

13. When responding to a gas related fire, first thing you should do is to put out the fire with your fire extinguisher.

True

False

14. The proper way to secure a blowing gas line is to _____.

- a. Install a suitable leak clamp
- b. Isolate the leaking section of pipe
- c. Use the HALT tool
- d. All of the above could be correct

15. You are called out to an underground gas leak on March 17th, and told you probably have a "B" leak. You should _____.

- a. Evacuate the structure and any others within 70 feet of where the leak is
- b. Secure the leak and reclassify it as a "C" leak
- c. Make certain the leak is less than 2%, within 20 inches of ground level and can be vented.
- d. All of the above are correct

16. Your crew has been called to an incident involving a car crashing into a regulator station and gas is blowing. You should _____.

- a. Move the car so there is no ignition source
- b. Control the gas flow by using approved methods
- c. Use your fire extinguisher to put the fire out if it is burning
- d. Turn all of the above ground valves to the off position
- e. All of the above

17. An "H" leak is _____.

- a. Reportable to Federal DOT
- b. Hydrogen that has entered into the gas piping system
- c. Only reportable to the State Office of Pipeline Safety
- d. An evacuation

18. An "A" leak _____

- a. Requires immediate attention
- b. Is a 100% stable reading on a CGI.
- c. Is any detectable amount of gas in a building
- d. Is a stable reading of 2% or more gas in a duct system
- e. All of the above

Emergency Responses (Module 62)
Written Evaluation Answers
DO NOT DISTRIBUTE

(Question 1 worth 6 points)

1. List in order of importance the priorities of an emergency.
- | | |
|----------|-------------------------------|
| <u>5</u> | a. Public relations |
| <u>2</u> | b. Employee safety |
| <u>1</u> | c. Customer and public safety |
| <u>6</u> | d. Economic considerations |
| <u>3</u> | e. Property damage |
| <u>4</u> | f. Customer inconvenience |

2. Which of the following would not be a consideration to minimize hazards during a natural gas related emergency?
- a. Evacuation of affected buildings
 - b. Checking DC millivolts prior to controlling the flow of gas**
 - c. Preventing accidental ignition
 - d. All of the above are necessary

(Question 3 worth 3 points)

3. Put a check mark by those items which would be considered system emergencies.

- | | |
|-------------|--|
| <u>X</u> | Escaping Gas |
| <u>X</u> | Fire in a regulator station |
| <u> </u> | 120 volts AC at the meter |
| <u>X</u> | Gas in building with less than 2% reading on CGI |
| <u> </u> | Less than 10 ppm H ₂ S in gas |

4. The outer perimeter of a gas leak is no closer than 13 feet away from a building on April 7th. The gas concentration is 3%. This would be classified as a(n) ___ leak.

- a. "A"
- b. "B"
- c. "C"**
- d. "H"

5. Abnormal qualities of gas "always" result in blowing down the affected portion of the pipeline.

True

False

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- d. Is a stable reading of 2% or more gas in a duct system
- e. **All of the above**

QUALIFICATION METHODS

Indicate how knowledge, skill and ability will be evaluated

COVERED TASK NAME: Emergency Response

MODULE: 62-Emergency Response

WRITTEN

Demonstrate knowledge (80% passing score) #

OBSERVATION – Performance on the Job

Demonstrate knowledge

Demonstrate skills

Demonstrate abilities

OBSERVATION – Simulation *

Demonstrate knowledge

Demonstrate skills

Demonstrate abilities

Evaluators need to ensure missed questions are discussed and there is understanding of the subject matter including any AOCs related to the question.

* When simulation is used, evaluator shall note any employee limitations that may interfere with covered task and refer this evaluation to the Training Department for special consideration.

Performance of task includes abnormal operating conditions

When skill and/or ability are not required, explain: _____
Knowledge base task. Individual AOC's are covered with each specific task.

Emergency Response

Abnormal Operating Condition

Expected Responses

Natural gas leak detected underground:

Retrace path to determine whether natural gas or other combustible fumes have been located. Determine percentage concentration of natural gas. Determine boundaries of the leak. Report class A and H leaks to Dispatch for immediate action. Report all leaks on the appropriate form. Notify supervision, dispatch or gas control so qualified individual can make necessary repairs to correct abnormal operating condition.

Natural gas detected in a duct system:

Gas registering a stable reading of 2% or more in a duct system requires evacuation of any houses or buildings on both sides of the street within 70 feet. Evacuation will begin at manhole where 2% or more reading is obtained and continue from manhole to manhole until gas free area is found in any direction from the original reading. Notify supervision, dispatch or gas control so qualified individual can make necessary repairs to correct abnormal operating condition.

Natural gas leak detected in a structure:

Do not operate electrical devices, telephone or any other device that could be a potential source of ignition. Instruct occupants to vacate premises, shut off gas at meter. Shut off electrical service only at outside breaker. Check breaker box with backpack prior to shutting off service. Notify supervision, dispatch or gas control so qualified individual can make necessary repairs to correct abnormal operating condition.


Instrument malfunction:

Each instrument used for leak detection and evaluation should be operated in accordance with the manufacturers operating instructions and should be periodically "checked" while in use to insure that the recommended voltage requirements are available. Instruments should be tested daily or prior to use to insure proper operation, to insure that the sampling system is free of leakage, and to insure that the filters are not obstructing the sample flow. In the event the instrument fails to perform satisfactorily, refer to the manufacturers operating manual for troubleshooting.

Abnormal Quality or pressure of gas:

If high or low pressure conditions exist or quality of gas does not meet minimum quality requirements, and operator is qualified to correct abnormality, refer to Section V of the Emergency Plan for specific information; otherwise refer to supervision for instruction.

PHYSICAL PROPERTIES OF NATURAL GAS




NATURAL GAS NATURAL GAS BLEND

- b 90% Methane
- b 10%
 - Propane
 - Ethane
 - Pentane
 - Butane

WELL HEAD 2 TYPES OF WELLS

- b Sweet gas
 - Requires very little or no maint.
- b Sour gas
 - Hydrogen Sulfide - Very Toxic
 - Sulfur Dioxide when burned



PHYSICAL PROPERTIES ODORLESS

- Questar adds a 50/50 mixture of butyl mercaptan and thioephene. 3/4 pounds per million cubic feet of gas.
- International odorant
- Can become separated
- This odorant is heavier than natural gas. Specific gravity 3.1

PHYSICAL PROPERTIES ODORLESS

- The odor is combustible and is consumed in the flame.
- This odor can be disguised by another stronger odor. This is why we never trust our noses or use any open flame to detect leaking gas.
- Proper detection equipment - LIF8800, CGI

PHYSICAL PROPERTIES NON-TOXIC

- The only way to make natural gas lethal is to completely displace all the oxygen in a space or have uncontrolled ignition of the gas.
- Tests
 - animals: 2 days/ 8 hrs. - 80% gas
 - people: 2 hrs. - 25% gas
- Propane is non-toxic
- Butane is slightly toxic


PHYSICAL PROPERTIES LIGHTER THAN AIR

- This is what makes natural gas safe. Gas will rise.
- Natural gas has a vapor density of .60, or two-thirds the density or weight of air.
- Provide a means for it to escape.

PHYSICAL PROPERTIES LIGHTER THAN AIR


- b The following gases are heavier than air and must be physically removed.
- Propane has a vapor density of 1.56
 - Butane has a vapor density of 2.06
 - Gasoline is 2-4 times the density of air

REQUIREMENTS FOR COMBUSTION FUEL

Fuel in
a gaseous
state 

- b All fuels must be in a gaseous state before they can burn. Solids do not burn.
- Natural gas is in a gaseous state beginning with a temperature of -260°F.
 - Propane is in a gaseous state above -44°F.
 - Butane is in a gaseous state above 33°F.

REQUIREMENTS FOR COMBUSTION AIR

Fuel in
a gaseous
state  Proper
Amount
of Air

- b Natural gas
- A ratio of 1 cubic foot of natural gas to 10 cubic feet of air = complete combustion.
- b Propane
- A ratio of 1 cubic foot of propane gas to 24 cubic feet of air = complete combustion.

LIMITS OF FLAMMABILITY

- b Natural Gas
- 5 to 15 % Gas
 - mixed with 95 to 85 % air
- b Propane
- 2.1 to 10.1% Gas
 - mixed with 97.9 to 89.9% air

COMPLETE COMBUSTION

- b 4 Products
- Carbon Dioxide - CO_2
 - Nitrogen - N_2
 - Water Vapor - H_2O
 - Heat