

9. - BACKFLOW AT A GAS STORAGE FACILITY

DATE OF BACKFLOW INCIDENT: August 1982

LOCATION OF BACKFLOW INCIDENT: Connecticut

SOURCE(S) OF INFORMATION:

- Pacific Northwest Section of the American Water Works Association, Summary of Backflow Incidents, Fourth Edition, 1995
- U.S. Environmental Protection Agency, Cross-Connection Control Manual, 1989
- Watts Industries, Inc.; Watts Regulator News/Stop Backflow

CASE HISTORY

In August 1982, residents in a Connecticut town reported hissing, bubbling noises coming from washing machines, sinks, and toilets. Faucets sputtered out small streams of water mixed with gas. Propane gas had backflowed into the town's public water system. Local firefighters and other officials asked hundreds of residents to evacuate their homes and businesses.

The town provided water to a propane storage facility in the area. Water was furnished to the facility for both domestic use and fire protection and entered the facility through a single eight-inch-diameter service connection. The facility included 26 subsurface 30,000-gallon liquid propane storage tanks.

On the day of the backflow incident, workers needed to repair a storage tank at the propane storage facility. Before repairing the tank, workers had to purge the tank of residual propane. There are two common methods for purging liquid propane storage tanks. One method is to use an inert gas such as carbon dioxide. The other method is to use water. The use of water is the preferred method because it is a more positive method and will float out any sludge as well as gas vapors. Accordingly, workers attempted to purge the tank using water in this case. They connected a hose to the tank from one of the two fire hydrants at the facility. Unfortunately, the pressure in the propane tank was about 85 to 90 psig, while the pressure in the town's public water system was about 65 to 70 psig. Consequently, propane gas backflowed into the town's public water system. It was estimated that about 2,000 cubic feet of gas flowed into the water system over a period of about 20 minutes. This is enough gas to fill approximately one mile of eight-inch-diameter water main.

Fires were reported at two houses, and fire gutted one of these houses. At another house, a washing machine exploded. Police, propane company workers, and town water works personnel, however, limited damage and injuries by quickly sealing off the affected area. The town flushed fire hydrants and individual building plumbing systems and monitored for gas. The propane company promptly instituted revised propane tank purging procedures at its storage facility.