

THE pipeline connection

for Emergency Responders

summer 2017



R E S O U R C E S F O R R E S P O N D E R S

SC Pipeline Emergency Response Initiative Update



In a past issue of *The Pipeline Connection* we provided an overview of the new **South Carolina Pipeline Emergency Response Initiative (SCPERI)**, which is a collaborative effort among a variety of stakeholders to enhance training and awareness for response to pipeline emergencies. We are proud to report that progress is being made on development of an “awareness level” training module for first responders.

The South Carolina Fire Academy’s curriculum staff has taken the lead to develop the training material based on the Pipeline Association for Public Awareness’ Pipeline Emergency Response Guidelines program that has been used nationwide for responder training.

In the spirit of truly being a collaborative effort, pipeline operators, who are members of the SCPERI Steering Committee, are assisting the SCFA staff with customizing the training materials to make them unique and applicable to South Carolina. The four hour program has been piloted once with a county fire department in the state and received very favorable comments.

A key element related to the success of this initiative is the partnership between first responders and pipeline operators. In that regard, the SCPERI Steering Committee is working closely with the SCFA instructional staff to ensure that in



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addition to a certified SCFA instructor, the course will also have pipeline representatives present to field any specific operational questions and provide an overview of local pipeline operations.

Look for more information later this year concerning the pipeline emergencies training program to include course registration opportunities. With safety being our common goal, this effort will help first responders be better prepared to respond to a pipeline emergency in their communities.

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What is a ... **Combustible Gas Indicator**

A Combustible Gas Indicator or CGI, is an instrument used to detect the presence of flammable or combustible gases in an environment. The combustible gas indicator can quickly, safely, and accurately detect combustible gases or vapors in the air. The indicator detects small quantities of these gases or vapors up to the lower explosive limit (LEL) then sounds an audible alarm.

York County Natural Gas Authority uses GMI brand multi-gas units for operations and emergency response. These monitors have the capability to measure natural gas in percent of the lower explosive limit (LEL) and percent gas by volume. This affords our technicians the ability to monitor gas accumulations for safety purposes as well as determining the source of potential gas leaks. York County Natural Gas Authority also has oxygen and carbon monoxide monitoring and detection capability as well.

Our multi-gas units are regularly calibrated and our employees are highly trained in use of the equipment. During any suspected gas leak calls, don’t hesitate to ask our technicians to assist with gas detection and monitoring activities.

Awareness of Cross-Bore Incidents

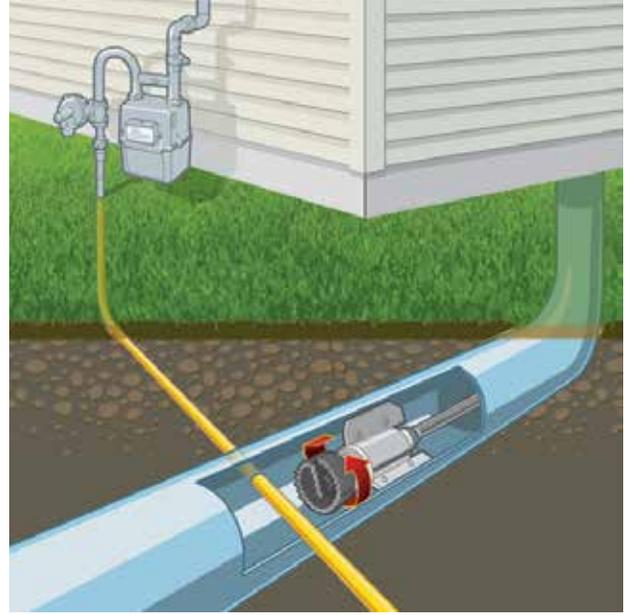
Trenchless technology is becoming an ever increasing method for installing underground utilities. While a very efficient construction process, it can have pitfalls if existing utilities are not properly located in advance of the work. This can result in a “cross bore” situation which can have dangerous results.

While cross bore incidents can impact any underground utility, one of the most serious involves an intersection between sewer lines and natural gas lines. A natural gas line inadvertently bored through a sewer line can go unnoticed for years. An unsuspecting plumber attempting to clear a blockage with an auger device could damage the gas line, creating a gas leak into the sewer system. The resulting leak would then create a dangerous gas migration situation.

Another hazard related to cross bores can be created when underground electrical lines are bored through sewer lines. A plumber attempting to clear a suspected blockage can be exposed to an electrocution risk due to the severed electrical line. The utility industry has a very aggressive program to educate excavators about the dangers associated with cross bores and the need to always have underground utilities located prior to any excavations.

From an Emergency Responder perspective...

It is very important to incorporate the risk of cross bore incidents into your scene size up when responding to reported outside gas leaks. **Checking for gas migration in sewer systems should be considered as a tactic when responding to outside gas leak calls.** York County Natural Gas Authority personnel are equipped with combustible gas indicators (CGIs) and are highly trained to effectively conduct leak assessments and to assist public sector emergency responders with elimination of hazards associated with gas leaks.



An unsuspecting plumber attempting to clear a blockage with an auger device can damage the gas line resulting in a leak into the sewer system.

EXAMPLES OF ACTUAL CROSS BORES



Pipeline Operations – Excess Flow Valves

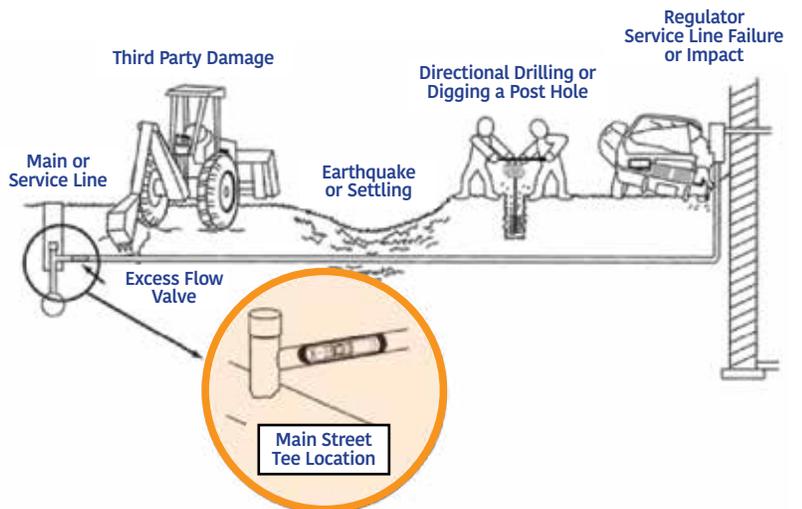
Since 2009, York County Natural Gas Authority has been installing excess flow valves on new and replaced service lines

What’s an “Excess Flow Valve?”

An excess flow valve is a device installed in a service line close to the connection to the gas main that is designed to close automatically if the gas flow exceeds a preset trip point. The device is held open under normal operations by a spring and is closed by gas pressure. These safety devices are intended to function in situations where a rapid increase in flow occurs as when a service line is damaged by excavation.

From an Emergency Responder perspective...

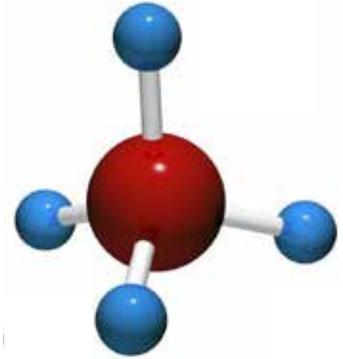
arrival at the scene of a “cut gas line” call could result in the absence of the tell-tale sound of gas being released to the atmosphere if an excess flow valve has operated. It is very important to ensure that York County Natural Gas Personnel are requested to respond in any situation where gas lines have been hit to ensure the situation is safe and to effect repairs as quickly as possible.



As always, York County Natural Gas Authority wants to be your partner in safety!

Natural Gas Properties & Behavior

Natural gas is one of the cleanest and safest energy sources, but outside of the protective environment of the pipeline system, it can ignite or become a simple asphyxiant when confined in an enclosure. For emergency response personnel, it is very important to understand the characteristics of natural gas when dispatched to a suspected leak. Natural gas is primarily composed of methane (94%). It also includes ethane (4%) and other gases (2%) including butane, carbon dioxide, nitrogen, and isopentane.



Natural gas is colorless, odorless, and tasteless in its natural state

An odorant called **mercaptan** is added to the gas stream to give it the characteristic odor of sulfur or rotten eggs. When responding to a suspected gas leak, don't rely exclusively on your sense of smell to locate the source of the release. The only accurate way to locate the source of the gas release (and determine hazard areas) is through the use of instrumentation such as a combustible gas indicator or CGI.

Natural gas is approximately 1/3 as light as air and has a vapor density of 0.6-0.7

Unlike liquefied petroleum gas or propane, which is heavier than air, **natural gas is lighter than air** and will rapidly rise and dissipate when released in the atmosphere. In an enclosure, natural gas can collect in high areas such as ceilings. As always, it is important to identify wind direction when dealing with a natural gas leak outside and to eliminate ignition sources as quickly as possible.

(SEE CHART BELOW)

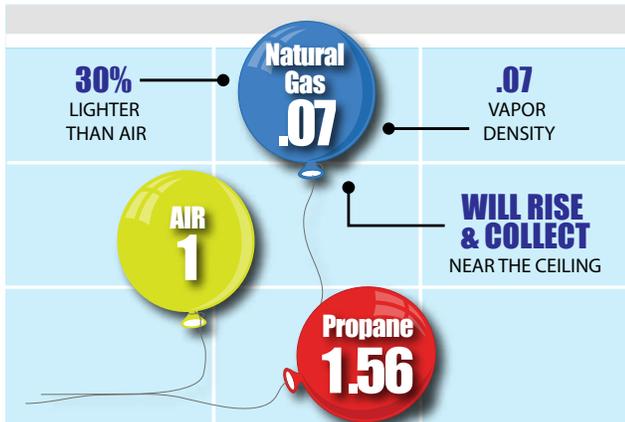
Natural gas has a flammable, or explosive range of 4% to 15% concentration in air

Natural gas can be a fuel source for combustion when combined with air in the proper proportion and exposed to an ignition source. When concentrations are below 4% the mixture is too lean to burn. Conversely when concentrations are above 15% the mixture is too rich to burn. When natural gas concentrations are within the flammable range elimination of ignition sources is paramount. (SEE CHART BELOW)

Natural gas has an ignition temperature of 1,200° F

Anything that can create a spark may cause a fire when exposed to natural gas at certain concentrations. Possible ignition sources include pilot lights, matches, static electricity, cigarette lighters, highway flares as well as sparks from tools, doorbells, cell phones, pagers, flashlights, heating systems, garage door openers, electric motors, switches and vehicle engines.

NATURAL GAS PROPERTIES



NATURAL GAS GAS-AIR MIXTURE

%	WILL IT BURN?	WHY/WHY NOT?
LESS THAN < 4.5%	NO	TOO LEAN (too much air, not enough gas)
4.5% - 15%	YES	PROPER MIXTURE
MORE THAN > 15%	NO	TOO RICH (not enough air, too much gas)



The following exercise is presented as a tool to enhance preparation for the response to a pipeline emergency. Please feel free to use this for a tailboard safety or shift meeting.

“ _____ Fire respond to a natural gas line break near the
STATION intersection of _____ and _____
ROAD ROAD
Operate on Fire Ops 1.”

So here we go, another “typical” gas leak call... or is it?

Upon arrival the scene is anything but typical. A contractor working with a backhoe has hit an 8-inch natural gas high pressure main pipeline operating at 250 lbs. of pressure and caused a significant leak. Heavy morning traffic has come to a standstill making response to the scene almost impossible.

As you approach the incident site, you hear an almost deafening roar that sounds like a jet engine and realize this isn't a “routine” cut distribution service line. As you begin to size-up the scene, you discover that one of the contractor employees who was standing near the backhoe at the time of the incident, has sustained serious injuries and appears unconscious.

_____ (name of) School, located _____
(proximity to the incident site) has 500 students that have arrived and are beginning to start the school day. As you further assess the scene you are advised the wind is 6 to 8 miles per hour from the _____ (direction of the school) Numerous bystanders are gathering at the scene as law enforcement units from the _____ (agency) arrive on the scene to assist. In addition, dispatch has just advised that a serious multi-motor vehicle accident (MVA) has occurred further _____ (direction) on _____ (road), resulting in several injuries.

A reporter and camera crew from WBTV Channel 3 is on the scene and wants to conduct a live interview with someone from the fire department. A reporter with the Herald Newspaper has also arrived, and is requesting an interview. You have established a Command Post in a safe location _____ (direction) of the incident site, confirmed notification of York County Natural Gas Authority and started developing strategic objectives.

ITEMS FOR DISCUSSION

- 1. What are your priorities based on Life Safety, Incident Stabilization, and Property Conservation?
- 2. What directions do you give your Operations Section Chief?
- 3. What resources do you need that aren't currently available on the scene?
- 4. What would your Incident Command System structure look like for this type of incident?
- 5. How do you coordinate with the York County Natural Gas personnel that arrive on the scene?

CONTACT US:

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Emergency..... (866) 201-1001
Non-Emergency..... (803) 323-5304
Websiteycnga.com

Patriots Energy Group
Emergency..... (888) 609-9858
Website patriotsenergy.com

Chester County Natural Gas Authority
Non-Emergency..... (803) 385-3157
Websitechestergas.com

Lancaster County Natural Gas Authority
Non-Emergency..... (803) 285-2045
Websitelcnngasc.com

SC811
In York County(888)721-7877
Website SC811.com

National Pipeline System
npms.phmsa.dot.gov

USDOT Pipeline Safety
primis.phmsa.dot.gov/comm/EmergencyOfficials.htm



Training Opportunities for your Department



York County Natural Gas Authority personnel are available to provide training to local emergency responders on how to safely handle a pipeline emergency. Please feel free to contact us for more information or to schedule a training session.

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