

4.14 Natural Gas Incidents

Scope- Fire Department units may encounter natural gas in a variety of situations and incident types, each presenting a different set of hazards and problems. The following guidelines present an approach which will be applicable in the majority of situations, but do not replace good judgment and experience in dealing with any particular incident. The guidelines should be used whenever situations are encountered that do not clearly indicate that a different approach is required to more safely resolve the hazard.

Natural gas is much lighter than air and will dissipate rapidly in the outside environment. Inside buildings, however, it tends to pocket, particularly in attics and dead air spaces. The flammable limits are approximately 4% to 15% in air. Natural gas itself is nontoxic, however, it displaces oxygen and can result in asphyxiation if in a confined space.

Burning natural gas should not normally be extinguished, since this would change the situation from a visible hazard with explosive potential. Fires should be controlled by stopping the flow.

Incidents At Which An Explosion Has Occurred- The first arriving engine company shall establish a water supply and assume command. Hand lines must be advanced for the protection of personnel and to combat the fire. Attempting to extinguish the burning gas will cause an invisible uncontrollable hazard if the flame is extinguished prior to shutting off gas. Once the source has been shut down, the fire can be extinguished as per the applicable standard operating guideline.

- A. Until it can be determined that the area is safe from the danger of further explosions, evacuate all civilians and keep the number of Fire Department and/or other emergency personnel (i.e. gas company personnel) in the area, to the minimum number necessary to stabilize the situation. Take a pessimistic point of view.
- B. Do not rely on gas odor. Use combustible gas indicators to check all suspected areas. Gas Company personnel have combustible gas indicators for this purpose. They are the experts in this field, use them.
- C. Check areas systematically using combustible gas indicator. Start close to the area of the explosion, and increase the area until readings indicate no detectable concentration. Map the readings for the affected area.
- D. If a gas concentration is encountered inside, adjacent to, or underneath any building, secure all possible sources of ignition in the affected area. Cut electricity from outside the affected area to avoid arcing. Ventilate buildings where gas is found.
- E. The use of ground probes is essential to evaluate potential underground leaks. When gas company personnel are on the scene, ground probe readings and locations must be coordinated. Time, location, and concentration should be recorded for each probe -subsequent readings should be taken from same holes when possible.
- F. Command shall provide for effective interaction between gas company personnel and the Fire Department. Gas company personnel are responsible for locating and eliminating leaks in the gas system. As industry specialists, they can provide Command with valuable assistance in the effective handling

of these incidents.

Incidents Involving A Reported Gas Leak -No Fire or Explosion- Calls for "odor of gas", "gas leak", "broken gas line", and similar situations may range from minor to potentially major incidents. All of these should be approached as potentially dangerous situations.

First arriving unit(s) should position upwind and uphill from the incident. Water supplies should be secured through the use of supply lines or by positioning the engine at a hydrant

With gas company personnel on the scene of an incident, it shall be standard procedure for the first Fire Department unit to provide effective interaction between agencies. Gas company personnel shall be responsible for locating and eliminating leak sources. Gas company personnel shall obtain a sufficient number of gas concentration readings, using their combustible gas indicators for Command to evaluate the hazard and take appropriate action.

In all cases, Fire Department units shall take whatever actions are necessary to provide for life and property safety.

The Hazardous Materials Plan should be used as a basic guide for these incidents. A minimum number of personnel should be allowed to enter the area to size up the situation while any additional units stage in a location out of the potentially dangerous zone.

- A. Evacuate any civilians in the area of escaping gas
- B. Attempt to locate the source of the gas and any shutoff devices available
- C. Gas leak situations within a building where the source of the leak is unknown or uncontrolled, the gas supply shall be shut off at the meter. Command shall ensure the meter is red-tagged and locked off until repairs are completed. This is most easily accomplished with the cooperation of the gas supplier at the scene
- D. If there is any indication of gas accumulating within a building, evacuate civilians from the structure and control ignition sources. Shut off electrical power from an outside breaker. Check for explosive concentrations with a combustible gas indicator if there is any suspicion of accumulation within a structure. Ventilate using positive pressure ventilation if necessary
- E. If gas company personnel must evacuate to shut off a leak, provide stand-by protection with a charged 1-1/2 inch or greater line and fire fighters in full protective equipment

Personnel Safety- All personnel working in the vicinity of a known or suspected gas leak shall wear full protective clothing. Personnel working in a suspected ignitable atmosphere (i.e. attempting to shut off a gas line) shall USE SCBA and shall be covered by charged protective hose line. The number of exposed personnel will be kept to an absolute minimum at all times.

A safety perimeter shall be established and maintained around any suspected gas leak. "Fire line" tape should be used to identify the safety perimeter when necessary.