

# Springdale Fire Department

## Policy & Procedures Manual

### Volume 2 – Operations

#### Section 203 – Fire Operations

##### 203.9 – Natural Gas and Liquefied Petroleum Gas

Natural gas is lighter than air so it will rise and dissipate rapidly outside. Inside buildings however, the gas will pocket in attics, under stairs and in other dead air spaces. The flammable limits are approximately 3-15%.

Liquefied Petroleum Gas (LPG, or Propane) is stored and transported as a liquid under moderate pressure. At normal atmospheric pressure and temperatures the liquid readily vaporizes yielding a fire and explosion hazard similar to natural gas. LP gas vapor is heavier than air and will collect in low-lying areas inside or out. The flammable limits are approximately 2-9%.

All known and suspected gas leaks require metering and monitoring. The Rae Systems 4-gas meters include an LEL sensor which provides readings as a percentage of the lower explosive limit. This instrument will be used at all known or suspected leaks.

Ignitable gas incidents can occur in a variety of settings and circumstances. Each has unique qualities and considerations. The following guidelines should be followed when possible and prudent. Good judgment by the incident commander may prompt different actions as appropriate to the situation. In all cases, SFD units shall take whatever actions are necessary to provide for life and property safety.

- A safety perimeter shall be established and maintained around any suspected gas leak.
- Have dispatch contact the Gas Company to respond to natural gas incidents.
- Command shall provide for effective interaction between Gas Company and SFD personnel. 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 accompany the personnel and monitor activities during their on-site operations.
- 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.

#### **Reported Gas Leak—No Fire or Explosion:**

Calls for "odor of gas," "gas leak," "broken gas meter" and similar situations may range from minor to major incidents. All should be approached as potentially dangerous situations. A minimum number of personnel should be allowed to enter the area to size-up the situation while any additional assigned units stage in a location out of the potentially dangerous zone.

- Evacuate any civilians in the area of escaping gas.
- Attempt to locate the source of the gas and any shut-off devices available.
- Have dispatch contact the Gas Company to respond.
- If there is any indication of gas accumulating within a building, evacuate civilians from the structure and control ignition sources. Inform Battalion 1 of the situation and have dispatch request the Electric Company in addition to the Gas Company. Shut off electrical power from an outside breaker or have the Electric Company shut off power going to the structure. Do not operate switches or attempt to shut off breakers in the building. Check for explosion potential by metering all areas of the structure. Ventilate if necessary but do not use PPV fans that are not intrinsically safe as they will provide an ignition source.
- If the problem is an extinguished pilot light on an appliance, SFD 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 until repairs are completed. This is most easily accomplished with the cooperation of a Gas Company representative at the scene.
- If Gas Company personnel must excavate to shut off a leak, provide stand-by protection with a charged 1 ¾" hose line and two firefighters in full protective equipment (including SCBA).
- The use of plugs by Fire Department personnel should be evaluated as necessary to provide for life and property 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.
- Do not attempt to plug or otherwise mitigate a leak from a high volume, large diameter or high pressure line. Contact the appropriate utility and establish a safe perimeter. Check adjacent exposure structures for gas accumulation. Stand-by with a charged 1 ¾" hose line and two firefighters in full protective equipment (including SCBA).

### **Explosion Has Occurred**

Units arriving at the scene of a structure explosion must consider ignitable 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.

- Look for signs of a gas leak, (i.e., smell of gas, flames coming through cracks in the ground or around foundations, bubbling through puddles). Do not extinguish flames coming up through the ground. Do not rely on gas odor. Odorant may be filtered out by passage through ground. Use gas meters to check suspected areas.
- Check systematically using gas meters. Start outside the area of the explosion and move into the area until readings indicate a detectable concentration. Map the readings in the affected area.
- 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 to avoid arcing. Ventilate buildings where gas is found naturally or with intrinsically safe equipment only.

### **Burning Natural Gas or LP Gas**

- **Burning natural or LP gas should not normally be extinguished.** This changes the hazard from visible to invisible and creates an explosion potential. Fire should be controlled by stopping the flow of gas while exposures are protected.