

We received more than 20 appeals. Several appellants filed supplements to their initial appeals of the implementation of HM-220D, either in total or in part. Appellants included the Air Conditioning and Refrigeration Institute, American Trucking Associations, Compressed Gas Association (CGA), Dangerous Goods Advisory Council, Fire Suppression Systems Association (FSSA), National Propane Gas Association (NPGA) and representatives of cylinder and equipment manufacturers, refillers and users, distributors, and shippers. Because of opposition to certain requirements in the August 8, 2002 final rule, we published a final rule in the **Federal Register** on September 30, 2002 (67 FR 51626), extending the compliance date for certain provisions until May 30, 2003. This extension allowed RSPA to fully evaluate the issues raised by the appellants. The September 30, 2002 final rule extended the compliance date for the following requirements:

—§§ 173.40(b) and 173.301a(d)(3)—Prohibiting the pressure at 55 °C (131 °F) in a cylinder from exceeding the service pressure of the cylinder. This provision affects Hazard Zone B gases, in particular hydrogen sulfide.

—§§ 173.301(f)(2) and 177.840(a)(1)—Requiring the inlet port to the relief channel of a pressure relief device, when installed, to be in the cylinder's vapor space.

—§ 173.301(f)(3) and 180.205(c)(4)—Requiring the set pressure of the pressure relief device to be at test pressure with a tolerance of minus 10% to plus zero for DOT 3-series cylinders.

—§ 173.301(h)(2)—Allowing cylinders filled with a flammable, corrosive, or noxious gas to have the valves protected by loading the cylinders in an upright position and securely bracing in rail cars or motor vehicles, when loaded by the consignor and unloaded by the consignee.

Discussion and Resolution of Appeals

Sections 173.40(b) and 173.301a(d)(3). The August 8, 2002 final rule contains a requirement that the pressure of a Hazard Zone A or B toxic by inhalation hazard material at 55 °C (131 °F) may not exceed the service pressure of the cylinder and that sufficient outage must be provided so that the cylinder will not be liquid full at 55 °C (131 °F). CGA and another appellant state that this revision would affect the shipment of hydrogen sulfide, a Hazard Zone B material, in DOT specification 3A and 3AA480 cylinders, as authorized in § 173.304a. Specifically, the appellants point out that the pressure of hydrogen sulfide at

55 °C (131 °F) exceeds the 480 psi marked service pressure for DOT 3A and 3AA480 cylinders. They also note that the § 173.304a table continues to authorize DOT specification cylinders with a marked service pressure of 480 psi, thus creating a conflict with the provisions in § 173.40(b). The appellants are correct that an inconsistency exists between the provisions in § 173.40(b) and the entry in § 173.304a table for hydrogen sulfide. Hydrogen sulfide has a vapor pressure of about 545 psi at 55 °C (131 °F). Therefore, in this final rule, we are revising the hydrogen sulfide entry in the § 173.304a table. This revised entry permits the continued use of currently authorized cylinders for hydrogen sulfide until December 31, 2003. After the transition period, hydrogen sulfide must be transported in a cylinder that conforms to the requirements in § 173.40(b). Also, for consistency we are extending the dates in §§ 173.40(b) and 173.301a(d)(3) to December 31, 2003.

In addition, an appellant notes that throughout the HMR, the normal filling densities and liquid-full conditions for liquefied compressed gas in cylinders are based on two temperatures, "54 °C (130 °F)" and "55 °C (131 °F)." The appellant suggests that one set of values be used. We agree and are revising the pressure reference temperature to read "55 °C (131 °F)" throughout the HMR, except in § 173.306. This reference temperature is consistent with that used in the United Nations Recommendations on the Transport of Dangerous Goods (UN Model Regulations).

Sections 173.301(f)(2) and 177.840(a)(1). Appellants express concern about the requirement in the August 8, 2002 final rule that the inlet port to the relief channel of a pressure relief device (PRD), when installed, must be in the cylinder's vapor space. Several appellants maintain that it is not possible to assure that the PRD is in communication with the vapor space. They further state that vapor space shifts based on the orientation of a cylinder, thus making it impossible to insure that the inlet port to the PRD is always in the cylinder's vapor space. Other appellants, representing the fire suppression industry, express concern that the current configuration of most fire suppression cylinders locates the inlet port to the pressure relief device in a siphon tube, which communicates directly with the liquid portion of the contents rather than the vapor space. Consequently, this requirement would ban most fire suppression cylinders from transportation. The appellants state that in order to comply with the

requirement, fire suppression cylinders would have to be redesigned to increase flow capacity and resubmitted to Underwriters Laboratories for testing and approval. They argue that this process effectively could take eighteen months or more. Moreover, several appellants cite test data generated in the late 1970s by CGA, with DOT participation, demonstrating that the current PRDs operate as designed regardless of whether the PRD inlet port is in the liquid or vapor space of the cylinder. CGA furnished a copy of the bonfire test data used to support the adequacy of PRDs conforming to CGA Pamphlet S-1.1.

Based on the merits of the comments and test data, we agree that the current requirements in CGA Pamphlet S-1.1 are adequate, regardless of whether the inlet port to a PRD communicates with the liquefied gas or the vapor space. However, it remains our position that, in a fire, a cylinder that vents a liquefied flammable gas poses a greater risk than if it vents vapors. Appellants support continuing to apply the requirement to liquefied flammable gases to minimize the amount of gas released and potential for initiation of the gas. Therefore, we are revising §§ 173.301(f)(2) and 177.840(a)(1) to require that the PRD be in the vapor space of cylinders used to transport Division 2.1 (flammable gas) materials, only.

Sections 173.301(f)(3) and 180.205(c)(4). Sections 173.301(f)(3) and 180.205(c)(4) set forth requirements for PRDs. The August 8, 2002 final rule requires that PRDs for DOT-3 series cylinders must be set at 100% of test pressure, with an allowable tolerance of minus 10% to plus zero. CGA and several other appellants oppose this requirement, stating that it does not take into consideration that several types of PRDs are activated either by pressure, temperature or both. For example, appellants state that certain PRDs, such as CG-2, CG-3, and CG-9 devices, are fusible plug devices activated by temperature and not by pressure. PRDs incorporating a CG-1, CG-4, and CG-5 device are activated by pressure or a combination of temperature and pressure. Similarly, other appellants state that the requirements specified in CGA Pamphlet S-1.1 restrict certain PRDs, such as CG-2, CG-3, and CG-7 devices, to service pressures below 500 psig, regardless of the test pressure of the cylinder. The appellants request that the provision requiring PRDs on DOT 3-series cylinders be set at 100% of test pressure, with an allowable tolerance of minus 10% to plus zero apply to the CG-1, CG-4, and CG-5 PRDs, only. We