I-81

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: October 6, 1981

Forwarded to:

Honorable Andrew L. Lewis
Secretary
U.S. Department of Transportation
400 Seventh Street, S.W.
Washington, D.C. 20590

SAFETY RECOMMENDATION(S)

I-81-8 through -10

During a 1-month period in the fall of 1979, the National Transportation Safety Board (NTSB) investigated four accidents at railroad/highway grade crossings involving a train collision with a truck transporting petroleum products. Three of these accidents resulted in gasoline fires which engulfed the truck trailers and the train locomotives. While the drivers were uninjured in the three accidents involving fire, five railroad employees were killed, four were injured, and the total property damage for the three accidents was estimated to be more than $923,000. These four accidents and five similar accidents, previously investigated by the NTSB, all involved factors that have been found to be common in accidents at crossings which involved trucks transporting bulk hazardous materials. Because of this accident experience, the NTSB initiated a special study 1/ to determine the magnitude of the problem and the characteristics of accidents at crossings involving trucks transporting bulk hazardous materials.

The NTSB examined data from its accident investigations involving train collisions with trucks transporting bulk hazardous materials and reviewed accident data on this type of accident from four agencies in the U.S. Department of Transportation (DOT). The data for 1975 through 1979 revealed a yearly average of 62 accidents, 7 fatalities, 41 injuries, and $1,670,000 in property damage for these truck accidents.

Shortly after the NTSB initiated the accident investigation phase of this study in November 1980, four such accidents occurred within a 10-day period that resulted in 9 fatalities, 9 injuries, and $718,000 in property damage. In this 10-day period, the total fatalities exceeded the yearly average, and the property damage was 43 percent of what might be expected for an entire year. Another accident investigated in 1981 resulted in the derailment of 5 locomotive units and 24 cars, 1 fatality, and $2,748,000 in property damage--1.6 times the average annual property damage in recent years.

1/ For more detailed information, read Special Study--"Railroad/Highway Grade Crossing Accidents Involving Trucks Transporting Bulk Hazardous Materials" (NTSB-HZM-81-2).

As evidenced by the absence in the Research and Special Programs Administration (RSPA)/Materials Transportation Bureau (MTB) files of six accidents which were investigated by the NTSB, of which five resulted in the release of large quantities of hazardous materials, fatalities, and substantial property damage, the MTB file is incomplete. Depending on which MTB reporting criteria are involved in the specific accidents, the small sample of Bureau of Motor Carrier Safety (BMCS) and NTSB accidents with hazardous spills (49 cases) indicates that the MTB may be missing as many as 32 to 47 percent of the accidents which should have been reported to the MTB.

The Federal Railroad Administration (FRA) was missing at least 7 percent and, based on a small sample (84 cases), perhaps as many as 22 percent of the accidents that should have been reported to it. Even if the report is sent to the FRA, the hazardous materials category may be inaccurate as often as 27 percent of the time, based on the related BMCS reports.

The BMCS did not receive an accident report it should have for an accident investigated by the NTSB. Additionally, BMCS data conflicted with that of the FRA in 20 cases. The BMCS data were probably in error in at least five of these cases. Based on the sample size (105 cases), the BMCS data may have errors in reporting of at least 5 percent and perhaps as many as 20 percent of the cases.

The National Highway Traffic Safety Administration's (NHTSA) current accident data do not highlight accidents involving hazardous materials. In one case, coding limitations on NHTSA forms did not allow the release of ammonia gas to be included.

To assess the validity of the agencies' accident files periodically and to increase the completeness of the data base, accident reports should be cross-referenced from one agency's system to the other and added into the other systems if they have not been reported to them. The potential exists to validate annually 200 to 2,000 or more accidents of all types. For example, the FRA could validate those crossing accidents that involve fatalities with the NHTSA and those that involve interstate trucks with the BMCS. The NHTSA could validate fatal truck accidents with the BMCS. The MTB could correlate the data from the BMCS, the NHTSA, and the FRA as appropriate.

These cross-checks might be accomplished through a common case number developed for the accident based on date, time, and location of the accident, with an abbreviated system to identify a carrier. If all of the accidents related to a particular safety problem were available from all the systems, the information would allow a more thorough evaluation of the safety problem and its solution. For example, those interested in driver records and qualifications and their involvement in accidents could obtain NHTSA information on driver history (such as previous accidents, motor vehicle convictions, etc.) and driver education; BMCS information on hours-on-duty and years with the company; and FRA information on driver actions at crossings. This information might lead to strategies to reduce accidents at crossings involving trucks transporting bulk hazardous materials. The MTB could use its own data and BMCS and NHTSA data to determine desirable driver qualifications.

As demonstrated by the FRA file, the existing form does not request sufficient information to report the involvement of hazardous materials and the performance of containers in accidents. A short supplement to the existing form which requests slightly more information than that requested by the BMCS would provide the necessary information. Perhaps the FRA form could be modified to be similar to the BMCS form, and the NHTSA could adopt a similar supplement for its Fatal Accident Reporting System (FARS) data. If sufficient information is obtained, the MTB form may not be necessary in these modes of transportation.

The new supplemental form developed by the four DOT administrations should have the carrier's name and address, origin and destination of the material, the type of container, the quantity and type of material, and other information about spillage. Since empty tanks may be hazardous and are subject to some Federal regulations, information also should be collected on empty tank vehicles used to transport hazardous materials. Data on origin and destination, when obtained on an FRA or a FARS report if not found in the BMCS file, could alert the BMCS to companies which are not reporting accidents.

Other information provided would allow for cross-checks and followup inquiry. These reports should be required only for those vehicles in which the hazardous material was directly involved in the accident. For example, if a train were to strike a truck, information would not be required for the train's tank cars loaded with hazardous materials unless the truck strikes hazardous materials rail cars or these cars are derailed. Currently, the RSPA is developing a Hazardous Materials Information System (HMIS). This system is to integrate the data systems of the FHWA, the FRA, the DOT's National Response Center, and the MTB. Conceptually this system when completed will allow cross-checking of critical items of information. The centralized accident information should aid in analyzing the effectiveness of regulatory and enforcement programs and identify common causal factors in accidents while detecting recurring problems in response. Since the NHTSA is not involved in enforcement of hazardous materials regulations and has not collected hazardous materials information on the FARS form, the HMIS does not include the NHTSA.

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

> Include the National Highway Traffic Safety Administration as a member of the task force for the Hazardous Materials Information System which will determine hazardous materials data needs for accident reports. (Class II, Priority Action) (I-81-8)
>
> Consider the development of uniform short supplemental accident data forms to supplement existing Federal Highway Administration, Federal Railroad Administration, and National Highway Traffic Safety Administration accident report forms. (Class III, Longer-Term Action) (I-81-9)
>
> Put into effect methodology to cross-reference accidents compiled by Department of Transportation administrations to periodically assess the validity of the data and the completeness of the data files, and to prepare detailed case analyses. (Class III, Longer-Term Action) (I-81-10)

KING, Chairman, and GOLDMAN and BURSLEY, Members, concurred in these recommendations. DRIVER, Vice Chairman, and McADAMS, Member, did not participate.

By: James B. King
Chairman