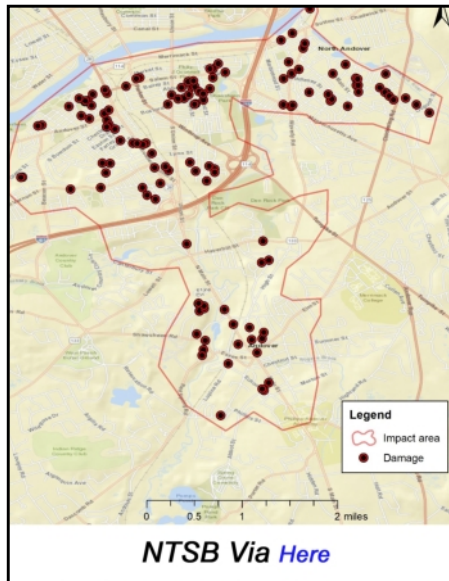




Pipeline Emergency Preparedness & Training: Case Study- the Merrimack Valley, MA Pipeline Explosions

At 4 p.m. on the afternoon of September 13, 2018, a series of fires and explosions erupted in the Merrimack Valley of Massachusetts as a result of high-pressure natural gas being introduced to a low-pressure distribution line. The over-pressurization on this line resulted in the death of 1 individual, 22 injuries resulting in transportation to local hospitals (including three firefighters), the destruction of at least 5 homes, and damage to 131 structures. Most of the structural damage was a result of fires ignited by gas-fueled appliances and some were from natural gas explosions. Three municipalities were affected: Lawrence, Andover and North Andover. Mutual aid was brought in from other districts in Massachusetts, Maine and New Hampshire.



Prior to the explosions, the pipeline operator was conducting a pipe replacement project in Lawrence, where they were tying-in a new plastic distribution main and abandoning the old cast iron main. When the old distribution main was disconnected, the sensing lines that detect and regulate the pressure of the pipeline had not been accounted for in the project. The sensing lines were left operational in the newly abandoned line, so they registered the loss when the

Best Practices

“I have been welcomed by the Montana Liquid and Gas Pipeline Association meetings, and the strong relationships that have been built have been very helpful.”

“We took an 8-hour pipeline emergency response plan.”
—Ben Tapley, Fire Chief,
Screven County Fire Dept,
Sylvania, GA

“My office is involved in several [energy] company tabletop drills a year. EMS, Fire and Law Enforcement are encouraged to attend.”

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abandoned line began to lose pressure. To compensate for the pressure loss, the regulators, which were located remotely from the work site, began to open further allowing the full flow of high-pressure gas to be released into the new distribution main causing an exceedance of the maximum allowable pressure in the distribution lines.

Minutes before the explosions began, the pipeline operator's monitoring system received two high-pressure alarms at 4:04pm and 4:05pm. The monitoring center in Ohio had no capability to remotely operate valves on the line. At 4:06pm a call out was made to local operations in Lawrence to inform them of the situation. The first 9-1-1 call from a local resident came in at 4:11pm. The operator was able to shut down the regulator by 4:30pm. The Lawrence Fire Chief contacted the towns of Andover and North Andover to request mutual aid assistance, but was denied, as they were dealing with their own fires. Once the 10th alarm level was reached a request was made to the Massachusetts Emergency Management Agency (MEMA) to initiate the statewide fire mobilization plan, requesting additional resources and personnel. The MEMA plan activated 15 task forces statewide, and over 180 fire departments and 140 law enforcement agencies responded to the scene.

Emergency responders contacted the local electrical company and asked them to cut power to the area as a precaution to eliminate ignition sources. Police closed all nearby roads, and freight and passenger railroad operations were suspended. Residents were evacuated to four different evacuation centers in the area.

By 7:24pm, all of the critical valves on the distribution system were closed and around midnight, local personnel began going door-to-door to shut off meters to all the homes in the area.

National Transportation Safety Board (NTSB) findings state the operator approved the work plan for that day without consideration for the sensing lines when disconnecting the old cast iron main. Following this incident, the operator and its parent company, implemented a safety stand-down for all personnel working on low-pressure natural gas systems.

The investigation into this incident consisted of a 19-member NTSB team, the pipeline operator and parent company, Pipeline and Hazardous Materials Safety Administration (PHMSA), Massachusetts State Police, and the Massachusetts Department of Public Utilities.

Key Considerations

- How would your department respond to an incident of this

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Did you know ...

811 is the nationally recognized three digit number to provide notification of pending excavation activity so that utilities can properly locate underground assets. Help us spread the word for safety ...Call 811 before you dig!



**Know what's below.
Call before you dig.**

Recommended Minimum Evacuation Distances Chart for Natural Gas Incidents

To view recommended minimum evacuation distances chart for natural gas incidents go to:

<https://pipelineawareness.org/media/1117/evacuation-distances-for-natural-gas.pdf>

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nature?

- What would you do, in an incident of this magnitude, if you were unable to receive mutual aid from surrounding departments?
- Do you have a protocol to communicate with other agencies and fire departments?
- Where would you evacuate residents to in your community?
- Do you have the emergency phone numbers for all public utility companies readily available?

Pipeline Emergency Response Tactics: Effectively Handling a Hazardous Liquids Spill

Hazardous liquids are commonly and safely transported in large quantities by pipeline, rail, truck, and ocean-going vessels. Despite the low risk of a hazardous liquids spill, prudence and proper pre-planning dictate that transporters and emergency response organizations prepare in the event a spill incident does occur.

A “hazardous liquid” is defined as petroleum, petroleum products, anhydrous ammonia, or ethanol. This includes unleaded gasoline, jet fuel, and heating oil. Propane, butane, and carbon dioxide that are transported in a liquid state, are also considered hazardous liquids.

When requested to respond to a reported release of a hazardous liquid, the initial priority is to conduct a scene size-up and identify the transporter and product. Physical properties for hazardous liquids vary greatly, so it is extremely important to identify the product. Wind direction, topography, and water body impacts are also very important initial considerations when conducting size-up.



distances for a multitude of products, including those classified as

The U.S. Department of Transportation’s Emergency Response Guidebook (ERG) is a key tool to assist in management of a hazardous liquids incident in the early stages. The ERG provides physical properties, response recommendations, and recommended evacuation

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First Responder Training Video Series

Learn how to safely and effectively respond to a pipeline emergency, how pipelines work, how different products impact response, response leading practices, how to better prepare to respond to pipeline incidents and roles in pipeline response. Videos feature interviews with pipeline and emergency response experts, covering a wide variety of emergency response disciplines.

* Videos available at www.shoulder2shoulder.tv



www.shoulder2shoulder.tv

The Emergency Response Guidebook (ERG)

To download PHMSA’s most recent copy of the Emergency Response Guidebook go to: <https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/docs/ERG2016.pdf>

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hazardous liquids. The ERG is available in booklet format, or as a smart phone app for iPhone or Android.

Consult the safety data sheets (SDS) for more detailed product specific information. The SDS will provide information regarding the health hazards and appropriate personal protective equipment required when in proximity to the spilled product. The manufacturer and/or shipper of the product is required to make SDSs available to responders upon request.

The Hazardous Waste Operations and Emergency Response (HAZWOPER) requirements found in OSHA 1910.120 dictate the required training for personnel engaged in emergency response operations involving hazardous liquids. It is important for responders to operate within the pre-established response levels: Awareness, Operations, Technician, and Specialist/Incident Commander. Excluding hazardous materials (HAZMAT) teams, most responders are trained and equipped to the Awareness or Operations level which requires defensive actions without direct contact with the hazardous liquid.

Assuming that most responders will be functioning at an Awareness or Operations level, tactical priorities should center on isolation of the area, defensive containment, and coordination with Kinder Morgan related to remote isolation of the leak. As with response to any hazardous liquids incident, use of the Incident Command system (ICS) is required and prudent.

Overview of Pipeline Systems: Emergency Responder Spotlight- Rusk County Sheriff's Office and Office of Emergency Management

Training is a critical step in effective emergency response. First responders are well-trained to handle a variety of incidents, but when an incident does occur it's important to be able to quickly recall and implement the lessons learned in training.

The Rusk County Sheriff's Office and Office of Emergency Management (OEM) in Henderson, Texas believe that training and practicing that training are key to successfully mitigating an incident. Training is conducted on a regular basis, and is held in-house, as well as externally at operator locations and public meetings. They regularly attend pipeline operator training offered in their area, and take facility tours of operations they may be called to respond to in the event of an incident. Facility tours grant first responders the unique opportunity to go inside compressor stations, terminals, and

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Suggest an Article for *The Responder!*

Is there a topic you'd like to see featured in the next issue?! Please click **here** to suggest your topic for *The Responder* newsletter!

WISER

WISER 5.4 Release Includes:

- *More detailed bibliographies for much of the substance data
- *Protective distance mapping now supports the export of KML (Keyhole Markup Language) on the WISER for Windows and WebWISER version
- *Redesigned the WISER for Windows protective distance mapping capability

A set of WISER tutorial videos can be viewed **here** and videos can also be found in the training section of the **NLM YouTube Channel**.



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other facilities so they can familiarize themselves with the location and any associated response challenges prior to an incident.

In addition to facility tours and regular training, they also have a Rusk County Hazardous Materials Plan. The plan establishes the policies and procedures under which Rusk County will operate in the event of a hazardous material incident or oil spill. It defines the roles, responsibilities and organizational relationships of government agencies and private entities in responding to and recovering from an oil spill or incident involving the transport, use, storage, or processing of hazardous material.

During face-to-face meetings with pipeline operations personnel, The Rusk County Sheriff's Office and OEM ensure that they have current maps and emergency contact numbers for the operators in their area.

By discussing procedures and training opportunities with peers, they gain a better understanding of what works and what practices can be improved upon. If you are interested in conducting training with Kinder Morgan personnel in your area, please fill out the form at PA-inforequest.kindermorgan.com.

Special thanks to Rusk County Sheriff Jeff Price, and Rusk County Deputy Sheriff and Assistant Emergency Manager, Patrick Dooley, for their assistance with this article.

Keeping Pipelines Safe/Practices & Protocols: Integrity Management Plans

Natural gas transmission, CO₂, and hazardous liquid pipelines are required by federal regulations to maintain integrity management plans. While the requirements differ, the main objective is to identify risks and more rigorously assess pipelines in areas where a leak or spill could result in significant consequences to people or the environment.

Pipeline operators are required to identify "High Consequence Areas", or HCAs, which could be impacted by a leak or spill. For CO₂ and hazardous liquids pipelines, these areas are typically environmentally sensitive, such as endangered species habitats and navigable waterways. Natural gas HCAs tend to be areas (a.k.a. identified sites) with large numbers of people who may be



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NPMS iPhone app for PIMMA and Updates

The National Pipeline Mapping System (NPMS) has iPhone app for PIMMA, can be accessed by searching for "pipeline information" on the App store. New High Population Area (HPA) and Other Population Area (OPA) datasets are now available for download from the Population Data Page.

NOTE

If you would like to request additional information, or to schedule a presentation or tabletop drill with Kinder Morgan, please fill out the form found at PA-inforequest.kindermorgan.com



First Responder Online Pipeline Training

To access the API-AOPL Emergency Response Team's free online training, click <https://nasfm-training.org/>

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present at a given time, and facilities where mobility would be limited or would be difficult to evacuate in the event of an incident. Once HCAs are identified, operators are required to inspect pipelines in those areas based on an established frequency. Inspections are conducted using a variety of sophisticated methods including intelligent internal inspection tools otherwise known as “smart pigs”. Smart pigs travel through the pipeline system pushed by the transported product, and can provide very detailed information regarding the condition of the pipeline system. These inspections look for imperfections in the pipeline including dents from outside force and corrosion. If areas are identified as requiring further examination, the pipeline is uncovered, visually inspected, and repaired, if necessary.

Emergency responders play a key role in pipeline integrity management. Awareness of the pipeline facilities in your area and diligence related to suspicious persons and/or activities near the pipeline are essential. Emergency Responders and Public Officials that know of locations that meet the natural gas pipeline operators identified site definition are encouraged to contact the pipeline operator to ensure that the operator is aware of these locations. Often, at pipeline safety and emergency response liaison meetings, operators will have detailed maps of pipeline rights of way available for responders to review and identify any areas that may be identified as new identified sites.

Contact your local pipeline operators to learn more about their integrity management efforts and how you can be involved to enhance pipeline safety. For more information on HCAs or to submit identified site information to Kinder Morgan, please go to: <http://SubmitHCAinfo.kindermorgan.com> ■

NOTE

To read past issues of *The Responder*, please go to the archived issues at http://www.kindermorgan.com/pages/public_awareness/The_Responder/archive.aspx

NOTE

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