

Natural Gas Emergencies

Purpose

To protect the personnel within the department, and citizens from the hazards involved in a natural gas emergency. The Incident Commander is to use his/her best judgment in safeguarding occupants, personnel, and exposed structures.

Characteristics of Natural Gas

Natural gas is composed of hydrocarbons. Its composition is 85% to 90% methane with the remaining 10% to 15% made up of other gases such as ethane, propane, butane, and non-flammable gases nitrogen and carbon dioxide. It is odorless, colorless, non-toxic and non-poisonous, lighter than air, and combustible. Odorant (mercaptan) is added to give natural gas its odor. It does not support life and is a simple asphyxiant. The vapor density is approximately .60. The flammability range is 4.5% to 14.5%. The ignition temperature is between 1100° and 1200°.

Potential Ignition Sources

Whether indoors or outdoors, sources of ignition must be recognized in order to avoid a dangerous situation with the presence of natural gas in the air. Some potential ignition sources are:

- **Doorbells** – Always knock
- **Electrical Switches** – Do not turn on or off
- **Open Flames** – Cigarettes, cigars, candles, pilot lights, gas lights etc.
- **Communication Equipment** – Telephones, portable radios, cell phones, and pagers that are not explosion proof
- **Sparks** – Two metallic surfaces rubbing, hitting, or striking together, mechanical equipment capable of producing sufficient heat and/or spark such as an automobile or any internal combustion engine
- **Static Electricity** -From plastic pipe, or from dragging feet across carpet

Personal Protective Equipment

Full protective gear including S.C.B.A. will be worn at incidents involving natural gas.

Apparatus Placement

When possible, apparatus is to approach from upwind and be positioned an adequate distance from the leak until additional information has been obtained and the type of gas identified. Do not position apparatus over sewers or manholes.

Combustible Gas Indicators (CGI)

Most LEL (Lower Explosive Level) combustible gas indicators sound an audible alarm at 10% LEL. 10% LEL equates to 1/2 % natural gas. If an LEL CGI alarms or reads 10% at any time in the **FREE AIR** (unconfined area) in any part of the building, evacuate the building. CGI readings of 60% LEL or higher in the **FREE AIR** or 3% natural gas must be considered very serious and the hot zone should be expanded. Sample the atmosphere in both high (ceilings) and low (basements) areas. Be sure to sample areas such as those above dropped ceilings, crawl spaces, sanitary sewer outlets, electrical receptacles in walls and around any conduits that may enter the building.

Procedure

Whenever natural gas is or may be involved at the scene of an emergency, **Notify Laclede Gas Company Immediately**. Laclede personnel are instructed to report to the Incident Commander at the scene upon arrival, and can assist in the evaluation of the problem, and recommend actions to take. The use of Combustible Gas Indicators are the only way to safely check suspected areas.

Natural Gas Escaping Outside

Notify Laclede Gas Company Immediately if natural gas is escaping from the ground, an excavation or from an open pipe outside the building. Establish a hot zone around the location. Eliminate potential ignition sources. Check the surrounding buildings for the presence of natural gas. Consider closing windows and shutting down fresh air intakes if there is a concern the escaping gas could enter any structures. Fog streams can redirect gas vapors, and such streams may be used to keep gas away from danger spots. Use care to keep unnecessary water out of the excavation pit, which will impede the work of utility crews.

NOTE: Special attention should be given to those circumstances where gas can more easily migrate, such as a boring incident, service pulled out of a main or gas in sanitary sewers. CGI checks shall be made in basements of adjoining areas. AmerenUE and SBC may also need to be contacted in order to help eliminate ignition sources if needed.

Natural Gas Burning Outside

The best method for controlling an outdoor natural gas fire is to shut off the gas flow. In most cases, the emergency responder should **NOT** attempt to put out the fire before the gas flow can be stopped. **Burning gas will not explode**. Establish a hot zone. Wet the surrounding combustibles if there is danger of ignition. If it is necessary to extinguish the gas fire before flow can be stopped, use dry chemical at the base of the flame and wet the surrounding area with fog to prevent re-ignition. **Gas valves on mains should only be operated by Laclede personnel**. Curb valves on gas services may be closed by firefighters who have been trained in the use of curb keys. **Never** turn a valve back on again after it has been shut off, leave this to Laclede Gas Co.

Natural Gas Escaping Inside A Building

When natural gas is found in a building **Notify Laclede Gas Immediately**. The Incident Commander should determine if the gas can be safely shut off inside the building, at the meter or at the curb valve. Ventilate the building by opening doors and windows from the highest level first if possible. **DO NOT** operate electrical switches or telephones in the affected area. Eliminate all potential sources of ignition.

NOTE: Be aware of any electric power interruptions to residences or commercial buildings that may have UPS or Uninterrupted Power Supply systems or any other type of emergency power backup systems.

The surrounding area should be secured. No one should reenter the building until it has been determined that the building is free of gas. Laclede Gas personnel will need to have access to any buildings that may have been evacuated. The evacuated occupants may be informed of this and police should be on the scene to help with security.

Natural Gas Burning Inside A Building

Notify Laclede Gas Immediately if gas is burning in a building. Establish a hot zone. The incident Commander should determine if gas can be shut off inside the building, at the meter or curb valve. It is possible in certain industrial or commercial areas that turning off the gas might seriously interrupt important and costly industrial processes or create further hazards. Laclede personnel can help evaluate the best procedure to shut down the gas flow. If the gas supply cannot be safely shut off, keep the surrounding combustibles wetted with hose stream until Laclede emergency crews can control the flowing gas.

Gas In Manholes, Vaults, Sewers

Utilize Laclede Gas Co. to assist in the identification of the type of gas involved, such as gasoline vapors, sewer gas, cable-burnout gases, etc. Do not extinguish flames if gas is ignited. Establish a hot zone around the opening. Keep bystanders away and eliminate potential ignition sources. Always test the atmosphere of a manhole, vault or sewer, first with a gas detector and then for oxygen deficiency, carbon monoxide, and hydrogen sulfide, before anyone enters. **DO NOT** enter if dangerous concentrations of gases or vapors are known or suspected to be present. Vent manholes or sewers by removing their covers until you reach manholes or sewers free of gas. Wet the manhole cover and rim before removing covers to prevent a spark. Check the basements of adjoining buildings for any evidence of gas migration. If found, ventilate by opening doors and windows from the top. Eliminate sources of ignition.

Plastic Gas Lines

Polyethylene plastic gas lines may be orange or yellow in color, varying in size from 3/8 to twelve inches and used with pressures up to 60 psi. This piping may be susceptible to buildup of static electricity during a gas leak and should never be plugged or capped off by emergency responders.

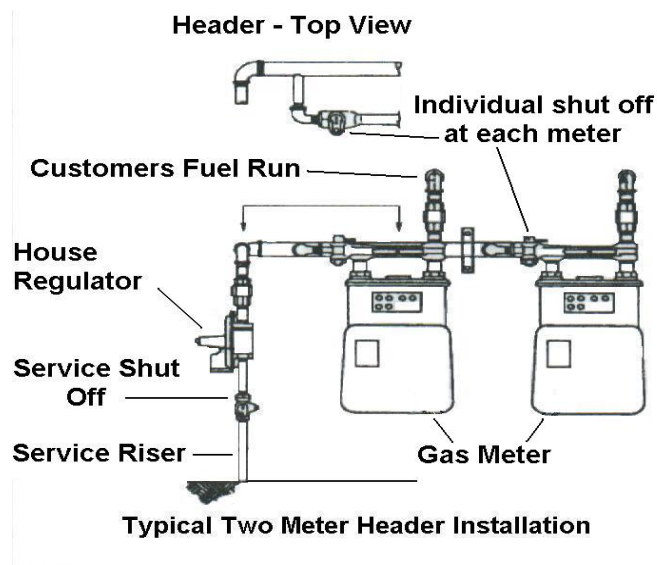
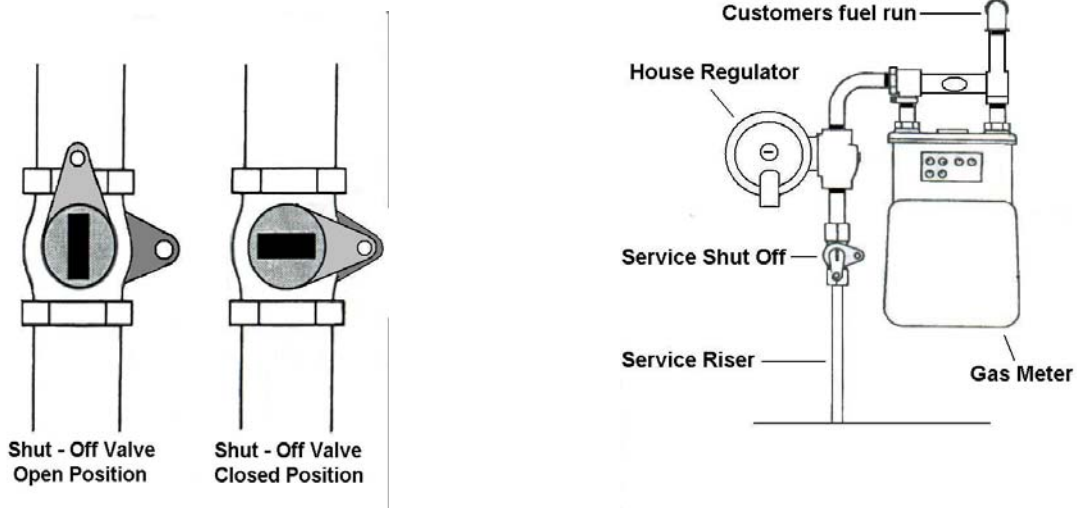
When Natural Gas Is Involved:

- **DON'T** ... forget to notify Laclede Gas Company.
- **DON'T** ... allow open flames, smoking, or spark producing devices if the presence of a combustible gas is suspected.
- **DON'T** ... ring doorbells, operate electrical switches, land and cell phones or pagers in areas where a combustible gas is suspected.
- **DON'T** ... open a closed valve at any time.
- **DON'T** ... close any gas valves in the street.
- **DON'T** ... plug a regulator vent or relief valve venting natural gas to the atmosphere.
- **DON'T** ... with the exception of saving a life, make any effort to extinguish a burning gas flame. (Use spray only to protect surrounding exposures).
- **DON'T** ... fill an excavation with water.
- **DON'T** ... attempt to plug or cap a blowing plastic gas main.

Gas Meters And Regulators

Each natural gas service is equipped with a meter(s), which serve the customer(s). Each meter set has a shut-off valve located on the gas supply side of the meter. If there are multiple meters at one location, there will also be a master shut-off valve near the inlet of the meter header. Meter sets will contain the appropriate number and types of regulators to reduce the incoming pressure to the desired delivery pressure, usually $\frac{1}{4}$ psig.

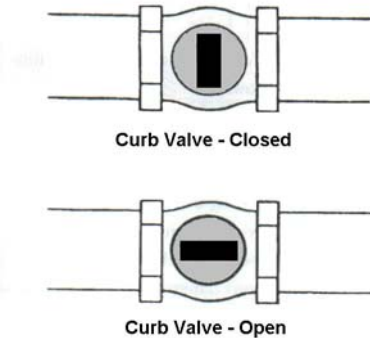
In an emergency, the meter shut off valve may be closed by using a wrench to turn it one-quarter turn, so that the ear on the valve stem is crosswise to the pipe.



Curb Valves

Public buildings such as schools, churches, commercial buildings, as well as inside residential meters have additional shut-off valves located in “curb boxes” found near the street or sidewalk. The box covers are usually secured with a five-sided nut to prevent tampering. In an emergency, a curb box may be opened by means of a five-sided wrench. The valve itself may be closed using a long-handled “valve key” to turn it one-quarter turn. The gas is off when the valve “ear” is crosswise to the pipe. Only Laclede Gas personnel should turn on gas valves that have been shut off.

CURB VALVE COVER



Main Valves

Normally located in the street, these valves control whole sections of the gas main system and **SHOULD NEVER BE CLOSED**, even during an emergency, except by Laclede Gas personnel. Closing these valves may shut-off essential service elsewhere or create further hazards.

MAIN VALVE COVERS



REMEMBER, AS A GENERAL RULE :

VALVES IN BOXES SECURED BY A FIVE-SIDED NUT MAY BE SHUT DOWN DURING AN EMERGENCY.

MAIN VALVES IN UNSECURED BOXES SHOULD NEVER BE SHUT DOWN DURING AN EMERGENCY.

Damaged Pipelines, Mains And Services

If you are notified or otherwise become aware that a pipeline has been damaged by excavating equipment, explosion or other forces no matter how small, notify Laclede Gas Company. They will be able to assess the extent of the damage and take action to make the area safe.

Press Relations And Publicity

In an emergency involving natural gas, refer inquiries from the press and other interested parties to a gas company representative, if available. The gas company representative will be able to clarify technicalities and provide other information necessary for complete and accurate reporting of the emergency. Proper identification of the type of “gas” is of vital importance. If the emergency involves natural gas be sure to identify it as “natural gas”. If gasoline, propane, chlorine gas, sewer gas, etc. is involved, always carefully identify the type. Laclede Gas Company’s objective in working with press, TV and radio representatives during an emergency is the same as that of emergency personnel – to be helpful and cooperative in determining the cause of an emergency and to accurately report the cause to the public.