

HOW SAFE ARE PIPELINES?



In reporting these stories reporter Shane Hoover reviewed more than 4,000 pages of documents, including Federal Energy Regulatory Commission filings, maps and drawings, NTSB investigation report...

Engineers have distilled the danger from an exploding natural-gas pipeline to a simple equation. Plug in the pressure and the diameter of the pipe and out comes the potential impact radius — the distance from the pipeline at which an explosion could cause death, injury or property damage.

A 42-inch pipeline at a pressure of 1,440 pounds per square inch has a potential impact radius of 1,100 feet.

Daniel Hershberger, his wife and their seven children live about 50 feet from the prospective path of two such pipelines.

The Amish family's farmhouse on a quiet corner of Welty Road SW is the closest any home in Stark, Tuscarawas or Carroll counties comes to Energy Transfer's twin-pipeline Rover project, according to documents filed by the company with federal regulators.

Hershberger, like most people outside the pipeline industry, had never heard of potential-impact formulas, but he was concerned about the risk of an explosion.

"I've thought about it," he said, taking a long pause. "I just guess we'll have to trust in the Lord nothing like that happens."

NEW PIPELINES, NEW CONCERNS

Plans to build large, high-pressure natural gas transmission pipelines through Stark and surrounding counties have focused attention on their safety.

Pipelines are the most practical method for moving natural gas, and regulators consider them safer than trucks or trains.

Incidents with gas transmission pipelines on average have killed two people and injured eight others annually since 1995, according to federal statistics. It's a reminder that while rare, ruptures can be deadly. Most casualties and damage happen within minutes.

Pipeline operators and government regulators use construction standards, safety equipment, inspections and maintenance programs to lessen the risk.

But a recent study by the National Transportation Safety Board — prompted by three ruptures since 2009 that killed eight people, injured another 50 and destroyed 41 homes — said improved standards are needed, especially in populated areas.

MORE NOODLES

The United States uses 73.4 billion cubic feet of natural gas each day to make electricity, run factories and heat homes. Nearly all of it travels through a 300,000-mile “spaghetti bowl” of onshore transmission pipelines.

Most transmission lines are between 16 and 48 inches in diameter with a pressure between 600 and 1,000 psi, according to the Interstate Natural Gas Association of America. (By comparison, the service line to your house is about an inch in diameter and operates at much lower pressures.)

Ohio soon could add to its 9,800 miles of gas transmission pipelines. Horizontal drilling and fracking in the Utica and Marcellus shales have unlocked great quantities of natural gas, prompting companies to build new pipelines.

The Rover pipelines would cross the county’s southern townships, while NEXUS Gas Transmission is planning a high-pressure pipeline, up to 42 inches in diameter, to run through eastern and northern Stark County and the city of Green.

The federal Pipeline and Hazardous Materials Safety Administration regulates pipelines and tracks incidents reported by operators.

PHMSA classifies as significant any event that kills, causes injuries requiring hospitalization or damages more than \$50,000 in property, including the value of the natural gas released.

Since 1995, 977 significant incidents involving onshore natural gas transmission pipelines have caused 40 deaths, 174 injuries, and \$1.3 billion in property damage. Fatalities spiked in 2000 and 2010 with pipeline explosions in New Mexico and California.

No onshore natural gas transmission pipelines operated by Energy Transfer nor the lead developers of NEXUS — Spectra Energy and DTE Energy — has had a fatal incident since 2002, according to a Repository review of PHMSA data.

“Energy Transfer operates more than 71,000 miles of pipelines in the U.S. and is very proud of its safety record,” Rover spokeswoman Vicki Granado wrote in an email. “It is among the best in the country in the operation and maintenance of its pipelines.”

NEXUS spokesman Arthur Diestel wrote in an email that DTE safely operates 21,000 miles of transmission and distribution pipeline, and that Spectra’s rate of reportable incidents since 2007 has been half the industry average.

FAILURE CAUSES

A well-built and maintained pipeline can last for decades, if not longer.

“I don’t fear these type of pipelines,” said Richard Kuprewicz, a nationally recognized pipeline investigator and consultant. “I just have a lot of respect for them.”

Between 2002 and 2011, failure of materials, equipment or welds caused one-third of all significant incidents with onshore natural gas transmission pipelines, according to an analysis of PHMSA data by Pipeline Safety Trust, an advocacy group.

Corrosion was the next biggest cause, accounting for 17 percent of incidents, followed by excavation damage with 16 percent.

In 2004, PHMSA made pipeline operators identify potential safety threats in populated areas and take steps to reduce the risk of injury and property damage.

Since then, the number of significant incidents, which had been increasing, has leveled off; strategies to reduce corrosion and material failure appear to be working, according to an NTSB study released in January.

But the study found no evidence that all reportable incidents in populated areas had declined.

TOO MUCH BOOM?

Shortly after pipeline construction took off in 2007, PHMSA issued warnings about substandard steel and poor-quality welds causing new pipelines to leak and fail.

“The stuff that’s going in the ground today ought to be better quality materials and tested better off the bat, so [recent failures are] kind of a real head-scratcher,” said Carl Weimer, Pipeline Safety Trust’s executive director.

Rover and NEXUS representatives said they will take steps to ensure the right steel is used and will X-ray or ultrasound all pipeline welds.

Catherine Landry, spokeswoman for the Interstate Natural Gas Association of America, said she didn’t think the boom in pipeline construction was hurting quality.

“You’re not going to do business for long if your pipelines aren’t safe,” she said
“Pipeline safety is the core of our business.”

NTSB’s safety study made 22 recommendations to PHMSA, including better inspections, more accurate maps, minimum standards for fixing safety threats and an annual public report on the links between pipeline incidents and the risk assessments and maintenance done by operators.

“We’ve seen examples where there are companies with pipelines almost right next to each other that are making different risk decisions,” Weimer said.

Whether PHMSA adopts all of those recommendations will be a lengthy process.

Something on which regulators, safety advocates and the industry agree is the ongoing need to build a safer system.

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