

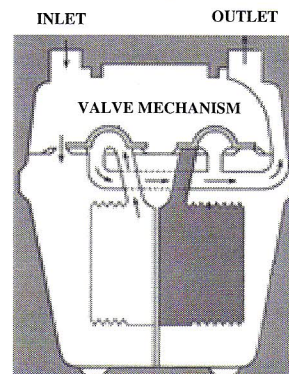
Job Name: _____ Job Site Location: _____

Date: _____ Start Time: _____ Finish Time: _____ Foreman/Supervisor: _____

Topic 557: Natural Gas Safety

Introduction: The physical properties of natural gas include color, odor, and flammability. The principle ingredient in natural gas is methane which is colorless, odorless, and highly flammable. Liquefied natural gas can be used to power fork lifts, manlifts, heaters, and certain types of lighting. The safest way to transport natural gas is to use pipelines. The use of trucks, trains, or barges to transport natural gas is more dangerous and expensive than pipelines. While natural gas pipelines are made of steel, most distribution lines that deliver the gas from the main line to the customer have been made out of plastic since the 1980's which are easy to lay and do not corrode. Following are safety guidelines for working with natural gas:

- **Low pressure natural gas systems** must employ an approved hydraulic back pressure valve at every point where gas is withdrawn from the piping system. A shut-off valve must be installed at the inlet of each hydraulic valve.
- **Natural gas systems that deliver gas** through pipes at a pressure in excess of one pound per square inch (1 psi) must be equipped with approved service regulators, check valves, or hydraulic seals. These must be employed at every point where gas is withdrawn from the piping system. A shut-off valve must be installed at the inlet of each hydraulic seal, regulator, or check valve. Gas for use with equipment not requiring oxygen must be withdrawn upstream of the piping protective devices.
- **Station outlets must be equipped** with a detachable outlet seal cap that is secured in place. The cap must be used to seal the outlet except when a hose, regulator, or piping is attached. Station outlets may terminate in pipe threads to which permanent connections are to be made, such as to a machine. When the station outlet is equipped with a detachable regulator, the outlet must terminate in a union connection that complies with the standard connections for regulator outlets.
- **Natural gas hoses must** be easily distinguishable from other supply hoses. The contrast may be either by different colors or by surface characteristics that are easily distinguishable by the sense of touch. Natural gas hoses must not be interchangeable with other supply hoses. Hoses having more than one passage must not be used. Red is generally accepted as the color to use for a gas hose. All hoses that are used to carry natural gas or any gas substance which may ignite or enter into combustion, or be in any way harmful to employees must be inspected at the beginning of each work shift.
- **Hoses which show signs of severe wear** or damage must be tested to twice the normal pressure at which it is normally subjected. A defective hose or a hose in doubtful condition must not be used. Hoses showing signs of leaks, burns, worn places, or defects rendering them unfit for further service must be repaired or replaced.
- **Gas cocks or valves must** be provided at points outside of all buildings where they are readily accessible for shutting off all gas supplies in case of an emergency. When the smell of gas is detected, or when gas can visibly be seen leaking, immediately extinguish all flames and cigarettes in the area. Do not use electrical switches, electrical devices, or telephones. Evacuate the area and report the gas leak emergency to 911 or other appropriate emergency services as soon as possible. Use phones that are located a safe distance from the leak.
- **The primary dangers** created by liquefied gas are fire, explosion, carbon monoxide poisoning, asphyxiation, and extreme cold. When a gas is liquefied, the pressure can increase rapidly as the temperature rises. Heating can come about from natural sources such as the sun. Under normal circumstances, a relief valve on the storage cylinder will release gas in a controlled manner to prevent the cylinder from exploding due to over-pressurization. When a cylinder or valve is not properly maintained and rapid pressure build-up occurs due to exposure to fire or other sources of extreme heat, a cylinder failure and subsequent explosion can occur.
- **Always make sure** that the cylinder or relief valve is not damaged in any way. Damaged cylinders should never be used. Cylinders with damaged relief valves must not be filled until the valve is replaced. Always store liquefied gas cylinders out of direct sunlight.
- **A properly filled liquefied gas cylinder must** not be completely full of liquid. Some space must remain in the cylinder to accommodate expansion and contraction due to normal heating and cooling. A correctly filled cylinder will retain the gas under normal heating and cooling conditions.
- **Inspect gas cylinders often** because they could become damaged from impact, or become corroded over a period of time. Keep your equipment in good condition. It is no guarantee that the tank is safe, because a gas supplier is willing to fill it.
- **Liquefied gas is heavier than air**, so when it leaks it will spread along the lowest areas from, and around the source. A clearly visible fog of gas will often be seen when there is a leak. Be aware that ignitable mixtures can spread beyond the immediate area.



BELLOWS GAS METER



Conclusion: When a gas leak is detected, or when a hazardous equipment failure occurs in the system, the gas supply company or a qualified and trained technician with the correct tools will be required to perform the repairs. Always utilize these safety guidelines when working with natural gas.

Work Site Review

Work-Site Hazards and Safety Suggestions: _____

Personnel Safety Violations: _____

Employee Signatures:

(My signature attests and verifies my understanding of and agreement to comply with, all company safety policies and regulations, and that I have not suffered, experienced, or sustained any recent job-related injury or illness.)

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

These guidelines do not supercede local, state, or federal regulations and must not be construed as a substitute for, or legal interpretation of, any OSHA regulations.