Tempe Fire Department Policies and Procedures
Natural Gas Incidents
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NATURAL GAS INCIDENTS

Fire Department units may encounter natural gas in a variety of situations, each presenting a different set of hazards. The following guidelines present an approach which will be applicable in the majority of situations, but do not replace good judgement and experience in dealing with any particular incident. The guidelines should be used whenever these types of situations are encountered.

Natural gas is much lighter than air and will dissipate rapidly outside. Inside buildings, however, it tends to pocket, particularly in attics and dead air spaces. The flammable limits are approximately 3% to 15% in air. Natural gas itself is non-toxic. It does, however, displace oxygen and can result in asphyxiation if in a confined space. Flammable gas ranges and oxygen contents can only be determined by a combustible gas instrument. Have Alarm dispatch a HIRT unit for monitoring and advise Southwest Gas.

Burning natural gas should not normally be extinguished, since this changes the hazard from visible to invisible and creates an explosion hazard. Fires should be controlled by stopping the flow.

Explosion Has Occurred

Units arriving at the scene of a structure explosion must consider natural gas as a significant possible cause. Explosions have occurred in structures which were not served by natural gas. Underground leaks may permit gas to travel considerable distances before entering a structure through the foundation, around pipes, or through void spaces. In these circumstances the cause of the explosion may be difficult to determine. 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 personnel in the area to minimum.

A. Look for signs of a gas leak, i.e., smell of gas, flames coming through cracks in ground or around foundations, bubbling through puddles. Do not extinguish flames coming up through the ground.

B. Do not rely on gas odor. Odorant may be filtered out by passage through ground. Use combustible gas indicators to check suspected areas.

C. Check systematically using combustible gas meters. Start outside the area of the explosion and move into the area until readings indicate detectable concentration. Map the readings in 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 with explosion-proof equipment only.

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. These personnel should be directed to Command to report their arrival, etc. In most cases, a company officer with a portable radio will be required to supervise during their on-site operations.

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.

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 and/or HIRT 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. Assess the need for HIRT units. 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 shut-off devices available.

C. If the problem is an extinguished pilot light on an appliance, Fire Department personnel will not relight the pilot, but will advise occupant on possible dangers of lighting pilots, and will advise them to have the utility called as appropriate. In any other gas leak situation within a building, the gas supply shall be shut off and red-tagged 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 explosion-proof blowers to pressurize if necessary.

E. If gas company personnel must excavate to shut off a leak, provide stand-by protection with a charged 1-1/2" line and two firefighters in full protective equipment (including SCBA).

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 plug a leak in a gas line) shall use SCBA and shall be covered by a 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.