Log R-627A

National Transportation Safety Board

Washington, D.C. 20594

Safety Recommendation

Date: JUL 1 1991

In reply refer to: R-91-22

To: City, County, and
Emergency Response Organizations
(see attached list)

The Safety Board has had a long-standing concern about emergency response management of railroad accidents involving hazardous materials. Since 1977, the Safety Board has investigated several railroad accidents and incidents involving hazardous materials in which the lack of adequate written emergency response plans and the lack of practice with the emergency response procedures between the railroads and the community presented major safety problems.[1] In these accidents/incidents, the lack of planning (a) hindered efforts made by the community response personnel to handle the emergency and to minimize the risk to the public, (b) increased the severity of the damage or consequences resulting from the accident, and/or (c) lengthened the duration of the evacuation period and disruption to businesses. As a result of its investigations of these accidents/incidents, the Board issued safety recommendations to various agencies and organizations to improve the coordinated planning between railroads and communities.

Further, in its 1985 special investigation report on railroad yard safety, the Board addressed the need for coordinated emergency response planning for railroad yards, through which pass a high volume of hazardous materials and where the release of the materials pose great threats to public safety.[2] The special investigation identified many accidents/incidents in which the coordination needed to handle the emergency was inadequate and in which the inadequacy resulted from a lack of planning and joint disaster

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[1] (a) As used in this letter, an incident refers to a release of hazardous materials, such as a leak, that was not the result of an accident. (b) The events occurred in Rockingham, North Carolina (1977); Crestview, Florida (1979); Sommerville, Massachusetts (1980); Livingston, Louisiana (1982); North Little Rock, Arkansas (1984); Elkhart, Indiana (1985); Pine Bluff, Arkansas (1985); Miamisburg, Ohio (1986); and New Orleans, Louisiana (1987).

[2] National Transportation Safety Board. 1985. Railroad yard safety--hazardous materials and emergency preparedness. Special Investigation Report NTSB/SIR-85/02. Washington, DC. 59 p.

drills between the railroad and emergency response personnel. Based on its special investigation, the Safety Board recommended that all railroads operating rail yards develop and implement, in coordination with communities adjacent to their railroad yards, emergency planning and response procedures for handling releases of hazardous materials (Safety Recommendation R-85-53, issued June 6, 1985). Only 6 of the 54 railroads that operate rail yards indicated that they have been in contact with communities to develop and implement emergency planning and response procedures. Consequently, the Safety Board believes that action is still needed between most railroads that operate rail yards and the communities in which the yards are located.

The Safety Board has also addressed its concerns about the need for emergency response planning to non-Federal agencies. In 1985, as a result of a derailment at Murdock, Illinois, the Safety Board urged the International Association of Fire Chiefs (IAFC), the International Association of Chiefs of Police (IACP), and the International Society of Fire Service Instructors (ISFSI) to notify their members that evacuation zones may need to be larger than the initial distances recommended in the U.S. Department of Transportation (DOT) Emergency Response Guidebook for Hazardous Materials Incidents because parts of tank cars carrying liquids or gases may be propelled a distance far beyond the recommended evacuation zone; thus a larger evacuation zone may be necessary to protect against injury (Safety Recommendation I-85-15).[3] Based on the actions taken by the IACP and ISFSI to notify their members, the Safety Board classified Safety Recommendation I-85-15 to those organizations as "Closed--Acceptable Action." In its 1989 response, the IAFC stated it had notified its members and had also requested that DOT revise the distances in the guidebook. The DOT revised the "protective action" distances in the guidebook, which was distributed to IAFC members. Based on the action taken, the Safety Board classifies Safety Recommendation I-85-15 to the IAFC as "Closed--Acceptable Action."

In 1988, the Safety Board recommended that the National League of Cities (NLC) (a) advise its membership of events of the 1987 hazardous materials accident in New Orleans, Louisiana, in which butadiene leaked from a tank car and ignited,[4] and (b) urge its membership to develop and implement, in coordination with rail yard management, emergency response procedures for handling releases of hazardous materials from tank cars (Safety Recommendation R-88-69). In September 1989, the Board sent a followup letter to the NLC. No response was received.

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[3] After the accident, which occurred on September 2, 1983, a tank car loaded with flammable compressed gas exploded and rocketed 3,630 feet from the derailment site. That distance is nearly 1,000 feet beyond the 1/2-mile evacuation zone recommended in the DOT Emergency Response Guidebook. Safety Recommendation I-85-15 was issued in a letter dated April 19, 1985, to the IAFC, the IACP, and the ISFSI.

[4] National Transportation Safety Board. 1988. Butadiene release and fire from GATX 55996 at the CSX terminal junction interchange, New Orleans, Louisiana, September 8, 1987. Hazardous Materials/Railroad Accident Report NTSB/HZM-88/01. Washington, DC. 79 p.

The Safety Board is concerned that so few of the railroads that were recipients of Safety Recommendation R-85-53 have acted in a positive manner. Likewise, the Safety Board is concerned that the NLC has not responded to Safety Recommendation R-88-69, especially because the Board learned in its investigations of 45 accidents/incidents occurring between March 1988 and February 1989 that many communities and the railroads that operate trains carrying hazardous materials through those communities either do not have proper emergency response plans or are not properly exercising the plans.

The 45 accidents/incidents (hereinafter called cases) were investigated as part of the Board's recent safety study on the transport of hazardous materials by rail.[5] In at least 21 of the 45 cases (47 percent), the incident commander did not have a hazardous materials emergency response plan to follow.[6] In these accidents, the decisions of emergency response personnel to evacuate were generally based on their visual observation of the accident sites and on various emergency response guidebooks published by Federal or State agencies. In 9 of the 45 cases, personnel responding to the emergency did not use an emergency response plan because either evacuations were not conducted or the emergency was resolved quickly.[7] Emergency response plans were followed in 15 of the 45 cases.

Major problems did not occur in most of the cases in which the incident commander relied on various emergency response guidebooks. However, investigations indicated that some of the problems experienced by emergency response personnel--for example, in obtaining information about the hazardous materials--could have been avoided had the community had an emergency response plan that contained reliable information, including emergency telephone numbers for key railroad personnel.

In the cases in which the incident commander followed emergency response plans, the plans contributed to the effectiveness of the emergency response. The benefit of written emergency response plans is illustrated by the accident at Elberton, Georgia.

On August 8, 1988, 61 cars in a freight train derailed near Elberton, Georgia. Five tank cars containing xylene (a flammable liquid) and one containing ferric chloride solution (a corrosive) were damaged and released product. Although no fire resulted from the accident, 25 persons were treated for chemical explosure and 300 persons were evacuated. In addition, the ground water was contaminated.

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[5] National Transportation Safety Board. 1991. Transport of hazardous materials by rail. Safety Study NTSB/SS-91/01. Washington, DC. 187 p.

[6] The communities are identified and more detailed discussion is presented in the safety study report.

[7] For example, the leak of hazardous materials from the fitting on a standing tank car, which was quickly stopped.

Emergency response agencies of Elbert County, in which Elberton is located, were notified immediately after the derailment. Within 10 minutes, personnel from the responding fire department made contact with the train's conductor, who supplied the fire department with information about the hazardous materials. The evacuation followed the guidelines of the Elberton-Elbert County Emergency Operations Plan.

The investigation of the accident concluded that the effective and efficient emergency response, which followed the emergency response plan, limited the number of persons who would have been exposed to the potential harmful effects of the product xylene had the product ignited, and also limited the number of injuries resulting from exposure to the xylene.

In at least 19 of the 45 cases (42 percent), the local incident commanders and the railroads had not been in contact before the accidents to plan actions to take in the event of a train accident involving hazardous materials.

Rail carriers transport a variety of hazardous materials that, if released, pose great threats to public safety of the communities along their routes. The ability of community response agencies to respond effectively to a railroad accident involving hazardous materials depends on the adequacy of the information that is available to them. Development of a written emergency response plan is the most efficient means to ensure that the incident commander (whose role it is to coordinate the emergency response) has the information needed to respond effectively, whether the accidents involve a single, standing tank car or many tank cars scattered over a large area and posing multiple hazards. The incident commander should be knowledgeable of the content of the community emergency response plan, which should include up-to-date information on items such as key railroad personnel and means of contact, procedures to identify the hazardous materials being transported, identification of resources for technical assistance that may be needed during the response effort, and procedures for coordination of activities between railroad officials and emergency response agencies after an accident. In addition, rail carriers that routinely transport hazardous materials through communities have a responsibility to provide to the community current information that would enable the community to establish appropriate emergency response procedures to cope with a release of, or fire or explosion involving, hazardous materials.

It is important for railroad personnel and local emergency response organizations to exercise or "test" the procedures outlined in a documented emergency response plan. A joint, full-scale disaster drill of a simulated emergency could identify any shortcomings in the plan and would better prepare responding personnel for emergencies involving hazardous materials. In at least 26 of the 45 cases (58 percent), the local emergency response coordinators and railroad personnel had not participated in joint disaster drills. The accident in Akron, Ohio, illustrates the positive effects of disaster drills and also illustrates the need for disaster drills with railroad and emergency response personnel.

On February 26, 1989, 21 cars in a freight train derailed in a rail yard in Akron, Ohio. Of the 21 cars, 9 were tank cars filled with butane (a flammable gas); these tank cars came to rest adjacent to a chemical company plant. Butane, released from two breached tank cars, immediately caught fire; some of the butane burned for 5 days before the fire could be extinguished. About 1,750 residents were evacuated from the area. As a result of the accident, 5 emergency response personnel received minor injuries, and 50 residents and passersby were treated for complaints of coughing, conjunctivitis, eye irritation, and anxiety.

The Akron fire department and chemical company personnel had participated in disaster drills and planning for an emergency. Fire department personnel responded to the emergency situation at the chemical plant in a well-organized manner: the fire department knew the potential hazards at the plant and the persons to contact, and communications and coordination between fire department and plant personnel were efficient. In contrast, the communications and coordination between the fire department and railroad personnel in the early stages of the emergency response were not well organized: inadequate communications between emergency response personnel and railroad personnel about vital information regarding the tank cars and hazardous materials involved in the derailment resulted in a delay for the emergency response personnel in obtaining timely information needed to attack the fire. Based on its investigation, the Safety Board concluded that the inadequate communications may have resulted, in part, from the lack of jointly conducted disaster drills between city agencies and the railroad.[8]

The severity of this accident and the potential for catastrophic results emphasizes the importance of having an emergency response plan and the testing of the emergency response procedures.

The Association of American Railroads (AAR) also has recognized the need for adequate hazardous materials emergency response plans. In guidelines prepared under contract for the Federal Railroad Administration (FRA), the AAR cited several problems addressed in Safety Board reports, including (1) a lack of sufficient involvement by railroads in the emergency response planning and preparedness of local organizations, and (2) inadequate communication between railroad and public officials at the accident site.[9] The AAR also urged railroads to coordinate their plans with local organizations so that emergency response personnel of the railroad and the local organizations will be familiar with one another's plans. In addition,

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[8] National Transportation Safety Board. 1990. Derailment of a CSX Transportation freight train and fire involving butane, Akron, Ohio, February 26, 1989. Hazardous Materials Accident Report NTSB/HZM-90/02. Washington, DC. 101 p.

[9] Association of American Railroads. 1989. Hazardous materials emergency response plan guidance document for railroads. Federal Railroad Administration Contract No. DTFR 53-81C-00238. Washington, DC. 29 p. plus appendixes.

the AAR believes that railroads should consider periodic drills to evaluate the emergency response capabilities of the railroads and of the State and local emergency response agencies.

Recent legislation also recognizes the importance of emergency preparedness for transportation accidents involving hazardous materials. The Hazardous Materials Transportation Uniform Safety Act of 1990 (Public Law 101-615, signed into law in November 1990) provides grants to States for training emergency response personnel and requires the establishment of standards in emergency preparedness for personnel responding to accidents involving the transportation of hazardous materials.

The Safety Board believes that communities have a responsibility to their citizens to contact the railroads to obtain the information needed for developing a comprehensive emergency response plan and for keeping its content current. In addition, the Safety Board also believes that the railroads have a responsibility to coordinate with communities to assist them in developing a written emergency response plan and keeping its content up-to-date.

The Safety Board also believes that the NLC, National Association of Counties, IAFC, IACP, and the National Sheriffs' Association should encourage their members to (a) develop, implement, and keep current, in coordination with each other and the railroads, written emergency response plans and procedures for handling releases of hazardous materials; and (b) urge the incident commanders to stay knowledgeable of the written content. Accordingly, the Board classifies Safety Recommendation R-88-69 to the NLC as "Closed--Unacceptable Action--No Response Received/Superseded" by Safety Recommendation R-91-22 asking that these actions be taken by the organizations named above.

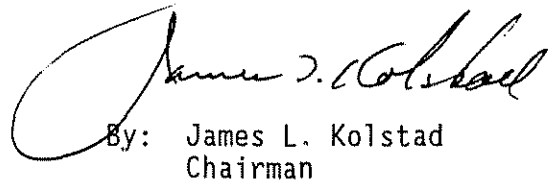
Therefore, as a result of the safety study, the National Transportation Safety Board recommends that the [name of the organization or association]:

> Urge your members to (a) develop, implement, and keep current, in coordination with each other, and with the Class I, regional, and local railroads that transport hazardous materials through the members' areas, written emergency response plans and procedures for handling releases of hazardous materials; and (b) encourage incident commanders to stay knowledgeable of the written content. The procedures should address, at a minimum, key railroad personnel and means of contact, procedures to identify the hazardous materials being transported, identification of resources for technical assistance that may be needed during the response effort, procedures for coordination of activities between railroad and emergency response personnel, and the conduct of disaster drills or other appropriate methods to test emergency response plans. (Class II, Priority Action) (R-91-22) (Supersedes R-88-69)

Also as a result of the safety study, the Safety Board issued recommendations to the Research and Special Programs and Federal Railroad Administration of the U.S. Department of Transportation; the Association of American Railroads; Class I railroads and railroad systems; Guilford Transportation, Inc.; MidSouth Rail Corporation; the American Short Line Railroad Association; the Chemical Manufacturers Association; the American Petroleum Institute; and the National Fire Protection Association.

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 actions taken as a result of its safety recommendations and would appreciate a response from you regarding action taken or contemplated with respect to the recommendation in this letter. Please refer to Safety Recommendation R-91-22 in your reply.

KOLSTAD, Chairman, COUGHLIN, Vice Chairman, and LAUBER, BURNETT, and HART, Members, concurred in this recommendation.



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