



Pipeline Emergency Preparedness & Training: A Case Study of Responding to a CO₂ Incident

Response to a Carbon Dioxide (CO₂) pipeline release varies greatly from other types of pipeline release response, and carries its own unique response challenges.

Exposure to CO₂ is hazardous, and can cause headaches, dizziness, coma, asphyxia, unconsciousness, and even death. It is transported as a liquid, and when it is depressurized it becomes a gas that is 1.5 times heavier than oxygen. Depending on the atmosphere, it may stay close to the ground and congregate in confined spaces, such as sewers and storm drains. It is odorless, colorless and non-flammable.



*photo courtesy of
Mississippi Emergency Management Agency*

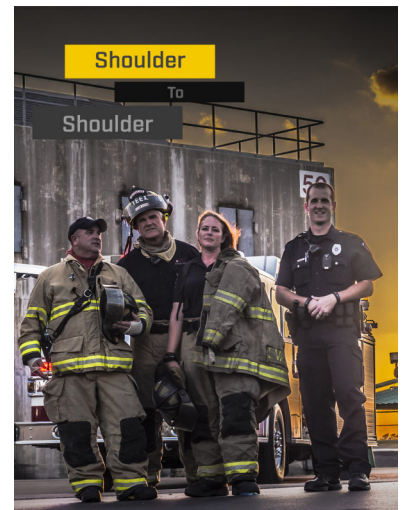
On Saturday evening, February 22, 2020, an unnamed operator's, 24-inch CO₂ pipeline ruptured in Yazoo County, Mississippi. The rupture occurred near Highway 433 in a heavily wooded portion of the county, and near the town of Satartia. Around 8 p.m., calls began to come in from residents reporting a fog-like substance. As police officers and firefighters arrived on-scene, they quickly moved to evacuate nearby residences and get individuals to safety. Mississippi Highway Patrol and the Yazoo and Warren County Sheriff's Departments assisted with traffic control and prevented motorists from entering the area.

Upon his arrival, a Sheriff's department investigator established a triage area upwind of the release. As he approached the incident location, he found a man and woman very disoriented. He was able

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_JuE TWw



(continued from page 1)

to get them into his truck. As he proceeded down Highway 433, and came across another woman inside her car. He was able to put her into his truck as well, and get all three to the triage area, after which they were sent to a local hospital.

He headed back towards Satartia to continue the evacuation. While speaking to fellow deputies on the radio they noticed his speech was impaired and he was ordered to turn back. He was taken to the local hospital to be treated for CO₂ exposure and eventually released. Over the course of the evening, 300 individuals were evacuated from their homes, and 46 were taken to local hospitals to receive care and were eventually released.

Prior to lifting the evacuation order on Sunday morning, the Mississippi Department of Environmental Quality (MDEQ) conducted tests to detect the presence of CO₂ and H₂S in and around the area of the release. CO₂ readings at that time were typical of normal, and there was no H₂S detected on site.

According to the Mississippi Emergency Management Agency (MEMA), the incident likely resulted from periods of very heavy rainfall and flooding, which caused the ground to cave into a ravine and damaged the 24-inch pipe. The CO₂ pipeline operator has since purchased an advanced warning system and has paid for five years of licensing fees for Yazoo County Emergency Management's use of the system.

Primary Considerations when Responding to a CO₂ Pipeline Leak:

- First responders should arrive on-scene with full personal protective equipment (PPE) and self-contained breathing apparatus (SCBA)
- Approach the area from an upwind direction and isolate the downwind area
- Quickly evacuate the area
- Contact the pipeline companies operating in the area to ensure they are aware of the situation
- Hot, warm, cold, and decontamination zones should be established in addition to a medical staging area
- Utilize oxygen gas detectors such as an MSA or QRAE
- Pay special attention to the ventilation of the area and wind direction
- Pay special attention to low-lying areas where CO₂ may have settled

(continued on page 3)

NOTE

To request additional information, or to schedule a presentation or tabletop drill with Kinder Morgan, please fill out the form found [here](#)

Suggest an Article for The Responder!

Is there a topic you'd like to see featured in the next issue?! Please click [here](#) publicawarenesscoord@kindermorgan.com to suggest your topic for The Responder newsletter!

(continued from page 2)

Pipeline Emergency Response Tactics: Investigating Root Cause Pipeline Incidents Involving Metallurgical Analysis

After a pipeline incident occurs, it is common for regulatory agencies and pipeline operators to conduct an investigation to determine the root cause. Finding a root cause can help determine actions to prevent future, similar incidents.

Depending on the size of the incident, emergency responders assist pipeline operations personnel in securing the site for investigation. Since the event and nature of the failure will determine the size of the investigation site; emergency responders should consult the pipeline operator to determine the area to be secured.



Pipeline operators may utilize metallurgist and investigation teams who specialize in investigating the failure mechanism and root cause of incidents involving pipeline failures. Once the site is secured and the investigation team arrives on-scene, they typically begin conducting a site investigation to map the area involved in the incident. The team will take pictures of the site, assess the condition of the pipeline system, record relevant weather conditions such as ambient temperature and wind direction, and document a chronology of events. The metallurgist will then obtain samples from the failed pipeline asset with the objective to identify the failure's origin, thoroughly label all items, and document the location they were found. The samples are then sent to a metallurgy laboratory for analysis under direction of a metallurgist. The results of the metallurgical report will include feedback on the potential cause. Depending on the suspected cause, pH, water and soil samples may also be taken from the scene as well. The rest of the investigation team will review other evidence to help determine root cause.

Once the failure mechanism and root cause are identified, an incident investigation report is prepared. The results of the investigation may provide specific recommendations to prevent a similar incident in the future. For example, if the incident was found to be the result of third-party damage, the pipeline company may work with the third-party to develop articles or a video on the importance of calling 811 to try to enhance awareness of the 811 system and pipelines in the area.

(continued on page 4)

Best Practices

"We hold annual tabletop drills and attend local pipeline operator sponsored training meetings. Purchased drones and SCBA's using PHMSA LEPC funds to be used in training exercises." – Director Thad Roberts, Tallahatchie County Emergency Management Agency, Tallahatchie County, MS

"Our department meets at the Kinder Morgan facility annually to meet the people and discuss the pipeline procedures. The facility also shows the equipment that would be used in an event at their location."- Heath Taylor, Gum Springs VFD, Searcy, AR

"We have an annual Haz-mat refresher and attend pipeline awareness seminars put on by OPAL."

Kinder Morgan Midstream Assets

For more information on Kinder Morgan's Midstream Assets, go to:

<https://www.kindermorgan.com/Operations/Natural-Gas/Index#tabs-intrastate>

(continued from page 3)

To locate transmission pipelines in your area, please click [here](#) to go to the National Pipeline Mapping System. Emergency responders and government officials can apply for more-detailed PIMMA access to NPMS.

Overview of Pipeline Systems: Gathering Pipelines

Over the past several years, oil and gas production in the U.S. has seen significant growth. This has led to a steady increase in the development of pipelines that move energy products away from production areas for processing.

These facilities, known as gathering pipelines, transport crude oil or natural gas from production and drilling areas to processing plants, refineries or transmission pipelines, which then move product to markets and ultimately the end-user. In comparison to transmission lines that may run for hundreds and even thousands of miles, gathering pipelines are typically short and smaller in diameter. In the United States, there are over 240,000 miles of onshore gathering pipelines. Sub-sea pipelines that collect product from deep water platforms may also be considered gathering pipelines.

Historically, gathering lines were located in more rural areas with low populations and limited opportunities for exposures to heavily populated areas. Over the past ten years, a number of production areas have seen rapid growth, including:

- The Utica Shale region, which lies under New York, Pennsylvania, Ohio, West Virginia and eastern Canada
- The Marcellus Shale region, which includes parts of New York, Western Pennsylvania, Western Maryland and West Virginia
- The Permian Basin in West Texas and New Mexico
- The Bakken region in North Dakota and Montana

The volume of production in these areas has resulted in the construction and operation of gathering lines.

Both the Federal government and the states have pipeline safety jurisdiction over gathering pipelines. Over the last several years, PHMSA has initiated the implementation of rules to expand their oversight of gathering lines.

If you are responding to a gathering pipeline incident:

- Determine the emergency number for the pipeline operator
- Get an upwind and safe distance from the location

(continued on page 5)

WISER

NEW- WISER 6.0 Released! It includes:

- *Sharing and collaboration across all platforms
- *More than 60 new substances
- *Various improvements to WISER search functionality
- *Protective distance improvements, including UI updates and improved support outside of the U.S.
- *PubChem data updates

A set of WISER tutorial videos can be viewed at <https://wiser.nlm.nih.gov/wiserYouTube.html>



NPMS iPhone app for PIMMA and Updates

The National Pipeline Mapping System (NPMS) now includes Offshore gas transmission and hazardous liquids pipeline maps. Instructions are also available for requesting updated Drinking Water and Ecological USA data from the NPMS.

(continued from page 4)

- Utilizing an intrinsically safe device, call the emergency contact number for the pipeline operator.

For more information on Kinder Morgan's gathering and processing operations, please contact us at <http://pa-inforequest.kindermorgan.com> or visit our website at <http://publicawareness.kindermorgan.com>

Keeping Pipeline Safe/Practices & Protocols: Emergency Response Liaison and Incident Response in a COVID-19 World

COVID-19 has had an immeasurable impact on all of our daily lives. As a result of this worldwide pandemic, coordination and training associated with pipeline emergency response has also been greatly affected. Despite the challenges the coronavirus has imposed, it is necessary for pipeline operators and emergency responders to tailor their liaison and response activities to ensure we are still prepared for any incident.

In the pre-COVID environment, the preferred common method of communication between emergency responders and pipeline operators was in-person meetings. In the current environment, emergency responders and pipeline operators have had to explore various options in order to share critical emergency response recommendations, while maintaining the ability to have two-way dialogue.

Perhaps the most similar to in-person meetings, are those held through a variety of social media platforms such as "Go to Meeting", "Log Me-In", "Microsoft Teams", and "Zoom". These virtual roundtables or webinars provide the ability to share video, audio, and presentation capabilities that can be used for pipeline safety and emergency response training. In addition to traditional PowerPoint slide training delivery, these platforms can be used to conduct tabletop exercises for pipeline operations and emergency response agency personnel. These types of meetings allow first responders and pipeline operators to engage in conversation and to communicate in real-time.

Operators are also utilizing platforms such as YouTube to host training, pipeline safety and orientation videos. The use of recorded videos provides flexibility for viewing and can be used with small, socially distanced groups on their own schedule. Unfortunately, this option does not allow for real-time two-way dialogue between the pipeline operator and responders which is a critical component of liaison activities.

(continued on page 6)

API Pandemic Planning Guide

The American Petroleum Institute has developed an API Pandemic Planning Guide to assist organizations with COVID-19 planning. Please go [here](#) to access the site.

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.**

(continued from page 5)

The distribution of printed materials has been an established means of communications of pipeline safety and emergency response information. Pipeline operators can develop simplified “tool box” safety messages or tabletop emergency response exercises that can be used in small groups for training purposes. Several of these exercises have been published in prior editions of *The Responder* and can be found here:
<http://responder.kindermorgan.com>.

In addition to emailing or mailing pipeline safety materials, such as brochures, contact numbers and county maps to first responders, some operators have found success in following up after the materials have been sent with a phone call to ensure the content was received and to address any questions or concerns emergency responders might have.

Not only does training and coordination prior to an incident look a little different right now, there are other considerations that need to be planned for in the event of an emergency. Personnel arriving to an incident scene need to be sure they wear a mask or face covering, per Center for Disease Control (CDC) Guidelines. Operators and emergency response agencies alike have recognized the need to have smaller personnel groupings at incident staging sites in order to limit the exposure and contact between individuals. These sites should maintain the current 6-foot social distancing recommendations. Emergency response crews and pipeline operations personnel should minimize their risk of exposure to each other by using their own vehicles and equipment when possible, rather than sharing. Incident Command Posts may now be equipped with sanitizing wipes, masks and disposable gloves as additional safety precautions.

The importance of continued coordination between pipeline operators and public sector responders related to safety and emergency response cannot be understated. During these times of social distancing due to the Coronavirus pandemic we are all going to have to discover creative ways to share information and stay connected to continue to foster pipeline safety.

To view our Public Awareness Brochures for emergency responders and public officials, please go to
https://www.kindermorgan.com/Safety-Environment/Public-Awareness/Index#tabs-government_&_safety_officials

If you have questions regarding training opportunities with Kinder Morgan, or would like to be put into contact with your local representative, please fill out the form found [here](#). ■

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



NOTE

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

Kinder Morgan Social Media

Facebook:
<https://www.facebook.com/KinderMorganInc>

Twitter:
<https://twitter.com/KinderMorgan>