Log P-106

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: July 19, 1978

Forwarded to:

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E.I. du Pont de Nemours & Co.(Inc.)
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SAFETY RECOMMENDATION(S)

P-78-41 and -42

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. It was connected to a steel gas main with a Dresser Style 90 short-barrel compression coupling. Du Pont provided the 5-inch-long smooth steel stiffener that was used inside of the end of the plastic pipe. Both products individually conformed to the requirements of 49 CFR 192.281(e). However, the composite joint was not as strong as the plastic pipe being joined as required by 49 CFR 192.281(a).

The Dresser Style 90 installation instructions are sent in the boxes of fittings and contain a warning that proper anchoring of the pipe should be provided. A similar appropriate warning against pullout could be incorporated in the Du Pont boxes of stiffeners.

There are many tests being conducted by the American Gas Association and the Society of the Plastic Industry, Inc., on such areas as the effects of temperature on polyethylene plastic pipe. Du Pont undoubtedly has conducted additional tests that also could be of benefit to the gas industry to which it supplies large quantities of plastic pipe. Based on the tests that the National Bureau of Standards conducted on the joint that failed, the Safety Board has determined that additional tests on the effect that time has on the pullout resistance of polyethylene plastic pipe and standard compression couplings are warranted.

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).

Therefore, the National Transportation Safety Board recommends that the E.I. du Pont de Nemours & Company:

Enclose warning literature and installation instructions in each carton of internal stiffeners indicating that the stiffeners do not provide any anchoring properties, and that it is the gas company's responsibility to properly design and install plastic pipelines in accordance with the applicable provisions of 49 CFR 192. (Class II, Priority Action)(P-78-41)

Work with the American Gas Association and the Society of the Plastic Industry, Inc., to conduct tests to determine the effect of time on the pullout resistance of polyethylene plastic pipe and standard compression couplings. (Class III, Longer Term Action)(P-78-42)

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

By: James B. King
Chairman