

FOREWORD

The 2004 edition of the United States Department of Transportation (DOT) Emergency Response Guide is a joint project with Canada and Mexico. This collaboration has resulted in the 2004 Emergency Response Guide (ERG).

Distribution of the 2004 Emergency Response Guide as in previous years will be undertaken by pre-designated state agencies in each state. Listings of each state's distribution agency can be obtained by calling the DOT at 202-366-0656 or visiting the DOT website at <http://hazmat.dot.gov/guidebook.htm>. This course has been developed to provide emergency responders with training in the use of the Emergency Response Guidebook before they are called upon to use the book in an emergency. This training is targeted to all emergency responders including fire, police, EMS, public works, private industry and others.

ERG 2004 is designed for first responders to the scene of a dangerous goods (hazardous materials incident). It should be used during the first 30 minutes of the incident. Response personnel cannot make effective use of the ERG if they do not become familiar with the book prior to an incident occurring. It is envisioned that, through this training program, the nation's emergency responders will be better prepared to deal effectively and safely with hazardous materials emergencies using the 2004 Emergency Response Guidebook.

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COURSE OVERVIEW

This course is designed to prepare individuals to teach the 2004 North American Emergency Response Guidebook Course to local responders in their jurisdictions. At the conclusion of the course, students will be able to:

1. Explain the role of the Emergency Response Guidebook when used at the scene of a dangerous goods (hazardous materials incident).
2. Locate a 3-digit orange guide for use with the placard when given a placard without a 4-digit identification number.
3. Locate the number in the yellow section of the guidebook and obtain a 3-digit guide number for the orange section of the book when given a placard with a 4-digit identification number.
4. Locate the chemical in the alphabetical blue section of the guide book and obtain a 3-digit guide number for the orange section of the book when given the name of a chemical.
5. Explain the significance of the highlighted 4-digit numbers and chemical names in the yellow and blue sections of the book.
6. Locate isolation and downwind distances in the green section of the book when given a 4-digit number or chemical name.
7. Explain the information available from the orange guide section of the book.

INTRODUCTION

The 2004 edition of the U.S. Department of Transportation's (DOT) *Emergency Response Guidebook* (ERG) has been published. Designed by the U.S. Department of Transportation, Transport Canada, and the Mexican Secretariat of Transport and Communications, the ERG is intended for the use of first responding emergency personnel to a hazardous materials or terrorist incident. This guidebook should only be used during the initial response phase of an incident (first 30 minutes). It is designed to aid first responders in quickly identifying the specific or generic hazards of the material(s) involved in an incident, and protecting themselves and the general public during the initial response phase of the incident. Personnel should find as much specific information about the material(s) involved as they can. The guidebook is only one source of information. Other sources include CHEMTREC, the National Response Center (NRC), shipping papers, MSDS sheets, and others. In order for the ERG to be the greatest benefit to responders, they need to become thoroughly familiar with the book before it is used during an actual emergency. Within the guide are a number of white pages, which explain how the book is organized, and includes first response tips for emergency personnel. The 2004 ERG is divided into four major color-coded sections, yellow, blue, orange, and green. It contains 373 pages, including a placard chart; numerical and alphabetical listings; action guides; protective action distances; water reactive materials; protective clothing; a glossary; and miscellaneous information. New sections covered in the 2004 ERG include Rail Car and Road Trailer Charts, Intermodal Container Hazard Identification Codes, and Criminal/Terrorist Use of Chemical/Biological Agents sections. The 3-page section covering Criminal/Terrorist Use of Chemical/Biological (CB) Agents is designed to provide information to response personnel during the preliminary assessment of a potential terrorist incident involving chemical or biological agents. A list of observable indicators of the use and/or presence of a CB agent is provided on pages 354-355. For further information contact the National Response Center or FBI.

Hazardous materials and terrorist scenes can pose a significant safety risk to emergency response personnel whether they are firefighters or from law enforcement, or emergency medical organizations. The scene should

always be approached from upwind, and also uphill if possible. Most importantly, do not walk into or touch spilled material. Avoid inhalation of fumes; smoke and vapors, even if no placards or labels are displayed. Lack of a smell does not mean there is no danger; odorless gases or vapors may be harmful. Once on scene, first responders have four basic responsibilities, Recognition, Notification, Isolation and Protection. First and most importantly, response personnel must protect themselves before taking any actions at a hazardous materials incident. Information on personal protective clothing can be found on page 351 of the guidebook. Information provided in ERG 2004 can assist response personnel in all of their first responder functions. When response personnel determine that a hazardous materials or terrorist event has occurred, they should access the ERG 2004 for assistance. The following steps should be followed when using the guidebook:

- STEP ONE:** Identify the material through one of the following actions:
1. Find the 4-digit identification number on the placard or orange panel.
 2. Locate the 4-digit number on a shipping document or package.
 3. Find the name of the material on a shipping document, placard, or package.
 4. If an ID number or name of a material is unavailable, the Table of Placards, Guide 111, or Railroad/Highway Charts should be used.
- STEP TWO:** Look up the materials 3-digit guide number.
1. In Yellow page ID number index.
 2. In the Blue name of material index.
- STEP THREE:** Turn to the numbered guide in the orange section and read carefully.

RAIL CAR AND ROAD TRAILER CHARTS

New pages have been added to the 2004 ERG with silhouettes of rail cars and road trailers. There are a wide variety of both rail cars and road trailer vehicles which transport liquids, compressed gases, liquefied compressed gases, refrigerated liquids, flammable solids, and molten solids to name a few. While the container type

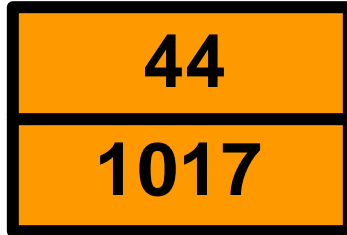
may indicate the physical state of the material inside, more identification is needed concerning the product before any mitigation efforts are initiated. The information presented in the ERG 2004 is designed to give responders a very generic idea of the hazards associated with certain bulk transportation containers. Orange guides have been provided for use depending on the type of container involved in an incident. They can be found in a circle next to individual rail cars and road trailers located on the charts. These guide pages should **ONLY** be used when **no other information is available about the materials in the container**. The “Rail Car Identification Chart” is located on page 18 and the “Road Trailer Identification chart” is located on page 19.

HAZARD CLASSIFICATION CODES

Some intermodal bulk containers may have a Hazard Identification Code number shown in the top half of an orange panel, just above the UN 4-digit identification number. Information concerning these numbers starts on page 21 of the ERG 2004. Code numbers may be two or three figures which indicate the following hazards:

- 2 – Emission of gas due to pressure or chemical reaction
 - 3 – Flammability of liquids (vapors) and gases or self-heating liquid
 - 4 – Flammability of solids or self-heating solid
 - 5 – Oxidizing (fire-intensifying effect)
 - 6 – Toxicity or risk of infection
 - 7 – Radioactivity
 - 8 – Corrosivity
 - 9 - Risk of spontaneous violent reaction
- Doubling of a figure indicates an intensification of that particular hazard (i.e. 33, 66, 88).
 - Where the hazard associated with a material can be adequately indicated by a single figure, the figure is followed by a zero (i.e. 30, 40, 50).
 - A hazard identification code prefixed by the letter “X” indicates that the material will react dangerously with water (i.e. X88).

An example of a Hazard identification code above a 4-digit UN identification number on an orange panel:



UN HAZARD CLASSIFICATION SYSTEM

The United Nations (UN) has established a system of classifying dangerous goods by their hazard. This system contains 9 separate hazard classes. DOT's placarding system is based upon the UN system. Many of the hazard classes are further divided into sub-classes. Shown below are the 9 hazard classes.

CLASS 1 - Explosives

Division 1.1	Mass Explosion Hazard
Division 1.2	Projection Hazard
Division 1.3	Fire Hazard
Division 1.4	No Blast Hazard
Division 1.5	Blasting Agents
Division 1.6	Insensitive Articles

Class 2 - Gases

Division 2.1	Flammable Gases
Division 2.2	Non-Flammable Gases
Division 2.3	Gases Toxic by Inhalation
Division 2.4	Corrosive Gases (Canada)

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

Class 4 - Flammable Solids

Division 4.1	Flammable Solids
Division 4.2	Spontaneously Combustible
Division 4.3	Dangerous When Wet

Class 5 - Oxidizers

Division 5.1	Oxidizers
Division 5.2	Organic Peroxides

Class 6 - Toxic Materials and Infectious Substances

Division 6.1	Toxic Materials
Division 6.2	Infectious Substances

Class 7 - Radioactives

Class 8 - Corrosives

Class 9 - Miscellaneous Dangerous Goods (Canada)

Division 9.1	Miscellaneous (Canada)
Division 9.2	Environmentally Hazardous (Canada)
Division 9.3	Dangerous Wastes (Canada)

PLACARD TABLE

ONLY when a 4-digit ID number is unavailable, and the name of the material is unknown, should responders refer to the table of placards in the front of the book on pages 16 and 17, for placards and labels displayed on containers and transportation vehicles. The placard table shows new placards used under the DOT regulations that were not shown in the 1996 guidebook, along with some additional placards used in Canada and Mexico. In a circle next to each placard on the table will be an action guide number from the orange section, which is used for materials displaying the placard shown. The following guidelines should be used when approaching a container, which only has a placard, displayed:

- Approach cautiously from upwind and uphill to a point where safe identification of the placard can be made.
- Match the placard(s) on the container with one of the placards in the table.
- Refer to the numbered guide associated with the placard on the table.
- Orange guides associated with the placards provide the worst-case scenario concerning the potential risk or hazard of the material(s).
- If additional information becomes available about the materials, use a more specific guide from the yellow or blue section of the guidebook.

When a Dangerous Placard is displayed, guide 111 is used for mixed loads or unidentified cargo. If the nature of the spilled, leaking, or burning material is unknown, additional information must be obtained as soon as possible.

Orange action guides in the ERG are grouped by hazard class and special information surrounding the shipment. A listing of hazard classes is located on page 13. This listing corresponds with the hazard classes represented on the placard table. Some of the classifications are different than what responders may be used to. For example, the

Canadian system uses an additional compressed gas sub-division, which is 2.4 corrosive gases. DOT's placarding and labeling system only identifies the most severe hazard of a material as determined by the regulatory agency, therefore the placard only shows one hazard class. Almost all hazardous materials can have more than one hazard. Responders should be aware of this fact and be prepared for "hidden hazards". The author of this training course has designed a "Placard Hazard Chart" for use by emergency responders, which lists potential hidden hazards of placarded and labeled materials. For information concerning the "Placard Hazard Chart" contact: Robert Burke robert.burke@att.net or Fax (410) 760-3864.

YELLOW NUMERICAL SECTION

The **yellow section**, which starts on page 25, contains a numerical listing of United Nations 4-digit identification numbers. These numbers are located in the center of placards on vehicles transporting bulk quantities of hazardous materials. Once the 4-digit number is located in the yellow section of the guide, a reference is made to an action guide located in the orange section of the book. This action guide is identified with a three-digit number, which appears at the top of the page.

For example:	ID No. 1017	Guide No. 124	Name of Material Chlorine
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Three-digit numbers located in the yellow and blue sections of the guide may have a letter "P" after the number. This letter indicates that in addition to any other hazards the material may have, it also may undergo polymerization, which can be a violent explosive reaction.

BLUE ALPHABETICAL SECTION

Alphabetical listings of the same materials found in the yellow section are located in the blue section starting on page 97. This section is used only if the name of the hazardous material is known.

For Example:	Name of Material Gasoline	Guide No. 128	ID No. 1203
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Both the yellow and blue sections reflect new additions of chemicals not contained in the 1996 guidebook. When a material listed in the yellow or blue section is highlighted, initial isolation and protective action distances for that chemical are listed in the green section, starting on page 300. The evacuation distances located in the green section of the book are used only if the material is **not** on fire. If a material is on fire, there will be evacuation distances listed in the orange guide section of the book.

ORANGE GUIDE SECTION

Protective action guides numbered from 111 to 172 are located in the 2004 ERG starting on page 169. Each protective action guide provides procedures designed to preserve the health and safety of the public and emergency response personnel during the initial stages of a hazardous materials incident.

- **Guide 111** is the first guide in the orange section and is used for Mixed Loads or Unidentified Cargoes. Subsequent guides deal with each of the nine United Nations hazard classes including explosives, compressed gases, flammable liquids, flammable solids, oxidizers, poisons, radioactives, corrosives, and miscellaneous hazardous materials. Other guides provide information for materials that pose special or multiple hazards.
- **Guide 113** is used for flammable solids that are considered wetted explosives.
- **Guide 115** deals with flammable gases including refrigerated liquids (cryogenics) such as hydrogen, argon, and nitrogen.
- **Guides 116 and 117** provide information on unstable flammable gases and flammable/toxic gases like hydrocyanic acid, acetylene, and silane.
- **Guide 118** lists information for flammable gases that are also corrosive, such as, ethyl and methylamine.
- **Guide 119** lists procedures for toxic/flammable gases like arsine, carbon monoxide, and ethylene oxide.
- **Guides 120 and 121** provide information on unrefrigerated inert gases, which include nitrogen, argon, and krypton. Inert gases do not readily react chemically with any other materials. Inert gases may however, be an asphyxiation hazard and displace the oxygen in the air.

- **Guides 122 to 126** are compressed gases, some with other hazards in addition to the pressure, such as anhydrous ammonia, chlorine, carbon dioxide, and oxygen.
- **Guides 127 to 130** are used for flammable liquids and are separated into polar and non-polar solvents. Polar solvents are usually miscible in water, because water is also polar. Alcohols, ketones, and aldehydes are polar materials. Knowing the polarity of a flammable liquid is important when choosing firefighting foam. Polar solvents involved in fire or liquid spills, which must be blanketed with foam, should be addressed with an alcohol type or polar solvent foam. Gasoline, diesel fuel and heating oil are examples of non-polar materials. They do not mix with water but instead form layers, usually on the top of the water. These materials require the use of a non-polar solvent hydrocarbon foam.
- **Guides 131 and 132** include materials that are flammable liquids and also corrosive or toxic such as acrolein, normal butylamine, and tetraethyl lead.
- **Guides 133 to 139** deal with materials that are flammable solids, spontaneously combustible, or water reactive. These materials may also be toxic and corrosive. Examples are phosphorus, sulfur, matches, and calcium phosphide.
- **Guides 140 to 150** are used for oxidizers, organic peroxides, and self-reactive materials. Many peroxides and oxidizers may also be explosive although not listed as such by regulatory agencies. It is the oxidizer in chemical explosives, which allow an explosion to occur. Organic peroxides may undergo polymerization reactions that can cause violent container failures. Ammonium nitrate is an example of an oxidizer and butadiene is an organic peroxide.
- **Guides 151 to 157** deal with materials that are toxic and those toxic materials which have other hazards, such as water reactivity, corrosivity, and flammability. Examples include toluene diisocyanate and organophosphate pesticides.
- **Guides 158 and 159** are used for infectious substances and irritants. Infectious substances are living organisms that cause biological damage to the body. Irritants such as tear gas, are materials that cause irritation to the certain parts of the body.

- **Guide 160** deals with halogenated solvents, those which contain fluorine, chlorine, bromine and iodine, examples are trichloroethylene and 1,1,1, trichloroethylene.
- **Guides 161 to 166** are used for materials with different levels of radioactivity from low to high.
- **Guide 167** is used for fluorine.
- **Guide 168** deals with carbon monoxide.
- **Guide 169** provides information on molten aluminum, which has an elevated temperature of 1300° F.
- **Guide 170** is used with metals in the form of powder, dust and turnings.
- **Guide 171** is used for substances with low or moderate hazards.
- **Guide 172** deals with gallium and mercury, which are toxic heavy metals.

Emergency responders should become familiar with all sections of the guidebook before an incident occurs.

Once an orange guide page is identified for a particular chemical, read the entire page before taking any action.

Actions taken should not exceed the level of training and equipment available to response personnel. The ERG is designed for first responders, who by Federal Law have a limited capability to deal with hazardous materials because of limited training and lack of proper chemical protective equipment. First responder responsibilities according to OSHA Regulation 29 CFR 1910.120 and recommendations in NFPA consensus Standard 472, are limited to recognition, identification (if safely possible), notification, isolation, and protection. The information listed in the action guides of the orange section is designed to assist first responders in safely carrying out those responsibilities.

Guide pages in the orange section of the book are divided into three major sections, Potential Hazards, Public Safety, and Emergency Response. The Potential Hazards Section is sub-divided into two sections, fire or explosion, and health hazards. Either the Fire or Explosion or the Health Hazards may appear first in the listing on the page. Whichever one is listed first indicates the most severe hazard of the material. Public Safety is divided into three sections, General Information for Responders, Protective Clothing, and Evacuation. Emergency Response is divided into three sections, Fire, which includes Evacuation and Isolation information, Recommended Extinguishing Agents, and when to use Unmanned Monitors and Withdraw from the area. Also included in the orange section are

Spill or Leak Procedures, and First-aid information. ERG 2000 has added notification of 911 to the first aid instructions. Several guides also contain loss of cooling information for materials that must be maintained at a certain temperature to remain stable. This applies primarily to organic peroxides, which have Self-Accelerating Decomposition Temperatures (SADT) and may polymerize if cooling is lost.

GREEN PROTECTIVE ACTION SECTION

Initial isolation and protective action distances for highlighted materials in the yellow and blue sections, are located in the green section, starting on page 300 (two new pages have been added to the 2004 ERG). An introduction to the Table of Initial Isolation and Protective Action Distances can be found on pages 300-301.

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)							
		First ISOLATE in all Directions		Then PROTECT persons Downwind during-		First ISOLATE in all Directions		Then PROTECT persons Downwind during-					
		Meters	(Feet)	DAY Kilometers (Miles)	NIGHT Kilometers (Miles)	Meters	(Feet)	DAY Kilometers (Miles)	NIGHT Kilometers (Miles)				
1005	Ammonia, anhydrous	30 m	(100 ft)	0.2 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	1.1 km	(0.7 mi)
1005	Ammonia, anhydrous, liquefied												
1005	Ammonia, solution, with more than 50% Ammonia												
1006	Anhydrous ammonia												
1006	Anhydrous ammonia, liquefied												
1008	Boron trifluoride	30 m	(100 ft)	0.2 km	(0.1 mi)	0.5 km	(0.4 mi)	215 m	(700 ft)	1.6 km	(1.0 mi)	5.1 km	(3.2 mi)
1008	Boron trifluoride, compressed												
1016	Carbon monoxide	30 m	(100 ft)	0.2 km	(0.1 mi)	0.2 km	(0.1 mi)	125 m	(400 ft)	0.6 km	(0.4 mi)	1.8 km	(1.1 mi)
1016	Carbon monoxide, compressed												
1017	Chlorine	30 m	(100 ft)	0.3 km	(0.2 mi)	1.1 km	(0.7 mi)	275 m	(900 ft)	2.7 km	(1.7 mi)	6.8 km	(4.2 mi)
1023	Coal gas	30 m	(100 ft)	0.2 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.3 km	(0.2 mi)	0.6 km	(0.3 mi)
1023	Coal gas, compressed												
1026	Cyanogen	30 m	(100 ft)	0.3 km	(0.2 mi)	1.1 km	(0.7 mi)	305 m	(1000 ft)	3.1 km	(1.9 mi)	7.7 km	(4.8 mi)
1026	Cyanogen, liquefied												
1026	Cyanogen gas												
1040	Ethylene oxide	30 m	(100 ft)	0.2 km	(0.1 mi)	0.2 km	(0.1 mi)	60 m	(200 ft)	0.5 km	(0.3 mi)	1.8 km	(1.1 mi)
1040	Ethylene oxide with Nitrogen												
1045	Fluorine	30 m	(100 ft)	0.2 km	(0.1 mi)	0.5 km	(0.3 mi)	185 m	(600 ft)	1.4 km	(0.9 mi)	4.0 km	(2.5 mi)
1045	Fluorine, compressed												
1048	Hydrogen bromide, anhydrous	30 m	(100 ft)	0.2 km	(0.1 mi)	0.5 km	(0.3 mi)	125 m	(400 ft)	1.1 km	(0.7 mi)	3.4 km	(2.1 mi)
1050	Hydrogen chloride, anhydrous	30 m	(100 ft)	0.2 km	(0.1 mi)	0.6 km	(0.4 mi)	185 m	(600 ft)	1.6 km	(1.0 mi)	4.3 km	(2.7 mi)
1051	AC (when used as a weapon)	60 m	(200 ft)	0.2 km	(0.1 mi)	0.5 km	(0.3 mi)	460 m	(1600 ft)	1.6 km	(1.0 mi)	3.9 km	(2.4 mi)

The green section lists materials by ID number, Toxic Inhalation Hazard (TIH) materials, and includes certain chemical warfare agents, and water-reactive materials, which produce toxic gases upon contact with water. A TIH

material is a liquid or a gas which is known to be so hazardous to humans that it poses a hazard to health during transportation, or in the absence of adequate data on human toxicity, is presumed to be toxic to humans based upon tests conducted using laboratory animals. A TIH has an LC₅₀ value of not more than 5000 ppm. The LC₅₀ is the lethal concentration to 50% of the laboratory animals tested. Hazard zones have been assigned to TIH materials in an attempt to classify the severity of the inhalation hazard in terms of LC₅₀. For example, a Hazard Zone A material would be more toxic than a Hazard Zone D material. These zones do not have any connection to areas or distances.

- **Hazard Zone A:** LC₅₀ of less than or equal to 200 ppm
- **Hazard Zone B:** LC₅₀ greater than 200 ppm and less than or equal to 1000 ppm
- **Hazard Zone C:** LC₅₀ greater than 1000 ppm and less than or equal to 3000 ppm
- **Hazard Zone D:** LC₅₀ greater than 3000 ppm and less than or equal to 5000 ppm

Many distances were revised, both upward and downward between the 1993, 1996, 2000 and 2004 editions of the ERG.

The minimum isolation distance listed in the 1993 guide was 500 feet, in the 1996 edition the minimum isolation distance was 30 m or 100 feet. Minimum distances in the 2004 ERG for isolation remain the same as the 1996 edition. Maximum isolation distances for any specific chemical in the 1993 edition were 1500 feet, in the 1996 edition the distance was increased to 2000 feet, and in the 2004 ERG the distance was increased to a maximum of 915 m or 3000 feet. The minimum downwind distance in the 2004 ERG of 0.1 miles or 0.2 kilometers, for any specific chemical, remains the same as in the 1996 edition. Maximum downwind distances in the 2004 ERG remain the same as for the 1996 edition, which was 7.0+ miles or 11.0+ kilometers. Fluctuations in the isolation and downwind protection distances occur because of improvements in computer modeling, which is used to determine the distances. Distances shown are expected to be reached by a vapor cloud of hazardous materials within the first 30 minutes of an incident. The initial isolation zone includes the area around the incident where the product is located, commonly known as the hot zone. Response personnel may be exposed to hazardous materials in the hot zone. Protective action distances involve the area downwind from the spill or release where people may come in contact with vapors. If materials are on fire, additional information concerning isolation and downwind protection distances must be obtained from the orange section or some other reliable source. A graphic showing set-up of

initial isolation and protective action guide distances is shown on pages 302 and 303 of the green section. When a material in the yellow or blue section is highlighted, responders should go directly to the green section of the book to obtain isolation and evacuation distances. Information on wind direction should be obtained as soon as possible. Distances in the green section are divided into two parts, small spills and large spills. A small spill consists of a single individual package or container, usually 55 gallons or less in capacity. Large spills involve a large package or container, or multiple small packages or containers. Spills are further divided into two types, day and night. Day spills are considered any time between sunrise and sunset, and night spills anytime between sunset and sunrise. Isolation distances and downwind protection distances are identified for both day and night spills. This is done because the air is more stable at night and the vapor clouds will travel farther than during the day.

GREEN WATER REACTIVE SECTION

Dangerous water reactive materials are also listed at the end of the green section. The 2004 ERG has two new protective action information sheets added to the water reactivities section located between pages 344 and 349. Green Water Reactive Section listings should only be used when materials are spilled in water, or firefighting will

TABLE OF 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	151	Dimethyldichlorosilane	HCl	
1242	139	Methyldichlorosilane	HCl	
1250	155	Methyltrichlorosilane	HCl	
1295	139	Trichlorosilane	HCl	
1298	155	Trimethylchlorosilane	HCl	
1340	139	Phosphorus pentasulfide, free from yellow and white Phosphorus	H ₂ S	
1340	139	Phosphorus pentasulphide, free from yellow and white Phosphorus	H ₂ S	
1360	139	Calcium phosphide	PH ₃	
1384	135	Sodium dithionite	H ₂ S SO ₂	
1384	135	Sodium hydrosulfite	H ₂ S SO ₂	
1384	135	Sodium hydrosulphite	H ₂ S SO ₂	
1397	139	Aluminum phosphide	PH ₃	
1412	139	Lithium amide	NH ₃	
1419	139	Magnesium aluminum phosphide	PH ₃	

cause a water reaction. Types of toxic vapor(s) released in a water reaction with listed water reactive materials are

identified in this section. The potential TIH gases released when water reactive materials are in contact with water are shown below.

Chemical Symbols for TIH Gases:					
Br ₂	Bromine	HF	Hydrogen fluoride	PH ₃	Phosphine
Cl ₂	Chlorine	HI	Hydrogen iodide	SO ₂	Sulfur dioxide
HBr	Hydrogen bromide	H ₂ S	Hydrogen sulfide	SO ₂	Sulphur dioxide
HCl	Hydrogen chloride	H ₂ S	Hydrogen sulphide	SO ₃	Sulfur trioxide
HCN	Hydrogen cyanide	NH ₃	Ammonia	SO ₃	Sulphur trioxide

Page 367 Use this list only when material is spilled in water.

Keep in mind that many water reactions also produce heat and may be violent in nature. Heat produced from a water reaction may be enough to ignite ordinary combustible materials in the area. Chemical names of toxic vapors released from a water reaction must be researched in the blue and green sections to determine what orange guide page to use. Isolation and evacuation distance should then be determined from the orange or green sections.

SHIPPING PAPERS

Located inside the front cover of the ERG is an example of the type of useful information that is found on the shipping papers. Also shown is the location of the UN 4-Digit Identification Number on a placard. One important change regarding shipping papers occurred in the 1993 ERG and involves the requirement for an emergency contact telephone number that must appear at the top of the shipping paper. If shipping papers have been located, emergency responders should use the emergency contact number first when trying to gain information about the product. If the shipping papers are not available, then the 24-hour Chemtrec number (1-800-424-9300) should be used. Shipping papers on highway transportation vehicles are located in the cab of the motor vehicle. Railroad shipping papers will be in the possession of the train crew. Shipping papers on water vessels are located in a "mail box" on a barge or in a holder on the bridge of a tug or ship. During air transportation, shipping papers are located in the cockpit or are in the pilot's possession. Other information found on shipping papers includes, for each material, the number of packages, the proper shipping name, the hazard class number, the UN 4-digit ID number, the packing group, and the weight of the shipment. Notice that the weight is listed using the metric system of measurement. The metric system is also used in the green section for distances under isolation and downwind protection. Response personnel should have a basic understanding of the metric system of weights and measures to

better understand the terminology used in certain sections of the ERG 2004. Along with the shipping papers, or attached to them, must be information that outlines the hazards of the product which can be used in the mitigation of a hazmat emergency. Attaching a guide page to the papers or having a copy of the ERG available for use can satisfy this requirement.

EMERGENCY CONTACT 1-800-000-0000		Example Emergency Telephone Number	
No & TYPE OF PACKAGES	DESCRIPTION OF ARTICLES	HAZARD CLASS OR DIVISION NO.	QUANTITY
1 TANK TRUCK	ISOPROPANOL	UN1219 II	← 3,000 LITERS
	↑ Shipping Name	↑ ID Number	↑ Packing Group

EMERGENCY CONTACT INFORMATION

When the first responder arrives on the scene of an incident, they are expected to recognize the presence of dangerous goods, protect themselves and the public, secure the area, and call for the assistance of trained personnel. Those notifications, which need to be made, can be placed into three general categories, Organization/Agency, Emergency Response Telephone Number, and National Assistance. Your organization/agency should be notified first. Actions should be instituted according to the local emergency response plan, which identifies the notifications to be made. Next, the emergency response telephone number should be obtained from the shipping papers if they are available. Lastly, contact the appropriate national resources as identified on pages 8-13 of the ERG 2004 and on page 380 of the ERG. Pages 7-9 of the ERG contain information concerning whom to notify during a hazardous materials incident including, Chemtrec and the National Response Center (NRC). If the material spilled is a marine pollutant, or if oil products are spilled on the water, the National Response Center should be notified. If an RQ is listed on the shipping papers, the material is a reportable quantity of the hazardous material, and if spilled, the NRC must also be contacted in addition to any other notifications made. The National Response Center has a 24-hour number, 1-800-424-8802. NRC is the notification, communications, technical assistance, and coordination center

for the National Response Team (NRT). They can provide much of the same information on chemicals that Chemtrec does, through their OM-TADS database. NRC can also provide facilities for conducting conference calls with over 20 different parties on the incident scene. NRC should also be contacted to report chemical or biological terrorist attacks. There are two contact numbers provided, for explosives or ammunition incidents call 703-697-0218, collect calls are accepted, all other dangerous goods incidents should be referred to 1-800-851-8061. These numbers are for emergencies only. In the new 2004 edition of the ERG, a glossary of terms is provided on pages 358 to 365. Terms have been added to the glossary dealing with terrorist incidents using chemical and biological agents.

Emergency scenes should be surveyed through binoculars to search for clues to the presence of hazardous materials. The ERG is a valuable tool to be used in the process of identifying hazardous materials and determining the proper actions to be taken by first responders. Just as first responders are limited in what they can do at the scene of a hazardous materials emergency, the ERG is limited in the amount of information it provides. It is not intended to be used during the mitigation phase of the incident and therefore should not be used as one of the reference materials selected to determine mitigation methods.

Free copies of the ERG are provided by the United States Department of Transportation to all police, fire, EMS and other emergency response organizations through a selected agency in each state. Your state agency can be determined by contacting the DOT Office of Hazardous Materials Transportation Research and Special Programs (RSPA) at (202) 366-0656. State contacts for the 2004 Emergency Response Guidebook are also listed on the DOT Web site, which is located at <http://hazmat.dot.gov/guidebook.htm>. Copies are also available commercially, for a fee, from the American Trucking association and other private companies. This training course for the 2004 Emergency Response Guidebook is available in two formats. Course formats include, PowerPoint CD-ROM version or 35 mm slide version. In addition to the PowerPoint and 35 mm slides, each version contains an Instructor Guide, Student Manual, list of state ERG contacts, and list of private sector sources for the response guide, a course certificate template, final exam, and a copy of the guidebook. Information on this training course can be obtained from Robert Burke E-mail: robert.burke@att.net or Fax: 410-760-2549.