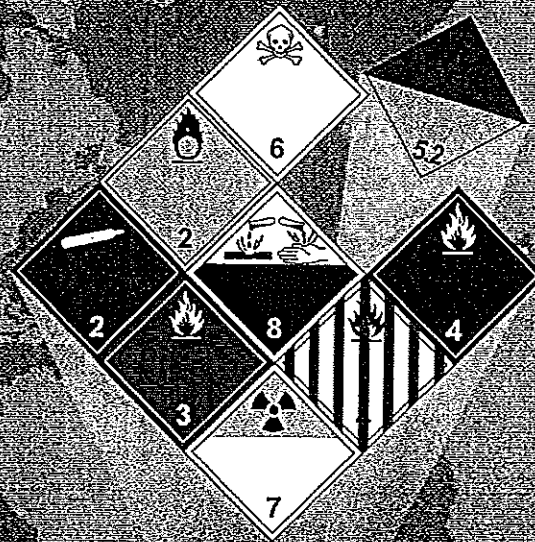


# 2008 Emergency Response Guidebook



A GUIDEBOOK  
FOR FIRST RESPONDERS  
DURING THE INITIAL PHASE  
OF A DANGEROUS GOODS/  
HAZARDOUS MATERIALS  
TRANSPORTATION INCIDENT

DISTRIBUTION STATEMENT A: Approved for public release; distribution is unlimited.

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**GUIDE  
131****FLAMMABLE LIQUIDS - TOXIC**

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**POTENTIAL HAZARDS****HEALTH**

- **TOXIC**; may be fatal if inhaled, ingested or absorbed through skin.
- Inhalation or contact with some of these materials will irritate or burn skin and eyes.
- Fire will produce irritating, corrosive and/or toxic gases.
- Vapors may cause dizziness or suffocation.
- Runoff from fire control or dilution water may cause pollution.

**FIRE OR EXPLOSION**

- **HIGHLY FLAMMABLE**: Will be easily ignited by heat, sparks or flames.
- Vapors may form explosive mixtures with air.
- Vapors may travel to source of ignition and flash back.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapor explosion and poison hazard indoors, outdoors or in sewers.
- Those substances designated with a "P" may polymerize explosively when heated or involved in a fire.
- Runoff to sewer may create fire or explosion hazard.
- Containers may explode when heated.
- Many liquids are lighter than water.

**PUBLIC SAFETY**

- **CALL** Emergency Response Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.
- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind. . . . Keep out of low areas.
- Ventilate closed spaces before entering.

**PROTECTIVE CLOTHING**

- Wear positive pressure self-contained breathing apparatus (SCBA).
- Wear chemical protective clothing that is specifically recommended by the manufacturer. It may provide little or no thermal protection.
- Structural firefighters' protective clothing provides limited protection in fire situations **ONLY**; it is not effective in spill situations where direct contact with the substance is possible.

**EVACUATION****Spill**

- See Table 1 - Initial Isolation and Protective Action Distances for highlighted materials. For non-highlighted materials, increase, in the downwind direction, as necessary, the isolation distance shown under "PUBLIC SAFETY".

**Fire**

- If tank, rail car or tank truck is involved in a fire, **ISOLATE** for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions.

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FLAMMABLE LIQUIDS - TOXIC

GUIDE  
131**EMERGENCY RESPONSE****FIRE**

**CAUTION:** All these products have a very low flash point: Use of water spray when fighting fire may be inefficient.

**Small Fire** • Dry chemical, CO<sub>2</sub>, water spray or alcohol-resistant foam.

**Large Fire**

- Water spray, fog or alcohol-resistant foam.
- Move containers from fire area if you can do it without risk.
- Dike fire-control water for later disposal; do not scatter the material.
- Use water spray or fog; do not use straight streams.

**Fire Involving Tanks or Car/Trailer Loads**

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.
- Cool containers with flooding quantities of water until well after fire is out.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.
- For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.

**SPILL OR LEAK**

- Fully encapsulating, vapor-protective clothing should be worn for spills and leaks with no fire.
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Do not touch or walk through spilled material. • Stop leak if you can do it without risk.
- Prevent entry into waterways, sewers, basements or confined areas.
- A vapor suppressing foam may be used to reduce vapors.

**Small Spill** • Absorb with earth, sand or other non-combustible material and transfer to containers for later disposal.

- Use clean non-sparking tools to collect absorbed material.

**Large Spill** • Dike far ahead of liquid spill for later disposal.

- Water spray may reduce vapor; but may not prevent ignition in closed spaces.

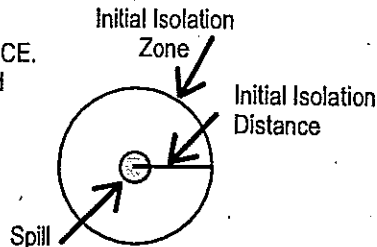
**FIRST AID**

- Move victim to fresh air. • Call 911 or emergency medical service.
- Give artificial respiration if victim is not breathing.
- Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.
- Administer oxygen if breathing is difficult.
- Remove and isolate contaminated clothing and shoes.
- In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.
- Wash skin with soap and water.
- In case of burns, immediately cool affected skin for as long as possible with cold water. Do not remove clothing if adhering to skin. • Keep victim warm and quiet.
- Effects of exposure (inhalation, ingestion or skin contact) to substance may be delayed.
- Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.

**HOW TO USE TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES**

- (1) The responder should already have:
  - Identified the material by its ID Number and Name; (if an ID Number cannot be found, use the Name of Material index in the blue-bordered pages to locate that number.)
  - Found the three-digit guide for that material in order to consult the emergency actions recommended jointly with this table;
  - **Noted the wind direction.**
- (2) Look in Table 1 (the green-bordered pages) for the ID Number and Name of the Material involved in the incident. Some ID Numbers have more than one shipping name listed—look for the specific name of the material. (If the shipping name is not known and Table 1 lists more than one name for the same ID Number, use the entry with the largest protective action distances.)
- (3) Determine if the incident involves a SMALL or LARGE spill and if DAY or NIGHT. Generally, a SMALL SPILL is one which involves a single, small package (e.g., a drum containing up to approximately 200 liters), a small cylinder, or a small leak from a large package. A LARGE SPILL is one which involves a spill from a large package, or multiple spills from many small packages. DAY is any time after sunrise and before sunset. NIGHT is any time between sunset and sunrise.

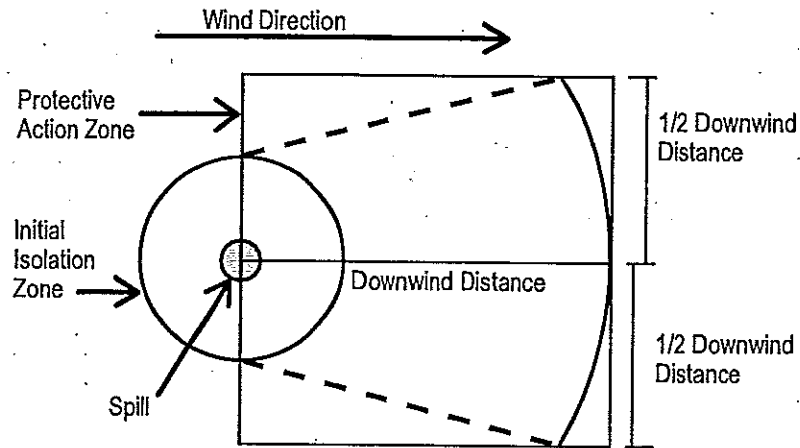
- (4) Look up the INITIAL ISOLATION DISTANCE. Direct all persons to move, in a crosswind direction, away from the spill to the distance specified—in meters and feet.



- (5) Look up the initial PROTECTIVE ACTION DISTANCE shown in Table 1. For a given material, spill size, and whether day or night, Table 1 gives the downwind distance—in kilometers and miles—for which protective actions should be considered. For practical purposes, the Protective Action Zone (i.e., the area in which people are at risk of harmful exposure) is a square, whose length and width are the same as the downwind distance shown in Table 1.

- (6) Initiate Protective Actions to the extent possible, beginning with those closest to the spill site and working away from the site in the downwind direction. When a water-reactive TIH producing material is spilled into a river or stream, the source of the toxic gas may move with the current or stretch from the spill point downstream for a substantial distance.

The shape of the area in which protective actions should be taken (the Protective Action Zone) is shown in this figure. The spill is located at the center of the small circle. The larger circle represents the INITIAL ISOLATION zone around the spill.



**NOTE 1:** See "Introduction To Table 1 - Initial Isolation And Protective Action Distances" for factors which may increase or decrease Protective Action Distances.

**NOTE 2:** See Table 2 - Water-Reactive Materials which Produce Toxic Gases for the list of gases produced when these materials are spilled in water.

Call the emergency response telephone number listed on the shipping paper, or the appropriate response agency as soon as possible for additional information on the material, safety precautions, and mitigation procedures.

TABLE 1 INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

ID No.	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package)			LARGE SPILLS (From a large package or from many small packages)		
		ISOLATE In all Directions Meters (Feet)	Then PROTECT persons Downwind during-		ISOLATE in all Directions Meters (Feet)	Then PROTECT persons Downwind during-	
			DAY Kilometers (Miles)	NIGHT Kilometers (Miles)		DAY Kilometers (Miles)	NIGHT Kilometers (Miles)
1005	Ammonia, anhydrous	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.3 km (1.4 mi)
1005	Anhydrous ammonia						
1008	Boron trifluoride	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.4 mi)	300 m (1000 ft)	1.9 km (1.2 mi)	4.8 km (3.0 mi)
1008	Boron trifluoride, compressed						
1016	Carbon monoxide	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	150 m (500 ft)	0.7 km (0.5 mi)	2.7 km (1.7 mi)
1016	Carbon monoxide, compressed						
1017	Chlorine	60 m (200 ft)	0.4 km (0.3 mi)	1.6 km (1.0 mi)	600 m (2000 ft)	3.5 km (2.2 mi)	8.0 km (5.0 mi)
1023	Coal gas	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.3 km (0.2 mi)	0.4 km (0.3 mi)
1023	Coal gas, compressed						
1026	Cyanogen	30 m (100 ft)	0.2 km (0.1 mi)	0.9 km (0.5 mi)	150 m (500 ft)	1.0 km (0.7 mi)	3.5 km (2.2 mi)
1026	Cyanogen gas						
1040	Ethylene oxide	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.8 km (0.5 mi)	2.5 km (1.6 mi)
1040	Ethylene oxide with Nitrogen						
1045	Fluorine	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	150 m (500 ft)	0.8 km (0.5 mi)	3.1 km (1.9 mi)
1045	Fluorine, compressed						
1048	Hydrogen bromide, anhydrous	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)	300 m (1000 ft)	1.5 km (1.0 mi)	4.5 km (2.8 mi)
1050	Hydrogen chloride, anhydrous	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.2 mi)	60 m (200 ft)	0.3 km (0.2 mi)	1.4 km (0.9 mi)
1051	AC (when used as a weapon)	100 m (300 ft)	0.3 km (0.2 mi)	1.1 km (0.7 mi)	1000 m (3000 ft)	3.8 km (2.4 mi)	7.2 km (4.5 mi)
1051	Cyanogen						
1051	Hydrocyanic acid, aqueous solutions, with more than 20% Hydrogen cyanide	60 m (200 ft)	0.2 km (0.1 mi)	0.6 km (0.4 mi)	400 m (1250 ft)	1.6 km (1.0 mi)	4.1 km (2.5 mi)
1051	Hydrogen cyanide, anhydrous, stabilized						
1051	Hydrogen cyanide, stabilized						
1052	Hydrogen fluoride, anhydrous	30 m (100 ft)	0.1 km (0.1 mi)	0.5 km (0.3 mi)	300 m (1000 ft)	1.7 km (1.1 mi)	3.6 km (2.2 mi)

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1053	Hydrogen sulfide	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.3 mi)	300 m (1000 ft)	2.0 km (1.3 mi)	0.2 km (0.3 mi)
1053	Hydrogen sulphide	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	150 m (500 ft)	0.7 km (0.4 mi)	2.2 km (1.4 mi)
1062	Methyl bromide	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	200 m (600 ft)	1.3 km (0.8 mi)	4.1 km (2.5 mi)
1064	Methyl mercaptan	30 m (100 ft)	0.1 km (0.1 mi)	0.4 km (0.2 mi)	400 m (1250 ft)	1.1 km (0.7 mi)	3.0 km (1.9 mi)
1067	Dinitrogen tetroxide	30 m (100 ft)	0.2 km (0.2 mi)	1.1 km (0.7 mi)	800 m (2500 ft)	4.2 km (2.6 mi)	11.0+ km (7.0+ mi)
1067	Nitrogen dioxide	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.3 km (0.2 mi)	0.4 km (0.3 mi)
1069	Nitrosyl chloride	30 m (100 ft)	1.1 km (0.7 mi)	4.0 km (2.5 mi)	1000 m (3000 ft)	7.5 km (4.7 mi)	11.0+ km (7.0+ mi)
1071	Oil gas	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	30 m (100 ft)	0.4 km (0.2 mi)	0.5 km (0.3 mi)
1071	Oil gas, compressed	30 m (100 ft)	0.2 km (0.2 mi)	0.7 km (0.5 mi)	200 m (600 ft)	1.1 km (0.7 mi)	2.6 km (1.6 mi)
1076	CG (when used as a weapon)	200 m (600 ft)	0.7 km (0.4 mi)	2.6 km (1.6 mi)	500 m (1500 ft)	3.3 km (2.0 mi)	9.7 km (6.1 mi)
1076	Diphosgene	30 m (100 ft)	0.3 km (0.2 mi)	1.2 km (0.7 mi)	400 m (1250 ft)	2.1 km (1.3 mi)	5.7 km (3.6 mi)
1076	DP (when used as a weapon)	100 m (300 ft)	0.3 km (0.2 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.4 km (0.3 mi)	1.0 km (0.6 mi)
1076	Phosgene	60 m (200 ft)	1.1 km (0.7 mi)	3.3 km (2.0 mi)	1000 m (3000 ft)	11.0+ km (7.0+ mi)	11.0+ km (7.0+ mi)
1079	Sulfur dioxide	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.6 km (0.4 mi)	1.1 km (0.7 mi)
1079	Sulphur dioxide	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.7 km (0.5 mi)	1.2 km (0.7 mi)
1082	Trifluorochloroethylene, stabilized	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.4 km (0.3 mi)	1.0 km (0.6 mi)
1092	Acrolein, stabilized	100 m (300 ft)	1.1 km (0.7 mi)	3.3 km (2.0 mi)	1000 m (3000 ft)	11.0+ km (7.0+ mi)	11.0+ km (7.0+ mi)
1098	Allyl alcohol	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.6 km (0.4 mi)	1.1 km (0.7 mi)
1135	Ethylene chlorohydrin	30 m (100 ft)	0.2 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.7 km (0.5 mi)	1.2 km (0.7 mi)
1143	Crotonaldehyde	30 m (100 ft)	0.1 km (0.1 mi)	0.1 km (0.1 mi)	60 m (200 ft)	0.4 km (0.3 mi)	0.7 km (0.5 mi)
1143	Crotonaldehyde, stabilized	30 m (100 ft)	0.1 km (0.1 mi)	0.3 km (0.2 mi)	60 m (200 ft)	0.6 km (0.4 mi)	2.0 km (1.3 mi)
1162	Dimethyldichlorosilane (when spilled in water)	30 m (100 ft)	0.2 km (0.1 mi)	0.5 km (0.3 mi)	100 m (300 ft)	1.3 km (0.8 mi)	2.4 km (1.5 mi)
1163	1,1-Dimethylhydrazine	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.4 km (0.3 mi)	0.7 km (0.5 mi)
1163	Dimethylhydrazine, unsymmetrical	30 m (100 ft)	0.2 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.4 km (0.3 mi)	0.7 km (0.5 mi)
1182	Ethyl chloroformate	30 m (100 ft)	0.1 km (0.1 mi)	0.2 km (0.1 mi)	60 m (200 ft)	0.4 km (0.3 mi)	0.7 km (0.5 mi)