



Tailboard Scenario: Responding to a CO₂ Leak



It is 4:30 p.m. on a Friday afternoon. Smith Brothers Construction is attempting to finish a drainage tile project in a farmer's field near the Oak Grove subdivision before the weekend and impending rain. The subdivision lies 300 yards south of the field

and contains approximately 500 single family homes. The track hoe they are operating strikes a pipeline and a large volume of product is released. The operator of the track hoe, who is adjacent to the excavation, is overcome by the released material and loses consciousness.

Weather: Skies are cloudy. The temperature is 70°F. Winds are from the north at 10-15 mph. Rain showers are forecasted for the area beginning later tonight.

Your engine company is dispatched to the incident. Upon arrival, you conduct a size-up and observe the scene described above. One of the firefighters locates a pipeline marker that provides the name of the operator, the product transported (carbon dioxide-CO₂) and an emergency contact telephone number. Your 911 dispatcher contacts the pipeline operator and requests their response. Pipeline personnel state they have a 30 minute ETA.

Calls from the Oak Grove subdivision flood the 911 dispatch center regarding large, white vapor clouds. A local TV news crew and a print reporter have arrived on the scene and are demanding an update from the PIO/Incident Commander.

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Best Practices

“As a responding emergency agency we participate in tabletop drills as well as site training scenarios with our local pipeline and gas storage agencies. The PDMA agencies here in Petal work closely with each other and do annual response training.”

“Attend tabletop exercises annually and conduct in person training at least every two years with our pipeline representatives.”

“Development of standard operating procedures (SOPs) allows for the establishment of predetermined and approved procedures for tasks. Exercising with pipeline operators is our opportunity to develop relationships...and enhance pipeline preparedness and help mitigate problems in the future.”

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Discussion Questions:

- Based on the initial scene size-up, what are the response priorities at this point?
- What are the strategies and tactics for this incident?
- What might the ICS structure look like for this incident?
- What are the safety concerns?
- What personal protective equipment will be required to enter the hazard area?
- What information is needed from the pipeline operator?
- What additional resources are needed?
- How are the requests from the news media addressed?

FACTS ABOUT CARBON DIOXIDE- CO₂

- Carbon dioxide is a nonflammable, colorless, and odorless gas
- Carbon dioxide is an asphyxiant, and heavier than air and accumulates in low-lying areas
- Carbon dioxide will displace oxygen
- May cause visibility limitations due to the dense vapor cloud
- And potential of vehicles stalling in the dense vapor cloud
- Skin contact with escaping gas can cause frostbite and freeze burns
- Water spray or fog can be used to disperse vapors

Land Use Planning and Local Government's Role in the Process

As our nation's demand for energy grows and evolves to address environmental concerns, as does the need for new pipelines to transport fuel and other products. Pipeline operators typically attempt to construct new lines in areas where land use conflicts will be minimized. However, in areas of rapid growth, it is sometimes impossible and unavoidable. It is extremely important in urban or high consequence areas for there to be coordination among land use planners, developers and pipeline operators. This begins with establishing relationships and communication avenues before land use conflicts develop.

Pipeline operators' primary concern is safety. All operators work diligently to ensure that their pipelines are constructed and operated in a manner that provides minimal risk to the public. Through the federal pipeline safety regulations enforced by state agencies and the Pipeline & Hazardous Materials Safety

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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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Administration (PHMSA), pipeline operators are required to have ongoing outreach to four stakeholder groups: Affected Public, Emergency Responders, Excavators and Government Officials. The primary focus of the outreach to government officials relates to proper land use planning and coordination.

Proper land use coordination begins with sharing mapping data and records among the interested parties mentioned above. The advent of GIS has greatly enhanced the ability of planners to share information and coordinate land use planning. Planning and Development Board meetings provide an excellent opportunity to discuss the need for coordination when development projects are planned in proximity to existing pipelines. PHMSA has a tool that can be very beneficial for land use planning called the National Pipeline Mapping System (NPMS). This GIS-based system provides pipeline operator contributed meta data regarding the location of transmission pipelines across the country. This database also contains pipeline operator contact information which can be very useful for coordination purposes.

Local government officials should consider adopting procedures that require property developers and owners to coordinate with pipeline operators in advance of land development activities. This coordination can minimize the risk to citizens living or working near pipelines. This process should be included in existing land development checklists. In addition, as part of the checklist, a reminder should be provided for developers that calling 811 before excavating is required. Property developers/owners should have a thorough understanding of the elements and rights outlined in right of way easements. As part of the planning process, pipeline operator restrictions, maintenance activities and access should be communicated and understood.

The Pipelines and Informed Planning Alliance otherwise known as PIPA, has a resource that provides guidance to local government officials related to land use and development near transmission pipelines. The checklist within the document provides recommended practices to local land use planners that balances the need for growth and safety. The document can be accessed via the link below:

<https://primis.phmsa.dot.gov/comm/publications/PIPA/PIPA%20Evaluation%20Tool%20For%20Local%20Government%20-%2020120206.pdf>

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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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Inline Safety Inspections Tools

Operators of natural gas transmission and highly volatile liquids (HVL) pipelines are required by federal pipeline safety regulations to have procedures in place to continually assess the condition of their lines to ensure safety and integrity. The regulations require operators to assess the risks and conditions of their pipeline segments utilizing a variety of inspection methods.

Inline inspection devices, commonly referred to as “smart pigs” are used to assess the condition of the pipeline internally. Either propelled by the product or water, smart pigs travel inside the pipeline to gather a variety of data such as deformations, wall thickness loss, presence of cracks and other anomalies.

There are several types of inline inspection devices including:

Caliper or Geometry Tools – Often used in advance of smart pig runs, these tools help identify dents, deformations or ovality issues in the line.

Magnetic Flux Leakage (MFL) and Ultrasonic Tools – These tools are used to identify and measure metal loss, which could be due to corrosion or outside force damage to the pipe.

Electromagnetic Acoustic Transducer (EMAT) tools – This type of tool is often used in pipelines transporting liquids and detects stress corrosion cracking.

All inline inspection tools are inserted into the pipeline through a “pig launcher,” which can be isolated from the line and then pressurized to transport the device. A “pig receiver” is used in a similar manner to safely remove the inspection tool from the pipeline once its work has been completed. While the pig is traveling, internal GPS and/or above ground markers are used to track its progress. Accuracy of the tools in identifying anomalies both in location, and severity, has improved dramatically over time.

After an inline inspection is conducted, integrity engineers assess the data and determine if there are any locations that require visual inspection by excavating the pipeline. Anomalies are assessed when discovered and are repaired as required.



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NPMS and PIMMA Updates

OSAVE Submission Tools for LNG Plant and Breakout Tank Data Released- the operator submission and validation environment (OSAVE) tool has added workflows to facilitate the annual NMPS LNG plant and breakout tank submissions. OSAVE does require a PIMMA login. For more information, go to: <https://www.npms.phmsa.dot.gov/>

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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Commodities Transported Via Pipeline and Evacuation Distances

The United States' pipeline transportation system is a critical component of our country's infrastructure. Across the nation, nearly three million miles of pipelines transport a wide range of commodities, each with their own unique characteristics and properties:

Natural Gas- naturally occurring, odorless, tasteless. At ambient temperatures, natural gas is lighter than air, but it can be compressed under high pressure, or liquefied at extreme cold temperatures for transport (LNG).

Liquefied Petroleum Gas- these are common products used in households or for industrial purposes: primarily methane, ethane and butane. These gases are liquefied under pressure and frequently stored and transported in containers.

Crude Oil- mixture of hydrocarbons that formed from fossil fuels millions of years ago. Commonly found in liquid form in underground reservoirs or wells, it is extracted and transported to refineries where the crude is separated into usable petroleum products. Gathering pipelines may transport crude with elevated levels of H₂S or hydrogen sulfide, which can be deadly at even low concentrations.

Refined Products- products such as gasoline, diesel, jet fuel, fertilizers, and home heating oils. These products are transported through pipelines to fuel terminals with storage tanks, and then loaded into tanker trucks for final delivery to the end user. All refined petroleum products have a vapor density heavier than air, and a specific gravity less than 1.0. Vapors will collect in low areas, while spills will float on the water's surface.

Evacuation Distances

Many factors must be considered when deciding to evacuate an area due to a pipeline incident. The type of product, the population of the area, terrain and wind direction, all play a factor in emergency responders' decisions to evacuate the public and where to establish the Incident Command Post (ICP).

Additional considerations:

- Are there life/safety exposures that must be immediately addressed?
- How many people may be affected by evacuations?

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Suggest an Article for The Responder!

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NOTE

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- Are there adequate facilities to shelter the evacuees?
- Are evacuations necessary or can emergency response maneuvers be conducted through protection in place?

To view recommended minimum evacuation distances for a Natural Gas Pipeline leak or rupture, go to: - **Evacuation-Distances-for-Natural-Gas.pdf (pipelineawareness.org)** ■

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