

## PROBABLE CAUSE

The National Transportation Safety Board determines that the probable cause of the explosion and fire was the ignition, by an unknown source, of an accumulation of natural gas which had leaked from two corrosion holes in a nearby 2-inch gas main.

Contributing to the intensity of the ensuing fire was the large amount of natural gas which had accumulated in the attic and between the original exterior walls of the house and a newer exterior brick veneer.

Contributing to the accident was the fact that none of the victims reported previously detected gas odors to the gas company or to the fire department. This was partially the result of the fact that the gas company's educational program submerged warnings and instructions within promotional material not needed by the customer and did not inform the customer of the possible consequences of failure to report a gas odor to the gas company or to leave the premises.

## RECOMMENDATIONS

The National Transportation Safety Board recommends that:

1. The Office of Pipeline Safety of the Department of Transportation:
  - (a) Amend 49 CFR Section 192.723 to require more frequent leak surveys on older, uncoated, and cathodically unprotected pipelines than required currently. (Recommendation No. P-74-29)
  - (b) Amend 49 CFR Section 192.615(d) to better define the intent of a public education program to warn against the full range of hazards of natural gas, to require retainable and specific instructions and placards of how to detect hazards, what to do, and why action is necessary. (Recommendation No. P-74-30)
2. The American Society of Mechanical Engineers Gas Piping Standards Committee:
  - (a) Develop guidelines to aid pipeline operators determine when to conduct leakage surveys on various types of pipe. These guidelines should take into account age of pipe, general condition of pipe, class location of pipe and metallurgy of pipe. (Recommendation No. P-74-31)
  - (b) Develop guidelines to aid pipeline operators in determining areas of active corrosion as required by 49 CFR 192.457(b). (Recommendation No. P-74-32)

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3. The American Gas Association (AGA):

Investigate the availability, economic feasibility, and practicality of gas vapor detectors currently manufactured and explore the possibility of their installation in manholes, conduits, basements, and other substructures for the automatic detection and reporting of natural gas vapors. If none are found acceptable, sponsor research to develop such a detector. (Recommendation No. P-74-33)

4. Columbia Gas of West Virginia, Inc.:

- (a) Conduct more frequent leak detection surveys on those areas where the gas pipelines are old, uncoated, and cathodically unprotected. (Recommendation No. P-74-34)
- (b) Initiate a more intense general public and gas customer information program as to the nature, characteristics, and hazards of natural gas and the steps to be taken when it is encountered. (Recommendation No. P-74-35)
- (c) Initiate a thorough survey to determine the areas of active corrosion on the entire length of this 2-inch gas main from its junction with the 3-inch gas main at Bakers Fork and similar pipes in its system. Make excavations for the physical examination of these pipes when indicated by the survey and replace or repair the pipe where indicated. When finished, place these pipes under adequate cathodic protection. (Recommendation No. P-74-36)

BY THE NATIONAL TRANSPORTATION SAFETY BOARD

/s/ JOHN H. REED  
Chairman

/s/ FRANCIS H. McADAMS  
Member

/s/ ISABEL A. BURGESS  
Member

/s/ WILLIAM R. HALEY  
Member

LOUIS M. THAYER, Member, did not participate in the adoption of this report.

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