U.S. Department of Transportation
Federal Railroad Administration

SAFETY BULLETIN
2025-03

SUBJECT: Railroad Employee Hazardous Materials Exposure from Tank Car

In July, a railroad employee suffered an injury as a result of a hazardous commodity leak resulting from improper tightening of a manway cover, specifically, using a circular pattern rather than a star pattern. The Federal Railroad Administration (FRA) is issuing this safety bulletin to provide a summary of the incident, the results of FRA's investigation, and a reminder of pertinent rules that stakeholders, including offerors of hazardous materials for railroad transportation, could review with their workforces.

On July 22, 2025, a railroad employee was injured when he inhaled an unknown amount of ammonium hydroxide vapor (UN 2672) while performing a ground level inspection of a general service DOT-111 tank car. The employee was transported to the hospital and later released. A response contractor inspected the tank car and found that although the manway cover gasket was in good condition, an intermittent leak was coming from under the cover and about half of the cover's securement eyebolts were extremely difficult to remove. The response contractor re-secured the manway cover utilizing a star pattern fastener tightening sequence prescribed by the tank car owner and the intermittent leak stopped.

FRA's investigation revealed that after the tank car was cleaned on March 3, 2025, the manway cover was secured using a circular pattern fastener tightening sequence, which caused asymmetric compression of the gasket.[1] FRA found that the cleaning facility had not been provided with closure instructions for the tank car, and that its employees had not received training on the proper method to secure and to seal the tank car. On July 6, 2025, the tank car was subsequently sent to a shipper (*i.e.*, an offeror) to be loaded. During the loading process, the shipper did not open the manway cover to inspect the gasket or its sealing surfaces and gasket, but instead the shipper relied solely on a pressure test to verify that the manway cover was properly sealed. The tank car passed the pressure test. FRA's investigation determined that the intermittent leak resulted from the asymmetric compression of the manway cover gasket.

FRA requests that stakeholders—including railroad carriers, tank car owners, shippers, and others performing offeror functions under the Hazardous Materials Regulations[2] or involved in preparing DOT specification tank cars for transportation—review this Safety Bulletin and the

[1] Photographs from the incident response confirm that one half of the gasket was compressed, while the other half was not.
[2] 49 CFR Parts 171-180.

circumstances of the incident described above. Specifically, FRA reminds all stakeholders of the following:

1. Pressure testing a tank car may not be sufficient to detect leaks from the manway cover. Conditions present in transportation can create leak paths that are not present during a pressure test while a tank car is static at an offeror's facility, including a loading rack. Many trade associations publish detailed closure instructions that are available upon request, which offerors and other entities maintaining, repairing, or otherwise utilizing a DOT specification tank car may use as a best practice to develop a securement program (*e.g.*, Association of American Railroads (AAR) Pamphlet 34 – Recommended Methods for the Safe Loading and Unloading of Non-Pressure (General Service) and Pressure Tank Cars; AAR, Manual of Standards and Recommended Practices, Section C, Part III, Specifications for Tank Cars, Appendix J, Threaded And Bolted Flange Joint Assembly; and ASME PCC-1-2022, Guidelines for Pressure Boundary Bolted Flange Joint Assembly). Upon request, tank car owners and offerors may also provide closure instructions.

2. Offerors of a tank car containing a hazardous material or a residue of a hazardous material are responsible for certifying that hazardous materials are properly packaged, which includes proper tank car securement.[3] This involves closing each valve and ensuring that each closure is secure, with no identifiable release of hazardous material.[4] Consulting industry standards, and communicating with tank car owners, may assist an offeror in ensuring proper securement procedures are followed and all potential conditions are addressed (*e.g.*, range of temperatures, in train forces, commodity surge), particularly after maintenance events, such as cleaning.

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[3] 49 CFR § 172.204.
[4] 49 CFR § 173.24(b) and 173.31(d).