



Urban Area Pipeline Emergency Response

The need for emergency response to pipeline incidents can occur at any time and any conceivable location. However, pipeline incidents in urban locations present some unique challenges that should be considered during pre-planning and response. Factors such as occupancies, traffic, leak migration, and ignition sources can be magnified during pipeline incident response in an urban environment.



Here are some specific issues to consider:

- Scene Size-Up – While size-up is important for every call, during a pipeline emergency in an urban setting it is critical. Appoint a Safety Officer early and conduct an effective and on-going size-up.
- Evacuations – In highly developed, urban areas, the need for evacuations may be present. Issues such as wind direction/speed, potential for gas migration, type of occupancy, weather conditions, and shelter locations should be factored into evacuation orders.
- Gas Migration – Gas migration should be a consideration during any pipeline emergency – especially involving distribution systems which operate at lower pressures than transmission lines. Gas leaks in urban areas where asphalt and concrete cover wide expanses can travel long distances and be difficult to detect. The use of detection equipment is paramount. In cases where horizontal directional drill (HDD) operations damage a pipeline, natural gas can

Best Practices

“Outreach with local FD’s, annual drill at our LNG plant and in each service territory. As we develop and expand our emergency response program, its good to see that The Responder articles mimic and support what we’re doing and the direction we’re going.”

“OFS conducts refresher courses and holds preliminary courses for other entities in Wildland Fire Suppression.”

“We hold tabletop drills with our local fire departments and attend local pipeline operator-sponsored training meetings that are very informative.”-
Patrick Dooley, Rusk County OEM/Fire Marshal’s Office, Henderson, TX

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travel long distances underground following the path of utilities or enter the sewer/storm drain system.

- Understand the Properties of Natural Gas – Natural gas is lighter than air having a .6 vapor density. When released into the atmosphere, it typically follows the path of least resistance and dissipates. The flammable range of natural gas is relatively narrow, 5%-15%, however a single spark can ignite it.
- Combustible Gas Monitors – While natural gas has a distinctive odor which is derived by injecting mercaptan into the gas stream, sense of smell cannot be solely relied upon to locate leaks. Emergency responders should have monitoring equipment and ensure they are correctly calibrated and that personnel understand how to interpret the data provided. Emergency responders should train regularly with the equipment.
- Coordinate and Train with Pipeline Operator Personnel – Pipeline operator personnel are the primary source of information regarding preparedness for response to leaks and incidents. In addition to tactical response considerations, pipeline operator personnel can share some of the unique aspects of urban pipeline response such as meter banks, vaults, and effective leak investigation. In addition to training, participating in tabletop exercises and full-scale mock emergency drills with pipeline operators can be an invaluable tool for gaining experience with urban environment pipeline emergency response.

Creating Fire Breaks Near Pipeline Facilities



Photo courtesy of U.S. Department of Agriculture

As wildfires continue across North America, emergency responders and residents may consider ways of mitigating the risk of fires spreading in their area. One way to slow the spread of wildfires is by creating firebreaks. A firebreak, sometimes referred to as a fireguard, is a gap in vegetation or other

combustible material that acts as a barrier to slow a wildfire. Most firebreaks are approximately ten to sixty feet wide in diameter, but depending on the size of the fire, they may be much larger. Firebreaks are not intended to stop wildfires but may slow it enough to allow emergency responders more time to respond to, and to ultimately contain the blaze.

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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 https://www.youtube.com/channel/UCLQv4arPbGluPt7j_JuETWw



BUXUS

Download the BUXUS app to obtain pipeline information 24/7! For more information on BUXUS or to register, go to www.buxus.io

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Most of us have heard that we should call 811 prior to digging near a pipeline, but does that apply to creating a firebreak? In an emergency situation where a wildfire is quickly approaching, farmers and ranchers may be focusing on quickly creating a firebreak and the spreading fire, without thinking about another potential hazard that may be below ground.

Texas 811 has worked to adapt its procedures in the event of wildland fires. They are now able to issue a general locate with just a direction of travel, and no specific address. This broad notification will be sent to local operators to contact a member of their incident command team. The Incident Commander will then provide instructions requesting prompt identification of pipelines in the area utilizing latitude/longitude coordinates. By calling 811 farmers, ranchers and large tract owners have provided pipeline operators with advance warning to potential disruptions or safety concerns along their systems, and have also potentially saved lives.

Firebreaks are a very effective tool in fighting wildland fires, but careful consideration should be given to what may be below ground. If farmers or ranchers need to create firebreaks, take two minutes, and call 811.

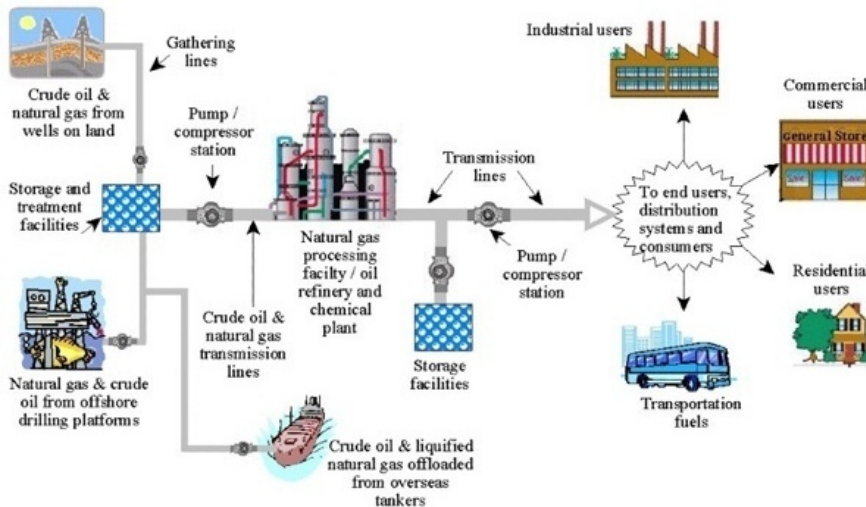


Photo courtesy of PHMSA

Understanding Different Types of Pipelines

The United States pipeline system operates like a highway and is comprised of over three million miles of pipe moving gas from over 275,000 wells from production areas all over the country. Natural gas, crude oil and refined petroleum products are pushed through various types of pipelines and result in product, or energy, being

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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.**

WISER

Effective February 28, 2023 WISER will be discontinued as part of NLM's initiative to align and consolidate information. Other sources of hazmat, chemical, biological, radiological, and nuclear weapons can be found at **CHEMM, ERG2020, DHS' Hazardous Materials Release website, NIOSH Pocket Guide.**



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delivered to end-use customers. The three main types of pipelines utilized to achieve this are: gathering, transmission and distribution pipelines.

Gathering Pipelines

Gathering pipelines are typically small-diameter pipelines (2-20 inches) that transport crude oil or natural gas from the wellhead, or production and drilling areas, to gas processing facilities or refineries where the product is prepared. Some of the largest production areas in our country are the Marcellus Shale, Eagle Ford Shale, Barnett Shale, Haynesville, and Bakken regions. Pipelines in the newer supply basins can be larger diameter and operate at higher pressures than historical gathering pipelines.

Sub-sea pipelines that collect product from deepwater platforms may be considered gathering lines as well. Jurisdictional onshore and offshore gathering pipelines account for approximately 110,000 miles of pipe.

Once these products are prepared at the processing facilities or refineries, they are fed into larger, mainline transmission pipelines.

Transmission Pipelines

Transmission pipelines are wide-diameter (typically 20-48 inches) and traverse long distances moving natural gas, crude oil, or refined petroleum products from processing areas to market areas in preparation for consumers. Transmission pipelines generally operate at higher pressure and utilize compressor stations at varying intervals to continuously move product through the pipeline to city gates.

Transmission pipelines can range from a few feet to hundreds of miles in length. There are over 300,000 miles of transmission pipelines in the United States.

Once transmission pipelines get close to highly populated or urban areas, they feed into the distribution pipeline system.

Distribution Pipelines

Distribution pipelines are generally small-diameter, low pressure pipelines that feed directly to residential and commercial customers. These are the lines that go directly into residences and businesses throughout our country.

There are nearly one million miles of distribution pipelines in the United States.

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NPMS and PIMMA Updates

The National Pipeline Mapping System Pipeline Attribute Data Dictionary file is now available for download through each user group 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 <http://PAinforequest.kindermorgan.com>



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Tailboard Scenario: Responding to a Natural Gas Storage Incident

It's a Saturday morning in early May. The weather is cool, with clouds and a blanket of low lying fog in the area. The temperature is 52° and winds are from the south at 10 mph. Emergency response units have been dispatched to an area one mile north of the city where an underground salt cavern storing natural gas is located. Several callers have reported a strong smell of natural gas in the area.

Upon arrival, cavern operations personnel advise that a dump truck hauling gravel veered into a natural gas piping header resulting in damage to a section of pipe and a large release of product. The driver of the truck apparently suffered a medical emergency and is slumped over the wheel of the truck and doesn't appear to be moving. The truck's engine is not running.

All cavern operations employees have been accounted for. The Incident Commander is advised by 911 Dispatch that numerous calls are coming in regarding gas odor. State Highway 65 which runs through the city, and north by the cavern, is becoming highly congested with traffic.

The Regional Medical Center located on the north side of the city has seen several patients complaining of coughing, nausea, and various respiratory issues associated with exposure to gas odors.

Two local TV news crews and three print reporters have arrived at an entry control point at the facility, and are requesting an interview with emergency responders and cavern operations personnel. Social media posts from nearby residents are prolific on emergency responder and cavern owner pages.

Discussion Points

- What are the strategies and associated tactics for response to this incident?
- Based on the initial "size-up" what are the hazards and associated safety concerns? What additional concerns are posed by the reported weather conditions?
- Are there additional resources needed?
- What information should be provided to the news media regarding the incident?
- What does the Incident Command System structure would look like for this incident?
- What specific information is needed from the cavern operator to assist in emergency response?

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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!

NOTE

To be added to *The Responder* distribution list, please email publicawarenesscoord@kindermorgan.com

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Additional Context and Considerations

Natural gas is stored in underground caverns and above ground facilities as a liquid for use during high demand periods.

Underground caverns are found in three types:

- 1) Depleted Natural Gas or Oil Fields – This is the most common type of storage cavern.
- 2) Aquifer Reservoir – Water bearing rock formations and an impermeable rock cap are employed to maintain the gas storage in the cavern.
- 3) Salt Caverns – Typically located in Gulf coast states and employed when injection and withdrawal rates are high.



Photo courtesy of
<https://www.conservation.ca.gov/calgem/PublishingImages/Natural-gas-storage-facility.jpg>

Caverns are a key component of the overall energy production and transportation system. Fluctuations in daily and seasonal demand for natural gas are accommodated through the use of these critical facilities to help meet the nation's energy requirements. ■

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