Responding to Pipeline Emergencies in a Frozen Body of Water

Winter weather conditions present some unique challenges when responding to and mitigating pipeline emergencies. Aside from the hazards of responding to an incident with deteriorating road conditions, releases from pipelines under frozen bodies of water can create additional hazards.

In the event of a pipeline rupture in a frozen body of water, emergency responders should take several factors into consideration. Is the hazardous liquid or compressed gas released at risk of migration? Typically, released products from pipelines will follow the path of least resistance. Thick ice can create a barrier that forces leaked product to travel until a release point is reached and can make identifying the precise release point of the product more difficult. This should be a consideration when conducting an initial scene size-up and establishment of an isolation area.

Under cold conditions, liquified petroleum gas (LPG) and natural gas may be slow to dissipate. In fact, LPG is heavier than air and can travel long distances horizontally to find ignition sources. Low lying areas should be of upmost concern if they are in the path of leaking LPG. Non-flammable gases that are transported by pipeline such as carbon dioxide, can be slow to dissipate as well and can create an asphyxiation hazard.

It's important to understand that winter weather conditions may delay the initial response to isolate the leaking product.

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Best Practices

"We hold multiple joint facility training and exercises with our local Kinder Morgan operators. Most of these exercises range from facility evacuations, pipeline leaks, scene control, and alerting practices. These joint exercises have drastically improved our response to ALL emergencies related to pipelines and facility emergencies, as well as have drastically improved our alerting and communication with Kinder Morgan." ***Brandon Roth - Director of Richland County Emergency management***

"We hold monthly LEPC meetings and review latest spills in our area. I attend the Hidalgo County LEPC meetings to share information. We participate in tabletop and full scale drills."

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Be it access to manual shut off valves due to deteriorated road conditions or excavating in frozen ground, isolation and repair may be delayed and this should factor into the overall response.

As with any pipeline incident, including those that occur in frozen bodies of water, early identification and contacting the operator, isolation of the area, and elimination of ignition sources should be initial tactical efforts.

Value of Participating in Joint Emergency Response Drills

Emergency response personnel and pipeline operations personnel alike agree that interface prior to an incident is critical to a successful emergency response. In order to successfully mitigate pipeline emergencies, information sharing and practicing emergency response procedures prior to an event is critical.

Many emergency responders regularly attend third party sponsored pipeline emergency preparedness meetings in their area. At some of these meetings, simulated tabletop exercises are performed jointly between pipeline operations personnel, emergency responders, and public officials. These in-the-room exercises are perfect for discussing the response considerations and the associated tactical aspects.

While tabletop exercises are helpful, full scale mock emergency exercises are the best way for fire departments, law enforcement, emergency management organizations, and pipeline personnel to establish each of their roles in a potential incident. It's important for all parties to be aware of the response resources, as well as the limitations, of the other responders. Full scale drills also provide operations personnel the opportunity to examine maps, potential hazards and discuss the characteristics of the products being transported, while simultaneously disseminating response resources to the point of action.

If you are interested in conducting a mock emergency exercise, or tabletop drill with Kinder Morgan in your area, please email **publicawarenesscoord@kindermorgan.com**.

Innovations in Emergency Responder Technology

Everywhere we look, advances in technology are making our jobs easier, lives more comfortable, and our existence ultimately safer. Emergency preparedness and response for both pipeline operators and public sector emergency responders is no exception.

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To download the Newest Version of the DOT ERG, go to:

Emergency Response Guidebook (ERG) | PHMSA (dot.gov)

BUXUS

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

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!

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Unmanned Aerial Vehicles (UAVs)
Once thought of as toys for hobbyists, unmanned aerial vehicles, commonly referred to as drones, have entered the mainstream and are prolific in our society. We see them being used to cover sports events, real estate advertisements, insurance claim assessments, and in groups as choreographed aerial shows. Drones are also being used to enhance pipeline safety and emergency response. Some pipeline operators are using drones for right-of-way inspections and aerial leak surveys. Public Sector emergency responders have engaged in the use of drones for enhanced situational awareness and to support tactical decision-making during response to large scale pipeline incidents. Prior to utilizing drones, operator should be sure to research regulations governing their use.

Laser Leak Detection
Natural gas leak detection has evolved over time, and the development of laser leak detection has been a game changer for utilities, as well as public sector emergency responders. The greatest advantage of using lasers as opposed to other types of detection methods is that laser detection can be conducted remotely. When conducting leak surveys, utilities are now able to assess areas that were previously inaccessible, such as fenced locations and elevated equipment supplied by natural gas. Public sector emergency responders can use laser detection to determine if a structure has accumulating levels of natural gas without breaching the structure and without placing personnel at risk. Laser leak detection has proven to be highly accurate and reliable.

Artificial Intelligence
Artificial intelligence or “AI” is a rapidly evolving area of technology. Many of us are familiar with ChatGPT, which is an AI driven tool for providing information on an endless variety of topics. However, AI goes far beyond helping craft job descriptions or assisting with term papers. In the fire service, AI is being used to enhance wildfire detection, development of training and education programs, policy

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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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development, firefighter occupational wellness, fire prevention, and emergency dispatch and response. In the pipeline industry, AI is being used for excavation damage prevention by tracking construction equipment and alerting when excavation is near pipelines. Under development by the Gas Technology Institute, mesh sensor networks will be linked to field sensors that can help accurately identify pipeline leak and unauthorized excavation equipment located in pipeline right-of ways. Lastly, AI is being used to analyze large amounts of data to aid in prioritizing the replacement of aging pipeline infrastructure. This can be accomplished by AI review and prioritization of extensive pipeline inspection and operational data collected over long periods. This will potentially help streamline pipeline operators' distribution and transmission integrity management programs furthering overall safety.

While the debate continues on how much influence technology should have in our daily lives, it has proven to be a useful tool in many areas including energy and emergency services. Technological advancements in the pipeline industry are working to make operations personnel lives' easier and make pipelines even safer than they already are.

Human Damage to Facilities

Pipelines are statistically the safest mode of transportation of hazardous liquids and gases. In a majority of cases, releases from pipelines are the result of damage caused by humans- known as third party damage. This can be from accidental or intentional activities.

Third party damage (first party is the pipeline operator, second party is a pipeline operator's contractor and third party is an outside excavator) is a leading cause of pipeline damages. Despite the best efforts of pipeline operators and utility owners, damage prevention continues to be a significant challenge. Established years ago, 811 is the national telephone number excavators must call prior to digging in an area where underground assets may be located. Unfortunately, there are still excavators who do not call for utility locates (a free service and required by law) and end up causing damage- loss of life or property.

As part of an Infrastructure Bill, internet services are being provided to widespread areas throughout the United States. An unfortunate side effect of this effort is an increase in damages to other utilities, including buried natural gas pipelines. Public sector emergency

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NPMS and PIMMA Updates

Version 2 of the Coastal Ecological Unusually Sensitive Area GIS data is now available for download. The new dataset reflects changes that NOAA made to their Sea Level Rise viewer data based on updated digital elevation models since publication of the original data set. Click here for more information **Coastal Eco USA Data**

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!**

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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responders need to be aware of this increased risk and assist utility operators in identifying potential situations for third party damage before they occur. This can be as simple as stopping by a utility construction site when no flags or markings are present and requesting the contractor present the excavation ticket for the work. Please become a pipeline defender and prevent utility damages before they occur!

Another type of human caused damage to pipeline facilities falls in the category of intentional acts. Environmental extremists and other groups intent on domestic terrorism have caused intentional damage to pipelines. Examples including breaking into above ground facilities and tempering with valves and other equipment, as well as setting fire to construction equipment on pipeline construction sites. Hackers continually attempt to breach secured pipeline control systems to create havoc or widespread system outages. Environmental extremists continue to threaten fossil fuel assets, including pipelines.

On September 16, 2024, a motor vehicle crashed into an above ground valve assembly for a natural gas liquids pipeline in Deer Park, Texas. A massive explosion and fire resulted, killing the vehicle's driver (the sole occupant), damaging other utilities and infrastructure, and causing evacuation and shelter in place orders for hundreds of surrounding homes and businesses. The fire burned for several days, and melted overhead power lines before it could be extinguished. A comprehensive investigation was conducted and determined that the driver of the vehicle committed suicide by crashing into the pipeline facility. For news coverage of the incident, click **here**.

Be it pipeline damage from excavation carelessness or an intentional act, we rely on our partners in safety to help us identify risks before they turn into potentially tragic incidents. The post 9/11 mantra, "If you see something, say something" could never be more applicable to anything more so than pipeline safety. ■

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://PA inforequest.kindermorgan.com**

NOTE

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