Aliso Canyon Natural Gas Leak Disaster

On October 23, 2015, the largest methane leak from a natural gas storage facility in U.S. history was discovered by Southern California Gas Company (SoCalGas).
Vent Crater Caused by Well Kill Attempts

Methane Emission Estimates

Approximately 90,000 metric tons of methane was released from the well

Source: CARB
Common Symptoms Reported from Residents

- Headache or migraines
- Nausea and vomiting
- Nosebleeds
- Shortness of breath
- Chest tightness
- Dizziness
- Eye irritation
- Nose or throat irritation
- Cough
Symptoms Reported to Public Health by Distance to Well SS-25
Public Health Directive for Relocation

• Nov 19: Public Health issued a directive to SoCalGas to offer free, temporary relocation to any area residents affected by odors from the Aliso Canyon site

– Issued a Preliminary Environmental Health Assessment:
  • Odors are causing significant symptoms to some residents
  • Symptoms expected to continue as long as odors remain

• Followed by a supplemental directive in December to relocate schools in Porter Ranch
Agency Air Monitoring Locations

Cal-EPA, California Air Resources Board - http://www.arb.ca.gov/research/aliso_canyon/community_methane_monitoring.htm
Expanded Analytical List of Chemicals Tested in Outdoor Air at the Facility

Outdoor air monitoring results indicated that a complex gas mixture was emitted:

- Barium
- Copper
- Polycyclic aromatic hydrocarbons
- Benzene
- Cyclohexane
- Toluene
- Other volatiles: hexane, n-nonane, n-octane
Summary of Health Assessment During Gas Leak

• Sulfur odorant appeared to be responsible for the symptoms, based on available data and information from mercaptan study in Alabama.

• However, symptoms do not completely match those experienced by odorants alone and suggest some uncertainty about the cause.

• Data gaps in information for expanded list of chemicals during the early period of the gas leak.
After Four Months, SS-25 was Sealed and Relocated Residents Began Moving Back Home
Sharp Decrease in Community Methane Levels

One Day After Leak Control

[Graph showing methane levels before and after leak control]
Oily Residue Found in Community

• Frequent reports of “oily residue” on outdoor surfaces – e.g. cars, patio furniture, playgrounds, etc.
• Consists of long-chain hydrocarbons found in crude oil
• Aliso Canyon is a former oil reservoir -- oil liquid droplets from underground surfaced with the leaking gas
Public Health Assessment Response Activities

1. Health Effects Evaluation: Community Assessment for Public Health Emergency Response (CASPER), CDC method
   – Rapid 3-day door-to-door survey
   – Representative sample of Porter Ranch residents

2. Indoor Environmental Testing: Coordinated effort by multiple agencies and academic experts
   – Indoor Air
   – Household Dust
CASPER Health Study Results

• Households that reported symptoms:
  – Before leak was sealed: 81%
  – After leak was sealed: 63%

• Majority of households (61%) sought medical care for symptoms experienced after well was sealed

• Residents commonly report alleviation of symptoms upon leaving their homes, both before and after leak was sealed

• 41% of households reported smelling “gas-like” odors after leak was sealed

• 35% of households reported oily residue and another 12% didn’t know if they noticed oily residue
Indoor Exposure Evaluation Results

Household dust:
Metals in dust detected more often/higher concentrations in Porter Ranch homes than comparison homes
• Not expected to pose long-term health risk
• Could contribute to short-term symptoms reported
• Barium and other metals were used in drilling muds

Air sampling:
• Levels of chemicals in indoor air samples were similar between Porter Ranch homes and comparison homes
Public Health Recommendations

- Ventilate homes to flush out residual contaminants – run central fans and heating/ventilation/air conditioning (HVAC) units and open all doors, windows and large cabinets
- Clean all surfaces – use high efficiency particulate air (HEPA) filter vacuum and wet wipe hard surfaces
- Clean air ducts
- Change air filters
- Maintain air purifiers and change filters regularly
- Spot treat oily residue
- Launder clothing
Road to Community Recovery

Community members continue to report symptoms, though not as frequent as before, reflects concern about overall health status of people living near Aliso Canyon.

Continued need to provide public health support through:

1. Ongoing Environmental Monitoring
2. Health Surveillance Activities and Follow-up
3. Community Outreach
4. Long-term Health Study
Thank you