U.S. Department
of Transportation
Pipeline and Hazardous
Materials Safety
Administration

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Washington, DC 20590

Safety Advisory Notice Concerning the Required Approval of Bulk Peroxyacetic Acid Shipments

U.S. Department of Transportation

Pipeline and Hazardous Materials Safety Administration

Office of Hazardous Materials Safety

Safety Advisory

The Pipeline and Hazardous Materials Safety Administration (PHMSA) hereby reminds offerors of bulk shipments of peroxyacetic acid (listed under § 173.225(h)) to seek a required prior approval from the Associate Administrator under § 173.128(d). Applications for approval must be submitted in accordance with the provisions of § 107.705. The testing and classification scheme is found in the UN Manual of Tests and Criteria Figure 20.1, which describes the required test results. Specifically, the results of Test E (UN Manual of Tests and Criteria, Section 25), Test F (UN Manual of Tests and Criteria, Section 26), and Test H (UN Manual of Tests and Criteria, Section 28) are required to approve formulations of peroxyacetic acid for bulk shipment.

Purpose of this Safety Advisory Notice

PHMSA has identified that some members of the organic peroxide industry may be shipping bulk amounts (tanks) of peroxyacetic acid without performing the required

classification tests. This action poses significant risks because many formulations of peroxyacetic acid require temperature control to avoid a self-accelerating decomposition reaction, and the only way to know the risk of dangerous decomposition is to perform a Self-Accelerating Decomposition Temperature (SADT) test from the UN Manual of Tests and Criteria. Peroxyacetic acid is widely used in agriculture for sterilizing animal housing and processing areas –especially in the poultry industry. We believe there are many newer companies that have entered this market since the COVID-19 public health emergency that may not be aware of the regulations or safety concerns around this material.

As part of its ongoing efforts to advance the safe transportation of hazardous materials, the PHMSA is issuing this safety advisory to remind bulk shippers of peroxyacetic acid to properly test their formulations in accordance with the UN Manual of Tests and Criteria, Part II, and submit the required application to PHMSA for a Competent Authority Approval (CAA) in accordance with the Hazardous Materials Regulations (HMR, 49 CFR Parts 171-180) under §§ 107.705 and 173.225(h).

This safety advisory is considered guidance under DOT Order 2100.6A (June 7, 2021). Guidance documents are not substantive rules—themselves—and do not create legally enforceable rights, assign duties, or impose new obligations not otherwise contained in the existing regulations and standards. Instead, guidance documents are intended as an aid to the regulated community to better understand how to comply with the regulations. An individual who is able to demonstrate that it is acting in accordance with the guidance, however, is likely to be able to demonstrate compliance with the relevant regulations. If an individual chooses not to follow the guidance, the individual must be able to demonstrate that its conduct is in accordance with the regulations.

Background

Peroxyacetic acid, also known as peracetic acid, is a potent biocidal agent used as an antimicrobial in a variety of industries. Peroxyacetic acid is a hazardous material regulated by PHMSA as a Division 5.2 organic peroxide, with a subsidiary hazard of Class 8 corrosive. Since the COVID-19 pandemic, there has been an increase in bulk shipments of peroxyacetic acid formulations.

Organic peroxides, including peroxyacetic acid formulations, are regulated by PHMSA under the HMR. When strict safety provisions in § 173.225 are not followed—including temperature control requirements—some organic peroxides can violently decompose. Organic peroxide formulations must be properly tested in accordance with the UN Manual of Tests and Criteria Figure 20.1 "Flow Chart Scheme for Self-Reactive Substances and Organic Peroxides" and classified as a generic classification of Type A to Type G (see 49 CFR 173.128(b) and (c)). Type A to Type E organic peroxides cannot be transported in bulk packagings.

Type G organic peroxides that are thermally stable (the self-accelerating decomposition temperature is 50°C or higher for a 50 kg package) are not subject to the HMR restrictions as a Division 5.2 hazardous material (see 49 CFR 173.128(b)(7)). An organic peroxide that meets the definition of a Type G but requires temperature control is classed as a Type F, temperature control organic peroxide (see 49 CFR 173.128(b)(7)). Peroxyacetic acid in concentrations not more than 5% in a stabilized mixture with hydrogen peroxide, acids, and water may be classified as a Division 5.1 oxidizer rather than as a Division 5.2 organic peroxide only if the formulation meets the definition of a Type G organic peroxide (see § 172.102(c)(1)(145)). Peroxyacetic acid mixtures classified as UN3149 may only be transported in bulk packagings permitted in accordance with § 173.243.

For bulk shipments in tanks or rail cars, only organic peroxides of Type F that are identified by technical name in the Organic Peroxide Portable Tank Table in § 173.225(g) or that have been approved in writing by the Associate Administrator in accordance with § 173.225(h) may be offered for transportation. In the case of peroxyacetic acid, the only technical name in the § 173.225(g) table is "Peroxyacetic acid, distilled, stabilized, not more than 41%," and it is assigned to UN3119, Organic Peroxide, Type F, Liquid, Temperature controlled, with a Control Temperature of +30°C and Emergency Temperature of +35°C. Only peroxyacetic acid compositions meeting that technical name and transported under those temperature control requirements are permitted to be transported without an approval from the Associate Administrator issued under § 173.225(h). Any other formulation, or the use of UN3109, Organic Peroxide, Type F, Liquid, would have to be approved by the Associated Administrator prior to offering it for transportation. A November 6, 2023 Letter of Interpretation (Interp. Resp. No. 23-0069) issued by PHMSA addresses this requirement in § 173.225(h).

Note that transporting a material that is likely to decompose with an SADT of 50°C or less without stabilization or temperature control is forbidden under § 173.21(f). To determine the appropriate Control Temperature and Emergency Temperature for a bulk shipment of an organic peroxide formulation, the material must be tested in accordance with the UN Manual of Tests and Criteria Section 28, Test Series H. The preferred test by PHMSA subject matter experts for bulk shipments under UN Manual of Tests and Criteria Table 28.1 is the Test H.2: Adiabatic storage test (AST) (see also UN Manual of Tests and Criteria Section 28.4.2).

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