



Office of the Chairman

National Transportation Safety Board

Washington, DC 20594

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US Department of Transportation
Dockets Management System
Dockets Operations, M-30
Ground Floor, Room W12-140
1200 New Jersey Avenue, SE
Washington, DC 20590-0001

Attention: Docket No. PHMSA–2013–0225 (HM–218H)

Dear Sir or Madam:

The National Transportation Safety Board (NTSB) has reviewed the Pipeline and Hazardous Materials Safety Administration's (PHMSA) notice of proposed rulemaking (NPRM), *Hazardous Materials: Miscellaneous Amendments*, published on January 23, 2015.¹ In this notice, PHMSA is proposing miscellaneous amendments to the Hazardous Materials Regulations (HMR) to update and clarify certain requirements. PHMSA states these amendments are designed to promote safer transportation, address seven petitions for rulemaking, respond to NTSB safety recommendations, facilitate international commerce, make editorial corrections, and simplify the regulations.

The proposed provisions in this rulemaking include, but are not limited to the following:

1. **Standards for Mobile Acetylene Trailers:** In response to petition for rulemaking P-1605 from the Compressed Gas Association (CGA), PHMSA is proposing to incorporate into the HMR a reference to CGA standard G-1.6, *Standard Mobile Acetylene Trailer Systems*, Seventh Edition.² PHMSA believes its proposal also responds to two NTSB safety recommendations issued to PHMSA (H-09-01 and H-09-02). The CGA standard would provide minimum requirements necessary for the design, construction, and operation of mobile acetylene trailer systems that charge, transport, and discharge acetylene. The standard would also cover ground-mounted auxiliary equipment used with mobile acetylene trailers such as piping, meters, regulators, flash arrestors, and fire protection equipment.
2. **Liquefied Petroleum Gas (LPG) Odorant:** In accordance with federal regulations, LPG intended for use by nonindustrial entities is generally required to be odorized to enable

¹ *Federal Register* (FR) 80, no. 15 : 3788.

² Compressed Gas Association, *Standard Mobile Acetylene Trailer Systems*, Seventh Edition, G-1.6. (Chantilly, Virginia: Compressed Gas Association, 2011).

the detection of any unintended release or leak of the gas. LPG is a highly flammable gas that is dangerous to inhale in large quantities. PHMSA is proposing to require odorization for rail tank cars and cylinders in LPG service, consistent with the existing HMR requirements for cargo and portable tanks, and add a performance standard to address the issues of “under-odorization” and “odor fade.”

The NTSB is pleased that PHMSA is enhancing transportation safety through its proposals and amendments. We offer the following comments on sections of the proposed rulemaking and the safety recommendations and matters for which we have basis to comment.

Standards for Mobile Acetylene Trailers

A 2009 NTSB Special Investigation Report discussed four accidents that occurred between July 25, 2007, and June 9, 2008, involving highway vehicles containing bulk quantities of acetylene gas, and reviewed reports of a 2008 accident of another vehicle that overturned.³ The vehicles, mobile acetylene trailers, carried up to 225 acetylene cylinders that were connected by a manifold system. The vehicles in two of the accidents overturned on public highways: in East New Orleans, Louisiana, on October 20, 2007, and in Lamar, Colorado, on June 9, 2008. Two other accidents occurred while the vehicles were being prepared for unloading: in Dallas, Texas, on July 25, 2007, and in The Woodlands, Texas, on August 7, 2007. In the two overturn accidents, cylinders were ejected from the trailers and damaged, releasing acetylene, which ignited. In one unloading accident, the fire on the initial trailer spread to cylinders on an adjacent trailer. In the other, the fire spread to cylinders on adjacent trailers and to nearby buildings and vehicles.

The failures of the cylinders on these trailers and the resultant damage raised concerns about the accident protection provided by these vehicles, the adequacy of the minimum safety standards, and procedures applicable to unloading these vehicles. The NTSB report contained two safety recommendations to PHMSA.

Modify 49 *Code of Federal Regulations* 173.301 to clearly require (1) that cylinders be securely mounted on mobile acetylene trailers and other trailers with manifolded cylinders to reduce the likelihood of cylinders being ejected during an accident and (2) that the cylinder valves, piping, and fittings be protected from multidirectional impact forces that are likely to occur during highway accidents, including roll overs. (H -09-1)

Require fail-safe equipment that ensures that operators of mobile acetylene trailers can perform unloading procedures only correctly and in sequence. (H-09-2)

³ National Transportation Safety Board, *Mobile Acetylene Trailer Accidents: Fire During Unloading in Dallas, Texas, July 25, 2007; Fire During Unloading in The Woodlands, Texas, August 7, 2007; and Overturn and Fire in East New Orleans, Louisiana, October 20, 2007*. NTSB/SIR-09/01 (Washington DC: NTSB, 2009).

Cylinder Securement and Impact Protection

In the East New Orleans, Louisiana, accident, 32 cylinders were thrown from the vehicle, valves were broken, and the venting acetylene ignited. Postaccident examination of the cylinders also found impact marks that indicated several cylinders struck other cylinders or objects during the vehicle rollover. Given the shock sensitivity of acetylene, impacts sustained during the rollover may have provided sufficient energy to ignite acetylene within intact cylinders. Similarly, in the Lamar, Colorado, accident, about half of the cylinders were thrown from the trailer, with 86 cylinders exhibiting broken valves.

The NTSB concluded that the fires in the East New Orleans, Louisiana, and Lamar, Colorado, accidents occurred as a result of the ejection of unsecured cylinders during the rollovers of the mobile acetylene trailers. The resulting damage to many of the cylinders and valves released acetylene, which then ignited. The NTSB further concluded that the HMR covering mobile acetylene trailers did not sufficiently address (1) the protection of the cylinders, valves, and fittings on the trailers from impact forces that occur during an overturn accident and (2) the secure mounting of the cylinders to the vehicles.

PHMSA proposes in this NPRM to remedy the lack of cylinder securement and accident impact protection requirements by incorporating by reference the CGA standard G-1.6 (seventh edition [2011]).⁴ PHMSA further proposes to revise Title 49 *Code of Federal Regulations* (CFR) 173.301(g)(1)(iii) to require that mobile acetylene trailers be maintained, operated, and transported in accordance with CGA standard G-1.6. Further, PHMSA seeks comment on the inclusion of CGA Technical Bulletin TB-25, *Design Considerations for Tube Trailers* to address structural integrity.⁵

We note that section 4 of CGA standard G-1.6 discusses mobile acetylene trailer design, and cylinder and piping arrangement. Section 4.1 shows views of typical mobile acetylene trailer system manifold piping. Section 4.2 requires the piping and tubing systems for mobile acetylene trailers to be designed, constructed, inspected, and tested in accordance with applicable requirements of the American Society of Mechanical Engineers Standard B31.3, *Process Piping*.⁶ The CGA standard states that “piping on an acetylene trailer shall be braced and supported to resist strain and vibration normally incident to transportation;” that “tubing and cylinder leads shall be flexible to prevent damage to valves, gauges, and fittings during transit;” and that “cylinder leads connecting cylinders to manifolds shall be designed to resist strain and vibration encountered when the trailer is in transit.” Section 4.3 includes a provision that cylinders shall be transported vertically and secured together as a unit in accordance with the Federal Motor Carrier Safety Regulations at 49 CFR 393.102, which provides performance criteria for cargo securement devices and systems during normal transportation activities. Section 4.3 also specifies “manifolded cylinder valves shall be provided with valve protection meeting the requirements of the HMR (49 CFR Parts 100-185).” However, neither G-1.6 nor the

⁴ The NPRM incorrectly lists (at page 3799) the year 2001 for the standard, rather than the year 2011.

⁵ Compressed Gas Association, *Design Considerations for Tube Trailers*, Third Edition, TB-25. (Chantilly, Virginia: Compressed Gas Association, 2013).

⁶ American Society of Mechanical Engineers, *Process Piping*, B31.3. (New York: American Society of Mechanical Engineers, 2012).

referenced documents address accident impact protection from multidirectional forces that are likely to be encountered during highway accidents, including rollover.

Currently, 49 CFR 173.301(i) applies the requirements of CGA TB-25 only to motor vehicle framework for horizontally mounted cylinders longer than 6.5 feet in tube trailers. It does not apply to vertically mounted, manifolded cylinders on mobile acetylene trailers. If the proposed regulation applied accident damage protection provisions of CGA TB-25 to mobile acetylene trailer construction, it would require the valves, pressure relief devices, and other piping components in direct communication with the lading to be installed within the motor vehicle framework; or within a collision-resistant guard, protective device, or housing in compliance with CGA S-1.1, *Pressure Relief Device Standards, Part 1, Cylinders for Compressed Gases*.⁷ If applied to mobile acetylene trailers, the protective device or housing, and the manner of attachment to the vehicle structure would be designed to minimize the loss of product lading when subjected to static loading in all directions, or the overturn of the vehicle, equal to two times the loaded gross weight of the motor vehicle combination. A revision to CGA TB-25 to include vertically mounted, manifolded cylinders would provide a standard for accurate and verifiable performance testing, analytical methods, or a combination thereof, to prove the adequacy of mobile acetylene trailer designs in both normal operation and accident conditions.

Contrary to the PHMSA discussion, the proposed changes in the NPRM do not address cylinder securement, vehicle accident impact, or rollover protection as was recommended by the NTSB. Therefore, the NTSB urges PHMSA to reconsider its proposed actions addressing mobile acetylene trailer cylinder securement requirements to fully address these shortcomings in the regulations.

Operator Unloading Procedures

In the 2009 NTSB Special Investigation Report on Mobile Acetylene Trailer Accidents, the NTSB noted:

Federal regulations and CGA guidance concerning mobile acetylene trailers...are silent concerning trailer unloading procedures other than the recommendation that a trained person be in attendance during manual valve operations and when a trailer is being connected or disconnected.

[T]he procedures were not sufficient to safeguard against the initiation of a decomposition reaction within the manifold piping and cylinders when simple human errors occurred...The complexity of the unloading procedures and the extreme instability of acetylene together created situations having little or no room for human error...[T]he current acetylene unloading procedures by themselves are not adequate to ensure safety...PHMSA should require fail-safe equipment that ensures that operators of mobile acetylene trailers can perform unloading procedures only correctly and in [the proper] sequence.

⁷ Compressed Gas Association, *Pressure Relief Device Standard. Part 1. Cylinders for Compressed Gases. S-1.1, Fourteenth Edition*. (Chantilly, Virginia: Compressed Gas Association, 2011).

The NTSB is pleased that CGA standard G-1.6, seventh edition, provides basic minimum requirements for operator training, and the PHMSA proposal to adopt this standard would help to improve the industry practices. However, neither the CGA standard nor the PHMSA-proposed regulatory actions fully address the shortcomings discussed in the NTSB Special Investigation Report. In H-09-02, the NTSB recommended that PHMSA require equipment that ensures that operators perform unloading procedures in the correct sequence. The CGA standard and therefore, the PHMSA-proposed actions only address operating procedure availability to the operator.

For installations requiring operation of any equipment by the user, instructions shall be posted and maintained at the discharge location. Where drivers operate valves at discharging stations, the driver shall be in possession of the valve operating instructions.⁸

The NTSB notes that each mobile acetylene trailer may have more than 200 acetylene cylinders connected to one or more manifolds for transferring acetylene into or out of the cylinders. Preparing a mobile acetylene trailer for attachment to facility piping and readying it for product transfer must be performed in a precise order to avoid the risk of a catastrophic acetylene decomposition reaction. Each cylinder and manifold has valves that must be shut during transportation and opened in a specific sequence to fill or remove acetylene from the cylinders. Extreme care must be taken to prevent air from entering the manifold, and valves must be slowly opened during acetylene transfer operations. Such a labor-intensive activity is prone to human error, as the NTSB discussed in the Special Investigation Report. Therefore, the NTSB continues to urge PHMSA to revise the regulations to require engineering controls to ensure that operators can only perform an unloading procedure “correctly and in sequence.”

LPG Odorant Tank Marking

The NPRM proposes changes to the regulations addressing shipping odorized LPG in containers marked “non-odorized” or “not-odorized”. Following the investigation of the July 2005 collision of two Canadian National Railway (CN) freight trains with release of hazardous materials in Anding, Mississippi, the NTSB issued the following safety recommendation to PHMSA:

With the assistance of the Federal Railroad Administration, require that railroads immediately provide to emergency responders accurate, real-time information regarding the identity and location of all hazardous materials on a train. (R-07-4)⁹

The NTSB has reiterated this safety recommendation in both the Cherry Valley, Illinois, and Paulsboro, New Jersey, accident reports.^{10,11} Thus, we remain concerned that timely and

⁸ Compressed Gas Association, *Standard Mobile Acetylene Trailer Systems*, Seventh Edition, G-1.6. (Chantilly, Virginia: Compressed Gas Association, 2011).

⁹ National Transportation Safety Board, *Collision of Two CN Freight Trains, Anding, Mississippi, July 10, 2005*. RAR 07/01. (Washington DC: National Transportation Safety Board, 2007).

¹⁰ National Transportation Safety Board, *Derailment of CN Freight Train U70691-18 With Subsequent Hazardous Materials Release and Fire, Cherry Valley, Illinois, June 19, 2009*. RAR 12/01. (Washington DC: National Transportation Safety Board, 2012).

accurate hazard communications—that is, identifying the nature of the hazardous materials involved in accidents through proper shipping paper description, marking, labeling, and placarding—continues to be one of the most frequently cited difficulties facing the emergency response community at hazardous materials accident scenes.

In this NPRM, PHMSA proposes to revise 49 CFR 172.301(f), 172.326(d), and 172.328(e) to allow nonbulk packaging, portable tanks, and cargo tanks used for both odorized and non-odorized LPG to be transported in tanks marked “non-odorized” or “not-odorized.” Shipping papers are required under 49 CFR 172.203(p) to include the word “non-odorized” or “not-odorized” in association with the proper shipping description on a shipping paper when non-odorized LPG is offered for transportation. The shipping paper, in combination with package markings, are intended to aid emergency responders and enhance transportation safety. Therefore, under such circumstances where odorized LPG would be authorized in tanks marked “non-odorized” or “not-odorized,” the shipping paper description would conflict with the tank marking information.

Although PHMSA has permitted this labeling deviation on certain LPG tanks since 2004, we believe the existing and proposed regulatory change could lead to confusion among emergency responders during an emergency, as first responders must rely on accurate hazard communications.¹² We are concerned that the “non-odorized”/“not-odorized” package markings would be rendered meaningless by the proposal to allow such a marking on a tank containing odorized LPG. We also believe it is poor policy to allow such mislabeling of LPG tanks merely for logistical convenience. While the HMR does not require odorization in all cases, the requirement to properly mark these packages as “odorized” or “not (non)-odorized” based on the actual condition of the LPG being transported (odorized or not odorized) should be a fundamental tenet to emergency response planning and execution involving hazardous materials in transportation. Therefore, the NTSB urges PHMSA not to approve the proposed rule changes and suggests that instead, PHMSA approve an acceptable means for the “non-odorized” or “not-odorized” marking to be temporarily covered whenever the container is used to transport odorized LPG.

LPG Odorization for Cylinders and Rail Tank Cars

PHMSA notes in the NPRM that although the HMR requires odorization of LPG in cargo tanks and portable tanks, it does not require LPG odorization for rail tank cars and cylinders. The NTSB supports the PHMSA proposal to add a new regulation to 49 CFR 173.304a(d)(5) and 173.314(h) to require odorization of LPG in rail tank cars and cylinders.

¹¹ National Transportation Safety Board, *Conrail Freight Train Derailment with Vinyl Chloride Release, Paulsboro, New Jersey, November 30, 2012*. RAR-14/01. (Washington, DC: National Transportation Safety Board, 2014).

¹² PHMSA has permitted shipping of either non-odorized or odorized LPG in tank cars and multiunit tank car tanks stenciled “non-odorized” or “not-odorized” since 2004.

The NTSB also supports the PHMSA proposal to revise section 173.315(b)(1) to add a performance standard to address the issue of under-odorization of LPG in cylinders and rail tank cars. The NTSB commends PHMSA for taking the initiative to address these gaps in coverage for LPG cylinders and rail tank cars to enhance LPG transportation safety.

The NTSB appreciates the opportunity to comment on the notice.

Sincerely,