

NATIONAL TRANSPORTATION SAFETY BOARD
WASHINGTON, D.C.

ISSUED: June 8, 1977

Forwarded to:

Mr. James T. Curtis, Jr.
Director
Materials Transportation Bureau
Department of Transportation
Washington, D.C. 20590

SAFETY RECOMMENDATION(S)
P-77-4

At 2 p.m., on August 8, 1976, a gas explosion destroyed a house at 1127 Oak Street, Allentown, Pennsylvania. The gas migrated from a break in a 4-inch cast-iron main under the street, through loose soil under a concrete sidewalk, and into the building through cracks and openings in its foundation. 1/

At 2:26 p.m., another house exploded across the street from the site of the first explosion. The front brick wall collapsed into the street and trapped two firemen. The street then caved in directly in front of the trapped firemen. The cast-iron gas main within the sinkhole broke into several pieces; flames from the broken main were more than 10 feet high and hampered rescue of the trapped firemen. Two firemen were killed, 14 persons were injured, 4 buildings were destroyed, and several buildings were damaged.

The UGI Corporation is conscious of the sinkhole phenomenon which is a problem in Allentown, Pennsylvania. It has considered several experimental methods of locating sinkholes under cast-iron gas mains.

Equipment manufacturers of "downward-looking" radar have offered to make some equipment modifications and conduct a demonstration in Allentown to see if sinkholes under pavements and in the vicinity of underground utilities

1/ For more detailed information on this accident read Pipeline Accident Report, UGI Corporation, Natural Gas Explosions and Fires, Allentown, Pennsylvania, August 8, 1976, NTSB-PAR-77-2.

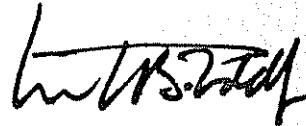
can be successfully located. Recent advances in radar technology may have developed this capability. If this is so, it will save the time and money that would normally be required in basic research to develop a new subsurface electromagnetic pulse radar concept capable of detecting sinkholes from 1 to 100 feet deep.

The National Transportation Safety Board has recommended that UGI "Expedite, in conjunction with equipment manufacturers, the development of a survey unit that could be used to detect the location of sinkholes in the vicinity of cast-iron gas mains. 'Downward-looking' radar equipment should be investigated as one possible means of surveying for sinkholes."

Therefore, the National Transportation Safety Board recommends that the Office of Pipeline Safety Operations of the Materials Transportation Bureau:

Encourage, coordinate, and monitor development of equipment which could be used to detect the location of sinkholes in the vicinity of underground utilities.
(Class III, Longer Term Followup) (P-77-4)

TODD, Chairman, BAILEY, Vice Chairman, McADAMS, HOGUE, and HALEY, Members, concurred in the above recommendation.



By: Webster B. Todd, Jr.
Chairman