



control of **Control** *of* **Natural Gas**

natural in gas **Emergency Situations**



800 North Third Street
Suite 301
Harrisburg, PA 17102
717.901.0600
www.energypa.org



PRESS RELATIONS AND PUBLICITY

In an emergency involving natural gas, refer inquiries from press representatives 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 and if the emergency involves natural gas, be sure to identify it as natural gas. If gasoline, chlorine gas, sewer gas, etc., is involved, always carefully identify the type.

The gas company's objective in working with press, television 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 report the cause accurately to the public.

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This booklet is designed as a guide for fire fighters, police and emergency personnel, who are called to fires where gas is in use, or are called to buildings in which gas odors are supposedly present. Procedures in this book are guidelines, and in certain situations these procedures cannot always be followed as presented.

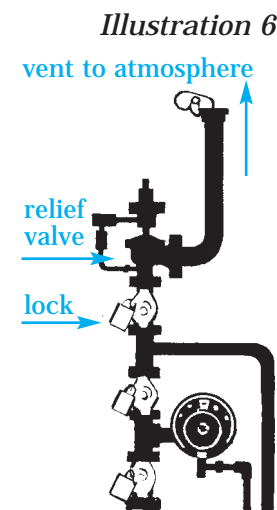
Since emergency response personnel may arrive at the scene before gas company personnel, it is in your best interest to know in advance how to eliminate or control potential hazards.

This booklet contains a brief background of natural gas, its characteristics, and how the gas company delivers this fuel to the communities it serves. Basic suggestions are provided on fighting a fire where gas facilities are involved, either as a precautionary measure or when gas is actively contributing to a fire. Fires from any cause may be worsened by gas flowing from broken pipes or other facilities near a fire.

There is also basic information on gas piping and meter and regulator installations made in accordance with accepted standards.

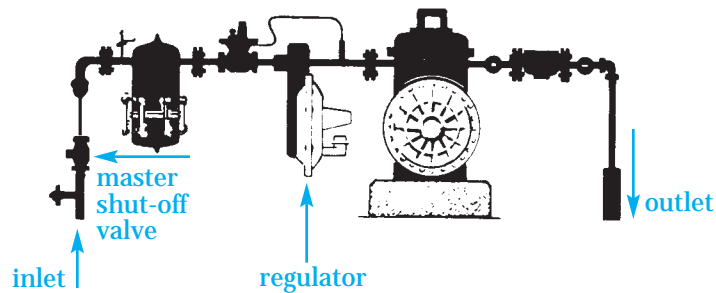
External valves may be used to protect gas systems from accidental overpressuring. Illustration 6 shows a typical relief valve installation. The relief valve may be recognized as the one connected to a discharge pipe extending upward usually with a rain cap on the end. Most companies install a standard shut-off valve below the relief valve with a lock to keep it in an open position. The lock is to keep unauthorized persons from closing the valve and rendering the relief valve ineffective.

A relief valve venting gas to the atmosphere is performing its proper function. It should never be shut off or restricted until a gas company employee arrives and makes corrections. Anyone who sees or hears a relief valve venting gas to the atmosphere should call the gas company immediately, but should not take action which would keep the relief valve from venting gas to the atmosphere.



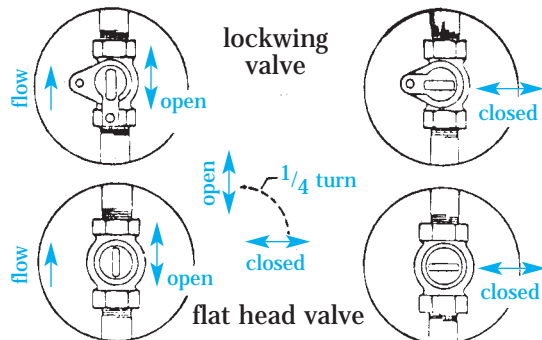
The meter facilities shown in Illustration 5 are used for large industrial or commercial gas users. The meter facilities are located outside the building or inside the building, or in their own separate buildings.

Illustration 5



TYPICAL GAS SERVICE VALVES

Depicted below are typical valves commonly used in gas service lines. These valves are illustrated in both the open and closed positions.



Gas utility employees are not fire fighting experts, but because of their day-to-day working knowledge of gas and its manner of distribution, they may impart vital and helpful information which can be utilized if and when the need arises.

Safety at all times is a watchword of the gas industry. This is certainly a major reason why the industry has earned an enviable position in safely delivering natural gas to customers and helping the public to enjoy the benefits derived from gas and gas appliances.



Natural gas comes mostly through interstate pipelines from gas fields in various regions of the United States and Canada. It is tapped from vast formations of underground deposits made by nature millions of years ago. Gas is transported from the wellhead to the local gas company through high pressure pipelines. The local gas company distributes natural gas through an underground system of mains, usually in city and town streets from which service lines are laid to its customers. A common method of city distribution is through low pressure systems. In this case, the gas goes through a meter on the customer's premises, and is immediately ready for use. Gas also may be distributed at intermediate or high pressures. In these systems, pressure is reduced

through a regulator and meter before it is introduced into the customer's piping system.



Illustrations 3 and 4 show meter facilities for a multiple dwelling building. There is a master control valve which shuts off the gas to all meters in the manifold, and there is also a valve on the inlet side of each individual meter. This makes it possible to shut off gas to an apartment where an emergency situation exists without interrupting service to units in other parts of the building. The number of the apartments served may appear on the front of or on a tag attached to the particular meter.

Illustration 4: medium pressure

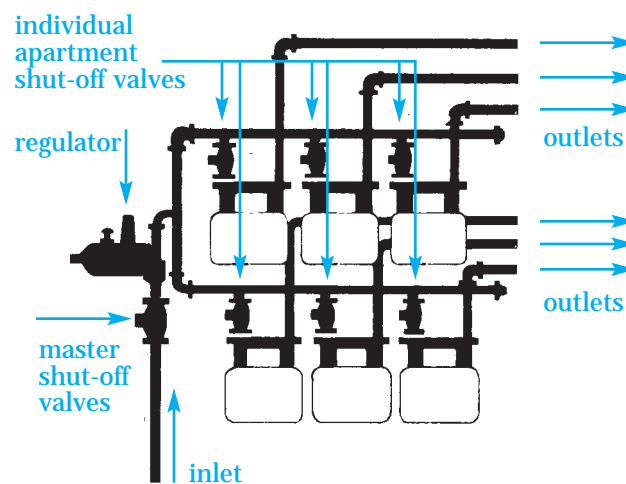


Illustration 2 is a typical meter facility on a medium pressure system. This installation differs from the first illustration in that a regulator is included to reduce the pressure of the incoming gas from pounds per square inch to low pressure of about one quarter per pound per square inch.

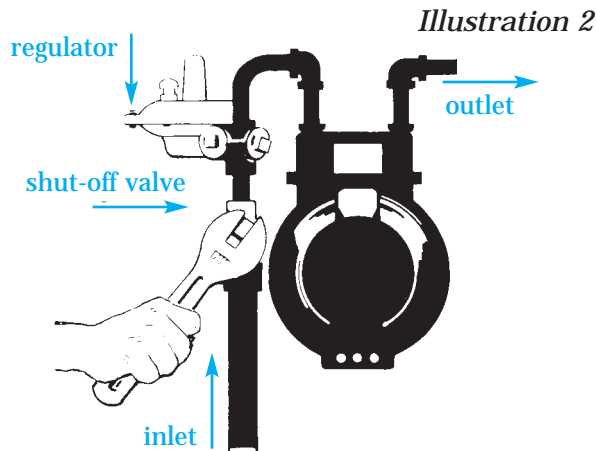
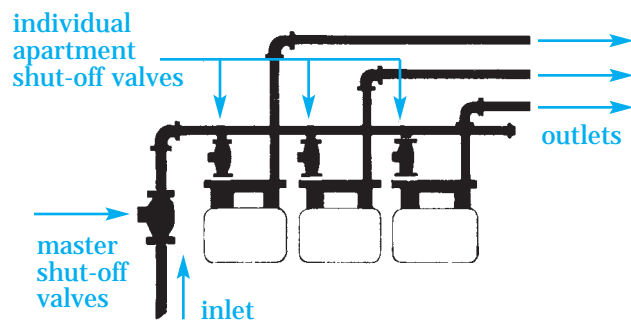


Illustration 3: low pressure



Natural gas may be used for heating, air conditioning, cooking, water heating, refrigeration, incineration, clothes drying, pool heating, and many other commercial uses at hotels, restaurants or schools, etc. Gas is also used for thousands of industrial purposes ranging from heat treating metals and baking finishes to the minute needs of an experimental scientist.

Natural gas is composed principally of methane. It is nontoxic, and only through the displacement of oxygen can it pose any asphyxia hazard. It is lighter than air and thus rises if it escapes. As it comes from the cross country pipelines, it is usually odorless, but chemicals are added either by the pipeline company, the local utility, or both, which gives it a strong detectable odor. Natural gas has a heat content of about 1,000 Btu per cubic foot. Under confinement and with a source of ignition, it has an explosive range of approximately four to 16 percent gas in air at atmospheric pressure and temperature. Natural gas is detectable either by its characteristic odor or by gas detection instruments.

All gas utilities have safety programs which include leak detection and correction.

BACKGROUND

Such programs are part of a utility's daily operational activities. Street openings and manholes in business areas are surveyed and tested for gas leakage. Methods include hydrogen flame ionization sampling, barhole tests, vegetation and pressure drop surveys, and suds testing of exposed pipe and fittings.

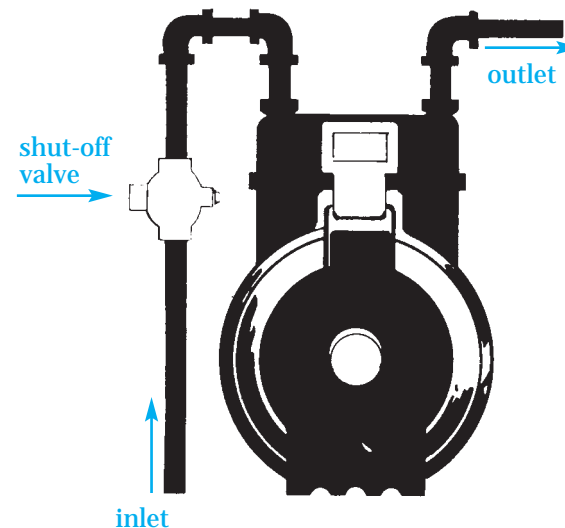
The gas company is aware that the industry has an important responsibility to deliver its fuel and services to the public so that it may be utilized safely. The company maintains “around the-clock” emergency services, and two-way radios are widely used for quick communication.

Installation of gas mains, services and related facilities must conform to rigid requirements. A code was initially developed by the industry in cooperation with the American Gas Association, the American National Standards Institute and other nationally recognized organizations. Since 1971, the gas industry has been regulated under a federal code that tracks the original standards.

Illustration 1 is a typical meter facility on a low pressure system which has operating pressures in the piping on both sides of the meter at about one-quarter pound per square inch. This application is sometimes used for single dwelling homes or small commercial buildings and is usually located outside in basements or under houses.

The typical shut-off valve can be operated (opened or closed) by turning it one-quarter turn (90 degrees).

Illustration 1



The diagrams on the following pages illustrate various types of piping, meters and regulators that are most common in gas service facilities with the usual location of appropriate inside shut-off valves designated by arrows.

Because conditions vary, it is best to rely on your local gas company for more specific information. The company will be glad to describe any particular distribution system and provide you with additional facts you might need to know.

This booklet does not attempt to cover problems that might arise from the facilities of cross country natural gas pipelines or other gas suppliers, such as bottled gas companies. These companies are also anxious to cooperate with emergency organizations and have their own special equipment and people to place at your disposal.

**REMEMBER, NATURAL GAS
UNDER CONTROL IS HARMLESS.**

The following illustrations were provided courtesy of the Southern Gas Association.

Certification by nationally recognized laboratories is given to appliances which meet rigid specifications.

The gas industry has encouraged municipalities to adopt the National Fire Protection Code No. 54 (American National Standards Institute Code Z223.1) as a standard for the safe installation of gas appliances and gas piping. Copies of this code booklet are available to builders, plumbers and other installers.



Upon the first indication that gas may be involved, NOTIFY THE GAS COMPANY IMMEDIATELY. Give the location and any details, whether inside or outside a building, your name and emergency organization.

Gas company personnel are instructed to report to the fire officer in charge at the scene upon arrival. If several gas company employees are at the scene, the gas company will appoint a coordinator to work with the fire official in charge. In all cases, they can assist in the evaluation of the problem and action insofar as their service or any further services of the gas company are necessary.



Here are some quick DO'S and DON'TS:

- DO** Notify the gas company immediately.
- DON'T** Allow open flames, smoking or spark-producing devices in either open or closed areas if the presence of unignited combustible gas is suspected.
- DON'T** Ring doorbells, operate electrical switches or two-way radios, use the telephone, or start automobiles and other motorized equipment in areas where the presence of unignited combustible gas is suspected.
- DON'T** Prematurely extinguish flames of escaping burning gas.
- DO** Use water spray to protect surrounding combustibles.
- DON'T** Enter manholes or vaults if gas is known or suspected to be present.
- DO** Eliminate all unnecessary personnel and bystanders from the immediate area.
- DON'T** Turn on any gas valve.

or suspected to be present, unless it is necessary to protect life. In these cases, use proper safety equipment, such as life lines and self contained breathing equipment.

4. Natural gas may migrate; therefore, check adjoining buildings for evidence of gas seepage. If found, alert occupants and evacuate. Shut off open flame devices, and do not operate electrical switches or two-way radios. Ventilate buildings by opening the doors and windows, and verify that the gas company has been notified if natural gas is involved.
5. If the gas in the vault or manhole becomes ignited, emergency personnel should not attempt to extinguish the fire unless it presents a hazard to life. In this case, the flame may be extinguished by using dry chemical at the base. Wet surrounding area with fog to prevent reignition.

If unignited gas is escaping from the ground, from an excavation or from an open pipe outside a building:

1. NOTIFY THE GAS COMPANY IMMEDIATELY.
2. Clear and barricade a safe area surrounding the location. Bystanders and all non-essential personnel should be prohibited from this area. Restrict or reroute all traffic until gas company personnel can bring the gas flow under control.
3. Eliminate all possible sources of ignition.
4. Natural gas may migrate. Check surrounding buildings, cellars in particular, for any presence of gas odors. Continue checking buildings in the area until no natural gas is detected.



BURNING GAS OUTSIDE OF A BUILDING

The best method of controlling an outdoor gas fire is to shut off the gas flow. In most cases, emergency personnel should not attempt to put out the fire while gas is still escaping; however, the following precautions should be taken:

1. NOTIFY THE GAS COMPANY IMMEDIATELY. Never operate a gas valve in the street or sidewalk. Underground gas valves should be operated by gas company personnel only. Turning the wrong valve or opening a closed valve could further endanger life or property.
2. Evacuate the immediate area and barricade it.
3. Spray the surrounding combustibles if there is danger of ignition.
4. If, in order to protect life, it is absolutely necessary to extinguish a natural gas fire before the gas flow can be stopped, use dry chemical at the base of the flame and wet surrounding area with fog to prevent reignition.

DAMAGED PIPELINES, MAINS AND SERVICE LINES

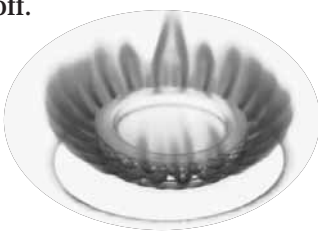
If you are notified or otherwise become aware that a pipeline, main or service line has been damaged by excavating equipment, explosion, landslide, subsidence or other forces, NOTIFY THE GAS COMPANY IMMEDIATELY. The gas company will be able to assess the extent of the damage and can take appropriate action to make the area safe.

GAS IN MANHOLES, VAULTS AND SEWERS

1. NOTIFY THE GAS COMPANY IMMEDIATELY to assist in the identification of the type of gas involved, such as gasoline vapors, sewer gas, cable-burn-out gases, etc. The gas company will also assist in tracing the source.
2. Rope off or barricade a safe area around the vault, and keep bystanders away. Prohibit smoking, and eliminate all possible sources of ignition.
3. Do not enter manholes, vaults, or sewers if dangerous concentrations of gases, vapors or oxygen deficiencies are known

A APPLIANCE FIRES

In some rare cases, gas may burn out of control at an appliance. Usually, it is enough to shut off the appliance at its own shut-off valve. If you cannot locate the valve, then shut off the gas flow at the meter supplying the residence. NOTIFY THE GAS COMPANY IMMEDIATELY and explain to the serviceman upon arrival what you have done. Remember, never turn on any valve once having shut it off.



C GAS DETECTION

Odors may come from many sources, including petroleum products such as gasoline, marsh gas, sewer gas, industrial gases, etc. Natural gas has a distinctive odor added by gas companies, and it can be recognized by smell. There are many types of gas detecting instruments. Some emergency organizations are equipped with gas detecting instruments. In any event, in the investigation of possible gas leakage of any sort, NOTIFY THE GAS COMPANY IMMEDIATELY. Gas company personnel are equipped and trained for gas detection. A gas detector when properly used, is a positive means of detection.

When escaping gas is found or suspected in a building:

1. NOTIFY THE GAS COMPANY IMMEDIATELY.
2. Clear the building of occupants (do not use doorbells, two-way radios, electric switches, etc. while notifying occupants.)
3. Shut off gas to the building at the service valve located near the meter.
4. Disconnect other utilities at a point away from the building. Contact local utilities to implement these procedures.
5. Ventilate the building by opening doors and windows.



BURNING GAS INSIDE OF A BUILDING

GAS PIPING OR METERS EXPOSED TO FIRE

When escaping gas is burning in a building:

1. NOTIFY THE GAS COMPANY IMMEDIATELY.
2. If possible, determine if the gas can be shut off at the meter.
3. Remember, in certain industrial or commercial areas, turning off the gas might seriously interrupt important and costly industrial processes, or create further hazards. Reliance on the gas company and or property owners to help evaluate the best procedure for eliminating the gas supply may be the best action.
4. If the gas supply cannot be safely shut off, wet surrounding combustibles.
5. Never turn on a gas valve. This should be done only by gas company personnel.



If it appears that the inside gas piping or meter may be endangered by fire:

1. NOTIFY THE GAS COMPANY IMMEDIATELY. They are best equipped to shut off the supply of gas.
2. If safety requires immediate action, the fire official in charge may proceed by shutting off the gas supply at an inside or outside valve — if it can be done without exposure to undue hazards.
3. If gas piping or a meter has been exposed to fire, notify the gas company so their personnel may inspect the facility to ensure safe operation in the future.

