

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: July 10, 1978

Forwarded to:

Mr. L. D. Santman
Director
Materials Transportation Bureau
Department of Transportation
Washington, D.C. 20590

SAFETY RECOMMENDATION(S)

P-78-33

At 12:50 a.m., c.s.t., on December 15, 1977, a 2-inch plastic gas main under an alley in downtown Lawrence, Kansas, pulled out of a compression coupling which joined it to a steel gas main. Natural gas escaped from the main and migrated through the stone foundation walls of two nearby buildings. At 1:20 a.m., the accumulations of gas in the two buildings ignited. The resulting explosion and fire destroyed one building, severely damaged the other building, and broke nearby windows. Two persons were killed and three persons were injured. 1/

The 394-foot-long polyethylene plastic gas main had been inserted in an abandoned 3-inch steel main on June 2, 1975. The plastic main had not been anchored against pullout that could be expected with thermal contraction. The mechanical joint was a standard, short-barrel compression coupling with a smooth metal insert which individually were acceptable under 49 CFR 192.281(e). However, as the Safety Board recommended to the Secretary of Transportation after the similar Fremont, Nebraska, accident, the stiffener also should have been designed to be compatible with the compression coupling so that the plastic pipe would not pull out of the coupling. 2/

At the same time, the Safety Board also recommended that the Department of Transportation: "Determine if there are locations or circumstances where standard compression couplings are unsafe, and amend 49 CFR 192 accordingly to prohibit their use for such applications (P-76-45)." In a response dated March 2, 1977, the Material Transportation Bureau (MTB) stated: "We believe that a properly installed compression coupling can be utilized in virtually all locations or circumstances. At this time, we have no evidence to indicate that the use of compression couplings must be predicated on location or other circumstances."

1/ For more detailed information read "Pipeline Accident Report -- Kansas Public Service Company, Inc., Explosion and Fire, Lawrence, Kansas, December 15, 1977," (NTSB-PAR-78-4).

2/ Letter of Recommendation dated September 15, 1976; Safety Recommendation P-76-44.

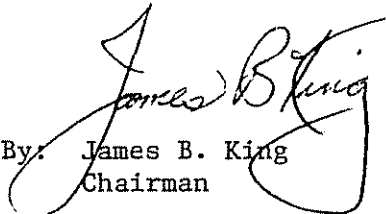
The Safety Board hopes that the MTB will consider the evidence of this and other accidents that have occurred with plastic pipe and standard compression couplings since 1977, and will reconsider its response to these recommendations. Unlike MTB, the Safety Board does not share the opinion that the correction of these safety problems will result in a "comparatively minor improvement in safety."

The Safety Board is emphatic in its contention that a standard compression coupling on an unrestrained plastic gas main is unsafe unless the coupling manufacturer also designs the stiffener so that the joint is as strong as the pipes being joined. The location of this standard compression coupling under a narrow paved alley and within 5 feet of a building wall is likewise considered unsafe by the Safety Board.

Therefore, the National Transportation Safety Board recommends that the Materials Transportation Bureau of the U.S. Department of Transportation:

Reconsider its responses to safety recommendations P-76-44 and P-76-45 in light of this and other accidents that have occurred with plastic pipe and "standard" compression couplings since 1977. (Class I, Urgent Action) (P-78-33)

KING, Chairman, McADAMS, HOGUE, and DRIVER, Members, concurred in the above recommendation.


By: James B. King
Chairman