Pipeline Emergency Preparedness & Training: Preparing for and Responding to Severe Weather Events

Officials maintain this year's hurricane season has been the worst in U.S. history, with four major storms hitting portions of Texas, Louisiana, Mississippi, Alabama, Florida, Puerto Rico and the Caribbean region in rapid succession. The ferocity of hurricanes Harvey, Irma, Maria and Nate tested the mettle of millions of people – and the ability of emergency response organizations to plan for the storms' passage, seek to keep people safe, and initiate response and continuing recovery operations.

How did energy companies prepare, and was local, state and federal planning sufficient when weighing forecasts against actual events?

Harvey: This was a major rain/flood event, which inundated Houston and the Texas Gulf Coast. It has become clear post-Harvey that Texas industries and energy companies will need to better harden facilities to withstand not only heavy rain and wind, but also major flooding.

According to Michael E. Webber of the University of Texas' Energy Institute, "Municipalities and regional planners must look more seriously at the floodplains and reconsider how development will be allowed to unfold in the future" to make sure local floodplains can

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Best Practices

"Our office holds several tabletops a year and our local LEPC has all the local pipeline operators in our county attend the local meetings once a year."**- Jerry Roberts, Osage County Emergency Management, CA**

"We hold multiple tabletop exercises and have had first responder training provided by local natural gas providers and bulk providers such as Kinder Morgan."

"We send our responders to the training courses that are provided, do tabletops and use actual scenarios."

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work like ecosystems that can absorb excess water. “We also need to invest in better information-sharing systems statewide. Rumors of a gasoline shortage became a self-fulfilling prophecy as nervous commuters went on a panic-buying spree to top off half-full tanks or to fill extra tanks as if preparing for an apocalypse, causing stations to run out of fuel. Regulators did a good job of communicating, but it would be beneficial to create real-time information systems that visually display how much fuel is available statewide and at individual cities or stations.”

The Energy Information Administration (EIA) reported that Harvey caused substantial electricity outages, as power plants and transmission infrastructure—particularly in south Texas and along the Gulf Coast—were affected by high winds and significant flooding. Power plant outages were largely caused by rain or flooding affecting generator fuel supplies, outages of transmission infrastructure connecting generators to the grid, and personnel not being able to reach generating facilities.

Irma and Maria: Irma cut a northerly swath from the Florida Keys, bringing heavy rain and flooding to the state. But Florida benefited from considerable advanced preparation and lessons learned from Harvey, and power supplies and interrupted movements of fuel resumed in short order.

Puerto Rico, however, took a direct hit from Maria in the days following passage of Irma. Before Puerto Rico could recover from Irma, Maria devastated the island and wiped out homes, businesses and utilities. Puerto Rico continues to try to re-build and restore electricity generating plants and its transmission grid infrastructure.

Planning for the Next Time: Has operational thinking and planning changed for natural gas and products pipelines to seek to ensure personnel safety and emergency response actions for a return to service in a timely and efficient manner?

Planning is a continual process, and officials and companies with every event are getting better at pre-planning for storm and response actions. But when major cities, such as Houston, are flooded for weeks on end, it becomes clear that even the best

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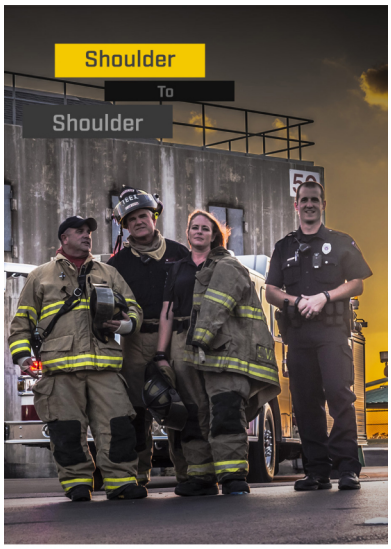
NEW - First Responder Training Video Series

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 **www.shoulder2shoulder.tv**



www.shoulder2shoulder.tv

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critical thinking and emergency response plans can fall short when freeways and neighborhoods are flooded and centers of commerce isolated, with the situation exacerbated by oil and gas production curtailments and disruptions of gasoline and refined products.

While no plan or forecast is perfect, in the final analysis, good communication – *early and often* – between energy companies and local, state and federal emergency responders is key to protecting life, enhancing public safety, improving preparedness, increasing environmental protection and preventing damage to pipelines, property and facilities.

Pipeline Emergency Response Tactics: Responding to a Carbon Dioxide Emergency

Carbon Dioxide (CO_2) is a heavy gas that may be transported through transmission pipelines as a compressed fluid. Primarily used to assist in oil recovery operations, incidents involving CO_2 are rare and while not posing a risk for fire or explosion, such incidents do require responders to be knowledgeable about the product's unique qualities.

Indications of a CO_2 leak can include:

- A hissing or whistling noise
- Soil blowing from a noticeable hole in the ground
- An unusual area of thawed or melted snow in the winter
- An area of frozen ground in the summer
- A bubbling pool of water

Under normal conditions, CO_2 is stable, inert and non-toxic. The colorless, odorless product primarily poses a risk to breathing and carries a potential for causing burns and frostbite. Released CO_2 will displace oxygen and can quickly cause asphyxiation.

If released CO_2 will almost always form a visible fog, with the size of the cloud determined by weather conditions and the volume released. Should emergency response personnel suspect a leak (based on the above factors) a critical first step when responding to a CO_2 emergency is to quickly confirm the identity of the pipeline operator, and for the first responder to make a prompt notification to the phone number listed on the pipeline marker.

In responding to a potential CO_2 incident, emergency responders should always wear full turnout gear and use self-contained breathing apparatus (SCBA) when entering an exposed area.

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WISER

NEW Update- A set of WISER tutorial videos can be viewed ***here*** and has been released to introduce and demonstrate WISER functionality. The videos can also be found in the training section of the **NLM YouTube Channel**. They include a dive into the information provided by a known substance as well as a demonstration of WISER's protective distance mapping feature

WISER
Wireless Information System for Emergency Responders

NPMS Launches iPhone app for PIMMA

The National Pipeline Mapping System has launched an iPhone app for PIMMA. It can be accessed by searching for "pipeline information" on the App store. You will need your PIMMA username and password to use the PIMMA iPhone app. To access the National Pipeline Mapping System online and locate transmission pipelines in your area, please go to **https://www.npms.phmsa.dot.gov/**

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Other tactics include:

- Isolate the release area from 50 up to 80 feet in all directions
- Keep unauthorized people away from the area
- Stay upwind of the leak source
- Ensure the area is adequately ventilated using natural or mechanical ventilation
- Do not direct water at the dry ice snow, venting safety release valves or source of the leak

A focus in dealing with any leak should be ensuring adequate air ventilation to promptly help dissipate the issue. Since CO_2 vapors are heavier than air, risks for collection of the product in low areas exists. In tandem with pipeline operators, who will work to promptly stop the leak, emergency responders should be particularly cautious for concentrations of CO_2 entering sewers, work pits or basements where it can pose a legitimate risk. Allow any exposed area to ventilate for at least two hours after all dry ice has sublimated and the frost has disappeared before allowing re-entry to the release zone.

Kinder Morgan transports CO_2 in the Permian Basin region, with a pipeline running from Utah to Oklahoma. The company's CO_2 operations are consistently monitored via SCADA operating systems with changes in pipeline pressures or flows quickly identified. Company personnel are well-trained in the unlikely event of a leak, and will respond with a focus on safety and stopping any leak. In some areas, this effort can be done remotely through the use of automated valves. Once on the scene, Kinder Morgan employees understand the vital need for communication and coordination with local emergency responders, since they both share the same goal of keeping people safe.

Overview of Pipeline Systems: Security related events in Pipelines and Emergency Responder Actions

The headlines tell the story: fossil fuels are under attack and likely will be for some time. Oil and natural gas exploration and production are the overarching targets, but the focus of activism and recently seen illegal and destructive activity is on stemming commerce and stopping projects – principally pipelines and other forms of transportation that move natural gas, LNG, CO_2, oil and refined products to market, as well as curtailing by lawsuits or other resistance activity associated construction of energy infrastructure and related facilities.

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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!***

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

NOTE

If you would like to request additional information, schedule a presentation or tabletop drill, or subscribe to *The Responder,* please fill out the form found at **http://PA-inforequest.kindermorgan.com**

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At this time of heightened national security and increased protest activity in the U.S. and Canada, it is vitally important that pipeline infrastructure and transportation assets (e.g., pipelines, valves, meter stations, compressor stations, rail/truck terminals, ships, ports and centers of commerce), be adequately protected. In turn, companies and the emergency response community must be prepared for what they may face and, as a consequence, manage.

Awareness, preparedness and response success hinges on continually maintaining and improving the shared responsibility between energy companies and local, state and federal law enforcement agencies, fire departments, the Department of Homeland Security and Transportation Safety Administration, the Department of Transportation and Pipeline and Hazardous Materials Safety Administration, the U.S. Coast Guard and other organizations and agencies.

Because of the need for enhancing response preparedness, including using stepped up forms of cyber security and SCADA system protection, companies and law enforcement agencies are engaging in increased training, informational forums, the use of new monitoring systems, and aerial drones to name only a few areas. Traditional security training has been augmented by the latest procedures and tactics; companies are becoming more adept at facility protection; and additional use of security tools and tactics, including legal action, have enabled companies to better manage protest actions and stem the ability of protestors to stage additional actions.

In recent years, pipeline and energy company personnel are being trained to better manage “worse case” incidents, such as sabotage, explosions and other events that could disrupt the movement of natural gas and refined products and affect the U.S. economy and national security. But advancements in training and best practices continually will be needed.

The federal government’s 2010 Pipeline Security and Incident Recovery Protocol Plan established guidelines for security and threat assessment, including pipeline prevention/protection and response and recovery measures. But the Protocol outlined a daunting task for pipeline operators and energy concerns:

“It is impossible to uniformly protect the pipeline system. While it is difficult to predict what method of attack may be utilized, the risks can be calculated in terms of threat, vulnerability, and consequence, and measures can be taken to safeguard the pipeline system. Regardless of the scenario, if the pipeline infrastructure is compromised or shutdown, it will require an immediate and coordinated response and recovery effort.”

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First Responder Online Pipeline Training

To access the API-AOPL Emergency Response Team’s free online training, click **https://nasfm-training.org/**

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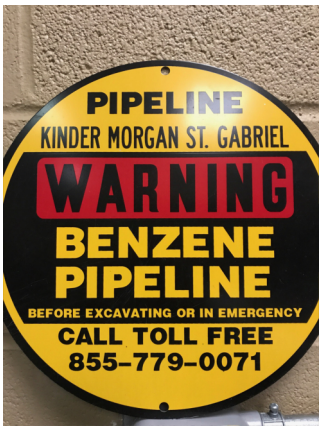
Keeping Pipelines Safe/ Practices & Protocols: Benzene Awareness



Benzene is classed as a hydrocarbon. It can be transported by pipeline as single commodity or as a constituent in petroleum products such as gasoline and natural gasoline condensate. It has been widely reported as a carcinogen and is most commonly associated with gasoline. It is also found in many other products including solvents, resins, paints, and rubber. It is used in the extraction of oils from seeds and in certain printing applications. It is also used in the manufacture of detergent, pharmaceuticals, and dyes.

Acute respiratory exposure to higher concentrations of benzene can result in dizziness, drowsiness, headaches, and unconsciousness. Exposure to liquids and vapor containing benzene can result in skin irritation as well as redness and blisters.

Chronic benzene exposure can cause blood disorders and affect bone marrow. Additionally, studies have shown that there is an increased risk of leukemia when exposed to the material. While most studies that address the health effects associated with benzene focus on forms at higher concentrations, typical exposure scenarios are to the product as a constituent of other materials at lower concentrations.

Armed with the knowledge that benzene has these associated risks, prudent responders will avoid any exposure to the product and especially smoke from fires. Full personal protective equipment including self-contained breathing apparatus (SCBA) and full turn out gear must be worn in order to protect responders from the risks. With the knowledge that firefighters are exposed to carcinogens on an ongoing basis, effective and regular cleaning of turnout gear should also be diligently practiced.

For more information on benzene, please go to:
https://www.atsdr.cdc.gov/toxprofiles/tp3-c2.pdf ■

NOTE

To read past issues of *The Responder,* please go to the archived issues at **http://www.kindermorgan.com/pages/public_awareness/The_Responder/archive.aspx**

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