

Purpose:

The purpose of this policy is to provide operational guidelines for San Diego County Fire Departments (FD) responses to natural gas incidents.

Policy:

This policy shall apply to all FD personnel responding to natural gas incidents.

Definitions:

B & B - Broken and Blowing: Terminology used to describe a natural gas line that is damaged severely enough to release gas on the supply side of the gas meter. The sound emanating from a broken natural gas line can range from a hissing sound to a jet engine type sound during release of natural gas.

ERG – Emergency Response Guide: – a Dept. Of Transportation (DOT) guide for reference on initial phases of a Dangerous Goods/Hazardous Material Transportation Incident. Excellent reference for initial actions/evacuation distances on non-transportation incidents involving Dangerous Goods/Hazardous Materials.

Gas Leak with Ignition (fire): Any natural gas leak or broken and blowing incident in which the natural gas has ignited resulting in a visible flame.

Leak: The escape of natural gas that has been detected by smell (odor), sound, or via a calibrated combustible gas detector generally very close to the source. This is a small volume escape of gas as contrasted with the “broken and blowing” gas leak which is a very large volume escape of natural gas.

LEL – Lower Explosive Limit

Natural Gas: A colorless, odorless, and highly flammable hydrocarbon consisting primarily of methane (97%) and ethane. The natural gas carried in the local utility gas lines is odorized to aid in detection of leaks. Natural gas is lighter than air with a specific gravity range of .60 to .70

PPE – Personal Protective Equipment

SDG&E - San Diego Gas and Electric. The local utility company responsible for the operation of the natural gas distribution pipeline system.

Procedure:

Standard Operating Procedures – Natural Gas Incidents

Odor of Natural Gas:

First arriving company officer will survey the scene and determine the need for any public safety measures or additional resources. Upon confirmation of a natural gas leak inside of a structure that cannot be immediately secured, establish incident command (IC) and upgrade the incident to a first alarm Residential/Commercial response.

- ❖ See Natural Gas Leak Inside of a Structure

SDG&E shall also be notified and assistance requested as needed.

Natural Gas Leak Inside of a Structure:

- First arriving company Officer will survey the scene and determine the need for any public safety measures or additional resources.
- The first actions should be to provide for the safety of the public through evacuations and the elimination of all possible ignition sources. In some cases, sheltering in place may be more advantageous. Refer to the ERG for initial actions and evacuation distances if needed. Isolate and shut off the gas leak if it can be done safely at the appliance or at the consumer gas meter.
- Request SDG&E for assistance if needed. NEVER turn the gas back on.
- Monitor the atmosphere with a calibrated combustible gas detector and determine the need for ventilation. Intrinsically safe mechanical blowers or natural ventilation is recommended due to the high flammability of natural gas.
- Do not enter a structure if the atmosphere is at 10% of the LEL (.45% natural gas) or greater.
- Personnel should be prepared for an explosion or fire. This includes full PPE with SCBA, and the deployment of hoseline(s).

Broken and Blowing Gas Line:

The first in company Officer shall establish incident command(IC). IC is responsible to survey the scene and determine the need for initial action and public safety measures. The first actions should be to provide for the safety of the public through evacuations. In some cases, sheltering in place may be more advantageous. Notify SDG&E that there is a gas line that is broken and blowing and request an ETA for the SDG&E supervisor and control crew.

Eliminate and keep all sources of ignition from the affected area, including fire apparatus and cell phones. Consider wind direction in this decision. Refer to the ERG for initial actions and evacuation distances.

Gas migration to another location beyond the point of escaping gas may be a possibility that can occur. The physical properties of the leaking gas must be known in order to plot the expected direction of travel of the gas. Also, if an underground leak is encountered, it is important to check all surrounding structures for gas that has traveled via underground channels. Utilize calibrated combustible gas detector(s) to aid in determination of location/migration options. Work closely with SDG&E.

If a Broken and Blowing gas incident is confirmed (i.e. gas line on the supply side is broken and blowing), the IC should:

- Attempt to identify the location of the break, isolate, deny entry and eliminate/control ignition sources.
 - Attempt to determine or estimate the size of the broken or damaged gas line (e.g. ½", 2", 12" etc.) and relay that information to SDG&E.
 - Upon arrival of the SDG&E personnel, the IC should establish communication with the SDG&E representative and maintain a close liaison with them until the gas leak is controlled.
 - Stage apparatus in a safe area, preferably upwind of the gas leak. Department personnel should be prepared for an explosion or fire. This includes full PPE with SCBA, and the deployment of hoseline(s).
 - NEVER attempt to control the escaping gas by shutting off valves on the supply side of the gas line. Supply lines may only be controlled by SDG&E. Methods of control of the gas will be discussed between the IC and the SDG&E representative.
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A calibrated combustible gas detector may be used to:

- Monitor the atmosphere around the gas break and establish the extent of the natural gas release using a reading of 10% of the LEL (.45% natural gas) or greater to determine the extent of the gas release.
- Monitor the atmosphere in adjacent buildings/areas using a reading of 10% of the LEL (.45% natural gas) or greater to determine whether the building/area should be evacuated.
- Determine the need to evacuate or shelter in place.

Sufficient FD resources determined by the IC shall remain at the scene until the gas break has been controlled by SDGE and it is determined that the area and buildings are safe to re-enter. The IC shall maintain communications with the SDG&E representative.

Broken and Blowing Gas Line with Ignition (Fire):

The first in company Officer shall establish incident command (IC). IC is responsible to survey the scene determine initial action for public safety measures. The first actions should be to provide for the safety of the public through evacuations. In some cases, sheltering in place may be more advantageous. Notify SDG&E that there is a gas line that is broken and blowing with fire and request an ETA for the SDG&E supervisor and control crew. Refer to the ERG for initial actions and evacuation distances.

Generally the gas flame is controlling the escaping gas; however, gas migration to another location beyond the point of burning gas may still be a possibility if there are multiple leaks. If an underground leak is encountered, it is important to check all surrounding structures for gas that has traveled via underground channels. Utilize calibrated combustible gas detectors to aid in determination of location/migration. Work closely with the SDG&E representative to determine control and mitigation options.

- The IC should establish and maintain communications with the SDG&E representative until the gas leak is controlled.
- Request law enforcement units for traffic control and/or evacuations.

- Fire apparatus should be staged in a safe location. Fire crews should identify water source(s) and deploy a sufficient number of charged exposure lines.
- NEVER attempt to control the escaping gas by shutting off valves on the supply side of the gas line. Supply lines may only be controlled by SDG&E. Methods of control of the gas will be discussed between the IC and the SDG&E representative.
- If the gas is burning on the supply side of the gas line, do not attempt to extinguish the gas burning from the leak. Instead, evacuate the affected area, protect exposures, and wait for SDG&E to control the source of the gas.
- If the gas is burning on the consumer side of the gas line (after the gas meter), shut off the gas at the gas meter (if possible), and conduct suppression operations as appropriate once gas has been secured at meter.
- In a scenario that FD resources cannot secure the gas leak, use a fog stream to keep surrounding combustibles wet until the gas can be controlled by SDG&E.
- If, due to extreme life hazard, the IC deems it necessary to make entry into an area involving a gas leak, the gas will be properly identified first. Then, entry should only be made with full PPE including SCBA, with a lifeline, and under the protection of flowing fire streams.