109# R-58/B

National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: October 16, 1987

In reply refer to: R-87-55 and -56

Mr. Ronald W. Drucker
President
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At 4:25 p.m. e.d.t., on July 8, 1986, 15 cars of a southbound Baltimore and Ohio Railroad Company freight train consisting of 44 cars and a locomotive, derailed while traveling at 45 mph near Miamisburg, Ohio. Three of the 15 derailed cars were tank cars containing yellow phosphorus, molten sulfur, and tallow. While derailing on a bridge, these tank cars were extensively damaged, lost product, and were involved in the resulting fire. Approximately 7,000 residents from a section of Miamisburg were initially evacuated as a safety precaution.

On the following day as a wreckage-clearing crew contracted by the railroad was preparing to remove the smoldering phosphorus tank car, a concrete structure supporting the tank car collapsed and several hundred gallons of molten phosphorus inside the tank car escaped and ignited, resulting in an extensive cloud of phosphorus combustion effluents. During the next 48 hours, a 3-square-mile area of Montgomery County, Ohio, was evacuated, forcing an estimated 30,000 people to leave their homes and businesses; 569 persons were treated for various complaints during the incident. Total property damage was approximately $3,540,000, including the cost of hazardous materials cleanup. 1/

Immediately following a railroad accident, the conductor is responsible for providing emergency response personnel information about the train and its contents. When a derailment occurs involving crewmembers in the locomotive and a caboose, a crewmember from both the front and rear of the train inspect the train concurrently by walking toward the derailment to identify the last standing cars at each end of the derailment. This information and the train papers help to identify the cars involved in the derailment and save valuable time in identifying the location of the hazardous materials tank cars.

1/ For more detailed information, read Hazardous Materials Accident Report--"Hazardous Materials Release Following the Derailment of Baltimore and Ohio Railroad Company Train No. SLFR, Miamisburg, Ohio, July 8, 1986," (NTSB/HZM-87/01).

In the accident at Miamisburg, Ohio, all the train crewmembers were located in the locomotive because the train used a rear-end marker rather than a caboose. Consequently, the crewmembers were isolated from the rear of the train by the river and the derailed cars on the bridge. The conductor initially searched the forward portion of the train for the two "Dangerous" tank cars, but he took no action to dispatch one of the other crewmembers to the rear of the train to determine which cars remained upright and on the rails. As a result, the conductor was able to give emergency response personnel only limited information on the number of cars derailed and the materials involved in the derailment. The firechief, therefore, had to send firefighters into the derailment site in full protective equipment to obtain the needed additional information. With this information and the assistance of the trainmaster, the conductor identified the phosphorus, sulfur, and tallow tank cars that were derailed on the bridge.

Additional delays were experienced in providing emergency response personnel information about hazardous materials transported by the train because of other ineffective actions by the conductor. When the firechief requested all information carried on the train, the conductor lost valuable time retrieving the waybills and reassembling the waybills in proper order to identify all the cars in the derailment. Additionally, the conductor inadvertently left an emergency guide for handling phosphorus on the floor of the locomotive when he searched for the "Dangerous" tank car information. This emergency guide prominently displayed the shipper's 24-hour emergency telephone number, information on product hazards, and technical advice of handling emergencies involving phosphorus that could have aided emergency responders.

In a review of recent rear-end train collisions, the National Transportation Safety Board noted that in the event of either a front-end or rear-end collision of a cabooseless train, the consist list of materials carried on trains could be destroyed and the local emergency response personnel would be without a critical immediate reference. The Safety Board observed that a conspicuous consist list container at, on, or near the end-of-train device on a cabooseless train would help to correct this deficiency. Such a container could be no more than a large plastic yellow envelope secured to the end-of-the-train device with wire ties and lettered "CONSIST LIST" or "HAZARDOUS MATERIALS LIST."

As demonstrated in the train crewmembers' response to the Miamisburg accident, cabooseless trains can create problems for crewmembers in identifying the derailed cars because crewmembers are no longer located at both ends of the train. The railroad industry and the Federal Railroad Administration (FRA) must compensate for this operational change by developing procedures for cabooseless train operations so that emergency response personnel can be provided early reliable information about the train consist. Improved methods or procedures must be developed to assist crewmembers in gathering essential information and to prevent delays in identifying the cars and materials in the derailment. In addition, information on the contents of the train should be kept at both ends of the train to avoid the destruction of all train documents in a derailment. The Safety Board encourages the railroad industry and FRA to examine the operating practices for cabooseless trains carrying hazardous materials and to develop procedures and practices capable of providing reliable, timely information to emergency response personnel about the presence of hazardous materials in derailments.

The lack of information regarding the location of the sulfur tank car and the conflicting technical advice provided on the use of water in handling the emergency made the job of the firechief more difficult. Although the conductor stated that there were three tank cars in the derailment, this information was not properly verified. Later the firechief was advised that only two tank cars were involved in the derailment, and emergency response actions were disrupted to allow a proper accounting of cars and materials involved in the emergency. This lack of verified information coupled with the

previous inappropriate trainmaster's communications challenging the firechief's authority initially lessened the overall effectiveness of the railroad personnel in working to support the local emergency response agencies. While these actions ultimately did not have a significant adverse affect on public safety, railroad personnel must work with emergency response agencies during emergencies that threaten the public and effectively use their experience and training to provide accurate, timely information needed by local response agencies in developing response actions to protect the public.

The initial order of the firechief that the city should begin an evacuation was based on his observation of the direction and size of the smoke plume coming from the fire area and his concern about the possibility of toxic pollutants. The presence of toxic pollutants was later verified by air monitoring data and the large number of medical complaints during the incident. Furthermore, his initial decision to use a direct hose stream attack to flood the fire-area was based on his review of available technical resource documentation and advice from available onscene technical expertise. These initial actions provided time to assess the situation and safely complete the evacuation, to establish emergency resource support capabilities, and to coordinate necessary assistance and technical support.

Therefore, as a result of its investigation, the National Transportation Safety Board recommends that CSX Transportation:

> Establish crewmember procedures for providing timely, accurate information to on-scene emergency responders about the types of hazardous materials being transported in tank cars involved in derailments where "end-of-train" devices are used. (Class II, Priority Action) (R-87-55)
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> Reemphasize to all operating personnel the importance of directing their initial activities following a derailment to the cooperative support of local emergency response agencies. (Class II, Priority Action) (R-87-56)

Also as a result of its investigation, the Safety Board issued Safety Recommendations R-87-46 through -51 to the Federal Railroad Administration and R-87-52 through -54 to the Association of American Railroads and reiterated Safety Recommendation I-81-1 to the Department of Transportation.

The National Transportation Safety Board is an independent Federal agency with the statutory responsibility ". . . to promote transportation safety by conducting independent accident investigations and by formulating safety improvement recommendations" (Public Law 93-633). The Safety Board is vitally interested in any actions taken as a result of its safety recommendations and would appreciate a response from you regarding action taken or contemplated with respect to the recommendations in this letter. Please refer to Safety Recommendations R-87-55 and -56 in your reply.

BURNETT, Chairman, and LAUBER, NALL, and KOLSTAD, Members, concurred in these recommendations. GOLDMAN, Vice Chairman, did not participate.

By: Jim Burnett
Chairman