Why train on HAZMAT Emergencies?

U.S. Department of Transportation
Pipeline and Hazardous Materials Safety Administration

How to Use the 2012 Emergency Response Guidebook

US DOT
Pipeline and Hazardous Materials Safety Administration

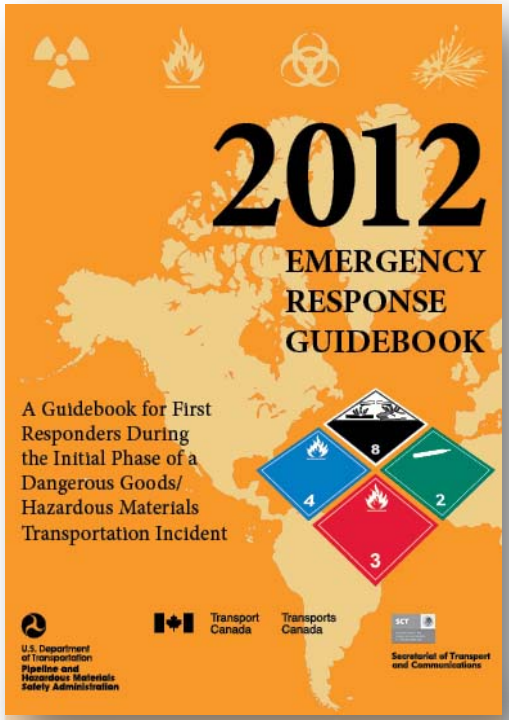
Overview

REVIEW background of Emergency Response Guidebook (ERG)

DISCUSS what is new in 2012

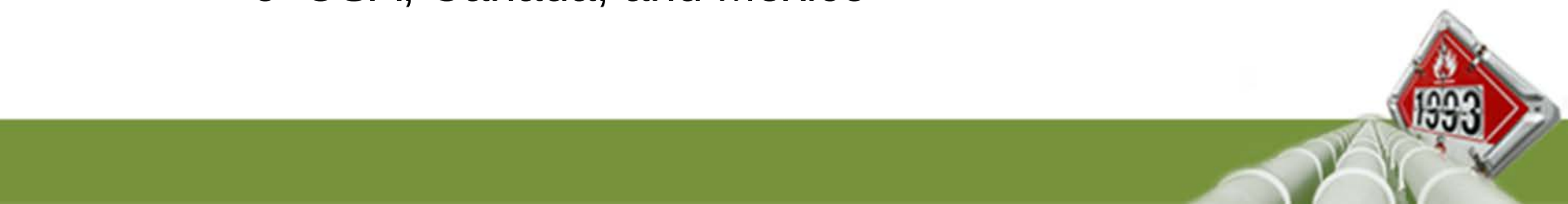
DEMONSTRATE how to Use the ERG

DISCUSS additional Resources



ERG History

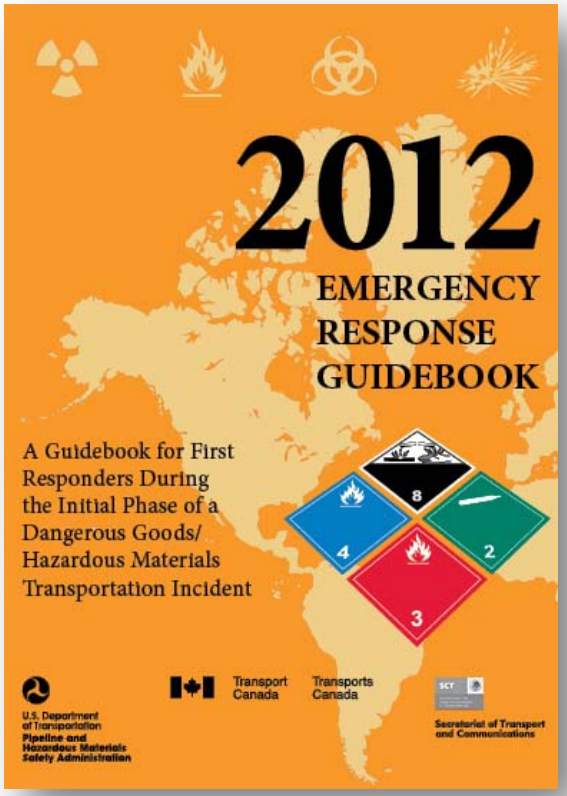
- **First Published 1973**
  - Four Year Cycle
- **Internationally Recognized Technical Guidance**
  - Translated into more than 17 Languages Including Japanese, Thai, Hebrew, and German
- **1996 and Subsequent Issues**
  - Joint Collaboration for One North American Guidebook
    - USA, Canada, and Mexico



2012 ERG

Over 2.2 million copies of the 2012 ERG printed and distributed free of charge to the Nation's First Responders

Using the ERG



Layout

- White Pages
- Bordered Pages
  - Yellow
  - Blue
  - Orange
  - Green

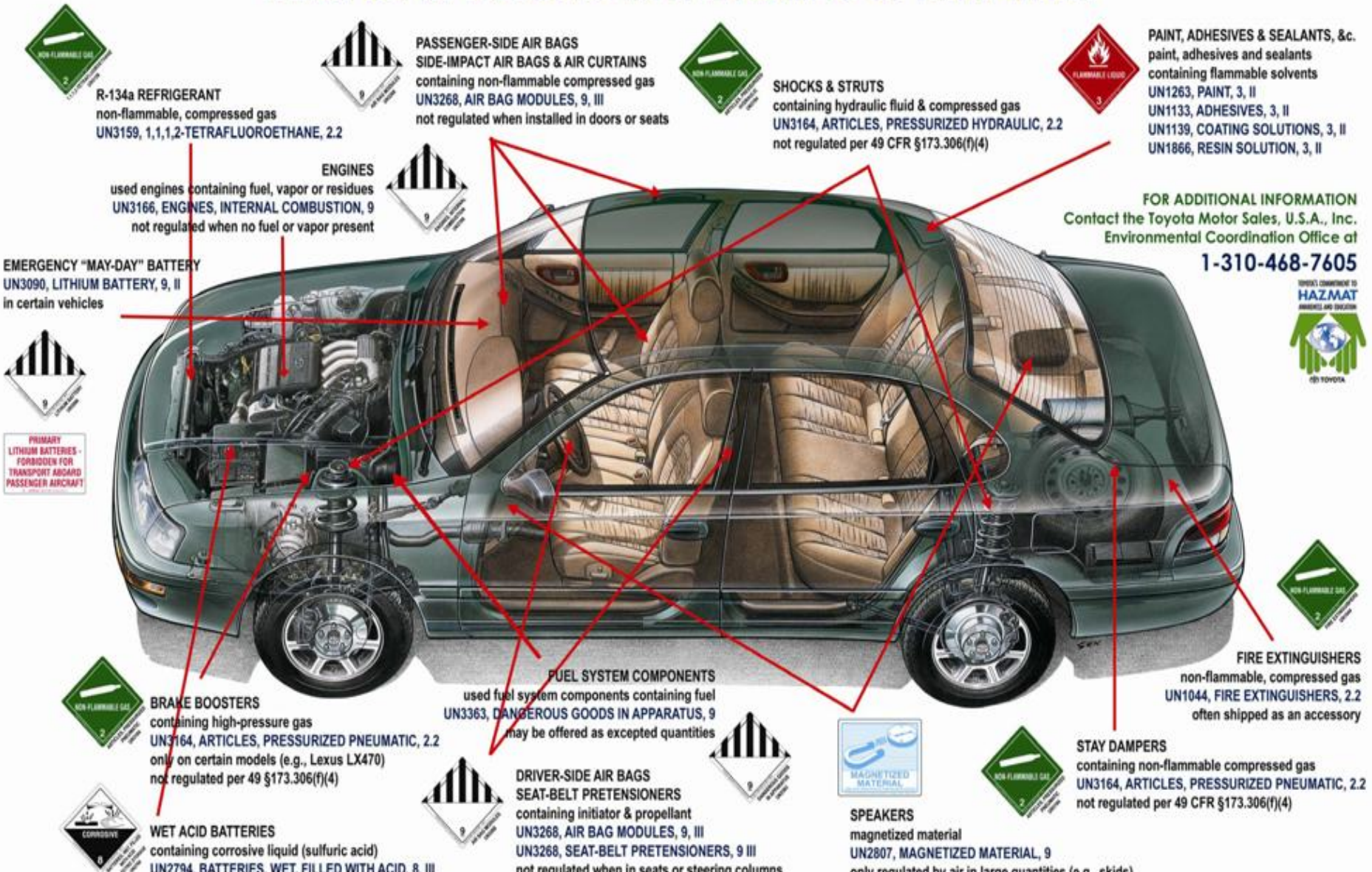
A Hazardous Materials Incident

RESIST **Rushing In!**

APPROACH **Incidents from Upwind.**

STAY **Clear of All Spills, Vapors, Fumes & Smoke**

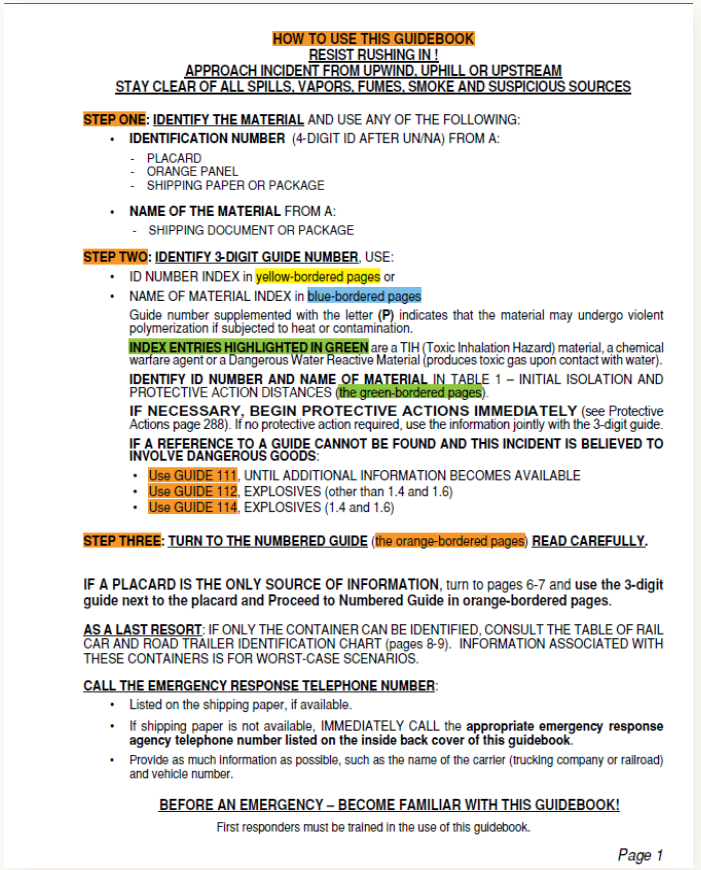
WHAT IS AN AUTOMOTIVE HAZARDOUS MATERIAL?



How to use the ERG

Three steps:

1. Identify the material
2. Look up materials 3-digit guide number
3. Turn to the numbered guide and read carefully



HOW TO USE THIS GUIDEBOOK
RESIST RUSHING IN !
APPROACH INCIDENT FROM UPWIND, UPHILL OR UPSTREAM
STAY CLEAR OF ALL SPILLS, VAPORS, FUMES, SMOKE AND SUSPICIOUS SOURCES

STEP ONE: IDENTIFY THE MATERIAL AND USE ANY OF THE FOLLOWING:

- **IDENTIFICATION NUMBER** (4-DIGIT ID AFTER UN/NA) FROM A:
  - PLACARD
  - ORANGE PANEL
  - SHIPPING PAPER OR PACKAGE
- **NAME OF THE MATERIAL** FROM A:
  - SHIPPING DOCUMENT OR PACKAGE

STEP TWO: IDENTIFY 3-DIGIT GUIDE NUMBER, USE:

- ID NUMBER INDEX in yellow-bordered pages or
- NAME OF MATERIAL INDEX in blue-bordered pages

Guide number supplemented with the letter **(P)** indicates that the material may undergo violent polymerization if subjected to heat or contamination.

INDEX ENTRIES HIGHLIGHTED IN GREEN are a TIH (Toxic Inhalation Hazard) material, a chemical warfare agent or a Dangerous Water Reactive Material (produces toxic gas upon contact with water).

IDENTIFY ID NUMBER AND NAME OF MATERIAL IN TABLE 1 – INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES (the green-bordered pages).

IF NECESSARY, BEGIN PROTECTIVE ACTIONS IMMEDIATELY (see Protective Actions page 288). If no protective action required, use the information jointly with the 3-digit guide.

IF A REFERENCE TO A GUIDE CANNOT BE FOUND AND THIS INCIDENT IS BELIEVED TO INVOLVE DANGEROUS GOODS:

- Use GUIDE 111, UNTIL ADDITIONAL INFORMATION BECOMES AVAILABLE
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AS A LAST RESORT: IF ONLY THE CONTAINER CAN BE IDENTIFIED, CONSULT THE TABLE OF RAIL CAR AND ROAD TRAILER IDENTIFICATION CHART (pages 8-9). INFORMATION ASSOCIATED WITH THESE CONTAINERS IS FOR WORST-CASE SCENARIOS.

CALL THE EMERGENCY RESPONSE TELEPHONE NUMBER:

- Listed on the shipping paper, if available.
- If shipping paper is not available, IMMEDIATELY CALL the **appropriate emergency response agency telephone number listed on the inside back cover of this guidebook.**
- Provide as much information as possible, such as the name of the carrier (trucking company or railroad) and vehicle number.

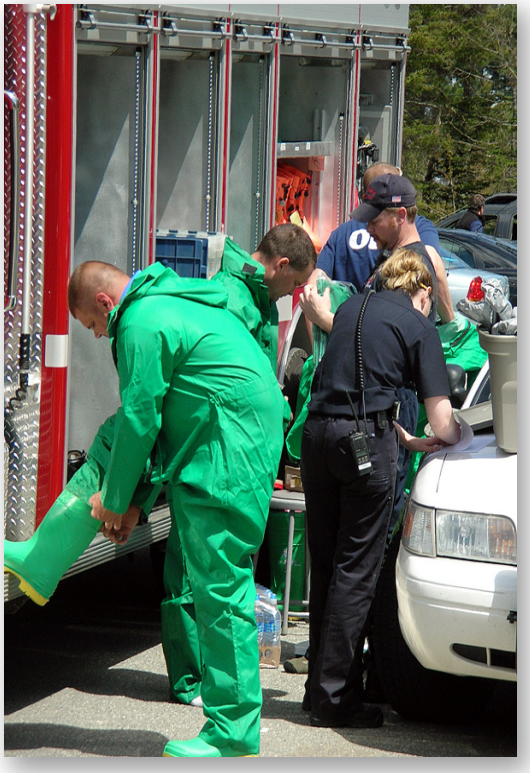
BEFORE AN EMERGENCY – BECOME FAMILIAR WITH THIS GUIDEBOOK!

First responders must be trained in the use of this guidebook.

Page 1

White Pages

- ERG2012 User's Guide
- Guidebook Contents
- What Is a TIH?
- Isolation and Evacuation Distances
- Safety Precautions
- Who to Call for Assistance



Pipeline Emergencies

Markers – Often appear at road, railroad, and water crossings. Signs may be posted at property boundaries. Signs include operator's POC and product transported. Warning, Caution, or Danger will appear on signs.

PIPELINE TRANSPORTATION

In North America, hazardous materials are transported through millions of miles of underground pipelines and related structures that can contain natural gas, natural gas liquids, crude oil, gasoline, diesel fuel, anhydrous ammonia, carbon dioxide, jet fuel and other commodities. Although pipelines are buried, there are above-ground structures and signs indicating the presence of underground transmission pipelines (see page 19 for U.S. pipeline location information). Natural gas also is transported via underground distribution pipelines.

Gas Pipelines

Natural Gas Transmission Pipelines

Large-diameter, steel pipelines transporting flammable, toxic and non-toxic natural gas at very high pressure.

Structures: Compressor Station Buildings, Valves, Metering Stations, and Aerial Patrol Markers.

Markers: "Warning, Caution, or Danger" appear at road, railroad, and water crossings, or may be posted at property boundaries and include operator's emergency Point-of-Contact (POC) and product transported.

Natural Gas Distribution Pipelines

Natural gas is delivered directly to customers via distribution pipelines--typically smaller-diameter, lower-pressure pipelines, and can be steel, plastic, or cast iron.

Structures: Regulator stations, customer meters and regulators, and valve box covers are the only above-ground indicators of gas distribution pipelines.

Gas Gathering and Gas Well Production Pipelines

Gas gathering/gas well production pipelines collect "raw" natural gas from wellheads and transport product to gas-processing and/or gas-treating plants. These gathering pipelines carry natural gas mixed with some level of gas liquids, water and, in some areas, contaminants such as hydrogen sulfide (H_2S).

Structures – Compressor Station Buildings, Valves, Metering Stations, and Aerial Patrol Markers.

Page 14

White Pages – National Response Center

- **Identifies Federal Agencies**
  - Federal On-Scene Coordinator
  - DOT
  - EPA
  - Other Federal Agencies

NOTE:

1. The appropriate federal agency must be notified in the case of rail, air or marine incidents.
2. The nearest police department must be notified in the case of lost, stolen or misplaced explosives, radioactive materials or infectious substances.
3. **CANUTEC must** be notified in the case of:
   a. lost, stolen or unlawfully interfered with dangerous goods (except Class 9);
   b. an incident involving infectious substances;
   c. an accidental release from a cylinder that has suffered a catastrophic failure;
   d. an incident where the shipping documents display **CANUTEC's** telephone number 613-996-6666 as the emergency telephone number; or
   e. a dangerous goods incident in which a railway vehicle, a ship, an aircraft, an aerodrome or an air cargo facility is involved.

UNITED STATES

NATIONAL RESPONSE CENTER (NRC)

The NRC, which is operated by the U.S. Coast Guard, receives reports required when dangerous goods and hazardous substances are spilled. After receiving notification of an incident, the NRC will immediately notify the appropriate Federal On-Scene Coordinator and concerned Federal agencies. Federal law requires that anyone who releases into the environment a reportable quantity of a hazardous substance (including oil when water is, or may be affected) or a material identified as a marine pollutant, must **immediately** notify the NRC. When in doubt as to whether the amount released equals the required reporting levels for these materials, the NRC should be notified.

CALL **NRC** (24 hours)

1-800-424-8802

(Toll-free in the U.S., Canada, and the U.S. Virgin Islands)

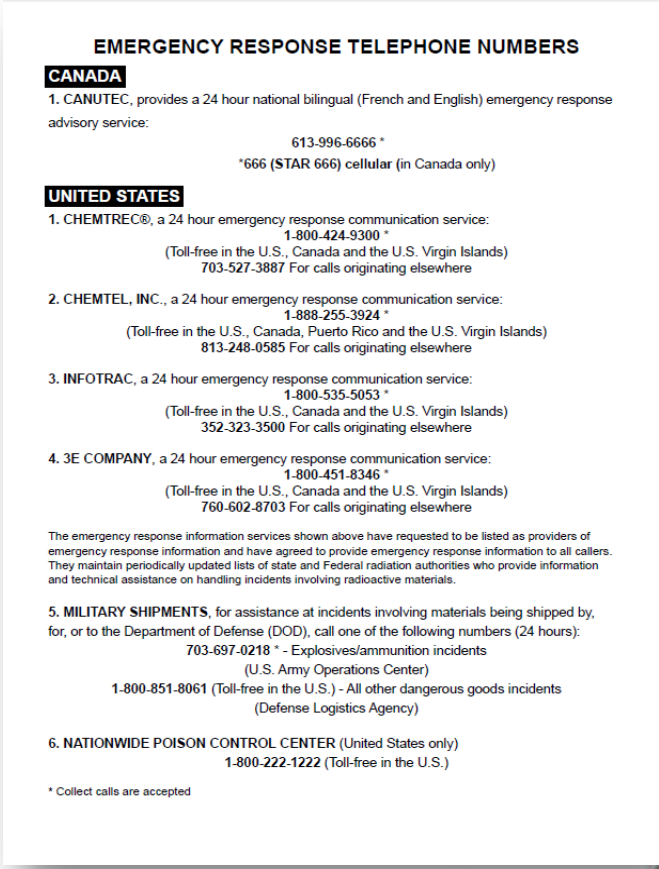
202-267-2675 in the District of Columbia

Calling the emergency response telephone number, CHEMTREC®, CHEMTEL, INC., INFOTRAC or 3E COMPANY, does not constitute compliance with regulatory requirements to call the NRC.

Page 387

White Pages – Call for Assistance

- Chemical Emergency Information Centers
  - *CHEMTREC*
  - *CHEM-TEL*
  - *INFOTRAC*
  - *3E Company*
- Military Shipments
- Poison Control Center *(U.S. Only)*



EMERGENCY RESPONSE TELEPHONE NUMBERS

CANADA

1. CANUTEC, provides a 24 hour national bilingual (French and English) emergency response advisory service:

613-996-6666 *

*666 (STAR 666) cellular (in Canada only)

UNITED STATES

1. CHEMTREC®, a 24 hour emergency response communication service:
1-800-424-9300 *
(Toll-free in the U.S., Canada and the U.S. Virgin Islands)
703-527-3887 For calls originating elsewhere

2. CHEMTEL, INC., a 24 hour emergency response communication service:
1-888-255-3924 *
(Toll-free in the U.S., Canada, Puerto Rico and the U.S. Virgin Islands)
813-248-0585 For calls originating elsewhere

3. INFOTRAC, a 24 hour emergency response communication service:
1-800-535-5053 *
(Toll-free in the U.S., Canada and the U.S. Virgin Islands)
352-323-3500 For calls originating elsewhere

4. 3E COMPANY, a 24 hour emergency response communication service:
1-800-451-8346 *
(Toll-free in the U.S., Canada and the U.S. Virgin Islands)
760-602-8703 For calls originating elsewhere

The emergency response information services shown above have requested to be listed as providers of emergency response information and have agreed to provide emergency response information to all callers. They maintain periodically updated lists of state and Federal radiation authorities who provide information and technical assistance on handling incidents involving radioactive materials.

5. MILITARY SHIPMENTS, for assistance at incidents involving materials being shipped by, for, or to the Department of Defense (DOD), call one of the following numbers (24 hours):
703-697-0218 * - Explosives/ammunition incidents
(U.S. Army Operations Center)
1-800-851-8061 (Toll-free in the U.S.) - All other dangerous goods incidents
(Defense Logistics Agency)

6. NATIONWIDE POISON CONTROL CENTER (United States only)
1-800-222-1222 (Toll-free in the U.S.)

* Collect calls are accepted

White Pages

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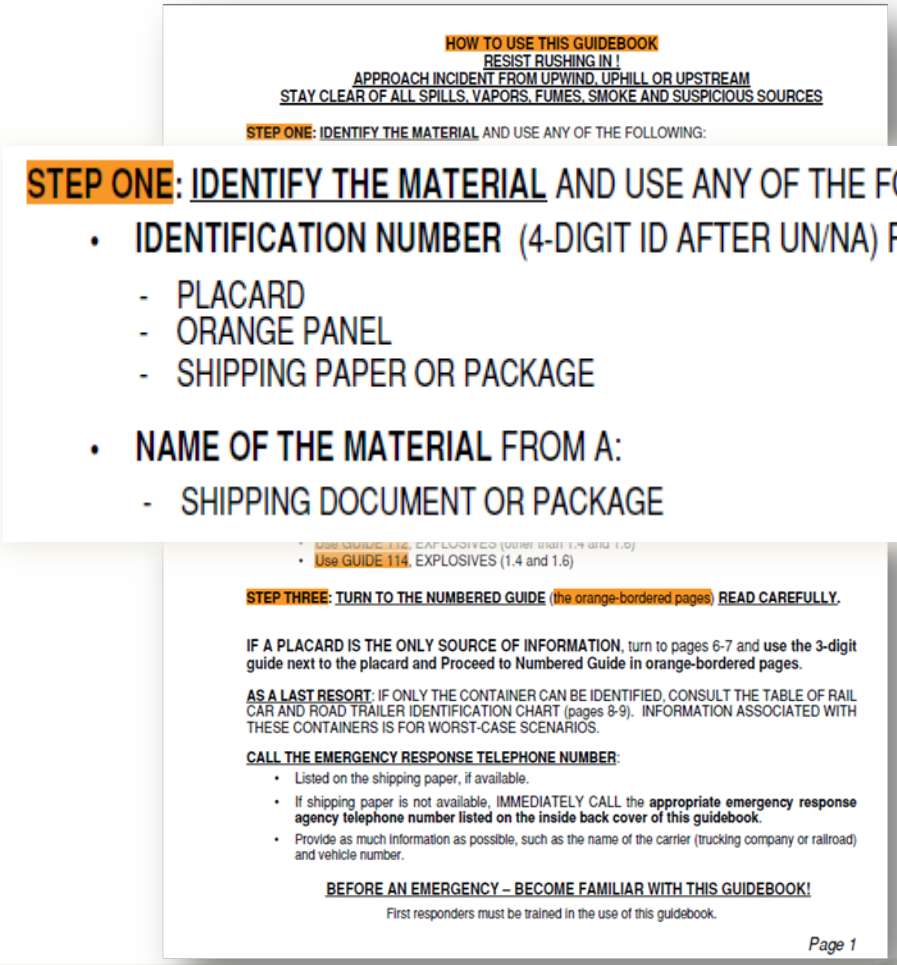

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- Use GUIDE 114, EXPLOSIVES (1.4 and 1.6)

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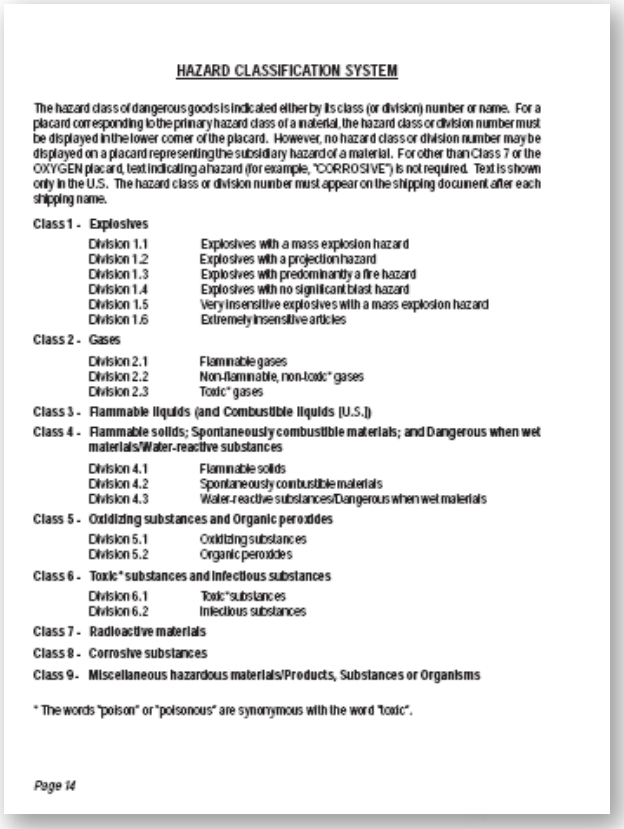
Page 1

White Pages

Hazard Classification System Translates:

- Placard information
- Label information
- Shipping paper information



HAZARD CLASSIFICATION SYSTEM

The hazard class of dangerous goods is indicated either by its class (or division) number or name. For a placard corresponding to the primary hazard class of a material, the hazard class or division number must be displayed in the lower corner of the placard. However, no hazard class or division number may be displayed on a placard representing the subsidiary hazard of a material. For other than Class 7 or the OXYGEN placard, text indicating a hazard (for example, "CORROSIVE") is not required. Text is shown only in the U.S. The hazard class or division number must appear on the shipping document after each shipping name.

Class 1 - Explosives

Division 1.1	Explosives with a mass explosion hazard
Division 1.2	Explosives with a projection hazard
Division 1.3	Explosives with predominantly a fire hazard
Division 1.4	Explosives with no significant blast hazard
Division 1.5	Very insensitive explosives with a mass explosion hazard
Division 1.6	Extremely insensitive articles

Class 2 - Gases

Division 2.1	Flammable gases
Division 2.2	Non-flammable, non-toxic* gases
Division 2.3	Toxic* gases

Class 3 - Flammable liquids (and Combustible liquids [U.S.])

Class 4 - Flammable solids; Spontaneously combustible materials; and Dangerous when wet materials/Water-reactive substances

Division 4.1	Flammable solids
Division 4.2	Spontaneously combustible materials
Division 4.3	Water-reactive substances/Dangerous when wet materials

Class 5 - Oxidizing substances and Organic peroxides

Division 5.1	Oxidizing substances
Division 5.2	Organic peroxides

Class 6 - Toxic* substances and Infectious substances

Division 6.1	Toxic* substances
Division 6.2	Infectious substances

Class 7 - Radioactive materials

Class 8 - Corrosive substances

Class 9 - Miscellaneous hazardous materials/Products, Substances or Organisms

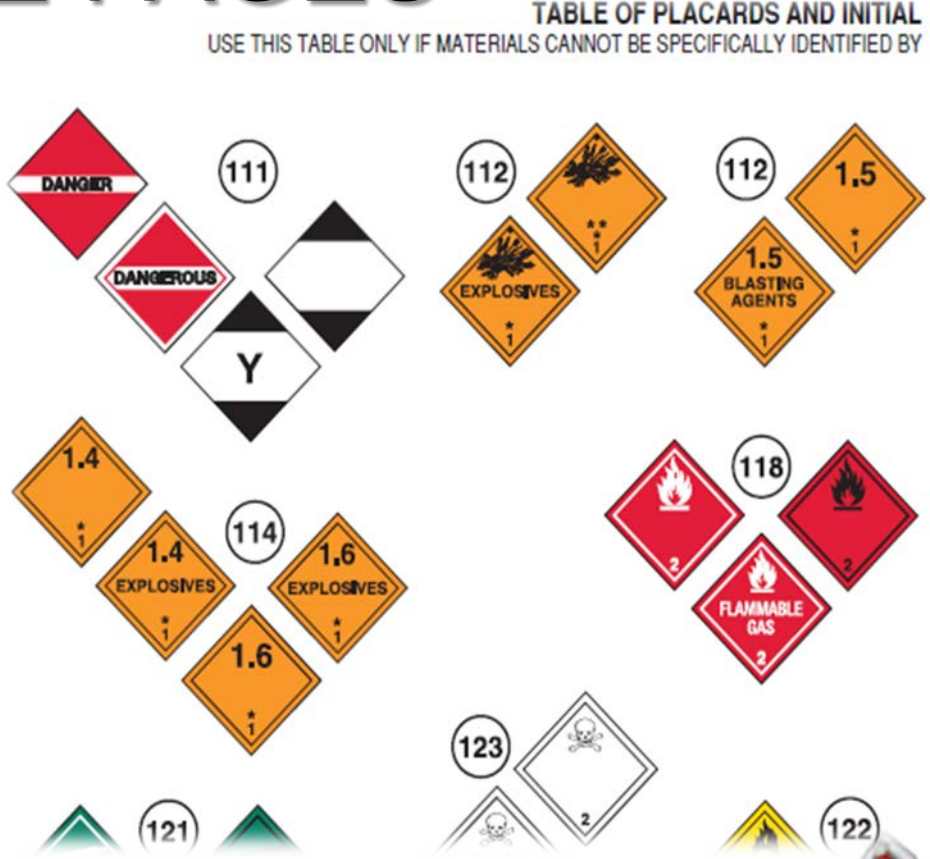
* The words "poison" or "poisonous" are synonymous with the word "toxic".

Page 14

WHITE PAGES

If a placard is visible, ***BUT*** no other information is available:

- GO TO Pages 6 and 7
- Find the placard
- Locate the Guide number beside the placard
- Turn to Guide for response information



White Pages – Rail and Road Identification

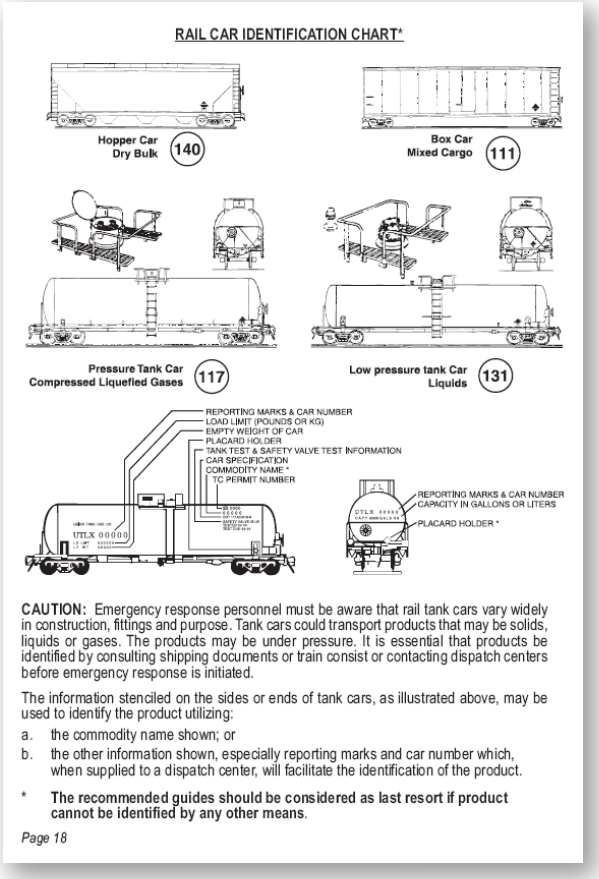
- For use when no other information is available
- Guidance is usually for most dangerous material in that type of container

LAST RESORT

White Pages – Rail Car Identification

- Tank cars may have solids, liquids or gases
  - Any may be under pressure
- Products must be identified if possible:
  - Use placards, ID# or stenciled name first!

LAST RESORT



RAIL CAR IDENTIFICATION CHART*

Hopper Car Dry Bulk 140

Box Car Mixed Cargo 111

Pressure Tank Car Compressed Liquefied Gases 117

Low pressure tank Car Liquids 131

REPORTING MARKS & CAR NUMBER
LOAD LIMIT (POUNDS OR KG)
EMPTY WEIGHT OF CAR
PLACARD HOLDER
TANK TEST & SAFETY VALVE TEST INFORMATION
CAR SPECIFICATION
COMMODITY NAME *
TC PERMIT NUMBER

REPORTING MARKS & CAR NUMBER
CAPACITY IN GALLONS OR LITERS
PLACARD HOLDER *

CAUTION: Emergency response personnel must be aware that rail tank cars vary widely in construction, fittings and purpose. Tank cars could transport products that may be solids, liquids or gases. The products may be under pressure. It is essential that products be identified by consulting shipping documents or train consist or contacting dispatch centers before emergency response is initiated.

The information stenciled on the sides or ends of tank cars, as illustrated above, may be used to identify the product utilizing:

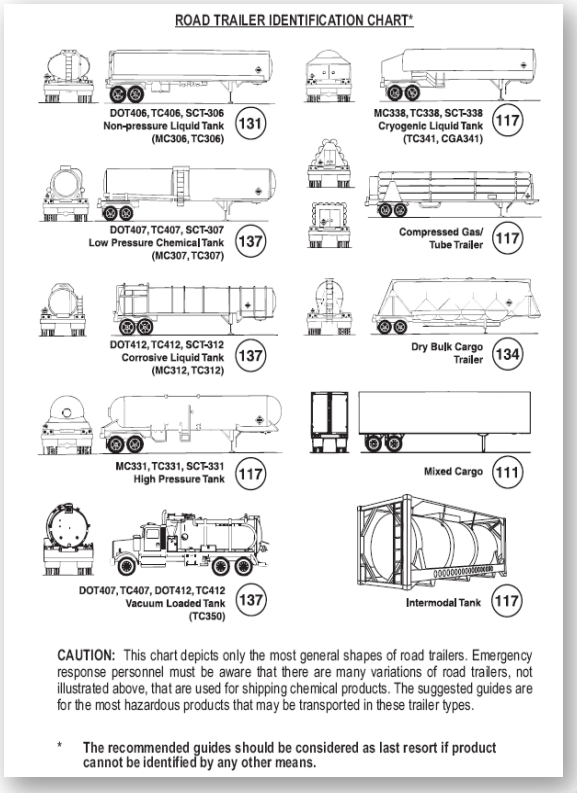
a. the commodity name shown; or
b. the other information shown, especially reporting marks and car number which, when supplied to a dispatch center, will facilitate the identification of the product.

* **The recommended guides should be considered as last resort if product cannot be identified by any other means.**

Page 18

White Pages – Road Trailer Identification

- These are the most general type of trailers
- Many are not illustrated
- Guides based on most hazardous material in these trailers


ROAD TRAILER IDENTIFICATION CHART*

DOT406, TC406, SCT-306 Non-pressure Liquid Tank (MC306, TC306) 131

MC338, TC338, SCT-338 Cryogenic Liquid Tank (TC341, CGA341) 117

DOT407, TC407, SCT-307 Low Pressure Chemical Tank (MC307, TC307) 137

Compressed Gas/ Tube Trailer 117

DOT412, TC412, SCT-312 Corrosive Liquid Tank (MC312, TC312) 137

Dry Bulk Cargo Trailer 134

MC331, TC331, SCT-331 High Pressure Tank 117

Mixed Cargo 111

DOT407, TC407, DOT412, TC412 Vacuum Loaded Tank (TC350) 137

Intermodal Tank 117

CAUTION: This chart depicts only the most general shapes of road trailers. Emergency response personnel must be aware that there are many variations of road trailers, not illustrated above, that are used for shipping chemical products. The suggested guides are for the most hazardous products that may be transported in these trailer types.

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LAST RESORT

White Pages

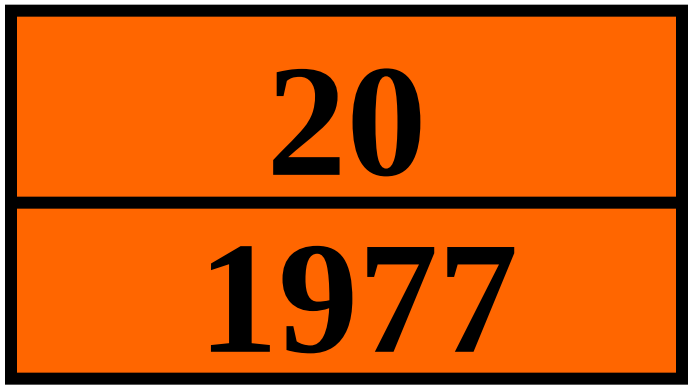
Hazard Identification Codes on Intermodal Containers

White Pages

Hazard Identification Codes on Intermodal Containers

Hazard Identification Codes:

- "2" through "9" indicates the hazard Identification Code
- DO NOT CONFUSE with HMR CLASS NUMBERS
- "0" indicates single hazard



Hazard Identification Codes

2 → Emission of Gas

3 → Flammable Liquids

4 → Flammable Solids

5 → Oxidizing Effect

6 → Toxicity or Risk of Infection

7 → Radioactivity

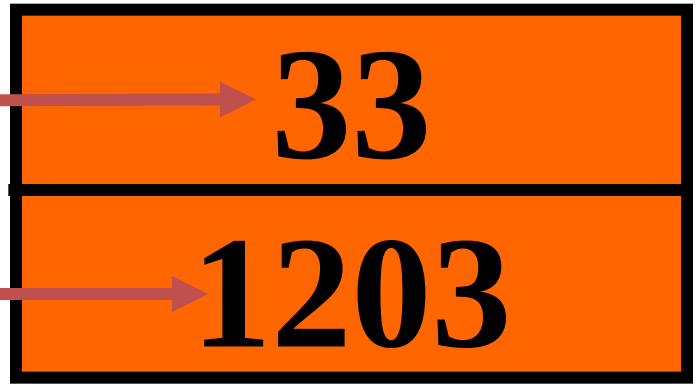
8 → Corrosivity

9 → Risk of Spontaneous Violent Reaction

White Pages

Hazard Identification Codes on Intermodal Containers

- Multiple Duplication Means Higher Hazard
- Identification Number of Material



White Pages

Hazard Identification Codes on Intermodal Containers

- Prefix “X” indicates material reacts dangerously with water

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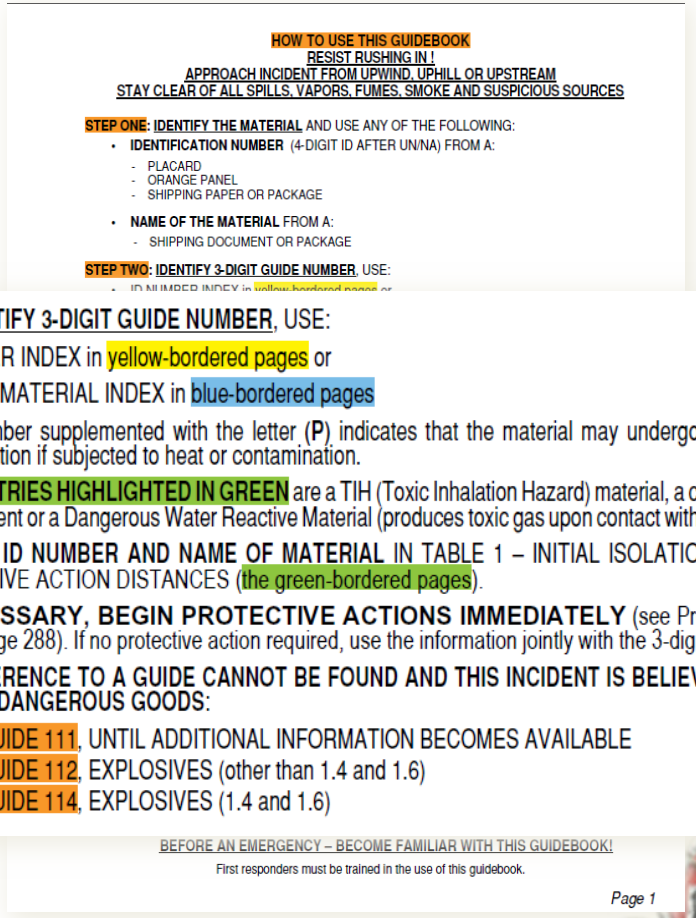

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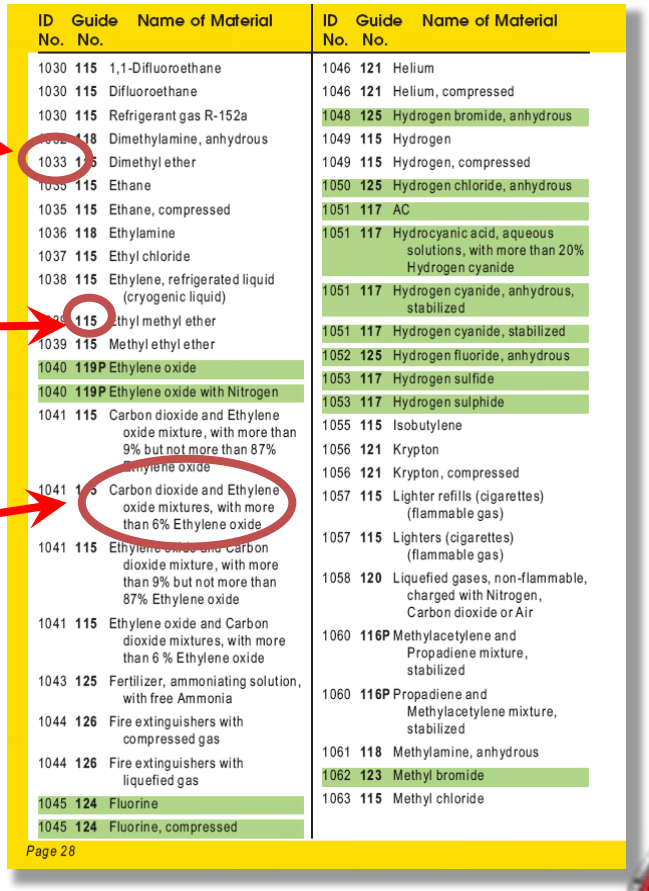
Page 1

Yellow Border Pages

- Identification Number
- Guide Page
- Proper Shipping Name



ID No.	Guide No.	Name of Material
1030	115	1,1-Difluoroethane
1030	115	Difluoroethane
1030	115	Refrigerant gas R-152a
[illegible]	118	Dimethylamine, anhydrous
1033	115	Dimethyl ether
[illegible]	115	Ethane
1035	115	Ethane, compressed
1036	118	Ethylamine
1037	115	Ethyl chloride
1038	115	Ethylene, refrigerated liquid (cryogenic liquid)
[illegible]	115	Ethyl methyl ether
1039	115	Methyl ethyl ether
1040	119P	Ethylene oxide
1040	119P	Ethylene oxide with Nitrogen
1041	115	Carbon dioxide and Ethylene oxide mixture, with more than 9% but not more than 87% Ethylene oxide
1041	115	Carbon dioxide and Ethylene oxide mixtures, with more than 6% Ethylene oxide
1041	115	Ethylene oxide and Carbon dioxide mixture, with more than 9% but not more than 87% Ethylene oxide
1041	115	Ethylene oxide and Carbon dioxide mixtures, with more than 6 % Ethylene oxide
1043	125	Fertilizer, ammoniating solution, with free Ammonia
1044	126	Fire extinguishers with compressed gas
1044	126	Fire extinguishers with liquefied gas
1045	124	Fluorine
1045	124	Fluorine, compressed
1046	121	Helium
1046	121	Helium, compressed
1048	125	Hydrogen bromide, anhydrous
1049	115	Hydrogen
1049	115	Hydrogen, compressed
1050	125	Hydrogen chloride, anhydrous
1051	117	AC
1051	117	Hydrocyanic acid, aqueous solutions, with more than 20% Hydrogen cyanide
1051	117	Hydrogen cyanide, anhydrous, stabilized
1051	117	Hydrogen cyanide, stabilized
1052	125	Hydrogen fluoride, anhydrous
1053	117	Hydrogen sulfide
1053	117	Hydrogen sulphide
1055	115	Isobutylene
1056	121	Krypton
1056	121	Krypton, compressed
1057	115	Lighter refills (cigarettes) (flammable gas)
1057	115	Lighters (cigarettes) (flammable gas)
1058	120	Liquefied gases, non-flammable, charged with Nitrogen, Carbon dioxide or Air
1060	116P	Methylacetylene and Propadiene mixture, stabilized
1060	116P	Propadiene and Methylacetylene mixture, stabilized
1061	118	Methylamine, anhydrous
1062	123	Methyl bromide
1063	115	Methyl chloride

Page 28

Identification Number

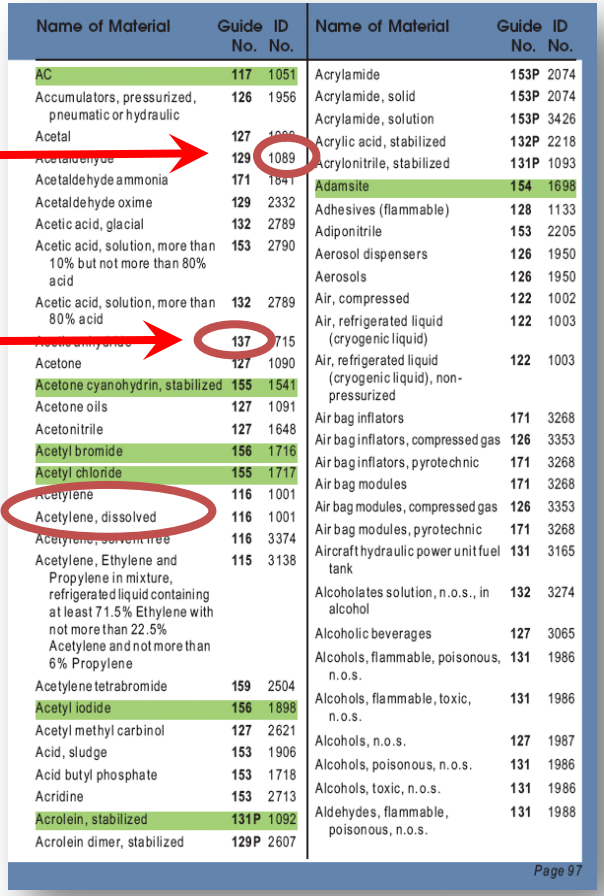
Identification Numbers Can Be Obtained From:

Orange Panel

Placard

Blue Border Pages

- Identification Number
- Guide Page
- Proper Shipping Name



Name of Material	Guide No.	ID No.
AC	117	1051
Accumulators, pressurized, pneumatic or hydraulic	126	1956
Acetal	127	
Acetaldehyde	129	1089
Acetaldehyde ammonia	171	1841
Acetaldehyde oxime	129	2332
Acetic acid, glacial	132	2789
Acetic acid, solution, more than 10% but not more than 80% acid	153	2790
Acetic acid, solution, more than 80% acid	132	2789
Acetic anhydride	137	715
Acetone	127	1090
Acetone cyanohydrin, stabilized	155	1541
Acetone oils	127	1091
Acetonitrile	127	1648
Acetyl bromide	156	1716
Acetyl chloride	155	1717
Acetylene	116	1001
Acetylene, dissolved	116	1001
Acetylene, solvent free	116	3374
Acetylene, Ethylene and Propylene in mixture, refrigerated liquid containing at least 71.5% Ethylene with not more than 22.5% Acetylene and not more than 6% Propylene	115	3138
Acetylene tetrabromide	159	2504
Acetyl iodide	156	1898
Acetyl methyl carbinol	127	2621
Acid, sludge	153	1906
Acid butyl phosphate	153	1718
Acridine	153	2713
Acrolein, stabilized	131P	1092
Acrolein dimer, stabilized	129P	2607

Name of Material	Guide No.	ID No.
Acrylamide	153P	2074
Acrylamide, solid	153P	2074
Acrylamide, solution	153P	3426
Acrylic acid, stabilized	132P	2218
Acrylonitrile, stabilized	131P	1093
Adamsite	154	1698
Adhesives (flammable)	128	1133
Adiponitrile	153	2205
Aerosol dispensers	126	1950
Aerosols	126	1950
Air, compressed	122	1002
Air, refrigerated liquid (cryogenic liquid)	122	1003
Air, refrigerated liquid (cryogenic liquid), non-pressurized	122	1003
Air bag inflators	171	3268
Air bag inflators, compressed gas	126	3353
Air bag inflators, pyrotechnic	171	3268
Air bag modules	171	3268
Air bag modules, compressed gas	126	3353
Air bag modules, pyrotechnic	171	3268
Aircraft hydraulic power unit fuel tank	131	3165
Alcoholates solution, n.o.s., in alcohol	132	3274
Alcoholic beverages	127	3065
Alcohols, flammable, poisonous, n.o.s.	131	1986
Alcohols, flammable, toxic, n.o.s.	131	1986
Alcohols, n.o.s.	127	1987
Alcohols, poisonous, n.o.s.	131	1986
Alcohols, toxic, n.o.s.	131	1986
Aldehydes, flammable, poisonous, n.o.s.	131	1988

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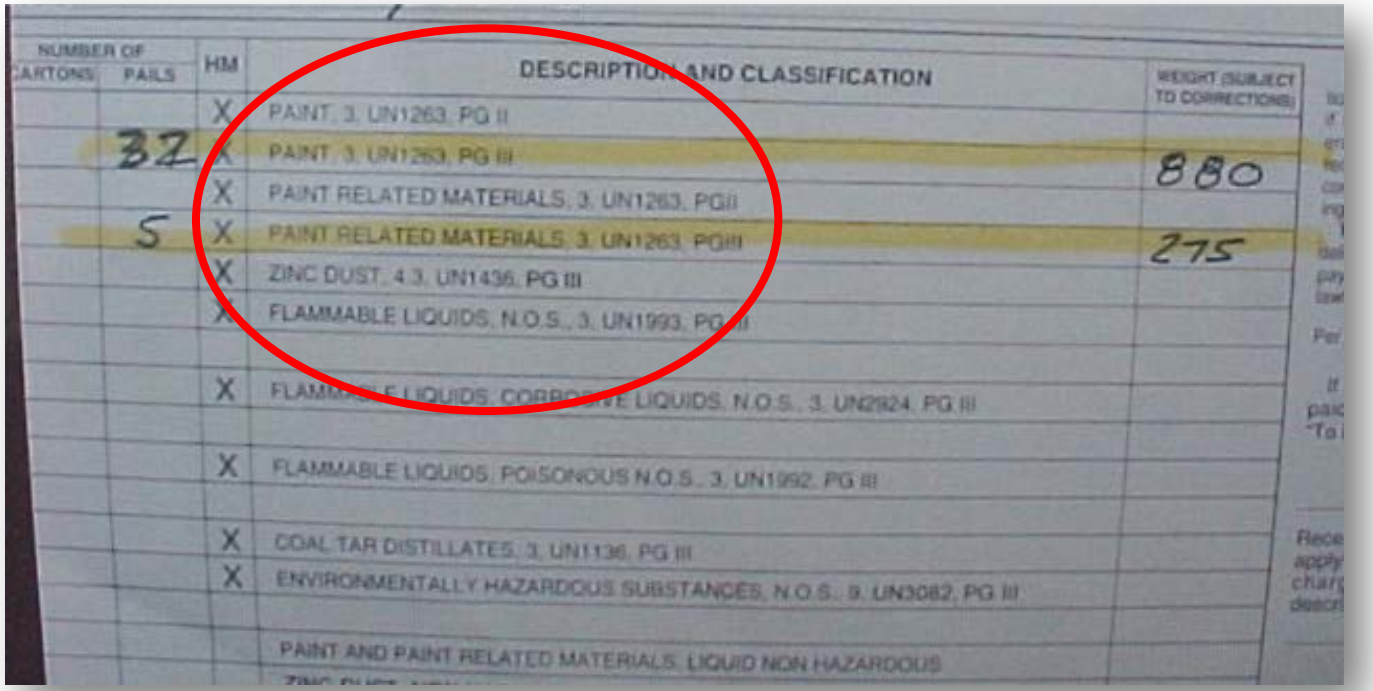
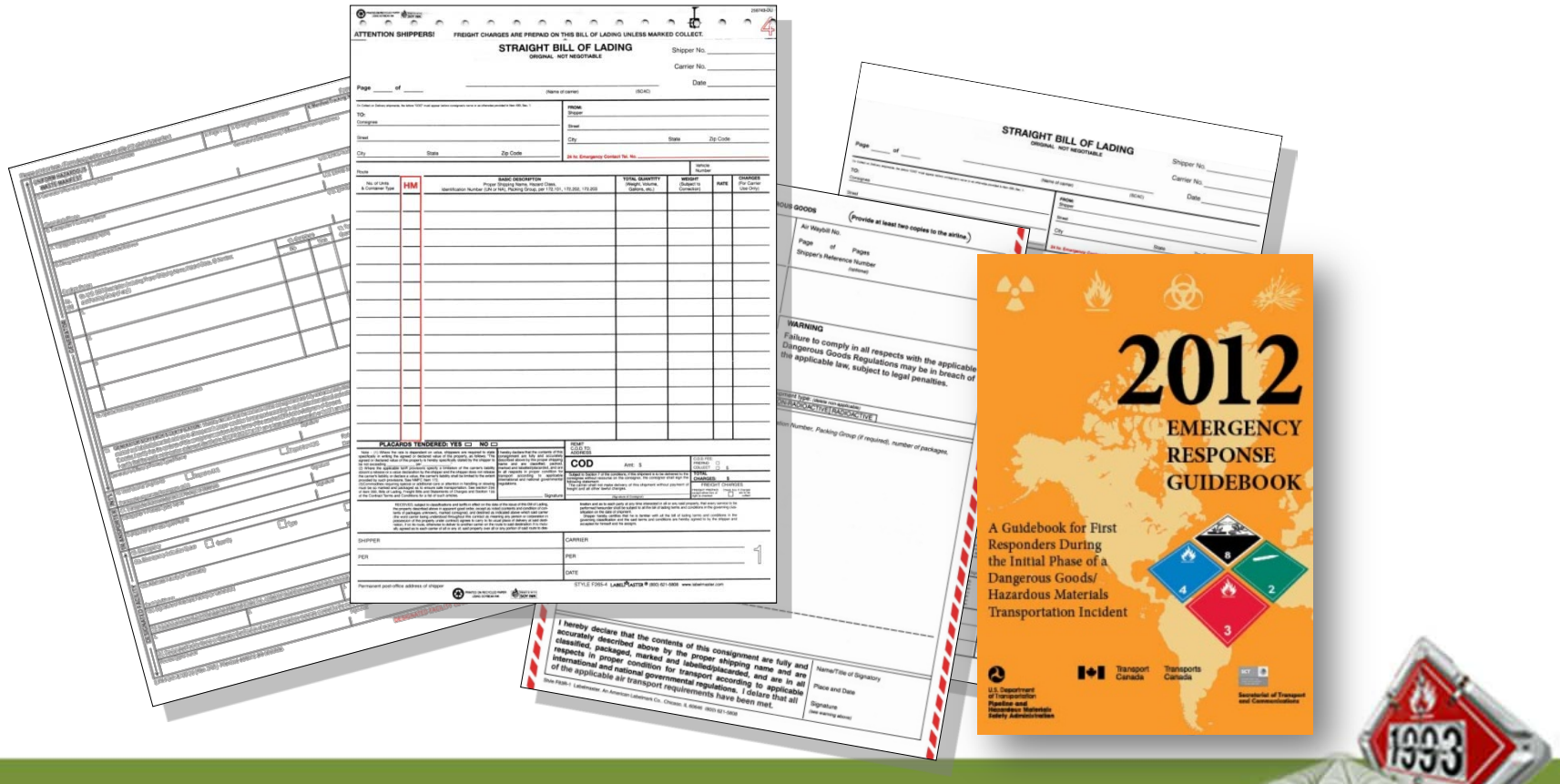
Proper Shipping Name

Obtain Proper Shipping Name From Shipping Papers



Shipping Papers and Emergency Response Information



Hazardous Materials Basic Description

No. of Units & Container Type	HM	BASIC DESCRIPTION Identification Number (UN or NA), Proper Shipping Name, Hazard Class, Packing Group, per 172.101, 172.202, 172.203	TOTAL QUANTITY (Weight, Volume, Gallons, etc.)
4 Drums	X	UN1805, Phosphoric acid solution, 8, PGIII	**4 gal**

I S H P

Yellow and Blue Border Pages

- The letter “P” following the Guide Page number indicates material may undergo violent polymerization if subjected to:
  - High heat
  - Contamination

1067	124	Dinitrogen tetroxide	1080	126	Sulphur hexafluoride
1067	124	Nitrogen dioxide	1081	116P	Tetrafluoroethylene, stabilized
1069	125	Nitrosyl chloride	1082	119P	Trifluorochloroethylene, stabilized
1070	122	Nitrous oxide	1083	118	Trimethylamine, anhydrous
1070	122	Nitrous oxide, compressed			

Polymerization may cause an explosive container failure!!

AC	117	1051	Acrylamide	153P	2074
Accumulators, pressurized, pneumatic or hydraulic	126	1956	Acrylamide, solid	153P	2074
Acetal	127	1088	Acrylamide, solution	153P	3426
Acetaldehyde	129	1089	Acrylic acid, stabilized	132P	2218
			Acrylonitrile, stabilized	131P	1093

Yellow and Blue Border Pages

- The letter “P” following the Guide Page number indicates material may undergo violent polymerization if subjected to:

  High heat

  Contamination

Practical Examples

1. **Petroleum Crude Oil vs. Petroleum Sour Crude Oil, Flammable Toxic**

2. **Can I use the same foam for UN1268 and UN2924?**

3. **What additional hazards are involved with UN3494?**

Yellow and Blue Border Pages

- **Highlighted entries**
  - Inhalation hazards (toxic gas or emit toxic gas)
  - Materials which emit toxic vapors <u>when wetted</u>
  - Indicates the need to use the **GREEN** bordered pages when material is ***NOT ON FIRE!***

ID No.	Guide No.	Name of Material
3306	124	Compressed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone D)
3306	124	Compressed gas, toxic,
3306	124	Comp
3306	124	Comp
3306	124	Comp
3306	124	Comp
3307	124	Lique
3307	124	Lique
3307	124	Lique
3307	124	Lique
3307	124	Lique
3307	124	Lique
3307	124	Lique

ID No.	Guide No.	Name of Material
3307	124	Liquefied gas, toxic, oxidizing, n.o.s. (Inhalation Hazard Zone C)
3307	124	Liquefied gas, toxic, oxidizing,

Name of Material	Guide No.	ID No.
Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone C)	123	1955
Compressed gas, poisonous, n.o.s. (Inhalation Hazard Zone D)	123	1955
Compressed gas, poisonous, oxidizing, corrosive, n.o.s.	124	3306
Compressed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone A)	124	3306
Compressed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone B)	124	3306
Compressed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone C)	124	3306
Compressed gas, poisonous, oxidizing, corrosive, n.o.s. (Inhalation Hazard Zone D)	124	3306
Compressed gas, poisonous, oxidizing, n.o.s.	124	3303
Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone A)	124	3303
Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone B)	124	3303
Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone C)	124	3303
Compressed gas, poisonous, oxidizing, n.o.s. (Inhalation Hazard Zone D)	124	3303
Compressed gas, toxic, corrosive, n.o.s.	123	3304
Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone A)	123	3304

Name of Material	Guide No.	ID No.
Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone B)	123	3304
Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone C)	123	3304
Compressed gas, toxic, corrosive, n.o.s. (Inhalation Hazard Zone D)	123	3304
Compressed gas, toxic, flammable, corrosive, n.o.s.	119	3305
Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone A)	119	3305
Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone B)	119	3305
Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone C)	119	3305
Compressed gas, toxic, flammable, corrosive, n.o.s. (Inhalation Hazard Zone D)	119	3305
Compressed gas, toxic, flammable, n.o.s.	119	1953
Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone A)	119	1953
Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone B)	119	1953
Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone C)	119	1953
Compressed gas, toxic, flammable, n.o.s. (Inhalation Hazard Zone D)	119	1953
Compressed gas, toxic, n.o.s.	123	1955

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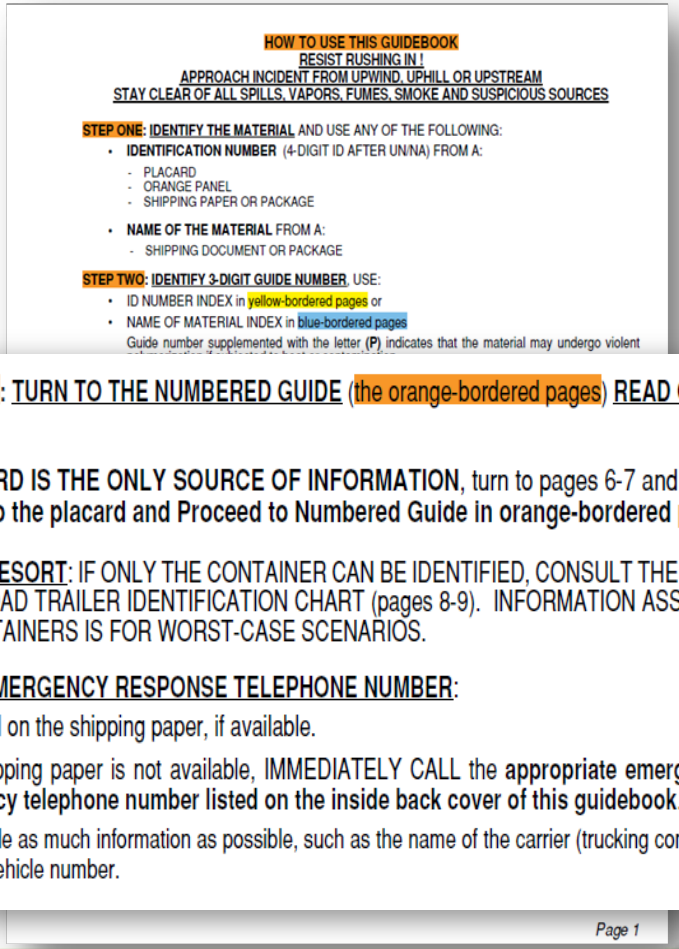
White Pages

Three steps:

1. Identify the material
2. Look up materials 3-digit guide number
3. Turn to the numbered guide and read carefully



HOW TO USE THIS GUIDEBOOK
RESIST RUSHING IN !
APPROACH INCIDENT FROM UPWIND, UPHILL OR UPSTREAM
STAY CLEAR OF ALL SPILLS, VAPORS, FUMES, SMOKE AND SUSPICIOUS SOURCES

STEP ONE: IDENTIFY THE MATERIAL AND USE ANY OF THE FOLLOWING:

- **IDENTIFICATION NUMBER** (4-DIGIT ID AFTER UN/NA) FROM A:
  - PLACARD
  - ORANGE PANEL
  - SHIPPING PAPER OR PACKAGE
- **NAME OF THE MATERIAL** FROM A:
  - SHIPPING DOCUMENT OR PACKAGE

STEP TWO: IDENTIFY 3-DIGIT GUIDE NUMBER, USE:

- ID NUMBER INDEX in yellow-bordered pages or
- NAME OF MATERIAL INDEX in blue-bordered pages

Guide number supplemented with the letter **(P)** indicates that the material may undergo violent

STEP THREE: TURN TO THE NUMBERED GUIDE (the orange-bordered pages) READ CAREFULLY.

IF A PLACARD IS THE ONLY SOURCE OF INFORMATION, turn to pages 6-7 and **use the 3-digit guide next to the placard and Proceed to Numbered Guide in orange-bordered pages.**

AS A LAST RESORT: IF ONLY THE CONTAINER CAN BE IDENTIFIED, CONSULT THE TABLE OF RAIL CAR AND ROAD TRAILER IDENTIFICATION CHART (pages 8-9). INFORMATION ASSOCIATED WITH THESE CONTAINERS IS FOR WORST-CASE SCENARIOS.

CALL THE EMERGENCY RESPONSE TELEPHONE NUMBER:

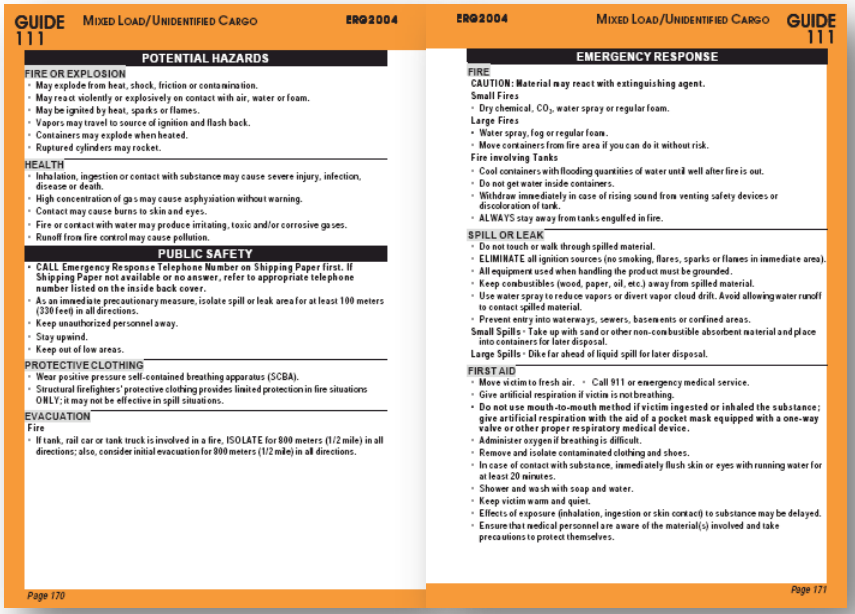
- Listed on the shipping paper, if available.
- If shipping paper is not available, IMMEDIATELY CALL the **appropriate emergency response agency telephone number listed on the inside back cover of this guidebook.**
- Provide as much information as possible, such as the name of the carrier (trucking company or railroad) and vehicle number.

Page 1

Orange Border Pages

Emergency response guidance

- **Three major sections**
  - Potential Hazards - *what can go wrong*
  - Public Safety - *protect the public*
  - Emergency Response - *proactive information*



GUIDE 111 MIXED LOAD/UNIDENTIFIED CARGO ERG2004

POTENTIAL HAZARDS

FIRE OR EXPLOSION
- May explode from heat, shock, friction or contamination.
- May react violently or explosively on contact with air, water or foam.
- May be ignited by heat, sparks or flames.
- Vapors may travel to source of ignition and flash back.
- Containers may explode when heated.
- Ruptured cylinders may rocket.

HEALTH
- Inhalation, ingestion or contact with substance may cause severe injury, infection, disease or death.
- High concentration of gas may cause asphyxiation without warning.
- Contact may cause burns to skin and eyes.
- Fire or contact with water may produce irritating, toxic and/or corrosive gases.
- Runoff from fire control may cause pollution.

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 100 meters (330 feet) in all directions.
- Keep unauthorized personnel away.
- Stay upwind.
- Keep out of low areas.

PROTECTIVE CLOTHING
- Wear positive pressure self-contained breathing apparatus (SCBA).
- Structural firefighters' protective clothing provides limited protection in fire situations ONLY; it may not be effective in spill situations.

EVACUATION

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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ERG2004 MIXED LOAD/UNIDENTIFIED CARGO GUIDE 111

EMERGENCY RESPONSE

FIRE

CAUTION: Material may react with extinguishing agent.

Small Fires
- Dry chemical, CO_2, water spray or regular foam.

Large Fires
- Water spray, fog or regular foam.
- Move containers from fire area if you can do it without risk.

Fire involving Tanks
- Cool containers with flooding quantities of water until well after fire is out.
- Do not get water inside containers.
- Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank.
- ALWAYS stay away from tanks engulfed in fire.

SPILL OR LEAK
- Do not touch or walk through spilled material.
- ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).
- All equipment used when handling the product must be grounded.
- Keep combustibles (wood, paper, oil, etc.) away from spilled material.
- Use water spray to reduce vapors or divert vapor cloud drift. Avoid allowing water runoff to contact spilled material.
- Prevent entry into waterways, sewers, basements or confined areas.

Small Spills • Take up with sand or other non-combustible absorbent material and place into containers for later disposal.

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

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.
- Shower and wash with soap and water.
- 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.

Page 171

LEFT
Safety

RIGHT
Response

Green Border Pages

Table 1 - Initial Isolation and Protective Action Distances

Used for estimating:

- Isolation zone
- Protective zone
  - Evacuation zone
  - Shelter-in-place

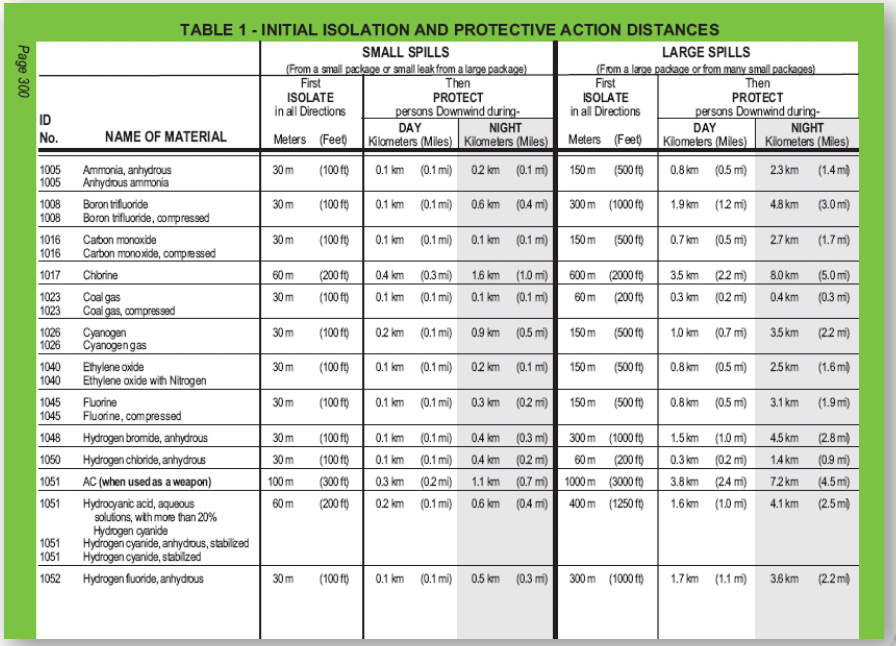


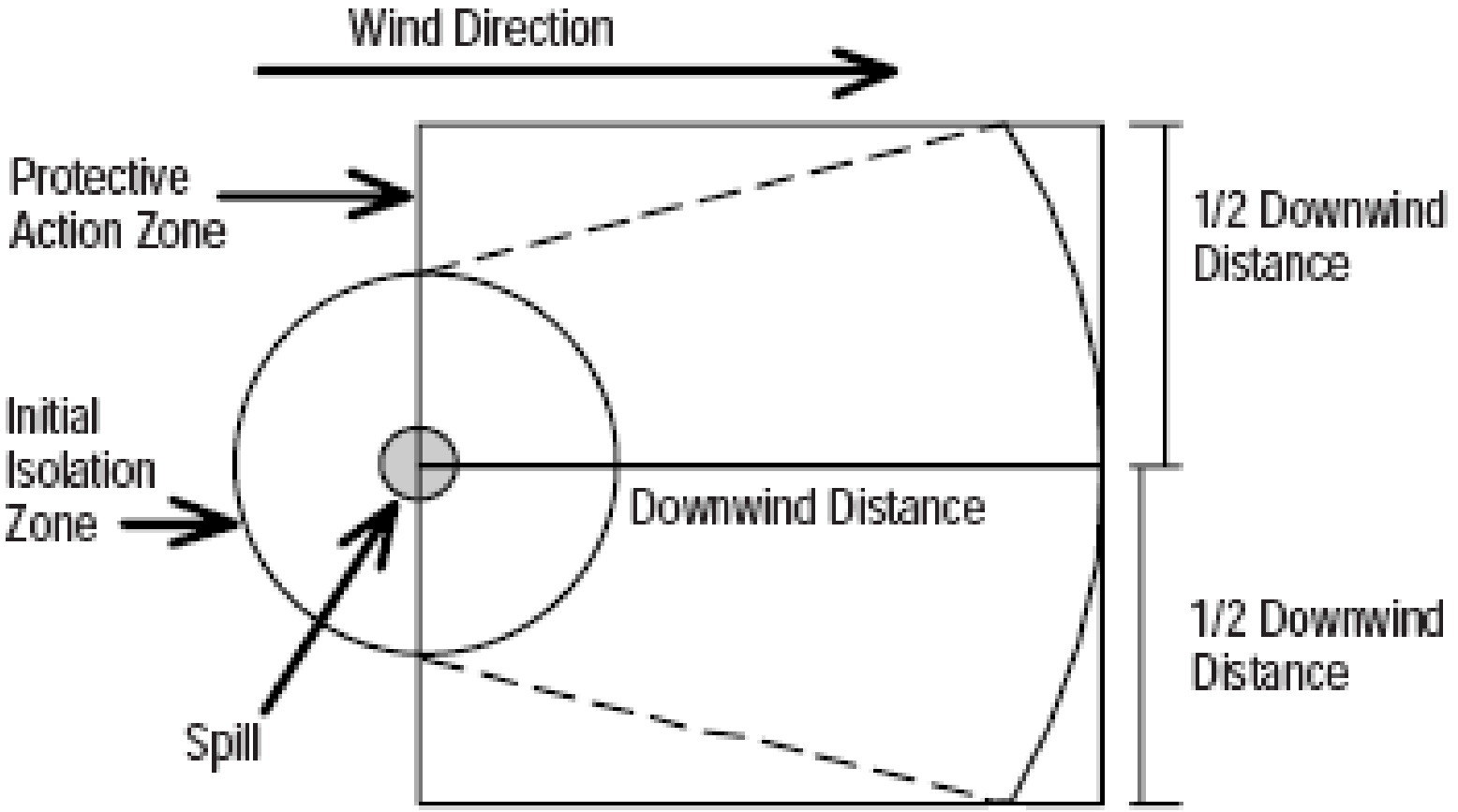
TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

Page 300

ID No.	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package) First ISOLATE in all Directions Meters (Feet)	SMALL SPILLS Then PROTECT persons Downwind during- DAY Kilometers (Miles)	SMALL SPILLS Then PROTECT persons Downwind during- NIGHT Kilometers (Miles)	LARGE SPILLS (From a large package or from many small packages) First ISOLATE in all Directions Meters (Feet)	LARGE SPILLS Then PROTECT persons Downwind during- DAY Kilometers (Miles)	LARGE SPILLS Then PROTECT persons Downwind during- NIGHT Kilometers (Miles)
1005 1005	Ammonia, anhydrous Anhydrous ammonia	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)
1008 1008	Boron trifluoride Boron trifluoride, compressed	30 m (100 ft)	0.1 km (0.1 mi)	0.6 km (0.4 mi)	300 m (1000 ft)	1.9 km (1.2 mi)	4.8 km (3.0 mi)
1016 1016	Carbon monoxide Carbon monoxide, compressed	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)
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 1023	Coal gas Coal gas, compressed	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)
1026 1026	Cyanogen Cyanogen gas	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)
1040 1040	Ethylene oxide Ethylene oxide with Nitrogen	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)
1045 1045	Fluorine Fluorine, compressed	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)
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 1051 1051	Hydrocyanic acid, aqueous solutions, with more than 20% Hydrogen cyanide Hydrogen cyanide, anhydrous, stabilized Hydrogen cyanide, stabilized	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)
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)

Ammonia Cloud

1. Initial Isolation Zone 2. Protective Action Zone



Green Border Pages

Table 1 - Initial Isolation and Protective Action Distances

- Area likely endangered in first 30 minutes
- *FIRE* may make the toxicity less important than fire or explosion hazard
- Vapors may be channeled in valleys or tall buildings

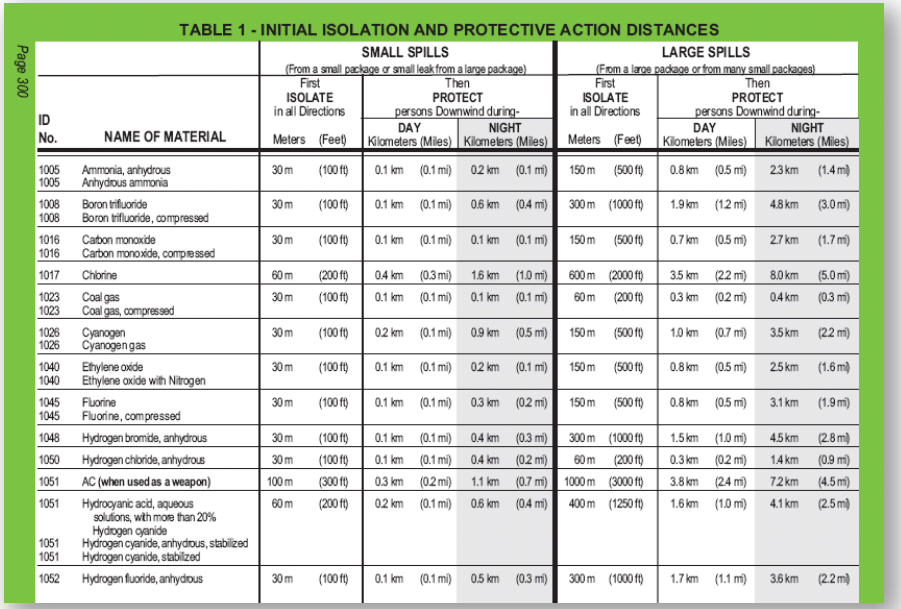


TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

Page 300

ID No.	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package) First ISOLATE in all Directions		Then PROTECT persons Downwind during- DAY		NIGHT		LARGE SPILLS (From a large package or from many small packages) First ISOLATE in all Directions		Then PROTECT persons Downwind during- DAY		NIGHT	
		Meters	(Feet)	Kilometers	(Miles)	Kilometers	(Miles)	Meters	(Feet)	Kilometers	(Miles)	Kilometers	(Miles)
1005 1005	Ammonia, anhydrous Anhydrous ammonia	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)
1008 1008	Boron trifluoride Boron trifluoride, compressed	30 m	(100 ft)	0.1 km	(0.1 mi)	0.6 km	(0.4 mi)	300 m	(1000 ft)	1.9 km	(1.2 mi)	4.8 km	(3.0 mi)
1016 1016	Carbon monoxide Carbon monoxide, compressed	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)
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 1023	Coal gas Coal gas, compressed	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)
1026 1026	Cyanogen Cyanogen gas	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)
1040 1040	Ethylene oxide Ethylene oxide with Nitrogen	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)
1045 1045	Fluorine Fluorine, compressed	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)
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 1051 1051	Hydrocyanic acid, aqueous solutions, with more than 20% Hydrogen cyanide Hydrogen cyanide, anhydrous, stabilized Hydrogen cyanide, stabilized	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)
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)

Green Border Pages

Table 1 - Initial Isolation and Protective Action Distances

1051	117	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)	1.4 km	(0.9 mi)	3.8 km	(2.4 mi)
1051	117	Hydrogen cyanide, anhydrous, stabilized												
1051	117	Hydrogen cyanide, stabilized												
1052 *	125	Hydrogen fluoride, anhydrous	30 m	(100 ft)	0.1 km	(0.1 mi)	0.5 km	(0.3 mi)	300 m	(1000 ft)	1.5 km	(0.9 mi)	3.2 km	(2.0 mi)
1053	117	Hydrogen sulfide	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.3 mi)	300 m	(1000 ft)	1.7 km	(1.0 mi)	5.6 km	(3.5 mi)
1053	117	Hydrogen sulphide												
1062	123	Methyl bromide	30 m	(100 ft)	0.1 km	(0.1 mi)	0.2 km	(0.2 mi)	100 m	(300 ft)	0.6 km	(0.4 mi)	1.9 km	(1.2 mi)
1064	117	Methyl mercaptan	30 m	(100 ft)	0.1 km	(0.1 mi)	0.3 km	(0.2 mi)	150 m	(500 ft)	1.0 km	(0.7 mi)	3.2 km	(2.0 mi)
1067	124	Dinitrogen tetroxide	30 m	(100 ft)	0.1 km	(0.1 mi)	0.4 km	(0.2 mi)	300 m	(1000 ft)	1.1 km	(0.7 mi)	2.7 km	(1.7 mi)

"+" means distance can be larger in certain atmospheric conditions * PLEASE ALSO CONSULT TABLE 3 FOR THIS MATERIAL

1071	119	Oil gas, compressed												
1076	125	CG **(when used as a weapon)**	150 m	(500 ft)	0.8 km	(0.5 mi)	3.2 km	(2.0 mi)	1000 m	(3000 ft)	7.5 km	(4.7 mi)	11.0+ km	(7.0+ mi)
1076	125	Diphosgene	30 m	(100 ft)	0.2 km	(0.1 mi)	0.2 km	(0.1 mi)	30 m	(100 ft)	0.3 km	(0.2 mi)	0.5 km	0.3 mi)
1076	125	DP **(when used as a weapon)**	30 m	(100 ft)	0.2 km	(0.1 mi)	0.7 km	(0.4 mi)	200 m	(600 ft)	1.0 km	(0.7 mi)	2.4 km	(1.5 mi)
1076	125	Phosgene	100 m	(300 ft)	0.6 km	(0.4 mi)	2.7 km	(1.7 mi)	500 m	(1500 ft)	3.1 km	(1.9 mi)	10.8 km	(6.7 mi)
1079 *	125	Sulfur dioxide	100 m	(300 ft)	0.7 km	(0.4 mi)	2.8 km	(1.7 mi)	1000 m	(3000 ft)	5.6 km	(3.5 mi)	11.0+ km	(7.0+ mi)
1079 *	125	Sulphur dioxide												
1082	119P	Trifluorochloroethylene, stabilized	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)	0.9 km	(0.6 mi)
1092	131P	Acrolein, stabilized	150 m	(500 ft)	1.4 km	(0.9 mi)	4.0 km	(2.5 mi)	800 m	(2500 ft)	9.3 km	(5.8 mi)	11.0+ km	(7.0+ mi)
1098	131	Allyl alcohol	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)	0.5 km	(0.3 mi)

"+" means distance can be larger in certain atmospheric conditions * PLEASE ALSO CONSULT TABLE 3 FOR THIS MATERIAL

Green Border Pages

Table 2 - Water-Reactive Materials Which Produce Toxic Gases When Spilled in Water

TABLE 2 - WATER-REACTIVE MATERIALS WHICH PRODUCE TOXIC GASES

Materials Which Produce Large Amounts of Toxic-by-Inhalation (TIH) Gas(es) *When Spilled in Water*

ID No.	Guide No.	Name of Material	TIH Gas(es) Produced
1162	155	Dimethyldichlorosilane	HCl
1183	139	Ethyldichlorosilane	HCl
1196	155	Ethyltrichlorosilane	HCl
1242	139	Methyldichlorosilane	HCl
1250	155	Methyltrichlorosilane	HCl
1295	139	Trichlorosilane	HCl
1298	155	Trimethylchlorosilane	HCl
1305	155P	Vinyltrichlorosilane	HCl
1305	155P	Vinyltrichlorosilane, stabilized	HCl
1340	139	Phosphorus pentasulfide, free from yellow and white Phosphorus	H_2S

Green Border Pages

Table 3 – Initial Isolation and Protective Action Distances for Different Quantities of Six Common TIH Gases

- ✓ Six Common TIH Gases
- ✓ Alphabetical Order
- ✓ Large Spills over 55gal
- ✓ Day time / Night time
- ✓ Accounts for Wind Speed

HOW TO USE TABLE 3 – INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES FOR DIFFERENT QUANTITIES OF SIX COMMON TIH GASES

Table 3 lists Toxic Inhalation Hazard materials that may be more commonly encountered.

The selected materials are:

- Ammonia (UN1005)
- Chlorine (UN1017)
- Ethylene oxide (UN1040)
- Hydrogen chloride (UN1050) and Hydrogen chloride, refrigerated liquid (UN2186)
- Hydrogen fluoride (UN1052)
- Sulfur dioxide/Sulphur dioxide (UN1079)

The materials are presented in alphabetical order and provide Initial Isolation and Protective Action Distances for large spills (more than 208 liters or 55 US gallons) involving different container types (therefore different volume capacities) for day time and night time situations and different wind speeds.

Green Border Pages

Table 3 – Initial Isolation and Protective Action Distances for Different Quantities of Six Common TIH Gases

TABLE 3 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES FOR DIFFERENT QUANTITIES OF SIX COMMON TIH GASES

TRANSPORT CONTAINER	UN1005 Ammonia, anhydrous: Large Spills											
	First ISOLATE in all Directions		Then PROTECT persons Downwind during									
			DAY						NIGHT			
			Low wind (< 6 mph = < 10 km/h)		Moderate wind (6-12 mph = 10 - 20 km/h)		High wind (> 12 mph = > 20 km/h)		Low wind (< 6 mph = < 10 km/h)		Moderate wind (6-12 mph = 10 - 20 km/h)		High wind (> 12 mph = > 20 km/h)	
	Meters	(Feet)	Km	(Miles)	Km	(Miles)	Km	(Miles)	Km	(Miles)	Km	(Miles)	Km	(Miles)
Rail tank car	300	(1000)	2.3	(1.4)	1.3	(0.8)	1.0	(0.6)	6.3	(3.9)	2.6	(1.6)	1.3	(0.8)
Highway tank truck or trailer	125	(400)	1.0	(0.6)	0.5	(0.3)	0.3	(0.2)	2.6	(1.6)	0.8	(0.5)	0.5	(0.3)
Agricultural nurse tank	60	(200)	0.6	(0.4)	0.3	(0.2)	0.3	(0.2)	1.5	(0.9)	0.5	(0.3)	0.3	(0.2)
Multiple small cylinders	30	(100)	0.3	(0.2)	0.2	(0.1)	0.2	(0.1)	0.8	(0.5)	0.3	(0.2)	0.2	(0.1)

Practical Examples

1. **Why can't I find proper shipping name "Jet Perforating Guns,** *oil well without detonator?*
2. **What guide pages are used for UN0124 (1.1D) and UN0494 (1.4D)?**
3. **What if the explosive is on fire?**

Special Circumstances

EXPLOSIVES - ALL!!

Use Guide 112 for all explosives

Except:

1.4 or 1.6 then use 114

If vehicle or material is on fire, consider 1 mile isolation/evacuation distance immediately!!!

Yellow and Blue Border Pages Require:

Identification number

Proper Shipping name

ID No.	Guide No.	Name of Material
1030	115	1,1-Difluoroethane
1030	115	Difluoroethane
1030	115	Refrigerant gas R-152a
1032	118	Dimethylamine, anhydrous

Name of Material	Guide No.	ID No.
AC	117	1051
Accumulators, pressurized, pneumatic or hydraulic	126	1956
Acetal	127	1088
Acetaldehyde	129	1089

Green Border Pages

Table 1 - Initial Isolation and Protective Action Distances

Required information:

- ID number
- Package size
- Day/night
- Wind direction

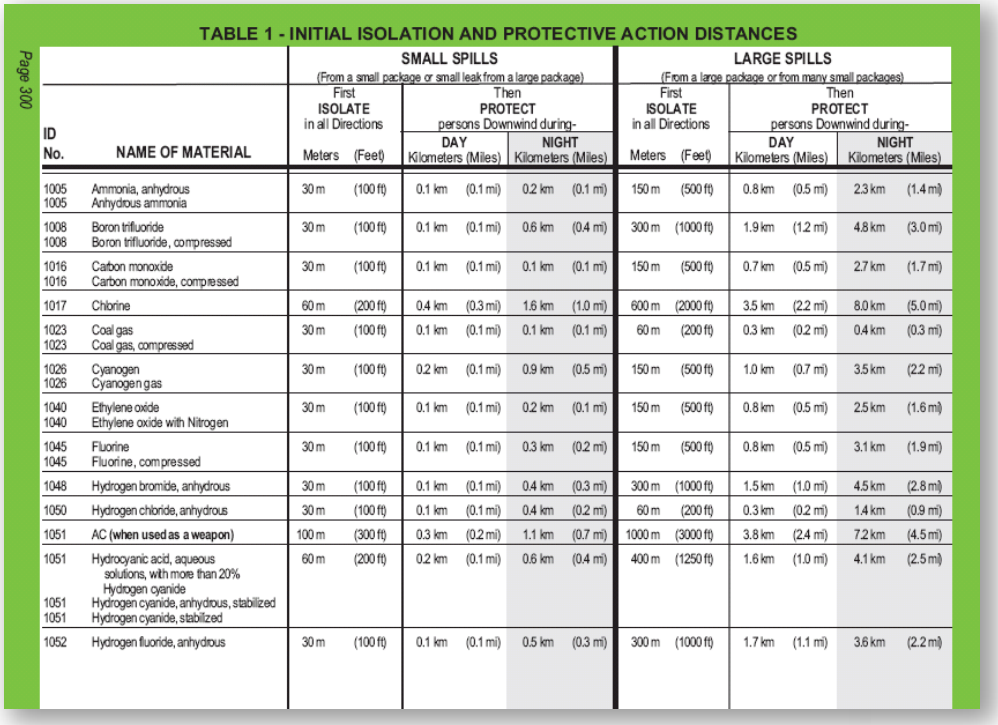


TABLE 1 - INITIAL ISOLATION AND PROTECTIVE ACTION DISTANCES

Page 300

ID No.	NAME OF MATERIAL	SMALL SPILLS (From a small package or small leak from a large package) First ISOLATE in all Directions		Then PROTECT persons Downwind during- DAY		NIGHT		LARGE SPILLS (From a large package or from many small packages) First ISOLATE in all Directions		Then PROTECT persons Downwind during- DAY		NIGHT	
		Meters	(Feet)	Kilometers	(Miles)	Kilometers	(Miles)	Meters	(Feet)	Kilometers	(Miles)	Kilometers	(Miles)
1005 1005	Ammonia, anhydrous Anhydrous ammonia	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)
1008 1008	Boron trifluoride Boron trifluoride, compressed	30 m	(100 ft)	0.1 km	(0.1 mi)	0.6 km	(0.4 mi)	300 m	(1000 ft)	1.9 km	(1.2 mi)	4.8 km	(3.0 mi)
1016 1016	Carbon monoxide Carbon monoxide, compressed	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)
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 1023	Coal gas Coal gas, compressed	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)
1026 1026	Cyanogen Cyanogen gas	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)
1040 1040	Ethylene oxide Ethylene oxide with Nitrogen	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)
1045 1045	Fluorine Fluorine, compressed	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)
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 1051 1051	Hydrocyanic acid, aqueous solutions, with more than 20% Hydrogen cyanide Hydrogen cyanide, anhydrous, stabilized Hydrogen cyanide, stabilized	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)
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)

WARNING

DO NOT Confuse meters with feet !!!

If you isolate 30 feet
instead of 100
WHERE will you be?

First **ISOLATE** in ALL directions	
Meters	(Feet)
30 m	(100 ft)

70 feet TOO close

Additional WHITE PAGE Information

- Protective Clothing
- Fire and Spill Control – BLEVE Boiling Liquid Expanding Vapor Explosion
- Criminal/Terrorist Use of Chemical/Biological/Radiological Agents Improvised Explosive Device (IED)
- Glossary

Additional WHITE PAGE Information

Boiling

Liquid

Expanding

Vapor

Explosion

Additional WHITE PAGE Information

Boiling

Liquid

Expanding

Vapor

Explosion

BLEVE
(USE WITH CAUTION)

Capacity		Diameter		Length		Propane Mass		Minimum time to failure for severe torch	Approximate time to empty for engulfing fire	Fireball radius		Emergency response distance		Minimum evacuation distance		Preferred evacuation distance		Cooling water flow rate	
Litres	(Gallons)	Meters	(Feet)	Meters	(Feet)	Kilograms	(Lbs)	Minutes	Minutes	Meters	(Feet)	Meters	(Feet)	Meters	(Feet)	Meters	(Feet)	Litres/min	USgal/min
100	(38.6)	0.3	(1)	1.5	(4.9)	40	(88)	4	8	10	(33)	90	(295)	154	(505)	307	(1007)	94.6	25
400	(154.4)	0.61	(2)	1.5	(4.9)	160	(353)	4	12	16	(53)	90	(295)	244	(801)	488	(1601)	189.3	50
2000	(772)	0.96	(3.2)	3	(9.8)	800	(1764)	5	18	28	(92)	111	(364)	417	(1368)	834	(2736)	424	112
4000	(1544)	1	(3.3)	4.9	(16.1)	1600	(3527)	5	20	35	(115)	140	(459)	525	(1722)	1050	(3445)	598	158
8000	(3088)	1.25	(4.1)	6.5	(21.3)	3200	(7055)	6	22	44	(144)	176	(577)	661	(2169)	1323	(4341)	848	224
22000	(8492)	2.1	(6.9)	6.7	(22)	8800	(19400)	7	28	62	(203)	247	(810)	926	(3038)	1852	(6076)	1404	371
42000	(16212)	2.1	(6.9)	11.8	(38.7)	16800	(37037)	7	32	77	(253)	306	(1004)	1149	(3770)	2200	(7218)	1938	512
82000	(31652)	2.75	(9)	13.7	(45)	32800	(72310)	8	40	96	(315)	383	(1257)	1435	(4708)	2200	(7218)	2710	716
140000	(54040)	3.3	(10.8)	17.2	(56.4)	56000	(123457)	9	45	114	(374)	457	(1499)	1715	(5627)	2200	(7218)	3539	935

ERG 2012
Mobile Pocket and Windows PC

- Requests Received From Emergency Responders Indicate Need for ERG2012 Mobile
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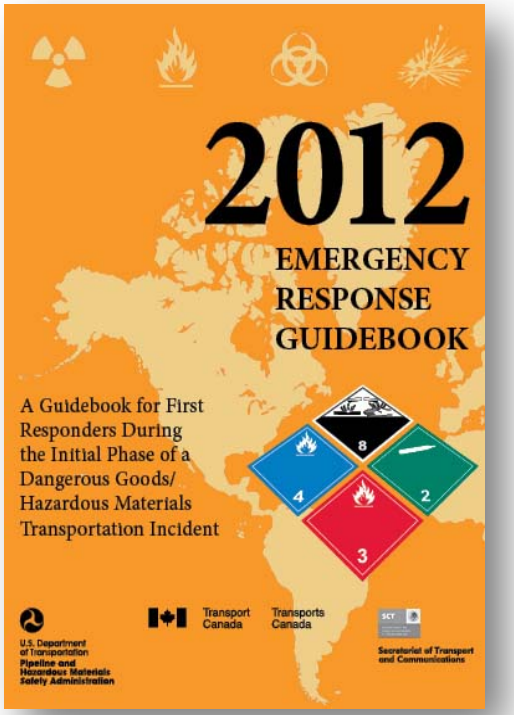

http://hazmat.dot.gov/pubs/erg/guidebook.htm

Where to Find More Information…

http://wiser.nlm.nih.gov/

http://hazmat.dot.gov

U.S. Department of Transportation
Pipeline and Hazardous Materials Safety Administration

Hazardous Material Info-Center

1-800-HMR-4922

(1-800-467-4922)

E-mail: infocntr@dot.gov

Hours of Operation: 9 am – 5 pm ET

- Obtain answers to HMR questions
- Request copies of Federal Register, special permits or training materials
- Report HMR violations
- Fax on Demand

U.S. Department of Transportation
Pipeline and Hazardous Materials Safety Administration

Hazardous Material Safety Assistance Team

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