Emergency Response Tactics for a Natural Gas Incident

In the United States, there are over 2.8 million miles of mainline and other pipelines delivering natural gas to eighty-million customers. Transportation of natural gas and hazardous liquids by pipeline is consistently the safest mode of transportation. However, incidents involving natural gas pipelines can, and do occur.

Effective response to a natural gas incident begins when the notification call is made to 911. It is extremely important that the call receiver/dispatcher obtains as much information from the caller as possible- such as the precise location of the incident, if gas is currently being released, if there is a fire, if the release is in close proximity to a structure, and if the pipeline operator has been notified.

Upon first responder arrival at a natural gas pipeline incident, in addition to establishing command and isolating the area, conducting a thorough scene size-up is critically important. Identifying the pipeline operator and requesting their response (if not already accomplished by dispatch) should be executed immediately. When the first responding pipeline operation's personnel arrive on the scene they should report to the Incident Command Post and be provided with a situation report. They can then advise Command on the plan for leak isolation.

If evacuations are needed, there are several factors to be considered. First, evacuation decisions should be based on scene-size up observations and input from natural gas pipeline

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Best Practices

"Communication is paramount to mitigation efforts and preparedness capabilities. Our LEPC incorporates Kinder Morgan's pipeline procedures into our EOP (Emergency Operations Plan) and annual tabletop exercise. Communication between emergency responders and stakeholders is essential to developing and practicing emergency procedures and protocols."

"We have a minimum of 2 joint trainings with all first responders and the local gas operator each year."

"We have several members that are pipeline certified inspectors and operators that teach and train our guys."

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operations personnel on scene. The size of the line, pressure on the pipeline, size of the breach, wind direction, nearby exposures, proximity to ignition sources, and extent of migration (if any) should all be considered when making evacuation decisions. Also, keep in mind if weather conditions dictate, you should have a plan for where evacuees will be taken to escape the elements.

In some cases, responders get fixated on the incident site and lose focus on the fact that gas migration can be a major concern. This "tunnel vision", if not recognized and corrected, can lead to a major escalation of the incident. Natural gas can migrate through sewer and storm drain lines over long distances. Monitoring for gas migration should be a main priority after arrival at the scene. Pipeline operations personnel can assist with monitoring operations.

If the pipeline release is on fire, do not try to extinguish it. The best way to put out a natural gas-fed fire is to eliminate the fuel source. This should be accomplished only by trained natural gas pipeline operations personnel.

Every natural gas pipeline incident is different. A cut 5/8-inch residential service line releasing gas can still ignite and burn those nearby or readily migrate into the adjacent structure. All pipeline incidents should be treated with caution and respect with a keen avoidance of complacency.

How to Identify and Respond to a Suspected Pipeline Leak

While pipeline incidents are rare compared to other types of emergencies, they do occur, and it is important to understand how to correctly identify and effectively respond to them. While some pipeline incidents might be obvious, such as a backhoe digging into a gas main with a large release of natural gas, others can be more subtle.

Natural Gas Pipelines

Signs of a natural gas release can include:

- A roaring noise comparable to a jet engine
- Dirt being blown into the air

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BUXUS

For more information on BUXUS or to register, go to **www.buxus.io**

NOTE

To request additional information, or to schedule a presentation or tabletop drill with Kinder Morgan, please fill out the form found **here.**

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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!

Download the NIOSH Pocket Guide to chemical hazards

this guide is intended to workers, employers and occupational health professionals about dangerous chemical hazards in the workplace.

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- Bubbles in a body of water
- Fire at ground level
- A vapor cloud near the right of way
- Odor of rotten eggs (mercaptan)
- Dead vegetation that would normally be green in proximity to the pipeline

When responding to a suspected natural gas pipeline leak, establish command, isolate the area, eliminate ignition sources, and conduct a thorough scene-size up. While natural gas is lighter than air and will naturally dissipate into the atmosphere, it can migrate through sewer and storm drain lines, as well as conduits. Checking nearby structures for gas accumulation should be a top priority. Ensure the pipeline operator has been notified and requested to respond.

Never operate pipeline valves upstream from a single meter set unless directed by the pipeline operations personnel on scene.

Hazardous Liquids Pipelines

Signs of a hazardous liquids pipeline release can include:

- Pungent, fossil fuel type odors lingering in the area
- Sheens appearing on bodies of water
- Pools of liquid on or near a pipeline right-of-way
- Dirt being blown into the air
- Fire at or near the ground
- A vapor cloud near the pipeline
- Dead vegetation that would normally be green in proximity to the pipeline
- Unusual hissing or roaring sounds near the pipeline right-of-way

Response to releases from hazardous liquids pipelines have some commonalities with natural gas. As always, first responders should establish command, isolate the area, eliminate ignition sources and check for product migration. Once again, ensure that the pipeline operator has been notified and requested to respond. Defensive leak control measures such as

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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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diking and damming can be taken by responders trained to the HAZMAT Operations level. Contact with leaking product should only be handled by HAZMAT technicians.

In the case of leaking liquefied petroleum gas (LPG) it is important to remember that vaporization of the product will occur rapidly when exposed to atmospheric temperatures. Unlike natural gas, liquefied petroleum gas, when vaporized, is heavier than air and will accumulate in low lying areas and tends to migrate above ground. Evacuations and elimination of ignition sources should be a primary objective.

Pipeline releases, while not common can create unique hazards and response considerations. Having on-going dialogue with pipeline operators in your area can help you be better prepared to respond to a pipeline emergency.

Tailboard Scenario: Responding to a Terminal Incident

It's 4:00 on a Friday afternoon. Engine 3, Ladder 1, and Battalion 1 have been dispatched to a reported chemical spill at the Sunset Point Terminal located in the downtown area of the City of Lakeview (population 55,000). The terminal provides tank truck and rail loading, unloading, and storage for a variety of chemicals.

A subsequent call to 911 indicated that a truck driver had a medical emergency and appears to be unconscious lying in a pool of spilled methanol. Terminal personnel have not eliminated the leak of the product.

Upon arrival, you establish command and conduct a scene size-up. You have visual confirmation of the individual lying in the pool of product next to the tanker truck. Terminal personnel advise that a damaged valve is the source of the leak and it has not been isolated. Methanol vapors have been filling the air and are leaving the terminal property resulting in numerous odor calls into 911. You are further advised that the leaking methanol is approaching a vector that leads to a storm drain. This storm drain leads to a creek

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NPMS and PIMMA Updates

Updated High Population Area (HPA) and Other Populated Area (OPA) GIS Data is now available to download and for viewing on a pipeline map in PIMMA or the NPMS Public Map Viewer. A National Map has also been added to NPMS Map Viewer that allows users to view, query and print data at a national level.

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!**

811
Know what's **below.**
Call before you dig.

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that flows into Prosper Lake which is the primary source of drinking water for the City of Lakeview.

Two local television affiliate camera crews have arrived at the gate to the terminal and are requesting interviews with emergency responders and site personnel.

Discussion Questions:

1. Based on the scene size-up what are the strategies and associated tactics for response to this incident?
2. What additional resources are needed?
3. What are the hazards associated with methanol and the recommended appropriate PPE?
4. How is the isolation area around the terminal determined and monitored?
5. What is the tactical plan for rescuing the victim?
6. What does the Incident Command System structure look like for this incident?
7. What information/assistance is needed from terminal personnel?
8. How are the requests for information from the news media addressed?

How do In-line Inspection Tools Work?

Pipelines are regulated in the United States by the Department of Transportation's Pipeline and Hazardous Materials Safety Administration (PHMSA). Hazardous liquid and natural gas transmission pipelines are specifically required to have integrity management plans in place that identify potential threats and assess those treats identified in areas in proximity to the public or environmental exposures. These inspections can take the form of external/above ground assessments and internal examinations of the pipe.

One of the most common inspection methods involves use of an in-line inspection tool often referred to as a "smart pig". These electronic devices

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are inserted into the pipeline at designated above ground locations and travel through the line to inspect for conditions including dents, scrapes, wall loss due to corrosion, and other anomalies. Smart pigs may be used as part of the commissioning of new lines to inspect for construction defects, as well as during on-going integrity management program activities.

There are a variety of in-line inspection tools available to be used based on engineering assessments and integrity management plans. Gauging pigs are often used before smart pig inspections to ensure there are no dents which affect the ovality of the pipe, excessive weld obstructions, sticking valves, or any other issues that would affect safe travel of the smart pig.

Magnetic Flux Leakage (MFL) tools detect metal loss by creating a temporary magnetic field within the pipe wall and recording data. Anomalies are identified when there is a break in the magnetic field. Ultrasonic tools analyze pipeline wall thickness and identify metal loss and also have the ability to identify cracks and weld defects. Electromagnetic Acoustic Transducer (EMAT) tools specifically search for corrosion cracking and are mostly used in liquids pipelines.

After smart pig runs are completed, electronically stored data from the tool is downloaded and analyzed by integrity management engineers. Since the tool has the ability to be tracked (typically by GPS), locations of anomalies can be identified with high levels of accuracy. Crews are then sent out in the field to the identified locations to excavate the pipeline and assess the anomalies. In some cases, repairs are needed and will be made while the pipeline is uncovered.

Intelligent in-line inspection tools have greatly reduced the number of corrosion-caused pipeline incidents across the nation and are just one of many ways pipeline operators are enhancing safety while meeting our country's energy needs. ■

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