

Responding to a CO_2 Pipeline Incident

"Engine 3, Squad 1, and Battalion 1, respond to a report of a ruptured gas pipeline on Highway 41 near the intersection of County Road 23. Time out 7:35".



In route to the scene, the 9-1-1 dispatcher provides additional information. A farmer installing new fence posts has struck a pipeline transporting carbon dioxide. The product is leaking and a worker at the scene was injured and has serious freeze burns over parts of his body.

Upon arrival, your size-up reveals a large cloud of CO_2 vapor being released to the atmosphere, an area surrounding the pipeline release that is frozen, and the injured worker with serious freeze burns on his torso and legs. Traffic on Highway 41 is beginning to back up in both directions.

The weather is cloudy, temperature is 33 degrees and sleet is in the forecast for later in the day. Winds are from the west at 10 mph and are currently blowing the releasing CO_2 product across Highway 41.

The area is rural farmland and there are no occupied structures located in the surrounding vicinity.

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Best Practices

"We have developed call taking protocols for our 911 dispatchers to use during pipeline emergencies. We have built the protocols from the information obtained through training and publications from Kinder Morgan."- Gary Gray, NLR Emergency Services, NLR, AR

"Attend and participate in operators emergency response drills and attend operator tabletop drills."- Tina Guilliams, Louisiana DC&E, Office of Enforcement/Inspections Division-Pipelines

"We have planning training and exercises each year through the Lewis County LEPC. We involve all first responders from E-911 dispatchers, Law Enforcement, Fire Rescue, EMS, EMA, and many other agencies."- George Sparks, Lewis County Judge Executive.

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Discussion Questions

1. What are the results of your "scene size-up"?
2. What are the hazards associated with a CO_2 release?
3. What are the strategies and associated tactics to manage this incident?
4. How would you identify the operator of the CO_2 pipeline?
5. What would the Incident Command Structure look like for this incident?
6. Upon arrival of the pipeline operations personnel what information/actions would you request?

There are approximately 5,300 miles of carbon dioxide pipelines currently operating in the United States. In many cases CO_2 pipelines transport the product to oil fields for enhanced oil recovery.

The U.S. Department of Transportation's Pipeline & Hazardous Materials Safety Administration (PHMSA) regulates the construction and operation of CO_2 pipelines. As with other pipelines transporting hazardous materials, operators are required to post signage and markers that identify the product being transported, the name of the operator, and a staffed 24-hours/seven days-a-week telephone number for emergencies.

In the event of an emergency involving a CO_2 pipeline…

1. Contact the Operator of the pipeline from the nearby pipeline marker and request assistance
2. Coordinate with the pipeline operator to mitigate the hazards and isolate the leak/release of product
3. Isolate the area and conduct evacuations
4. Recognize the hazards:
   - Released CO_2 can also cause dermal hazards of frostbite to exposed skin
   - Risk of debris being thrown from buried pipeline release
   - Excessive high noise caused by CO_2 escaping from the pipeline
   - While not flammable, CO_2 displaces oxygen and can create an asphyxiation
5. Proper PPE includes:
   - Respiratory protection – Supplied air respirators or SCBA
   - Leather or insulated gloves
   - Personal CO_2 monitors

How to Effectively Conduct Joint Tabletop Drills

Exercising emergency plans and procedures is analogous to a football team conducting practices before the big game. Ensuring

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BUXUS

Buxus is a free app funded by pipeline operators that gives emergency officials instant, offline access to pipeline details, emergency contacts, hazard information, response guidance, interactive maps, and the ability to request resources — all in one place. Buxus helps responders stay prepared before and during a pipeline emergency.

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** to suggest your topic for *The Responder* newsletter!

WISER has been discontinued

WISER has been 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**, **ERG 2020**, **DHS' Hazardous Materials Release website**, **NIOSH** pocket guide.

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that everyone understands the gameplan (or response plan) is critical for a successful outcome. Far too often, organizations rely on training and experience alone to ensure everyone is prepared to respond to a significant emergency. Exercises are a key tool to assess responders' knowledge of emergency response processes as well as communications and coordination.

Tabletop exercises are an extremely valuable tool for assessing decision making and coordination between public sector emergency responders and pipeline operators.

Scenario Development

When considering a pipeline-related trigger event for a joint tabletop exercise, there is a wide range of options to choose from starting with a small incident, such as an excavator hitting the pipeline without rupturing it, to a catastrophic incident, such as a mass casualty event. While outside force or third-party damage is a leading cause of pipeline incidents, there are other fairly common causes. Lightning strikes, motor vehicle collisions with aboveground pipeline assets, and intentional vandalism or sabotage also provide realistic sources of trigger events. Emergency responders should seek insight from local pipeline operators' personnel regarding what type of trigger event would be the most plausible for their operations. The objective of the drill is to have an exercise that is challenging, provides the best opportunity for testing the collaboration and joint capabilities of the operator and the first responders, and is realistic!

Facilitating the Tabletop Exercise



The challenge with any tabletop exercise is to know which actions are worth implementing and which actions are not. Discussions that lead to real

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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**



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collaboration and learning are of tremendous value during a real event. Tabletop facilitators need to be intimately familiar with the scenario and the drill objectives. Ground rules are established during the planning phase of the drill that set the boundaries of the exercise. It is important for the facilitator to help participants adhere to these rules throughout the drill in a way that encourages participation. Differences of opinion are to be respected and explored. However, naysayers who disagree with the premise of the drill scenario (e.g., "that would never happen…") and offer no solutions should not be allowed to get a foothold in the discussion. These naysayers can squelch productive discussion of the scenario, which is contrary to the intent of the exercise. A key measure of success of the drill is participant engagement.

Facilitators should actively engage the participants and seek to highlight enlightening moments in the exercise that turn into real learning opportunities. Avoid reading from a Power Point Presentation, and ask open and probing questions that generate thoughtful dialogue.

The Debrief

An engaging review of the drill exercise or debrief is critical to the success of any tabletop exercise. While it is fresh in the minds of participants, the debrief should focus on what items were identified as new learning, what takeaways were captured, and most importantly, what are the next steps for future collaboration and training. Designate a scribe to capture the salient points from the debrief. In addition, for any action items identified, assign owners to each task and ensure reasonable completion dates are assigned.

Tabletop exercises are an invaluable tool for enhancing communication and coordination between public sector emergency responders and pipeline operations personnel. While significant pipeline incidents are not frequent occurrences, it is critical that all parties that could be involved in response are trained and prepared!

Protecting Pipelines in Winter Weather and Geohazard Events

While pipelines are at risk from human-caused damage, mother nature can also impact their operations. Winter weather and land movement from geohazard events can produce unique risks for pipeline operators.

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NPMS and PIMMA Updates

Version 3 of the **Coastal Ecological Unusually Sensitive Area (Coastal Eco USA) GIS data** is now available for download. The new dataset reflects changes NOAA made to their Sea Level Rise Viewer data based on updated digital elevation models since publication of previous Coastal Eco USA datasets (their 0SLR data subset comprises a portion of the Coastal Eco USA dataset).

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!**



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Prior to the onset of winter weather, pipeline operators make preparations for adverse conditions that could affect operations. Aboveground meter and regulator stations are inspected and any overhanging tree branches are typically removed which could fall during ice accumulation. In some cases, regulator pressure controls are adjusted to accommodate higher gas loads during peak demand periods. Relief valves and other safety devices are inspected to ensure they will be operable during freezing conditions. Any vessels that capture fluids are drained and inspected. Pipeline heaters, which are employed in above ground stations where significant pressure drops occur are inspected and serviced. Some facilities have backup power and those generators are inspected and serviced in preparation for any loss of commercial power.



Geohazard events such as earthquakes and land subsidence present unique challenges for pipeline operators. By their very nature, these events are unpredictable and can affect underground assets such as pipelines. Engineering departments within pipeline operators' organizations take seismic activity and fault locations into account when planning new pipeline projects. Signs of pending land subsidence are given priority following land or aerial patrols. Operations and emergency plans provide guidance on response activities in the event of a geohazard incident. Recent pipeline safety regulations require operators to inspect pipeline right of ways immediately following these events to assess for any damage or possible product release. In addition, under Transmission Pipeline Integrity Management regulations, pipeline operators are required to assess for threats, including geohazards and where practical, and take mitigative measures such as the instillation of remotely operated valves.

Pipeline operations can be affected by winter weather and geohazard incidents. Pipeline operators have extensive plans and procedures in place as well as highly trained and qualified employees to mitigate the impact of these natural disasters as much as possible.

What is Aerial Patrol?

One of the most important ways we keep pipelines safe is through aerial right-of-way (ROW) patrols of our pipelines. With over 2.6

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million miles of pipeline in the United States, aerial patrols are the most efficient means of looking for pipeline encroachments or other issues along rights of-way. Pipeline operators use fixed wing aircraft (e.g., Cessna, Maule) or helicopters equipped with GIS mapping, thermal imaging, LiDar and leak detection systems to fly along pipeline corridors. These patrols can:

- **Detect leaks** (methane, liquid, or subsurface) using laser based sensors or infrared thermography
- **Identify encroachments** such as trees or vegetation overgrowth, structures, or unauthorized access
- **Monitor geohazards** like erosion, landslides, or river washouts.
- **Verify compliance** with DOT and environmental regulations via digital patrol reports

These aircraft fly the route of the pipeline to look for signs of ground disturbances or excavation activity, heavy equipment near the pipeline, and potential signs of leaks. If aerial patrol identifies an area of concern, it is reported to local operations via phone call, satellite communications or electronic reporting system. The operator will then send personnel to investigate the area, or initiate emergency procedures, if warranted. While aerial patrols are the most commonly used method of viewing large portions of the pipeline, ground patrols may be necessary in areas with heavy, dense tree cover preventing a clear view of the pipeline.

The potential risks of encroachments to pipelines without operator notification or calling 811, puts all of us at risk. If you see an encroachment, suspicious activity near the pipeline, or a damaged or missing pipeline marker, please contact us at **http://PA-inforequest.kindermorgan.com** .

NOTE

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