

NATIONAL TRANSPORTATION SAFETY BOARD  
WASHINGTON, D.C.

R-360

ISSUED: June 19, 1981

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Forwarded to:

Honorable Howard Dugoff  
Administrator  
Research and Special Programs Administration  
Washington, D. C. 20590

SAFETY RECOMMENDATION(S)

R-81-74

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On March 30, 1981, the Materials Transportation Bureau (MTB) of the Research and Special Programs Administration published in the Federal Register an amendment to the final rule issued under Docket HM-174. The amendment provided that Specification 112A tank cars (which do not meet the tank head puncture resistance and thermal protection requirements established under Docket HM-144) may be used to transport certain flammable gases (anhydrous methylamines) until July 1, 1982. This amendment, which was developed by the Federal Railroad Administration (FRA) for issuance by MTB, was characterized in the rulemaking notice as simply a correction of an error in the HM-174 final rule, and no opportunity was provided for public comment, as the amendment became effective the day after it was published. The National Transportation Safety Board believes that this amendment, which affects approximately 66 Specification 112 tank cars which were not equipped to meet HM-144 safety requirements by the December 31, 1980, deadline, is considerably more significant than the notice indicated. Moreover, we are concerned that the decision to allow these tank cars to continue transporting flammable gases until July 1, 1982, without the safeguards of tank head and thermal protection appears to have been made without consideration of its safety implications, since no formal safety assessment was made and no compensating interim safety precautions were required when the amendment was issued.

We understand that Specification 112 tank cars used to transport anhydrous methylamines were not clearly identified as being subject to tank head and thermal protection requirements as a result of errors in the HM-144 regulatory provisions. We also are aware that after the end of the 2 1/2-year retrofit period provided under HM-144, one shipper, du Pont, informed MTB that it has 66 Specification 112 tank cars in anhydrous methylamines service which do not meet HM-144 safety requirements. These circumstances notwithstanding, any decision to permit the continued operation of the tank cars in flammable gas service should be based upon the establishment of interim safeguards to adequately control the exposure of the public to unacceptable or unreasonable hazardous materials transportation risks.

The tank head and thermal protection requirements of HM-144 were intended to apply to all Specification 112 and 114 tank cars transporting flammable gases because of the recognition that transportation of these products in these tank cars without such safeguards poses unreasonable risks to the public. These risks were considered so serious that, in response to the Safety Board's National Public Hearing on Derailments and Hazardous Materials in April 1978 and the resulting safety recommendations, the Department of Transportation acted on an emergency basis to substantially accelerate the retrofit program for these tank cars.

The products affected by the errors in HM-144, anhydrous methylamines, certainly pose serious hazards if released in railroad accidents. The National Fire Protection Association has assigned its highest flammability hazard rating and its second-highest health hazard rating to these products. Specification 112 tank cars not equipped with tank head protection have a higher risk of tank head puncture in train switching operations and in derailment conditions. FRA Emergency Order No. 5 requires that flammable gas cars without tank head protection be "shoved to rest" in train classification yards to minimize the possibility of overspeed impacts; however, the unretrofitted tank cars may not be readily distinguishable to railroad employees in switching operations, traincrews, and emergency response personnel from the nearly 18,000 tank cars which were required to meet HM-144 safety retrofit requirements by the end of last year. Under the fire conditions which can occur in railroad accidents, tank cars carrying these products can violently rupture and rocket to a considerable distance from the accident site, endangering railroad employees, firefighters and other emergency response personnel, and local communities. Tank cars not insulated with thermal protection can rupture and rocket after a considerably shorter exposure time than would be expected with insulated tank cars.

Considering these hazards, we cannot understand MTB's failure to require application of compensating interim safeguards when the extended retrofit period was established. We recognize that the number of tank cars involved is small compared to the thousands of tank cars subject to HM-144 safety retrofit requirements. We also are aware that all 66 tank cars are equipped with coupler vertical restraint systems and more than half of the cars have headshields. However, as MTB has observed in its rulemaking notices under Docket HM-144, a single accident involving release of flammable gas from even one tank car can be catastrophic.

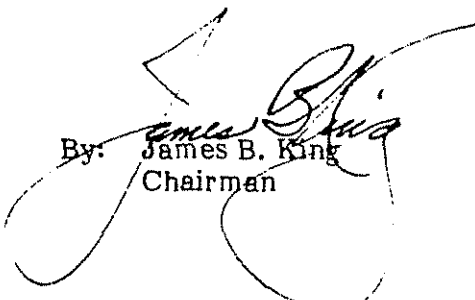
In staff contacts with du Pont and FRA, Safety Board representatives raised questions about efforts to expedite the retrofit of safety equipment, whether railroads had been alerted to the status of unretrofitted cars and the cars distinctively marked to minimize the potential for improper handling during switching operations, and whether action had been taken to assure that accurate information about the thermal protection status of the tank cars would be available to firefighters and other emergency response personnel in the event of an accident. We understand that certain actions have now been taken in these areas. Du Pont has indicated that its retrofit program is being accelerated in an effort to complete all of the tank cars by the end of 1981--6 months earlier than the deadline established by MTB. FRA staff also has indicated that the railroads and the Chemical Manufacturers Association's Chemical Transportation Emergency Center (CHEMTREC) have been notified of the status of the unretrofitted tank cars and that arrangements have been made to update this information periodically as the retrofit progresses. These precautions should help reduce immediate risks and the potential for errors which could have tragic consequences. However, the adequacy of these precautions should be ascertained and any additional interim safety precautions which may be necessary to adequately control the risks to the public should be implemented

immediately. For example, distinctive markings might be applied to the unretrofitted tank cars to make their status conspicuous to railroad employees and emergency response personnel and speed restrictions for trains containing unretrofitted tank cars might be established to minimize crash forces in the event of a derailment.

Therefore, the National Transportation Safety Board recommends that the Research and Special Programs Administration:

Immediately ascertain, in conjunction with the Federal Railroad Administration, the adequacy of industry-adopted interim safety precautions for transportation of anhydrous methylamines in Specification 112A tank cars and institute any additional interim safety precautions which may be necessary to adequately control the risks to the public pending installation of tank head puncture resistance and thermal protection systems. In the identification of possible interim safety precautions consideration should be given to measures such as application of distinctive markings to the unretrofitted tank cars to make their status conspicuous to railroad employees and emergency response personnel, restrictions on the speeds of trains containing unretrofitted tank cars to minimize crash forces in the event of a derailment, and other precautions which may be appropriate. (Class I, Urgent Action) (R-81-74)

KING, Chairman, DRIVER, Vice Chairman, McADAMS, GOLDMAN, and BURSLEY, Members, concurred in this recommendation.

By:  James B. King  
Chairman