



Rail Tank Cars, Hazardous Materials and Emergency Response

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NFPA



Overview of NFPA

- Accredited not-for-profit voluntary standards development organization
- NFPA 1001 – Firefighter Professional Qualifications
- NFPA 1620 – Pre-Incident Planning
- NFPA 472 – Competence of Responders to HM/WMD Incidents



Operational Capabilities - Firefighting

- Class 3 HM represent 55% of transportation releases (PHMSA)
- Key elements of firefighting capability:
 - Amount of Class B concentrate available
 - Amount of water supplies available (94 - 97%)
 - Foam education and application devices



Emergency Preparedness Elements

- Planning
- Training
- Response
- Resource Management



Summary

- HM unit train emergencies are a relatively new and complex response problem
- Resource requirements exceed current baselines and operational capabilities
- Risk-based tactical response principles do not change



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**RAIL SAFETY: TRANSPORTATION OF CRUDE OIL
AND ETHANOL**

**Statement
of
Mr. Gregory Noll, CSP, CEM
Technical Committee Chair
Hazardous Materials Response Personnel
To
The National Transportation Safety Board**

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**COMMENTS – GREGORY NOLL & GREGORY CADE
NATIONAL FIRE PROTECTION ASSOCIATION
NTSB RAIL SAFETY FORUM**

Good afternoon, Chairman Hersman and members of the National Transportation Safety Board. My name is Gregory Noll and I serve as the Program Manager for the South Central (PA) Regional Task Force. Today I am appearing as the chairperson of the National Fire Protection Association (NFPA) Technical Committee on Hazardous Materials and WMD Emergency Response, of which I've been a member since its inception in 1986.

NFPA is a private, not-for-profit voluntary standards development organization. Founded in Boston in 1896, NFPA currently has over 70,000 members in 120 nations. As an accredited standards developer through the American National Standards Institute (ANSI), NFPA supports over 330 codes and standards. These include NFPA 1001, Firefighter Professional Qualifications, NFPA 1620, Pre Incident Planning NFPA 472, *Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents*. We thank you for the opportunity to share the perspective of those emergency response stakeholders who are involved in the development of the fire service and response industry's standards and recommended practices.

NFPA would like to provide the Board with testimony related to the operational capabilities required in responding to and managing a flammable liquid incident, including those involving ethanol and crude oil, and provide an overview of the critical elements in planning for and responding to these emergencies.

The fire service and the emergency response community are very familiar with flammable and combustible liquids (or DOT Class 3 materials). According to PHMSA statistics, Class 3 materials are involved in approximately 55% of all HM transportation releases. Emergency responders in metro regions and in areas with a large petroleum industry presence typically have a more robust operational capability for flammable liquids emergencies.

A critical point that needs to be recognized as part of the risk-assessment and planning process for these emergencies is defining the operational capabilities that are required. These operational capabilities will be based upon three key elements:

- First, the amount of Class B foam concentrate that is available to suppress vapors or extinguish the fire.
- Second, available water supplies to make finished foam. Recognize that Class B firefighting foam streams consist of 94 to 97% water combined with the foam concentrate.
- Third, foam education and application devices to apply the foam streams onto the hazard. To successfully apply the foam onto the fire for extinguishment requires trained and competent responders who can size up these scenarios and perform the requisite tasks.

To better frame the operational capability discussion, consider the following. Historically, the emergency response community possesses the ability to safely and effectively handle flammable liquid scenarios involving MC-306 / DOT-406 cargo tank trucks that are transporting about 9,000 gallons of gasoline and similar refined products. The necessary foam and firefighting resources would typically be drawn from a county or regional response area, rather than a single fire department. The reason for this is the high cost of foam concentrate and the fact that most engine companies will only carry less than 30 gallons of foam concentrate to handle vehicle fires.

For flammable liquid risks above this level, the emergency response community would typically look to the Responsible Party, such as the owner or carrier, to either provide or facilitate the requisite operational capability. Options may include a facility operator providing the Class B foam capability, the development of industry or joint public-private mutual aid groups, or contracting with a specialized response contractor with expertise in the flammable liquids area. Examples of risks above this local threshold would include petroleum liquid transmission and distribution pipelines, and bulk petroleum

storage and distribution facilities. In my opinion, derailment scenarios involving multiple flammable liquid tank cars or unit trains would also fall into this category.

A critical analysis of the possible emergency preparedness scenarios and issues would focus on four elements: planning, training, response and resource management. It is important to recognize that an “all hazards” planning structure already exists nationally, through a combination of local and county Emergency Management Agencies, as well as Local Emergency Planning Committees (LEPC) that were previously established under EPA regulations enacted in the late 1980’s. Although there are clearly peaks and valleys in the performance and sustainment of some LEPC’s, they represent the most effective vehicle for initiating community-based planning discussions between all of the stakeholders. As some of my peers in the fire service have noted, nobody should be better than the local emergency response community in knowing the low frequency / high consequence scenarios in their community.

Emergency response training requirements to hazardous materials emergencies, including the scenarios being discussed as part of this forum, already exist via both the Occupational Safety and Health Administration’s (OSHA) regulation for *Hazardous Waste Operations and Emergency Response* (29 CFR 1910.20), and NFPA 472. These training requirements emphasize that responders shall be trained to perform their expected tasks, which are categorized as Awareness, Operations or Technician levels. Response operations fall into three strategic-level categories: offensive strategies where responders aggressively attack the problem; defensive strategies where responders focus on protecting surrounding exposures and preventing the spread of the problem; and non-intervention strategies where responders follow a “wait and watch” strategy with no actions to change the outcome. I should note that all of the recent incidents involving crude oil unit trains employed a defensive or non-intervention strategy.

There is an growing consensus within the hazardous materials response community that the unit train problem does not require a new training curriculum, or changes in the

basic strategies for responding to flammable liquid spill and fire scenarios. However, there is a clear need for tactical-level information that focuses on the behavior of the products and the tank cars in which they are being transported. We believe that these training needs can be addressed through a combination of both traditional and non-traditional delivery systems, including blended training, web-based training and social media platforms. This approach was used by NFPA in its responder safety training program for electric and hybrid passenger vehicles, with over 35,000 responders trained in less than three years.

Any incident involving a unit train transporting ethanol or crude oil has significant potential to be a large, complex response scenario. When these incidents occur in a populated area with surrounding exposures or critical infrastructure involved, the challenges will multiply. Regardless of the operational capabilities of local responders and their familiarity with flammable liquids, this will be a low frequency / high consequence response scenario that will pose significant operational risks and resource challenges to emergency responders.

Previous discussions within the emergency response community have noted the need for technician-level expertise, such as that provided through a Hazardous Materials Response Team (HMRT). While not every community requires a HazMat Team, it should have the ability to access technician-level skills and capabilities through either mutual aid or regional and state response agencies. Many states, such as Virginia and Massachusetts, already have very good and mature regional HazMat Response Teams, However, these units may have response times of up to two hours.

Emergencies involving hazardous materials unit trains are a relatively new phenomenon. As we have noted, the emergency response community has not seen train derailment scenarios of this size and complexity since the 1970's when the challenge was flammable liquefied gases, such as LPG, and the poor performance of the DOT-112 and 114 railroad tank cars. In addition, there was a total lack of emergency response training in this area. While the problems and resource

requirements posed by today's scenarios go well beyond our current baselines and operational capabilities, the risk-based tactical processes that responders use to manage the incident do not change. In short, the same response principles that we apply at other hazmat emergencies – establishing initial site management and control, having a unified command organization in-place, using a risk-based size-up process, and leveraging your pre-incident relationships with product and container specialists – will be essential in achieving a successful outcome to the emergency.

Thank you for the opportunity to present both the perspectives and concerns of the hazardous materials emergency response community. NFPA thanks the NTSB for focusing on this important issue, and we look forward to working with all of the stakeholders represented here today to ensure the safety and security of our communities and response agencies.