

Standardized Awareness Authorized Training, Train-the-Trainer

Identification of Hazardous Materials and the *ERG*



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Objectives

- **Define terms associated with HAZMAT/CBRNE incidents pertaining to awareness level personnel/responders.**
- **Identify the nine United Nations (UN)/Department of Transportation (DOT) hazard classes for hazardous materials.**
- **Identify seven basic clues for recognizing a HAZMAT incident.**
- **Identify the initial protective actions that may be taken.**



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Objectives (continued)

- Identify the hazardous materials recognition methods for container shapes, markings and colors, and labels and placards.
- Identify the shipping papers, Material Safety Data Sheets (MSDS), and facility documents recognition method for hazardous materials.
- Discuss instructional strategies for facilitating the “Identification of Hazardous Materials and the *ERG*” module.



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Definitions

Awareness Level Personnel/Responder

- **HAZWOPER, 29 C.F.R. § 1910.120 (q)(6)(i)—First responders at the awareness level are individuals who are likely to witness or discover a hazardous substance release and who have been trained to initiate an emergency response sequence by notifying the proper authorities of the release. They would take no further action beyond notifying the authorities of the release (2010).**



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Definitions (continued)

Awareness Level Personnel/Responder

- ***NFPA 472 3.3.4***—Personnel who, in the course of their normal duties, could encounter an emergency involving hazardous materials/WMD and who are expected to recognize the presence of hazardous materials/WMD, protect themselves, call for trained personnel, and secure the scene (National Fire Protection Association [NFPA], 2007; 2008 edition).



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Hazardous Material



Courtesy of FEMA/Robert Kaufmann

Five phases of hazardous material life cycle

- Production
- Transportation
- Storage
- Use
- Disposal



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UN/DOT Hazard Classes



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Courtesy of Emergency Film Group



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UN/DOT Hazard Classes (continued)



Courtesy of the U.S. Department
of Transportation (DOT)

Class 1—Explosives

- Division 1.1—Mass explosion hazard
- Division 1.2—Projection hazard
- Division 1.3—Fire hazard



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UN/DOT Hazard Classes (continued)



Courtesy of DOT

Class 1—Explosives (continued)

- Division 1.4—No significant blast hazard
- Division 1.5—Very insensitive explosives
- Division 1.6—Extremely insensitive articles



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UN/DOT Hazard Classes (continued)



Courtesy of DOT

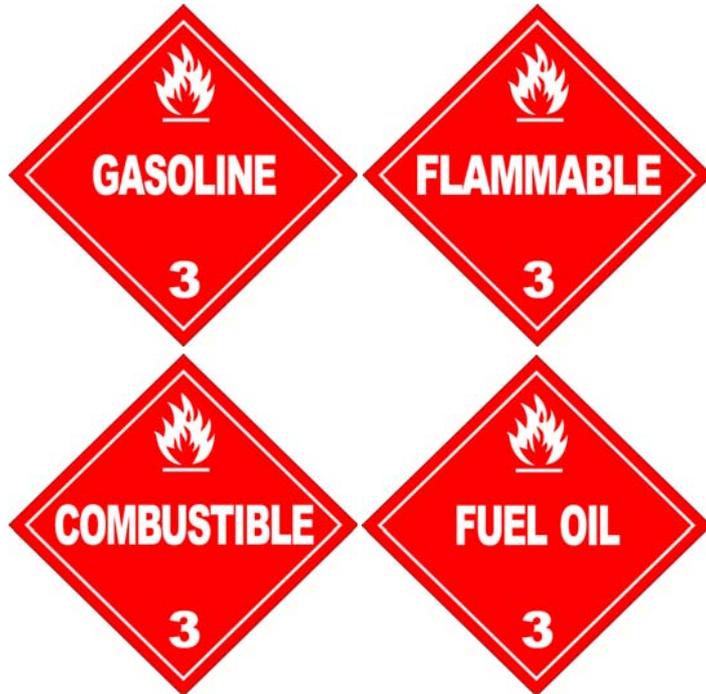
Class 2—Gases

- Division 2.1—
Flammable gases
- Division 2.2—
Nonflammable,
nontoxic gases
- Division 2.3—Toxic
gases



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UN/DOT Hazard Classes (continued)



**Class 3—Flammable liquids
and combustible liquids**

Courtesy of DOT



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UN/DOT Hazard Classes (continued)



Courtesy of DOT

Class 4—Flammable Solids

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



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UN/DOT Hazard Classes (continued)



Courtesy of DOT

Class 5—Oxidizing substances and organic peroxides

- **Division 5.1—Oxidizing substances**
- **Division 5.2—Organic peroxides**



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UN/DOT Hazard Classes (continued)



Courtesy of DOT

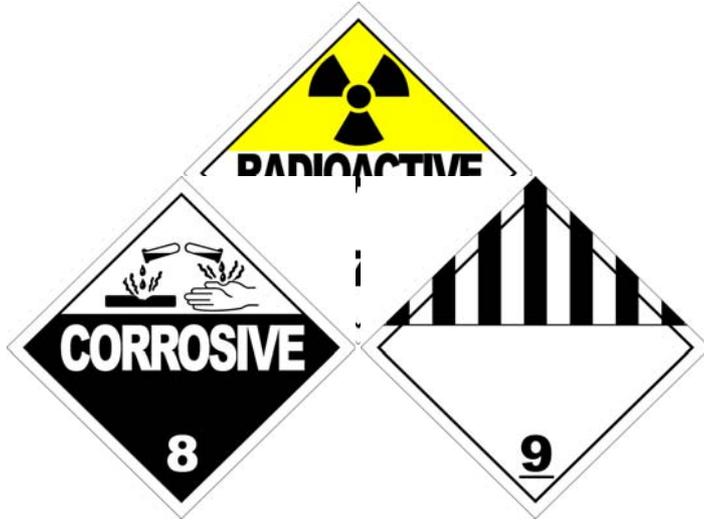
Class 6—Toxic (Poisonous) and Infectious substances

- Division 6.1—Toxic substances
- Division 6.2—Infectious substances



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UN/DOT Hazard Classes (continued)



Courtesy of DOT

Class 7— Radioactive materials

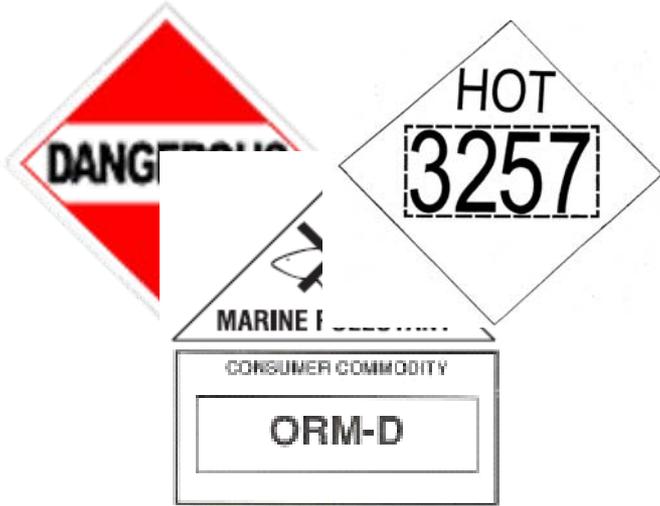
Class 8—Corrosive substances

Class 9—Miscellaneous hazardous



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Other Hazard Designations



Courtesy of DOT

- Dangerous
- ORM-D Material
- Forbidden
- Marine Pollutant
- Elevated-Temperature Material



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Recognizing a HAZMAT Incident



Courtesy of FEMA/Patsy Lynch

Seven basic clues for a HAZMAT incident

- Potential Sources
- **Container Shapes**
- Markings and Colors
- Labels and Placards



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Recognizing a HAZMAT Incident (continued)

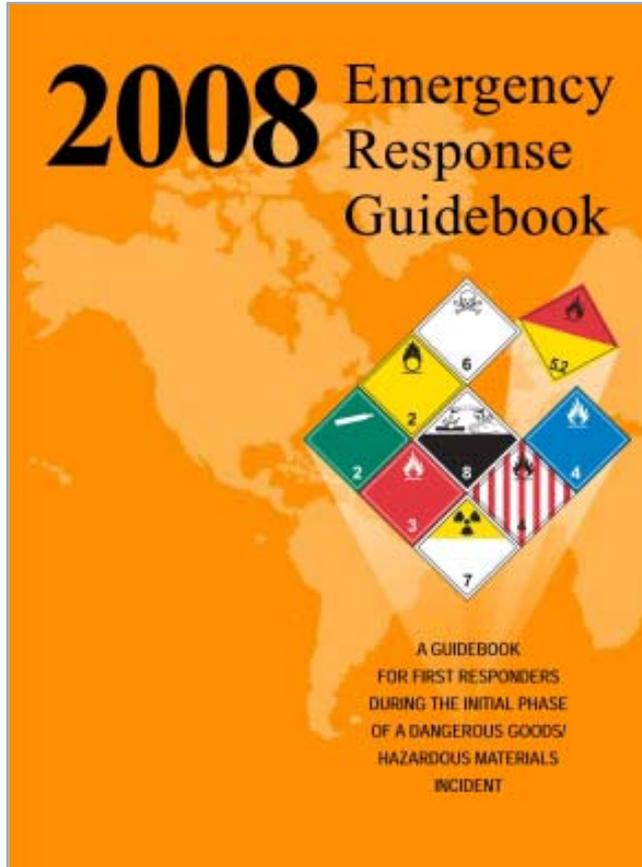
Seven basic clues for a HAZMAT incident (continued)

- Shipping Papers and Facility Documents
- Monitoring and Detection Equipment
- Senses



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ERG



Five color-coded sections

- **White**
- **Yellow**
- **Blue**
- **Orange**
- **Green**

Courtesy of DOT



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Response Actions

Step 1—Identify the material

- 4-Digit UN ID number
- Name of the material

Step 2—Identify the 3-Digit Guide Number

Step 3—Locate within orange pages

Note: If green, go to green pages, the material is an inhalation hazard. **Approach scene from upwind, uphill and upstream.**



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Protective Actions

- **Assess the situation**
- **Isolate and deny entry**
- **Evacuate**
- **Shelter in place**



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Personal Protective Equipment



Courtesy of FEMA/Anjanette Stayten

- **Street clothing and/or work uniform**
- **Structural Firefighting Protective Clothing (SFPC)**
- **Positive-pressure Self-Contained Breathing Apparatus (SCBA)**
- **Chemical protective clothing and equipment**



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Nonbulk Packaging Video



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Courtesy of Emergency Film Group



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Container Shapes Video



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Courtesy of Emergency Film Group



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Fixed Facilities Video



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Courtesy of Emergency Film Group



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Markings and Color Identification



A Numbered
Placard

A Placard
and an
Orange Panel



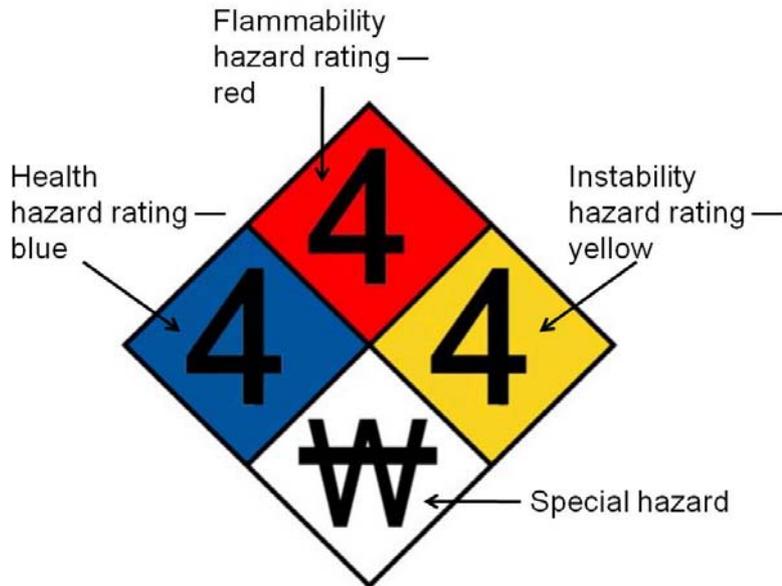
Courtesy of DOT

- Transportation Markings
- 4-Digit UN Identification Number
- Marine Pollutant mark
- Elevated Temperature (HOT) mark
- Inhalation Hazard mark



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Markings and Color Identification (continued)



Courtesy of CDP

NFPA 704

- Identifies potential risk
- Overall hazard



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Markings and Color Identification (continued)



<https://rdl.train.army.mil/soldierPortal/attia/adlsc/view/public/9555-1/fm/4-30.13/ch8.htm>

- **Military markings**
 - **Red**
 - **Yellow**
 - **White**
- **Apply No Water**
- **Wear Protective Breathing Apparatus**



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Markings and Color Identification (continued)

Name of Material

<input type="checkbox"/>	HEALTH
<input type="checkbox"/>	FLAMMABILITY
<input type="checkbox"/>	REACTIVITY
<input type="checkbox"/>	PROTECTIVE EQUIPMENT

- **Special hazard communication markings**
- **Hazardous Material Identification Guide (HMIG)**
- **Hazardous Material Identification System (HMIS)**
- **Used as compliance tool in workplace**

<http://chemlabs.uoregon.edu/Safety/HMIG.html>



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Markings and Color Identification (continued)



- Pipeline markings
- Pipeline Rights of Way (ROW)
- Contents
- Operator's name
- Emergency telephone number
- "Danger" or "Warning"
- 8-1-1 state One-Call Center



Courtesy of DOT

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Markings and Color Identification (continued)

- Reporting mark and tank number
- Specification marking
- DOT Exemption marking
- AAR-600 markings
- Country, Size and Type markings



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Labels and Placards



Courtesy of CDP

Labels

- Approximately 4-inch diamonds
- Positioned near the content names
- Tags may be attached to the package
- Based on hazard class of material



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Labels and Placards (continued)



Courtesy of EPA

Placards

- Approximately 10-inch diamonds
- Appear on all sides of containers
- Placarding is determined
 - Labels
 - Size
 - Quantity of hazardous material



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Shipping Papers

Mode of Transportation	Shipping papers	Location/ Responsible Person
Highway	Bill of lading or freight bill	Cab of the truck/Driver
Rail	Consist or waybill	Engine/Conductor
Water	Dangerous cargo manifest	Wheelhouse or special container on barge/Captain or master
Air	Air bill with shipper's declaration of dangerous goods	Cockpit/Pilot

Courtesy of Noll, Hildebrand, & Yvorra



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Shipping Papers (continued)

EMERGENCY CONTACT 1-000-000-0000		EXAMPLE OF EMERGENCY CONTACT TELEPHONE NUMBER	
NO. & TYPE OF PACKAGES		HAZARD CLASS OR DIVISION NO.	
1 TANKTRUCK	UN1219	ISOPROPANOL 3	II 12,000 LITERS
	ID NUMBER	SHIPPING NAME	PACKING GROUP

Courtesy of DOT



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Material Safety Data Sheet

- Provides detailed information about hazardous material
- Prepared by manufacturer
- ANSI (Z400.1) 16-section format
- Located with shipping papers



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Facility Documents

- **HAZMAT inventory forms**
- **Shipping and receiving forms**
- **Risk management and supporting documentation**
- **MSDS**
- **Tier II reporting forms**



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Questions for Presentation Preparation

- How will you explain the importance of learning this module to your participants?
- What do participants need to learn from this module content?
- What additional resources can be used to reinforce learning the content in this module?
- How will you involve the audience in learning this material?
- What safety concerns need to be reinforced in this module?



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Conclusion

- **What terms are associated with HAZMAT/CBRNE incidents pertaining to awareness level personnel/responders?**
- **What are the nine DOT hazard classes for hazardous materials?**
- **What are seven clues for recognizing a HAZMAT incident?**
- **What are the initial protective actions that may be taken?**



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Conclusion (continued)

- **What are the hazardous materials recognition methods for container shapes, markings and colors, and labels and placards?**
- **How would you use the shipping papers, MSDS, and the facility documents recognition method for hazardous materials?**
- **What are some potential instructional strategies you could use for facilitating the “Identification of Hazardous Materials and the *ERG*” module?**



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Standardized Awareness Authorized Training, Train-the-Trainer

Identification of Hazardous Materials and the
ERG—End of Module



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