



Pipeline Emergency Preparedness & Training: Training Resources Available to Emergency Responders

Training is a key element for any response agency that may be called to respond to a pipeline emergency. Fortunately, there are numerous resources available to assist responders with pertinent information to prepare them to safely and effectively respond to emergencies. One of the most widely recognized programs available is “Pipeline Emergencies” (www.pipelineemergencies.com), which was developed through a partnership between the National Association of State Fire Marshals (NASFM) and the Pipeline & Hazardous Materials Safety Administration (PHMSA). This program consists of on-line training programs, a student manual, and interactive scenarios related to natural gas and highly volatile liquid pipeline emergency response, and is available via an iPhone and Android app.



The American Petroleum Institute (API) and the Association of Oil Pipelines (AOPL) in tandem with various emergency response agencies have developed a First Responder Online Pipeline Training Portal designed to help emergency responders handle hazardous liquids or natural gas pipeline incidents. Awareness, Operations and Technician level courses were developed using the previously referenced “Pipeline Emergencies” program. This training is offered free-of-charge to first responders and is available through NASFM’s website <https://nasfm-training.org/pipeline/>.

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

(continued on page 2)

(continued from page 1)

Pipeline operators also provide training to emergency response organizations in their areas of operation. These trainings serve as opportunities to interact with pipeline personnel, learn about the products being transported, and to keep up-to-date on recommended response procedures in the event of an incident. These trainings may include facility tours, tabletop exercises, and full-scale emergency drills. To learn more about available training opportunities or emergency drills in your area, contact the pipeline operators in your jurisdiction.

In addition to links to online resources such as the Emergency Response Guidebook (ERG) and the online PHMSA library, Kinder Morgan also offers free training resources to emergency responders through our training website

http://www.kindermorgan.com/public_awareness/additionalInformation/trainingmeetings.aspx including downloadable tabletop drill guides and scenarios for natural gas and liquids incidents, as well as an emergency response self-assessment form.

Through a number of collaborative efforts across the country, we are able to join with other pipeline operators and sponsor widespread damage prevention and pipeline safety meetings with first responders. Please go to:

http://www.kindermorgan.com/public_awareness/AdditionalInformation/RequestAdditionalInformation.aspx to contact us for upcoming events in your area.

Pipeline Emergency Response Tactics: Responding to a Highly Volatile Liquids Pipeline Incident

Pipelines are used to transport a variety of materials classified as Highly Volatile Liquids or HVLs. An HVL is a liquid that will form a vapor cloud when released into the atmosphere and which has a vapor pressure exceeding 40 psia at 100°F. Examples of HVLs include Anhydrous Ammonia, Butane, Propane, Ethane-Propane mix, and Liquefied Petroleum Gas (LPG). The response to incidents involving HVLs can vary based on the physical characteristics of the product being transported.



When dispatched to a reported HVL incident, it is important to identify the product involved and the pipeline operator as soon as possible. Once the product and operator are identified, typically through information provided on pipeline markers, the operator

(continued on page 3)

Best Practices from Emergency Responder Peers

“Our department always sends at least two of our firefighters to the annual pipeline safety training and they, in turn, give a briefing to the department at our next station training.” – **Wayne Marx, Sherwood Forest Estates Fire Department, Williams, AZ**

“...we have tabletop exercises, classroom training, and full blown training exercises with all agencies involved. We utilize younger emergency responders to step up during these drills into roles that will help prepare them for real life situations. This gets us all out of our comfort zone and makes for good ideas and questions about different scenarios. We have very definitive response levels in our ERG plans and each responding agency has as many copies as needed of the plan to keep personnel aware.”

(continued from page 2)

should be contacted and requested to respond. Upon arrival, emergency responders should isolate the area and prioritize the elimination of ignition sources. HVLs are flammable and have varying flammability ranges.

When responding to a HVL release, it is important to remember that LPG is heavier than air, with a vapor density of 1.5 (air has a vapor density of 1). Other HVLs are lighter than air and can more quickly dissipate into the atmosphere. The potential for migration of LPG into low-lying areas or over long distances should be recognized and considered when determining isolation areas.

Signs of an HVL release can include dead or discolored vegetation on the pipeline right-of-way, sheens or oily appearance on bodies of water, frozen ground near the pipeline, pools of liquid, the presence of a vapor cloud or dirt blowing into the air, fire coming out of the ground, and bubbling on water bodies.

Given the nature of HVL releases, the use of full protective equipment, including firefighter turnout gear and self-contained breathing apparatus should be implemented for any personnel that will be operating in proximity to the incident area. Atmospheric monitoring should be employed as early as possible during response to the incident to assess for product migration and to establish isolation areas.

While incidents involving HVL pipelines are rare, planning and associated training are prudent strategies for emergency responders and pipeline operators alike. As always, emergency responders are encouraged to contact pipeline operator personnel to obtain more information, schedule training, or to discover opportunities to participate in exercises and mock emergency drills.

Overview of Pipeline Systems: Natural Gas and Liquefied Petroleum Gas Odorization

As the population in the United States continues to increase and the use of natural and liquefied petroleum gases increases, more and more people are potentially impacted by a leak. Because these products can be naturally colorless and odorless, people need an early warning sign that they are present. For this purpose, the specialized field of odorization continues to be an important aspect of pipeline safety.



(continued on page 4)

NPMS

To access the National Pipeline Mapping System and locate pipelines in your area, please go to:

<https://www.npms.phmsa.dot.gov/default.aspx>

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. Locating services are free. Help us spread the word for safety...

Call before you dig!



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

(continued from page 3)

Odorization is the process of adding chemicals, usually mercaptan, to odorless gas to create a distinct smell, typically described as “rotten egg”, to aid in the identification of a potential gas leak.

In the U.S., regulations to standardize gas odorization began in 1937 after odorless natural gas ignited in a high school in New London, Texas killing 294 children and teachers. This tragedy prompted strict guidelines for natural gas pipeline operators to ensure that lines are odorized so that the gas can be “readily detectable by a person with a normal sense of smell.” The explosive limits of natural gas are generally 5% - 15% gas in air. When odorized, leaking natural gas **must** be detectable at 1/5 of the lower explosive limit (LEL). The DOT Office of Pipeline Safety has established this level so that leaking gas can be detected **before** it reaches the explosive limits.

Liquefied petroleum gases are typically not odorized in the pipelines. For example, propane is odorized at the truck loading facility.

In those cases where natural gas is odorized, qualified pipeline company personnel check the gas stream for odorant concentration levels at key locations along the pipeline on a regular basis, typically at transfer points between transmission and local distribution lines (city gates). Pipeline personnel check the levels using a special machine called an odorometer. To determine the concentration of odorant in the natural gas stream is sufficient, the odorometer mixes gas from the pipeline with air to 1/5 LEL. The pipeline technician sniffs the mix to determine whether the odor is readily detectable. The concentration of odorant is adjusted, as necessary, based on these tests to achieve the desired 1/5 LEL concentration. In some instances, pipeline companies employ automated odor measurement technologies to monitor odorant along transmission and distribution lines at given intervals.

Odorant level testing is required on a regular frequency because the level of odorant can gradually fade over long distances in transmission pipelines or when stored in steel cylinders and tanks. New steel pipelines can adsorb the odorant and must be pre-conditioned or pickled before the line is placed into use, or a short-term increase in odorant injection called “slugging” a new line may be necessary. Odorant may also be absorbed by pipeline fluids such as natural hydrocarbons, compressor oils, and other pipeline fluids. Additionally, uneven distribution of odorant or odorizer malfunction can result in pockets of gas with higher or lower concentration. Other environmental factors may diminish the detectability of the smell. While investigating a reported leak environmental factors that can influence the concentration of the

(continued on page 5)

First Responder Online Pipeline Training

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

WISER

The Wireless Information System for Emergency Responders (WISER) is offered as a standalone application on Microsoft Windows PCs, Apple iPhone and iPod Touch, Google Android devices and Blackberry devices.



(continued from page 4)

odorant are soil condition and atmospheric humidity. For more information on odorant fade contact your local pipeline company or contact Kinder Morgan at <http://PA-InfoRequest.kindermorgan.com>

For pipeline operators, odorizing gas in populated areas is an additional public safety measure and an important component of a pipeline safety program.

Keeping Pipelines Safe/ Practices & Protocols: SCADA Systems- Working to Keep Pipelines Safe

A key element in the multi-layered approach used to keep pipelines operating safely and efficiently is use of a system known as Supervisory Control and Data Acquisition, or SCADA.



While certainly sophisticated as a process, SCADA is not a specific technology, but a function. SCADA systems have been around for decades and are used for controlling chemical plants, manufacturing facilities, power grids, nuclear power plants and drinking water systems. In the pipeline industry, SCADA systems are used to collect near real time data and display this information to human controllers who monitor the pipeline systems in control centers. SCADA systems monitor data points such as flow rates, operating pressures, temperature readings and other items critical to assessing the status of the pipeline at any given moment.

In addition to monitoring the status of the pipeline, controllers can use the SCADA system to input commands that remotely control key pipeline operations and equipment, such as valves, pumps and compressor engines. Having the capability to remotely start or stop compressor engines or pumps allows for the prompt adjustment of flow rates in the pipeline. Remote valve operation allows for fast isolation of a critical or affected section of the pipeline in the event of an emergency.

Another key component of pipeline SCADA systems is the array of alarms that alert controllers to abnormal situations and conditions along the pipeline. Alarm conditions can be very specific, providing detailed status information that allows controllers to get a comprehensive understanding of conditions at a given point or moment, or alarm conditions can provide general information, such

(continued on page 6)

NOTE

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

http://www.kindermorgan.com/pages/public_awareness/AdditionalInformation/RequestAdditionalInformation.aspx

(continued from page 5)

as an alarm that warns controllers that conditions are outside established limits. Examples of alarm indicators are a pop-up box on a monitoring screen, a colored or flashing area (much like a “fuel tank near empty” light in a car), or an audible sound like a siren. In many cases, SCADA monitoring systems are designed so that controllers must acknowledge the alarm; this may deactivate the alarm indicator, while other indicators remain active until the alarm conditions are cleared. Controllers and their supervisors are trained to interpret SCADA system data and make appropriate decisions based on that information.

SCADA systems are just one ingredient in the pipeline safety formula. While the capability to use technology to continuously monitor data from remote locations is vital, so too is having skilled controllers with the ability to interpret the data and manage key elements of the operation. When combined with the strategic placement of trained operational personnel at key pipeline locations and relationships with emergency responders in the communities where pipelines operate, SCADA systems help produce a safety and response process that lowers the risk of pipeline incidents. ■

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