



# National Transportation Safety Board

Washington, D.C. 20594  
Safety Recommendation

I-96  
#546

Date: March 23, 1990

In reply refer to: H-90-8 and -9 and  
I-90-1

Mr. Calvin E. Lewis, Jr.  
General Manager  
Hy Yield Bromine Company  
Post Office Box 24  
Rocky Point, North Carolina 28457

About 11:30 a.m., on November 30, 1988, a tractor-flatbed semitrailer operated by Hy Yield Bromine Company overturned at the intersection of two farm roads in a sparsely populated area of Collier County, Florida. The semitrailer was loaded with 32 cylinders of a poisonous and toxic by inhalation mixture, 98 percent methyl bromide and 2 percent chloropicrin. Eleven of the cylinders were full, each containing about 1,500 pounds of the poisonous mixture, and the remainder of the cylinders were partially full or empty except for residue. The driver had completed the second of four scheduled stops when the accident occurred.<sup>1</sup>

As the vehicle overturned onto its left side, the front of the tractor struck a tree and some of the cylinders and sidepanels on the semitrailer were ejected from the vehicle. Several cylinders struck trees in the wooded area adjacent to the accident site and one cylinder was punctured. Several emergency response personnel reported symptoms associated with exposure to methyl bromide and chloropicrin as a result of their activities on and near the accident scene, and were provided medical treatment.

The lack of markings, tags, labels, or other means of identification on the cylinders to indicate which contained significant quantities of hazardous materials or were empty (except for residue) before the accident, hindered emergency response personnel in their efforts to estimate the amount of product released. If the punctured cylinder had been identified as containing a significant quantity of hazardous material or as empty (except for residue), emergency response personnel could have better assessed the threat posed by the amount of product potentially released. This would have allowed them to better assess the severity of possible exposures to on-scene

<sup>1</sup>For more detailed information, read Hazardous Materials Accident Report--"Puncture of a Cylinder Containing a Mixture of Methyl Bromide and Chloropicrin Following the Overturn of a Tractor/Semitrailer, Collier County, Florida, November 30, 1988" (NTSB/HZM-90/01).

personnel. Therefore, the Safety Board believes that the Hy Yield Bromine Company should identify cylinders to distinguish those that contain significant quantities of hazardous materials from those that are empty except for hazardous materials residue, when in transportation, and prepare appropriate shipping papers to correspond to the load.

Although the Hy Yield Bromine Company failed to comply with federal regulations for properly screening and qualifying the driver, records obtained during the investigation indicate that he had met applicable qualification requirements for the position of truckdriver at the time of the accident. Prior to his employment with Hy Yield Bromine Company, the driver had completed written and road tests, and he had passed a recent medical examination. Statements and documentation from some previous employers indicate that the driver possessed the necessary skills to properly drive a tractor and semitrailer and that he had operated a wide variety of equipment.

However, the driver's driving record and work history with other employers indicate a propensity to operate vehicles at a high rate of speed and to take risks. During the 4-year period following the issuance of his Florida chauffeurs permit, the driver received four moving violations, his last for operating the Hy Yield Bromine Company vehicle 69 mph in a 55 mph zone. While working for a previous employer, the driver was cited for speeding inside the confines of a chemical plant facility on two occasions within a 1-year period; was suspended for 2 days for driving in an unprofessional manner; and was terminated after he twice transported unauthorized passengers in his vehicle.

While the driver failed to operate the vehicle in a safe manner, there is no indication that anyone at Hy Yield Bromine Company checked or monitored the driver's driving record. The company failed to establish and then to enforce safe operating practices for its driver, and the driver's unsafe operating practices went unchecked.

There is no indication that anyone at the driver's terminal monitored the driver's hours of service. Moreover, on the day of the accident, Hy Yield Bromine Company officials failed to adequately consider safety implications of the driver's assigned workload; additional stops were added to the driver's normal delivery schedule even though additional time was required to load and unload cylinders because of the inoperative hydraulic crane, and further, the driver was expected to return to his terminal that evening so that repairs could be made to the truck. It is likely that the driver would have had to exceed the maximum federal hours of service limits to complete his assigned duties and return to his terminal that evening.

The driver's operation of trucks at high rates of speed and his risk taking are indicative of an individual who is both impatient and overconfident. These behavioral characteristics may have manifested themselves on the day of the accident when he faced the expanded work schedule, the inoperable hydraulic crane, and the company's requirement to return the vehicle to Plant City that night. Farm workers at the two previous stops were familiar with the driver from previous deliveries and they were confident in their assessment that the driver appeared rushed.

Therefore, the Safety Board believes that these behavioral characteristics combined with the extra workload assigned to the driver that day fostered the driver's inclination to rush.

In its safety study on training, licensing, and qualification standards for drivers of heavy trucks,<sup>2</sup> the Safety Board stated that driver performance is a major factor in many truck accidents. When a truck transporting hazardous materials is involved in an accident, the threat to life and property can spread well beyond the immediate site of the accident. Because of the dangers posed by hazardous materials, the drivers transporting them must be among the most skilled. But, in addition to having a high degree of truck driving skill and experience, these drivers must know the properties of their cargo, and possess an attitude that reflects courtesy, respect for the rules, and an appreciation of the responsibility that comes with the job. Carriers must establish proper qualification and operational safety standards for drivers who transport hazardous materials, and implement procedures necessary to adequately monitor the safety of its operations. The Safety Board believes that Hy Yield Bromine Company needs to establish and implement a safety management program for transportation operations that includes written objectives and procedures for hiring and qualifying new drivers; initial and recurrent hazardous materials driver training; and the proper monitoring of drivers' performance and driving records, work schedules, and hours of service.

Manchester cylinder G-479 was punctured by a sharp object externally impacting the side body, most likely by the corner of a saddle-type foot on another cylinder, after the vehicle overturned and ejected the cylinders. Ejection of the cylinders from the semitrailer also caused severe damage to other cylinders, including dents, gouges, and deformation to the sidewalls, heads, valve protection collars, and valve caps. The lack of an adequate cargo restraint system not only made the vehicle more susceptible to overturn but it increased the exposure of cylinders to damaging forces by allowing the cylinders to be thrown from the vehicle. Therefore, the Safety Board believes that Hy Yield Bromine Company should secure cylinders in transportation with an adequate cargo restraint system to prevent lateral movement on the vehicle and ejection of cylinders from the vehicle.

Therefore, the National Transportation Safety Board recommends that the Hy Yield Bromine Company:

Implement expeditiously a safety management program for transportation operations that includes written objectives and procedures for hiring and qualifying drivers; initial and recurrent hazardous materials training for drivers; review of driver performance and driving records; scheduling of driver assignments; and monitoring of driver hours of service.  
(Class II, Priority Action) (H-90-8)

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<sup>2</sup> Safety Study--"Training, Licensing, and Qualification Standards for Drivers of Heavy Trucks" (NTSB/SS-86/02).

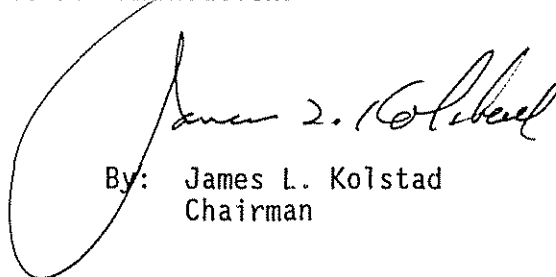
Require that cylinders be secured in transportation with an adequate cargo restraint system to prevent lateral movement on the vehicle and ejection of cylinders from the vehicle. (Class II, Priority Action) (H-90-9)

Establish a procedure to distinguish cylinders that contain significant quantities of hazardous materials from those that are empty (except for hazardous materials residue) when in transportation, and require appropriate shipping paper notations. (Class II, Priority Action) (I-90-1)

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 action taken as a result of its safety recommendations. Therefore, it would appreciate a response from you regarding action taken or contemplated with respect to the recommendations in this letter. Please refer to Safety Recommendations H-90-8 and -9 and I-90-1 in your reply.

Also, the Safety Board issued Safety Recommendations I-90-2 through -4 to the Manchester Tank and Equipment Company, Inc.; I-90-5 through -12 to the Research and Special Programs Administration of the U.S. Department of Transportation; I-90-13 through -15 to Collier County, Florida; and I-90-16 and -17 to the Florida Highway Patrol.

KOLSTAD, Chairman, COUGHLIN, Acting Vice Chairman, and LAUBER and BURNETT, Members, concurred in these recommendations.



By: James L. Kolstad  
Chairman