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**NATIONAL TRANSPORTATION SAFETY BOARD**  
WASHINGTON, D.C.

ISSUED: March 31, 1982

Forwarded to:

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SAFETY RECOMMENDATION(S)

R-82-19 and -20

On January 2, 1982, in Southampton, Pennsylvania, a single-unit Southeastern Pennsylvania Transportation Authority (SEPTA) commuter train struck an Atlantic Richfield Company (ARCO) tractor/cargo tank semitrailer loaded with 7,900 gallons of gasoline at a railroad/highway grade crossing. The gasoline was released upon impact and fire engulfed the front of the train, the truck, and a nearby occupied passenger vehicle. The motorman died several weeks later, and six persons suffered minor injuries. Damage was estimated to be about \$500,000.

The National Transportation Safety Board has learned that other transit authorities are either currently operating commuter trains over routes which have grade crossings or may do so in the future. Grade crossing accidents involving trucks carrying hazardous materials and rail cars carrying large numbers of passengers could be catastrophic. One of the first accidents of this type that the Safety Board investigated occurred under similar circumstances in Everett, Massachusetts, in 1966. The same type of rail car as in the Southampton accident struck and ruptured a tank truck containing 8,300 gallons of fuel oil. Low-order explosions and a rapid spread of flames covered the forward section of the rail car. Eleven of the 28 passengers and 2 of the 3 train crewmembers were killed--all by burns or smoke inhalation rather than collision injuries. Transit authorities should review in detail the circumstances surrounding such accidents and take steps to prevent them on their properties.

During a 1-month period in the fall of 1979, the Safety Board investigated four accidents at grade crossings involving a train collision with a truck transporting petroleum products. Three of these accidents resulted in gasoline fires which engulfed the tractor/trailers and the train locomotives. While the truckdrivers 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 Safety Board, all involved factors that have been found to be common in accidents at grade crossings which involved trucks transporting bulk hazardous materials. Because of this accident experience, the Safety Board initiated a special study <sup>1/</sup> to determine the magnitude of the problem and the characteristics of accidents at grade crossings involving trucks transporting bulk hazardous materials.

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

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RHR-82-3

The Safety Board 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. The data for 1975 through 1979 revealed a yearly average of 62 accidents, 7 fatalities, 41 injuries, and \$1,670,000 in property damage from these accidents.

Shortly after the Safety Board initiated the accident investigation phase of its study in November 1980, four such accidents occurred within a 10-day period and 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.

To reduce the number of accidents involving collisions of trains and highway vehicles at grade crossings, a uniform, coordinated effort is needed. The education, enforcement, engineering, and legislative effort that is required involves interaction among agencies that may ordinarily not become involved in each other's activities. Trucking associations, State and local departments of transportation, labor groups, enforcement agencies, legislatures, railroads, highway carriers, and shippers should participate in this effort. Many of these agencies are already working together in State "Operation Lifesaver" programs which are being coordinated by the National Safety Council (NSC). In its study, the Safety Board asked the NSC to expand the existing Operation Lifesaver program to include a specific program that addresses preventing accidents involving trucks carrying bulk hazardous materials, especially petroleum products, over grade crossings. The NSC has responded favorably and plans to expand into this critical area as soon as it is organizationally feasible. Similarly, the American Petroleum Institute, the American Trucking Associations, Inc., the National Tank Truck Carriers, Inc., the Association of American Railroads, and the Brotherhood of Locomotive Engineers have initiated activity in these areas. The Safety Board believes that the American Public Transit Association should become involved in this program.

Therefore, the National Transportation Safety Board recommends that the American Public Transit Association:

Assist the National Safety Council in its program to reduce the likelihood of railroad/highway grade crossing accidents involving trucks carrying bulk hazardous materials. (Class II, Priority Action) (R-82-19)

Encourage its members who operate rail systems to cooperate with local and State traffic authorities and operators of trucks carrying bulk hazardous materials in the designation of specific railroad/highway grade crossings to be used by the trucks, preferably crossings with a grade separation, but as a minimum crossings with automatic gates or other active warning devices. (Class II, Priority Action) (R-82-20)

BURNETT, Acting Chairman, and McADAMS, GOLDMAN, and BURSLEY, Members, concurred in these recommendations.

  
By Jim Burnett  
Acting Chairman