



Information for personnel involved in the design and construction of new gas piping systems.

At Pacific Gas and Electric Company, our top priority is the safety of our customers, our employees, and the public. Customers and gas piping contractors should also make safety their top priority when working with and around our natural gas system.

Although PG&E adds a distinctive odor to natural gas as a safety precaution to assist in the detection of leaks, PG&E would like to remind contractors of the importance of proper conditioning (“pickling”) of all new natural gas piping segments prior to customer in-service use.

If you suspect a gas leak, or if you strike, dent, or scrape a gas line:

- Alert others and move to an upwind location vacating the immediate vicinity of the gas leak
- Do not attempt to cut off the flow of gas—don’t squeeze or try to tie off the pipeline and stay away from pipeline valves.
- Call 911 to notify first responders.
- Contact PG&E at:
1-800-743-5000

Do not use anything that could be a source of ignition until you are a safe distance away. Vehicles, cell phones, matches, electric switches, doorbells, and garage door openers might create a spark.

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Safety Bulletin

Natural Gas Odor Fade



Natural Gas Odor Safety

Natural gas is mostly methane which is a colorless and odorless gas. An odorant is added by PG&E prior to delivery to endpoint customers to ensure customer safety.

There are several reasons why your sense of smell alone is not enough to alert you to the presence of natural gas. Some people may not be able to detect the odorant because they have a diminished sense of smell, or because they have smelled the same odor for too long or because the odor is being masked by other odors in the area.

There are also certain conditions that may cause the odor to “fade” so that it is not readily detectable. Odor fade, or loss of odorant, occurs when the odorant in the gas is diminished because of physical and chemical processes. These processes include adsorption, absorption, and oxidation.

Odor-fade on customer-owned piping usually occurs where a large volume of new piping is installed (i.e., large building such as a hospital) and there is no or low flow within the gas piping after installation.



Natural Gas Odor Adsorption, Absorption, and Oxidation

Adsorption occurs when an extremely thin layer of gas molecules adheres to a solid surface. This occurs predominately in new pipe installations, rather than in existing pipe, and is more pronounced in steel pipe but can also occur in plastic pipe. The longer and larger the pipe, the amount of mill scale and rust in the pipe, flow rate, and pressure all influence odor fade. For this reason, newly installed piping or in-service pipelines that have been hydrostatically tested, pigged or cleaned may require conditioning (“pickling”) to mitigate or prevent odor fade before that pipeline is placed into service.

Absorption occurs when liquids, that may be present in the pipe, absorb the gas odorant in the pipeline.

Oxidation occurs with the presence of rust and air, which can act to oxidize the odorant (mercaptan) into compounds that have less odor and are potentially undetectable.

There are many factors that impact the rate of odor fade, such as pipe material, pressure, pipe material condition, natural gas flow conditions, soil type, and soil composition. For example, when natural gas leaks from a buried pipeline, some, or all, of its characteristic odor can be absorbed as the gas passes through soil or fresh concrete. Soils with high clay content tend to remove and retain odor more effectively than sandy soil. Soils with high iron or metal content will chemically combine with the odorant to reduce the strength of the odor.

Natural Gas Safety Precautions

Adsorption, absorption, and oxidation can lead to natural gas becoming undetectable by smell. Following these natural gas safety precautions can help to prevent an adverse event from occurring when working with our natural gas system.

- DO NOT rely on your sense of smell alone to detect the presence of natural gas.
- DO NOT purge the contents of a gas line into an enclosed space. Any purging of a gas line should only be done in a well ventilated area or by venting the contents to the outside atmosphere. Ensure no powerlines or other energized energy sources are present.
- Always use gas detection equipment (combustible gas detector) during purging operations or when otherwise working on or around gas piping systems.
- In addition to the distinctive odor added to natural gas, the following signs may indicate the presence of a gas leak: a hissing, whistling or roaring sound near a gas appliance or pipeline; a damaged connection to a gas appliance; dead or dying vegetation in an otherwise moist area over or near pipeline areas; dirt or water being thrown in the air; a fire or explosion near a pipeline; and exposed pipeline after an earthquake, fire, flood or other disaster.
- Consult your local plumbing, mechanical or fuel gas code and/or your Department of Building and Safety for more information.
- When installing gas appliances or equipment, the manufacturer’s instruction manual should be followed in accordance with the local code.