COUNTY OF LOS ANGELES
Public Health

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December 1, 2015

TO: Each Supervisor

FROM: Cynthia A. Harding, M.P.H.
Interim Director

SUBJECT: **ALISO CANYON GAS LEAK INCIDENT AND POTENTIAL PUBLIC HEALTH IMPLICATIONS**

This is in response to Mayor Antononvich's request for the Department of Public Health to report on health effects related to the natural gas leak at the Aliso Canyon Storage Facility at the November 24, 2015 meeting of the Board of Supervisors.

Background

The natural gas leak at the Aliso Canyon Storage Facility began on October 23, 2015. Initial estimates suggested the repairs would be made within a few days. However, efforts to characterize and stop the leak are moving into their sixth week. Estimates are that it may take several months to complete the repairs and restore the community to prior conditions. The Department of Public Health (DPH) determined in a Preliminary Environmental Health Assessment (PEHA) (Attachment 1) that mercaptan emissions from the gas leak are causing health effects in some residents of the Porter Ranch community. On November 24, 2015, DPH summarized this assessment in a presentation to your Board. This memorandum provides a summary of the PEHA and emerging data from multi-agency efforts to monitor the natural gas leak.

Preliminary Environmental Health Assessment

From the onset of the incident, two primary chemicals of concern have been extensively evaluated: methane and mercaptans.

Methane is the primary ingredient in natural gas, and its levels are being monitored at the facility and in the Porter Ranch neighborhood. Methane is an odorless, flammable gas, but measurements to date in Porter Ranch have been substantially below flammability limits. Additionally, inhalation in this setting at the measured levels does not pose a significant health risk.

Mercaptans are odorants added to natural gas in small amounts to enable detection of leaks by smell. Reported health effects from Porter Ranch residents are consistent with low-level, acute exposure to mercaptans. As of December 1, 2015, DPH has received over 60 reports from Porter Ranch residents describing recurrent, short-term symptoms such as headaches, nausea, abdominal discomfort, dizziness, and respiratory irritation.

Due to continuing mercaptan odors in Porter Ranch, some residents have raised questions regarding the long-term health effects of exposure. Mercaptans at the levels detected to date are generally not expected to lead to long-term health effects. Known health effects of mercaptan exposures are based on data from occupational and industrial settings. Even in these settings, where mercaptan levels are often elevated, long-term health effects are generally not observed. Studies beyond the occupational and industrial settings are limited. However, a study conducted by the Centers for Disease Control and Prevention (CDC) in 2012 chronicled a 6-month leak of natural gas containing mercaptans in a residential setting.[1] Residents in a 2-mile zone reported similar symptoms to those in Porter Ranch. The CDC researchers noted recurrent short-term health effects, but did not observe long-term effects.

Evidence supports that the mercaptan odors in Porter Ranch will cause recurrent, short-term health effects in some residents as long as the odors persist. In addition, people with certain health conditions may be more vulnerable to these effects, or may experience an exacerbation of their conditions. As a result, DPH issued a directive (Attachment 2) to the Southern California Gas Company (SCGC) on November 19, 2015 to expedite their work to repair the leak and to provide temporary relocation for affected residents in the interim. As of December 1, 2015, approximately 998 households have inquired about relocation, with 282 households already relocated and 496 residents in the process of relocation.

Supplemental Assessment

Chemical exposures are typically classified as short-term or long-term. The risks associated with short-term exposures to trace levels of toxic emissions are typically low. As the duration of exposure increases, these trace levels can produce significant long-term health effects. As this incident has moved from a short-term exposure event resolved within days, to now a long-term event potentially lasting months, supplemental monitoring of potentially harmful trace chemicals is warranted.

Natural gas contains not only methane and mercaptans, but also small amounts of other compounds, including hydrogen sulfide, sulfur dioxide, benzene, toluene, ethylbenzene, and xylenes. DPH is working with the regulatory agencies to assess exposure to these other chemicals. The chemical of greatest concern is benzene, as it is a known human carcinogen. Further, radon gas naturally occurs in geologic formations and may potentially be released as a result of current repair operations. Radon is also a known human carcinogen, and a leading cause of lung cancer in

[1] Behrooz Behbod, MB, ChB, MSc, ScD; Erin M. Parker, MA, PhD; Erin A. Jones, BS, MD; et al. Community Health Assessment Following Community Health Assessment Following Mercaptan Spill: EightMile, Mobile County, Alabama, September 2012. J Public Health Management Practice, 2013, 00(00), 1–8.

non-smokers. Monitoring will need to be expanded to include these chemicals at both the Aliso facility and in the Porter Ranch community. DPH will continue to work closely with the regulatory agencies to characterize the levels of benzene, radon, and other trace gases in the Porter Ranch community.

Summary

Efforts to evaluate the nature and extent of the chemicals released by the natural gas leak at the Aliso Canyon facility are ongoing. As the repair efforts will take months to complete, expanded monitoring of emissions is necessary. DPH will continue to work with the regulatory agencies to assess both short-term and potential long-term health effects from these exposures. Further, DPH will use its authority to bring public health considerations to the forefront of decision-making. As significant new information comes to light, DPH will keep your Board informed.

If you have questions or need additional information, please let me know.

CAH:cr

Attachments

cc: Chief Executive Officer
County Counsel
Acting Executive Officer, Board of Supervisors

COUNTY OF LOS ANGELES DEPARTMENT PUBLIC HEALTH
BUREAU OF HEALTH PROTECTION
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PRELIMINARY ENVIRONMENTAL HEALTH ASSESSMENT
Natural Gas Leak from Aliso Canyon Storage Field, Southern California Gas Company

11-19-15

Note: On October 28, 2015, Los Angeles County Department of Public Health (DPH) was asked by the Office of Emergency Management to assess whether conditions at the subject site could be adversely affecting the health of nearby residents. Based on review of available environmental and health data, DPH has prepared this Preliminary Environmental Health Assessment.

Background: On October 23, 2015, a natural gas leak was discovered by Southern California Gas Company (SoCal Gas) at the Aliso Canyon Storage Field. The Los Angeles County Department of Public Health (LADPH) was notified on 10.28.2015. Odors have been affecting residents in the Porter Ranch area. LADPH attended a community meeting hosted by SoCal Gas. LA County Fire Department was also in attendance. The community meeting focused on exposure to methane gas, and mercaptans which are odorants added to natural gas. LADPH advised that methane gas itself poses little direct health threat upon inhalation in an outdoor space. Mercaptans, however, do pose a health threat to the community, including short-term neurological, gastrointestinal, and respiratory symptoms that may result from inhalation.

Problem Identification: Daily complaints are being received by LADPH from neighboring Porter Ranch residents regarding strong odors from the Aliso Canyon site. Over 200 odor complaints have also been logged by the South Coast Air Quality Management District. Common health complaints include nausea, dizziness, vomiting, shortness of breath, and headaches. Complaints are associated with the detection of sulfur-type odors. These health complaints are consistent with inhalational exposure to mercaptans. It should be understood that odors alone can be directly responsible for health effects, and that these health effects currently reported by area residents are consistent with exposure to mercaptans at the odor threshold. Correspondence from SoCal Gas on 11.18.15 indicates that the process to cap and repair this leak may take several months.

Potential Other Sources of Exposure: None.

Potentially Affected Population: The site is adjacent to residential properties in the Porter Ranch neighborhood. These exposures do not constitute an immediate danger to life, and permanent or long-term health effects are not expected. Daily, short-term symptoms are expected to continue, as long as the odors remain.

Assessment: SoCal Gas has been addressing the problem from a technological standpoint since its inception. SoCal Gas has indicated that the problem is very complex, and requires a complex solution.

SoCal Gas is not able to provide a timeline for the amelioration of odors in the residential areas. Odors are causing significant symptoms in some area residents. These symptoms are expected to persist as long as the odors persist. Solutions to protect the public's health include eliminating the odorous emissions, or offering temporary relocation assistance to affected persons in the area.

Recommendations:

(1) SoCal Gas should continue the abatement process to repair the leak. Odor elimination and public protection should be the highest priorities in the development of all mitigation plans.

(2) LADPH will issue a directive to SoCal Gas to continue the abatement of odorous emissions in the area on an expedited basis, and, in the interim, to offer free, temporary relocation to any area residents affected by odors from the Aliso Canyon site.

(3) The regulatory agencies should continue to explore appropriate interventions to expedite the characterization and repair the leak.

Cyrus Rangan MD FAAP FACMT

Dr. Cyrus Rangan, M.D., F.A.A.P., F.A.C.M.T.
Director, Bureau of Toxicology and Environmental Assessment

Angelo J. Bellomo, REHS, QEP
Deputy Director for Health Protection

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November 19, 2015

Bret Lane, Chief Operating Officer
Southern California Gas Company
555 West 5th Street
Los Angeles, California 90013

RE: NATURAL GAS LEAK AT ALISO CANYON STORAGE FIELD

Dear Mr. Lane:

The Los Angeles County Department of Public Health is issuing the following Public Health Directive to the Southern California Gas Company:

Southern California Gas Company should continue the abatement process to characterize and repair the subject gas leak, and eliminate odorous emissions, on an expedited basis in consultation with the appropriate regulatory agencies. All mitigation plans should cite public health protection as the highest priority.

In the interim, Southern California Gas Company is to offer free, temporary relocation to any area residents affected by odors from the Aliso Canyon site. Please find attached our Preliminary Environmental Assessment on this matter. If you have any questions, or need additional information, please let me know.

Sincerely,

Angelo J. Bellomo, REHS, QEP
Deputy Director for Health Protection
Los Angeles County Department of Public Health

AJB/

Attachment