

## Does your nose really know? Probably not !

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**What happened?** On June 9, 2009, a natural gas explosion damaged a meat processing factory in Garner, North Carolina. Three workers were killed when a section of the building collapsed. Four workers were critically burned, and 71 persons were sent to the hospital. Three firefighters were exposed to toxic anhydrous ammonia from the plant's refrigeration system. About 18,000 lbs (8165 kg) of ammonia were released and a large area of the plant was damaged.

**What went wrong?** While installing a new gas-fired water heater in a utility room, a worker from the water heater manufacturer was attempting to displace the air in the new gas line using natural gas. The purged fuel gas vented into the utility room. An exhaust fan provided some ventilation, but a combustible gas detector was not used to monitor the area. Personnel relied on their sense of smell to determine when the piping had been effectively purged of air.

**What was missed?** Some nearby employees smelled gas; others did not smell it. Personnel who noticed the gas odor were not concerned, thinking this was a normal part of starting the water heater. Manufacturer and company employees were not aware that the purging created a dangerous accumulation of natural gas in the utility room that exceeded the lower explosive limit (LEL). The utility room contained several potential ignition sources, including unclassified electrical devices, that could have ignited the gas.

### Did You Know?

- The ability to smell some gases fades when workers are exposed for some time. This is true of hydrogen sulfide (H<sub>2</sub>S) and the mercaptans used to odorize natural gas.
- The natural ability of individuals to detect certain odors varies widely and is affected by respiratory factors like having a cold the flu or Covid.
- Workers repeatedly exposed to chemicals experience a loss in odor detection ability due to odor adaptability and olfactory fatigue.
- The U.S. National Institute of Occupational Safety & Health (NIOSH) released a bulletin about odorant fade. (link: <https://www.cdc.gov/niosh/docs/2021-106/>)
- Flammable vapors or gases vented into a confined or congested area can accumulate and form a flammable gas cloud.
- Portable gas meters are the best method to detect and monitor the level of hazardous gases. Use the correct meter for the gas present in the area and calibrate gas meters before each use.
- Intermittent gas testing can detect a gas leak. However, continuous gas testing is the best way to monitor an area for hazardous gases.

### What Can You Do?

- Never rely on the sense of smell to detect hazardous gases – it is unreliable. If you do smell a hazardous gas, leave the area **and** notify your supervisor immediately.
- If hazardous gas purging is required, follow the purging procedure carefully. Verify that the hazardous gases are vented to a well-ventilated area.
- Before breaking or opening a line containing hazardous gas, conduct a hazard review or use the proper permit to ensure all required safety systems are used.
- Before using a gas meter, verify it has been calibrated by a competent person for the gas of interest and it is used according to the manufacturer's instructions.

**Use the correct gas meter ! Do not rely on your sense of smell to detect hazardous gases.**