

# Study of Neighborhood Air near Petroleum Sources

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Lost Hills Draft Report:  
Cumulative Health Risk Assessment Overview

May 17, 2024

Leona D. Scanlan, PhD – California Office of Environmental Health Hazard Assessment

# Acknowledgements



Lost Hills Community

California Air Resources Board (CARB)

Office of Environmental Health Hazard Assessment (OEHHA)

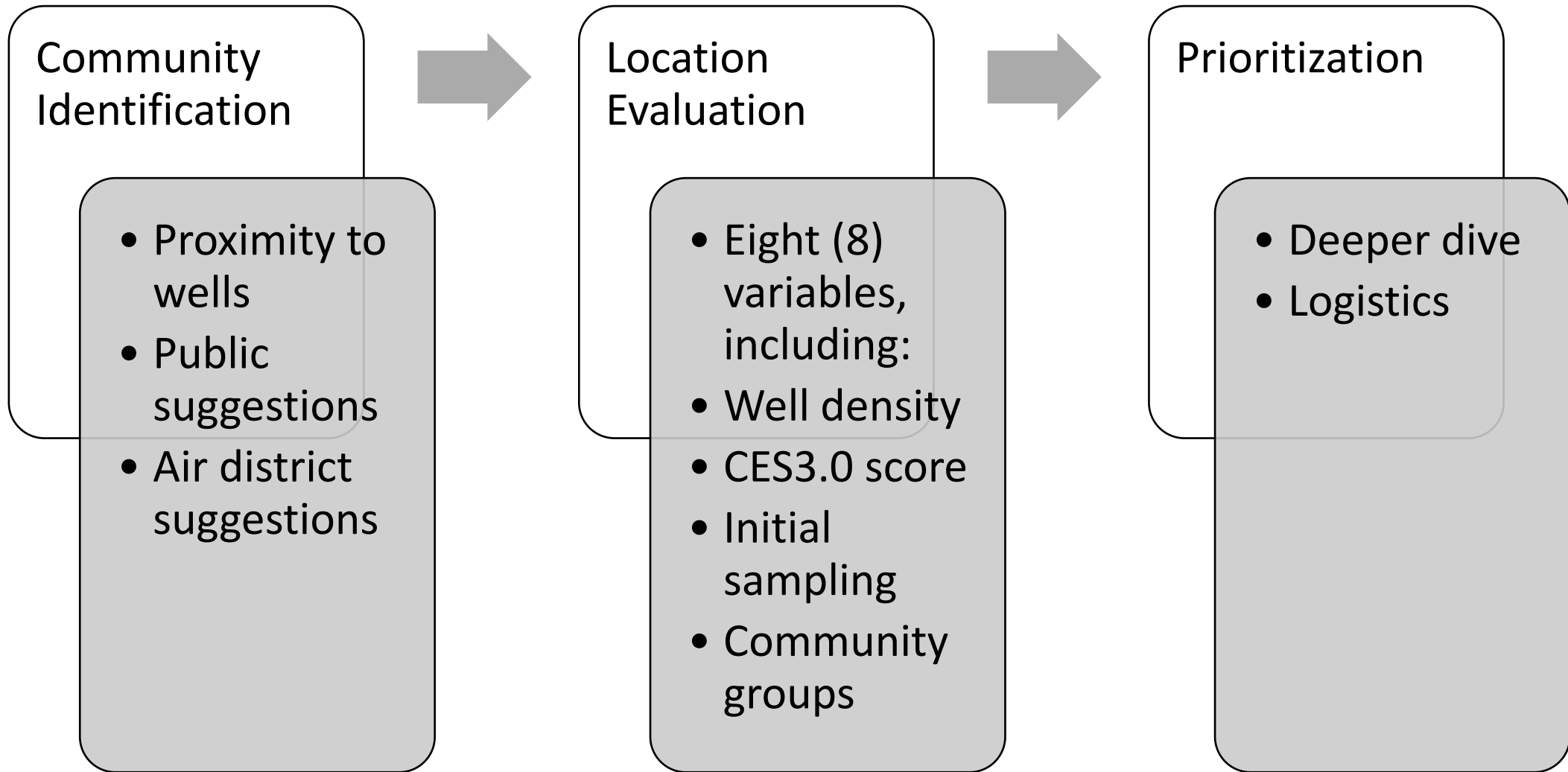
# Presentation Outline



1. SNAPS Community Selection
2. Air Measurements in Lost Hills and Source Apportionment
3. Health Risk Assessment
  1. Single chemical: acute and chronic, non-cancer and cancer
  2. Cumulative: acute and chronic, non-cancer and cancer
4. Next Steps

SNAPS Lost Hills Draft Report released in January 2024

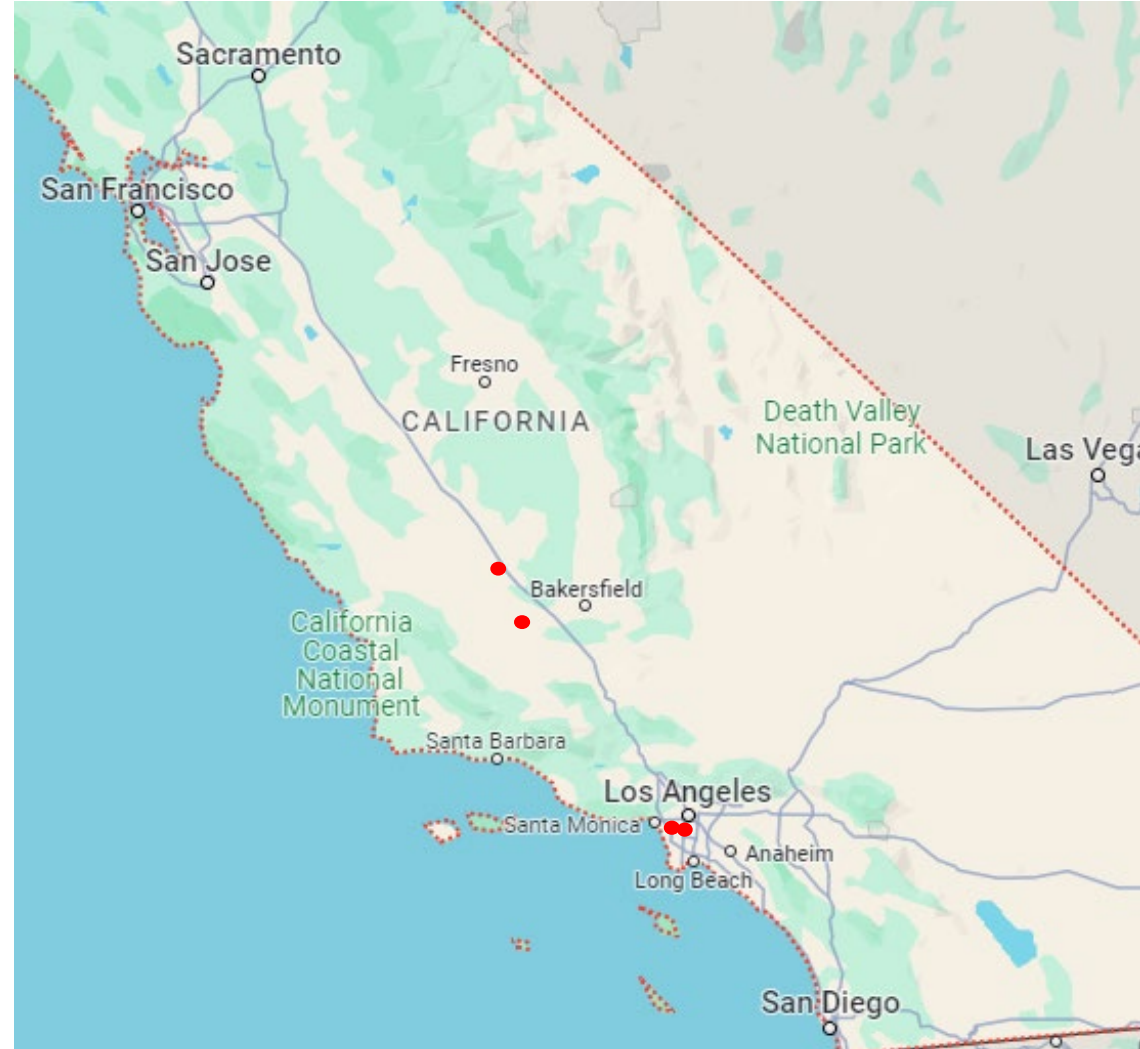
# SNAPS Community Selection



56 candidate communities identified across California

The first four communities selected for SNAPS:

- Lost Hills
- Baldwin Hills
- McKittrick/Derby Acres
- South Los Angeles



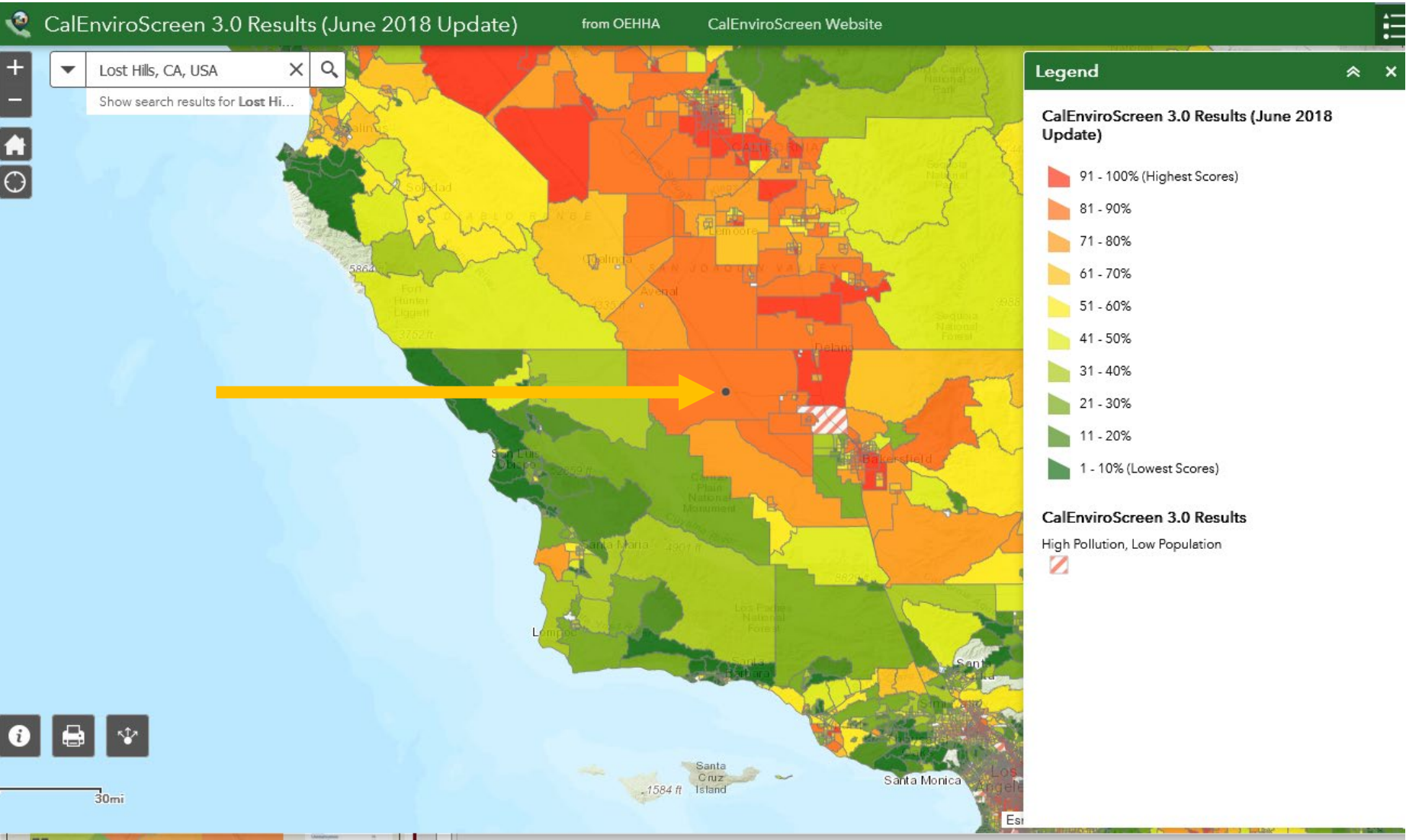
# CalEnviroScreen: Chemical and Non-Chemical Stressors



Pollution Burden		Population Characteristics	
Exposures	Environmental Effects	Sensitive Populations	Socioeconomic Factors
 Ozone  PM2.5  Diesel Particulate Matter  Drinking Water Contaminants  Toxic Releases from Facilities  Traffic  Children's Lead Risk from Housing  Pesticide Use	 Solid Waste Sites and Facilities  Cleanup Sites  Groundwater Threats  Impaired Water Bodies  Hazardous Waste Generators and Facilities	 Asthma  Cardiovascular Disease  Low Birth Weight Infants	 Educational Attainment  Housing Burden  Linguistic Isolation  Poverty  Unemployment

New indicator on lead added in 4.0

# CalEnviroScreen Indicators

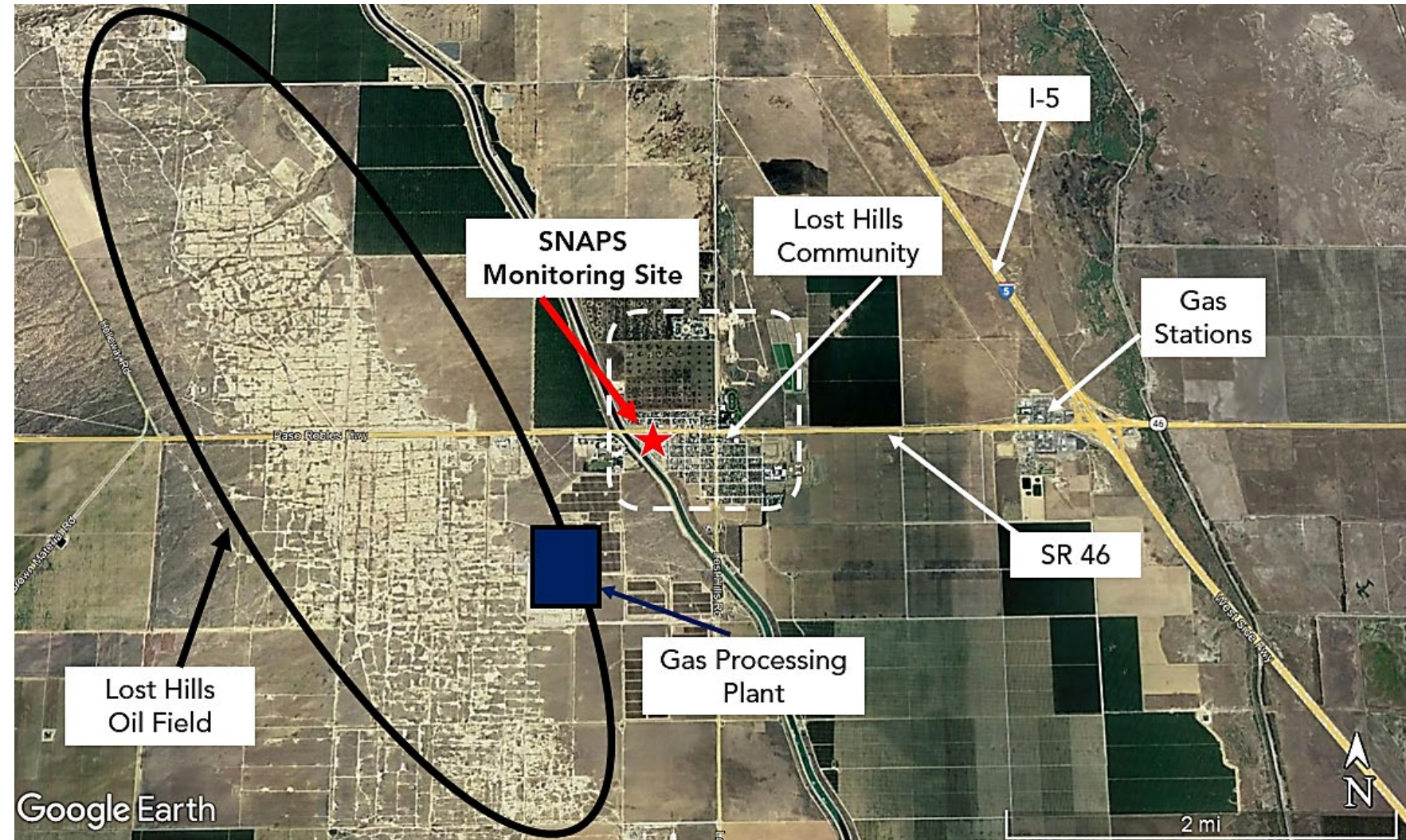


Lost Hills census tract CES 3.0 score: 87

# Potential Pollution Sources at Lost Hills

## Potential Sources

1. Lost Hills Oil Field
2. Local natural gas distribution lines
3. Mobile sources (I-5 and SR-46)
4. Agriculture, landfills, composting facilities
5. Other Regional Sources





Many monitoring types, instruments

- Stationary trailer – 11 months
- Mobile measurement unit – every ~2 months
- Discrete sampling – 24-hour samples every 6-12 days

Also – meteorology, wind, AQI, odor analyses...

Over 200 chemical species monitored

108 compounds detected and considered in the risk assessments



# Source Apportionment – PMF Analysis

Pollution Type	Source Prediction
Black carbon	91-93% mobile sources 6-9% oil and gas related sources 1% biogenic (natural) sources
Volatile organic carbons (VOCs)	83-94% oil and gas related sources 6-17% mobile sources 1% biogenic sources
Benzene, toluene, ethylene and xylene (BTEX)	44-58% mobile sources 39-55% oil and gas related sources 1% biogenic



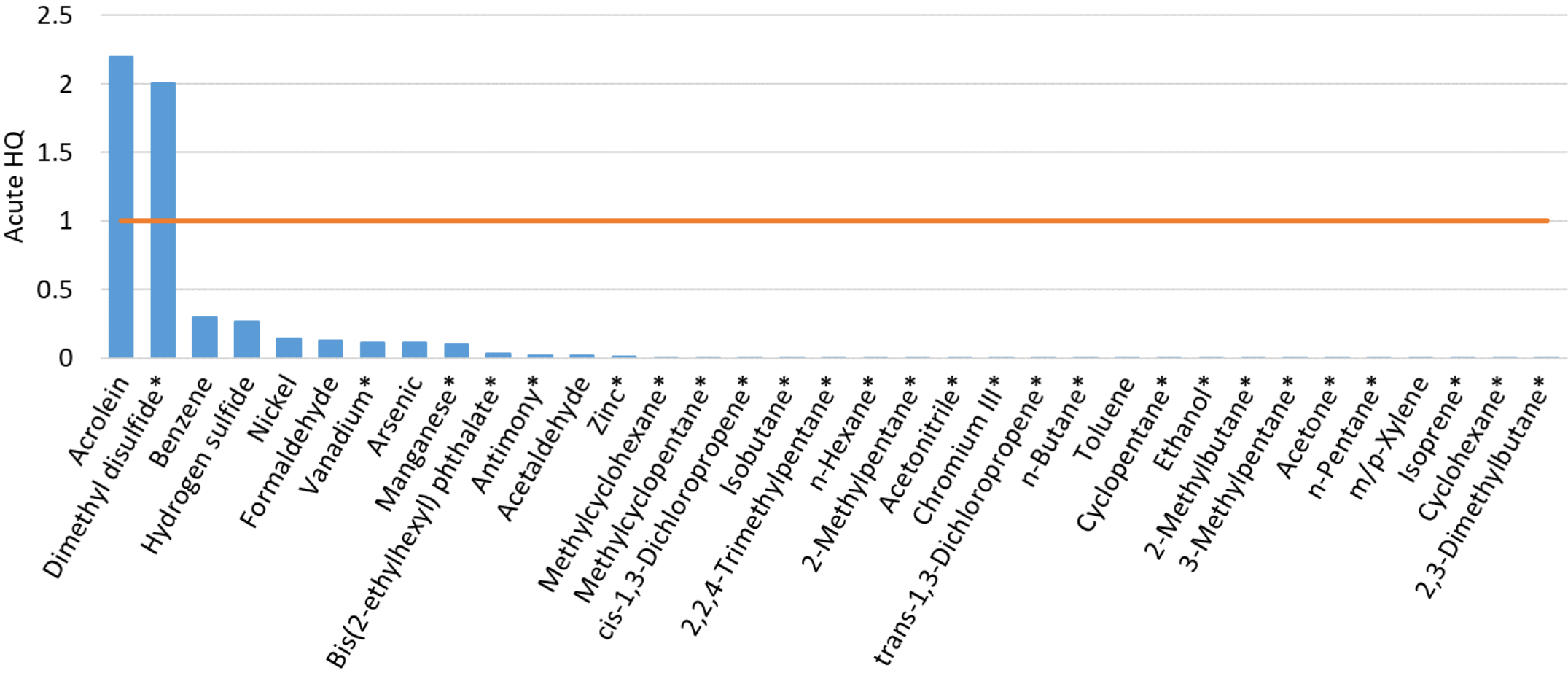
$$\text{Hazard Quotient (HQ)} = \frac{\text{Air Concentration } (\mu\text{g}/\text{m}^3)}{\text{Health Guidance Value } (\mu\text{g}/\text{m}^3)}$$

Acute: maximum air concentration, acute HGV

Chronic: average annual air concentration, chronic HGV

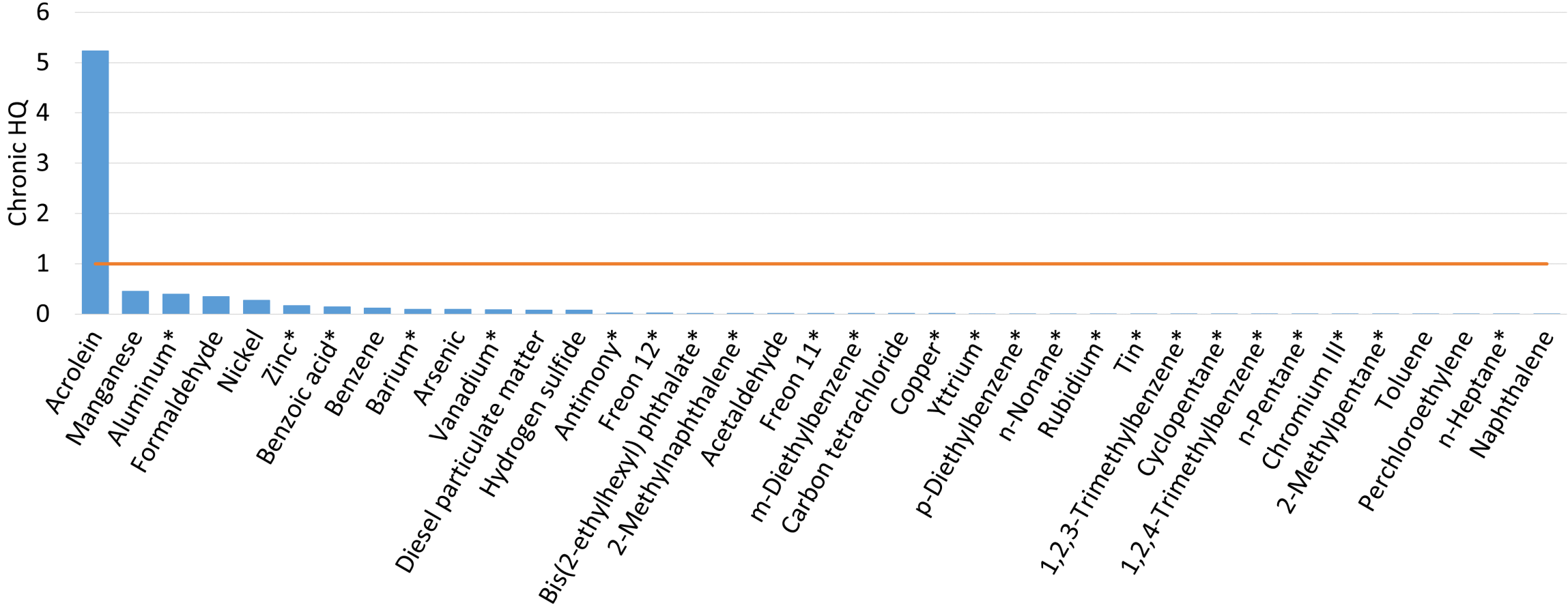
HQ  $\leq$  1 = health effects not expected

# Acute Noncancer Risks of Concern



\*HGV is not an OEHHA acute REL

# Chronic Noncancer Risks of Concern



\*HGV is not an OEHHA acute REL



Chemicals that target the same organ or system.

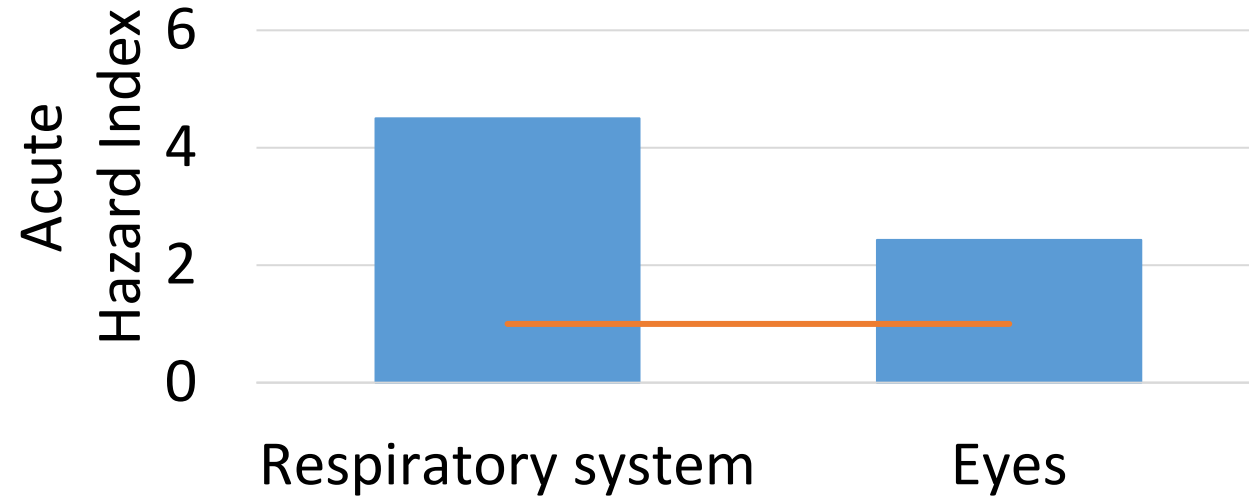
$\Sigma HQ = \text{Hazard Index (HI)}$

Inhalation only: non-inhalation pathways were not included at this time



## Acute effects

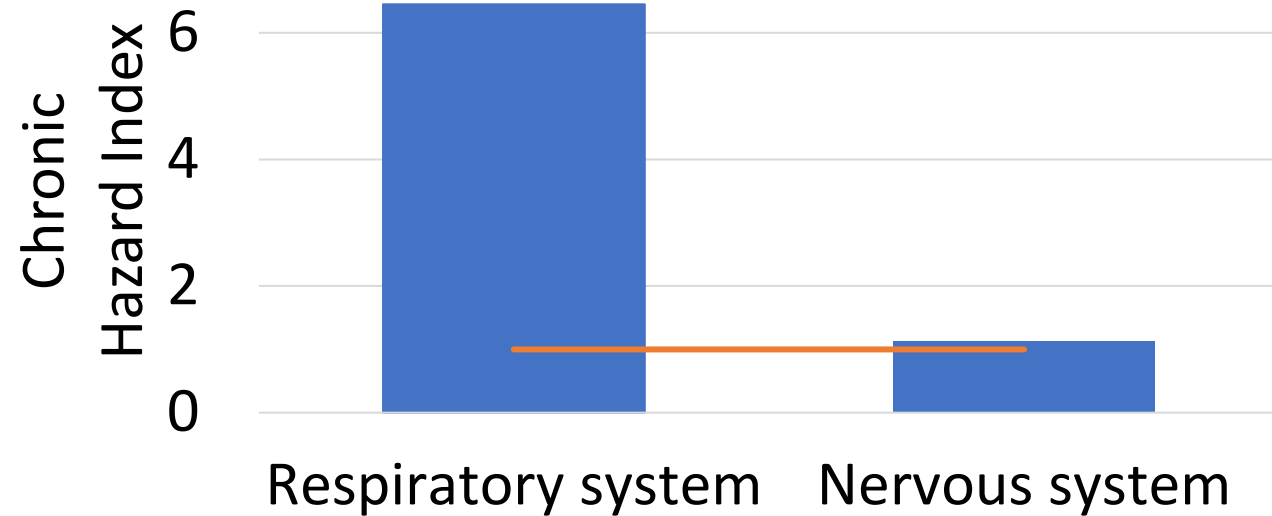
- Respiratory system
  - Acrolein
  - Dimethyl disulfide
- Risk to eyes
  - acrolein





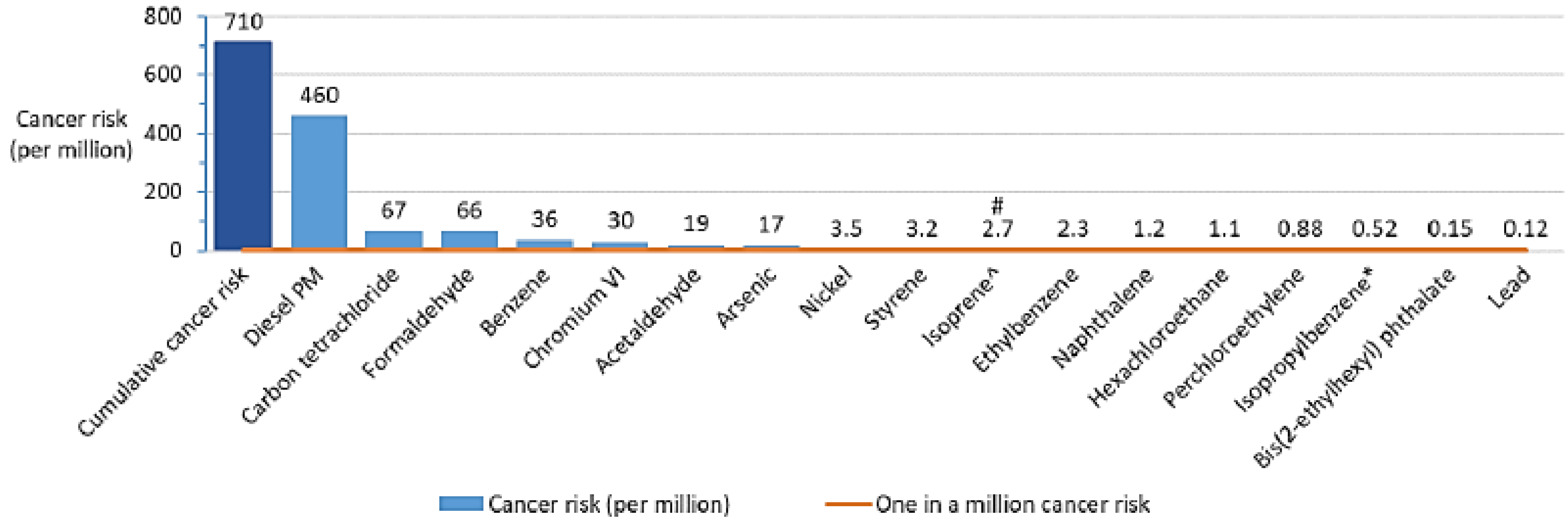
## Chronic effects

- Respiratory system risk
  - Acrolein
- Risk to nervous system
  - Metals
  - Benzene





# Cancer Risks in Lost Hills



#HGV is an OEHHA draft value, \*HGV is not an OEHHA value

- **Lost Hills Report**
  - Incorporation of public comments
  - Data from Lost Hills monitoring will be released with release of final report
- **Acrolein**
  - CARB planning additional acrolein monitoring
  - OEHHA exploring development of cancer potency value for acrolein
- **Current SNAPS Monitoring**
  - In communities near the Inglewood Oil Field – began in June 2023



# Thank you!

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[Leona.Scanlan@OEHHA.ca.gov](mailto:Leona.Scanlan@OEHHA.ca.gov)

SNAPS Data Display:

<https://ww2.arb.ca.gov/applications/snaps-data-display>

Job Postings At OEHHA (<https://calcareers.ca.gov>)

Cumulative Risk Research Scientist IV JC-425653

SNAPS Staff Toxicologist JC- 415026

