

How to Respond to, and Possibly Prevent, Pipeline Incidents

A government program helps fire departments respond to pipeline incidents — or prevent them in the first place.

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[Additional formatting of this article has been done to incorporate it on this website.]

On Sept. 14, 2008, external corrosion caused a 50-year-old section of pipeline near Appomattox, Va., to explode. The pressure sent 30 feet of steel flying, and the concussion damaged several power lines. A spark from the power lines ignited the natural gas, creating a 300-foot fireball that destroyed two homes, damaged more than 100 others and injured five residents within the danger zone.

An equally loud but slightly less calamitous gas-pressure explosion preceded it. That one managed to leave a crater 37 feet across and 15 feet deep. [[See Pictures at the end of this article.](#)]

Pipeline operators use transmission lines to transport energy from their source to end users – often several states away. This particular pipeline stretches 10,000 miles from the Gulf of Mexico to New York, providing natural gas to thousands of customers in 12 East Coast states.

Pipeline accident–related fatalities have risen from nine in 2008, to 13 in 2009 to 22 in 2010. In February 2011, five more fatalities occurred following an explosion in Allentown, Pa. ([See timeline of other recent incidents.](#))

Transportation Secretary Ray LaHood issued a call to action after the Allentown incident. In it, LaHood asked U.S. pipeline owners and operators to conduct a comprehensive review of their oil and gas pipelines to identify areas of high risk and accelerate critical repair and replacement work. He also announced federal legislation aimed at strengthening the power of [Pipeline and Hazardous Materials Safety Administration](#) to oversee pipeline safety.

It's All About Relationships

A major pipeline failure can set off a complex chain of events that often involve many separate, compounded hazards that can overwhelm first responders very quickly. To help minimize the impact of pipeline emergencies, first responders need to establish a relationship with pipeline operators in their jurisdictions.

“Early communication and emergency response planning absolutely must happen well before an incident occurs,” said Tim Butters, deputy administrator at PHMSA and former assistant chief of operations for the [Fairfax \(Va.\) Fire Department](#). “Game day is not the time to be getting acquainted and trying to implement an unfamiliar response plan.”

PHMSA requires pipeline operators to provide emergency responders with detailed information about their pipelines, including locations of pipelines and shutoff valves, the company’s emergency response plan, who to contact in the event of an incident and how to safely respond to an emergency.

Preplanning helped keep the Appomattox incident from becoming a greater tragedy. Chief Timothy Garrett of the [Appomattox Volunteer Fire Company](#) led the unit that responded to the pipeline failure. Knowing personally who he needed to talk to well before the incident, made a world of difference in the way the company responded to the rupture, he said.

“Within 5 minutes of the incident, we had direct contact with the pipeline company,” Garrett said. “The preplanning was key. I can’t think of anything we could have done differently.”

After joining the department, Garrett toured the pipeline facility and reviewed their Material Safety Data Sheets. The fire company also conducts training each year that specifically prepares them for dealing with pipeline emergencies.

“A lot of areas just don’t have that relationship with the company, but that’s what really helped us,” Garrett said. “We knew what to do right off the bat once we knew what the cause of the incident was.”

The fire company had another key asset during the explosion response — volunteer firefighter Eddie Ragland, who has worked for the pipeline company, Williams, for 34 years.

Williams by default filled a critical role that every pipeline operator should designate and provide to emergency responder leadership – a knowledgeable, recognizable liaison that both groups can recognize and relay information through.

“It gives them a face to look for in a situation like that — someone they can relate to,” Ragland said.

When the incident occurred, Ragland and most of his fellow pipeline workers didn’t need to get a call informing them of the disaster — the deafening roar of the pipeline and ground erupting did the trick. The flames that poured out of the broken tube left no doubt.

“Nothing else could have been burning like that,” he said.

Ragland grabbed his fire company-issued radio and contacted Garrett, already who had been dispatched to the rupture site. “I hollered at the fire chief as we were heading to the valve setting to let him know we were on the way to shut the gas off,” he said.

Safety for Pipeline Emergencies

To begin to address a pipeline failure a fire chief needs several key pieces of information: the location of the pipeline, what it carries and its operator.

The [National Pipeline Mapping System](#) is an interactive, Web-based tool that displays maps of hazardous liquid and gas transmission pipelines, liquefied natural gas plants, and other facilities. While the NPMS is available for public view, emergency responders can access a more sophisticated and detailed version available only to government officials.

Also available to fire departments is the *Emergency Response Guidebook*, which contains well-organized information to help responders identify specific risks associated with hazardous materials involved in a transportation incident, measures to take to protect themselves and procedures for containing the incident as quickly and safely as possible. The guidebook includes a section on pipeline transportation and incident response.

PHMSA is distributing more than 2 million free copies of the latest version of the ERG. PHMSA also has partnered with the National Library of Medicine to provide a free smartphone version of the ERG in its Wireless Information System for Emergency Responders. The mobile version will be available this summer.

Speaking of mobile apps, [on-the-go versions of the free, Pipeline Emergencies training manual](#) currently are available for the iPhone and Android devices. Pipeline Emergencies is a comprehensive program produced by PHMSA and the National Association of State Fire Marshals that offers formal pipeline emergency response training to firefighters that may respond to a pipeline incident. More than 1,000 firefighters and certified fire trainers have completed the course since it was introduced in 2004.

Don't Reinvent the Training Wheel

While there are plenty of resources available to fire leaders to better prepare their companies for pipeline emergencies, PHMSA sees institutionalizing pipeline training and awareness as the most effective means of ensuring that emergency responders are universally prepared to deal with pipeline emergencies, despite the low frequency of their occurrence.

Rather than creating an entirely new means of delivering the training materials and other resources, training officers and fire departments will be able to obtain pipeline-specific training from existing systems that are familiar and also have credibility, said Butters, who previously chaired the [IAFC's Hazmat Committee](#).

That concept is being applied in a pilot program for the state of Georgia, where emergency officials are considering incorporating response preparation into existing training at the state's fire academy with the help of PHMSA's southern region office.

"A young firefighter needs to understand community risk, and that it's not simply getting on a fire truck and going to a fire when you're dispatched. It's about being a part of the community-risk-reduction aspect and the prevention aspect," said Chief Jackie Gibbs of the [Marietta Fire Department](#).

Gibbs also stressed the value of preparing firefighters for pipeline emergencies early in their careers, even if there aren't high concentrations of pipelines in the areas they serve.

"The earlier they understand that what we do is protect the entire community, and the more hazards in their community that they are aware of, the broader their perspective is on how we deliver those emergency services."

The Georgia pilot program, which could serve as a model for institutionalized training in other states, will familiarize students with pipelines and incident response tactics, making firefighters more confident in their ability to deal with such an uncommon, unfamiliar

threat. Perhaps most importantly, it will impress upon them the value of establishing a solid relationship with local pipeline companies.

“That relationship is absolutely important during one of these types of emergencies,” Gibbs said. “That’s what we’re trying to focus on in Georgia — not only teaching the response aspect, but teaching the relationship aspect with pipeline companies.”

Aside from being ready to respond to yet another kind of threat, Gibbs recognizes that the additional training opportunity will provide leaders with benefits that transcend pipeline emergency response.

“You’re trying to develop people for their entire career,” he said. “The earlier you start with that educational component, the better off you are, and the more well-rounded firefighter you have on your team.”

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Pictures

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