

**U.S. Chemical Safety and
Hazard Investigation Board**

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Chairperson

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Attention: Docket No. PHMSA-2014-0099; Notice No. 14-11

Dear Sir or Madam:

The U.S. Chemical Safety and Hazard Investigation Board (CSB) would like to comment on the U.S. Department of Transportation's notice, "Hazardous Materials: Revision of Emergency Response Guidebook" (FR Doc. 2014-20683) which was published on August 29, 2014. Our comments are intended to provide information and to assist in the revision of the Emergency Response Guidebook for the 2016 version.

The cover page of the Emergency Response Guidebook (ERG) states that the publication is, "A Guidebook for First Responders During the Initial Phase of a Dangerous Goods/Hazardous Materials Transportation Incident."¹

The ERG is intended for incidents involving the transport of hazardous materials and is limited to the size of the transportation containers involved. However, the CSB has found in several of its investigations² that the ERG manual is used by emergency responders for incidents involving chemical fires, explosions and releases of hazardous materials at fixed facilities. Incidents at fixed facilities may involve larger quantities of hazardous materials as well as additional hazards involving process conditions or other hazardous chemicals stored nearby, resulting in higher risk to emergency responders. The directions on how to respond to a chemical release or fire incident intended for transportation may be different when applied to an incident at a fixed chemical or manufacturing facility. For this reason, the CSB suggests that the Department of Transportation consider additional language to clarify ERGs usage limitations at fixed facilities. Please see the following comments:

I. Clarification of the use of the ERG for responding to hazardous materials in non-transportation incidents.

Though the ERG is intended for transportation incidents, the limited effectiveness of its application at a fixed chemical facility is not prominently cautioned in the front section of the guidebook. The second paragraph of the User's Guide (page 356) of the 2012 Edition of the ERG states, "*This guidebook will assist responders in making initial decisions upon arriving at the scene of a dangerous goods incident. It should not be considered as*

¹ The ERG is jointly produced by the U.S. Department of Transportation, Transport Canada, and the Secretariat of Communications and Transportation (Mexico). Although other countries such as Argentina, Brazil, and Colombia have recently begun using the ERG, it was developed primarily to be consulted by emergency response personnel (such as firefighters, emergency medical technicians, and police officers) in the United States, Canada, and Mexico, when responding to transportation emergency involving hazardous materials.

² Technics, Inc. (2003), DuPont Belle (2010), Millard Refrigerated Services (2010), AL Solutions (2010).

U.S. Chemical Safety and Hazard Investigation Board

a substitute for emergency response training, knowledge or sound judgment. ERG2012 does not address all possible circumstances that may be associated with a dangerous goods incident. It is primarily designed for use at a dangerous goods incident occurring on a highway or railroad during transportation. Be mindful that there may be limited value in its application at fixed facility locations.”

The CSB believes that this information is obscured in the User’s Guide (See Excerpt 1 below) and should be emphasized in the early pages of the ERG. While the chemical name and identification number of the hazardous material could be available in the ERG, the guidelines and the information provided may still be of limited value, as the ERG is geared for transportation incidents rather than fixed facility incidents.

The CSB recognizes that the ERG manual will continue to be referenced by emergency responders for incidents involving the release of hazardous materials and fixed facilities. As a result, the Department of Transportation should also consider adding additional guidance such as the information first responders should obtain and reference when responding to an incident at a fixed facility, such as the company’s Safety Data Sheets (SDS) or submitted Tier II information. This information should also be in the front matter of the guidance, for example on page 1 and 2.

Suggested Revision: While the User’s Guide stated the primary intention of the application of the ERG – for use during transportation incidents, the CSB suggests the following:

1. In the next edition of the ERG, highlight boldly on the front cover page - “**ONLY INTENDED FOR USE WHEN RESPONDING TO TRANSPORTATION INCIDENTS.**”
2. Include additional guidance on the location emergency responders can obtain chemical hazard information if responding to an incident at a fixed facility, such as Material Safety Data Sheets (MSDSs) or Tier II information for that facility.
3. Move the User’s Guide from page 356 to page 1 or 2 of the next edition of the ERG to provide the users with the necessary guidance beginning from the earlier pages of the ERG.

U.S. Chemical Safety and Hazard Investigation Board

ERG2012 USER'S GUIDE

The 2012 Emergency Response Guidebook (ERG2012) was developed jointly by Transport Canada (TC), the U.S. Department of Transportation (DOT), the Secretariat of Transport and Communications of Mexico (SCT) and with the collaboration of CIQUIME (Centro de Información Química para Emergencias) of Argentina, for use by fire fighters, police, and other emergency services personnel who may be the first to arrive at the scene of a transportation incident involving dangerous goods. **It is primarily a guide to aid first responders in quickly identifying the specific or generic hazards of the material(s) involved in the incident, and protecting themselves and the general public during the initial response phase of the incident.** For the purposes of this guidebook, the "initial response phase" is that period following arrival at the scene of an incident during which the presence and/or identification of dangerous goods is confirmed, protective actions and area securement are initiated, and assistance of qualified personnel is requested. It is not intended to provide information on the physical or chemical properties of dangerous goods.

This guidebook will assist responders in making initial decisions upon arriving at the scene of a dangerous goods incident. It should not be considered as a substitute for emergency response training, knowledge or sound judgment. ERG2012 does not address all possible circumstances that may be associated with a dangerous goods incident. **It is primarily designed for use at a dangerous goods incident occurring on a highway or railroad. Be mindful that there may be limited value in its application at fixed facility locations.**

ERG2012 incorporates dangerous goods lists from the most recent United Nations Recommendations as well as from other international and national regulations. Explosives are not listed individually by either proper shipping name or ID Number. They do, however, appear under the general heading "Explosives" on the first page of the ID Number index (yellow-bordered pages) and alphabetically in the Name of Material index (blue-bordered pages). Also, the letter (P) following the guide number in the yellow-bordered and blue-bordered pages identifies those materials which present a polymerization hazard under certain conditions, for example: Acrolein, stabilized 131P.

First responders at the scene of a dangerous goods incident should seek additional specific information about any material in question as soon as possible. The information received by contacting the appropriate emergency response agency, by calling the emergency response telephone number on the shipping document, or by consulting the information on or accompanying the shipping document, may be more specific and accurate than this guidebook in providing guidance for the materials involved.

BEFORE AN EMERGENCY – BECOME FAMILIAR WITH THIS GUIDEBOOK! In the U.S., according to the requirements of the U.S. Department of Labor's Occupational Safety and Health Administration (OSHA, 29 CFR 1910.120), and regulations issued by the U.S. Environmental Protection Agency (EPA, 40 CFR Part 311), first responders must be trained regarding the use of this guidebook.

Page 356

Excerpt 1 (Page 356 of the 2012 Edition of the ERG)

II. Clarification of non-clearly defined and vague terms in the ERG.

The CSB compared firefighting measures in the ERG and found vague or poorly defined terms. For example, under the Emergency Response Section of Guide 140 – Oxidizers (See Excerpt 4), the ERG recommends the following:

Fire involving Tanks or Car/Trailer Loads

- Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.

U.S. Chemical Safety and Hazard Investigation Board

- Cool containers with flooding quantities of water until well after fire is out.
- 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.

ERG2012	OXIDIZERS	GUIDE 140
EMERGENCY RESPONSE		
FIRE		
Small Fire		
• Use water. Do not use dry chemicals or foams. CO ₂ or Halon® may provide limited control.		
Large Fire		
• Flood fire area with water from a distance.		
• Do not move cargo or vehicle if cargo has been exposed to heat.		
• Move containers from fire area if you can do it without risk.		
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.		
• 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		
• Keep combustibles (wood, paper, oil, etc.) away from spilled material.		
• Do not touch damaged containers or spilled material unless wearing appropriate protective clothing.		
• Stop leak if you can do it without risk.		
• Do not get water inside containers.		
Small Dry Spill		
• With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.		
Small Liquid Spill		
• Use a non-combustible material like vermiculite or sand to soak up the product and place into a container for later disposal.		
Large Spill		
• Dike far ahead of liquid spill for later disposal.		
• Following product recovery, flush area with water.		
FIRST AID		
• Move victim to fresh air.		
• Call 911 or emergency medical service.		
• Give artificial respiration if victim is not breathing.		
• Administer oxygen if breathing is difficult.		
• Remove and isolate contaminated clothing and shoes.		
• Contaminated clothing may be a fire risk when dry.		
• In case of contact with substance, immediately flush skin or eyes with running water for at least 20 minutes.		
• Keep victim warm and quiet.		
• Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves.		

Excerpt 2 (Page 219 of the 2012 Edition of the ERG)

U.S. Chemical Safety and Hazard Investigation Board

Terms such as “maximum distance”, “flooding quantities,” “stay away,” “massive fire” and “withdraw from area” are not clearly defined. A firefighter must make subjective judgments in determining the **maximum distance** deemed safe enough to fight a fire involving an oxidizer, which fire is **massive**, or the distance or area is safe enough for withdrawal by a firefighter.

The CSB is currently investigating the 2013 catastrophic explosion at the West Fertilizer Company in West, Texas which resulted in 15 fatalities and over 250 injuries to first responders and the public. As a result of this incident, 12 first responders died while attempting to respond to a fire at an ammonium nitrate fertilizer storage facility that suddenly exploded. The CSB reviewed the DOT guidance in the ERG for ammonium nitrate fertilizer, classified as an oxidizer (Guide 140 on page 219). Within Guide 140 for a large fire, the guidance states “Flood fire with water from a distance.” In the case of an ammonium nitrate fire similar to West Fertilizer, flooding the fire with water from an undefined distance could result in serious injuries or fatalities if the ammonium nitrate detonated. Guide 140 includes additional precautions for a massive water flooding of the fire recommending the use of “unmanned hose holders or monitor nozzles; if this is impossible, withdraw from area and let fire burn.” However, these precautions only apply to tanks or car trailer loads, and not a storage warehouse similar to the one at West. The CSB acknowledges that Guide 140 covers several oxidizers, however the unpredictable and explosive nature of ammonium nitrate fertilizer should be considered when revising firefighting precautions as demonstrated by the line of duty deaths (LODD) incident at West, Texas. Based on a review of prior incidents investigated by the CSB, the ERG has been consulted on many occasions for non-transportation related incidents involving hazardous materials. The inclusion of additional language on the explosive hazards associated with ammonium nitrate fires would reduce the risk of injury and death the emergency responders and the public when responding to either a transportation or fixed facility incidents, if the emergency responders chose to reference the ERG.

Suggested Revision:

1. Review the ERG to remove generic and vague information in the emergency response section of Guide 140 and other sections of the guidebook. Include a statement that urges emergency responders to reference other sources, in addition to the ERG, for more detailed instructions when responding to emergency incidents at fixed facilities. First responders should obtain and refer to the company’s Safety Data Sheets (SDS) or submitted Tier II information when responding to an incident at a fixed facility. This information should also be in the introduction of the guidance, for example on page 1 and 2.
2. Because other Guides within the ERG include precautions and recommended actions for specific chemicals covered in the guide³, revise the ERG to address the unpredictable behavior of AN-related fires and the potential for detonation within a very short time frame. Consider recommending a more conservative response

³ Guide 115, 125 and 155 contain cautionary statements for specifically named chemicals.

U.S. Chemical Safety and Hazard Investigation Board

to AN-related fires by emphasizing firefighter and resident evacuation when the threat is to human lives rather than property.

3. Revise Guide 140 to include a separate discussion of the properties and behaviors unique to AN, such as the potential for spontaneous detonation that may differ from other oxidizers covered by the Guide 140

III. Consult other guidance documents:

1. The CSB also found a number of other issues that the DOT should consider when revising the ERG. Certain hazardous materials are not listed in the Emergency Response Guidebook because they are not regulated by the DOT, or they are listed under another name. For example, carbon dioxide, solid dry ice is not regulated as a hazardous material when shipped via highway transportation. However, dry ice is regulated as a hazardous material when shipped via air transportation. Determining whether to take the necessary safety precautions requires consultation with alternative sources, which the ERG does not reference.
2. Moreover, a review of the ERG indicates that there are several different chemical names associated with the same 4-digit identification number⁴. Sole reliance on this number may not provide emergency responders accurate information for an effective response. Also, there are several different listings for the same chemical name, each with a slightly different description in the ERG. For example there are 15 variations of Ammonium Nitrate listed in the current (2012) edition of the ERG, each of which may have significantly different hazards, therefore requiring different response actions. Therefore, without the ERG referring the emergency responder to additional sources of information such as the SDS, it may be challenging to determine which hazardous material or specific hazards are involved, and which appropriate safety precautions should be taken.
3. Lastly, the orange-bordered guides in the ERG do not illustrate scenarios in which more than one hazardous material, or materials of different classes and divisions become mixed in a transportation incident. DOT should consider adding additional precautions for incidents involving mixtures of one or more chemicals, with additional considerations for materials commonly transported together that may be reactive or result in more hazardous conditions in a fire or release involving several containers.

⁴ For Example, the ERG listed four chemicals under the Identification Number 1051, Guide Number 117. Chemicals listed are: Hydrocyanic acid, aqueous solutions, with more than 20% Hydrogen cyanide, Hydrogen cyanide, anhydrous, stabilized, and Hydrogen cyanide, stabilized.

**U.S. Chemical Safety and
Hazard Investigation Board**

The CSB appreciates the DOT's consideration of the possible revisions that we believe will better safeguard emergency responders. We thank the DOT for the opportunity to comment on the revision of the ERG.

If you have any questions about our comments, or if we may be of further assistance, please do not hesitate to contact us.

Sincerely,

A handwritten signature in blue ink that reads "Rafael Moure-Eraso".

Rafael Moure-Eraso, PhD, CIH
Chairperson

A handwritten signature in blue ink that reads "Mark Griffon".

Mark Griffon
Board Member