

Noxious Odors in Western Goleta

COMMUNITY MEETING

March 7, 2018



What is H₂S and what are its sources

Reference: Occupational Safety and Health Administration

Hydrogen sulfide is a colorless, flammable, extremely hazardous gas with a “rotten egg” smell. A person can smell it at very low levels, as low as .00047 ppm. The Recommended Exposure Limits (REL) is 10 ppm. At 100 ppm it is deadly.

It occurs naturally in crude petroleum, natural gas, and hot springs. In addition, hydrogen sulfide is produced by bacterial breakdown of organic materials and human and animal wastes.

Industrial activities that can produce the gas include petroleum/natural gas drilling and refining, wastewater treatment, coke ovens, tanneries, and kraft paper mills.

Hydrogen sulfide can also exist as a liquid compressed gas.

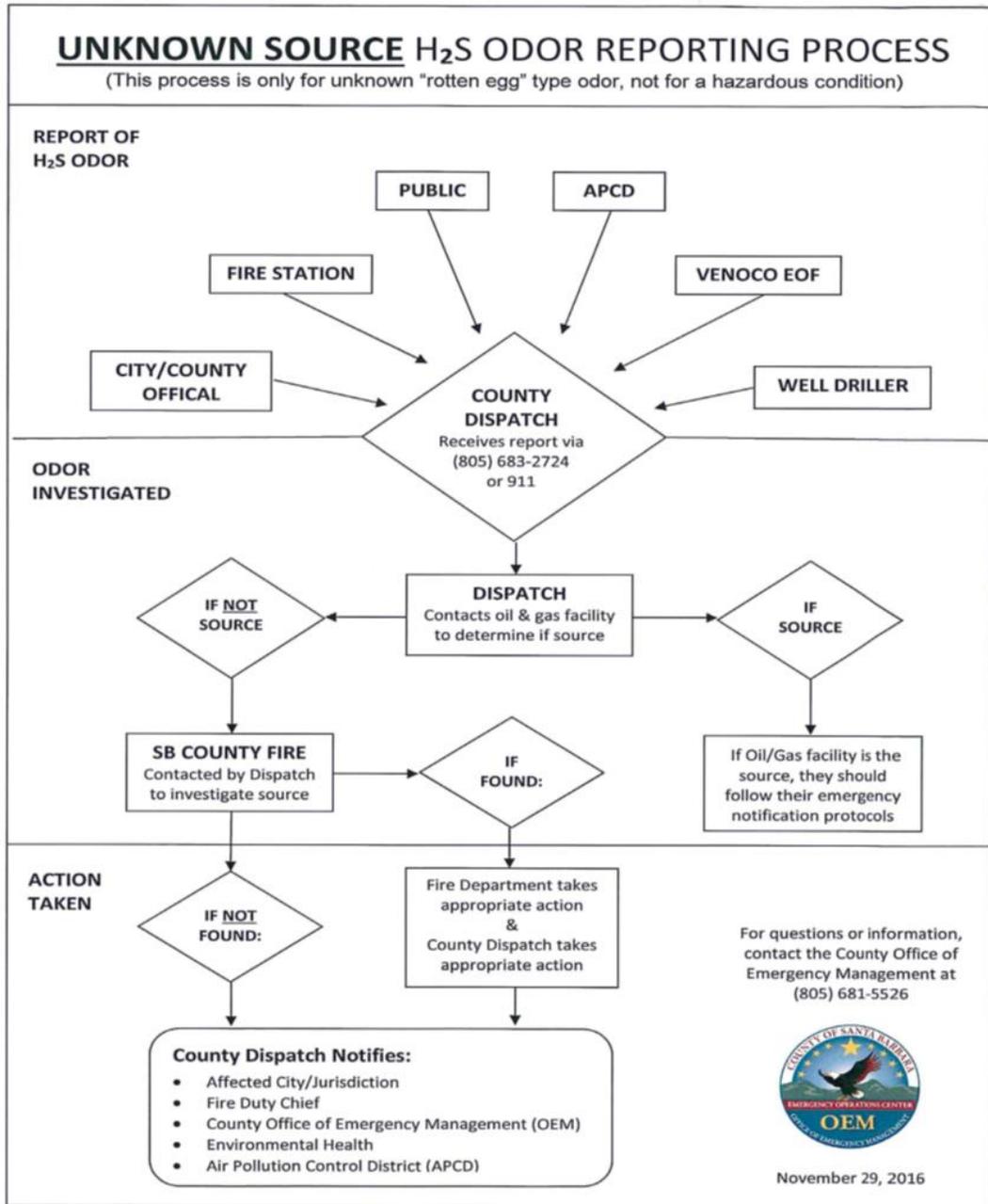
H₂S US Health Exposure Limits

Reference: National Institute of
Occupational Safety and Health

Permissible Exposure Limits	C 20 ppm; 50 ppm (10-min. maximum peak)
Recommended Exposure Limits	C 10 ppm (15 mg/m ³) (10-min.)
Immediate Danger Life Health	100 ppm

H₂S Odor Reporting Process for Agencies for Unknown Odors

Developed November 2016



H₂S Odor Reporting Process for Individuals

If experiencing health effects from the odor and need assistance, call **911** immediately.

If you smell a noxious odor but are not experiencing health effects and **DO NOT** need immediate assistance, contact the **Air Pollution Control District at 805-961-8810** and they will respond during normal business hours.

(Monday – Friday, 8am – 5pm)

Santa Barbara County Fire Department



Emergency response for odor calls:

- Calls come through dispatch center to closest resource
- Typical response:
 - (1) Type 1 engine with monitoring equipment
 - (1) Battalion chief
 - Fire resources respond from 6901 Frey Way in Goleta off Storke Rd.



Santa Barbara County Fire Department



Monitoring equipment:

- Jerome J605
 - Purchased by City of Goleta for fire department use
 - Portable hydrogen sulfide (H₂S) detection monitor
 - Ambient air analysis
- Capabilities/Applications
 - Ultra sensitive: detects hydrogen sulfide in air at levels as low as 3 parts per billion (3ppb). Will test H₂S levels up to 10 ppm.
 - Takes 12-27 seconds to detect odor, depending on levels.



Santa Barbara County Fire Department



Monitoring equipment (continued):

- QRAE multi gas detector
 - Continuous exposure monitoring of:
 - Oxygen
 - Hydrogen sulfide
 - Carbon monoxide
 - QRAE monitors for various hazardous gases, where the Jerome is specific just to H₂S.



Santa Barbara
County Fire
Department



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Battalion Chief

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Air Pollution Control District's Mission Statement

Reference: Santa Barbara
County Air Pollution Control
District (APCD)



The Santa Barbara County Air Pollution Control District is a local government agency that works to protect the people and the environment of Santa Barbara County from the effects of air pollution. Our jurisdiction covers the entire County including the incorporated cities of Buellton, Carpinteria, Goleta, Guadalupe, Lompoc, Santa Barbara, Santa Maria, and Solvang.

More info: www.ourair.org

APCD's Role with regard to Noxious Odors

Reference: APCD



- CA ambient air quality standard
 - 0.03 ppm for one hour average
- Permit requirements on stationary sources
 - Oil and Gas activity
 - Monitoring requirements
- Monitoring of H₂S
 - Handheld Jerome used for onsite investigations
- Respond to complaints of H₂S
 - www.ourair.org/complaints/

H₂S in Goleta

Reference: APCD



- Increase in reports of sulfur odor in western Goleta in recent years
- Historically, groundwater in this region contains sulfur compounds including H₂S
- Some Goleta-area agriculture users use private well water for irrigation
- H₂S can be released from water as a gas and create “rotten egg” odors

H₂S Odor Enforcement Avenues

Reference: APCD



1. APCD Odorous Organic Sulfides Rule 310. Enforceable if all criteria are met:
 - A single source is verified
 - Odors occur at or beyond the property line
 - Measurements of H₂S exceed the rule's concentration limits:
 - 0.03 ppm for one hour average
 - 0.06 ppm for 3 minute average
2. APCD Nuisance Rule 303. Enforceable for H₂S odors if all criteria are met:
 - A single source is verified
 - The source is not an agricultural operation

APCD Data

Reference: APCD



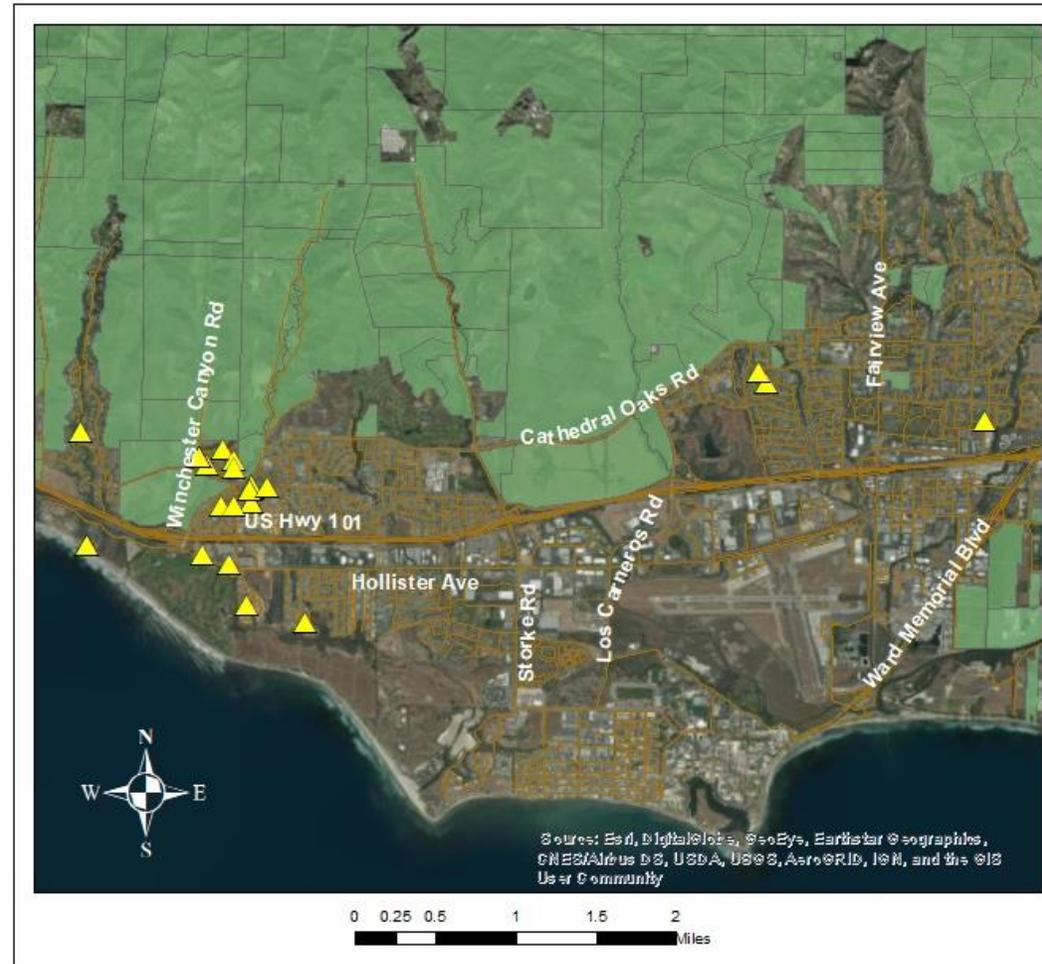
- October – December 2017:
 - 31 complaints received and responded to
 - Source = irrigation from an agricultural operation
 - All H₂S measured by APCD staff was below levels that allow the District to take further action
 - Highest reading = 0.023 ppm H₂S
- January – February 2018:
 - 13 complaints received and responded to
 - No source found
 - On 2/14/18, 6:00 am – 7:35 am, EOF fenceline monitor readings > 0.3 ppm H₂S
 - Highest reading = 0.8 ppm H₂S

APCD H2S Odors Map

Reference: APCD



Goleta H2S Odors Map



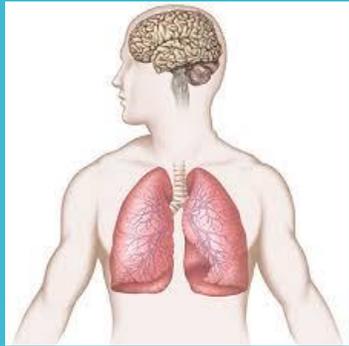
APCD
Contact
Information



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www.ourair.org/hydrogen-sulfide-in-goleta-area/



H₂S and Health Effects

References:

- OSHA, U.S. Dept. of Labor
- Agency for Toxic Substances and Disease Registry, U.S. Dept of HHS
- OEHHA, California EPA

H ₂ S Level (parts per million)	Odor	Health Effects
.01-1.5 ppm	None or Mild	Unlikely
2-5 ppm	Offensive "rotten egg"	<u>Short Exposure:</u> Temporary irritation of eyes/ nose/ throat/ lungs <u>Prolonged Exposure:</u> Temporary nausea, HA, watery eyes <u>Asthma/ Children:</u> more sensitive
20 ppm (OSHA limit)	Offensive "rotten egg"	Headache, dizziness, fatigue, coughing, shortness of breath, nausea/ vomiting
50-100 ppm	"Sickeningly Sweet" (Odor Fatigue)	Breathing difficulty, eye irritation (Possible 72 hour delay)

Role of Environmental Health Services

Reference: Santa Barbara
County Public Health Department



Regulates well construction through issuance of well construction permits

Permits issued if well location meets regulatory standards

Steps in when drilling results in a condition that jeopardizes or threatens public health and safety

Ends once the well has been completed

Proposed Changes to Well Drilling Ordinance

Reference: Santa Barbara
County Public Health Department



Adds requirements for well drilling contractors to:

- Monitor, respond to and control hydrogen sulfide gas released as a result of drilling operations
- Keep a properly maintained and calibrated Hydrogen Sulfide H₂S gas monitor at the Drill Site and in operation at all times during well excavation activities
- Contact EHS, APCD and the California Office of Emergency Services immediately if H₂S levels exceeding 1.0 ppm
- If Release occurs during non-business hours notify 911
- Implement mitigation measures immediately if the H₂S release exceeds limits
- Notify the Administrative Authority should the well construction vary significantly from the specifications (e.g. depth of the well)

Public Health Contact Information

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Additional Information

- California Air Resources Board: Hydrogen Sulfide & Health
 - https://www.arb.ca.gov/research/aaqs/caaqs/h2s/h2s_22aug16_css1.htm
- Osha Fact Sheet: Hydrogen Sulfide
 - https://www.osha.gov/OshDoc/data_Hurricane_Facts/hydrogen_sulfide_fact.pdf
- Hydrogen Sulfide Chemical Fact Sheet
 - https://cchealth.org/hazmat/pdf/chem_hydrogen_sulfide.pdf
- Drilling and Operating Oil, Gas and Geothermal Wells in an H₂S Environment
 - <ftp://ftp.consrv.ca.gov/pub/oil/publications/m10.pdf>

Thank you for coming

Questions?