

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: March 3, 1976

Forwarded to:

Honorable William T. Coleman, Jr.
Secretary
Department of Transportation
Washington, D.C. 20590

SAFETY RECOMMENDATION(S)
I-76-1 through I-76-4

At 12:30 p.m. on August 6, 1974, a shipment of monomethylamine nitrate solution (PRM) exploded during routine switching operations in Burlington Northern's Apple Yard in Wenatchee, Washington. The PRM was being transported in tank car DUPX 16009, operated by E.I. DuPont De Nemours & Company, under DOT Special Permit 5737. Two persons died, 113 were injured, and estimated losses exceeded \$7,500,000.

PRM was classified as a flammable solid under the Department of Transportation's Hazardous Materials Regulations. The permit to transport the PRM was issued by the Federal Railroad Administration.

A number of ways the accident might have happened were found during the Safety Board's investigation. These possibilities were identified by the methodical application of existing knowledge in the explosive field. Safety requirements established under Special Permit 5737 did not address these possibilities. Efforts to identify such possibilities before the accident, using methodical safety analysis techniques, were not required or used by any of the parties who participated in the evaluation of the proposed transportation before it was authorized. Thus, similar accidents resulting from undiscovered hazards during transportation of detonable materials, authorized under the same evaluation process, could occur in the future.

Cancellation of the Special Permit after the accident indicates that such accidents are considered to be unacceptable risks. Until methodical safety analysis techniques are used to examine large shipments of other materials capable of detonation, similar undetected and unacceptable risks may continue to exist. The Safety Board believes

that the need for such examinations should be acted on reasonably soon. One approach to meeting this need is to make guidelines available for the examination effort and to request that those benefiting from such transportation do this work. Prevention of one such accident would more than justify this effort.

The Safety Board found that dry PRM crystals were sufficiently dangerous to require classification as an "explosives Class A, Type 3" hazardous material. During transportation, spilled or leaking solution of PRM could become dry crystals. This would change the required classification of the PRM from a "flammable solid" to an "explosive" if the PRM were exposed to certain high temperatures and low humidities.

The classification as a flammable solid probably resulted in less stringent surveillance and less adherence to precautionary requirements in loading, shipping, and transporting PRM. Testimony given during the Safety Board's public hearing into the facts and circumstances of this accident clearly indicated that current classification regulations are inadequate to prevent similar accidents.

The PRM that exploded differed from the materials on which the classification and the performance tests for quality control were made.

The strength of the solution exceeded the strength of the solution authorized under the special permit. The pH of that solution deviated significantly from the shipper's written specifications. The unloading and handling of the cars permitted the accumulation of an iron contaminant in the cars. While the effects of these deviations in the quality of the PRM could not be established in the investigation, their existence indicates the need for an examination of product quality standards and quality control procedures for transportation of detonable mate.

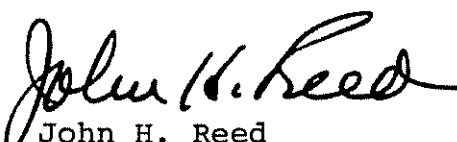
Therefore, the National Transportation Safety Board recommends that the Secretary of Transportation:

1. Require applicants submitting proposals for transportation of detonable materials to make an examination of the transportation conditions for detonation risks and describe what they found. (I-76-1) (Class II, Priority Followup)

(3)

2. Publish guidelines describing methods available for conducting safety analyses that would facilitate the discovery of detonation risks and standards to be met in preparing the proposal. (I-76-2)
(Class II, Priority Followup)
3. Amend 49 CFR 173 to establish appropriate explosives classification definitions and test procedures that address every known way in which detonable materials could explode accidentally in transportation.
(I-76-3) (Class II, Priority Followup)
4. Establish regulations for quality specifications and quality control procedures in the manufacture, packaging, and loading of detonable hazardous materials.
(I-76-4) (Class III Longer-Term Followup)

REED, Acting Chairman, McADAMS, THAYER, BURGESS, and HALEY, Members, concurred in the above recommendations.


By: John H. Reed
Acting Chairman