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NATIONAL TRANSPORTATION SAFETY BOARD WASHINGTON, D.C.

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Governors of all States
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SAFETY RECOMMENDATION(S)

H-81-81

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).

Current rules of the road for bulk hazardous materials trucks at crossings are not uniform from State to State. Differences exist in rules governing crossings with active or passive warning devices. These differences should be resolved to eliminate possible driver confusion--especially for drivers engaged in interstate transportation or those who may change residence frequently from one State to another.

The Uniform Vehicle Code (UVC) states that "situations similar in nature should be treated similarly" and thus emphasizes the need for uniformity in laws. In 1971, the UVC was revised in the area which deals with bulk hazardous materials vehicles at crossings. Previously, only vehicles carrying explosive substances or flammable liquids as cargo were required to stop before every crossing--even those "protected" by crossing gates or flashing light signals. The revised UVC (11.703(b)(3)) states that the section which pertains to requiring hazardous materials trucks to stop does not apply at "(3) Any railroad grade crossing protected by crossing gates or an alternately flashing light signal intended to give warning of the approach of a railroad train." According to a study, 2/ 10 States have the UVC version, 2 States do not require stops where there are open gates, and 36 States require stops at all crossings, even those with gates which are open.

Flashing light devices may not provide sufficient time for a truck to clear the crossing when it begins from a stopped position. In 27 of the 120 accidents at crossings with active devices, drivers stopped and proceeded, stopped on the crossing, or stalled on the tracks. Perhaps accidents of this type could be avoided if trucks were not required to stop for active devices unless they are flashing or gates are down. Additionally, some "rear-end" motor vehicle accidents would be avoided. In only 3 of the 120 cases at active crossings did accidents occur where active devices were not functioning properly. These active devices are designed to be "failsafe" and are more reliable than earlier systems. If trucks were not required to stop before active crossings that are not flashing, times at crossings could be reduced to 20 seconds or less. A uniform minimum delay of about 20 seconds could result in more compliance by all drivers at crossings with active devices.

Four States do not require bulk hazardous materials trucks to stop always at a crossing with passive devices. Texas allows a truck transporting bulk hazardous materials to cross the track at a rural crossing at 20 mph. Where active devices are not installed, bulk hazardous materials trucks should be required to stop. Stopping at a crossing with passive devices will provide the best opportunity for a driver to detect an approaching train from either direction. Stopping does increase exposure time and therefore crossings with passive devices should be given priority for installation of active devices if there is substantial hazardous materials traffic. In contrast, Maryland, Virginia, and Rhode Island do not require stops in developed areas. Similar lack of uniformity was noted in the NHTSA study in the following areas:

- o The vehicles required to stop based on cargo
- o The requirement to look and listen
- o The requirement to not shift gears

Regulations that govern trucks transporting bulk hazardous materials at crossings need to be standardized to eliminate possible driver confusion. If laws are changed, the drivers must be educated about the changes.

2/ "Drivers' Duties at Railroad Grade Crossings," Traffic Laws Commentary, National Highway Traffic Safety Administration (NHTSA), Vol. 8, No. 1, January 1979.