or intended to be discarded as is, it is an ignitable hazardous waste as defined in RCRA (40 CFR 261.21). The EPA hazardous waste number is D001.

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof.

Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.

Come to  Shell for answers

  
Manager

SHELL OIL COMPANY  
PRODUCT SAFETY AND COMPLIANCE  
OIL AND CHEMICAL PRODUCTS  
P.O. BOX 4320  
HOUSTON, TEXAS 77210

DATE PREPARED

January 29, 1981

## MATERIAL SAFETY DATA SHEET

page 1 of 3.

### IDENTIFICATION

Name Methanol

Synonyms Methyl alcohol, wood alcohol,  
carbinol  
CAS Name Methanol

Chemical Family Alcohol

CAS Registry No. 67-56-1

I.D. Nos./Codes NIOSH Registry No. PC-14000  
Wiswesser Line Notation Q1  
Manufacturer/Distributor  
E. I. du Pont de Nemours & Co., Inc.

Product Information and Emergency Phone  
(302) 774-2421

Address  
Wilmington, DE 19898

Transportation Emergency Phone  
(800) 424-9300

### HAZARDOUS COMPONENTS

Material(s)

Approximate %

Methanol

100%

### PHYSICAL DATA

Boiling Point, 760 mm Hg  
64.7°C (148.5°F)

Melting Point  
-97.8°C (-144°F)

Specific Gravity  
@ 20°C 0.792

Vapor Pressure  
mm Hg @ 25°C = 138, @ 37.7°C = 220

Vapor Density  
(Air = 1) ~ 1.1

Solubility in H<sub>2</sub>O

100%

% Volatiles by Vol.

Evaporation Rate (Butyl Acetate = 1)

100%

@ 25°C ~ 12.5

Form Appearance  
Liquid Clear

Color Odor  
Colorless Faint Alcoholic

pH Information

Octanol/Water Partition Coefficient  
Log P = -0.82

### FIRE AND EXPLOSION DATA

Flash Point Method  
11°C (52°F) TCC

Autoignition Temperature  
385°C (725°F)

Flammable Limits in Air, % by Vol.

Lower 6.7%

Upper 36%

Fire and Explosion Hazards Flammable. Flame is invisible in daylight. Methanol-water mixtures with 25% or more methanol are flammable.

### Extinguishing Media

Dry chemical, CO<sub>2</sub>, water spray, "alcohol" foam.

### Special Fire Fighting Instructions

Use water spray to cool tanks or containers.

## HAZARDOUS REACTIVITY

page 2 of 3

### Instability

### Stable

**Incompatibility** Reacts vigorously with strong oxidizers, chromic anhydride, lead perchlorate, perchloric acids.

**Decomposition** Occurs from heat and reaction with materials above.

### Polymerization

Will not occur.

## HEALTH HAZARD INFORMATION

### Exposure Limits

OSHA TWA 200 ppm, 260 mg/m<sup>3</sup>. ACGIH TLV® (skin) 200 ppm, 260 mg/m<sup>3</sup>.

**Routes of Exposure and Effects** May be fatal or cause blindness if swallowed. Cannot be made nonpoisonous. Harmful if inhaled. May irritate eyes. Repeated contact may irritate skin. LD<sub>50</sub> (rats) = 12,900 mg/kg. LC<sub>50</sub> (rats) > 145,000 ppm.

### First Aid

SEE ATTACHMENT.

## PROTECTION INFORMATION

**Ventilation** Use or store only with adequate ventilation.

**Personal Protective Equipment** Chemical splash goggles, rubber gloves.

In case of spills, emergencies, or other conditions with potential for vapor concentrations near exposure limits, use self-contained breathing apparatus, face shield, rubber clothing, as appropriate.

## DISPOSAL PROCEDURES

### Aquatic Toxicity

TLm 96: > 1000 ppm

**Spill, Leak or Release** Dike large spills. Flush spill area with plenty of water. Do not flush to sewer.

**Waste Disposal** Dispose of in accordance with Federal, State & Local regulations. If approved, use incineration, on-site bio-oxidation or subsurface injection, or disposal contactor.

## SHIPPING PRECAUTIONS

**Transportation DOT Shipping Name** - Methyl Alcohol DOT Hazard Class: Flammable liquid. STCC Code 49-092-30. UN No. 1230. IMCO Class 3. Shipping Containers Barge, railroad tank cars, tank trucks.

**Storage Conditions** Keep away from heat sparks & flame. Keep container tightly closed. Do not store or mix with strong oxidizers, chromic anhydride, lead perchlorate, or perchloric acid. Store in adequately ventilated area.

## REFERENCES AND ADDITIONAL INFORMATION

Avoid prolonged or repeated breathing of vapor.

Avoid contact with eyes.

Avoid prolonged or repeated contact with skin.

Wash thoroughly after handling.

For more information, refer to: Du Pont Methanol Data Sheet  
Du Pont Methanol Properties, Uses, Storage  
& Handling Bulletin.

DATE: 10/79



METHANOL MATERIAL SAFETY DATA SHEET ATTACHMENT

First Aid

If swallowed, induce vomiting immediately by giving two glasses of water and sticking finger down throat. Have patient lie down and keep warm. Cover eyes to exclude light. Call a physician. Never give anything by mouth to an unconscious person.

If inhaled, remove to fresh air. If not breathing, give artificial respiration; preferably mouth-to-mouth. If breathing is difficult, give oxygen. Call a physician.

In case of eye contact, flush with plenty of water for at least 15 minutes. Call a physician. For skin contact, flush with water.

# MATERIAL SAFETY DATA SHEET

(Approved by U.S. Department of Labor as "essentially similar" to Form LSB-005-4)

EXXON CHEMICAL AMERICAS • P.O. BOX 3272, HOUSTON, TEXAS 77001  
A Division of EXXON CHEMICAL COMPANY, a Division of EXXON CORPORATION

Methyl Ethyl Ketone (MEK) PRODUCT
---

## SECTION I - IDENTIFICATION OF PRODUCT

MANUFACTURER'S NAME <b>EXXON CHEMICAL AMERICAS</b>		EMERGENCY TELEPHONE NO.  <b>713 - 870-6000</b>
ADDRESS (Number, Street, City, State and ZIP Code) <b>P. O. BOX 3272, HOUSTON, TEXAS 77001</b>		
TRADE NAME <b>Methyl Ethyl Ketone, MEK</b>	CHEMICAL NAME <b>2-Butanone</b>	
CHEMICAL FAMILY <b>Ketone</b>	CHEMICAL FORMULA <b>CH<sub>3</sub>COCH<sub>2</sub>CH<sub>3</sub></b>	

## SECTION II - HAZARDOUS COMPONENTS OF MIXTURES

The precise composition of this product is proprietary information. A more detailed disclosure will be provided by Exxon Medical or Industrial Hygiene personnel to qualified Medical or Industrial Hygiene personnel as privileged information upon request in case of need for specific treatment.

Not Applicable to High Purity Chemicals

## SECTION III - TYPICAL PHYSICAL DATA

APPEARANCE AND ODOR <b>Clear, colorless liquid, lacquer thinner type</b>	SPECIFIC GRAVITY <b>0.807 at 20/20°C (68/68°F)</b>
BOILING POINT (°F) <b>79.6°C (175.4°F)</b>	PERCENT VOLATILE (BY VOLUME) - <b>100%</b>
VAPOR PRESSURE <b>190 mm Hg at 38°C (100°F)</b>	EVAPORATION RATE (n-BUTYL ACETATE = 1) <b>5.6</b>
VAPOR DENSITY (AIR 1) <b>2.5</b>	
SOLUBILITY IN WATER <b>Appreciable* (26 wt.%)</b>	

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method) <b>Tag closed cup -6°C (21°F)</b>	FLAMMABLE LIMITS (PERCENT BY VOLUME) <b>At 25°C (77°F)</b>	<b>Lel</b>	<b>Uel</b>
		<b>1.8</b>	<b>10.0</b>
FIRE EXTINGUISHING MEDIA <b>Dry chemical or alcohol-type foam. Waterspray may be ineffective.</b>			
SPECIAL FIRE FIGHTING PROCEDURES <b>Use waterspray to cool fire-exposed surfaces and to protect personnel.</b>			
UNUSUAL FIRE AND EXPLOSION HAZARDS <b>Respiratory protection required for fire fighting personnel.</b>			
<b>Stay upwind, if possible. Cool exposed tanks with water.</b>			
HAZARDOUS PRODUCTS OF COMBUSTION <b>No unusual products of combustion.</b>			

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of our knowledge and belief, accurate and reliable as of the date compiled. However, no representation, warranty or guarantee is made as

to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability and completeness of such information for his own particular use. We do not accept liability for any loss or damage that may occur from the use of this information nor do we offer any warranty against patent infringement.

**SECTION V - HEALTH HAZARD DATA**

**THRESHOLD LIMIT VALUE** 200 ppm

**EFFECTS OF OVEREXPOSURE** ACUTE Vapor irritates eyes, nose & throat. Liquid will damage eye t  
CHRONIC Liquid is irritating to skin, causing dermatitis.

**EMERGENCY AND FIRST AID PROCEDURES**  
If overcome by vapors, remove to fresh air and if breathing stopped, give artificial respiration. Keep individual calm. Call a physician. If skin contact occurs, wash affected parts thoroughly with soap and water; launder clothing before re-use. If eye contact occurs, flush with water for at least 15 minutes and call a physician.

**SECTION VI - REACTIVITY DATA**

STABILITY	UNSTABLE		CONDITIONS TO AVOID Not Applicable
	STABLE	X	

**INCOMPATIBILITY (MATERIALS TO AVOID FOR PURPOSES OF TRANSPORT, HANDLING & STORAGE ONLY)**  
Strong oxidants, caustic, amines, alkanolamines, aldehydes, ammonia, will dissolve some plastics, rubber and coatings, chlorinated compounds.

**HAZARDOUS DECOMPOSITION PRODUCTS**  
NONE

**SECTION VII - SPILL OR LEAK PROCEDURES**

**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED**  
Keep public away. Shut off source if possible to do so without hazard. Eliminate source of ignition. Warn occupants of downwind areas of explosion hazard. Prevent liquid from entering sewers, watercourses or low areas.

**WASTE DISPOSAL (INSURE CONFORMITY WITH LOCAL DISPOSAL REGULATIONS)**  
Contain spilled liquid with sand or earth. Dilute contained spill with water. Recover free liquid by pumping or with a suitable absorbant. Consult a disposal expert and ensure conformity to local regulation.

**SECTION VIII - PERSONAL PROTECTION INFORMATION**

**RESPIRATORY PROTECTION**  
Use approved respiratory protection such as air-supplied mask if used in enclosed spaces.

VENTILATION	LOCAL EXHAUST Face velocity >60 fpm in confined space	SPECIAL
	MECHANICAL (General) Explosion-proof ventilation equipment	OTHER No smoking or open lights

**PROTECTIVE GLOVES**  
Chemically resistant gloves

**EYE PROTECTION**  
Chemical splash goggles or face shield

**OTHER PROTECTIVE EQUIPMENT**  
Usually not needed.

**SECTION IX - HANDLING AND STORAGE PRECAUTIONS**

**PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING** Keep container closed when not in use. Do not handle or store near flame, heat or strong oxidants. Adequate ventilation required. Containers of this material may be hazardous when emptied. Emptied containers retain product residues (vapor, liquid, etc.). Observe all Hazard Precautions outlined in this sheet.

**OTHER PRECAUTIONS**  
All handling equipment should be electrically grounded.

**DATE OF ISSUE** October, 1977

NEW  REVISED; SUPERSEDES 3/77

**APPROVED BY:** *James W. Hammond*

**TITLE:** Director of Industrial Hygiene

EFFECTIVE DATE: 27 JAN 82

PRODUCT CODE: 55590

PRODUCT NAME: METHYLENE CHLORIDE, TECH.

MSC: 0009

INGREDIENTS (TYPICAL VALUES-NOT SPECIFICATIONS) : % :  
METHYLENE CHLORIDE, ESSENTIALLY : 100 :

SECTION 1

PHYSICAL DATA

BOILING POINT: 104F (39.8C) : SOL. IN WATER: 2.0G/100G @ 25C  
VAP PRESS: 340 MMHG @ 20C : SP. GRAVITY: 1.320 @ 25/25C  
VAP DENSITY (AIR=1): 2.93 : % VOLATILE BY VOL: 100 (ESSENT.)

APPEARANCE AND ODOR: COLORLESS LIQUID

SECTION 2

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: NONE : FLAMMABLE LIMITS  
METHOD USED: TOC, TCC, COC : LFL: 14.8% @ 25C UFL: 22% @ 25C

EXTINGUISHING MEDIA: WATER FOG.

SPECIAL FIRE FIGHTING EQUIPMENT AND HAZARDS: PRESSURE DEMAND SELF-CONTAINED RESPIRATORY EQUIPMENT. FORMS FLAMMABLE VAPOR-AIR MIXTURES AT TEMPERATURES ABOVE AMBIENT. LOWER TEMPERATURES INCREASE THE DIFFICULTY OF GETTING IT TO IGNITE.

SECTION 3

REACTIVITY DATA

STABILITY: HYDROLYSIS PRODUCING SMALL AMOUNTS OF HYDROCHLORIC ACID POSSIBLE WITH GROSS WATER CONTAMINATION.

INCOMPATIBILITY: ALUMINUM, POSSIBLY SODIUM, POTASSIUM, AND MAGNESIUM.

HAZARDOUS DECOMPOSITION PRODUCTS: OPEN FLAMES AND WELDING ARCS CAN CAUSE THERMAL DEGRADATION WITH THE EVOLUTION OF HYDROGEN CHLORIDE AND VERY SMALL AMOUNTS OF PHOSGENE AND CHLORINE.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

SECTION 4

SPILL, LEAK, AND DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS (USE APPROPRIATE SAFETY EQUIPMENT): SMALL SPILLS: MOP UP, WIPE UP OR SOAK UP IMMEDIATELY. REMOVE TO OUT OF DOORS. LARGE SPILLS: EVACUATE AREA. CONTAIN LIQUID; TRANSFER TO CLOSED

(CONTINUED ON PAGE 2 )

(R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

EFFECTIVE DATE: 27 JAN 82  
PRODUCT (CONT'D): METHYLENE CHLORIDE, TECH.

PRODUCT CODE: 55590  
MSD: 0009

SECTION 4            SPILL, LEAK, AND DISPOSAL PROCEDURES (CONTINUED)

ACTION TO TAKE FOR SPILLS (USE APPROPRIATE SAFETY EQUIPMENT): (CONTINUED)  
METAL CONTAINERS. KEEP OUT OF WATER SUPPLY.

DISPOSAL METHOD: (IN ORDER OF PREFERENCE) SEND SOLVENT TO LICENSED RECLAIMER,  
INCINERATION, EVAPORATION OF VERY SMALL QUANTITIES, OR APPROVED  
LANDFILL BURIAL IN COMPLIANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS.  
DUMPING INTO SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER IS STRONGLY  
DISCOURAGED, AND MAY BE ILLEGAL.

SECTION 5            HEALTH HAZARD DATA

INGESTION: LOW SINGLE DOSE ORAL TOXICITY. LD50 MALE RATS 2524 MG/KG.

EYE CONTACT: CAUSES PAIN AND MODERATE IRRITATION, AND POSSIBLE TRANSIENT  
CORNEAL INJURY.

SKIN CONTACT: SHORT CONTACT - NO IRRITATION. PROLONGED OR FREQUENTLY  
REPEATED CONTACT - MODERATE IRRITATION. IF CONFINED TO SKIN - MAY  
CAUSE A BURN.

SKIN ABSORPTION: IS ABSORBED, BUT IS LOW IN TOXICITY BY THIS ROUTE.

INHALATION: OSHA STANDARD IS 500 PPM (1975). ACGIH TLV IS 100 PPM.

EFFECTS OF OVEREXPOSURE: CARBOXYHEMOGLOBIN LEVELS MAY BE ELEVATED.  
INCREASING SIGNS OF ANESTHESIA ABOVE 900 PPM IN THE ATMOSPHERE.  
CAN CAUSE DEATH IF TOO MUCH IS BREATHED.

SECTION 6            FIRST AID

EYES: IRRIGATE WITH FLOWING WATER IMMEDIATELY AND CONTINUOUSLY FOR  
15 MINUTES. REFER TO MEDICAL PERSONNEL.

SKIN: WASH OFF IN FLOWING WATER. WASH CLOTHING BEFORE REUSE.

INHALATION: REMOVE TO FRESH AIR IF EFFECTS OCCUR. CALL PHYSICIAN AND/OR  
TRANSPORT TO MEDICAL FACILITY. IF RESPIRATION STOPS GIVE MOUTH-  
TO-MOUTH RESUSCITATION.

INGESTION: DO NOT INDUCE VOMITING. CALL A PHYSICIAN AND/OR TRANSPORT  
TO EMERGENCY FACILITY.

NOTE TO PHYSICIAN:

EYES: MAY CAUSE IRRITATION. STAIN FOR EVIDENCE OF CORNEAL  
INJURY. IF CORNEA IS BURNED, INSTILL ANTIBIOTIC STEROID PREPARATION  
FREQUENTLY. CONSULT OPHTHALMOLOGIST.

SKIN: MAY CAUSE IRRITATION. CHRONIC EXPOSURE MAY CAUSE  
DEFATTING TYPE OF DERMATITIS. IF RASH IS PRESENT, TREAT AS ANY CONTACT

(CONTINUED ON PAGE 3 )

(R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

EFFECTIVE DATE: 27 JAN 82  
PRODUCT (CONT'D): METHYLENE CHLORIDE, TECH.

PRODUCT CODE: 55590  
MSD: 0009

SECTION 6                      FIRST AID (CONTINUED)

NOTE TO PHYSICIAN: (CONTINUED)

DERMATITIS.

RESPIRATORY: ANESTHETIC OR NARCOTIC EFFECT MAY OCCUR. ADMINISTER .  
OXYGEN IF AVAILABLE.

ORAL: MAY CAUSE CHEMICAL PNEUMONIA IF ASPIRATED INTO LUNGS. DANGER  
OF CHEMICAL PNEUMONIA MUST BE WEIGHED AGAINST TOXICITY WHEN CONSIDERING  
EMPTYING STOMACH. IF LAVAGE IS PERFORMED SUGGEST ENDOTRACHEAL AND/OR  
ESOPHAGOSCOPIC CONTROL.

SYSTEMIC: MAY CAUSE INCREASE IN CARBOXYHEMOGLOBIN LEVELS. MAY  
INCREASE MYOCARDIAL IRRITABILITY. AVOID EPINEPHRINE OR SIMILAR  
DRUGS IF AT ALL POSSIBLE. CONSULT STANDARD LITERATURE. NO SPECIFIC  
ANTIDOTE. TREATMENT BASED ON THE SOUND JUDGMENT OF THE PHYSICIAN AND  
THE INDIVIDUAL REACTIONS OF THE PATIENT.

SECTION 7                      SPECIAL HANDLING INFORMATION

VENTILATION: RECOMMEND CONTROL OF VAPORS TO SUGGESTED GUIDES.

RESPIRATORY PROTECTION: APPROVED RESPIRATORY PROTECTION REQUIRED  
IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL. FOR EMERGENCIES, A  
SELF-CONTAINED BREATHING APPARATUS OR A FULL-FACE RESPIRATOR  
IS RECOMMENDED.

PROTECTIVE CLOTHING: NO SPECIAL PROTECTIVE CLOTHING NEEDED.

EYE PROTECTION: SAFETY GLASSES WITHOUT SIDE SHIELDS. EYE WASH STATIONS  
AND SAFETY SHOWERS SHOULD BE READILY AVAILABLE.

SECTION 8                      SPECIAL PRECAUTIONS AND ADDITIONAL INFORMATION

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: EXERCISE REASONABLE  
CARE AND CAUTION. AVOID BREATHING VAPORS. STORE IN COOL PLACE.  
VAPORS OF THIS PRODUCT ARE HEAVIER THAN AIR AND WILL COLLECT IN  
LOW AREAS SUCH AS PITS, DEGREASERS, STORAGE TANKS, AND OTHER CON-  
FINED AREAS. DO NOT ENTER THESE AREAS WHERE VAPORS OF THIS PRO-  
DUCT ARE SUSPECTED UNLESS SPECIAL BREATHING APPARATUS IS USED AND  
AN OBSERVER IS PRESENT FOR ASSISTANCE. DO NOT PRESSURE PRODUCT  
OUT OF VESSEL OR TRANSPORT CONTAINER WITH AIR.

ADDITIONAL INFORMATION: 27 JAN 82 REVISED FROM 22 SEP 81 --  
SECTIONS 3, 5 AND 6.

LAST PAGE

(R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

CONSULT THE DOW CHEMICAL COMPANY FOR FURTHER INFORMATION.

THE INFORMATION HEREIN IS GIVEN IN GOOD FAITH, BUT NO WARRANTY,  
EXPRESSED OR IMPLIED, IS MADE.



Shell

97002 (7-79)

# MATERIAL SAFETY DATA SHEET

MSDS NUMBER ▶

5350-03

PAGE 1 OF 4

<b>SECTION I</b>		<b>NAME</b>		<b>24 HOUR EMERGENCY ASSISTANCE</b>												
PRODUCT NAME ▶	NEODOL™ 25-3A Ethoxysulfate			SHELL	713-473-9461		<table border="1"> <tr> <td></td> <td>HEALTH</td> <td>2</td> </tr> <tr> <td></td> <td>FIRE</td> <td>3</td> </tr> <tr> <td></td> <td>REACTIVITY</td> <td>0</td> </tr> </table>		HEALTH	2		FIRE	3		REACTIVITY	0
	HEALTH	2														
	FIRE	3														
	REACTIVITY	0														
CHEMICAL/SYNONYMS ▶	C <sub>12-15</sub> H <sub>25-31</sub> -O(CH <sub>2</sub> CH <sub>2</sub> O) <sub>3</sub> SO <sub>3</sub> NH <sub>4</sub>			CHEMTREC	800-424-9300											
CHEMICAL FAMILY ▶	Alcohol Ethoxysulfate Salt			<b>HAZARD RATING</b>												
SHELL CODE ▶	38050	C.A.S. NUMBER ▶	Mixture	LEAST	SLIGHT											
				0	1											
				MODERATE	HIGH	EXTREME										
				2	3	4										

<b>SECTION II</b>		<b>INGREDIENTS</b>		<b>TOXICITY DATA</b>	
	<b>COMPOSITION</b>	<b>%</b>			
	Alcohol Ethoxysulfate	60		LD <sub>50</sub> oral, rat=13.7 g/kg	
	Water	26		LD <sub>50</sub> dermal, rabbit= 9.4 ml/kg	
	Ethyl Alcohol	14			
	NEODOL 25-3A	100		LD <sub>50</sub> oral, rat=10.2 g/kg	
	(The ammonium salt of sulfated mixture of dodecanol, tridecanol, tetradecanol, pentadecanol ethoxylates with average 3 moles of ethylene oxide per mole of alcohol.)			LD <sub>50</sub> dermal, rabbit=5.6 g/kg	

**SECTION III HEALTH INFORMATION**

Inhalation of high vapor concentrations or prolonged breathing of vapors can cause headache, dizziness and nausea.  
 Very irritating to the eyes on contact.  
 Mild irritation to the skin after prolonged and repeated contact.

Human patch test for sensitization was negative.

**NOTE:** This product could contain 1,4-dioxane as a contaminant in the range of a hundred to few thousand parts per million in the liquid phase.

Nevertheless, you should be aware that 1,4-dioxane has been found to cause cancer in laboratory rodents when given orally for two years at or above 5,000 ppm.

See Section IX for proper employee protection practices.

**SECTION IV OCCUPATIONAL EXPOSURE LIMITS**

None established for mixture.  
 Ethanol-1000 ppm TWA (OSHA)  
 1,4-dioxane (skin)=100 ppm TWA (OSHA)  
 =50 ppm TWA (ACGIH 1979 TLV).



# Material Safety Data Sheet

MSDS NUMBER ▶ 5350-03

97003 (7-79)

PAGE 2 OF 4

**SECTION V****EMERGENCY AND FIRST AID PROCEDURES**

**INHALATION:** Remove the victim to fresh air. Give artificial respiration if breathing has stopped. Get medical attention.

**EYE CONTACT:** Immediately flush eyes with large amounts of water for 15 minutes. Get medical attention.

**SKIN CONTACT:** Wash immediately with water.

**INGESTION:** Attempt to dilute the material by drinking copious amounts of water or milk. Call a physician immediately.

**CAUTION:** Never give anything by mouth to an unconscious person.

**SECTION VI****PHYSICAL DATA**

BOILING POINT (°F) ▶ 173	MELTING POINT (°F) ▶ 40	VAPOR PRESSURE (mmHg) ▶ 40
SPECIFIC GRAVITY (H <sub>2</sub> O = 1) ▶ 1.01	% VOLATILE BY VOLUME ▶ 40	VAPOR DENSITY (AIR = 1) ▶ 10
SOLUBILITY IN WATER ▶ Complete	EVAPORATION RATE (BUTYL ACETATE = 1) ▶ N.A.	N.A.=not available

**APPEARANCE AND ODOR**

Slightly viscous liquid. Ethanol odor.

**SECTION VII****FIRE AND EXPLOSION HAZARDS**

FLASH POINT AND METHOD USED 73°F PMCC (ASTM D-93)	FLAMMABLE LIMITS % VOLUME IN AIR Ethanol portion ▶	LOWER 3	UPPER 19
--	---	------------	-------------

**EXTINGUISHING MEDIA**"Alcohol" foam, dry chemical or CO<sub>2</sub>. Use water fog on large fires.**SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS**

Water may form a gel and foam.

**UNUSUAL FIRE AND EXPLOSION HAZARDS**Handle as a flammable liquid. Corrosive and poisonous SO<sub>2</sub> and SO<sub>3</sub> and oxides of nitrogen may be given off during combustion. Wear NIOSH-approved self-contained breathing apparatus when fighting fires in confined areas.



# Material Safety Data Sheet

97004 (7-79)

MSDS NUMBER ▶

5350-03

PAGE 3 OF 4

SECTION VIII		REACTIVITY	
STABILITY ▶	<input type="checkbox"/> UNSTABLE	<input checked="" type="checkbox"/> STABLE	HAZARDOUS POLYMERIZATION ▶ <input type="checkbox"/> MAY OCCUR <input checked="" type="checkbox"/> WILL NOT OCCUR
CONDITIONS AND MATERIALS TO AVOID			
Keep away from heat, sparks and open flames. Reacts with strong oxidizing agents.			
HAZARDOUS DECOMPOSITION PRODUCTS			
Carbon monoxide and oxides of sulfur and nitrogen may be given off during combustion.			

SECTION IX		EMPLOYEE PROTECTION	
RESPIRATORY PROTECTION			
NIOSH approved respiratory protection equipment as required to prevent overexposure.			
PROTECTIVE CLOTHING			
Gloves, goggles and other appropriate protective clothing as required to minimize skin contact.			
ADDITIONAL PROTECTIVE MEASURES			
Ventilation must be provided when this product is opened to the atmosphere such as during redrumming and mixing.			

SECTION X		ENVIRONMENTAL PROTECTION	
SPILL OR LEAK PROCEDURES			
CAUTION: Spilled material is very slippery.			
Remove all sources of ignition immediately. Appropriate protective clothing should be worn while handling spills. Dike spill and pump or vacuum into container. Absorb residue with inert material and scoop into containers for disposal.			
WASTE DISPOSAL			
1) Incinerate in compliance with local regulations. 2) Drum residual material and bury in approved landfill.			

ENVIRONMENTAL HAZARDS	
Do not allow this product to enter sewers or public water supplies. Notify the proper authorities if this happens or is threatened.	



# Material Safety Data Sheet

97005 (7-79)

MSDS NUMBER ▶

5350-03

PAGE 4 OF 4

## SECTION XI

### SPECIAL PRECAUTIONS

Store material in tightly closed containers in a cool well-ventilated area. Use good personal hygiene.

## SECTION XII

### TRANSPORTATION REQUIREMENTS

DEPARTMENT OF TRANSPORTATION CLASSIFICATION ▶	<input type="checkbox"/> FLAMMABLE LIQUID	<input checked="" type="checkbox"/> COMBUSTIBLE LIQUID	<input type="checkbox"/> OXIDIZING MATERIAL	<input type="checkbox"/> NON-FLAMMABLE COMPRESSED GAS
	<input type="checkbox"/> FLAMMABLE SOLID	<input type="checkbox"/> POISON, CLASS A	<input type="checkbox"/> CORROSIVE MATERIAL	<input type="checkbox"/> NOT HAZARDOUS BY D.O.T. REGULATIONS
	<input type="checkbox"/> FLAMMABLE COMPRESSED GAS	<input type="checkbox"/> POISON, CLASS B	<input type="checkbox"/> IRRITATING MATERIAL	<input type="checkbox"/> OTHER—Specify below

D.O.T. PROPER SHIPPING NAME

Combustible Liquid N.O.S.

OTHER REQUIREMENTS

Code of Federal Regulations, Title 49, Section 173.115 (b)(2) determines that this product is not classified as a flammable liquid.

## SECTION XIII

### OTHER REGULATORY CONTROLS

EPA, FDA, OSHA, USDA, CPSC, ETC.

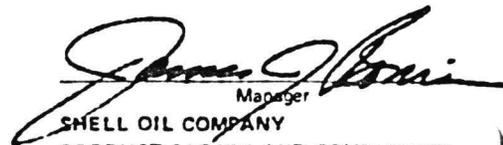
This product meets EPA requirements for use in certain pesticide formulations.

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof.

Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet.

Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore, vendee assumes the risk in his use of the material.

Come to  Shell for answers

  
Manager  
SHELL OIL COMPANY

PRODUCT SAFETY AND COMPLIANCE  
OIL AND CHEMICAL PRODUCTS  
P. O. BOX 4320  
HOUSTON, TEXAS 77210

DATE PREPARED

October 2, 1979



# MATERIAL SAFETY DATA SHEET

MSDS NUMBER ▶ 7,270-1

PAGE 1 OF 1

97002 (1-81)

SECTION I		NAME	24 HOUR EMERGENCY ASSISTANCE																	
PRODUCT ▶	NEODOL® 91-6		SHELL	713-473-9461																
CHEMICAL/ SYNONYMS ▶	Detergent Range Alcohol Ethoxylate		CHEMTREC	800-424-9300																
CHEMICAL FAMILY ▶	Linear Primary Alcohol Ethoxylate		HAZARD RATING																	
SHELL CODE ▶	38194	C.A.S. NUMBER ▶	<table border="0"> <tr> <td>LEAST</td> <td>SLIGHT</td> <td></td> <td></td> <td></td> </tr> <tr> <td>0</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>MODERATE</td> <td>HIGH</td> <td>EXTREME</td> <td></td> <td></td> </tr> </table>			LEAST	SLIGHT				0	1	2	3	4	MODERATE	HIGH	EXTREME		
LEAST	SLIGHT																			
0	1	2	3	4																
MODERATE	HIGH	EXTREME																		
			<table border="1"> <tr> <td></td> <td>HEALTH</td> <td>1</td> </tr> <tr> <td></td> <td>FIRE</td> <td>1</td> </tr> <tr> <td></td> <td>REACTIVITY</td> <td>0</td> </tr> </table>				HEALTH	1		FIRE	1		REACTIVITY	0						
	HEALTH	1																		
	FIRE	1																		
	REACTIVITY	0																		

SECTION II		INGREDIENTS		TOXICITY DATA
COMPOSITION	%			
NEODOL 91-6*	100	Rat oral LD <sub>50</sub> = 1.2 ml/kg		
*-A mixture of C <sub>8</sub> to C <sub>11</sub> alcohol ethoxylates with average 6 moles of ethylene oxide per mole of alcohol.				

SECTION III	HEALTH INFORMATION
Severely irritating to skin and eyes. Avoid prolonged or repeated contact.	
High vapor concentrations or prolonged exposure can cause headache, dizziness, nausea and vomiting.	
Not a skin sensitizer in animals.	

SECTION IV	OCCUPATIONAL EXPOSURE LIMITS
None established	



# MATERIAL SAFETY DATA SHEET

MSDS NUMBER ▶

7,270-1.  
PAGE 2 OF 4

97003 (1-81)

**SECTION V****EMERGENCY AND FIRST AID PROCEDURES**

**EYE CONTACT:** Flush with water for 15 minutes while holding eyelids open. Get medical attention.

**SKIN CONTACT:** Immediately deluge with water for 15 minutes while removing contaminated clothing and shoes. Follow by washing exposed area with soap and water. Do not reuse clothing or shoes until thoroughly cleaned. Get medical attention.

**INHALATION:** Remove victim to fresh air and provide oxygen if breathing is difficult. Give artificial respiration if not breathing. Get medical attention.

**INGESTION:** Do not give liquids if victim is unconscious or very drowsy. Otherwise, give no more than 2 glasses of water and induce vomiting by giving 30cc (2 tablespoons) Syrup of Ipecac.\* If Ipecac is unavailable, give 2 glasses of water and induce vomiting by touching finger to back of victim's throat. Keep victim's head below hips while vomiting. Get medical attention.

\*NOTE TO THE PHYSICIAN: If victim is a child, give no more than 1 glass of water and 15cc (1 tablespoon) Syrup of Ipecac. If symptoms such as loss of gag reflex, convulsions or unconsciousness occur before emesis, gastric lavage should be considered following intubation with a cuffed endotracheal tube.

**SECTION VI****PHYSICAL DATA**

BOILING POINT (°F) ▶ >450 --	MELTING POINT (°F) ▶ 42-48	VAPOR PRESSURE (mmHg) <0.1
SPECIFIC GRAVITY (H <sub>2</sub> O=1) ▶ 0.99	% VOLATILE BY VOLUME ▶ --	VAPOR DENSITY (AIR=1) ▶ 15
SOLUBILITY IN WATER ▶ Complete, may form gel	EVAPORATION RATE (BUTYL ACETATE=1) ▶ --	Pour point = 45°F
APPEARANCE AND ODOR		
Slightly viscous liquid. Mild odor.		

**SECTION VII****FIRE AND EXPLOSION HAZARDS**

FLASH POINT AND METHOD USED	FLAMMABLE LIMITS: % VOLUME IN AIR	LOWER	UPPER
334°F PMCC	Not applicable	--	--
EXTINGUISHING MEDIA			
Use water, foam, dry chemical or CO <sub>2</sub> .			
SPECIAL FIRE FIGHTING PROCEDURES AND PRECAUTIONS			
Do not enter confined fire space without proper protective equipment including a NIOSH approved self-contained breathing apparatus. Cool fire-exposed containers, surrounding equipment and structures with water.			
ADDITIONAL FIRE AND EXPLOSION HAZARDS			
None unusual			



# MATERIAL SAFETY DATA SHEET

MSDS NUMBER ▶

7,270-1  
PAGE 3 OF

97004 (10-79)

**SECTION VIII****REACTIVITY**STABILITY ▶  UNSTABLE  STABLEHAZARDOUS POLYMERIZATION ▶  MAY OCCUR  WILL NOT OCCUR**CONDITIONS AND MATERIALS TO AVOID**

Avoid contact with strong oxidizing agents and open flame.

Do not use with aluminum equipment at temperatures above 120°F

**HAZARDOUS DECOMPOSITION PRODUCTS**

Carbon monoxide upon incomplete combustion.

**SECTION IX****EMPLOYEE PROTECTION****RESPIRATORY PROTECTION**

Use a NIOSH-approved respirator as required to prevent overexposure. In accord with 29 CFR 1910.134, use either an atmosphere-supplying respirator or an air-purifying respirator for organic vapors.

**PROTECTIVE CLOTHING**

Wear impervious gloves and protective clothing as required to prevent skin contact. Wear chemical goggles to prevent eye contact if a full-face mask respirator is not worn.

**ADDITIONAL PROTECTIVE MEASURES**

Use explosion-proof ventilation as required to control vapor concentrations.

**SECTION X****ENVIRONMENTAL PROTECTION****SPILL OR LEAK PROCEDURES****CAUTION:** Spilled material is slippery.

Keep away from open flames. Dike large spills and remove with vacuum truck or pump into salvage vessels. Spread sand, vermiculite or other absorbent materials to soak up small spills and residues. Scoop up any solid material. Put spilled material into tight containers for disposal or reclamation.

Use of water to flush away spills should be avoided. Gels and some foam can be formed which are difficult to handle and clean up.

**WASTE DISPOSAL**

1) Reclaim 2) Controlled incineration in compliance with government regulations 3) Dispose of in a state approved waste disposal facility.

**ENVIRONMENTAL HAZARDS**

Do not allow this product to enter storm or sanitary sewers, lakes, rivers, streams or public water supplies. If this happens or is threatened, notify



# MATERIAL SAFETY DATA SHEET

MSDS NUMBER ▶

7,270-1  
PAGE 4 OF 4

97005 (1-81)

## SECTION XI

## SPECIAL PRECAUTIONS

Avoid using in aluminum equipment above 120°F

Caution. Irritant. Minimize bodily contact with material. Wash with soap and water before eating, drinking, smoking or using toilet facilities. Launder contaminated clothing before reuse.

## SECTION XII

## TRANSPORTATION REQUIREMENTS

DEPARTMENT OF TRANSPORTATION CLASSIFICATION	<input type="checkbox"/> FLAMMABLE LIQUID	<input type="checkbox"/> COMBUSTIBLE LIQUID	<input type="checkbox"/> OXIDIZING MATERIAL	<input type="checkbox"/> NON-FLAMMABLE GAS
	<input type="checkbox"/> FLAMMABLE SOLID	<input type="checkbox"/> POISON, CLASS A	<input type="checkbox"/> CORROSIVE MATERIAL	<input checked="" type="checkbox"/> NOT HAZARDOUS BY D.O.T. REGULATIONS
	<input type="checkbox"/> FLAMMABLE GAS	<input type="checkbox"/> POISON, CLASS B	<input type="checkbox"/> IRRITATING MATERIAL	<input type="checkbox"/> OTHER—Specify below

D.O.T. PROPER SHIPPING NAME

OTHER REQUIREMENTS

## SECTION XIII

## OTHER REGULATORY CONTROLS

EPA, FDA, OSHA, USDA, CPSC, etc.

The information contained herein is based on data considered accurate. However, no warranty is expressed or implied regarding the accuracy of these data or the results to be obtained from the use thereof.

Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Additionally, vendor assumes no responsibility for injury to vendee or third persons proximately caused by abnormal use of the material even if reasonable safety procedures are followed. Furthermore vendee assumed the risk in his use of the material.



*James J. Bowen*  
Manager

SHELL OIL COMPANY  
PRODUCT SAFETY AND COMPLIANCE  
OIL AND CHEMICAL PRODUCTS  
P.O. BOX 4320  
HOUSTON, TEXAS 77210

DATE PREPARED

March 03, 1982

EFFECTIVE DATE: 03 OCT 80

PRODUCT CODE: 59010

PRODUCT NAME: PERCHLOROETHYLENE SVG

MSD: 0475

INGREDIENTS (TYPICAL VALUES-NOT SPECIFICATIONS) : % :  
PERCHLOROETHYLENE : 99 :

SECTION 1

PHYSICAL DATA

BOILING POINT: 250F (121C) : SOL. IN WATER: 0.015G/100G 25C  
VAP PRESS: 13 MMHG @ 20C : SP. GRAVITY: 1.612-1.619 @ 25/25C  
VAP DENSITY (AIR=1): 5.76 : % VOLATILE BY VOL: 100 (ESSENTIALLY)

APPEARANCE AND ODOR: COLORLESS LIQUID.

SECTION 2

FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: NONE : FLAMMABLE LIMITS  
METHOD USED: TOC, TCC, COC : LFL: ---- UFL: ----

EXTINGUISHING MEDIA: NON-FLAMMABLE MATERIAL.

SPECIAL FIRE FIGHTING EQUIPMENT AND HAZARDS: PRESSURE DEMAND  
SELF-CONTAINED RESPIRATORY EQUIPMENT.

SECTION 3

REACTIVITY DATA

STABILITY: AVOID OPEN FLAMES, WELDING ARCS, OR OTHER  
HIGH TEMPERATURE SOURCES WHICH INDUCE THERMAL DECOMPOSITION.

INCOMPATIBILITY: ----

HAZARDOUS DECOMPOSITION PRODUCTS: INVOLVEMENT IN FIRE FORMS HYDROGEN  
CHLORIDE AND SMALL AMOUNTS OF PHOSGENE AND CHLORINE.

HAZARDOUS POLYMERIZATION: WILL NOT OCCUR.

SECTION 4

SPILL, LEAK, AND DISPOSAL PROCEDURES

ACTION TO TAKE FOR SPILLS (USE APPROPRIATE SAFETY EQUIPMENT): SMALL LEAKS -  
MOP UP, WIPE UP, OR SOAK UP IMMEDIATELY. REMOVE TO OUT OF DOORS.  
LARGE SPILLS - EVACUATE AREA. CONTAIN LIQUID; TRANSFER TO CLOSED  
METAL CONTAINERS. KEEP OUT OF WATER SUPPLY.

(CONTINUED ON PAGE 2 )

(R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

EFFECTIVE DATE: 03 OCT 80  
PRODUCT (CONT'D): PERCHLOROETHYLENE SVG

PRODUCT CODE: 59010  
MSD: 0475

SECTION 4            SPILL, LEAK, AND DISPOSAL PROCEDURES (CONTINUED)

DISPOSAL METHOD: (IN ORDER OF PREFERENCE) SEND SOLVENT TO LICENSED RECLAIMER, INCINERATION, EVAPORATION OF VERY SMALL QUANTITIES, OR APPROVED LANDFILL BURIAL IN COMPLIANCE WITH LOCAL, STATE, AND FEDERAL REGULATIONS. DUMPING INTO SEWERS, ON THE GROUND, OR INTO ANY BODY OF WATER IS STRONGLY DISCOURAGED, AND MAY BE ILLEGAL.

SECTION 5            HEALTH HAZARD DATA

INGESTION: LOW IN SINGLE DOSE ORAL TOXICITY. LD50 (RAT) GREATER THAN 5000; (MOUSE) IN RANGE OF 8000 TO 11000 MG/KG.

EYE CONTACT: PAIN AND IRRITATION, BUT NO CORNEAL INJURY SHOULD OCCUR.

SKIN CONTACT: SHORT CONTACT - NO IRRITATION. PROLONGED OR FREQUENTLY REPEATED CONTACT - MODERATE IRRITATION AND DRYING. IF CONFINED TO SKIN - PAIN AND IRRITATION, EVEN A BURN.

SKIN ABSORPTION: LOW TOXICITY. LD50 (RABBIT) GREATER THAN 10 G/KG.

INHALATION: ACGIH TLV AND OSHA GUIDE IS 100 PPM.

EFFECTS OF OVEREXPOSURE: POSSIBLE ORGANIC INJURY FROM PROLONGED OR REPEATED EXPOSURES; IRRITATION, CENTRAL NERVOUS SYSTEM DEPRESSION. CAN CAUSE DEATH IF TOO MUCH IS BREATHED. ONE LIFETIME STUDY WITH TOXIC DOSES GIVEN BY STOMACH TUBE INDICATED A CARCINOGENIC RESPONSE IN LABORATORY MICE, BUT NOT IN RATS EXPOSED BY INGESTION OR INHALATION. THE PREPONDERANCE OF INFORMATION INDICATES PERCHLOROETHYLENE IS NOT LIKELY TO BE A CARCINOGEN IN MAN. EMBRYOTOXICITY WAS SEEN IN ANIMALS AT DOSES TOXIC TO THE MATERNAL ANIMAL.

SECTION 6            FIRST AID

EYES: IRRIGATION OF THE EYES IMMEDIATELY WITH WATER FOR FIVE MINUTES IS GOOD SAFETY PRACTICE.

SKIN: WASH OFF IN FLOWING WATER OR SHOWER 15 MINUTES. CONSULT MEDICAL. THOROUGHLY AIR DRY OR WASH GROSSLY CONTAMINATED CLOTHES BEFORE REUSE.

INHALATION: REMOVE TO FRESH AIR IF EFFECTS OCCUR. IF RESPIRATION STOPS, GIVE MOUTH-TO-MOUTH RESUSCITATION. CALL PHYSICIAN AND/OR TRANSPORT TO MEDICAL FACILITY.

INGESTION: DO NOT INDUCE VOMITING. CALL A PHYSICIAN OR TRANSPORT TO EMERGENCY FACILITY.

(CONTINUED ON PAGE 3 )

(R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

EFFECTIVE DATE: 03 OCT 80  
PRODUCT (CONT'D): PERCHLOROETHYLENE SVG

PRODUCT CODE: 59010  
MSD: 0475

SECTION 6

FIRST AID (CONTINUED)

NOTE TO PHYSICIAN:

EYES: MAY PRODUCE CONJUNCTIVITIS. STAIN FOR EVIDENCE OF CORNEAL ABRASION OR INJURY.

SKIN: CHRONIC EXPOSURE MAY PRODUCE DEFATTING TYPE OF DERMATITIS. TREAT AS ANY CONTACT DERMATITIS; INHIBITOR IS KNOWN OR SUSPECTED SKIN SENSITIZER.

RESPIRATORY: MODERATE IRRITANT. BRONCHODILATORS, EXPECTORANTS AND ANTITUSSIVES MAY BE OF HELP. OXYGEN MAY BE HELPFUL. MECHANICAL SUPPORT OF RESPIRATION MAY BE NEEDED.

ORAL: MAY CAUSE CHEMICAL PNEUMONITIS IF ASPIRATED INTO LUNGS. PRODUCT LOW IN TOXICITY. DANGER OF CHEMICAL PNEUMONIA MUST BE WEIGHED AGAINST TOXICITY. IF LAVAGE IS PERFORMED, SUGGEST ENDO-TRACHEAL AND/OR ESOPHAGOSCOPIC CONTROL.

SYSTEMIC: ANESTHETIC OR NARCOTIC EFFECT MAY OCCUR. MAY INCREASE MYOCARDIAL IRRITABILITY. AVOID EPINEPHRINE OR SIMILAR ACTING DRUGS IF AT ALL POSSIBLE. MAY CAUSE NAUSEA OR VOMITING. ALCOHOL CONSUMED BEFORE OR AFTER EXPOSURE MAY INCREASE INJURY. NO SPECIFIC ANTIDOTE. LIVER AND KIDNEY CHANGES SHOWN IN ANIMAL STUDIES. CONSULT STANDARD LITERATURE.

SECTION 7

SPECIAL HANDLING INFORMATION

VENTILATION: RECOMMEND CONTROL OF VAPORS TO SUGGESTED GUIDE. GOOD ROOM VENTILATION USUALLY ADEQUATE FOR MOST OPERATIONS.

RESPIRATORY PROTECTION: APPROVED RESPIRATORY PROTECTION REQUIRED IN ABSENCE OF PROPER ENVIRONMENTAL CONTROL. FOR EMERGENCIES, A SELF-CONTAINED BREATHING APPARATUS OR A FULL-FACE RESPIRATOR IS RECOMMENDED.

PROTECTIVE CLOTHING: NONE REQUIRED.

EYE PROTECTION: SAFETY GLASSES WITHOUT SIDE SHIELDS.

SECTION 8

SPECIAL PRECAUTIONS AND ADDITIONAL INFORMATION

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: HANDLE WITH REASONABLE CARE AND CAUTION. AVOID BREATHING VAPORS. VAPORS OF THIS PRODUCT ARE HEAVIER THAN AIR AND WILL COLLECT IN LOW AREAS SUCH AS PITS, DEGREASERS, STORAGE TANKS, AND OTHER CONFINED AREAS. DO NOT ENTER THESE AREAS WHERE VAPORS OF THIS PRODUCT ARE SUSPECTED UNLESS SPECIAL BREATHING APPARATUS IS USED AND AN OBSERVER IS PRESENT FOR ASSISTANCE.

ADDITIONAL INFORMATION: 03 OCT 80 REVISIONS OF 02 FEB 80 --  
SECTIONS 4, 5, AND 6.

(CONTINUED ON PAGE 4 )

(R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

M A T E R I A L   S A F E T Y   D A T A   S H E E T   P A G E : 4  
DOW CHEMICAL U.S.A. MIDLAND MICHIGAN 48640 EMERGENCY PHONE: 517-636-4400

EFFECTIVE DATE: 03 OCT 80  
PRODUCT (CONT'D): PERCHLOROETHYLENE SVG

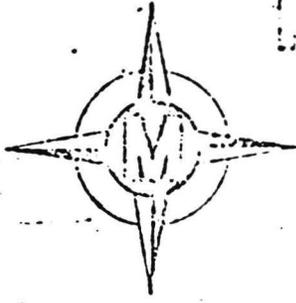
PRODUCT CODE: 59010  
MSD: 0475

LAST PAGE

(R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

CONSULT THE DOW CHEMICAL COMPANY FOR FURTHER INFORMATION.

THE INFORMATION HEREIN IS GIVEN IN GOOD FAITH, BUT NO WARRANTY,  
EXPRESSED OR IMPLIED, IS MADE.



# MORELAND Chemicals

□ Spartanburg, S. C. 29304  
Post Office Box 2169

## MATERIAL SAFETY DATA SHEET

Information on this form is furnished solely for the purpose of compliance with the Occupational Safety and Health Act of 1970 and shall not be used for any other purpose.

SECTION I	
MANUFACTURER'S NAME Moreland Chemical Co., Inc	EMERGENCY TELEPHONE NO. .804-585-4321
ADDRESS (NUMBER, STREET, CITY, STATE, AND ZIP CODE) P. O. Box 2169, Spartanburg, S. C. 29302	
CHEMICAL NAME AND SYNONYMS Sodium Hypochlorite	TRADE NAME AND SYNONYMS Bleach, Liquid Bleach
CHEMICAL FAMILY Hypochlorites	FORMULA NaOCl

SECTION II HAZARDOUS INGREDIENTS					
INGREDIENT	%	TLV (UNITS)	INGREDIENT	%	TLV (UNITS)
Sodium Hypochlorite	13 † *				
Sodium Hydroxide	0.8				
POTENTIALLY TOXIC INGREDIENTS					
Chlorine, as a product of rapid decomposition if acidified.					

\*This material is easily decomposed, losing strength in relation to storage time, temperature, alkalinity, light, etc.

### SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	see Sec VI	SPECIFIC GRAVITY (H <sub>2</sub> O=1)	1.2
VAPOR PRESSURE (mm Hg.)	decomposes	PERCENT VOLATILE BY VOLUME (%)	see Sec. V
VAPOR DENSITY (AIR=1)	decomposes	EVAPORATION RATE (_____ = 1)	see Sec. VI
SOLUBILITY IN WATER	soluble		
APPEARANCE AND ODOR Pale Yellow Color - Mildly Pungent Odor			

### SECTION IV FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED) None	FLAMMABLE LIMITS None	LEL	UEL
EXTINGUISHING MEDIA			
SPECIAL FIRE FIGHTING PROCEDURES None			
UNUSUAL FIRE AND EXPLOSION HAZARDS None			

### SECTION V HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE	Not established--aqueous solution
EFFECTS OF OVEREXPOSURE	Irritation of nose & throat, mucous membranes:  Corrosive to skin or to internal organs if swallowed.
EMERGENCY AND FIRST AID PROCEDURES	
Skin--wash affected area with large amounts of water and apply a paste of baking soda (sodium bicarbonate). Remove wet clothing to prevent recontact.	
Eyes--irrigate with plenty of water for 15 minutes--consult eye doctor immediately.	
Ingestion--immediately swallow milk, eggwhite, or milk of magnesia and call a physician.	

### SECTION VI REACTIVITY DATA

STABILITY Fair unless improperly handled	UNSTABLE	X	CONDITIONS TO AVOID Temperature over 80° F, Bright light
	STABLE		Prolonged tight sealing--should vent daily
INCOMPATIBILITY (MATERIALS TO AVOID) Do not mix with acids or acidic solutions			
HAZARDOUS DECOMPOSITION PRODUCTS Chlorine (Cl <sub>2</sub> ) gas			
HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID
	WILL NOT OCCUR	X	

### SECTION VII SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED	
Air--allow full ventilation to clear out chlorine fumes if present	
Container--turn so leak point is turned upward to reduce leaking--flush with water.	
Areas, floors, etc.--flush with plenty of water	
WASTE DISPOSAL METHOD Dilute with water and flush to drain or drainage area; this material is the same as commercial bleaches such as "Chlorox", and may be disposed of in same way.	

**SECTION VIII SPECIAL PROTECTION INFORMATION**

RESPIRATORY PROTECTION (SPECIFY TYPE)

Not required unless chlorine is released by rapid decomposition.

PROTECTIVE GLOVES

Rubber or neoprene or PVC

EYE PROTECTION

chemical goggles or full face shields

VENTILATION

Normal

LOCAL EXHAUST

Good ventilation to prevent irritation

MECHANICAL (GENERAL)

SPECIAL

OTHER

OTHER PROTECTIVE EQUIPMENT

Rubber or neoprene or PVC aprons, boots, jackets, etc.

**SECTION IX SPECIAL PRECAUTIONS**

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

Keep product cool (80° F or below), out of direct light, free from addition of

acidic substances, or ammonia compounds.

OTHER PRECAUTIONS

Vent containers daily to relieve pressure build-up -- use proper venting procedure.

Use containers, pipes, valves, and other equipment not affected by bleach.

Date Issued June 6, 1977

While the information, recommendations, and data herein are believed to be accurate, and the opinions expressed are those of qualified sources or based on actual experience, this material and data are not to be taken as a warranty or representation for which the Company assumes legal responsibility or liability. They are offered solely for your consideration, investigation, and verification.

## VII. Implementation of the Contingency Plan

- The facility contingency/emergency response plan will be used, where practical, to neutralize, control or otherwise ameliorate on or off-site emergencies involving: fire, explosions, regulated chemical or hazardous waste releases to air, soil, or surface water, or personal injury, caused by equipment failure, procedural violations, acts of God, etc.
- The plan is purposely designed to minimize hazards to human health or the environment, due to any of the above emergencies.
- The provisions of the plan must be carried out immediately whenever an emergency constitutes a threat to human health or the environment.
- Facility personnel cannot reasonable be either trained or equipped to confront a major catastrophe. The decision to commit facility people and/or equipment must be made on-the-spot by the local manager.
- The health and welfare of the facility employees must always be the most important factor in any emergency decision.

## VIII. Emergency Response Procedures

- A. Fire Plans (Intensity and location of fire determine emergency response)
- 1) Activate alarm and fire brigade
  - 2) Call Fire Department and assist
  - 3) Render First Aid
  - 4) Call other emergency services in case of serious injury
  - 5) Shut down power panel
  - 6) Remove truck and forklifts if possible
  - 7) Keep unauthorized persons out of area
  - 8) Evacuate employees - take head count
  - 9) Activate neighborhood alert (Sec. VIII-B) if release of toxic gas or other conditions warrant. Be certain employees are not exposed
  - 10) Re-enter when fire department approves
  - 11) Turn off sprinkler system when authorized by fire department
  - 12) Arrange for replacement of sprinkler heads, draining dry system and re-activating sprinkler as soon as possible
  - 13) Secure facility
  - 14) Begin salvage and repair operation (being careful of any residues which may be toxic or otherwise hazardous)
- B. Spills (Magnitude of spill, product characteristics, release into sewers, drainage ditch or confined to dike walls, etc. determine emergency response)
- 1) Sound alarm
  - 2) Shut down power panel (If flammable, stop all sources of ignition)
  - 3) Stop or reduce product flow if possible - with minimal risk to personnel
  - 4) Rescue injured - if any - remove to safe area and administer First Aid
  - 5) If necessary, implement the Facility Evacuation Plan - (Sec. IX)
  - 6) If necessary, implement the Neighborhood Alert Plan (Sec. III-F)
  - 7) Contain if possible. If not, call fire department (hazardous materials unit)
  - 8) When contained, begin neutralization or salvage and clean up operation: (Ref. To Master Contingency Plan for Clean Up Principles and Procedures)
  - 9) Notify Regional Office Staff (not necessarily last, but any time needed to ask for guidance)

## Emergency Response Procedures, continued

- C. Toxic Gas Release (Magnitude of release, wind direction, product characteristics, protective equipment on hand, and the presence of trained personnel determines emergency response)
- 1) Sound alarm
  - 2) Stop or reduce product release immediately, if possible, using trained personnel, and protective equipment (many facility personnel Chlorop trained)
  - 3) Rescue injured - Remove to safe area (upwind) Administer first aid.
  - 4) If necessary, call fire department and other emergency service
  - 5) If necessary, implement Facility Evacuation Plan
  - 6) If necessary, implement Neighborhood Alert Plan
  - 7) Report to Regional Office Operations for coordination of notification and reporting to governmental agencies
- D. Vehicle Emergencies
- 1) Turn off ignition - Secure shipping papers. Notify facility as soon as possible. If you can not do this personally, ask a bystander to do this for you. If police, fire, or rescue personnel are available, ask them to have their dispatcher to call the facility.
  - 2) Rescue injured, remove to safe area. Administer First Aid
  - 3) Do not try to put out fire, other than an incipient fire involving the vehicle's components--brakes, electrical system, etc.
  - 4) Do not enter the cargo box of a truck or the back of a cargo trailer if smoke is visible. Do not open the doors
  - 5) If it is feasible to move the unit to a safer location safely, do so. If it is possible to drop the trailer or tanker, do so
  - 6) Set out flares, emergency markers, and instruct bystanders to divert traffic, and to stay away from the vehicle
  - 7) Be prepared to brief emergency response personnel on correct fire fighting and/or spill control procedures (Refer to 49 CFR (DOT) Subpart E, Sec. 392, 40 and Sec. 397.5)
- E. First Aid Plan
- 1) Rescue the victim and yourself
  - 2) Rest and/or maintain breathing and heartbeat
  - 3) Control heavy bleeding
  - 4) Treat for poisoning, if necessary
  - 5) Prevent shock
  - 6) Examine the victim carefully
  - 7) Seek medical help
    - First Aid and CPR trained facility

Emergency Response Procedures, continued

First Aid Plan, continued

Item 7, continued

Seek Medical Help, item 1

- personnel to assist until emergency services arrive

8) Keep checking victim until emergency medical personnel arrive

F. Neighborhood Alert Plan

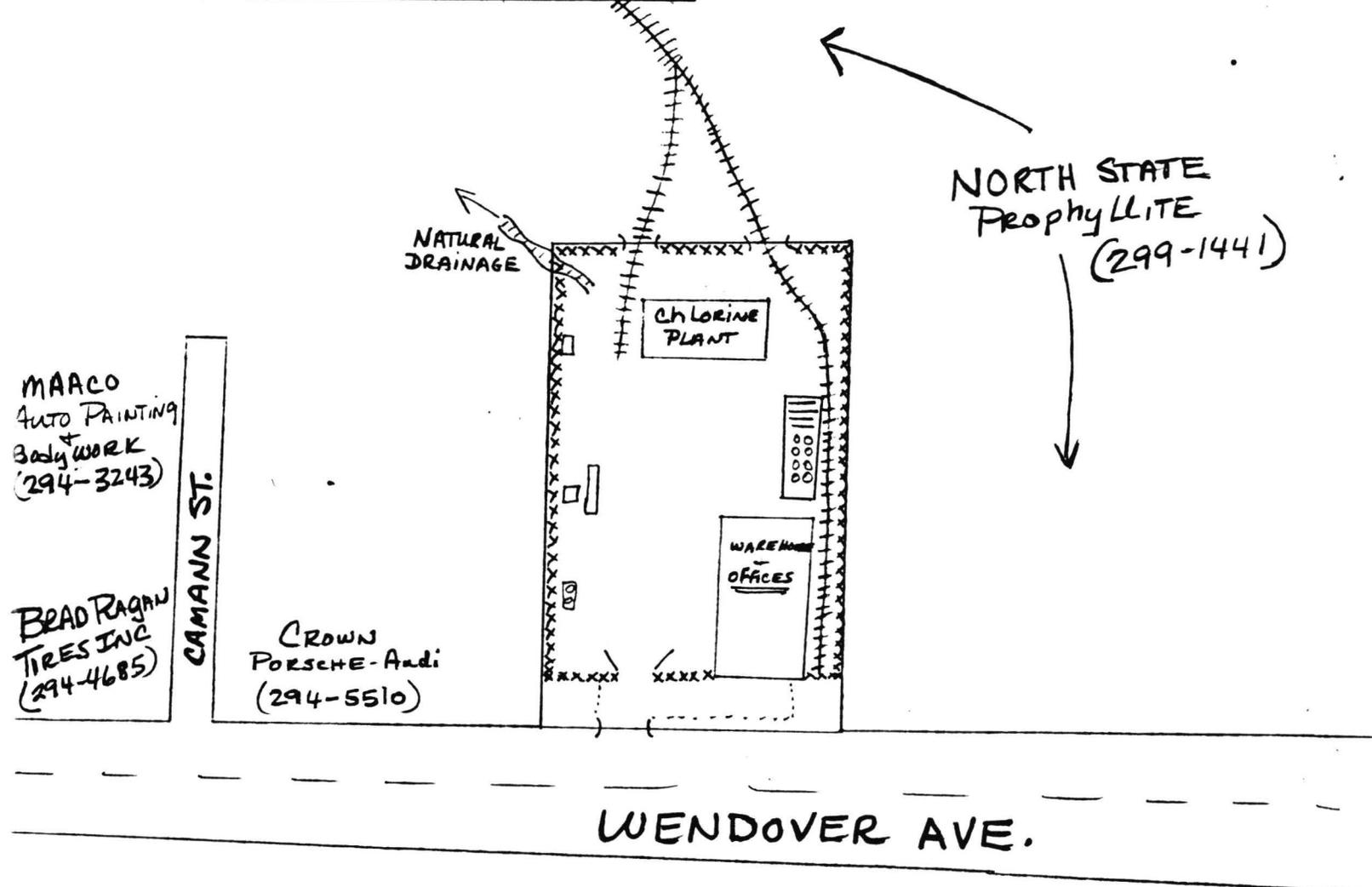
- 1) Refer to Sec. III B (3) for list of phone numbers of adjacent businesses
- 2) Call police at 373-2222 if assistance in notification is needed
- 3) Make care note as to prevailing winds (especially if notification is needed due to a release of toxic gases)
- 4) Notification diagram attached.

MCKESSON CHEMICAL COMPANY: 3600 W. WENDOVER AVE.

(F.)

NEIGHBORHOOD ALERT PLAN:

NOTIFICATION DIAGRAM



MARCO  
Auto PAINTING  
Body WORK  
(294-3243)

BRAD RAGAN  
TIRES INC  
(294-4685)

CROWN  
Porsche-Audi  
(294-5510)

CROWN  
PONTIAC  
(294-2700)

ENGINEERS  
CONSTRUCTION  
(292-9231)

FASTNERS  
OF CAROLINA  
(855-9090)

## IX. Evacuation Plans

### A. General

- Facility personnel will be evacuated at such time that the emergency coordinator or location manager decides that their personal safety is in danger
- Evacuation will take place through any safe exit doors out of the buildings, and through the main (front) gate out into the front parking lot. (Diagram attached)
- If this gate is blocked for any reason, evacuation will take place through the auxiliary gates, behind the chlorine plant, (these gates are normally kept locked) (All management personnel have keys to gates)

### B. Notification

- Any employee who recognizes an unsafe act or condition must immediately notify co-workers in the immediate area, then decide if immediate correction action is possible. If so, accomplish and notify closest supervisor.
- If immediate correction action not possible, notify nearest supervisor and observe condition from a safe distance
- Supervisor is to notify Primary Facility Emergency Coordinator, giving him specific information concerning the condition
- Emergency coordinator then quickly decides if evacuation is necessary. If so:

- All employees are notified quickly

Means of notification:

Terry Phones (Speakers in all work areas)  
Siren (Horn) In chlorine plant  
Fire Bell in warehouse  
Local button on all phones  
Word of Mouth: Supervisors to employees in  
different work areas

### C. Assembly/Accountability

- Once notification is complete and any immediate corrective actions are performed, all employees will shut down any equipment and proceed to the assembly area (See diagram)
- Each supervisor should have a clear accounting of all their personnel

Evacuation Plans, continued,

D. Rescues

- If one or more employees cannot be accounted for, the emergency coordinator will quickly coordinate a rescue attempt
- If possible, and rescue attempts will be accomplished with the assistance and/or leadership of emergency service personnel
- However, in the absence of better trained and equipped emergency service personnel, we will do everything possible within our capabilities to rescue our employees from danger
- Personnel rescue and safety will always be our highest priority emergency operation
- Evacuation diagram attached

3600 WENDOVER AVE

Ⓧ EMERGENCY EXITS = ↗

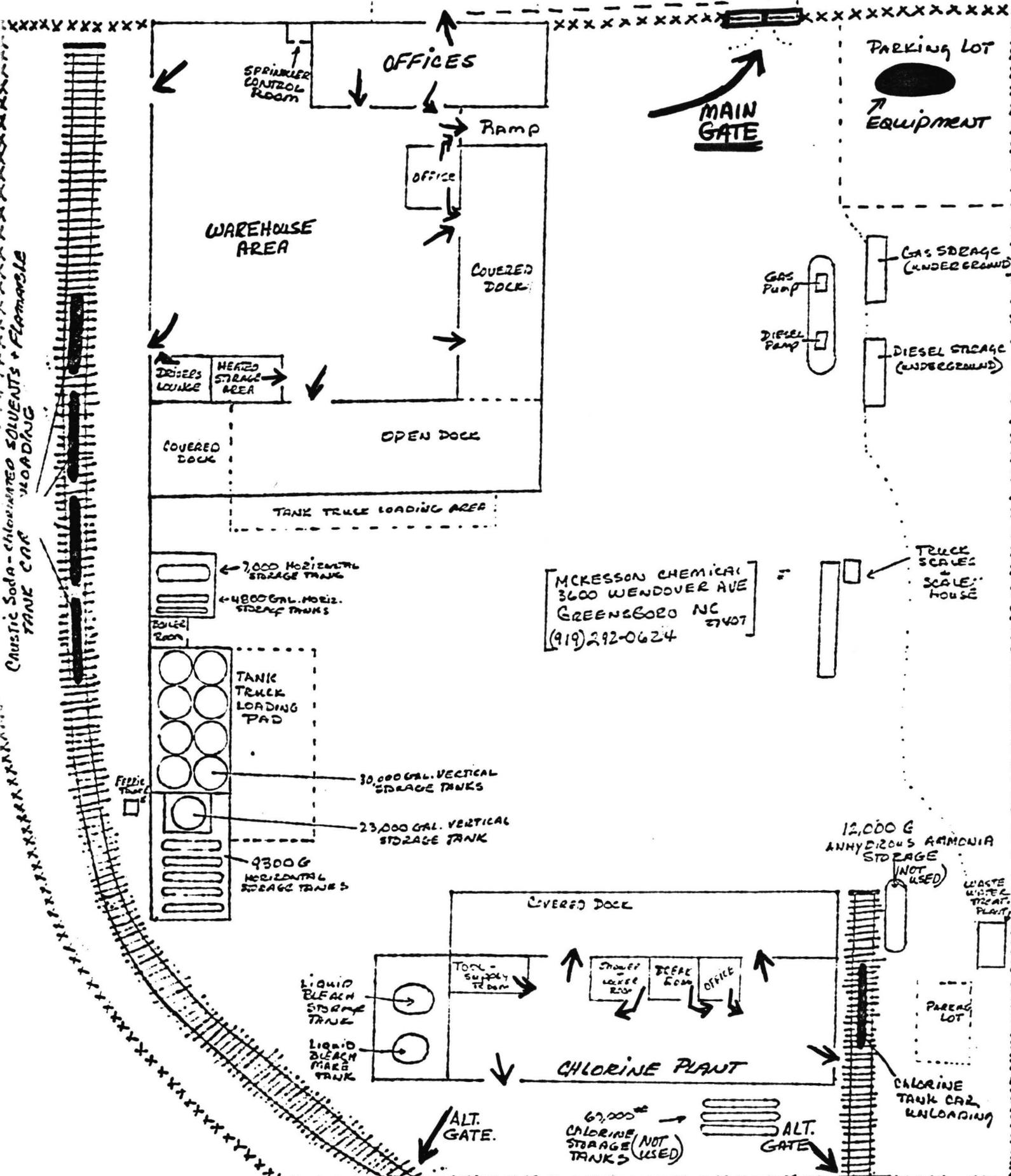
Ⓧ ASSEMBLY POINT PERSONNEL = ○

ASSEMBLY POINT EQUIPMENT = ●

PARKING LOT

PERSONNEL

Ⓧ EVACUATION DIAGRAM



CAUSTIC SODA - CHLORINATED SOLVENTS + FLAMMABLE TANK CAR UNLOADING

MCKESSON CHEMICAL  
3600 WENDOVER AVE  
GREENSBORO NC  
27407  
(919) 292-0624

12,000 G ANHYDROUS AMMONIA STORAGE (NOT USED)

WASTE WATER TREAT. PLANT

PARKING LOT

CHLORINE TANK CAR UNLOADING

67,000 CHLORINE STORAGE TANKS (NOT USED)

ALT. GATE

ALT. GATE

MAIN GATE

PARKING LOT  
EQUIPMENT

GAS PUMP  
DIESEL PUMP

GAS STORAGE (UNDERGROUND)

DIESEL STORAGE (UNDERGROUND)

TRUCK SCALES & SCALE HOUSE

SPRINKLER CONTROL ROOM

OFFICES

Ramp

OFFICE

COVERED DOCK

WAREHOUSE AREA

DECKERS LOUNGE

HEATED STORAGE AREA

COVERED DOCK

OPEN DOCK

TANK TRUCK LOADING AREA

7,000 HORIZONTAL STORAGE TANKS  
4,800 GAL. HORIZ. STORAGE TANKS

TANK TRUCK LOADING PAD

30,000 GAL. VERTICAL STORAGE TANKS

23,000 GAL. VERTICAL STORAGE TANK

4300 G HORIZONTAL STORAGE TANKS

COVERED DOCK

TOOL-SUPPLY ROOM

STORAGE LOCKER ROOM

DECK ROOM

OFFICE

CHLORINE PLANT

LIQUID BLEACH STORAGE TANK

LIQUID BLEACH MAKE TANK

FEED TANK

## X. Coordination Agreements

- Facility contingency plan distributed to all local fire, police, hospitals, and emergency service units through the assistance of Marilyn J. Braun, Coordinator, at Guilford County EMERGENCY MANAGEMENT ASSISTANCE AGENCY, asking the individual agencies to contact the facility if there are any questions about, or problems with the plan
- Attached copy of the Greensboro-Guilford County Inter-Agency Agreement on Hazardous Materials. This statement should be considered proof of agreement with our plan, and that a coordinated response will be made at our facility should a problem arise

**GREENSBORO-GUILFORD COUNTY  
EMERGENCY MANAGEMENT ASSISTANCE AGENCY**

**DRAWER W-2, GREENSBORO, N. C. 27402**

**TELEPHONE 373-2278**

May 19, 1983

Mr. George M. McClintock, Operations Manager  
McKesson Chemical Company  
3600 West Wendover Avenue  
Greensboro, NC 27407

Dear Mr. McClintock:

This letter is to verify that your contingency plan has been registered with the following local emergency services contacts:

Cpt. O. R. McKinney  
State Highway Patrol  
Telephone No.: 379-5621

Cpt. Carl Richards  
Guilford County Sheriff's Department  
Telephone No.: 373-3690

Major Sylvester Daughtry, Jr.  
Greensboro Police Department  
Telephone No.: 373-2058

Robert Marine, Chief  
Greensboro Communications Operations  
Telephone No.: 373-2122

Jerold Stack, Deputy Fire Marshal  
Guilford County Hazardous Materials Team  
County Fire Marshal's Office  
Telephone No.: 299-1351

Chief Jack Coble  
Greensboro Hazardous Materials Team  
City Fire Administration  
Telephone No.: 373-2161

Mr. Thomas F. Owens  
Guilford County  
Environmental Health  
Telephone No. 373-3771

Ed Woodard  
Guilford County ES-EMS  
Telephone No.: 299-1351

HOSPITAL CONTACTS

Mr. Joseph Swedish, Director  
of Patient Care Management  
Moses Cone Hospital  
Telephone No.: 379-4361

Ms. Constance Powell, Assistant Director  
for Support Services  
L. Richardson Hospital  
Telephone No.: 275-9741

Mr. Richard Thompson, Director of  
Safety  
Wesley Long Community Hospital  
Telephone No.: 299-6815, Ext. 667

Mr. Keith Sandlin, Associate Executive  
Director  
Humana Greensboro Hospital  
Telephone No.: 373-8555

Attached is the Emergency Inter-Agency Agreement on Hazardous Materials. For an accident at your sites you would activate this system by telephoning 373-2222, (City Police/Fire Emergency) or 292-6121 (Guilford County Fire Marshal's Emergency telephone number).

Please keep this letter on file as verification that your plan has been sent. We are asking the individual agencies to contact you if they have any problem with your plan. Please send any updates to us for redistribution.

It was a pleasure assisting you.

Cordially,



Marilyn J. Braun  
Coordinator

MJB:pg

Enclosure

cc: Emergency Services Contacts

GREENSBORO-GUILFORD COUNTY  
EMERGENCY MANAGEMENT ASSISTANCE AGENCY

DRAWER W-2, GREENSBORO, N. C. 27402

TELEPHONE 373-2278

May 20, 1983

Mr. Mike E. Efting, Branch Manager  
McKesson Chemical Company  
P. O. Box 18805  
Greensboro, NC 27419

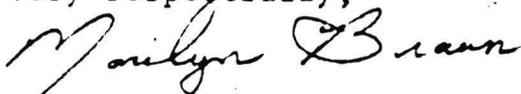
Dear Mr. Efting:

I am writing to express my gratitude to your company on the design and care taken in writing your contingency plan. I have had the pleasure of working closely with Mr. George McClintock in the past several weeks. He has dedicated himself to provide the hospitals and emergency services with a very well organized plan satisfying the RCRA requirements.

All contingency plans given to us by local industries are considered public information, however, I should very much appreciate your permission to use your plan as an example to other industries who are struggling to write their plans. Should this not be desirable to you, please let me know.

Once again, I am admiring the way your company has handled the planning effort and the result.

Very respectfully,



Marilyn J. Braun  
Coordinator

MJB:pg



INTER-AGENCY STATEMENT OF EMERGENCY COOPERATION: UNCONTROLLED  
HAZARDOUS MATERIAL INCIDENTS

SEPTEMBER 24, 1981

PHASE I: INITIAL RESPONSE

The Initial Responder's (law enforcement or fire) obligation is to activate the City's (Greensboro or High Point) or Guilford County's fire department's Hazardous Materials team.

PHASE II: RESPONSE/STABILIZING OR CONTAINING THE HAZARD

CONTROL

GUILFORD COUNTY:

Director of Emergency Services or his designee on the County's Hazardous Materials team.

CITY: (High Point or Greensboro)

The Chief of the Greensboro or High Point Fire Department or his designee on the Hazardous Materials team.

RESPONSIBILITIES

1. Coordination of all operations to protect life, property and the environment through suppression of fire, stabilize and/or contain the substance. Notify Guilford County Environmental Health.
2. Identification and classification of material involved.
3. Determination of the "safety zone" and evacuation limits.
4. Coordination of notification and related instructions.

INTER-AGENCY STATEMENT OF EMERGENCY COOPERATION: UNCONTROLLED

HAZARDOUS MATERIAL INCIDENTS - SEPTEMBER 24, 1981

4. Examples: Guilford County Emergency Medical Service  
Carrier  
Shipper  
Department of Transportation  
Department of Human Resources  
State Emergency Response Team  
Local Emergency Management
5. Coordination with Environmental Health and other departments:  
The ranking fire officer will activate an on-scene Command Post. The representatives of all responding departments should coordinate their actions with the ranking fire officer in advance of initiating any action.
6. Coordination with carrier/shipper. The carrier/shipper will be informed of the incident. The ranking fire officer may request the presence of the carrier's/shipper's personnel on-scene.
7. News releases will be cleared through the Command Post. (High Point's Public Information Officer will be in charge of this for High Point.)

COORDINATING DEPARTMENTS

Law Enforcement - Responsibilities:

1. Evacuation of citizens.
2. Enforcement of the "safety zone" and directing traffic.
3. Criminal investigation.
4. Body identification.
5. Notification of relatives.
6. Public information (see #7 above).
7. Assistance with notification of State and local departments and agencies.

INTER-AGENCY STATEMENT OF EMERGENCY COOPERATION: UNCONTROLLED  
HAZARDOUS MATERIAL INCIDENTS - SEPTEMBER 24, 1981

Environmental Health - Responsibilities:

1. Assist in the identification of the substance.
2. Determine the present environmental impact.
3. Advise the carrier and/or shipper on their legal responsibilities.

Water and Sewer Personnel - Responsibilities:

Greensboro's Public Works Department and High Point's Water and Sewer Utilities will assist by determining which watershed (if any) is impacted by the incident, advise on procedures, and take appropriate action.

Fire Prevention/Investigation - Responsibilities:

May be involved in any on-scene investigation.

PHASE III: CLEAN-UP

CONTROL

Environmental Health

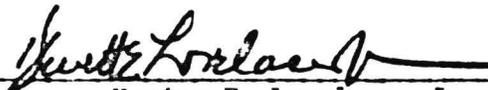
RESPONSIBILITIES

Coordinate all activities related to the monitoring and clean-up of hazardous materials or other residue.

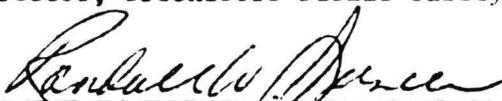
INTER-AGENCY STATEMENT OF EMERGENCY COOPERATION: UNCONTROLLED

HAZARDOUS MATERIAL INCIDENTS

SIGNATURE PAGE



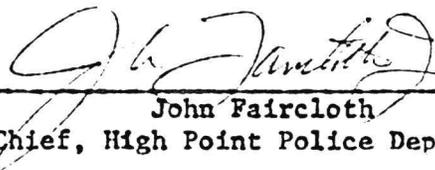
Hewitt E. Lovelace, Jr.  
Director, Greensboro Public Safety



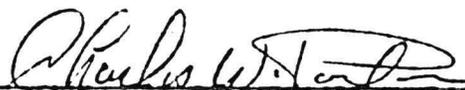
Randall Spencer, High Point  
Assistant City Manager/Public Safety



W. E. Swing  
Chief, Greensboro Police Department



John Faircloth  
Chief, High Point Police Department



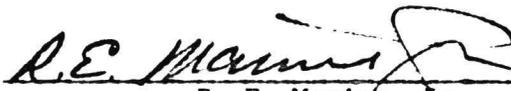
Charles W. Porter  
Director, Guilford County Emergency Services



R. L. Powell, Jr.  
Chief, Greensboro Fire Department



Hannis L. Thompson  
Chief, High Point Fire Department



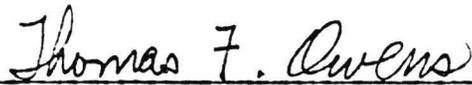
R. E. Marine, Jr.  
Chief, Greensboro Communications Operations

INTER-AGENCY STATEMENT OF EMERGENCY COOPERATION: UNCONTROLLED  
HAZARDOUS MATERIAL INCIDENTS

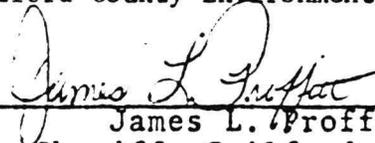
SIGNATURE PAGE (cont'd)



Linwood E. O'Neal  
Director, Water and Sewer Utilities



Thomas F. Owens, Director  
Guilford County Environmental Health



James L. Proffitt  
Sheriff, Guilford County



D. E. Knibb  
Assistant Director, Greensboro Public Works

## XI. Media Relation

### A. General

Whenever serious accidents, acts of God, disasters, fires, or other death-causing incidents occur, there is a distinct likelihood of inquiry or personal visit by media representatives. It is very important to follow a proper procedural sequence so that the home office chemical may marshal the proper corporate resources, should they be needed

### B. Action Plan

- 1) In the event of an emergency the emergency coordinator or his alternate should be notified as soon as the emergency will allow. He is responsible for handling emergency press relations.
- 2) The Emergency Coordinator is responsible for promptly advising the Home Office Chemical, District and Regional Offices, as well as the proper government agencies
- 3) Home Office Chemical will, in turn, advise and solicit advice from the corporate public relations regarding the incident.
- 4) Listed below are day and night numbers for initial contact with Home Office Chemical. Names should be called in order.

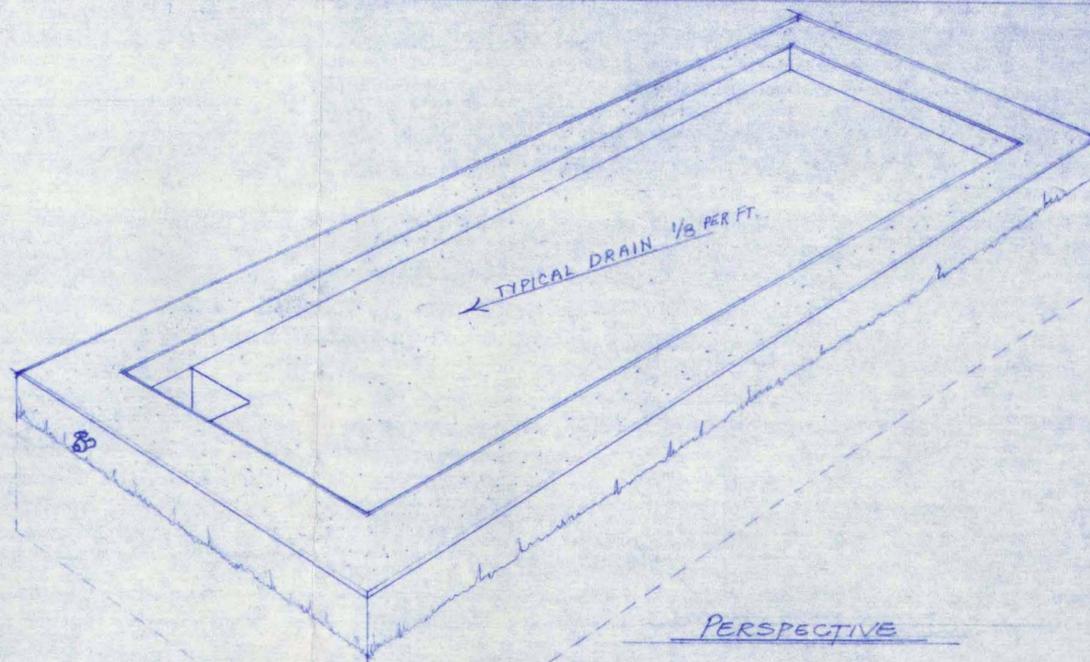
<u>Name</u>	<u>Office</u>	<u>Evening</u>
Doug Eisner	415-983-9214	415-937-7708
Carl Piercy	415-983-8492	415-284-4251
Bruce Wilcox	415-983-8343	415-935-1037
Charles Thompson	415-983-8497	415-376-0884
George Constantino	415-983-8581	415-254-2941
Barry Blocker	415-983-8342	415-851-0102

- 5) To avoid the spread of misinformation and false rumors by employees, the Emergency Coordinator will brief the employees on exactly what the situation is.
- 6) In the event that the Emergency Coordinator or Alternate does not have contact with Home Office in San Francisco, it becomes that person's responsibility to handle emergency press relations appropriately and in accordance with general guidelines of the company policy. (Ref. Operations Manual - 10.21, Page 3)

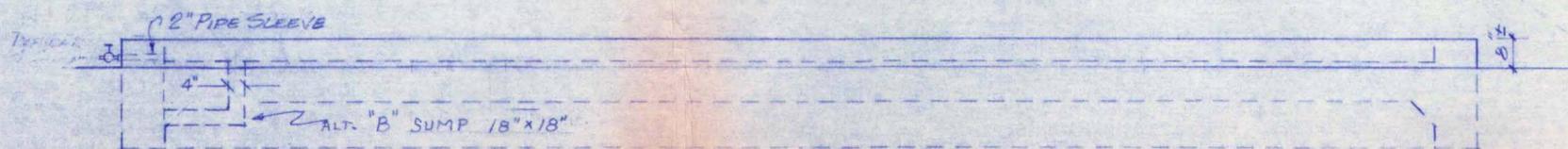
CONCRETE CHEMICAL WASTE PAD				ALT. "A"
PALLET CAPACITY	DIM. "A"	DIM. "B"	DIM. "C"	DIM. "C"
14 (112 DRUMS)	30'	10'	6"	9"
10 (80 DRUMS)	20'	10'	6"	9"
5 (40 DRUMS)	20'	5'	6"	9"
7 (56 DRUMS)	30'	5'	6"	9"

**GENERAL NOTES:**

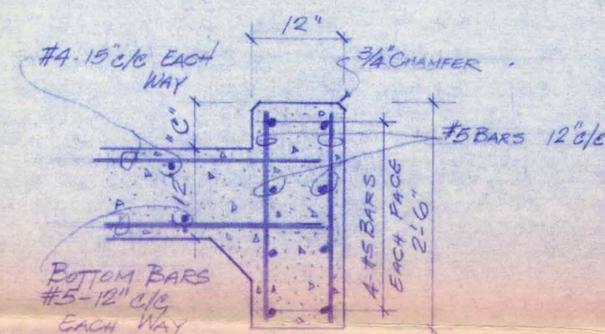
1. ALL CONCRETE WORK IN CONFORMANCE WITH ACI-318-77.
2. USE 3,000 PSI CONCRETE; 60,000 PSI STEEL REBARS.
3. MINIMUM 1 1/2" CONCRETE COVER OVER REBAR.



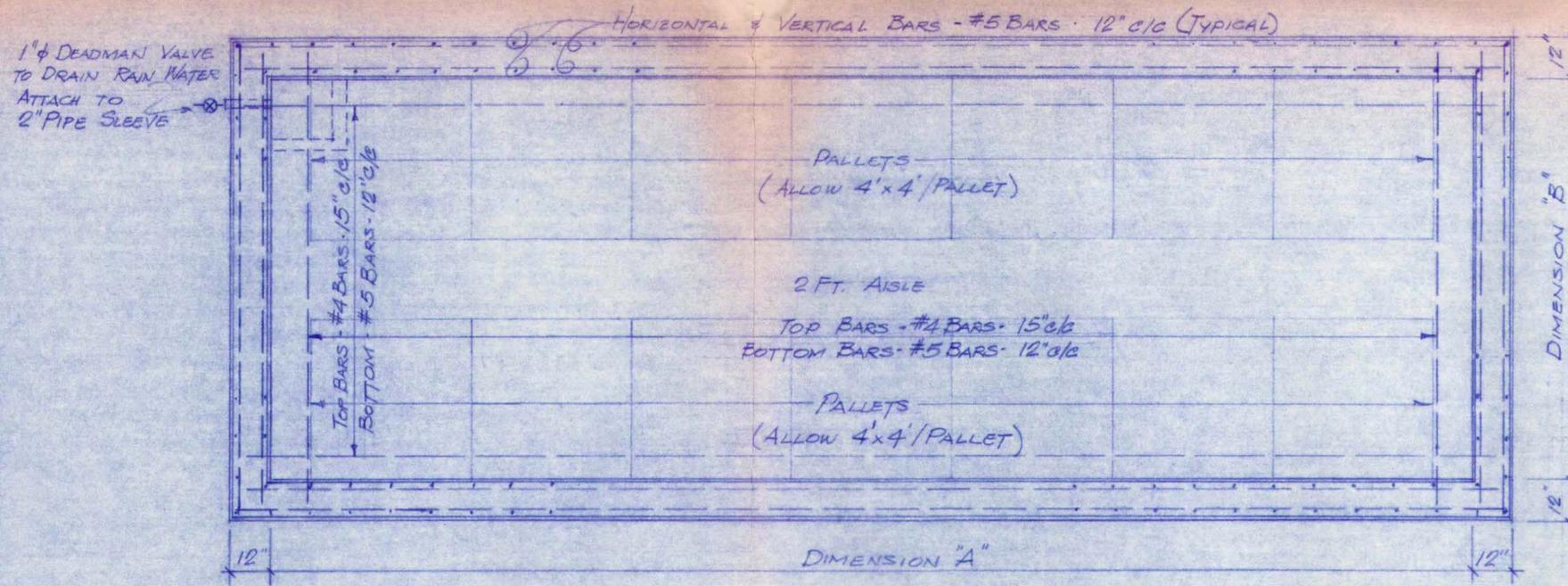
PERSPECTIVE



ELEVATION



TYPICAL SECTION  
SCALE: 3/4" = 1'-0"



PLAN

4-55 GAL DRUMS / PALLET  
2 PALLET HIGH

**SPENWAY CORP.**  
CONSTRUCTION MNGMNT & DESIGN  
450 CEDAR LANE  
RIVERVALE, N.J. 07642

PROJECT

DRAWING

CONTAINMENT PAN  
FOR STORAGE OF DRUMS  
WITH CHEMICAL WASTE

DRAWN BY F.E.P.  
CHKD. BY  
DATE 18 JANUARY 82  
SCALE 3/4" = 1'-0" OR AS NOTED  
JOB NO.

DRAWING NO. CW-2

1/8/82 REV. "B"  
6/10/82 ALT. "B"  
6/10/82 ALT. "A"  
REVISIONS

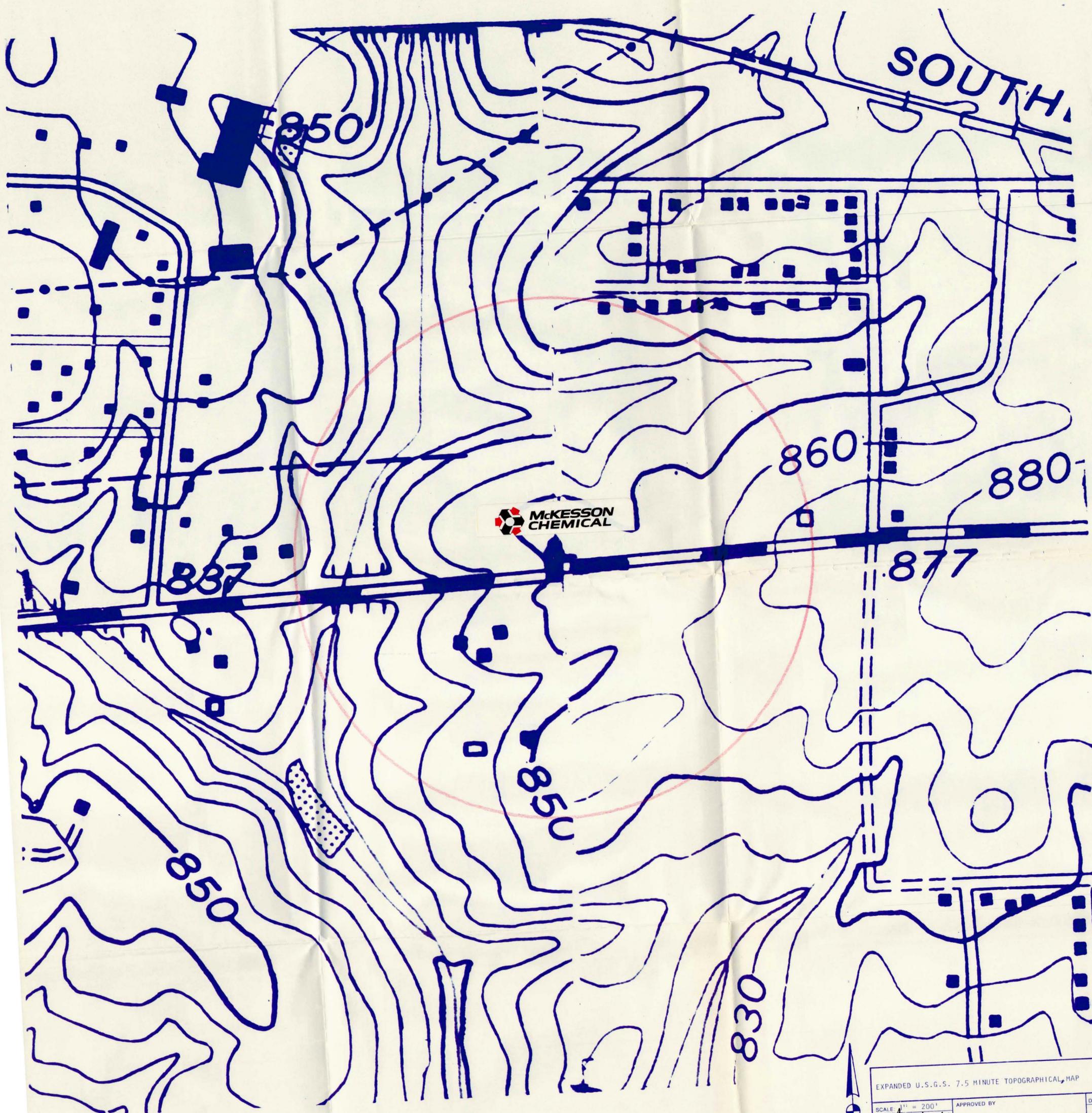
**FRANK E. PANNONE**  
PROFESSIONAL ENGINEER  
92 Knickerbocker Road Cresskill, New Jersey 07626

ENGINEERING LICENSES  
N.Y. - 39516 N.J. - 12861  
Penn. - 021098-E Ohio - E-40549  
Mass. - Conn. - 10296  
Ky. - Fla. - PE 0023869  
Mich. - 29590

These plans are an instrument of service and are the property of the architect. Infringements will be prosecuted.

Contractor shall verify all field conditions and dimensions and be responsible for field fit and quantity of work.

Frank E. Pannone



EXPANDED U.S.G.S. 7.5 MINUTE TOPOGRAPHICAL MAP

SCALE: 1" = 200'	APPROVED BY:	DRAWN BY:
DATE: <i>June Map 1968</i>		
McKESSON CHEMICAL COMPANY		DRAWING NUMBER: