

1944 Cleveland Liquefied Natural Gas (LNG) Disaster

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Forensic Files Tragedy

In 1944 a Liquid Natural Gas explosion incinerated a square mile of downtown Cleveland, Ohio.

The explosion destroyed 79 homes, two factories, and 217 cars. Its heat reached 1000 degrees, killing 128 people and injuring 275.

Because of war shortages, engineers were making LNG tanks out of 3.5% nickel steel, instead of the standard 9%. Investigation showed that the accident was due to the low temperature embrittlement of the inner shell of the cylindrical tank. When the tank cracked it allowed a vapor cloud to escape into surrounding streets and the storm sewer system, where it ignited. The force of the explosion blew out storefronts a mile away.



LNG holding tanks failed and released their contents into the streets and sewers and their vaporous cloud ignited and fire engulfed the nearby residents and commercial establishments.

At the time, engineers were not aware of the metal's failure properties, and no additional defense measures were in place around the tank to protect civilian infrastructure. This disaster revealed the need to (1) implement plans to contain the catastrophe, (2) monitor to detect and warn of problems, and (3) thoroughly test designs against possible environmental conditions prior to implementation.

These days LNG tanks are surrounded by berms capable of containing a complete spill, and they are closely monitored for problems. Homes and businesses are also located far away from the tanks.



The spill that created this blast was approximately 5% of the volume held by a modern LNG tanker.

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