

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

106- I-83
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ISSUED: October 2, 1979

Forwarded to:

Honorable Howard Dugoff
Administrator
Research and Special Programs Administration
Department of Transportation
Washington, D. C. 20590

SAFETY RECOMMENDATION(S)

I-79-12

About 8 a.m., on April 8, 1979, 29 cars, including 26 placarded tank cars containing hazardous materials, of Louisville & Nashville Railroad Company freight train No. 403 derailed while moving around a 4°02' curve between Milligan and Crestview, Florida. Two tank cars of anhydrous ammonia ruptured and rocketed. Twelve other cars containing acetone, methyl alcohol, chlorine, carbolic acid, and anhydrous ammonia ruptured, and their contents either burned or were consumed by fire. Fourteen persons were injured as a result of the release of anhydrous ammonia and other materials or during the evacuation of about 4,500 persons. Property damage was estimated to be \$1,258,500. ^{1/}

While the cars were derailing, one tank car containing pressurized liquefied anhydrous ammonia ruptured due to mechanical damage inflicted by other cars. The rupture allowed all the contents of the tank to escape at once, creating a cloud of vapors that reached as far as 650 feet from the wreckage. The tank fragments came to rest 900 feet apart. Seventeen cars carrying anhydrous ammonia, chlorine, acetone, methyl alcohol, carbolic acid, sulfur, carbon tetrachloride, and urea were involved in a fire that broke out immediately after the derailment.

About 20 minutes after the derailment, a second anhydrous ammonia tank car ruptured violently, due to the heat of the fire, enlarging the existing plume of vapors rising from the site and drifting toward inhabited areas. Parts of the second ruptured tank landed 350 feet apart. The rupture forced firefighters, who were moving toward the wreckage to search for additional accident victims, to retreat and change their approach. During wreck-clearing operations which continued for 9 days after the accident, 10 workers were treated for toxic fume inhalation. Four of these workers were injured on August 16 when a tank car containing anhydrous ammonia began leaking during transfer operations.

^{1/} For more information read "Railroad Accident Report--Louisville & Nashville Railroad Company Freight Train Derailment and Puncture of Hazardous Materials Tank Cars, Crestview, Florida, April 8, 1979" (NTSB-RAR-79-11), and "National Transportation Safety Board Spill Map, Crestview, Florida, April 8, 1979."

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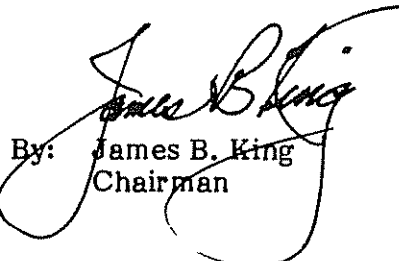
While the reasons for each rupture or release were different, the rapidity of the release of a large quantity of dangerous vapors threatened everyone within range. Similar rapid breakup or releases from bulk hazardous materials containers, and the resulting hazards have been observed in other accidents involving nonflammable pressurized liquefied gases. 2/

In 1976, following its investigation of an accident in Eagle Pass, Texas, 3/ the Safety Board recommended that the Department of Transportation: "Initiate a research program to identify new approaches to reduce the injuries and damages caused by the dangerous behavior of pressurized, liquefied flammable gases released from breached tanks on bulk transport vehicles. (I-76-5)" The Research and Special Programs Administration's Materials Transportation Bureau has contracted for research 4/ into "new approaches for controlling pressurized flammable liquefied gas releases" from breached tanks on bulk transport vehicles. The behavior of the anhydrous ammonia and chlorine—nonflammable pressurized liquefied gases—released from breached and ruptured tanks at Crestview and other accidents suggests that problems with the transportation of nonflammable gases may be similar to transportation problems with flammable gases and that current research may be relevant to both. New approaches to control future losses might have application to pressurized liquefied nonflammable gases, such as potentially lethal anhydrous ammonia and chlorine, as well as the flammable gases.

Therefore, the National Transportation Safety Board recommends that the Research and Special Programs Administration:

Expand current research into "new approaches for controlling pressurized liquefied flammable gas releases" from breached tanks on bulk transport vehicles to include control of pressurized liquefied nonflammable ammonia and chlorine gas releases. (Class II, Priority Action) (I-79-12)

KING, Chairman, DRIVER, Vice Chairman, McADAMS, GOLDMAN, and BURSLEY, Members, concurred in the above recommendation.


By: James B. King
Chairman

2/ "Railroad Accident Report—Chicago, Burlington, and Quincy Railroad Company Train 64 and Train 824 Derailment and Collision with Tank Car Explosion, Crete, Nebraska, February 18, 1969" (NTSB-RAR-71-2); "Railroad Accident Report—Derailment of Atlanta and Saint Andrews Bay Railway Company Freight Train, Youngstown, Florida, February 26, 1978" (NTSB-RAR-78-7).

3/ "Highway Accident Report—Surtigas, S.A., Tank-Semitrailer Overturn, Explosion, and Fire, near Eagle Pass, Texas, April 29, 1975" (NTSB-HAR-76-4).

4/ Contract DOT-RC-82039, September 26, 1978.