



Gavin Newsom, Governor
Jared Blumenfeld, Secretary for Environmental Protection
Lauren Zeise, Ph.D., Director

MEMORANDUM

TO: Elise McCaleb
Redevelopment and Economic Development Manager
City of Signal Hill
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FROM: Jim Carlisle, D.V.M.
Staff Toxicologist
Air and Site Assessment and Climate Indicators Branch
Office of Environmental Health Hazard Assessment (OEHHA)

DATE: March 21, 2022

SUBJECT: HUMAN HEALTH RISK ASSESSMENT – 1933 TEMPLE AVENUE,
SIGNAL HILL, CALIFORNIA

OEHHA # 830170-00

Document reviewed

- Human Health Risk Assessment, 1933 Temple Avenue, Signal Hill, California by Means Consulting LLC, dated February 16, 2022.

Scope of the Review

- Per your request, OEHHA reviewed the above-named human health risk assessment. We did not review the mitigation measures .

Site Description and Background

- The 0.55-acre site has been an oil field since at least 1928. Historically the site had oil derricks, sumps, and pipelines.
- Various auto repair, boat servicing, cabinet shops, and small businesses occupied the site from the 1940s through the 1950s.
- The site is bounded to north, south, and west by apartments and condominiums.
- The proposed development is eight single-family residences.

Site Characterization

- An accurate risk assessment depends on adequate site characterization. Since OEHHA was not involved in site characterization, the following comments assume that the data in the reviewed reports are accurate and representative of contamination at the site.

Attachment H

Conceptual Site Model

Mearns evaluated the following potential exposure pathways:

- Vapor intrusion (VI) for residents and indoor workers
- Direct contact with soil (ingestion and dermal) and inhalation of fugitive dust in outdoor air for future commercial and construction workers as well as future residents.
- Inhalation of vapors from soil gas in trenches for future construction workers
- Groundwater is not considered an exposure medium since drinking water is provided by a remote municipal water supply.

Chemicals of Potential Concern (COPCs)

- COPCs in soil vapor include the following detected volatile organic carbons (VOCs): tetrachloroethylene, toluene, and total xylenes.
- COPCs in soil include total petroleum hydrocarbons (TPH), metals, and VOCs. Background metals were appropriately excluded.

Human Health Risk Assessment – Soil Vapors

Mearns assessed VI risk using the San Francisco Bay Regional Water Quality Control Board Environmental Screening Level (ESL, 2019) calculator with maximum detected VOC concentrations. Results are summarized in Table 1.

Table 1. Mearns' Vapor Intrusion Risk and Hazard Estimates

	Risk	HI
Residential	2.1E-6	0.04
Commercial	4.8E-7	0.008

- OEHHA (2009) recommends including the age-specific factor (ASF) for residential VI assessments (not included in the ESL calculator). ASFs would increase the residential risk estimates by a factor of 2.8.
- OEHHA agrees with the commercial VI risk and hazard estimates.

Mearns assessed outdoor inhalation risk from soil vapor using the VURAM (2022) model. Results are summarized in Table 2.

Table 2. Mearns' Soil Vapor Construction Risk and Hazard Estimates

	Risk	HI
Construction	6.9E-11	0.0006

- OEHHA agrees with these risk and hazard estimates.

Human Health Risk Assessment – Soil

Mearns assessed risks and hazards to residents, outdoor workers, and construction workers using standard DTSC (2019a, 2019b) equations and toxicity values along with maximum detected soil concentrations. Results are summarized in Table 3.

Table 3. Mearns' Risk and Hazard Estimates for Soil

	Risk	HI
Residential	2.4E-6	0.75
Commercial	2.1E-6	0.20
Construction	1.4E-4	132

- OEHHA recommends including the ASF for residential soil assessments. ASFs would increase the residential risk estimates by a factor of 4.
- OEHHA agrees with the commercial VI risk and hazard estimates.

Mearns combined the separate pathway risk and hazard estimates to residents, outdoor workers, and construction workers as shown in Table 4.

Table 4. Mearns' combined Risk and Hazard Estimates

	Residential Scenario		Commercial Scenario		Construction Scenario	
	<i>Risk</i>	<i>Hazard</i>	<i>Risk</i>	<i>Hazard</i>	<i>Risk</i>	<i>Hazard</i>
Total	4.5E-6	0.78	2.6E-6	0.21	1.4E-4	132

- Mearns combined indoor air and outdoor soil exposure pathway risks and hazards for the commercial workers. It is unlikely that indoor workers would be subject to the full soil exposure experienced by outdoor workers and vice versa.

Summary and Conclusions

- Risks and hazards were calculated for the residential, commercial, and construction scenarios.
- The above estimates are conservative in most respects because:
 - Estimates are based on maximum detected concentrations. Many of the chemicals were detected in only a few of the samples.
 - For vapor intrusion the EPA screening AF was used.
 - However, the recommended ASF was not incorporated into residential risk estimates. These factors, if incorporated, would increase residential risks from soil vapor by a factor of 2.8 and from soil by a factor of 4.

Memo reviewed by:

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Section Chief

References

DTSC, 2019a. Human Health Risk Assessment Note 3 – DTSC-modified Screening Levels, Department of Toxic Substances Control, California Environmental Protection Agency, April 2019.

DTSC, 2019b. Human Health Risk Assessment Note 10 – Toxicity Criteria, Department of Toxic Substances Control, California Environmental Protection Agency, February 2019.

OEHHA, 2009. Technical Support Document for Cancer Potency Factors: Methodologies for derivation, listing of available values, and adjustments to allow for early life stage exposures. May 2009.

Virginia Department of Environmental Quality, Virginia Unified Risk Assessment Module (VURAM) version 3.2, January 2022

SFBRWQCB (San Francisco Bay Regional Water Quality Control Board) 2019. Environmental Screening Levels. Rev 2.