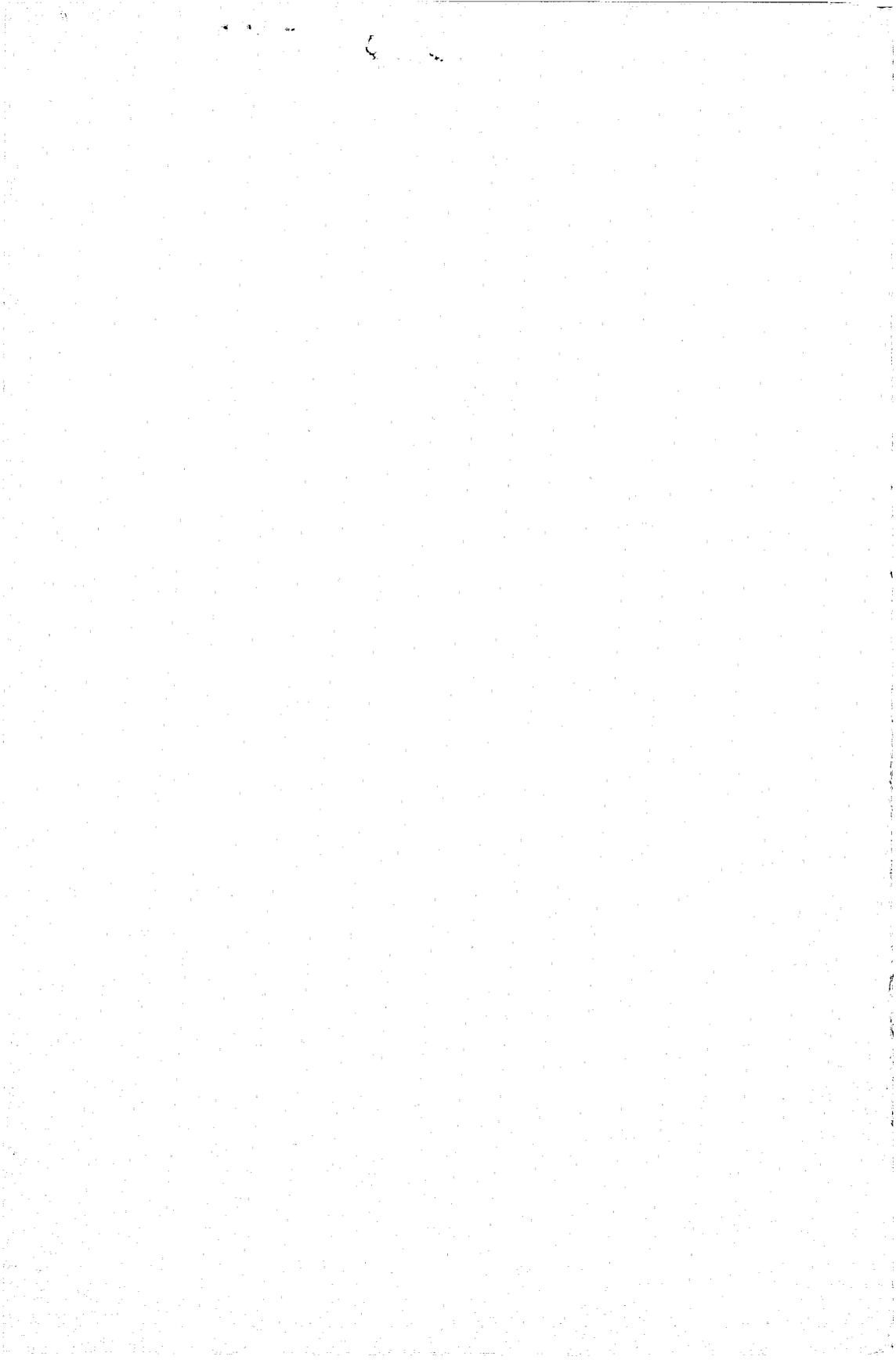


Emergency  
Adm.  
Office

SELECTED  
MATERIALS  
REMOVED

47074



---

Emergency  
Action  
Guide  
for

**SELECTED  
HAZARDOUS  
MATERIALS**

---

**1978**

---



**U.S. Department of Transportation  
National Highway Traffic Safety Administration  
and Materials Transportation Bureau**

This manual is limited to 42 selected hazardous materials shipped in bulk that are gaseous or highly volatile liquids with poisonous or extremely flammable properties. A major spillage of any of these materials may necessitate evacuation. This manual provides guidance concerning exclusion areas recommended for the protection of the public. It does **NOT** provide information concerning all hazardous materials that are shipped in commerce.

## PREFACE

This guide was prepared to help emergency service personnel during the first 30 minutes of an incident involving a spill of a volatile, toxic, gaseous and/or flammable material that is shipped in bulk. General and specific safety procedures to follow are provided in spill guides arranged alphabetically by hazardous material.

Each left hand page identifies a specific hazardous material, outlines its potential hazards and provides immediate action information for fires, spills and first aid. This page also lists certain functions and services for those with appropriate resources and equipment.

Each right hand page specifies recommended evacuation areas and distances\* for protecting the public from dangerous concentrations of toxic vapors and explosions. Where applicable, necessary water pollution controls are provided. This page also lists procedures to follow when assistance is needed or when appropriate resources and equipment are not available.

To establish an evacuation area for a poisonous material, emergency service personnel need only estimate the size of the spill puddle. Illustrations on the right hand page offer quick reference for determining an evacuation based on spill puddle size. Exclusion distances covering ignition control and blast effects are given for certain flammable materials.

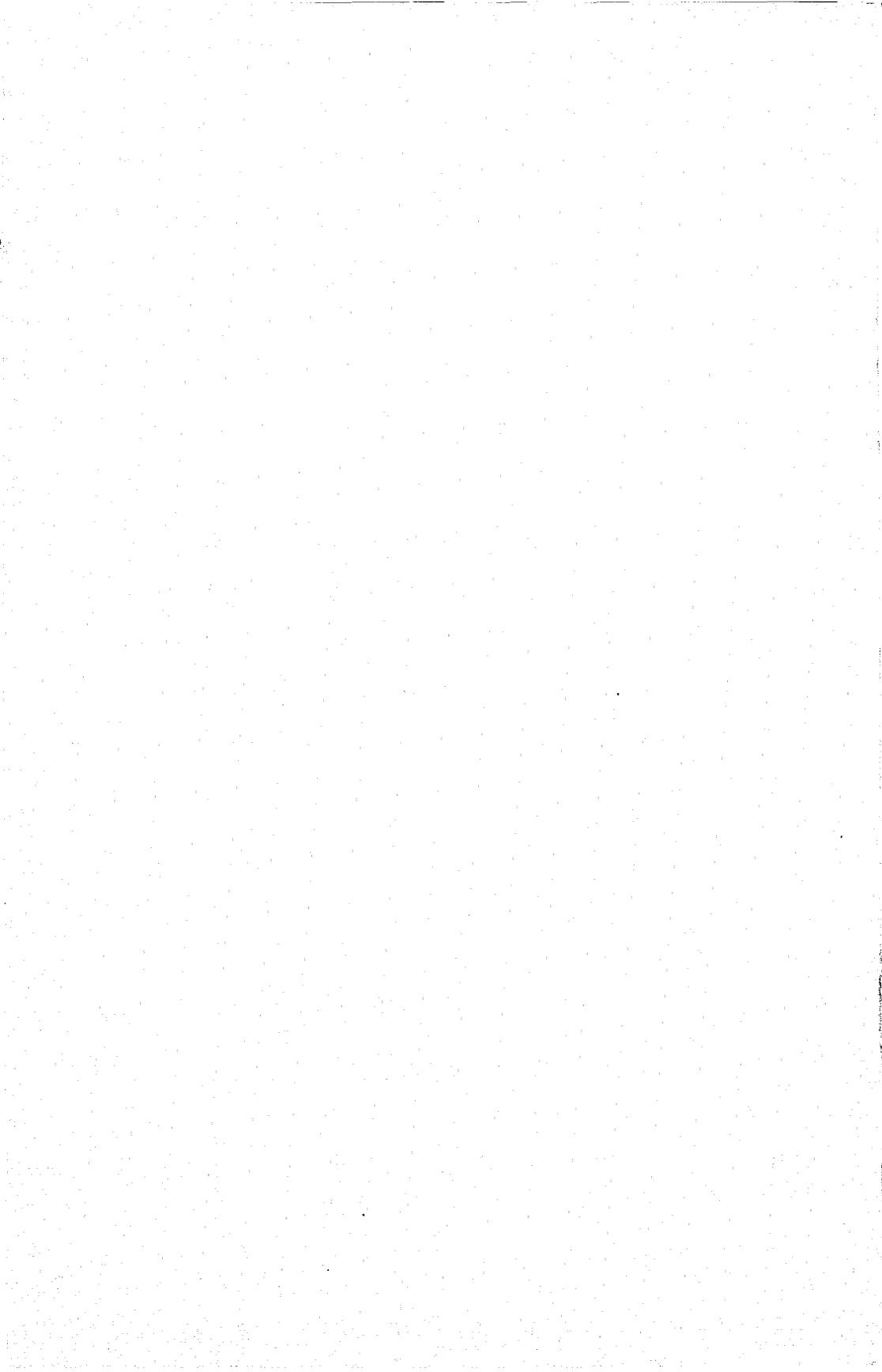
The time required to evacuate a specific area may not always be practical — especially for extremely toxic materials with high evaporation rates. Therefore, the use of the spill guides will not always eliminate a threat to the public near a spill.

Evacuation distances are provided to reduce the danger of flying fragments caused by an explosion. Explosions have occurred from two minutes to 48 hours after a tank car or tank truck involvement in a fire.

The maximum reported fragment distance from an exploding tank car is 4,900 feet. A 100 per cent safe evacuation distance is some distance greater than 4,900 feet, but may not be practical to attain. At a distance of 2,000 feet, the estimate is one fragment-caused fatality per 100 incidents. The probability increases greatly at shorter distances.

An evacuation radius should be enlarged as time permits. Every effort should be made to prevent outsiders and non-essential personnel from entering the danger zone.

\*Recommended evacuation areas are based on principles and calculations developed by the NASA Aerospace Safety Research and Data Institute, Lewis Research Center, Cleveland, Ohio; and under contract to DOT by the Chemical Propulsion Information Agency, Johns Hopkins University, Applied Physics Laboratory, Silver Spring, Maryland. Diffusion data and calculations are based on the publication *Workbook of Atmospheric Dispersion Estimates* by D. Bruce Turner, Environmental Protection Agency, Research Triangle Park, North Carolina.



## FOREWORD

This document was compiled from sources representing the best opinions on the subject at the time of its preparation. However, it should not be assumed that all acceptable safety measures are mentioned or that other measures may not be necessary under certain circumstances.

Comments concerning this booklet may be addressed to:

**U.S. Department of Transportation**  
National Highway Traffic Safety Administration  
Emergency Medical Services Branch  
400 Seventh Street, S.W.  
Washington, D.C. 20590

Or:

**U.S. Department of Transportation**  
Materials Transportation Bureau MTH-30  
Office of Hazardous Materials Operations  
2100 Second Street, S.W.  
Washington, D.C. 20590

It is recommended that this booklet be kept in the vehicles of emergency service personnel (fire, police, medical and maintenance) who may encounter emergencies involving hazardous materials. The booklet may also be of use to emergency service dispatchers and Civil Defense coordinators.

This booklet was printed originally in 1973 by the U.S. Department of Transportation's Office of Hazardous Materials (now the Office of Hazardous Materials Operations) under the title *Emergency Services Guide for Selected Hazardous Materials*. The National Highway Traffic Safety Administration (NHTSA) revised the original format to achieve a broader application of Highway Safety Program Standards 11, 15 and 16 as well as to the total transportation sector.

Publication of this document was under the general supervision of:

Leo R. Schwartz, Chief  
Emergency Medical Services Branch  
National Highway Traffic Safety Administration

Editing and formatting was under the supervision of:

Richard D. Jordan  
Senior Publications Specialist  
General Services Division  
National Highway Traffic Safety Administration

Technical development was provided by:

Hans R. Neumark, Ph. D.  
Office of Hazardous Materials Operations  
Materials Transportation Bureau

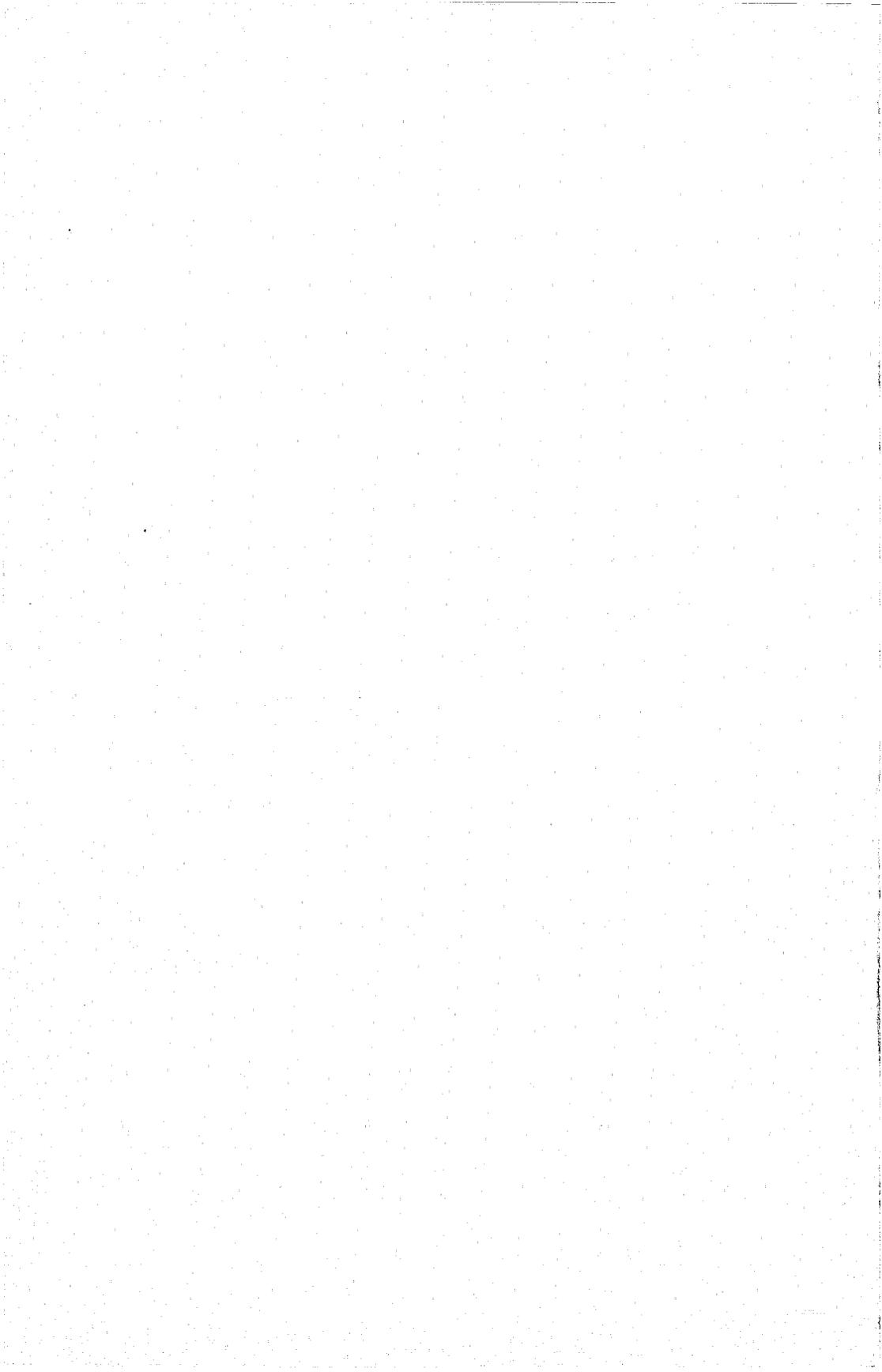
CL ..... Chlorine  
COR ..... Corrosive  
FG ..... Flammable Gas  
FL ..... Flammable  
NFG ..... Non-Flammable Gas  
OXY ..... Oxygen  
OXZ ..... Oxydizer  
P ..... Poison  
PG ..... Poison Gas

# CONTENTS

PREFACE .....	iii
FOREWORD .....	v
CHEM-CARDS .....	1

## HAZARDOUS MATERIAL

Acrolein (FL) .....	2
Acrylonitrile (FL) .....	4
Ammonia (NFG) .....	6
Ammonia, anhydrous (NFG) .....	8
Boron Trifluoride (NFG) .....	10
Bromine (COR) .....	12
Carbon Disulfide (FL) .....	14
Chlorine (CL) .....	16
Dimethylamine (FG) .....	18
Dimethyl Ether (FG) .....	20
Dimethyl Sulfate (COR) .....	22
Epichlorohydrin (FL) .....	24
Ethyl Chloride (FL) .....	26
Ethylene (FG) .....	28
Ethyleneimine (FL) .....	30
Ethylene Oxide (FL) .....	32
Fluorine (P) .....	34
Hydrocarbon Fuels (FL) .....	36
(Gasoline and similar fuels)	
Hydrogen, liquid (FG) .....	38
Hydrogen Chloride (NFG) .....	40
Hydrogen Cyanide/Hydrocyanic Acid (PG) .....	42
Hydrogen Fluoride (COR) .....	44
Hydrogen Sulfide (FG) .....	46
Liquid Petroleum Gas (LPG) (FG) .....	48
Methane, liquid (FG) .....	50
Methylamines, anhydrous (FG) .....	52
Methyl Bromide (P) .....	54
Methyl Chloride (FG) .....	56
Methyl Ethyl Ether/Ethyl Methy Ether (FL) .....	58
Methyl Mercaptan (FG) .....	60
Monomethylamine (FG) .....	62
Nitric Acid, fuming (OX) .....	64
Nitrogen Tetroxide (PG) .....	66
Oleum/Sulfur Trioxide/Sulfuric Acid (COR) .....	68
Oxygen, liquid (OXY) .....	70
Phosgene (PG) .....	72
Phosphorus Trichloride (COR) .....	74
Propane/LPG (FG) .....	76
Sulfur Dioxide (NFG) .....	78
Sulfur Trioxide/Sulfuric Acid (COR) .....	80
Titanium Tetrachloride (COR) .....	82
Trimethylamine (FG) .....	84
Vinyl Chloride (FG) .....	86



## CHEM-CARDS

Many drivers transporting hazardous materials carry Chem-Cards in the cabs of their vehicles.

Each Chem-Card provides:

- A brief description of a specific hazardous material.
- A statement concerning the hazardous nature of the material.
- General guidelines for coping with an emergency situation in case of fire, leak, spill or exposure to humans.

This is a facsimile of a typical Chem-Card

MCA CHEM-CARD — Transportation Emergency Guide		CC-55 August 1985
<h1>DIMETHYL SULFATE</h1> <p>Clear, colorless liquid; slight odor</p>		
 <b>HAZARDS</b> 		
<b>FIRE</b>	Can catch fire.	
<b>EXPOSURE</b>	Vapor extremely irritating. <b>LUNG INJURY MAY BE DELAYED.</b> Liquid causes severe burns.	
<b>IN CASE OF ACCIDENT</b>		
<b>IF THIS HAPPENS</b>	<b>DO THIS</b>	
 		
<b>SPILL or LEAK</b>	Keep upwind from small spills. Evacuate area in case of large spills or tank rupture. Shut off leak if without risk. If necessary to enter spill area, wear self-contained breathing apparatus and full protective clothing including boots. Flush area with water spray.	
<b>FIRE</b>	On small fire use dry chemical or carbon dioxide. On large fire use water spray. Wear self-contained breathing apparatus and full protective clothing. Cool tank with water if exposed to fire.	
<b>EXPOSURE</b>	Remove to fresh air and call a physician at once. If not breathing, apply artificial respiration, oxygen. If breathing is difficult, administer oxygen. Keep patient at rest and under observation for 24-48 hours; effects may be delayed. In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes; remove contaminated clothing and shoes at once.	
<small>© Manufacturing Chemists' Association, Inc., 3825 Connecticut Avenue, N.W., Washington, D. C. 20009, 1985. While prepared from sources believed reliable, the Association makes no warranty that the information is, in all cases, correct or sufficient. Printed in USA</small>		

# Acrolein

(Flammable, Thermally Unstable, Poisonous)



## Potential Hazards

---

- Fire:**— May be ignited by heat, sparks, flames.  
— Flammable vapors may spread from spill.
- Explosion:**— Container may explode due to heat of fire.  
— Runoff may create fire or explosion hazard in sewer system.
- Health:**— Vapors extremely irritating. Contact may cause burns to skin and eyes.  
— Fire may produce irritating or poisonous gases.  
— *Vapors may be fatal if inhaled.*  
— Runoff may pollute water supply.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible, wear self-contained breathing apparatus and full protective clothing.
- Eliminate all open flames. No smoking. No flares. Keep internal combustion engines at *least 20 yards* away.
- Keep up wind and estimate *Immediate Danger Area*.
- Evacuate according to *Evacuation Table*.

## Immediate Follow-up Action

---

- Fire:**— **Small Fire:** Dry Chemical or CO<sub>2</sub>.  
— **Large Fire:** Water spray or fog.  
— Move containers from fire area if without risk.  
— Cool containers with water from *maximum distance* until well after fire is out.  
— For massive fire in cargo area, use unmanned hose holder or monitor nozzles.  
— Stay away from ends of tanks.  
— Withdraw immediately in case of rising sound from venting safety device.
- Spill or Leak:**— Do not touch spilled liquid.  
— Stop leak if without risk.  
— Use water spray to reduce vapors.  
— **Large Spills:** Dike for later disposal.  
— **Small Spills:** Take up with sand, earth or other noncombustible, absorbent material.
- First Aid:**— Remove victim to fresh air. Call for emergency medical care. *Effects of contact or inhalation may be delayed.*  
— If victim is not breathing, give artificial respiration.  
  If breathing is difficult, give oxygen.  
— If victim contacted material, immediately flush skin or eyes with running water *for at least 15 minutes*.  
— Remove contaminated clothes.  
— Keep victim warm and quiet.

# For Assistance Call Chemtrec toll free (800) 424-9300

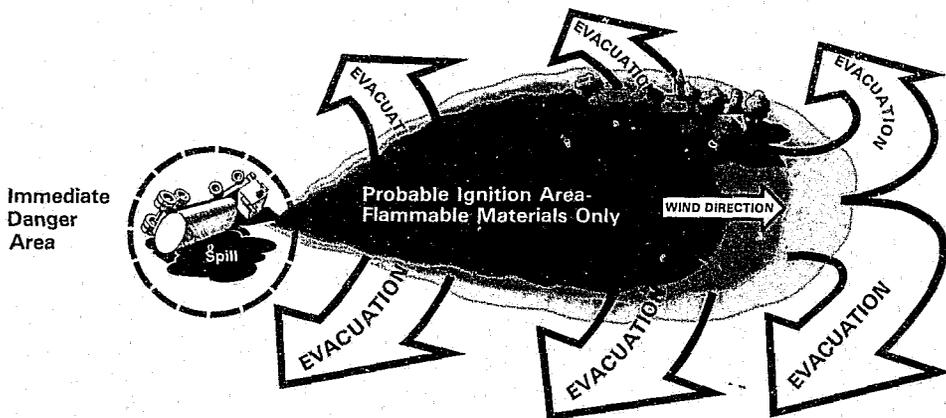
In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and Alaska, call (202) 483-7616.

## Additional Follow-up Action

- For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:
  - Your location and phone number.
  - Location of the accident.
  - Name of product and shipper, if known.
  - The color and number on any labels on the carrier or cargo.
  - Weather conditions.
  - Type of environment (populated, rural, business, etc.)
  - Availability of water supply.
- Adjust evacuation area according to wind changes and observed effect on population.

## Water Pollution Control

- Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



Evacuation Table — Based on Prevailing Wind of 6-12 mph.

Approximate Size of Spill	Distance to Evacuate From Immediate Danger Area	For Maximum Safety, Downwind Evacuation Area Should Be
200 square feet	360 yards (432 paces)	2 miles long, 1 mile wide
400 square feet	530 yards (636 paces)	3 miles long, 2 miles wide
600 square feet	650 yards (780 paces)	4 miles long, 2 1/2 miles wide
800 square feet	760 yards (912 paces)	5 miles long, 3 miles wide

In the event of an explosion, the minimum safe distance from flying fragments is 2,000 feet in all directions.

# Acrylonitrile

(Flammable, Thermally Unstable, Corrosive)



## Potential Hazards

---

- Fire:—Highly flammable.  
—Flammable vapors may spread from spill.

- Explosion:—Container may explode due to heat of fire.  
—Runoff may create fire or explosion hazard in sewer system.

- Health:—Contact may cause burns to skin and eyes.  
—Runoff may pollute water supply.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible, wear self-contained breathing apparatus and full protective clothing.
- Eliminate all open flames. No smoking. No flares. Keep internal combustion engines *at least 20 yards* away from spill.
- Keep upwind and estimate *Immediate Danger Area*.
- Evacuate according to *Evacuation Table*.

## Immediate Follow-up Action

---

- Fire:—**Small Fire:** Dry chemical or CO<sub>2</sub>.  
—**Large Fire:** Water spray or fog.  
—Move containers from fire area if without risk.  
—Cool containers with water from *maximum distance* until well after fire is out.  
—For massive fire in cargo area, use unmanned hose holder or monitor nozzles.  
—Stay away from ends of tanks.  
—Withdraw immediately in case of rising sound from venting safety device.

- Spill or Leak:—Do not touch spilled liquid.  
—Stop leak if without risk.  
—Use water spray to reduce vapors.  
—**Large Spills:** Dike for later disposal.  
—**Small Spills:** Take up with sand, earth or other noncombustible, absorbent material.

- First Aid:—Remove victim to fresh air. Call for emergency medical care. *Effects of contact or inhalation may be delayed.*  
—If victim is not breathing, give artificial respiration. If breathing is difficult, give oxygen.  
—If victim contacted material, immediately flush skin or eyes with running water *for at least 15 minutes*.  
—Remove contaminated clothes.  
—Keep victim warm and quiet.

# For Assistance Call Chemtrec toll free (800) 424-9300

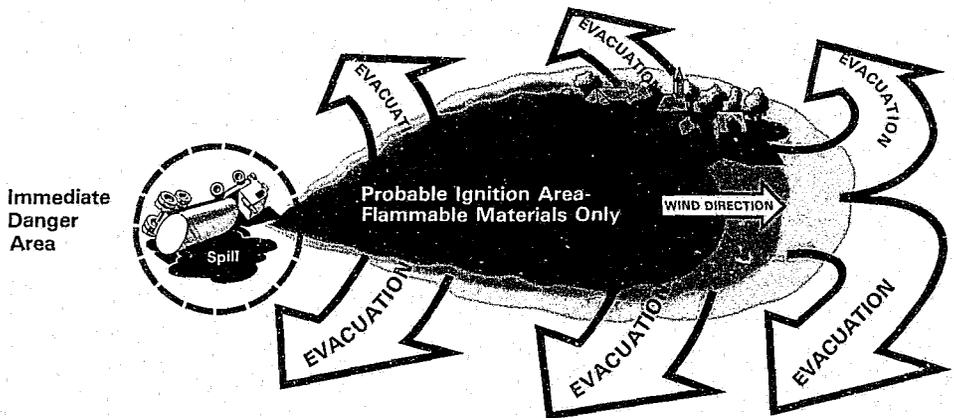
In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and Alaska, call (202) 483-7616.

## Additional Follow-up Action

- For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:
  - Your location and phone number.
  - Location of the accident.
  - Name of product and shipper, if known.
  - The color and number on any labels on the carrier or cargo.
  - Weather conditions.
  - Type of environment (populated, rural, business, etc.)
  - Availability of water supply.
- Adjust evacuation area according to wind changes and observed effect on population.

## Water Pollution Control

- Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



Evacuation Table — Based on Prevailing Wind of 6-12 mph.

Approximate Size of Spill	Distance to Evacuate From Immediate Danger Area	For Maximum Safety, Downwind Evacuation Area Should Be
200 square feet	20 yards (24 paces)	528 feet long, 528 feet wide
400 square feet	20 yards (24 paces)	528 feet long, 528 feet wide
600 square feet	30 yards (36 paces)	528 feet long, 528 feet wide
800 square feet	30 yards (36 paces)	1,056 feet long, 528 feet wide

In the event of an explosion, the minimum safe distance from flying fragments is 2,000 feet in all directions.

# Ammonia

(Nonflammable Gas, Corrosive)



## Potential Hazards

---

Fire:—May catch fire.

Explosion:—Container may explode due to heat of fire.

Health:—Vapors extremely irritating. Contact may cause burns to skin and eyes. *If inhaled, may be harmful.*

—Runoff may pollute water supply.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible, wear self-contained breathing apparatus and full protective clothing.
- Keep upwind and estimate *Immediate Danger Area*.
- Evacuate according to *Evacuation Table*.

## Immediate Follow-up Action

---

Fire:—**Small Fire:** Dry chemical or CO<sub>2</sub>.

—**Large Fire:** Water spray or fog.

—Move containers from fire area if without risk.

—Cool containers with water from *maximum distance* until well after fire is out.

—Stay away from ends of tanks.

Spill or Leak:—Do not touch spilled liquid.

—Stop leak if without risk.

—Use water spray to reduce vapors.

—Do not put water on liquid ammonia pool.

—Isolate area until gas has dispersed.

First Aid:—Remove victim to fresh air. Call for emergency medical care.

—If victim is not breathing, give artificial respiration. If breathing is difficult, give oxygen.

—If victim contacted material, immediately flush skin or eyes with running water for *at least 15 minutes*.

—Remove contaminated clothes.

—Keep victim warm and quiet.

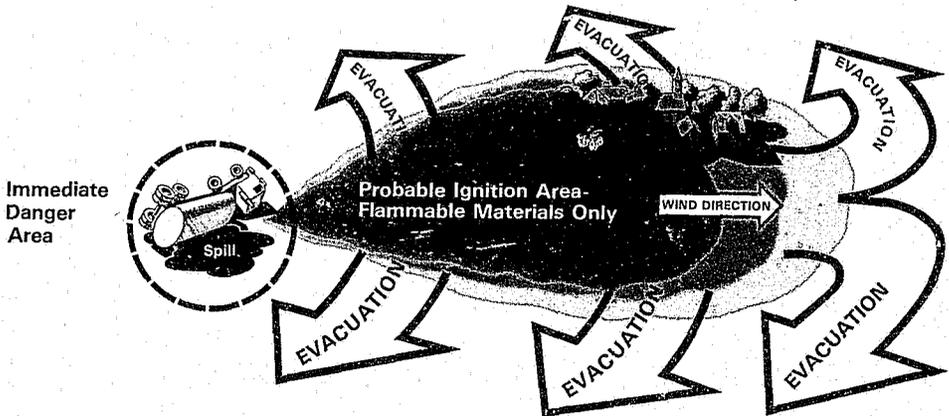
For Assistance Call Chemtrec toll free (800) 424-9300  
 In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico, and Alaska, call (202) 483-7616.

**Additional Follow-up Action**

- For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:
  - Your location and phone number.
  - Location of the accident.
  - Name of product and shipper, if known.
  - The color and number on any labels on the carrier or cargo.
  - Weather conditions.
  - Type of environment (populated, rural, business, etc.)
  - Availability of water supply.
- Adjust evacuation area according to wind changes and observed effect on population.

**Water Pollution Control**

- Ammonia is water soluble and can kill fish. Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Runoff to storm sewers or sanitary system is acceptable if a water deluge and/or flooding is possible. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



**Evacuation Table — Based on Prevailing Wind of 6-12 mph.**

Approximate Size of Spill	Distance to Evacuate From Immediate Danger Area	For Maximum Safety, Downwind Evacuation Area Should Be
200 square feet	40 yards (48 paces)	1,056 feet long, 528 feet wide
400 square feet	60 yards (72 paces)	1,584 feet long, 1,056 feet wide
600 square feet	80 yards (96 paces)	2,112 feet long, 1,056 feet wide
800 square feet	90 yards (108 paces)	2,112 feet long, 1,584 feet wide

In the event of an explosion, the minimum safe distance from flying fragments is 2,000 feet in all directions.

# Ammonia, Anhydrous

(Nonflammable Gas, Corrosive)



## Potential Hazards

---

Fire:—May catch fire.

Explosion:—Container may explode due to heat of fire.

Health:—Vapors extremely irritating. Contact may cause burns to skin and eyes. *If inhaled, may be harmful.*  
—Runoff may pollute water supply.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible, wear self-contained breathing apparatus and full protective clothing.
- Keep upwind and estimate *Immediate Danger Area*.
- Evacuate according to *Evacuation Table*.

## Immediate Follow-up Action

---

- Fire:—**Small Fire:** Dry chemical or CO<sub>2</sub>.  
—**Large Fire:** Water spray or fog.  
—Move containers from fire area if without risk.  
—Cool containers with water from *maximum distance* until well after fire is out.  
—Stay away from ends of tanks.

Spill or Leak:—Do not touch spilled liquid.  
—Stop leak if without risk.  
—Use water spray to reduce vapors.  
—Do not put water on liquid ammonia pool.  
—Isolate area until gas has dispersed.

First Aid:—Remove victim to fresh air. Call for emergency medical care.  
—If victim is not breathing, give artificial respiration. If breathing is difficult, give oxygen.  
—If victim contacted material, immediately flush skin or eyes with running water *for at least 15 minutes*.  
—Remove contaminated clothes.  
—Keep victim warm and quiet.

# For Assistance Call Chemtrec toll free (800) 424-9300

In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico, and Alaska, call (202) 483-7616.

## Additional Follow-up Action

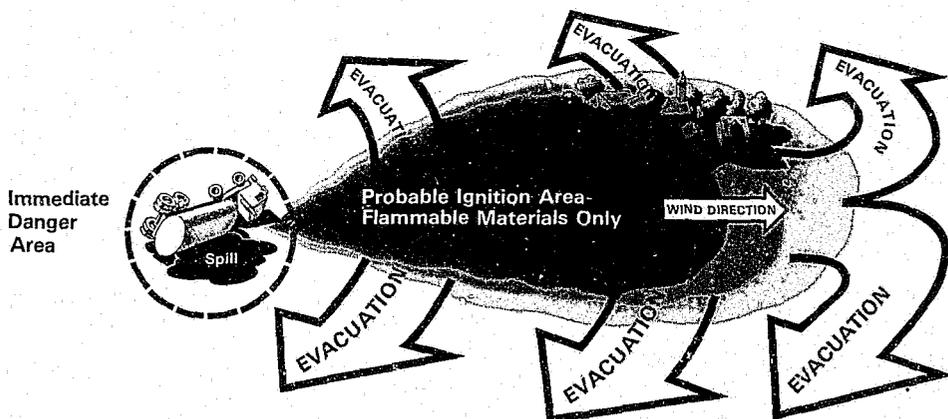
—For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:

- Your location and phone number.
- Location of the accident.
- Name of product and shipper, if known.
- The color and number on any labels on the carrier or cargo.
- Weather conditions.
- Type of environment (populated, rural, business, etc.)
- Availability of water supply.

—Adjust evacuation area according to wind changes and observed effect on population.

## Water Pollution Control

—Ammonia is water soluble and can kill fish. Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Runoff to storm sewers or sanitary system is acceptable if a water deluge and/or flooding is possible. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



Evacuation Table — Based on Prevailing Wind of 6-12 mph.

Approximate Size of Spill	Distance to Evacuate From Immediate Danger Area	For Maximum Safety, Downwind Evacuation Area Should Be
200 square feet	40 yards (48 paces)	1,056 feet long, 528 feet wide
400 square feet	60 yards (72 paces)	1,584 feet long, 1,056 feet wide
600 square feet	80 yards (96 paces)	2,112 feet long, 1,056 feet wide
800 square feet	90 yards (108 paces)	2,112 feet long, 1,584 feet wide

In the event of an explosion, the minimum safe distance from flying fragments is 2,000 feet in all directions.

# Boron Trifluoride

(Nonflammable Gas, Poisonous)



## **Potential Hazards**

---

- Fire:—Cannot catch fire.  
—Cannot support combustion.
- Health:—Vapors extremely irritating. Contact may cause burns to skin and eyes.  
—*Vapors may be fatal if inhaled.*  
—Runoff may pollute water supply.

## **Immediate Action**

---

- Get helper and notify local authorities.
- If possible, wear self-contained breathing apparatus and full protective clothing.
- Keep upwind and estimate *Immediate Danger Area*.
- Evacuate according to *Evacuation Table*.

## **Immediate Follow-up Action**

---

- Fire:—Move containers from fire area if without risk.  
—Cool containers with water from *maximum distance* until well after fire is out.

- Spill or Leak:—Stop leak if without risk.  
—Use water spray to reduce vapors.  
—Isolate area until gas has dispersed.  
—Do not apply water directly to leak.

- First Aid:—Remove victim to fresh air. Call for emergency medical care. *Effects of inhalation may be delayed.*  
—If victim is not breathing, give artificial respiration. Administer oxygen at once. In case of severe exposure, continue intermittent oxygen administration for at least 6 hours.  
—If victim contacted material, immediately flush skin or eyes with running water for *at least 15 minutes*.  
—Remove contaminated clothes.  
—Keep victim warm and quiet.

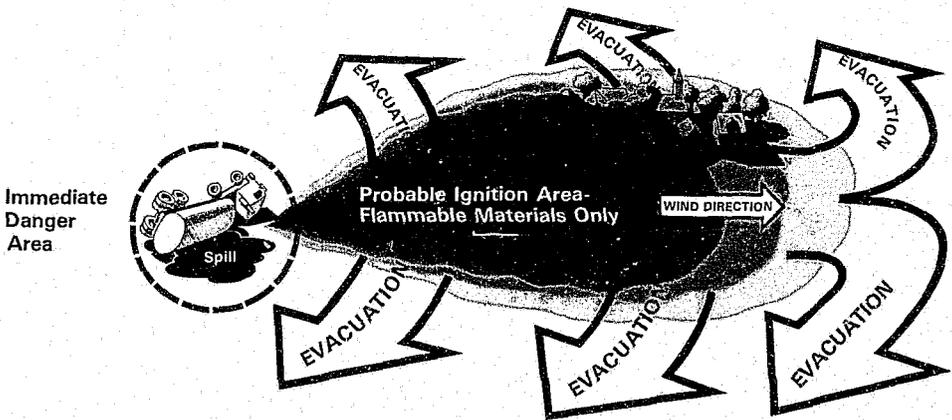
For Assistance Call Chemtrec toll free (800) 424-9300  
 In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and  
 Alaska, call (202) 483-7616.

**Additional Follow-up Action**

- For detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:
  - Your location and phone number.
  - Location of the accident.
  - Name of product and shipper, if known.
  - The color and number on any labels on the carrier or cargo.
  - Weather conditions.
  - Type of environment (populated, rural, business, etc.)
  - Availability of water supply.
- Adjust evacuation area according to wind changes and observed effect on population.

**Water Pollution Control**

- Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



**Evacuation Table — Based on Prevailing Wind of 6-12 mph.**

Approximate Size of Spill	Distance to Evacuate From Immediate Danger Area	For Maximum Safety, Downwind Evacuation Area Should Be
200 square feet	210 yards (252 paces)	1 mile long, 3/4 mile wide
400 square feet	310 yards (372 paces)	1 3/4 miles long, 1 mile wide
600 square feet	380 yards (456 paces)	2 miles long, 1 1/2 miles wide
800 square feet	445 yards (534 paces)	2 1/2 miles long, 1 3/4 miles wide

**Caution:** Although Boron Trifluoride does not form an explosive mixture, the container in which it is shipped may explode under pressure from a fire. For maximum safety, evacuate 2,000 feet in all directions.

# Bromine

(Corrosive, Oxidizer)



## Potential Hazards

---

- Fire:— Cannot catch fire.  
— May ignite combustibles.

- Health:— Liquid causes burns to skin and eyes.  
— Vapors extremely irritating.  
— *Vapors may be fatal if inhaled.*  
— Runoff may pollute water supply.

## Immediate Action

---

- Get helper and notify local authorities.  
— If possible, wear self-contained breathing apparatus and full protective clothing.  
— Keep upwind and estimate *Immediate Danger Area*.  
— Evacuate according to *Evacuation Table*.

## Immediate Follow-up Action

---

- Fire:— Move containers from fire area if without risk.  
— Cool containers with water from *maximum distance* until well after fire is out.

- Spill or Leak:— **Large Spills:** Dike for later disposal.  
— **Small Spills:** Neutralize with lime water if available or flush area with water.  
— Do not touch spilled liquid.  
— Stop leak if without risk.  
— Use water spray to reduce vapors.

- First Aid:— Remove victim to fresh air. Call for emergency medical care.  
— If victim is not breathing, give artificial respiration. If breathing is difficult, give oxygen.  
— If victim contacted material, immediately flush skin or eyes with running water for *at least 15 minutes*.  
— Remove contaminated clothes.  
— Keep victim warm and quiet.

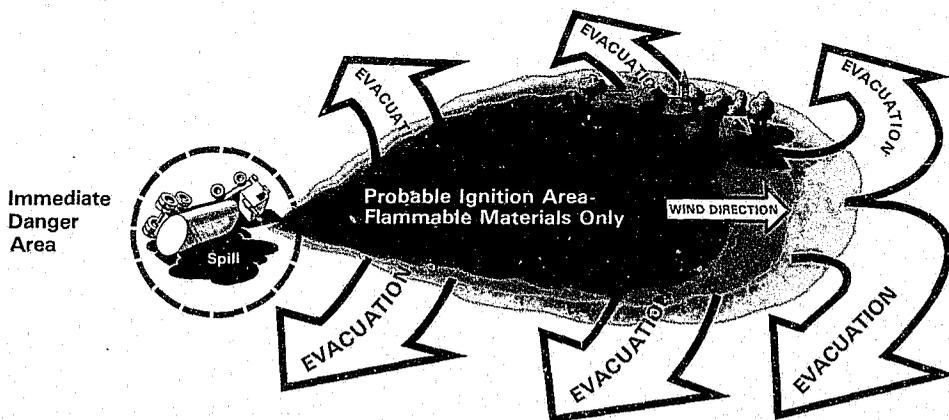
For Assistance Call Chemtrec toll free (800) 424-9300  
 In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and  
 Alaska, call (202) 483-7616.

### Additional Follow-up Action

- For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:
  - Your location and phone number.
  - Location of the accident.
  - Name of product and shipper, if known.
  - The color and number on any labels on the carrier or cargo.
  - Weather conditions.
  - Type of environment (populated, rural, business, etc.)
  - Availability of water supply.
- Adjust evacuation area according to wind changes and observed effect on population.

### Water Pollution Control

- Bromine is water soluble and can kill fish. Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



Evacuation Table — Based on Prevailing Wind of 6-12 mph.

Approximate Size of Spill	Distance to Evacuate From Immediate Danger Area	For Maximum Safety, Downwind Evacuation Area Should Be
200 square feet	195 yards (234 paces)	1 mile long, 2/3 mile wide
400 square feet	285 yards (342 paces)	1 1/2 miles long, 1 mile wide
600 square feet	350 yards (420 paces)	2 miles long, 1 1/4 miles wide
800 square feet	410 yards (492 paces)	2 1/3 miles long, 1 1/2 miles wide

**Caution:** Although Bromine does not form an explosive mixture, the container in which it is shipped may explode under pressure from a fire. For maximum safety, evacuate 2,000 feet in all directions.

# Carbon Disulfide

(Flammable Liquid)



## Potential Hazards

---

- Fire:—Highly flammable.  
—Flammable vapors may spread from spill.

- Explosion:—Container may explode due to heat of fire.  
—Runoff may create fire or explosion hazard in sewer system.

- Health:—Fire may produce irritating or poisonous gases.  
—Vapors indoors may cause dizziness or suffocation.  
—Runoff may pollute water supply.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible, wear full protective clothing.
- Eliminate all open flames. No smoking. No flares. Keep internal combustion engines at least 20 yards away from spill.
- Keep upwind and estimate *Immediate Danger Area*.
- Evacuate according to *Evacuation Table*.

## Immediate Follow-up Action

---

- Fire:—**Small Fire:** Dry chemical or CO<sub>2</sub>.  
—**Large Fire:** Water spray or fog.  
—Move containers from fire area if without risk.  
—Cool containers with water from *maximum distance* until well after fire is out.  
—Stay away from ends of tanks.

- Spill or Leak:—Stop leak if without risk.  
—Use water spray to reduce vapors.  
—**Large Spills:** Dike for later disposal.  
—**Small Spills:** Take up with sand, earth or other noncombustible, absorbent material.

- First Aid:—Remove victim to fresh air. Call for emergency medical care.  
—If victim is not breathing, give artificial respiration. If breathing is difficult, give oxygen.  
—Keep victim warm and quiet.

# For Assistance Call Chemtrec toll free (800) 424-9300

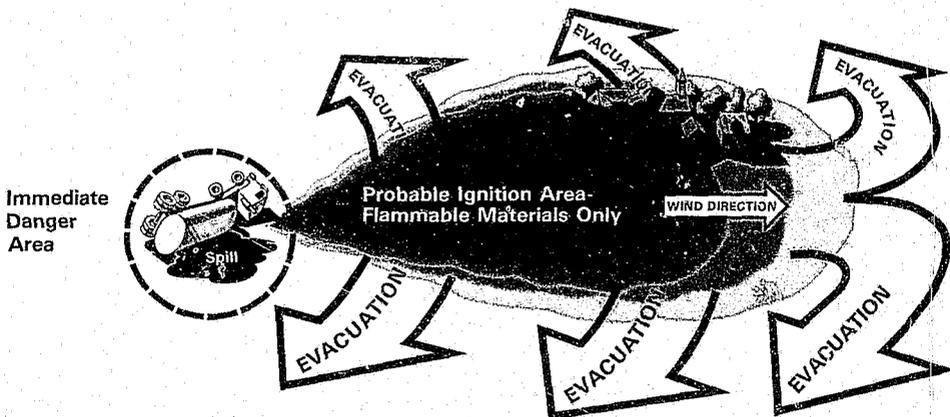
In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and Alaska, call (202) 483-7616.

## Additional Follow-up Action

- For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:
  - Your location and phone number.
  - Location of the accident.
  - Name of product and shipper, if known.
  - The color and number on any labels on the carrier or cargo.
  - Weather conditions.
  - Type of environment (populated, rural, business, etc.)
  - Availability of water supply.
- Adjust evacuation area according to wind changes and observed effect on population.

## Water Pollution Control

- Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



Evacuation Table — Based on Prevailing Wind of 6-12 mph.

Approximate Size of Spill	Distance to Evacuate From Immediate Danger Area	For Maximum Safety, Downwind Evacuation Area Should Be
200 square feet	20 yards (24 paces)	528 feet long, 528 feet wide
400 square feet	30 yards (36 paces)	528 feet long, 528 feet wide
600 square feet	40 yards (48 paces)	1,056 feet long, 528 feet wide
800 square feet	45 yards (54 paces)	1,056 feet long, 528 feet wide

In the event of an explosion, the minimum safe distance from flying fragments is 2,000 feet in all directions.

# Chlorine

(Nonflammable Gas, Poisonous)



## Potential Hazards

Fire:— Cannot catch fire.  
— May ignite combustibles.

Explosion:— Container may explode due to heat of fire.

Health:— Contact may cause burns to skin or eyes.  
— *Vapors may be fatal if inhaled.*  
— Runoff may pollute water supply.

## Immediate Action

— Get helper and notify local authorities.  
— If possible, wear self-contained breathing apparatus and full protective clothing.  
— Keep upwind and estimate *Immediate Danger Area*.  
— Evacuate according to *Evacuation Table*.

## Immediate Follow-up Action

Fire:— Move containers from fire area if without risk.  
— Cool containers with water from *maximum distance* until well after fire is out.  
— Do not get water inside containers.  
— Do not use water on leaking container.  
— Stay away from ends of tanks.

Spill or Leak:— Do not touch spilled liquid.  
— Stop leak if without risk.  
— Use water spray to reduce vapors.  
— Isolate area until gas has dispersed.  
— Do not get water inside containers.

First Aid:— Remove victim to fresh air. Call for emergency medical care. *Effects of contact or inhalation may be delayed.*  
— If victim is not breathing, give artificial respiration.  
— If breathing is difficult, give oxygen.  
— If victim contacted material, immediately flush skin or eyes with running water *for at least 15 minutes*.  
— Remove contaminated clothes.  
— Keep victim warm and quiet.

For Assistance Call Chemtrec toll free (800) 424-9300

In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and Alaska, call (202) 483-7616.

### Additional Follow-up Action

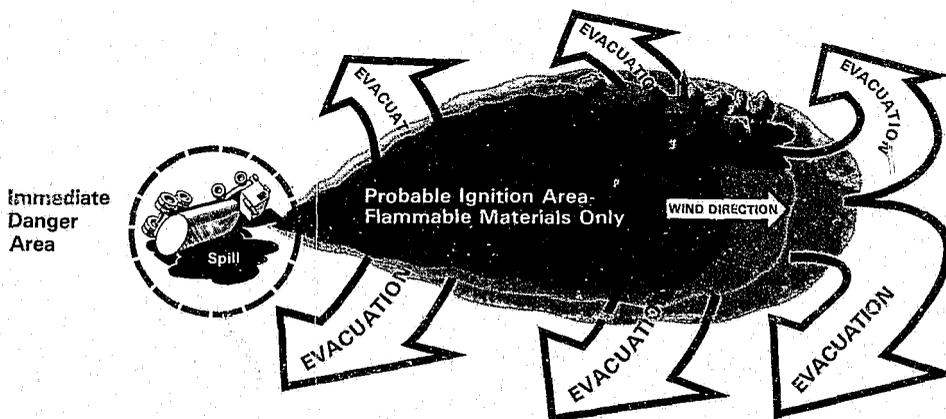
—For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:

- Your location and phone number.
- Location of the accident.
- Name of product and shipper, if known.
- The color and number on any labels on the carrier or cargo.
- Weather conditions.
- Type of environment (populated, rural, business, etc.)
- Availability of water supply.

—Adjust evacuation area according to wind changes and observed effect on population.

### Water Pollution Control

—Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



Evacuation Table — Based on Prevailing Wind of 6-12 mph.

Approximate Size of Spill	Distance to Evacuate From Immediate Danger Area	For Maximum Safety, Downwind Evacuation Area Should Be
200 square feet	160 yards (192 paces)	1 mile long, 1/2 mile wide
400 square feet	240 yards (288 paces)	1 1/2 miles long, 1 mile wide
600 square feet	300 yards (360 paces)	1 1/2 miles long, 1 mile wide
800 square feet	340 yards (408 paces)	2 miles long, 1 1/2 miles wide

In the event of an explosion, the minimum safe distance from flying fragments is 2,000 feet in all directions.

# Dimethylamine

(Flammable Gas, Corrosive)



## Potential Hazards

---

- Fire:— Highly flammable.  
— Flammable vapors may spread from spill.

- Explosion:— Container may explode due to heat of fire.  
— Gas explosion hazard indoors, outdoors or in sewers.

- Health:— Vapors extremely irritating. Contact may cause burns to skin and eyes.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible, wear self-contained breathing apparatus and full protective clothing.
- Eliminate all open flames. No smoking. No flares. Keep internal combustion engines *at least 20 yards* away from vapor cloud.
- Keep upwind and estimate *Immediate Danger Area*.
- Evacuate according to *Evacuation Table*.

## Immediate Follow-up Action

---

- Fire:— Let burn unless leak can be stopped immediately.
- **Small Fire:** Dry chemical or CO<sub>2</sub>.
  - **Large Fire:** Water spray or fog.
  - Move containers from fire area if without risk.
  - Cool containers with water from *maximum distance* until well after fire is out. Apply water from sides of tanks.
  - For massive fire in cargo area, use unmanned hose holder or monitor nozzles. If this is impossible, withdraw from area and let fire burn.
  - Stay away from ends of tanks.

- Spill or Leak:— Do not touch spilled liquid.
- Stop leak if without risk.
  - Use water spray to reduce vapors.
  - Isolate area until gas has dispersed.

First Aid:— Remove victim to fresh air. Call for emergency medical care.

- If victim is not breathing give artificial respiration. If breathing is difficult, give oxygen.
- In case of skin contact, wipe liquid from skin *before* flushing with water *for at least 15 minutes*.
- In case of eye contact, immediately flush with water *for at least 15 minutes*.
- Remove contaminated clothes.
- Keep victim warm and quiet.

For Assistance Call Chemtrec toll free (800) 424-9300

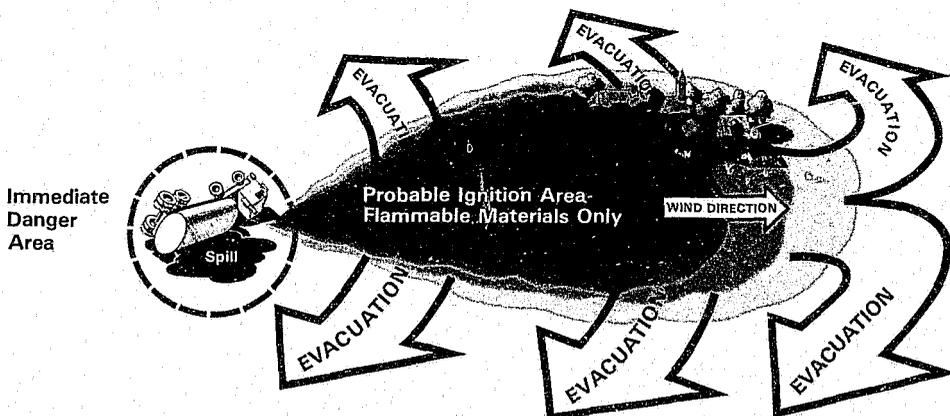
In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and Alaska, call (202) 483-7616.

### Additional Follow-up Action

- For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:
  - Your location and phone number.
  - Location of the accident.
  - Name of product and shipper, if known.
  - The color and number on any labels on the carrier or cargo.
  - Type of environment (populated, rural, business, etc.)
  - Availability of water supply.
- Adjust evacuation area according to wind changes and observed effect on population.

### Water Pollution Control

- Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



Evacuation Table — Based on Prevailing Wind of 6-12 mph.

Approximate Size of Spill	Distance to Evacuate From Immediate Danger Area	For Maximum Safety, Downwind Evacuation Area Should Be
200 square feet	70 yards ( 84 paces)	1,584 feet long, 1,056 feet wide
400 square feet	100 yards (120 paces)	4,224 feet long, 1,584 feet wide
600 square feet	125 yards (150 paces)	3,168 feet long, 2,112 feet wide
800 square feet	150 yards (180 paces)	3,696 feet long, 4,224 feet wide

In the event of an explosion, the minimum safe distance from flying fragments is 2,000 feet in all directions.

# Dimethyl Ether

(Flammable Gas)



## Potential Hazards

- Fire:—Highly flammable.  
—Flammable vapors may spread from spill.
- Explosion:—Container may explode due to heat of fire.  
—Gas explosion hazard indoors, outdoors or in sewers.
- Health:—Vapors indoors may cause dizziness or suffocation.  
—Contact may cause burns to skin and eyes.

## Immediate Action

- Get helper and notify local authorities.
- If possible, wear full protective clothing.
- Eliminate all open flames. No smoking. No flares. Keep internal combustion engines at *least* 25 yards away from spill.
- Keep upwind. Isolate hazard area.
- Evacuate by *at least* 2,000 feet.

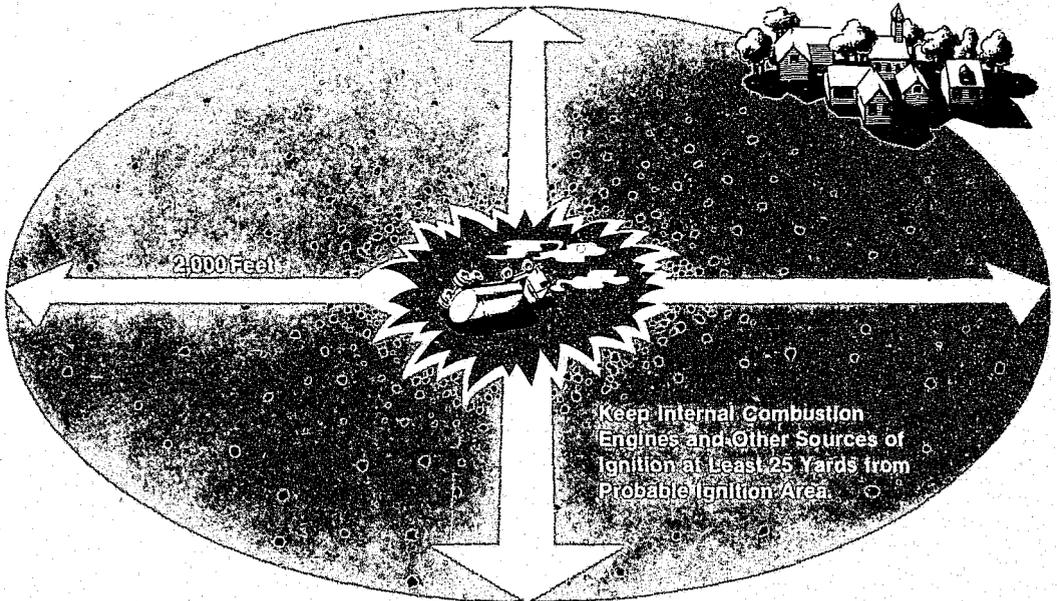
## Immediate Follow-up Action

- Fire:—Let burn unless leak can be stopped immediately.  
—**Small Fire:** Dry chemical or CO<sub>2</sub>.  
—**Large Fire:** Water spray or fog.  
—Move containers from fire area if without risk.  
—Cool containers with water from *maximum distance* until well after fire is out. Apply water from sides of tank.  
—For massive fire in cargo area, use unmanned hose holder or monitor nozzles. If this is impossible, withdraw from area.  
—Stay away from ends of tanks.  
—Withdraw immediately in case of rising sound from venting safety device.
- Spill or Leak:—Do not touch spilled liquid.  
—Stop leak if without risk.  
—Use water spray to reduce vapors.  
—Isolate area until gas has dispersed.
- First Aid:—Remove victim to fresh air.  
—Use standard first aid procedures.

For Assistance Call Chemtrec toll free (800) 424-9300  
In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and  
Alaska, call (202) 483-7616.

### **Additional Follow-up Action**

- For more detailed assistance in controlling the hazard, call Chemtrec  
(Chemical Transportation Emergency Center) toll free (800) 424-9300.  
You will be asked for the following information:
- Your location and phone number.
  - Location of the accident.
  - Name of product and shipper, if known.
  - The color and number on any labels on the carrier or cargo.
  - Weather conditions.
  - Type of environment (populated, rural, business, etc.)
  - Availability of water supply.



**In Case of Explosion, the Minimum Safe  
Distance from Flying Fragments is 2,000 Feet  
In All Directions.**

# Dimethyl Sulfate

(Combustible Liquid, Poisonous)



## Potential Hazards

---

Fire:—May catch fire.

Health:—Liquid causes burns to skin and eyes.

- Vapors extremely irritating.
- Vapors may be fatal if inhaled.*
- Runoff may pollute water supply.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible, wear self-contained breathing apparatus and full protective clothing.
- Eliminate all open flames. No smoking. No flares. Keep internal combustion engines *at least 20 yards* away.
- Keep upwind and estimate *Immediate Danger Area*.
- Evacuate according to *Evacuation Table*.

## Immediate Follow-up Action

---

Fire:—**Small Fire:** Dry chemical or CO<sub>2</sub>.

- Large Fire:** Water spray or fog.
- Move containers from fire area if without risk.
- Cool containers with water if exposed to fire.
- Stay away from ends of tanks.
- Withdraw immediately in case of rising sound from venting safety device.

Spill or Leak:—**Large Spill:** Dike for later disposal.

- Small Spill:** Flush area with water.
- Do not touch spilled liquid.
- Stop leak if without risk.
- Use water spray to reduce vapors.

First Aid:—Remove victim to fresh air. Call for emergency medical care. *Effects of inhalation may be delayed.*

- If victim is not breathing, give artificial respiration. If breathing is difficult, give oxygen.
- If victim contacted material, immediately flush skin or eyes with running water for *at least 15 minutes*.
- Remove contaminated clothes.
- Keep victim warm and quiet.

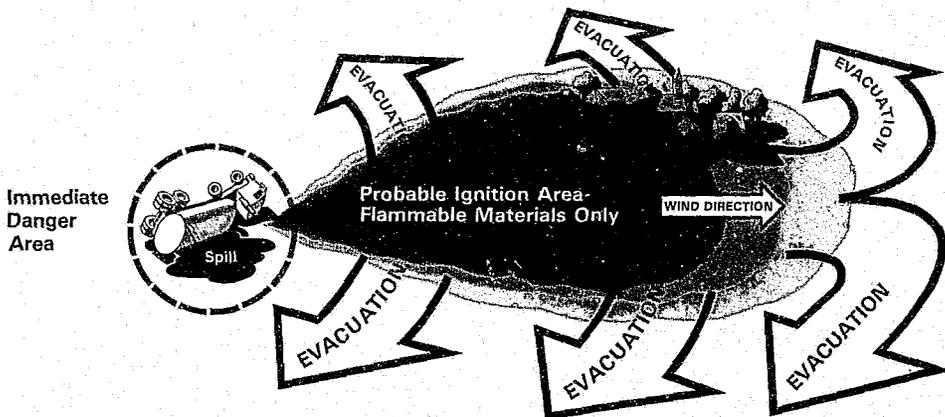
For Assistance Call Chemtrec toll free (800) 424-9300  
 In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and  
 Alaska, call (202) 483-7616.

### Additional Follow-up Action

- For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:
  - Your location and phone number.
  - Location of the accident.
  - Name of product and shipper, if known.
  - The color and number on any labels on the carrier or cargo.
  - Weather conditions.
  - Type of environment (populated, rural, business, etc.)
  - Availability of water supply.
- Adjust evacuation area according to wind changes and observed effect on population.

### Water Pollution Control

- Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



Evacuation Table — Based on Prevailing Wind of 6-12 mph.

Approximate Size of Spill	Distance to Evacuate From Immediate Danger Area	For Maximum Safety, Downwind Evacuation Area Should Be
200 square feet	50 yards (60 paces)	1,056 feet long, 528 feet wide
400 square feet	75 yards (90 paces)	1/2 mile long, 1/4 mile wide
600 square feet	95 yards (114 paces)	1/2 mile long, 1/3 mile wide
800 square feet	110 yards (132 paces)	1/2 mile long, 1/3 mile wide

**Caution:** Although Dimethyl Sulfate does not form an explosive mixture, the container in which it is shipped may explode under pressure from a fire. For maximum safety, evacuate 2,000 feet in all directions.

# Epichlorohydrin

(Flammable, Poisonous)



## Potential Hazards

---

Fire:—Highly flammable.

Explosion:—Container may explode due to heat of fire.

Health:—Vapors extremely irritating. Contact causes severe burns to skin and eyes.

- Inhalation harmful — lung injury may be delayed.*
- Runoff may pollute water supply.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible, wear self-contained breathing apparatus and full protective clothing.
- Keep internal combustion engines *at least* 20 yards away from spill.
- Keep upwind and estimate *Immediate Danger Area*.
- Evacuate according to *Evacuation Table*.

## Immediate Follow-up Action

---

- Fire:—**Small Fire:** Dry chemical or CO<sub>2</sub>.
- Large Fire:** Water spray or foam.
  - Cool containers with water from *maximum distance* until well after fire is out.
  - Stay away from ends of tanks.
  - Withdraw immediately in case of rising sound from venting safety device.

- Spill or Leak:—Do not touch spilled material.
- Stop leak if without risk.
  - Use water spray to reduce vapors.
  - Small Spills:** Flush area with water spray.
  - Large Spills:** Dike for later disposal.

- First Aid:—Remove victim to fresh air. Call for emergency medical care. *Effects of contact or inhalation may be delayed.*
- If victim is not breathing, give artificial respiration. If breathing is difficult, give oxygen.
  - If victim contacted material, immediately flush skin or eyes with running water *for at least 15 minutes*.
  - Remove contaminated clothes.
  - Keep victim warm and quiet.

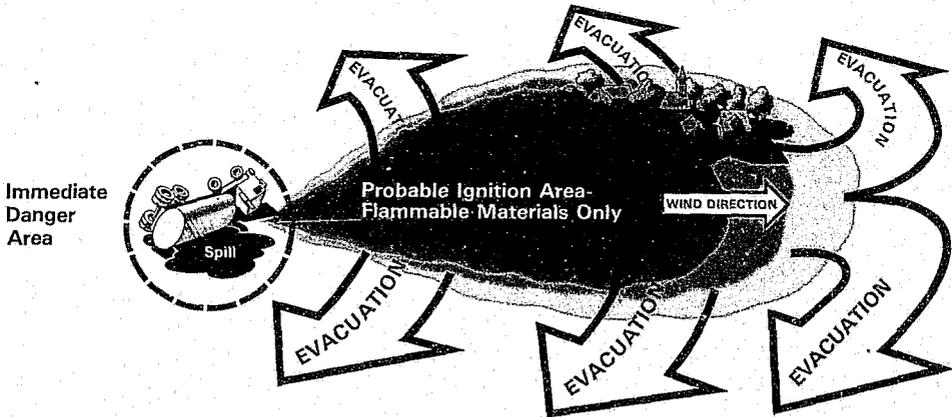
For Assistance Call Chemtrec toll free (800) 424-9300  
 In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and Alaska, call (202) 483-7616.

### Additional Follow-up Action

- For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:
  - Your location and phone number.
  - Location of the accident.
  - Name of product and shipper, if known.
  - The color and number on any labels on the carrier or cargo.
  - Weather conditions.
  - Type of environment (populated, rural, business, etc.)
  - Availability of water supply.
- Adjust evacuation area according to wind changes and observed effect on population.

### Water Pollution Control

- Epichlorohydrin is water soluble and can kill fish. Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



Evacuation Table — Based on Prevailing Wind of 6-12 mph.

Approximate Size of Spill	Distance to Evacuate From Immediate Danger Area	For Maximum Safety, Downwind Evacuation Area Should Be
200 square feet	26 yards (32 paces)	528 feet long, 528 feet wide
400 square feet	37 yards (45 paces)	1,056 feet long, 528 feet wide
600 square feet	46 yards (56 paces)	1,056 feet long, 528 feet wide
800 square feet	54 yards (64 paces)	1,056 feet long, 1,056 feet wide

In the event of an explosion, the minimum safe distance from flying fragments is 2,000 feet in all directions.

# Ethyl Chloride

(Flammable Liquid, Corrosive)



## Potential Hazards

---

- Fire:—Highly flammable.  
—Flammable vapors may spread from spill.

- Explosion:—Container may explode due to heat of fire.  
—Runoff may create fire or explosion hazard in sewer system.

- Health:—Contact may cause burns to skin and eyes.  
*If inhaled, may be harmful.*  
—Runoff may pollute water supply.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible, wear self-contained breathing apparatus and full protective clothing.
- Eliminate all open flames. No smoking. No flares. Keep internal combustion engines *at least* 20 yards away from spill area.
- Keep upwind. Isolate hazard area.
- Evacuate by *at least* 2,000 feet.

## Immediate Follow-up Action

---

- Fire:—**Small Fire:** Dry chemical or  $\text{CO}_2$ .  
—**Large Fire:** Water spray or fog.  
—Move containers from fire area if without risk.  
—Cool containers with water from *maximum distance* until well after fire is out.  
—For massive fire in cargo area, use unmanned hose holder or monitor nozzles. If this is impossible, withdraw from area and let fire burn.  
—Stay away from ends of tanks.

- Spill or Leak:—Do not touch spilled material.  
—Stop leak if without risk.  
—Use water spray to reduce vapors.  
—**Large Spills:** Dike for later disposal.  
—**Small Spills:** Take up with sand, earth or other noncombustible, absorbent material.

- First Aid:—Remove victim to fresh air. Call for emergency medical care.  
—If victim is not breathing give artificial respiration. If breathing is difficult, give oxygen.  
—If victim contacted material, immediately flush skin or eyes with running water *for at least 15 minutes*.  
—Keep victim warm and quiet.

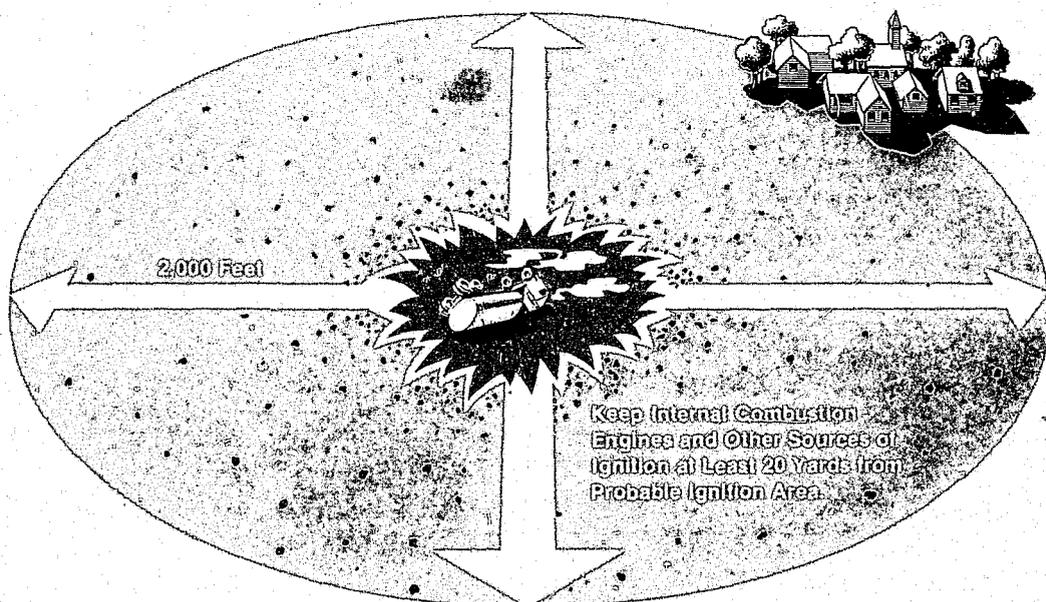
For Assistance Call Chemtrec toll free (800) 424-9300  
In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and  
Alaska, call (202) 483-7616.

### **Additional Follow-up Action**

- For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:
- Your location and phone number.
  - Location of the accident.
  - Name of product and shipper, if known.
  - The color and number on any labels on the carrier or cargo.
  - Weather conditions.
  - Type of environment (populated, rural, business, etc.)
  - Availability of water supply.

### **Water Pollution Control**

- Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



**In Case of Explosion, the Minimum Safe  
Distance from Flying Fragments is 2,000 Feet  
In All Directions.**

# Ethylene

(Flammable Gas)



## Potential Hazards

---

- Fire:—Highly flammable.  
—Flammable vapors may spread from spill.

Explosion:—Container may explode due to heat of fire.

- Health:—Vapors indoors may cause dizziness or suffocation.  
—Contact with liquid may cause burns to skin and eyes.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible, wear full protective clothing.
- Eliminate all open flames. No smoking. No flares. Keep internal combustion engines at least 50 yards away from vapor cloud.
- Keep upwind. Isolate hazard area.
- Evacuate by *at least* 2,000 feet.

## Immediate Follow-up Action

---

- Fire:—Let burn unless leak can be stopped immediately.
- Small Fire:** Dry chemical or CO<sub>2</sub>.
  - Large Fire:** Water spray or fog.
  - Move containers from fire area if without risk.
  - Cool containers with water from *maximum distance* until well after fire is out. Apply water from sides of tank.
  - For massive fire in cargo area, use unmanned hose holder or monitor nozzles. If this is impossible, withdraw from area.
  - Stay away from ends of tanks.
  - Withdraw immediately in case of rising sound from venting safety device.

- Spill or Leak:—Do not touch spilled liquid.  
—Stop leak if without risk.  
—Isolate area until gas has dispersed.

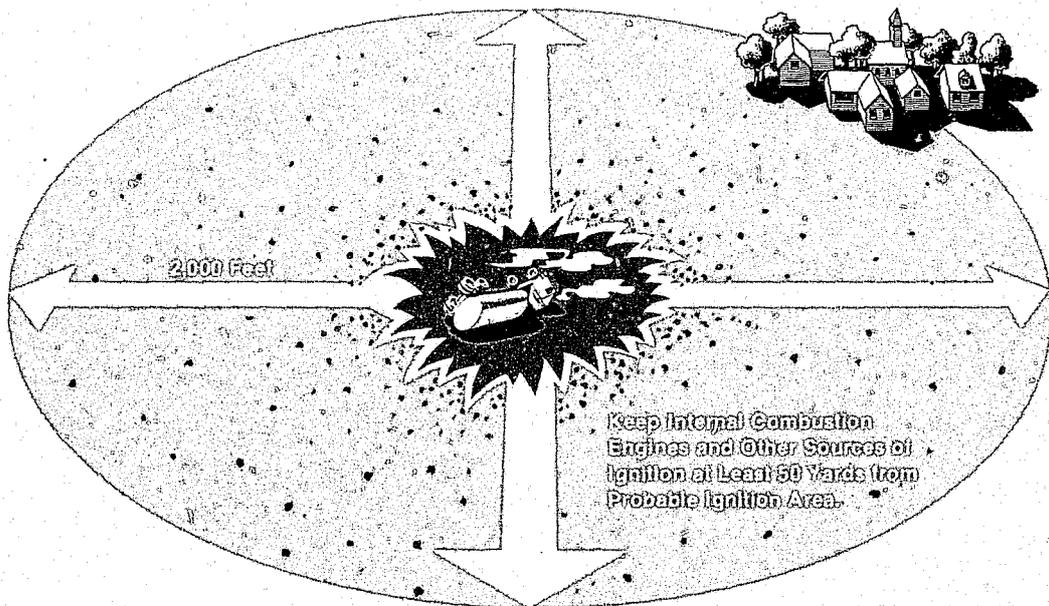
- First Aid:—Remove victim to fresh air.  
—Use standard first aid procedures.

For Assistance Call Chemtrec toll free (800) 424-9300  
In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and  
Alaska, call (202) 483-7616.

### **Additional Follow-up Action**

—For more detailed assistance in controlling the hazard, call Chemtrec  
(Chemical Transportation Emergency Center) toll free (800) 424-9300.  
You will be asked for the following information:

- Your location and phone number.
- Location of the accident.
- Name of product and shipper, if known.
- The color and number on any labels on the carrier or cargo.
- Weather conditions.
- Type of environment (populated, rural, business, etc.)
- Availability of water supply.



**In Case of Explosion, the Minimum Safe  
Distance from Flying Fragments is 2,000 Feet  
In All Directions.**

# Ethyleneimine

(Flammable, Thermally Unstable, Poisonous)



## Potential Hazards

---

- Fire:—Highly flammable.  
—Flammable vapors may spread from spill.

- Explosion:—Container may explode due to heat of fire.  
—Runoff may create fire or explosion hazard in sewer system.

- Health:—Vapors extremely irritating. Contact may cause burns to skin and eyes.  
—Fire may produce irritating or poisonous gases.  
—*Vapors may be fatal if inhaled.*  
—Runoff may pollute water supply.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible, wear self-contained breathing apparatus and full protective clothing.
- Eliminate all open flames. No smoking. No flares. Keep internal combustion engines *at least 20 yards* away from spill.
- Keep upwind and estimate *Immediate Danger Area*.
- Evacuate according to *Evacuation Table*.

## Immediate Follow-up Action

---

- Fire:—**Small Fire:** Dry chemical or CO<sub>2</sub>.  
—**Large Fire:** Water spray or fog.  
—Move containers from fire area if without risk.  
—Cool containers with water from *maximum distance* until well after fire is out.  
—For massive fires in cargo area, use unmanned hose holder or monitor nozzles. If this is impossible, withdraw from area and let fire burn.  
—Stay away from ends of tanks  
—Withdraw immediately in case of rising sound from venting safety device.

- Spill or Leak:—Do not touch spilled liquid.  
—Stop leak if without risk.  
—Use water spray to reduce vapors.  
—**Large Spills:** Dike for later disposal.  
—**Small Spills:** Take up with sand, earth or other noncombustible, absorbent material.

- First Aid:—Remove victim to fresh air. Call for emergency medical care. *Effects of contact or inhalation may be delayed.*  
—If victim is not breathing, give artificial respiration. If breathing is difficult, give oxygen.  
—If victim contacted material, immediately flush skin or eyes with running water for *at least 15 minutes*.  
—Remove contaminated clothes.  
—Keep victim warm and quiet.

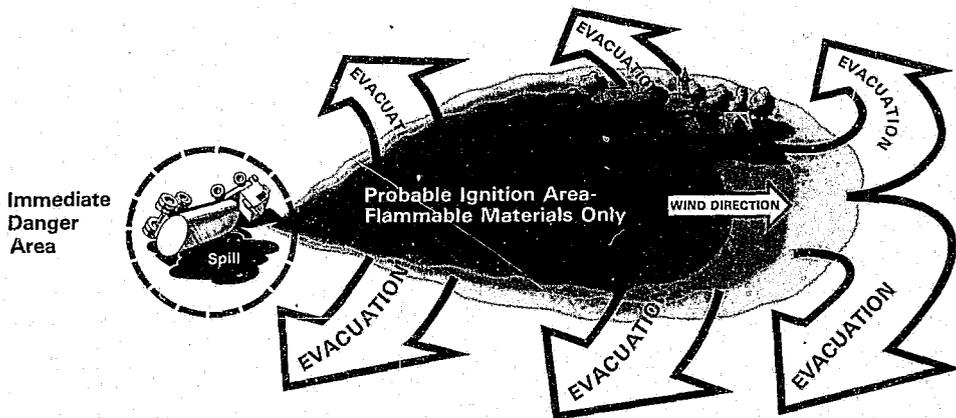
For Assistance Call Chemtrec toll tree (800) 424-9300  
 In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and  
 Alaska, call (202) 483-7616.

### Additional Follow-up Action

- For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:
  - Your location and phone number.
  - Location of the accident.
  - Name of product and shipper, if known.
  - The color and number on any labels on the carrier or cargo.
  - Weather conditions.
  - Type of environment (populated, rural, business, etc.)
  - Availability of water supply.
- Adjust evacuation area according to wind changes and observed effect on population.

### Water Pollution Control

- Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



Evacuation Table — Based on Prevailing Wind of 6-12 mph.

Approximate Size of Spill	Distance to Evacuate From Immediate Danger Area	For Maximum Safety, Downwind Evacuation Area Should Be
200 square feet	180 yards (216 paces)	1 mile long, 1/2 mile wide
400 square feet	260 yards (312 paces)	1 1/2 miles long, 1 mile wide
600 square feet	325 yards (390 paces)	2 miles long, 1 mile wide
800 square feet	380 yards (456 paces)	2 miles long, 1 1/2 mile wide

In the event of an explosion, the minimum safe distance from flying fragments is 2,000 feet in all directions.

# Ethylene Oxide

(Flammable, Thermally Unstable, Corrosive)



## Potential Hazards

---

Fire:—Highly flammable.  
—Flammable vapors may spread from spill.

Explosion:—Container may explode due to heat of fire.  
—Runoff may create fire or explosion hazard in sewer system.

Health:—Contact may cause burns to skin and eyes.  
*If inhaled, may be harmful.*  
—Fire may produce irritating or poisonous gases.  
—Runoff may pollute water supply.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible, wear self-contained breathing apparatus and full protective clothing.
- Eliminate all open flames. No smoking. No flares. Keep internal combustion engines *at least 25 yards* away from spill.
- Keep upwind and estimate *Immediate Danger Area*.
- Evacuate according to *Evacuation Table*.

## Immediate Follow-up Action

---

- Fire:—Let burn unless leak can be stopped immediately.
- Move containers from fire area if without risk.
  - Cool containers with water from *maximum distance* until well after fire is out.
  - For massive fire in cargo area, use unmanned hose holder or monitor nozzles. If this is impossible withdraw from area and let fire burn.
  - Stay away from ends of tanks.
  - Withdraw immediately in case of rising sound from venting safety device.

- Spill or Leak:—Do not touch spilled liquid.
- Stop leak if without risk.
  - Use water spray to reduce vapors.
  - Large Spills:** Dike for later disposal.
  - Small Spills:** Take up with sand, earth or other noncombustible, absorbent material.

- First Aid:—Remove victim to fresh air. Call for emergency medical care. *Effects of contact or inhalation may be delayed.*
- If victim is not breathing, give artificial respiration.  
If breathing is difficult, give oxygen.
  - If victim contacted material, immediately flush skin or eyes with running water *for at least 15 minutes*.
  - Remove contaminated clothes.
  - Keep victim warm and quiet.

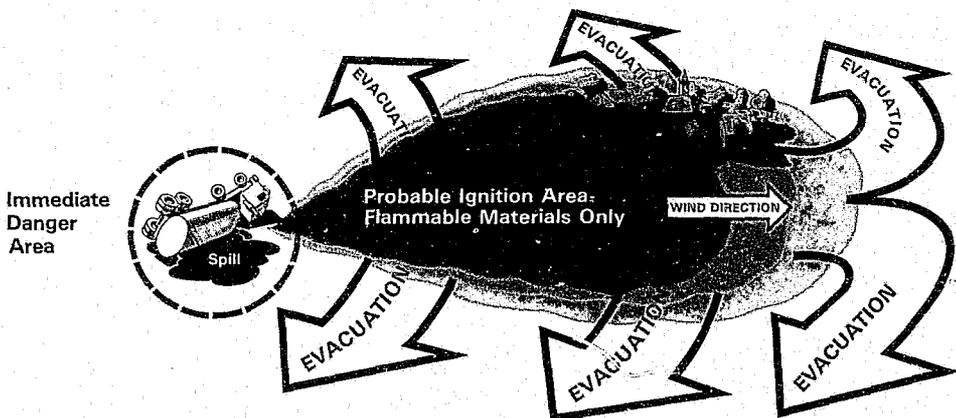
For Assistance Call Chemtrec toll free (800) 424-9300  
 In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and Alaska, call (202) 483-7616.

**Additional Follow-up Action**

- For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:
  - Your location and phone number.
  - Location of the accident.
  - Name of product and shipper, if known.
  - The color and number on any labels on the carrier or cargo.
  - Weather conditions.
  - Type of environment (populated, rural, business, etc.)
  - Availability of water supply.
- Adjust evacuation area according to wind changes and observed effect on population.

**Water Pollution Control**

- Ethylene Oxide is water soluble and can kill fish. Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



**Evacuation Table — Based on Prevailing Wind of 6-12 mph.**

Approximate Size of Spill	Distance to Evacuate From Immediate Danger Area	For Maximum Safety, Downwind Evacuation Area Should Be
200 square feet	25 yards (30 paces)	528 feet long, 528 feet wide
400 square feet	30 yards (36 paces)	528 feet long, 528 feet wide
600 square feet	40 yards (48 paces)	1,056 feet long, 528 feet wide
800 square feet	45 yards (54 paces)	1,056 feet long, 528 feet wide

In the event of an explosion, the minimum safe distance from flying fragments is 2,000 feet in all directions.

# Fluorine

(Oxidizer, Corrosive, Poisonous)



## Potential Hazards

Fire:— May ignite combustibles.

Explosion:— Container may explode due to heat of fire.  
— Reaction with fuels may be violent.  
— Gas explosion hazard indoors, outdoors or in sewers.

Health:— Vapors extremely irritating. Contact may cause burns to skin and eyes.  
— *Vapors may be fatal if inhaled.*  
— Runoff may pollute water supply.

## Immediate Action

- Get helper and notify local authorities.
- If possible, wear self-contained breathing apparatus and full protective clothing.
- Keep upwind and estimate *Immediate Danger Area*.
- Evacuate according to *Evacuation Table*.

## Immediate Follow-up Action

Fire:— **Small Fire:** Dry chemical or CO<sub>2</sub>.  
— **Large Fire:** Water spray or fog.  
— Move containers from fire area if without risk.  
— Cool containers with water from *maximum distance* until well after fire is out.  
— Stay away from ends of tanks.  
— Do not put solid stream of water on fluorine pool.

Spill or Leak:— Do not touch spilled liquid.  
— Stop leak if without risk.  
— Use water spray to reduce vapors.  
— Keep combustibles away from spilled material.  
— **Large Spills:** Dilute with large amounts of water and dike for later disposal.  
— Isolate area until gas has dispersed.

First Aid:— Remove victim to fresh air. Call for emergency medical care.  
— If victim is not breathing, give artificial respiration. If breathing is difficult, give oxygen.  
— If victim contacted material, immediately flush skin or eyes with running water *for at least 15 minutes*.  
— Remove contaminated clothes.  
— Keep victim warm and quiet.

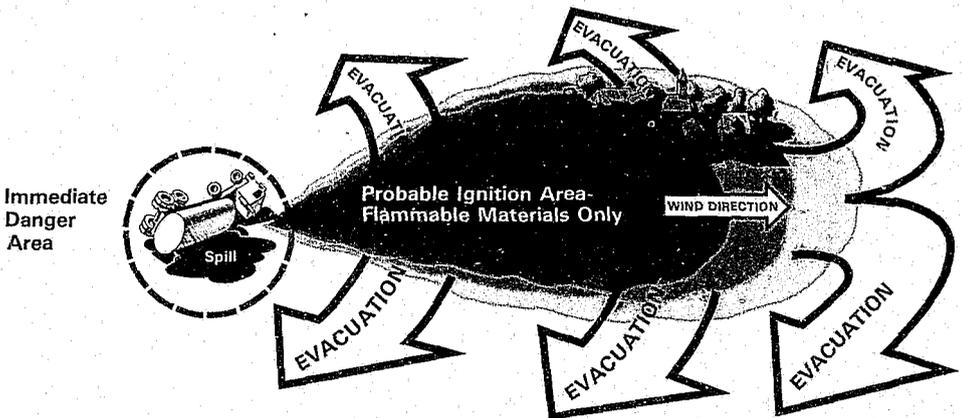
For Assistance Call Chemtrec toll free (800) 424-9300  
 In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and  
 Alaska, call (202) 483-7616.

**Additional Follow-up Action**

- For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:
  - Your location and phone number.
  - Location of the accident.
  - Name of product and shipper, if known.
  - The color and number on any labels on the carrier or cargo.
  - Weather conditions.
  - Type of environment (populated, rural, business, etc.)
  - Availability of water supply.
- Adjust evacuation area according to wind changes and observed effect on population.

**Water Pollution Control**

- Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



**Evacuation Table — Based on Prevailing Wind of 6-12 mph.**

Approximate Size of Spill	Distance to Evacuate From Immediate Danger Area	For Maximum Safety, Downwind Evacuation Area Should Be
200 square feet	105 yards (126 paces)	1/2 mile long, 1/2 mile wide
400 square feet	150 yards (180 paces)	1 mile long, 1/2 mile wide
600 square feet	185 yards (222 paces)	1 mile long, 1/2 mile wide
800 square feet	220 yards (264 paces)	1 mile long, 1 mile wide

In the event of an explosion, the minimum safe distance from flying fragments is 2,000 feet in all directions.

# Hydrocarbon Fuels

(Flammable Liquid)



## Potential Hazards

Fire:—Highly flammable.  
—Flammable vapors may spread from spill.

Explosion:—Container may explode due to heat of fire.  
—Runoff may create fire or explosion hazard in sewer system.

Health:—Vapors indoors may cause dizziness or suffocation.

## Immediate Action

- Get helper and notify local authorities.
- If possible, wear full protective clothing.
- Eliminate all open flames. No smoking. No flares.
- Keep upwind. Isolate hazard area.
- Evacuate by *at least* 2,000 feet.

## Immediate Follow-up Action

- Fire:—**Small Fire:** Dry chemical or CO<sub>2</sub>.  
—**Large Fire:** Water spray or fog.  
—Move containers from fire area if without risk.  
—Cool containers with water from *maximum distance* until well after fire is out.  
—Stay away from ends of tanks.

- Spill or Leak:—Stop leak if without risk.  
—Use water spray to reduce vapors.  
—**Large Spills:** Dike for later disposal.  
—**Small Spills:** Take up with sand, earth or other noncombustible, absorbent material.

- First Aid:—Remove victim to fresh air.  
—Use standard first aid procedures.

For Assistance Call Chemtrec toll free (800) 424-9300

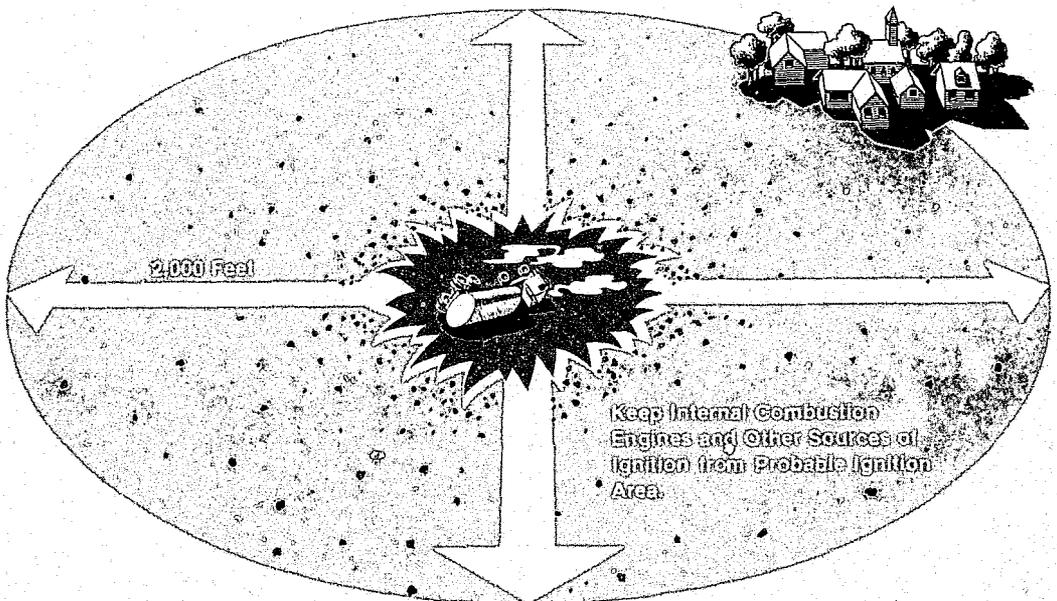
In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and Alaska, call (202) 483-7616.

### **Additional Follow-up Action**

- For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:
- Your location and phone number.
  - Location of the accident.
  - Name of product and shipper, if known.
  - The color and number on any labels on the carrier or cargo.
  - Weather conditions.
  - Type of environment (populated, rural, business, etc.)
  - Availability of water supply.

### **Water Pollution Control**

- Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



**In Case of Explosion, the Minimum Safe Distance from Flying Fragments is 2,000 Feet In All Directions.**

# Hydrogen, Liquid

(Flammable Gas)



## **Potential Hazards**

---

- Fire:—Highly flammable — flame may be invisible.  
—Flammable vapors may spread from spill.

- Explosion:—Container may explode due to heat of fire.  
—Gas explosion hazard indoors, outdoors or in sewers.

- Health:—Contact with liquid may cause burns to skin and eyes.  
—Vapors indoors may cause dizziness or suffocation.

## **Immediate Action**

---

- Get helper and notify local authorities.
- If possible, wear full protective clothing.
- Eliminate all open flames. No smoking. No flares. Keep internal combustion engines *at least* 250 yards away from vapor cloud area.
- Keep upwind. Isolate hazard area.
- Evacuate by *at least* 2,000 feet.

## **Immediate Follow-up Action**

---

- Fire:—Let burn unless leak can be stopped immediately.  
—Move containers from fire area if without risk.  
—Cool containers with water from *maximum distance* until well after fire is out. Apply water from sides of tank.  
—Stay away from ends of tanks.

- Spill or Leak:—Do not touch spilled liquid.  
—Stop leak if without risk.  
—Isolate area until gas has dispersed.

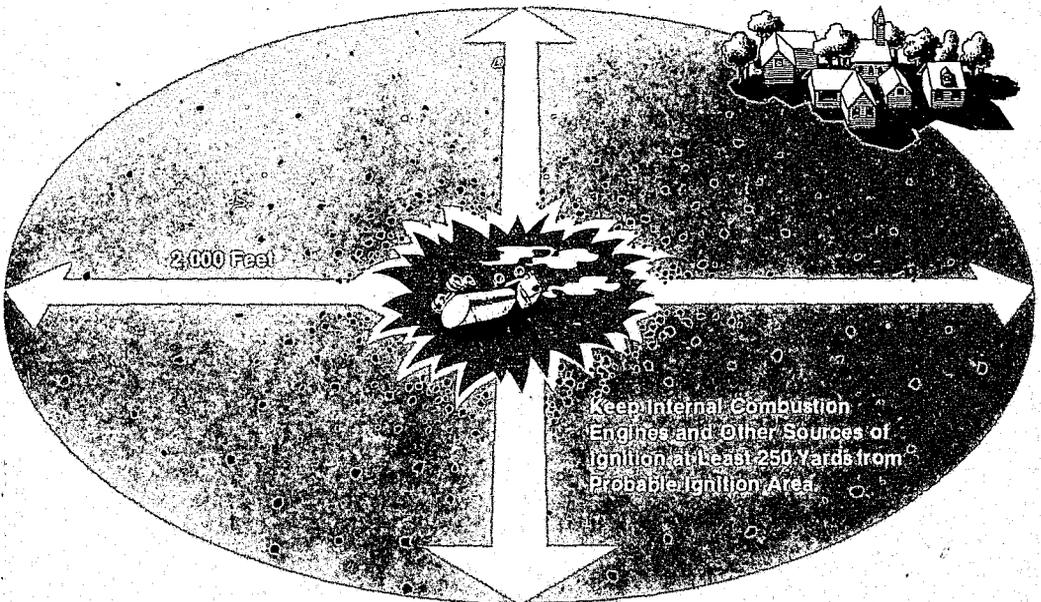
- First Aid:—Remove victim to fresh air.  
—Use standard first aid procedures.

For Assistance Call Chemtrec toll free (800) 424-9300  
In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and  
Alaska, call (202) 483-7616.

### **Additional Follow-up Action**

—For more detailed assistance in controlling the hazard, call Chemtrec  
(Chemical Transportation Emergency Center) toll free (800) 424-9300.  
You will be asked for the following information:

- Your location and phone number.
- Location of the accident.
- Name of product and shipper, if known.
- The color and number on any labels on the carrier or cargo.
- Weather conditions.
- Type of environment (populated, rural, business, etc.)
- Availability of water supply.



**In Case of Explosion, the Minimum Safe  
Distance from Flying Fragments is 2,000 Feet  
In All Directions.**

# Hydrogen Chloride

(Nonflammable Gas, Corrosive)



## Potential Hazards

---

Fire:—Cannot catch fire.

Explosion:—Container may explode due to heat of fire.

Health:—Vapors extremely irritating. Contact may cause burns to skin and eyes. *If inhaled, may be harmful.*

—Runoff may pollute water supply.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible, wear self-contained breathing apparatus and full protective clothing.
- Keep upwind and estimate *Immediate Danger Area*.
- Evacuate according to *Evacuation Table*.

## Immediate Follow-up Action

---

Fire:—**Small Fire:** Dry chemical or CO<sub>2</sub>.

—**Large Fire:** Water spray or fog.

—Move containers from fire area if without risk.

—Cool containers with water from *maximum distance* until well after fire is out.

—Stay away from ends of tanks.

Spill or Leak:—Do not touch spilled liquid.

—Stop leak if without risk.

—Use water spray to reduce vapors.

—**Large Spills:** Dike for later disposal.

—**Small Spills:** Flush area with water.

—Isolate area until gas has dispersed.

First Aid:—Remove victim to fresh air. Call for emergency medical care.

—If victim is not breathing, give artificial respiration. If breathing is difficult, give oxygen.

—If victim contacted material, immediately flush skin or eyes with running water *for at least 15 minutes*.

—Remove contaminated clothes.

—Keep victim warm and quiet.

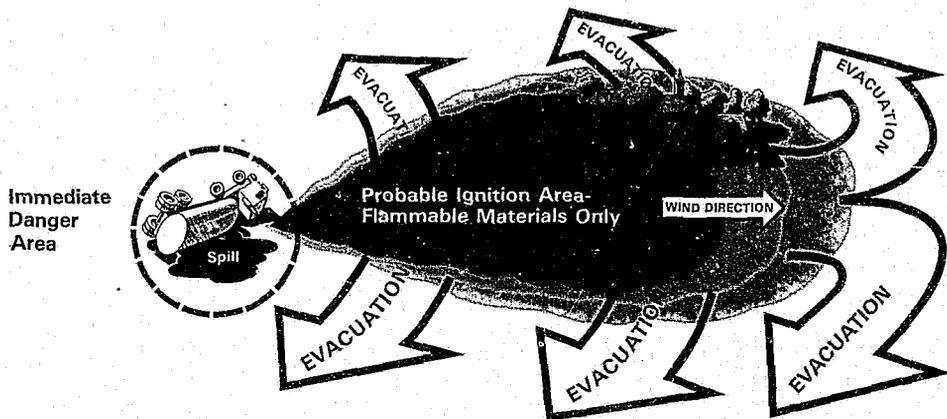
For Assistance Call Chemtrec toll free (800) 424-9300  
 In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and  
 Alaska, call (202) 483-7616

### Additional Follow-up Action

- For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:
  - Your location and phone number.
  - Location of the accident.
  - Name of product and shipper, if known.
  - The color and number on any labels on the carrier or cargo.
  - Weather conditions.
  - Type of environment (populated, rural, business, etc.)
  - Availability of water supply.
- Adjust evacuation area according to wind changes and observed effect on population.

### Water Pollution Control

- Hydrogen Chloride is water soluble and can kill fish. Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



Evacuation Table — Based on Prevailing Wind of 6-12 mph.

Approximate Size of Spill	Distance to Evacuate From Immediate Danger Area	For Maximum Safety, Downwind Evacuation Area Should Be
200 square feet	125 yards (150 paces)	1/2 mile long, 1/2 mile wide
400 square feet	180 yards (216 paces)	1 mile long, 1/2 mile wide
600 square feet	225 yards (270 paces)	1 mile long, 1 mile wide
800 square feet	260 yards (312 paces)	1 1/2 miles long, 1 mile wide
In the event of an explosion, the minimum safe distance from flying fragments is 2,000 feet in all directions.		

# Hydrogen Cyanide

(Flammable Gas, Extremely Hazardous, Poisonous)



## Potential Hazards

- Fire: — Highly flammable.  
— Flammable vapors may spread from spill.

- Explosion: — Container may explode due to heat of fire.  
— Gas explosion and poison hazard indoors, outdoors or in sewers.

- Health: — Vapors nonirritating, deaden sense of smell. Skin contact poisonous.  
— *Vapors may be fatal if inhaled.*  
— Runoff may pollute water supply.

## Immediate Action

- Get helper and contact local authorities.  
— If possible, wear self-contained breathing apparatus and full protective clothing.  
— Eliminate all open flames. No smoking. No flares. Keep internal combustion engines at *least 20 yards* away from vapor cloud area.  
— Keep upwind and estimate *Immediate Danger Area*.  
— Evacuate according to *Evacuation Table*.

## Immediate Follow-up Action

- Fire: — Let burn unless leak can be stopped immediately.  
— **Small Fire:** Dry chemical or CO<sub>2</sub>.  
— **Large Fire:** Water spray or fog.  
— Move containers from fire area if without risk.  
— Cool containers with water for *maximum distance* until well after fire is out.  
— Stay away from ends of tanks.  
— Fight fire from maximum distance.

- Spill or Leak: — Do not touch spilled liquid.  
— Stop leak if without risk.  
— Use water spray to reduce vapors.  
— Isolate area until gas has dispersed.

- First Aid: — Remove victim to fresh air. Call for emergency medical care.  
*Effects of contact or inhalation may be delayed.*  
— If victim is not breathing, give artificial respiration.  
If breathing is difficult, give oxygen.  
— If victim contacted material, immediately flush skin or eyes with running water for *at least 15 minutes*.  
— Remove contaminated clothes.  
— Keep victim warm and quiet.

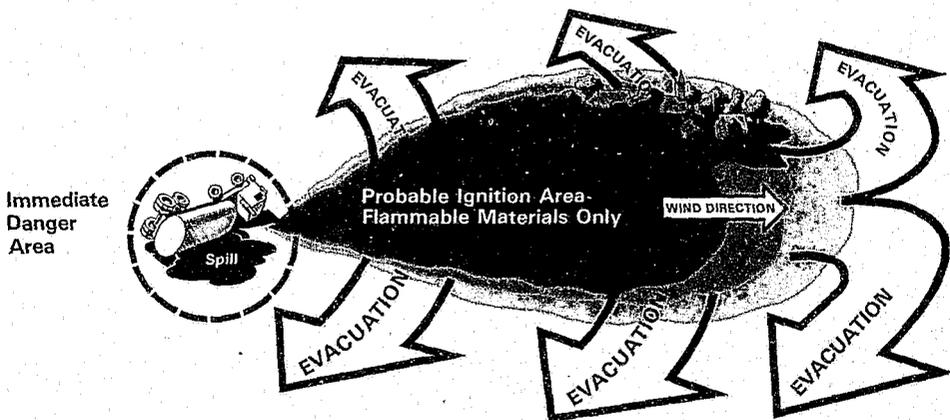
For Assistance Call Chemtrec toll free (800) 424-9300  
 In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and Alaska, call (202) 483-7616.

### Additional Follow-up Action

- For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:
  - Your location and phone number.
  - Location of the accident.
  - Name of product and shipper, if known.
  - The color and number on any labels on the carrier or cargo.
  - Weather conditions.
  - Type of environment (populated, rural, business, etc.)
  - Availability of water supply.
- Adjust evacuation area according to wind changes and observed effect on population.

### Water Pollution Control

- Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



Evacuation Table — Based on Prevailing Wind of 6-12 mph.

Approximate Size of Spill	Distance to Evacuate From Immediate Danger Area	For Maximum Safety, Downwind Evacuation Area Should Be
200 square feet	60 yards (72 paces)	1,584 feet long, 1,056 feet wide
400 square feet	90 yards (108 paces)	2,112 feet long, 1,584 feet wide
600 square feet	110 yards (132 paces)	3,168 feet long, 1,584 feet wide
800 square feet	130 yards (156 paces)	3,696 feet long, 2,112 feet wide

In the event of an explosion, the minimum safe distance from flying fragments is 2,000 feet in all directions.

# Hydrogen Fluoride

(Corrosive, Poisonous)



## Potential Hazards

---

Fire:— Cannot catch fire.

Health:— Vapors extremely irritating. Contact may cause burns to skin and eyes. *If inhaled, may be harmful.*  
— Runoff may pollute water supply.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible, wear self-contained breathing apparatus and full protective clothing.
- Keep upwind. Estimate *Immediate Danger Area*.
- Evacuate according to *Evacuation Table*.

## Immediate Follow-up Action

---

Fire:— **Small Fire:** Dry chemical or CO<sub>2</sub>.

- **Large Fire:** Water spray or fog.
- Move containers from fire area if without risk.
- Cool containers with water from *maximum distance* until well after fire is out.
- Do not get water inside container.

Spill or Leak:— Do not touch spilled material.

- Stop leak if without risk.
- Use water spray to reduce vapors.
- **Small Spills:** Flush area with water.
- **Large Spills:** Dilute with large amounts of water and dike for later disposal.
- Isolate area until gas has dispersed.

First Aid:— Remove victim to fresh air. Call for emergency medical care. *Effects of contact or inhalation may be delayed.*

- If victim is not breathing, give artificial respiration.  
If breathing is difficult, give oxygen.
- If victim contacted material, immediately flush skin or eyes with running water *for at least 15 minutes*.
- Remove contaminated clothes.
- Keep victim warm and quiet.

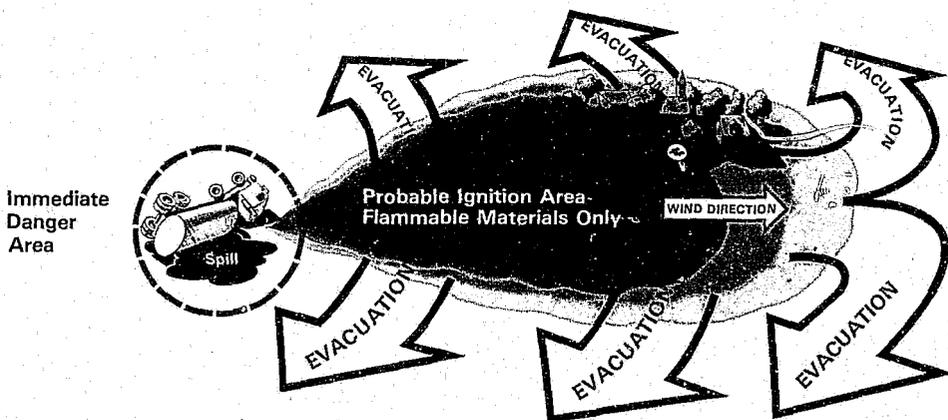
For Assistance Call Chemtrec toll free (800) 424-9300  
 In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and  
 Alaska, call (202) 483-7616.

### Additional Follow-up Action

- For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:
  - Your location and phone number.
  - Location of the accident.
  - Name of product and shipper, if known.
  - The color and number on any labels on the carrier or cargo.
  - Weather conditions.
  - Type of environment (populated, rural, business, etc.)
  - Availability of water supply.
- Adjust evacuation area according to wind changes and observed effect on population.

### Water Pollution Control

- Hydrogen Fluoride is water soluble and can kill fish. Prevent runoff from fire control or dilution water from entering streams or drinking water. Dike for later disposal. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



Evacuation Table — Based on Prevailing Wind of 6-12 mph.

Approximate Size of Spill	Distance to Evacuate From Immediate Danger Area	For Maximum Safety, Downwind Evacuation Area Should Be
200 square feet	160 yards (192 paces)	1 mile long, 1/2 mile wide
400 square feet	225 yards (270 paces)	1 1/2 miles long, 1 mile wide
600 square feet	280 yards (336 paces)	1 1/2 miles long, 1 mile wide
800 square feet	325 yards (390 paces)	2 miles long, 1 mile wide

**Caution:** Although Hydrogen Fluoride does not form an explosive mixture, the container in which it is shipped may explode under pressure from a fire. For maximum safety, evacuate 2,000 feet in all directions.

# Hydrogen Sulfide

(Flammable Gas, Extremely Hazardous, Poisonous)



## Potential Hazards

---

- Fire:—Highly flammable.  
—Flammable vapors may spread from spill.

- Explosion:—Container may explode due to heat of fire.  
—Gas explosion and poison hazard indoors or in sewers.

- Health:—Vapors nonirritating, deaden sense of smell.  
—*Vapors may be fatal if inhaled.*  
—Runoff may pollute water supply.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible, wear self-contained breathing apparatus and full protective clothing.
- Eliminate all open flames. No smoking. No flares. Keep internal combustion engines *at least* 30 yards away from spill.
- Keep upwind. Estimate *Immediate Danger Area*.
- Evacuate according to *Evacuation Table*.

## Immediate Follow-up Action

---

- Fire:—Let burn unless leak can be stopped immediately.
- Small Fire:** Dry chemical or CO<sub>2</sub>.
  - Large Fire:** Water spray or fog.
  - Move containers from fire area if without risk.
  - Cool containers with water from *maximum distance* until well after fire is out.
  - Stay away from ends of tanks.
  - Fight fire from maximum distance.

- Spill or Leak:—Do not touch spilled liquid.
- Stop leak if without risk.
  - Use water spray to reduce vapors.
  - Isolate area until gas has dispersed.

- First Aid:—Remove victim to fresh air. Call for emergency medical care. *Effects of contact or inhalation may be delayed.*
- If victim is not breathing, give artificial respiration.  
If breathing is difficult, give oxygen.
  - If victim contacted material, immediately flush skin or eyes with running water *for at least 15 minutes*.
  - Remove contaminated clothes.
  - Keep victim warm and quiet.

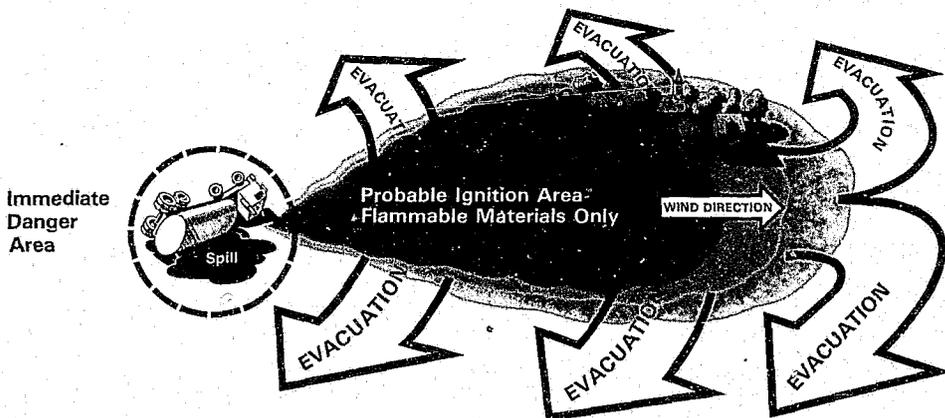
For Assistance Call Chemtrec toll free (800) 424-9300  
 In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and Alaska, call (202) 483-7616.

### Additional Follow-up Action

- For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:
  - Your location and phone number.
  - Location of the accident.
  - Name of product and shipper, if known.
  - The color and number on any labels on the carrier or cargo.
  - Weather conditions.
  - Type of environment (populated, rural, business, etc.)
  - Availability of water supply.
- Adjust evacuation area according to wind changes and observed effect on population.

### Water Pollution Control

- Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



Evacuation Table — Based on Prevailing Wind of 6-12 mph.

Approximate Size of Spill	Distance to Evacuate From Immediate Danger Area	For Maximum Safety, Downwind Evacuation Area Should Be
200 square feet	yards ( 96 paces)	2,112 feet long, 1,056 feet wide
400 square feet	110 yards (132 paces)	4,224 feet long, 1,584 feet wide
600 square feet	140 yards (168 paces)	3,696 feet long, 2,112 feet wide
800 square feet	160 yards (192 paces)	1 mile long, 1/2 mile wide

In the event of an explosion, the minimum safe distance from flying fragments is 2,000 feet in all directions.

# Liquid Petroleum Gas (LPG)

(Flammable Gas)



## Potential Hazards

---

Fire:—May be ignited by heat, sparks, flames.  
—Flammable vapors may spread from spill.

Explosion:—Container may explode due to heat of fire.  
—Gas explosion hazard indoors, outdoors or in sewers.

Health:—Contact with liquid may cause burns to skin and eyes.  
—Vapors indoors may cause dizziness or suffocation.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible, wear full protective clothing.
- Eliminate all open flames. No smoking. No flares. Keep internal combustion engines at *least* 35 yards away from vapor cloud.
- Keep upwind. Isolate hazard area.
- Evacuate by *at least* 2,000 feet.

## Immediate Follow-up Action

---

- Fire:—Let burn unless leak can be stopped immediately.
- Small Fire:** Dry chemical or CO<sub>2</sub>.
  - Large Fire:** Water spray or fog.
  - Move containers from fire area if without risk.
  - Cool containers with water from *maximum distance* until well after fire is out. Apply water from sides of tank.
  - For massive fire in cargo area, use unmanned hose holder or monitor nozzles. If this is impossible, withdraw from area and let fire burn.
  - Stay away from ends of tanks.
  - Withdraw immediately in case of rising sound from venting safety device.

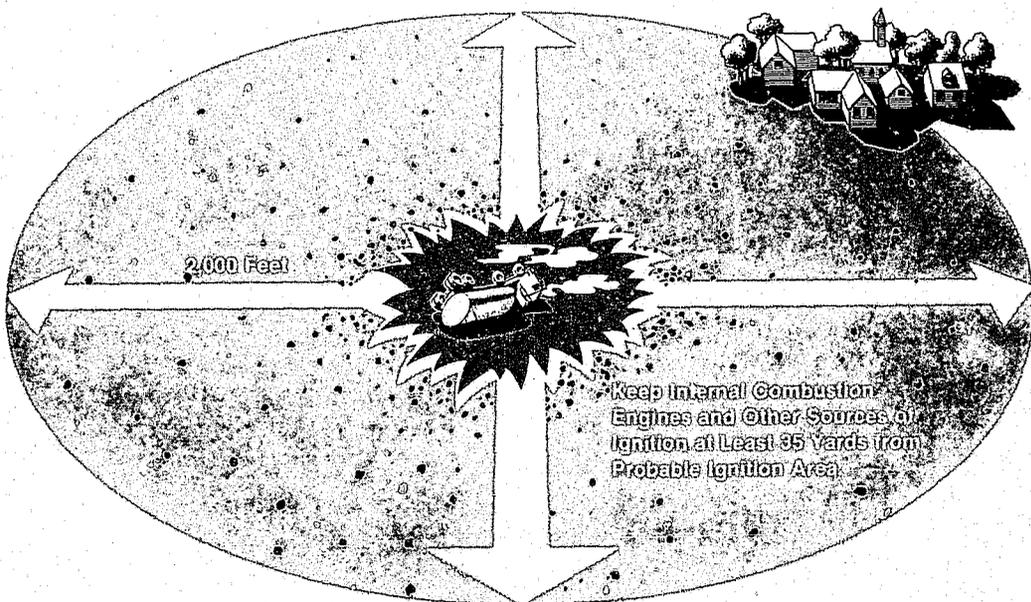
Spill or Leak:—Do not touch spilled liquid.  
—Stop leak if without risk.  
—Isolate area until gas has dispersed.

First Aid:—Remove victim to fresh air.  
—Use standard first aid procedures.

For Assistance Call Chemtrec toll free (800) 424-9300  
In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and  
Alaska, call (202) 483-7616.

### **Additional Follow-up Action**

- For more detailed assistance in controlling the hazard, call Chemtrec  
(Chemical Transportation Emergency Center) toll free (800) 424-9300.  
You will be asked for the following information:
- Your location and phone number.
  - Location of the accident.
  - Name of product and shipper, if known.
  - The color and number on any labels on the carrier or cargo.
  - Weather conditions.
  - Type of environment (populated, rural, business, etc.)
  - Availability of water supply.



**In Case of Explosion, the Minimum Safe  
Distance from Flying Fragments is 2,000 Feet  
in All Directions.**

# Methane, Liquid

(Flammable Gas)



## Potential Hazards

---

Fire:—Highly flammable.  
—Flammable vapors may spread from spill.

Explosion:—Container may explode due to heat of fire.  
—Gas explosion hazard indoors, outdoors or in sewers.

Health:—Contact with liquid may cause burns to skin or eyes.  
—Vapors indoors may cause dizziness or suffocation.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible, wear full protective clothing.
- Eliminate all open flames. No smoking. No flares. Keep internal combustion engines at *least* 60 yards from vapor cloud.
- Keep upwind. Isolate hazard area.
- Evacuate by *at least* 2,000 feet.

## Immediate Follow-up Action

---

- Fire:—Let burn unless leak can be stopped immediately.
- Small Fire:** Dry chemical or CO<sub>2</sub>.
  - Large Fire:** Water spray or fog.
  - Move containers from fire area if without risk.
  - Cool containers with water from *maximum distance* until well after fire is out. Apply water from sides of tank.
  - For massive fire in cargo area, use unmanned hose holder or monitor nozzles. If this is impossible withdraw from area.
  - Stay away from ends of tanks.
  - Withdraw immediately in case of rising sound from venting safety device.

Spill or Leak:—Do not touch spilled liquid.  
—Stop leak if without risk.  
—Isolate area until gas has dispersed.

First Aid:—Remove victim to fresh air.  
—Use standard first aid procedures.

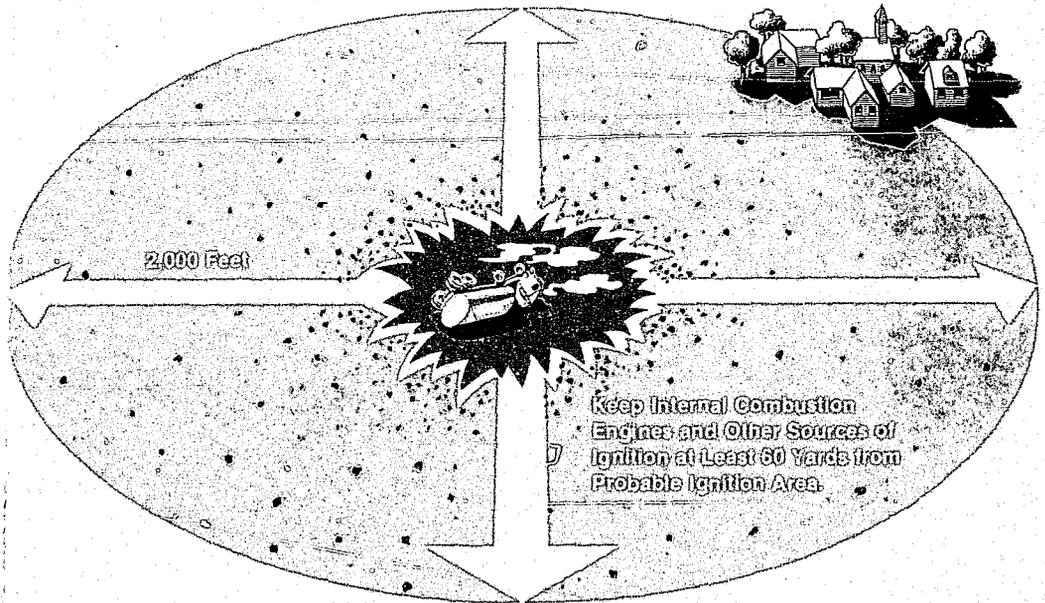
For Assistance Call Chemtrec toll free (800) 424-9300

In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and Alaska, call (202) 483-7616.

### Additional Follow-up Action

—For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:

- Your location and phone number.
- Location of the accident.
- Name of product and shipper, if known.
- The color and number on any labels on the carrier or cargo.
- Weather conditions.
- Type of environment (populated, rural, business, etc.)
- Availability of water supply.



**In Case of Explosion, the Minimum Safe Distance from Flying Fragments in 2,000 Feet In All Directions.**

# Methylamines, Anhydrous

(Flammable Gas, Corrosive)



## Potential Hazards

---

- Fire:— Highly flammable.  
— Flammable vapors may spread from spill.

- Explosion:— Container may explode due to heat of fire.  
— Gas explosion hazard indoors, outdoors or in sewers.

- Health:— Vapors extremely irritating. Contact may cause burns to skin and eyes.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible, wear self-contained breathing apparatus and full protective clothing.
- Eliminate all open flames. No smoking. No flares. Keep internal combustion engines *at least* 20 yards away from vapor cloud.
- Keep upwind and estimate *Immediate Danger Area*.
- Evacuate according to *Evacuation Table*.

## Immediate Follow-up Action

---

- Fire:— Let burn unless leak can be stopped immediately.
- **Small Fire:** Dry chemical or CO<sub>2</sub>.
  - **Large Fire:** Water spray or fog.
  - Move containers from fire area if without risk.
  - Cool containers with water from *maximum distance* until well after fire is out. Apply water from sides of tanks.
  - For massive fire in cargo area, use unmanned hose holder or monitor nozzles. If this is impossible, withdraw from area and let fire burn.
  - Stay away from ends of tanks.

- Spill or Leak:— Do not touch spilled liquid.
- Stop leak if without risk.
  - Use water spray to reduce vapors.
  - Isolate area until gas has dispersed.

- First Aid:— Remove victim to fresh air. Call for emergency medical care.
- If victim is not breathing give artificial respiration. If breathing is difficult, give oxygen.
  - If victim contacted material, immediately flush skin or eyes with running water *for at least 15 minutes*.
  - Remove contaminated clothes.
  - Keep victim warm and quiet.

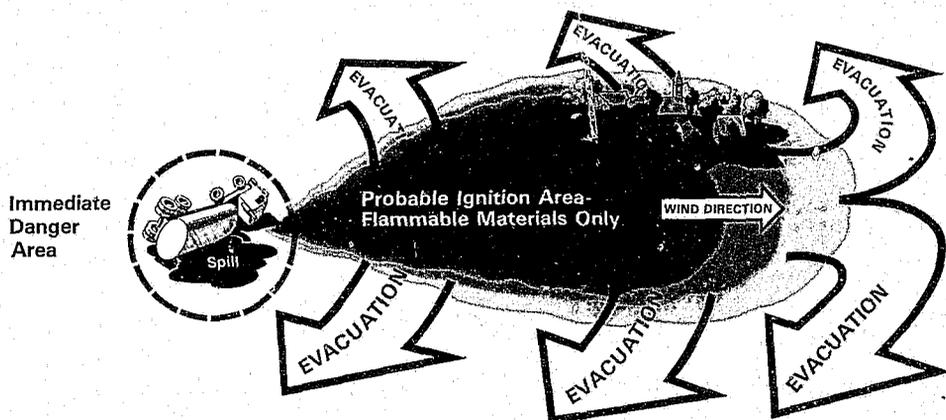
For Assistance Call Chemtrec toll free (800) 424-9300  
 In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and Alaska, call (202) 483-7616.

### Additional Follow-up Action

- For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:
  - Your location and phone number.
  - Location of the accident.
  - Name of product and shipper, if known.
  - The color and number on any labels on the carrier or cargo.
  - Type of environment (populated, rural, business, etc.)
  - Availability of water supply.
- Adjust evacuation area according to wind changes and observed effect on population.

### Water Pollution Control

- Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



Evacuation Table — Based on Prevailing Wind of 6-12 mph.

Approximate Size of Spill	Distance to Evacuate From Immediate Danger Area	For Maximum Safety, Downwind Evacuation Area Should Be
200 square feet	70 yards ( 84 paces)	1,584 feet long, 1,056 feet wide
400 square feet	100 yards (120 paces)	4,224 feet long, 1,584 feet wide
600 square feet	125 yards (150 paces)	3,168 feet long, 2,112 feet wide
800 square feet	150 yards (180 paces)	3,696 feet long, 4,224 feet wide

In the event of an explosion, the minimum safe distance from flying fragments is 2,000 feet in all directions.

# Methyl Bromide

(Poisonous)



## Potential Hazards

---

Fire:— Cannot catch fire.

Health:— Liquid causes burns to skin and eyes. Absorption by clothes or shoes may cause delayed burns.

- Vapors extremely irritating.
- *Vapors may be fatal if inhaled.*
- Runoff may pollute water supply.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible, wear self-contained breathing apparatus and full protective clothing.
- Keep upwind and estimate *Immediate Danger Area*.
- Evacuate according to *Evacuation Table*.

## Immediate Follow-up Action

---

Fire:— Move containers from fire area if without risk.  
— Cool containers with water if exposed to fire.

Spill or Leak:— Do not touch spilled liquid.  
— Stop leak if without risk.  
— Isolate area until gas has dispersed.  
— Do not use rubber boots or rubber protective clothing.

First Aid:— Remove victim to fresh air. Call for emergency medical care. *Effects of contact or inhalation may be delayed.*

- If victim is not breathing, give artificial respiration.  
If breathing is difficult, give oxygen.
- If victim contacted material, immediately flush skin or eyes with running water *for at least 15 minutes*.
- Remove contaminated clothes.
- Keep victim warm and quiet.

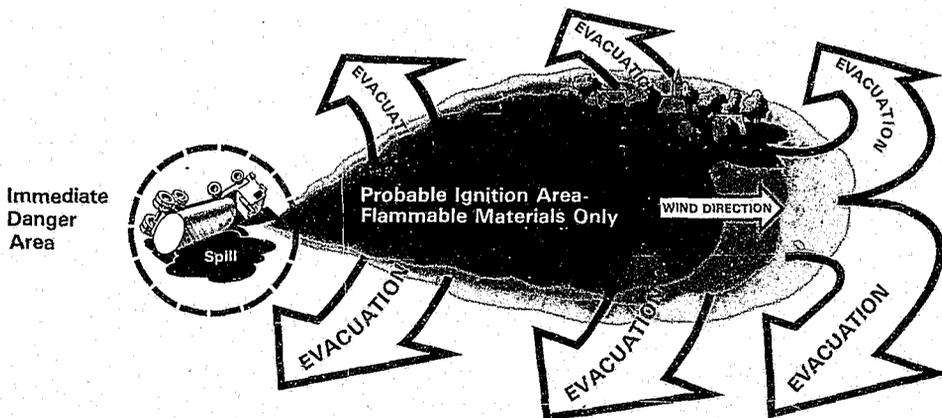
For Assistance Call Chemtrec toll free (800) 424-9300  
 In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and  
 Alaska, call (202) 483-7616.

### Additional Follow-up Action

- For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:
  - Your location and phone number.
  - Location of the accident.
  - Name of product and shipper, if known.
  - The color and number on any labels on the carrier or cargo.
  - Weather conditions.
  - Type of environment (populated, rural, business, etc.)
  - Availability of water supply.
- Adjust evacuation area according to wind changes and observed effect on population.

### Water Pollution Control

- Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



Evacuation Table — Based on Prevailing Wind of 6-12 mph.

Approximate Size of Spill	Distance to Evacuate From Immediate Danger Area	For Maximum Safety, Downwind Evacuation Area Should Be
200 square feet	25 yards (30 paces)	528 feet long, 528 feet wide
400 square feet	35 yards (42 paces)	1,056 feet long, 528 feet wide
600 square feet	45 yards (54 paces)	1,056 feet long, 528 feet wide
800 square feet	50 yards (60 paces)	1,056 feet long, 528 feet wide

**Caution:** Although Methyl Bromide does not form an explosive mixture, the container in which it is shipped may explode under pressure from a fire. For maximum safety, evacuate 2,000 feet in all directions.

# Methyl Chloride

(Flammable Gas)



## Potential Hazards

---

Fire: — Highly flammable.  
— Flammable vapors may spread from spill.

Explosion: — Container may explode due to heat of fire.  
— Gas explosion hazard indoors, outdoors or in sewers.

Health: — Contact with liquid may cause burns to skin and eyes.  
— Vapors indoors may cause dizziness or suffocation.  
— Fire may produce irritating or poisonous gases.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible, wear self-contained breathing apparatus and full protective clothing.
- Eliminate all open flames. No smoking. No flares. Keep internal combustion engines at *least* 20 yards away from spill.
- Keep upwind. Isolate hazard area.
- Evacuate by *at least* 2,000 feet.

## Immediate Follow-up Action

---

- Fire: — Let burn unless leak can be stopped immediately.
- **Small Fire:** Dry chemical or CO<sub>2</sub>.
  - **Large Fire:** Water spray or fog.
  - Move containers from fire area if without risk.
  - Cool containers with water from *maximum distance* until well after fire is out. Apply water from sides of tank.
  - For massive fire in cargo area, use unmanned hose holder or monitor nozzles. If this is impossible withdraw from area and let fire burn.
  - Stay away from ends of tanks.
  - Withdraw immediately in case of rising sound from venting safety device.

Spill or Leak: — Do not touch spilled liquid.  
— Stop leak if without risk.  
— Use water spray to reduce vapors.  
— Isolate area until gas has dispersed.

First Aid: — Remove victim to fresh air.  
— Use standard first aid procedures.

For Assistance Call Chemtrec toll free (800) 424-9300  
In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and  
Alaska, call (202) 483-7616.

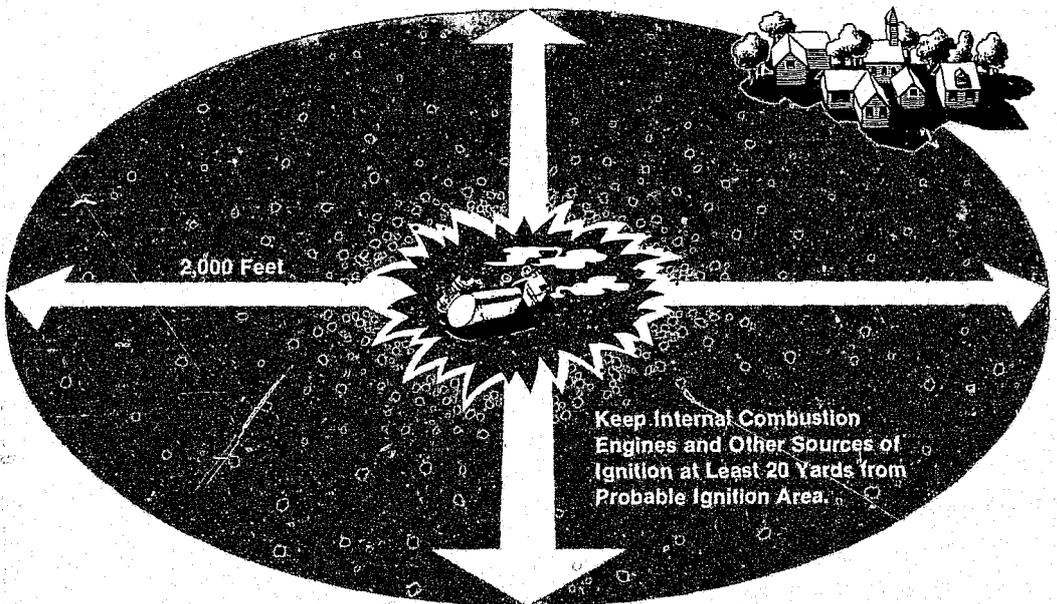
### **Additional Follow-up Action**

—For more detailed assistance in controlling the hazard, call Chemtrec  
(Chemical Transportation Emergency Center) toll free (800) 424-9300.  
You will be asked for the following information:

- Your location and phone number.
- Location of the accident.
- Name of product and shipper, if known.
- The color and number on any labels on the carrier or cargo.
- Weather conditions.
- Type of environment (populated, rural, business, etc.)
- Availability of water supply.

### **Water Pollution Control**

—Prevent runoff from fire control or dilution water from entering streams or  
drinking water supply. Dike for later disposal. Notify Coast Guard or  
Environmental Protection Agency of the situation through Chemtrec or your  
local authorities.



**In Case of Explosion, the Minimum Safe  
Distance from Flying Fragments is 2,000 Feet  
In All Directions.**

# Methyl Ethyl Ether

(Flammable Gas)



## Potential Hazards

---

Fire:—Highly flammable.

- Flammable vapors may spread from spill.

Explosion:—Container may explode due to heat of fire.

- Gas explosion hazard indoors, outdoors or in sewers.

Health:—Vapors indoors may cause dizziness or suffocation.

- Contact with liquid may cause burns to skin and eyes.

## Immediate Action

---

- Get helper and notify local authorities.

- If possible, wear self-contained breathing apparatus and full protective clothing.

- Eliminate all open flames. No smoking, No flares. Keep internal combustion engines *at least* 25 yards away from spill.

- Evacuate by *at least* 2,000 feet.

## Immediate Follow-up Action

---

Fire:—Let burn unless leak can be stopped immediately.

- Small Fire:** Dry chemical or CO<sub>2</sub>.

- Large Fire:** Water spray or fog.

- Move containers from fire area if without risk.

- Cool containers with water from *maximum distance* until well after fire is out. Apply water from sides of tank.

- For massive fire in cargo area, use unmanned hose holder or monitor nozzles. If this is impossible, withdraw from area and let fire burn.

- Stay away from ends of tanks.

- Withdraw immediately in case of rising sound from venting safety device.

Spill or Leak:—Do not touch spilled liquid.

- Stop leak if without risk.

- Use water spray to reduce vapors.

- Isolate area until gas has dispersed.

First Aid:—Remove victim to fresh air.

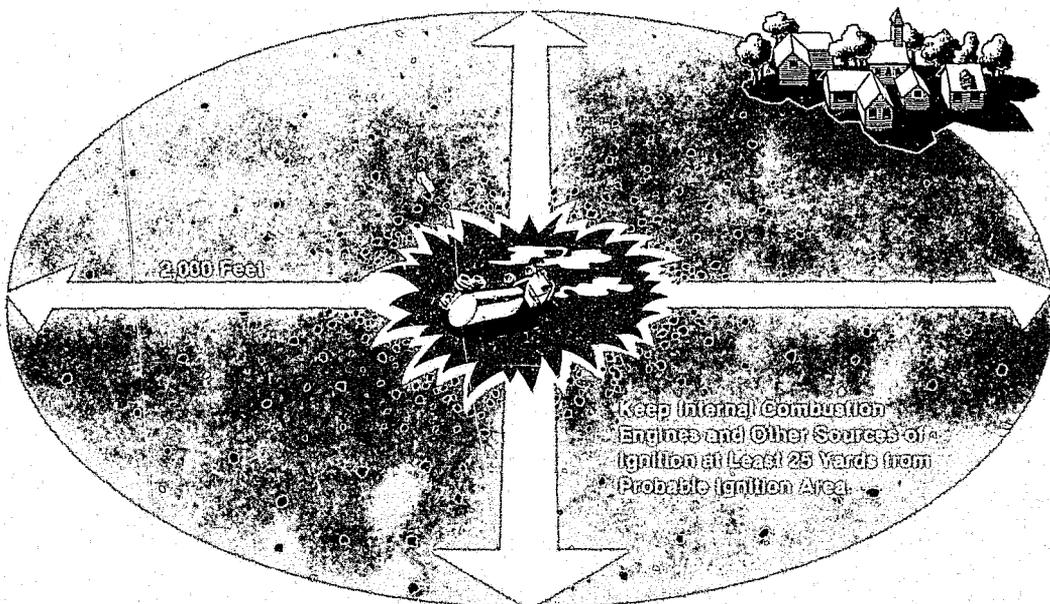
- Use standard first aid procedures.

For Assistance Call Chemtrec toll free (800) 424-9300  
In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and  
Alaska, call (202) 483-7616.

### **Additional Follow-up Action**

—For more detailed assistance in controlling the hazard, call Chemtrec  
(Chemical Transportation Emergency Center) toll free (800) 424-9300.  
You will be asked for the following information:

- Your location and phone number.
- Location of the accident.
- Name of product and shipper, if known.
- The color and number on any labels on the carrier or cargo.
- Weather conditions.
- Type of environment (populated, rural, business, etc.)
- Availability of water supply.



**In Case of Explosion, the Minimum Safe  
Distance from Flying Fragments is 2,000 Feet  
In All Directions.**

# Methyl Mercaptan

(Flammable Gas)



## Potential Hazards

---

- Fire:— Highly flammable.  
— Flammable vapors may spread from spill.

- Explosion:— Container may explode due to heat of fire.  
— Gas explosion hazard indoors, outdoors or in sewers.

- Health:— Vapors indoors may cause dizziness or suffocation.  
— Contact with liquid may cause burns to skin and eyes.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible, wear self-contained breathing apparatus and full protective clothing.
- Eliminate all open flames. No smoking. No flares. Keep internal combustion engines at *least 20 yards* away from vapor cloud.
- Keep upwind and estimate *Immediate Danger Area*.
- Evacuate according to *Evacuation Table*.

## Immediate Follow-up Action

---

- Fire:— Let burn unless leak can be stopped immediately.
- **Small Fire:** Dry chemical or CO<sub>2</sub>.
  - **Large Fire:** Water spray or fog.
  - Move containers from fire area if without risk.
  - Cool containers with water from *maximum distance* until well after fire is out. Apply water from sides of tank.
  - For massive fire in cargo area, use unmanned hose holder or monitor nozzles. If this is impossible, withdraw from area and let fire burn.
  - Stay away from ends of tanks.
  - Withdraw immediately in case of rising sound from venting safety device.

- Spill or Leak:— Do not touch spilled liquid.
- Stop leak if without risk.
  - Use water spray to reduce vapors.
  - Isolate area until gas has dispersed.

- First Aid:— Remove victim to fresh air.  
— Use standard first aid procedures.

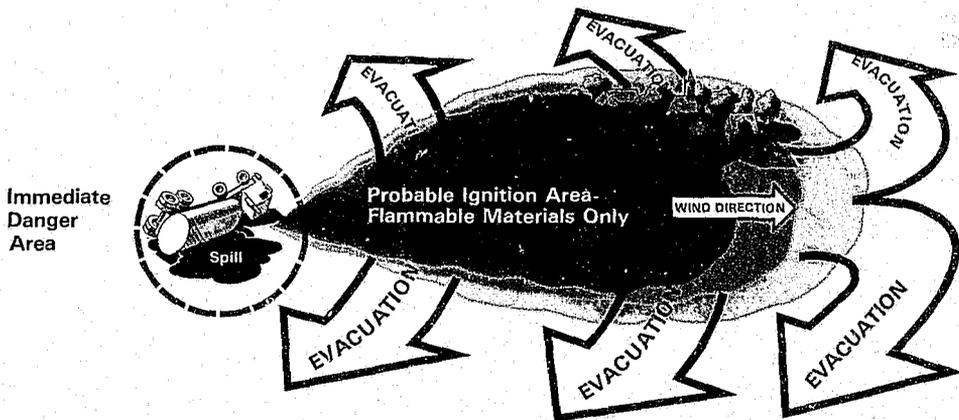
For Assistance Call Chemtrec toll free (800) 424-9300  
 In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and Alaska, call (202) 483-7616.

**Additional Follow-up Action**

- For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:
  - Your location and phone number.
  - Location of the accident.
  - Name of product and shipper, if known.
  - The color and number on any labels on the carrier or cargo.
  - Weather conditions.
  - Type of environment (populated, rural, business, etc.)
  - Availability of water supply.
- Adjust evacuation area according to wind changes and observed effect on population.

**Water Pollution Control**

- Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



**Evacuation Table — Based on Prevailing Wind of 6-12 mph.**

Approximate Size of Spill	Distance to Evacuate From Immediate Danger Area	For Maximum Safety, Downwind Evacuation Area Should Be
200 square feet	50 yards (60 paces)	1,056 feet long, 528 feet wide
400 square feet	70 yards (84 paces)	1,584 feet long, 1,056 feet wide
600 square feet	90 yards (108 paces)	2,112 feet long, 1,584 feet wide
800 square feet	100 yards (120 paces)	4,224 feet long, 1,584 feet wide

In the event of an explosion, the minimum safe distance from flying fragments is 2,000 feet in all directions.

# Monomethylamine

(Flammable Gas, Corrosive)



## Potential Hazards

---

- Fire: — Highly flammable.  
— Flammable vapors may spread from spill.

- Explosion: — Container may explode due to heat of fire.  
— Gas explosion hazard indoors, outdoors or in sewers.

- Health: — Vapors extremely irritating. Contact may cause burns to skin and eyes.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible, wear self-contained breathing apparatus and full protective clothing.
- Eliminate all open flames. No smoking. No flares. Keep internal combustion engines at *least* 20 yards away from vapor cloud.
- Keep upwind and estimate *Immediate Danger Area*.
- Evacuate according to *Evacuation Table*.

## Immediate Follow-up Action

---

- Fire: — Let burn unless leak can be stopped immediately.
- **Small Fire:** Dry chemical or CO<sub>2</sub>.
  - **Large Fire:** Water spray or fog.
  - Move containers from fire area if without risk.
  - Cool containers with water from *maximum distance* until well after fire is out. Apply water from sides of tanks.
  - For massive fire in cargo area, use unmanned hose holder or monitor nozzles. If this is impossible, withdraw from area and let fire burn.
  - Stay away from ends of tanks.

- Spill or Leak: — Do not touch spilled liquid.  
— Stop leak if without risk.  
— Use water spray to reduce vapors.  
— Isolate area until gas has dispersed.

- First Aid: — Remove victim to fresh air. Call for emergency medical care.
- If victim is not breathing give artificial respiration. If breathing is difficult, give oxygen.
  - If victim contacted material, immediately flush skin or eyes with running water *for at least 15 minutes*.
  - Remove contaminated clothes.
  - Keep victim warm and quiet.

For Assistance Call Chemtrec toll free (800) 424-9300  
 In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and  
 Alaska, call (202) 483-7616.

### Additional Follow-up Action

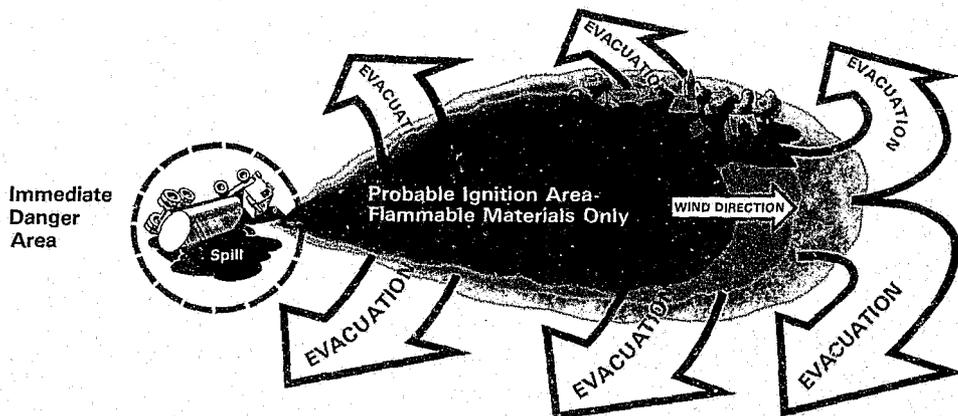
—For more detailed assistance in controlling the hazard, call Chemtrec  
 (Chemical Transportation Emergency Center) toll free (800) 424-9300.  
 You will be asked for the following information:

- Your location and phone number.
- Location of the accident.
- Name of product and shipper, if known.
- The color and number on any labels on the carrier or cargo.
- Type of environment (populated, rural, business, etc.)
- Availability of water supply.

—Adjust evacuation area according to wind changes and observed effect on  
 population.

### Water Pollution Control

—Prevent runoff from fire control or dilution water from entering streams or  
 drinking water supply. Dike for later disposal. Notify Coast Guard or  
 Environmental Protection Agency of the situation through Chemtrec or your  
 local authorities.



Evacuation Table — Based on Prevailing Wind of 6-12 mph.

Approximate Size of Spill	Distance to Evacuate From Immediate Danger Area	For Maximum Safety, Downwind Evacuation Area Should Be
200 square feet	70 yards ( 84 paces)	1,584 feet long, 1,056 feet wide
400 square feet	100 yards (120 paces)	4,224 feet long, 1,584 feet wide
600 square feet	125 yards (150 paces)	3,168 feet long, 2,112 feet wide
800 square feet	150 yards (180 paces)	3,696 feet long, 4,224 feet wide

In the event of an explosion, the minimum safe distance from flying fragments  
 is 2,000 feet in all directions.

# Nitric Acid, Fuming

(Oxidizer, Corrosive, Poisonous)



## Potential Hazards

---

Fire:—May ignite combustibles.

Explosion:—Mixtures with fuels may explode.  
—Runoff may create fire or explosion hazard in sewer system.

Health:—Contact may cause burns to skin and eyes.  
—*Vapors may be fatal if inhaled.*  
—Runoff may pollute water supply.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible, wear self-contained breathing apparatus and full protective clothing.
- Keep upwind and estimate *Immediate Danger Area*.
- Evacuate according to *Evacuation Table*.

## Immediate Follow-up Action

---

Fire:—**Small Fire:** Dry chemical or CO<sub>2</sub>.  
—**Large Fire:** Water spray or fog.  
—Move containers from area if without risk.  
—Cool containers with water from *maximum distance* until well after fire is out.  
—For massive fire in cargo area, use unmanned hose holder or monitor nozzles.

Spill or Leak:—Do not touch spilled material.  
—Stop leak if without risk.  
—Keep combustibles away from spilled material.  
—Use water spray to reduce vapors.  
—**Small Spills:** Take up with sand, earth or other noncombustible, absorbent material.  
—**Large Spills:** Dilute with large amounts of water and dike for later disposal.  
—Isolate area until gas has dispersed.

First Aid:—Remove victim to fresh air. Call for emergency medical care. *Effects of contact or inhalation may be delayed.*  
—If victim is not breathing, give artificial respiration.  
—If breathing is difficult, give oxygen.  
—If victim contacted material, immediately flush skin or eyes with running water for *at least 15 minutes*.  
—Remove contaminated clothes.  
—Keep victim warm and quiet.

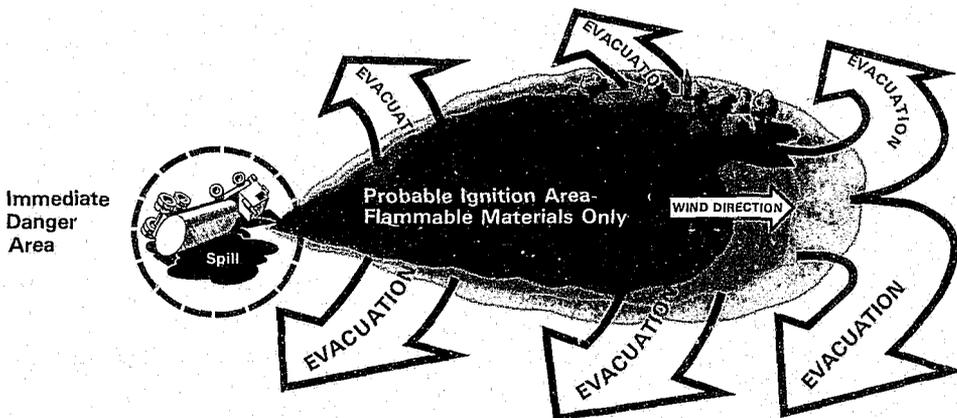
For Assistance Call Chemtrec toll free (800) 424-9300  
 In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and Alaska, call (202) 483-7616.

### Additional Follow-up Action

- For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:
  - Your location and phone number.
  - Location of the accident.
  - Name of product and shipper, if known.
  - The color and number on any labels on the carrier or cargo.
  - Weather conditions.
  - Type of environment (populated, rural, business, etc.)
  - Availability of water supply.
- Adjust evacuation area according to wind changes and observed effect on population.

### Water Pollution Control

- Nitric Acid is water soluble and can kill fish. Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Runoff to storm sewers or sanitary system is acceptable if a water deluge and/or flooding is possible. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



Evacuation Table — Based on Prevailing Wind of 6-12 mph.

Approximate Size of Spill	Distance to Evacuate From Immediate Danger Area	For Maximum Safety, Downwind Evacuation Area Should Be
200 square feet	65 yards (78 paces)	1,528 feet long, 1,056 feet wide
400 square feet	100 yards (120 paces)	4,224 feet long, 1,584 feet wide
600 square feet	120 yards (144 paces)	3,168 feet long, 2,112 feet wide
800 square feet	140 yards (168 paces)	3,696 feet long, 2,112 feet wide

In the event of an explosion, the minimum safe distance from flying fragments is 2,000 feet in all directions.

# Nitrogen Tetroxide

(Oxidizer, Corrosive, Poisonous)



## Potential Hazards

---

Fire:—May ignite combustibles.

Explosion:—Mixtures with fuels may explode.  
—Runoff may create fire or explosion hazard in sewer system.

Health:—Contact may cause burns to skin and eyes.  
—*Vapors may be fatal if inhaled.*  
—Runoff may pollute water supply.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible, wear self-contained breathing apparatus and full protective clothing.
- Keep upwind and estimate *Immediate Danger Area*.
- Evacuate according to *Evacuation Table*.

## Immediate Follow-up Action

---

- Fire:—**Small Fire:** Dry chemical or CO<sub>2</sub>.  
—**Large Fire:** Water spray or fog.  
—Cool containers with water from *maximum distance* until well after fire is out.  
—For massive fire in cargo area, use unmanned hose holder or monitor nozzles.

- Spill or Leak:—Do not touch spilled material.  
—Stop leak if without risk.  
—Keep combustibles away from spilled material.  
—Use water spray to reduce vapors.  
—**Small Spills:** Take up with sand, earth or other noncombustible, absorbent material.  
—**Large Spills:** Dilute with large amounts of water and dike for later disposal.  
—Isolate area until gas has dispersed.

- First Aid:—Remove victim to fresh air. Call for emergency medical care. *Effects of contact or inhalation may be delayed.*  
—If victim is not breathing, give artificial respiration.  
  If breathing is difficult, give oxygen.  
—If victim contacted material, immediately flush skin or eyes with running water *for at least 15 minutes*.  
—Remove contaminated clothes.  
—Keep patient warm and quiet.

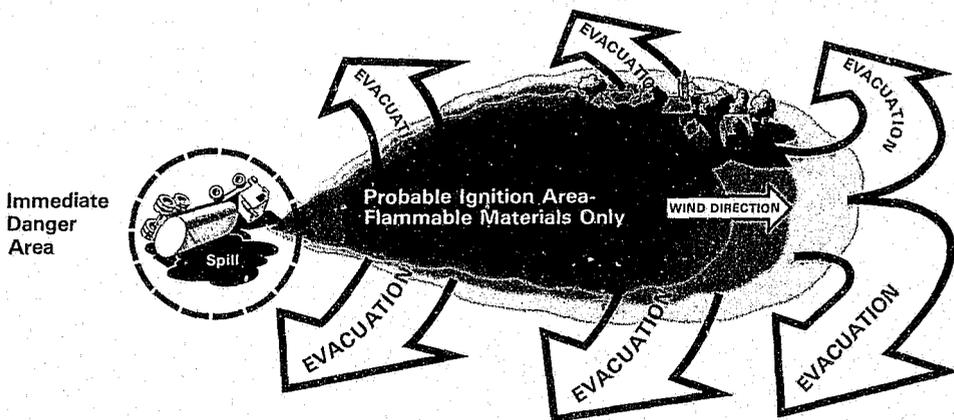
For Assistance Call Chemtrec toll free (800) 424-9300  
 In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and  
 Alaska, call (202) 483-7616.

### Additional Follow-up Action

- For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:
  - Your location and phone number.
  - Location of the accident.
  - Name of product and shipper, if known.
  - The color and number on any labels on the carrier or cargo.
  - Weather conditions.
  - Type of environment (populated, rural, business, etc.)
  - Availability of water supply.
- Adjust evacuation area according to wind changes and observed effect on population.

### Water Pollution Control

- Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Evaporation of the material to the air at its slow, natural rate is preferable to flooding, which will produce large clouds of fumes. Residue may be flushed to storm drain or sanitary system. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



Evacuation Table — Based on Prevailing Wind of 6-12 mph.

Approximate Size of Spill	Distance to Evacuate From Immediate Danger Area	For Maximum Safety, Downwind Evacuation Area Should Be
200 square feet	70 yards (84 paces)	1,584 feet long, 1,056 feet wide
400 square feet	100 yards (120 paces)	4,224 feet long, 1,584 feet wide
600 square feet	125 yards (150 paces)	3,168 feet long, 2,112 feet wide
800 square feet	150 yards (180 paces)	3,696 feet long, 4,224 feet wide

In the event of an explosion, the minimum safe distance from flying fragments is 2,000 feet in all directions.

# Oleum/Sulfur Trioxide

(Corrosive, Poisonous)



## Potential Hazards

---

Fire:—May ignite combustibles.

Explosion:—Explosive concentrations of gas may accumulate in tanks containing acid.

Health:—Contact with material will cause severe burns to skin and eyes. *If inhaled, may be harmful.*  
—Runoff may pollute water supply.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible, wear self-contained breathing apparatus and full protective clothing.
- Keep upwind and estimate *Immediate Danger Area*.
- Evacuate according to *Evacuation Table*.

## Immediate Follow-up Action

---

- Fire:—**Small Fire:** Dry chemical or CO<sub>2</sub>.  
—**Large Fire:** Water spray or fog.  
—Move containers from fire area if without risk.  
—Cool containers with water from *maximum distance* until well after fire is out.  
—Do not get water inside container.

- Spill or Leak:—Do not touch spilled material.  
—Stop leak if without risk.  
—Use water spray to reduce vapors.  
—**Small Spills:** Flush area with water spray or fog.  
—**Large Spills:** Dilute with large amounts of water spray or fog and dike for later disposal.  
—Isolate area until gas has dispersed.  
—Do not get water inside container.

- First Aid:—Remove victim to fresh air. Call for emergency medical care.  
—If victim is not breathing give artificial respiration.  
  If breathing is difficult, give oxygen.  
—If victim contacted material, *immediately wipe off excess quantities with cloth*, then flush skin or eyes with running water *for at least 15 minutes*.  
—Keep victim warm and quiet.

For Assistance Call Chemtrec toll free (800) 424-9300

In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and Alaska, call (202) 483-7616.

### Additional Follow-up Action

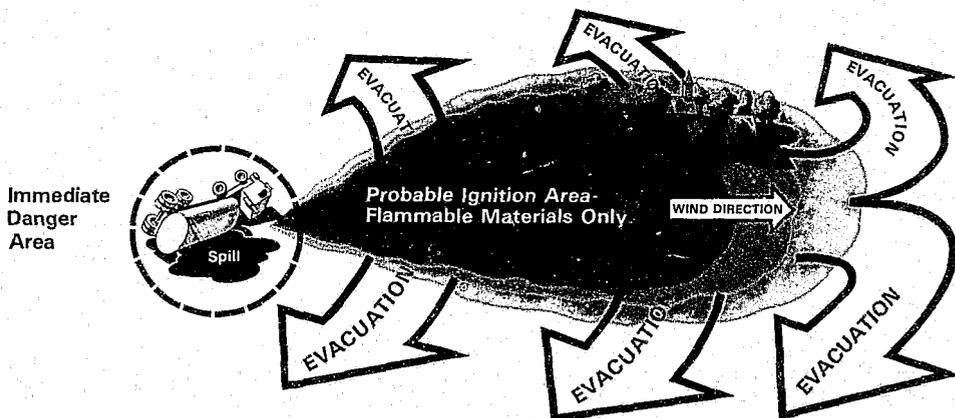
— For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:

- Your location and phone number.
- Location of the accident.
- Name of product and shipper, if known.
- The color and number on any labels on the carrier or cargo.
- Weather conditions.
- Type of environment (populated, rural, business, etc.)
- Availability of water supply.

— Adjust evacuation area according to wind changes and observed effect on population.

### Water Pollution Control

— Oleum/Sulfur Trioxide is water soluble and can kill fish. Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



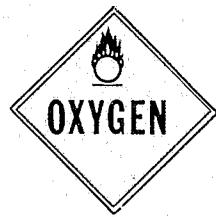
Evacuation Table — Based on Prevailing Wind of 6-12 mph.

Approximate Size of Spill	Distance to Evacuate From Immediate Danger Area	For Maximum Safety, Downwind Evacuation Area Should Be
200 square feet	185 yards (222 paces)	1 mile long, 1/2 mile wide
400 square feet	268 yards (322 paces)	1 1/2 miles long, 1 mile wide
600 square feet	332 yards (268 paces)	2 miles long, 1 mile wide
800 square feet	387 yards (465 paces)	2 miles long, 1 mile wide

In the event of an explosion, the minimum safe distance from flying fragments is 2,000 feet in all directions.

# Oxygen, Liquid

(Oxidizer)



## Potential Hazards

---

- Fire:—Materials may ignite in oxygen vapor.  
—Automobile engine may catch fire in oxygen atmosphere.
- Explosion:—Container may explode due to heat of fire.  
—Mixtures with fuels may explode.  
—Gas explosion hazard indoors, outdoors or in sewers.
- Health:—Contact with liquid may cause burns to skin and eyes.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible, wear full protective clothing.
- Eliminate all open flames. No smoking. No flares. Keep internal combustion engines away from vapor cloud area.
- Keep upwind. Isolate hazard area.
- Evacuate by at least 2,000 feet.

## Immediate Follow-up Action

---

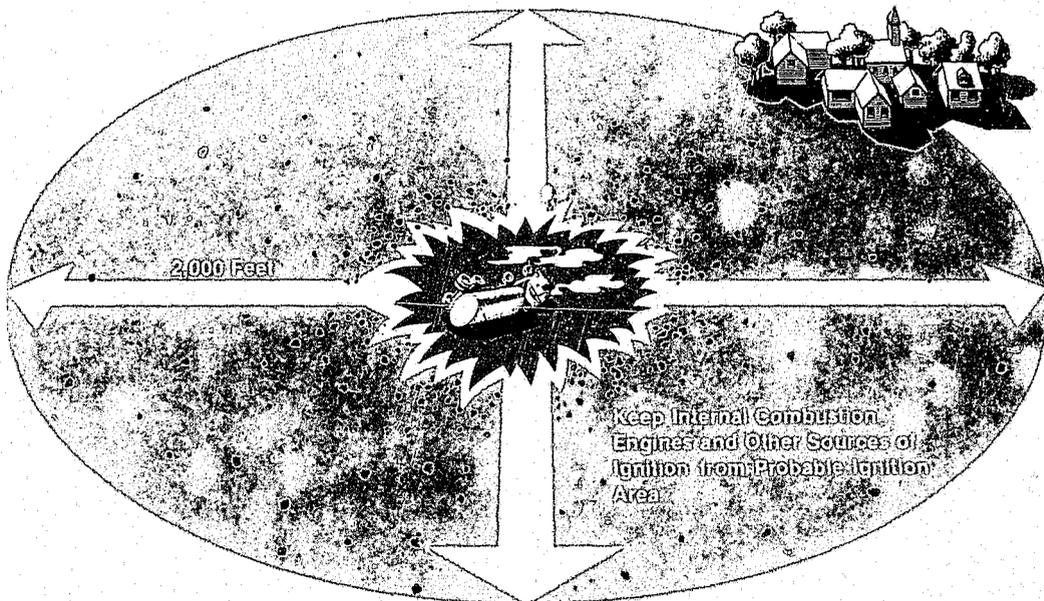
- Fire:—**Small Fire:** Dry chemical or CO<sub>2</sub>.  
—**Large Fire:** Foam or water.  
—Move containers from fire area if without risk.  
—Cool containers with water from *maximum distance* until well after fire is out.  
—For massive fire in cargo area, use unmanned hose holder or monitor nozzles. If this is impossible, withdraw from area and let fire burn.
- Spill or Leak:—Do not touch spilled liquid.  
—Stop leak if without risk.  
—Keep combustibles away from spilled material.  
—Isolate area until gas has dispersed.
- First Aid:—Remove victim to fresh air.  
—Remove contaminated clothes.  
—Use standard first aid procedures.

For Assistance Call Chemtrec toll free (800) 424-9300  
In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and  
Alaska, call (202) 483-7616.

### **Additional Follow-up Action**

—For more detailed assistance in controlling the hazard, call Chemtrec  
(Chemical Transportation Emergency Center) toll free (800) 424-9300.  
You will be asked for the following information:

- Your location and phone number.
- Location of the accident.
- Name of product and shipper, if known.
- The color and number on any labels on the carrier or cargo.
- Weather conditions.
- Type of environment (populated, rural, business, etc.)
- Availability of water supply.



**In Case of Explosion, the Minimum Safe  
Distance from Flying Fragments is 2,000 Feet  
in All Directions.**

# Phosgene

(Nonflammable Gas, Poisonous)



## Potential Hazards

---

Fire:— Cannot catch fire.

Explosion:— Container may explode due to heat of fire.

Health:— Contact causes burns to skin and eyes.

- Vapors may be fatal if inhaled.
- Runoff may pollute water supply.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible wear self-contained breathing apparatus and full protective clothing.
- Keep upwind and estimate *Immediate Danger Area*.
- Evacuate according to *Evacuation Table*.

## Immediate Follow-up Action

---

- Fire:— Move containers from fire area if without risk.
- Cool containers with water from *maximum distance* until well after fire is out.
  - Do not get water inside container.

- Spill or Leak:— Do not touch spilled material.
- Stop leak if without risk.
  - Use water spray to reduce vapors.
  - Isolate area until gas has dispersed.
  - Do not get water inside container.

- First Aid:— Remove victim to fresh air. Call for emergency medical care.
- If victim is not breathing, give artificial respiration. If breathing is difficult, give oxygen.
  - If victim contacted material, immediately flush skin or eyes with running water for *at least 15 minutes*.
  - Remove contaminated clothes.
  - Keep victim warm and quiet.

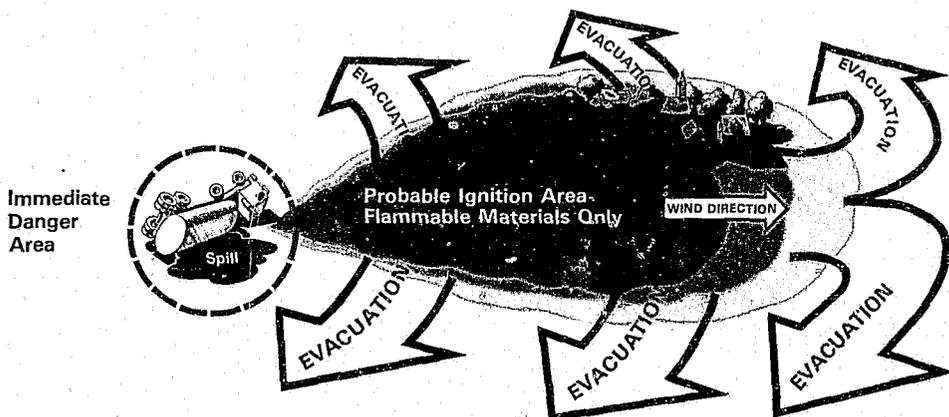
For Assistance Call Chemtrec toll free (800) 424-9300  
 In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and  
 Alaska, call (202) 483-7616.

### Additional Follow-up Action

- For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:
  - Your location and phone number.
  - Location of the accident.
  - Name of product and shipper, if known.
  - The color and number on any labels on the carrier or cargo.
  - Weather conditions.
  - Type of environment (populated, rural, business, etc.)
  - Availability of water supply.
- Adjust evacuation area according to wind changes and observed effect on population.

### Water Pollution Control

- Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Evaporation of the material at its slow, natural rate is preferable to flooding with water any warmer than 45°, which will increase the quantity of fumes. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



Evacuation Table — Based on Prevailing Wind of 6-12 mph.

Approximate Size of Spill	Distance to Evacuate From Immediate Danger Area	For Maximum Safety, Downwind Evacuation Area Should Be
200 square feet	390 yards (468 paces)	2 miles long, 1 1/10 miles wide
400 square feet	570 yards (684 paces)	3 1/2 miles long, 2 miles wide
600 square feet	700 yards (840 paces)	4 1/2 miles long, 2 1/2 miles wide
800 square feet	820 yards (984 paces)	5 miles long, 3 miles wide

In the event of an explosion, the minimum safe distance from flying fragments is 2,000 feet in all directions.

# Phosphorus Trichloride

(Corrosive, Poisonous)



## Potential Hazards

---

Fire:— Cannot catch fire.

Explosion:— Contact with water may form flammable and poisonous gas and cause explosions.

Health:— Liquid causes burns to skin and eyes.

- Vapors extremely irritating.
- *Vapors may be fatal if inhaled.*
- Runoff may pollute water supply.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible, wear self-contained breathing apparatus and full protective clothing.
- Keep upwind and estimate *Immediate Danger Area*.
- Evacuate according to *Evacuation Table*.

## Immediate Follow-up Action

---

Fire:— Move containers from fire area if without risk.

- Cool containers with water from *maximum distance* until well after fire is out.
- Do not get water inside containers.

Spill or Leak:— **Large Spill:** Use flooding amounts of water on the entire spill.

- **Small Spill:** Absorb with dry sand or soda ash.
- Do not touch spilled liquid.
- Stop leak if without risk.
- Do not get water inside containers.

First Aid:— Remove victim to fresh air. Call for emergency medical care. *Effects of contact or inhalation may be delayed.*

- If victim is not breathing, give artificial respiration. If breathing is difficult, give oxygen.
- If victim contacted material, immediately flush skin or eyes with water for *at least 15 minutes*.
- Remove contaminated clothes.
- Keep victim warm and quiet.

For Assistance Call Chemtrec toll free (800) 424-9300

In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and Alaska, call (202) 483-7616.

### Additional Follow-up Action

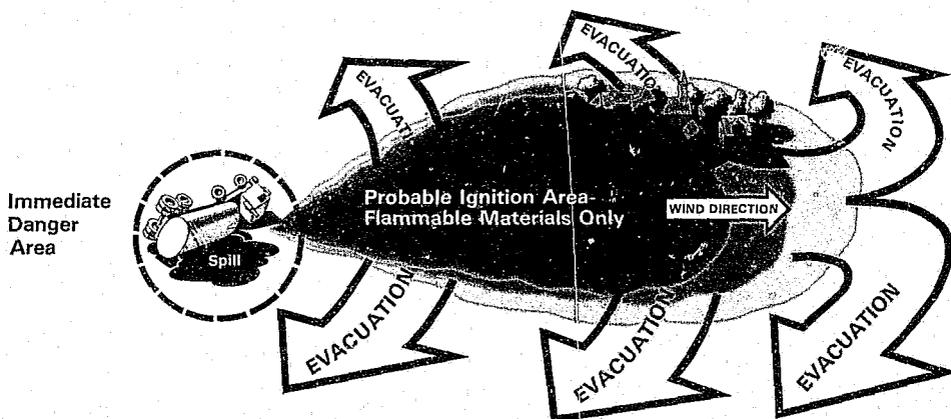
—For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:

- Your location and phone number.
- Location of the accident.
- Name of product and shipper, if known.
- The color and number on any labels on the carrier or cargo.
- Weather conditions.
- Type of environment (populated, rural, business, etc.)
- Availability of water supply.

—Adjust evacuation area according to wind changes and observed effect on population.

### Water Pollution Control

—Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



Evacuation Table — Based on Prevailing Wind of 6-12 mph.

Approximate Size of Spill	Distance to Evacuate From Immediate Danger Area	For Maximum Safety, Downwind Evacuation Area Should Be
200 square feet	70 yards ( 84 paces)	1,584 feet long, 1,056 feet wide
400 square feet	100 yards (120 paces)	1/2 mile long, 1/3 mile wide
600 square feet	125 yards (150 paces)	2/3 mile long, 1/2 mile wide
800 square feet	150 yards (180 paces)	3/4 mile long, 1/2 mile wide
In the event of an explosion, the minimum safe distance from flying fragments is 2,000 feet in all directions.		

# Propane/LPG

(Flammable Gas)



## Potential Hazards

Fire:— May be ignited by heat, sparks, flames.  
— Flammable vapors may spread from spill.

Explosion:— Container may explode due to heat of fire.  
— Gas explosion hazard indoors, outdoors or in sewers.

Health:— Contact with liquid may cause burns to skin and eyes.  
— Vapors indoors may cause dizziness or suffocation.

## Immediate Action

- Get helper and notify local authorities.
- If possible, wear full protective clothing.
- Eliminate all open flames. No smoking. No flares. Keep internal combustion engines at *least* 35 yards away from vapor cloud.
- Keep upwind. Isolate hazard area.
- Evacuate by *at least* 2,000 feet.

## Immediate Follow-up Action

- Fire:— Let burn unless leak can be stopped immediately.
- **Small Fire:** Dry chemical or CO<sub>2</sub>.
  - **Large Fire:** Water spray or fog.
  - Move containers from fire area if without risk.
  - Cool containers with water from *maximum distance* until well after fire is out. Apply water from sides of tank.
  - For massive fire in cargo area, use unmanned hose holder or monitor nozzles. If this is impossible, withdraw from area and let fire burn.
  - Stay away from ends of tanks.
  - Withdraw immediately in case of rising sound from venting safety device.

Spill or Leak:— Do not touch spilled liquid.  
— Stop leak if without risk.  
— Isolate area until gas has dispersed.

First Aid:— Remove victim to fresh air.  
— Use standard first aid procedures.

For Assistance Call Chemtrec toll free (800) 424-9300

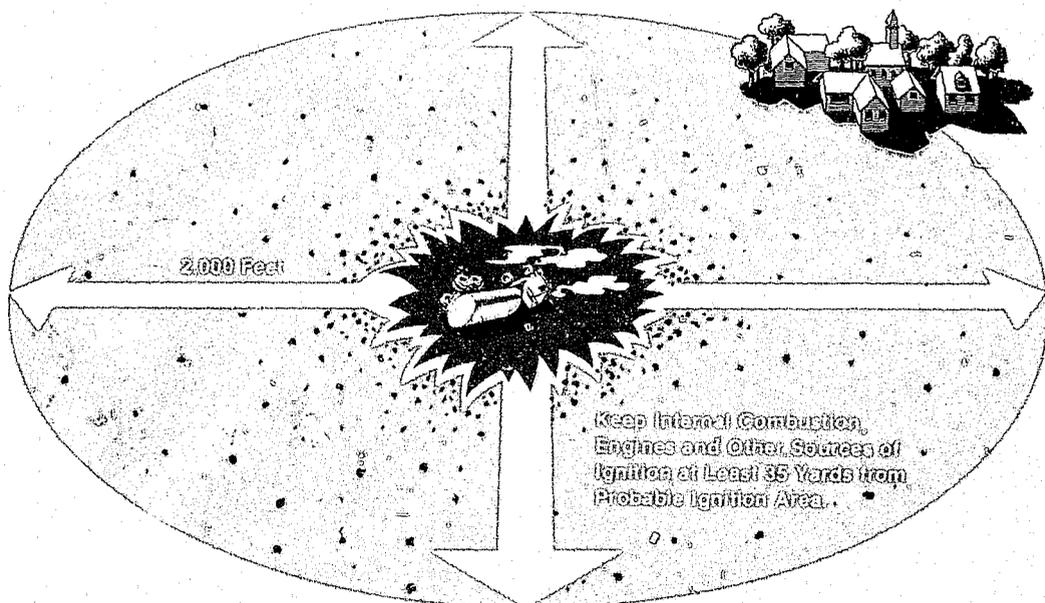
In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and Alaska, call (202) 483-7616.

### **Additional Follow-up Action**

—For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300.

You will be asked for the following information:

- Your location and phone number.
- Location of the accident.
- Name of product and shipper, if known.
- The color and number on any labels on the carrier or cargo.
- Weather conditions.
- Type of environment (populated, rural, business, etc.)
- Availability of water supply.



**In Case of Explosion, the Minimum Safe Distance from Flying Fragments is 2,000 Feet In All Directions.**

# Sulfur Dioxide

(Nonflammable Gas, Corrosive)



## Potential Hazards

---

Fire:—Cannot catch fire.

Explosion:—Container may explode due to heat of fire.

Health:—Vapors extremely irritating. Contact may cause burns to skin and eyes. *If inhaled, may be harmful.*

—Runoff may pollute water supply.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible, wear self-contained breathing apparatus and full protective clothing.
- Keep upwind and estimate *Immediate Danger Area*.
- Evacuate according to *Evacuation Table*.

## Immediate Follow-up Action

---

Fire:—Move containers from fire area if without risk.

—Cool tank with water if exposed to fire.

Spill or Leak:—**Large Spill:** Dilute with large amounts of water and dike for later disposal.

—**Small Spill:** Flush area with water spray or fog.

—Stop leak if without risk.

—Use water spray to reduce vapors.

—Isolate area until gas has dispersed.

First Aid:—Remove victim to fresh air. Call for emergency medical care.

—If victim is not breathing, give artificial respiration.

    If breathing is difficult, give oxygen.

—If victim contacted material, immediately flush skin or eyes with running water *for at least 15 minutes*.

—Remove contaminated clothes.

—Keep victim warm and quiet.

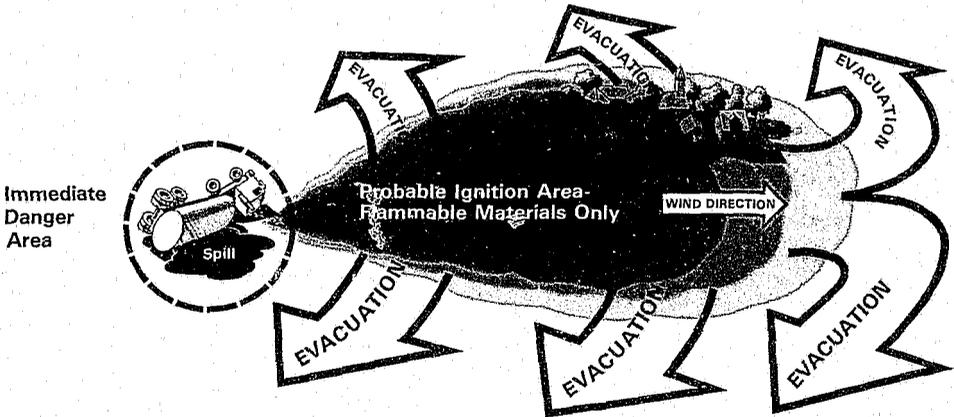
For Assistance Call Chemtrec toll free (800) 424-9300  
 In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and  
 Alaska, call (202) 483-7616.

**Additional Follow-up Action**

- For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:
  - Your location and phone number.
  - Location of the accident.
  - Name of product and shipper, if known.
  - The color and number on any labels on the carrier or cargo.
  - Weather conditions.
  - Type of environment (populated, rural, business, etc.)
  - Availability of water supply.
- Adjust evacuation area according to wind changes and observed effect on population.

**Water Pollution Control**

- Sulfur Dioxide is water soluble and can kill fish. Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



**Evacuation Table — Based on Prevailing Wind of 6-12 mph.**

Approximate Size of Spill	Distance to Evacuate From Immediate Danger Area	For Maximum Safety, Downwind Evacuation Area Should Be
200 square feet	70 yards ( 84 paces)	1,584 feet long, 1,056 feet wide
400 square feet	100 yards (120 paces)	1/2 mile long, 1,584 feet wide
600 square feet	125 yards (150 paces)	3/4 mile long, 1/2 mile wide
800 square feet	145 yards (174 paces)	3/4 mile long, 1/2 mile wide

In the event of an explosion, the minimum safe distance from flying fragments is 2,000 feet in all directions.

# Sulfur Trioxide

(Corrosive, Poisonous)



## Potential Hazards

---

Fire:—May ignite combustibles.

Explosion:—Explosive concentrations of gas may accumulate in tanks containing acid.

Health:—Contact with material will cause severe burns to skin and eyes. *If inhaled, may be harmful.*  
—Runoff may pollute water supply.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible, wear self-contained breathing apparatus and full protective clothing.
- Keep upwind and estimate *Immediate Danger Area*.
- Evacuate according to *Evacuation Table*.

## Immediate Follow-up Action

---

- Fire:—**Small Fire:** Dry chemical or CO<sub>2</sub>.  
—**Large Fire:** Water spray or fog.  
—Move containers from fire area if without risk.  
—Cool containers with water from *maximum distance* until well after fire is out.  
—Do not get water inside container.

- Spill or Leak:—Do not touch spilled material.  
—Stop leak if without risk.  
—Use water spray to reduce vapors.  
—**Small Spills:** Flush area with water spray or fog.  
—**Large Spills:** Dilute with large amounts of water spray or fog and dike for later disposal.  
—Isolate area until gas has dispersed.  
—Do not get water inside container.

- First Aid:—Remove victim to fresh air. Call for emergency medical care.  
—If victim is not breathing give artificial respiration.  
  If breathing is difficult, give oxygen.  
—If victim contacted material, *immediately wipe off excess quantities with cloth*, then flush skin or eyes with running water *for at least 15 minutes*.  
—Keep victim warm and quiet.

For Assistance Call Chemtrec toll free (800) 424-9300

In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and Alaska, call (202) 483-7616.

**Additional Follow-up Action**

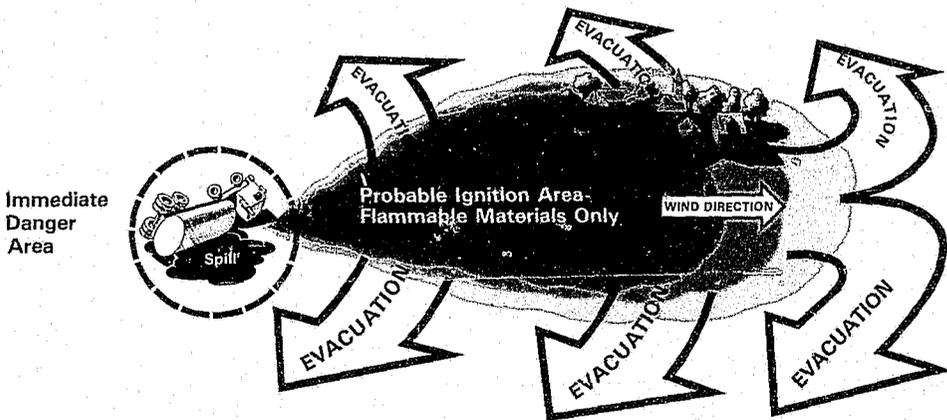
—For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:

- Your location and phone number.
- Location of the accident.
- Name of product and shipper, if known.
- The color and number on any labels on the carrier or cargo.
- Weather conditions.
- Type of environment (populated, rural, business, etc.)
- Availability of water supply.

—Adjust evacuation area according to wind changes and observed effect on population.

**Water Pollution Control**

—Sulfur Trioxide is water soluble and can kill fish. Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



**Evacuation Table — Based on Prevailing Wind of 6-12 mph.**

Approximate Size of Spill	Distance to Evacuate From Immediate Danger Area	For Maximum Safety, Downwind Evacuation Area Should Be
200 square feet	185 yards (222 paces)	1 mile long, 1/2 mile wide
400 square feet	268 yards (322 paces)	1 1/2 miles long, 1 mile wide
600 square feet	332 yards (268 paces)	2 miles long, 1 mile wide
800 square feet	387 yards (465 paces)	2 miles long, 1 mile wide

In the event of an explosion, the minimum safe distance from flying fragments is 2,000 feet in all directions.

# Titanium Tetrachloride

(Corrosive)



## Potential Hazard

Fire:—Cannot catch fire.

Health:—Fumes in air react violently with water to form Hydrogen Chloride gas.  
—Vapors extremely irritating. Contact may cause burns to skin and eyes. *If inhaled, may be harmful.*  
—Runoff may pollute water supply.

## Immediate Action

- Get helper and notify authorities.
- If possible, wear self-contained breathing apparatus and full protective clothing.
- Keep upwind and estimate *Immediate Danger Area*.
- Evacuate according to *Evacuation Table*.

## Immediate Follow-up Action

Fire:—Move containers from fire area if without risk.  
—Cool containers with water from *maximum distance* until well after fire is out.  
—Do not use water to fight fire involving this material.  
—Do not get water inside containers.

Spill or Leak:—**Large Spills:** Dike for later disposal.  
—Do not touch spilled material.  
—Stop leak if without risk.  
—Cover spills with dry sand or soda ash. After removal, flush area with water.  
—Isolate area until gas has dispersed.  
—Do not get water inside containers.

First Aid:—Remove victim to fresh air. Call for emergency medical care. *Effects of contact or inhalation may be delayed.*  
—If victim is not breathing, give artificial respiration. If breathing is difficult, give oxygen.  
—If victim contacted material, immediately wipe off excess quantities with cloth, then flush skin or eyes with running water for at least 15 minutes.  
—Remove contaminated clothes.  
—Keep victim warm and quiet.

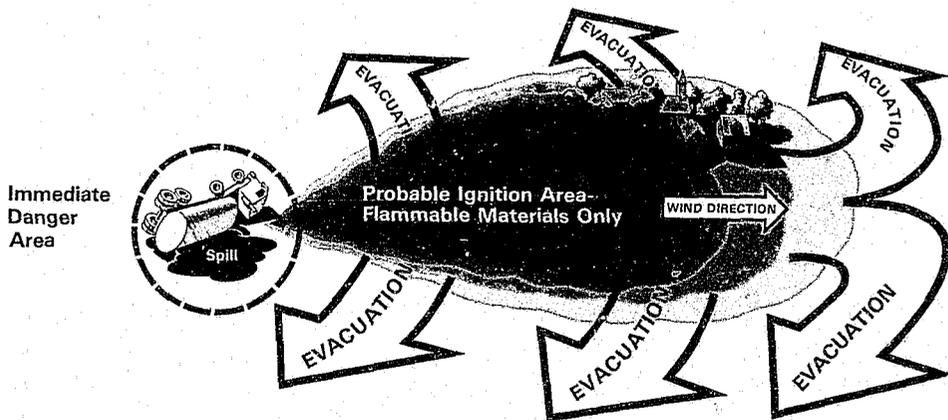
For Assistance Call Chemtrec toll free (800) 424-9300  
 In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and Alaska, call (202) 483-7616.

### Additional Follow-up Action

- For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:
  - Your location and phone number.
  - Location of the accident.
  - Name of product and shipper, if known.
  - The color and number on any labels on the carrier or cargo.
  - Weather conditions.
  - Type of environment (populated, rural, business, etc.)
  - Availability of water supply.
- Adjust evacuation area according to wind changes and observed effect on population.

### Water Pollution Control

- Titanium Tetrachloride is water soluble and can kill fish. Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



Evacuation Table — Based on Prevailing Wind of 6-12 mph.

Approximate Size of Spill	Distance to Evacuate From Immediate Danger Area	For Maximum Safety, Downwind Evacuation Area Should Be
200 square feet	20 yards (24 paces)	528 feet long, 528 feet wide
400 square feet	25 yards (30 paces)	528 feet long, 528 feet wide
600 square feet	30 yards (36 paces)	528 feet long, 528 feet wide
800 square feet	40 yards (48 paces)	1,056 feet long, 528 feet wide
<p><b>Caution:</b> Although Titanium Tetrachloride does not form an explosive mixture, the container in which it is shipped may explode under pressure from a fire. For maximum safety, evacuate 2,000 feet in all directions.</p>		

# Trimethylamine

(Flammable Gas, Corrosive)



## Potential Hazards

---

- Fire:— Highly flammable.  
— Flammable vapors may spread from spill.
- Explosion:— Container may explode due to heat of fire.  
— Gas explosion hazard indoors, outdoors or in sewers.
- Health:— Vapors extremely irritating. Contact may cause burns to skin and eyes.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible, wear self-contained breathing apparatus and full protective clothing.
- Eliminate all open flames. No smoking. No flares. Keep internal combustion engines at *least 20 yards* away from vapor cloud.
- Keep upwind and estimate *Immediate Danger Area*.
- Evacuate according to *Evacuation Table*.

## Immediate Follow-up Action

---

- Fire:— Let burn unless leak can be stopped immediately.
- **Small Fire:** Dry chemical or CO<sub>2</sub>.
  - **Large Fire:** Water spray or fog.
  - Move containers from fire area if without risk.
  - Cool containers with water from *maximum distance* until well after fire is out. Apply water from sides of tanks.
  - For massive fire in cargo area, use unmanned hose holder or monitor nozzles. If this is impossible, withdraw from area and let fire burn.
  - Stay away from ends of tanks.
- Spill or Leak:— Do not touch spilled liquid.
- Stop leak if without risk.
  - Use water spray to reduce vapors.
  - Isolate area until gas has dispersed.
- First Aid:— Remove victim to fresh air. Call for emergency medical care.
- If victim is not breathing give artificial respiration. If breathing is difficult, give oxygen.
  - If victim contacted material, immediately flush skin or eyes with running water *for at least 15 minutes*.
  - Remove contaminated clothes.
  - Keep victim warm and quiet.

For Assistance Call Chemtrec toll free (800) 424-9300

In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and Alaska, call (202) 483-7616.

### Additional Follow-up Action

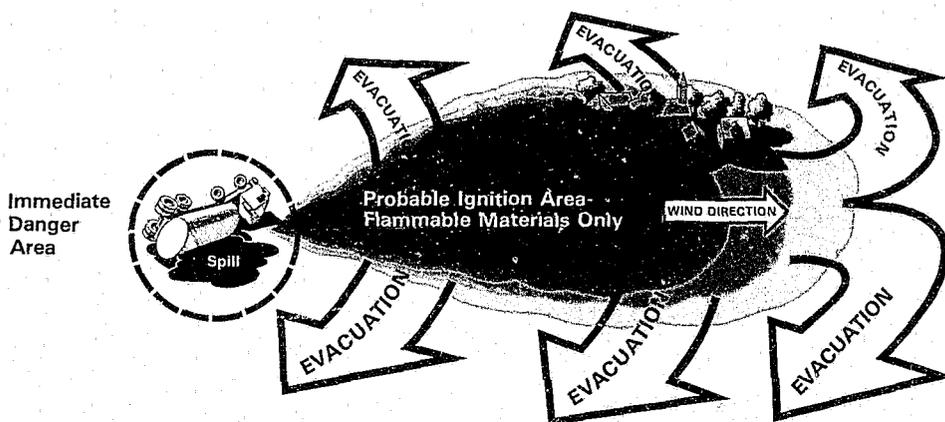
—For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300. You will be asked for the following information:

- Your location and phone number.
- Location of the accident.
- Name of product and shipper, if known.
- The color and number on any labels on the carrier or cargo.
- Type of environment (populated, rural, business, etc.)
- Availability of water supply.

—Adjust evacuation area according to wind changes and observed effect on population.

### Water Pollution Control

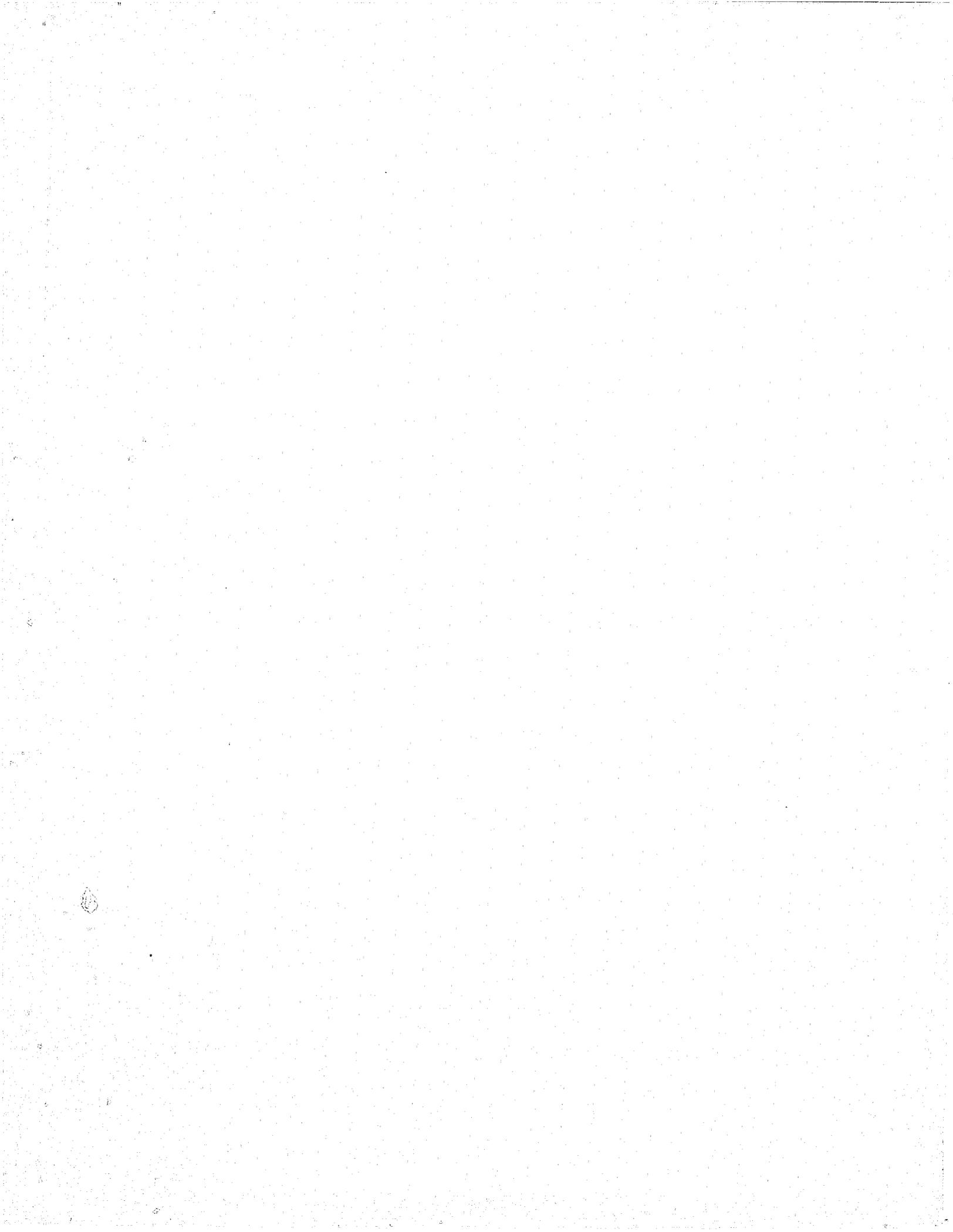
—Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



Evacuation Table — Based on Prevailing Wind of 6-12 mph.

Approximate Size of Spill	Distance to Evacuate From Immediate Danger Area	For Maximum Safety, Downwind Evacuation Area Should Be
200 square feet	70 yards ( 84 paces)	1,584 feet long, 1,056 feet wide
400 square feet	100 yards (120 paces)	4,224 feet long, 1,584 feet wide
600 square feet	125 yards (150 paces)	3,168 feet long, 2,112 feet wide
800 square feet	150 yards (180 paces)	3,696 feet long, 4,224 feet wide

In the event of an explosion, the minimum safe distance from flying fragments is 2,000 feet in all directions.



**CONTINUED**

**1 OF 2**

# Vinyl Chloride

(Flammable Gas)



## Potential Hazards

---

Fire:—Highly flammable.  
—Flammable vapors may spread from spill.

Explosion:—Container may explode due to heat of fire.  
—Gas explosion hazard indoors, outdoors or in sewers.

Health:—Contact with liquid may cause burns to skin and eyes.  
—Vapors indoors may cause dizziness or suffocation.  
—Fire may produce irritating or poisonous gases.

## Immediate Action

---

- Get helper and notify local authorities.
- If possible, wear self-contained breathing apparatus and full protective clothing.
- Eliminate all open flames. No smoking. No flares. Keep internal combustion engines *at least* 20 yards away from vapor cloud.
- Keep upwind. Isolate hazard area.
- Evacuate by *at least* 2,000 feet.

## Immediate Follow-up Action

---

- Fire:—Let burn unless leak can be stopped immediately.
- Small Fire:** Dry chemical or CO<sub>2</sub>.
  - Large Fire:** Water spray or fog.
  - Move containers from fire area if without risk.
  - Cool containers with water from *maximum distance* until well after fire is out. Apply water from sides of tank.
  - For massive fire in cargo area, use unmanned hose holder or monitor nozzles. If this is impossible, withdraw from area and let fire burn.
  - Stay away from ends of tanks.
  - Withdraw immediately in case of rising sound from venting safety device.

Spill or Leak:—Do not touch spilled liquid.  
—Stop leak if without risk.  
—Use water spray to reduce vapors.  
—Isolate area until gas has dispersed.

First Aid:—Remove victim to fresh air.  
—Use standard first aid procedures.

For Assistance Call Chemtrec toll free (800) 424-9300

In the District of Columbia, the Virgin Islands, Guam, Samoa, Puerto Rico and Alaska, call (202) 483-7616.

### **Additional Follow-up Action**

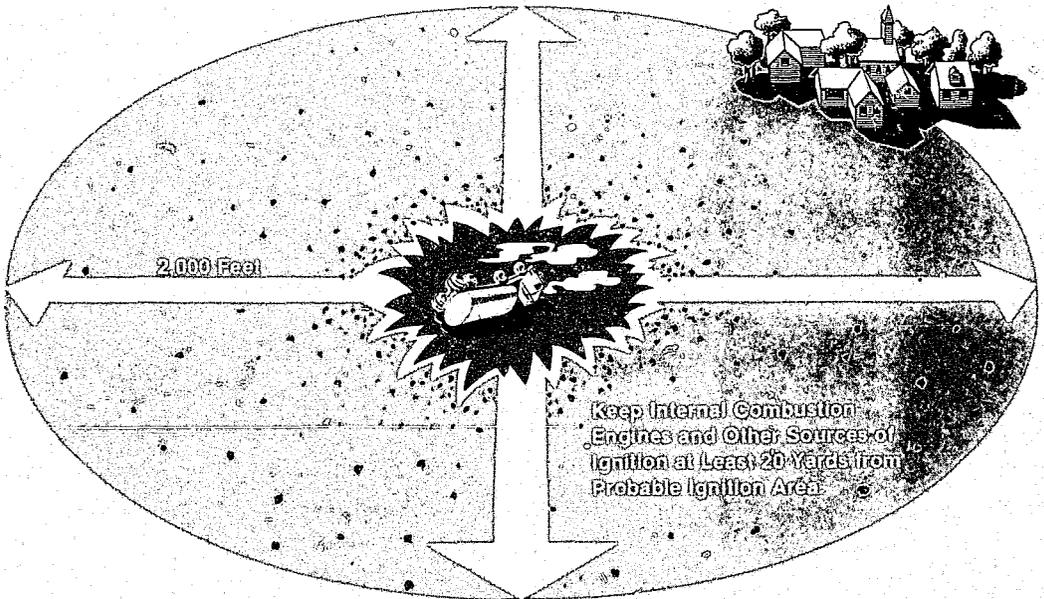
—For more detailed assistance in controlling the hazard, call Chemtrec (Chemical Transportation Emergency Center) toll free (800) 424-9300.

You will be asked for the following information:

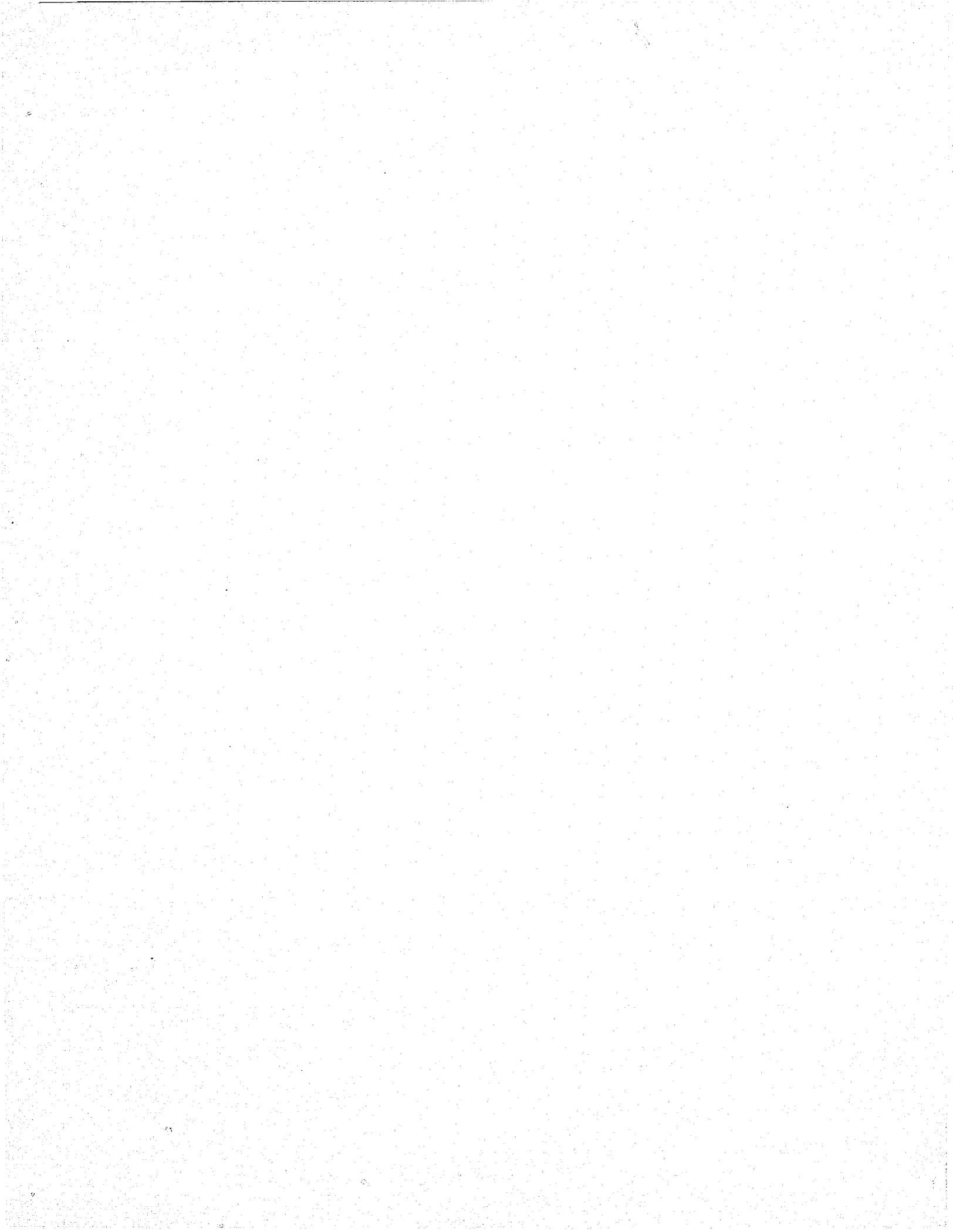
- Your location and phone number.
- Location of the accident.
- Name of product and shipper, if known.
- The color and number on any labels on the carrier or cargo.
- Weather conditions.
- Type of environment (populated, rural, business, etc.)
- Availability of water supply.

### **Water Pollution Control**

—Prevent runoff from fire control or dilution water from entering streams or drinking water supply. Dike for later disposal. Notify Coast Guard or Environmental Protection Agency of the situation through Chemtrec or your local authorities.



**In Case of Explosion, the Minimum Safe Distance from Flying Fragments is 2,000 Feet In All Directions.**



**END**