

Gas safety training exercises

National Grid Group Training Exercise #3

This training reflects industry best practices but does not replace your organization's SOPs/SOGs. This material can be utilized to provide a perspective as you reflect on emergency operations and can be collaboratively incorporated into your operating procedures as they are updated.

Training Officer:
Print pages 4 and 5 and hand them out to all participants so they can follow along for the discussion.

Gas Leaks

Gas odor from an unknown source

Your crew has been alerted to respond to a call reporting an odor of natural gas. As you sign on the air responding to the incident, the dispatcher relays that there have been two callers reporting an odor of what they believe to be natural gas near Main and Market streets. The dispatcher further notes that one caller believes the odor is coming from a street drain or a manhole.

As a crew, please work together to address the following response-related questions. Upon arrival, you encounter the situation displayed in the photo.



Training Officer Guidance | Questions and Answers

Relevant sections of the *National Grid Natural Gas Safety Training Certification Program* are listed below the answers where appropriate. Answers without a corresponding reference reflect fire service best practices or are derived from National Grid internal response protocols.

Initial response questions to consider

1. What instructions should be given to the reporting parties who smell gas in the area?

The dispatcher should advise callers who smell gas to evacuate the immediate area but remain on scene to provide the arriving fire officer with specific information relative to the location of the odor.

Please see Module 4, *Arriving on the scene* (implied reference)

2. As you respond to the incident, what notifications would you consider?

You should ensure that the dispatcher has contacted National Grid or the local natural gas utility and requested an immediate response. In addition, your investigation of this situation should include other municipal and public safety agencies including

the Police Department and possibly the Department of Public Works (DPW).

Please see Module 4, *When to call*

3. As you approach the scene, how do you position your apparatus?

Approach the incident scene cautiously. Stage apparatus upwind, away from the hazard area at a safe distance. If a leak is confirmed, a staging distance of 330 feet, if possible, is recommended. Park safely out of the collapse zone of involved structures, and away from manhole covers, gas valve covers and storm sewer grates.

Please see Module 4, *Arriving on the scene*

4. What actions will you take to ensure the safety of the public and to determine the scope of the situation?

Upon arrival, you should obtain as much information as possible from reporting parties. You should then clear the area immediately around the point the odor was last detected. Personnel in full PPE should be utilized to initiate air monitoring. If air monitoring reveals a concentration of natural gas, additional precautions should be implemented.

Please see Module 4, When to call, Arriving on the scene

5. Other than a gas leak, what are potential causes of an odor of this type?

Several substances could potentially generate an odor that may be perceived as Mercaptan (the odorant added to

natural gas). These could include chemicals improperly released into the atmosphere or sewer system, the release of sewer gas and decomposing proteins.

Additional information

After a search of recent incident reports, your dispatcher indicates that this is the third call of this nature in the general area during the previous week. The dispatcher informs you that the other two calls resulted in the detection of an unknown odor that dissipated over time.

Questions as your crew arrives on the incident scene

1. What is a danger associated with the update provided by your dispatcher?

Often a report of this nature can produce an assumption that the same situation exists as it fits previous patterns of experience. This can cause personnel to become complacent. It is essential that personnel fully investigate the report of any odor of gas as a possible natural gas leak. Additionally, responders should be aware that the odor of Mercaptan may be filtered out by sand or gravel or masked by other odors. Never rely on the presence or absence of a natural gas odor to determine whether a gas leak exists.

2. Based on the description above, what is your size up of this situation?

This appears to be a recurring situation in the area. It should result not only in the response of National Grid but the development of a strategy to respond to future events. This should include the request that National Grid periodically monitor the area and place sufficient resources on standby to respond if a leak is detected.

3. Should you shut down traffic on Main and Market streets based on this situation?

Traffic should be directed away from your immediate operating area. Traffic should only be rerouted if air monitoring and/or air-free readings reveal the presence of natural gas.

4. Using your knowledge of the characteristics of natural gas, where will the gas collect as it emerges from the street?

Natural gas is lighter than air and will rise and disperse if it is not confined. A hazard occurs when gas is confined or presents in sufficient volume that its concentration lies within the flammable/explosive range of 5 to 15 percent gas in air.

Please see Module 4, Arriving on the scene, Safeguards

5. How would you deploy your crew and other responding resources?

Crews should obtain the most information possible from reporting parties through a direct interview. Personnel in full PPE and SCBA should then initiate air monitoring of the area and determine an appropriate exclusion zone that will ensure the safety of the public and provide a sufficient operating area for fire service personnel.

Please see Module 4, Arriving on the scene

6. What should you NOT do as you address the situation?

Never enter a manhole, sewer or any other type of underground vault. Eliminate any potential sources of ignition, such as vehicle engines, flame-producing devices and anything that could produce sparks. Use intrinsically safe radios and flashlights. If you must approach the incident, do so with the minimum amount of personnel, each wearing full Personal Protective Equipment (PPE) and Self-Contained Breathing Apparatus (SCBA). Monitor the atmosphere using multiple monitors, if it is safe to do so. Maintain a safe standoff distance from buildings with gas.

Please see Module 4, Arriving on the scene

7. What actions do you take prior to the arrival of National Grid personnel?

Prior to the arrival of National Grid personnel, you should identify the location of the odor, clear the immediate area, initiate air monitoring and create an appropriate exclusion zone.

Please see Module 4, Arriving on the scene

Additional information

National Grid has arrived on the incident scene and together with your crew has deployed combustible gas indicators (CGIs) to monitor the area. These CGIs have not registered any readings and the odor seems to have dissipated.

Questions regarding working with National Grid

1. Upon the arrival of National Grid personnel, how do you integrate them into the command structure?

When it comes to controlling the leak, National Grid personnel are the experts and their efforts should be fully supported. Given the need to integrate operations, this is an opportunity to build relationships and form a unified command with National Grid personnel.

Please see Module 4, Working with us

2. What can you expect from National Grid?

National Grid personnel will respond to assist you, mitigate the leak, render the area safe and then restore service. In general, National Grid personnel will report their presence to the incident commander (IC), coordinate action and work together to resolve the situation. Based on policy, National Grid personnel are responsible to do the following:

- Inform the IC of the arrival of National Grid Personnel and offer assistance. National Grid recognizes that an emergency incident is under the purview and control of the IC and will offer assistance.*
- Inquire if the gas source has been controlled, provide guidance as it relates to the gas distribution system and*

mobilize resources to control the leak.

- Offer to work with the IC as a non-governmental organization (NGO) in the incident command system. Typically, this is referred to as developing a unified command.*
- Secure gas to the compromised gas infrastructure and work to eliminate ignition sources in proximity to the leak.*
- Upon request from the IC, work to detect combustible gas in structures that may have been impacted by the event.*
- Work with the fire department to ventilate structures, manholes, vaults and other sealed spaces or areas that have accumulated gas.*
- Coordinate with other utilities whose infrastructure has been impacted.*
- Shut off all services fed by the compromised gas infrastructure.*
- Provide public information to the media.*
- Restart gas service impacted by the event once the compromised infrastructure has been repaired and the isolated area has been re-pressurized.*

Questions regarding evacuation

1. What would cause you to initiate an evacuation of the area?

If air monitoring revealed the presence of natural gas in the area, an evacuation zone of at least 330 feet should be established and traffic should be diverted to minimize ignition sources and create an appropriate exclusion zone.

Please see module 4, Outdoor leak response

2. How do you implement the evacuation, and where do you direct evacuees to go?

Utilize public safety personnel to notify occupants within the hazard area that they will need to relocate. Once the area is clear, emergency vehicles, safety cones and/or barricades and barrier tape can be effectively utilized to mark the boundaries of the exclusion zone.

Questions relative to the control and termination of the incident

1. How should you proceed?

As this has been a reoccurring event, you should meet or have a command officer meet with representatives from National Grid to develop a collaborative approach to the management of future incidents.

2. How would you terminate this incident?

As you are ready to clear apparatus from the incident scene, complete the following:

- Double check that there is no odor or detectable level of natural gas present in the area. This includes checking beyond the area where the gas was detected to ensure the entire area is safe.*
- Clear the area, informing your dispatch center of the specific location and your findings.*
- Develop a complete and detailed National Fire Incident*

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2. As you respond to the incident, what notifications would you consider?
3. As you approach the scene, how do you position your apparatus?
4. What actions will you take to ensure the safety of the public and to determine the scope of the situation?

5. Other than a gas leak, what are potential causes of an odor of this type?

Additional information

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