

R-73-1-4

ditional impacts below an undefined "damage level" on the routes he selected. The A&S Railroad and its hump-equipment suppliers depended on undefined cleanliness of wheels on interchanged cars in establishing the performance capabilities of their equipment. Such assumed conditions were not justified, since the crash and explosion occurred.

Similar gaps in the definitions and coordination of interrelated safety responsibilities have been observed in other hazardous materials accidents investigated by the Safety Board. Difficulties associated with establishing and documenting functional definitions and responsibilities are substantial, or the work would have been accomplished by now. Thus, the need for resolving this safety problem presents a continuing challenge to the transportation industry, its users, its suppliers, and its regulators.

VI. PROBABLE CAUSE

The National Transportation Safety Board determines that the probable cause of the overspeed impact was the failure of the retarding system in the hump classification yard to decelerate effectively heavy cars with oil or grease on their wheel rims, the absence of a backup system to halt cars passing through retarders at overspeeds, and routine acceptance of uncontrolled overspeeds.

Propylene leaked from the tank car because the overriding coupler of the hopper car punctured a tank head too weak to resist the blow. Lack of specifications which define permissible impact and adequate crash resistance was a contributing cause.

Losses were increased by the rapid rate at which the vaporized propylene spread at ground level, its ignition, and the acceleration of the burning reaction in air to the extent that a violent explosion occurred.

VII. RECOMMENDATIONS

The National Transportation Safety Board recommends that:

- 1. The Alton and Southern Railroad Company review the design of the hump at Gateway Yard and make those changes necessary to insure that all cars brought to the hump for classification will be handled without overspeed crashes. This review should include a systems analysis which covers grades, retarders, control for switching and maintaining programmed speed, provisions for backup, decelerating, and stopping devices, constant monitoring of overspeeds, and hump procedures in general. (Recommendation No. R-73-1).
- 2. The Federal Railroad Administration establish a requirement that railroad carriers handle switching operations of cars containing large shipments of hazardous materials, with a danger range beyond railroad property boundaries, in the same manner as they handle switching operations of cars containing explosives. (Recommendation No. R-73-2).
- 3. The Federal Railroad Administration develop requirements for the collection, documentation, and technical analysis of the principal ways in which the hazardous materials present produce injuries and damages in railroad accidents. Such documentation should identify the range of distances at which injuries or damages occurred. (Recommendation No. R-73-3).
- 4. The Federal Railroad Administration review and, if necessary, revise its reporting requirements for accidents involving hazardous materials to obtain more accurate reporting of casualties adjacent to railroad premises. (Recommendation No. R-73-4).

(R-73-1)

(R-73-2)

(R-73-3)

(R-73-4)

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BY THE NATIONAL TRANSPORTATION SAFETY BOARD:

/s/ JOHN H. REED

Chairman

/s/ FRANCIS H. McADAMS

Member

/s/ LOUIS M. THAYER

Member

/s/ ISABEL A. BURGESS

Member

/s/ WILLIAM R. HALEY

Member

January 31, 1973