

Fact Sheet

Results of Indoor Air Sampling at the Terradev Jefferson LLC Property

January 22, 2016

This fact sheet provides an update on the investigation of a former gasoline underground storage tank (UST) that was closed in-place below the sidewalk adjacent to the Terradev Jefferson property located at 645 4th Street in Oakland in 2006. Investigation of the extent and magnitude of gasoline constituents in the subsurface associated with the UST has been ongoing since 2009. Subslab vapor samples collected in 2015 indicated a potential vapor intrusion risk within the buildings associated with 645 4th Street and 380 MLK Jr Way.

The most recent phase of work consisted of indoor air sampling of buildings associated with 645 4th Street, 380 MLK Jr Way, 638 3rd Street and outdoor air sampling on the roofs of the buildings in December 2015. The purpose of this sampling was to determine if gasoline related compounds were present in indoor air and outdoor air (i.e. background conditions). The main chemicals of concern are gasoline (TPHg), benzene, toluene, ethylbenzene, and xylenes (BTEX), methyl tert-butyl ether (MTBE), naphthalene, 1,2-dichloroethane (1,2-DCA), and 1,2-dibromoethane (EDB). Site investigation activities are being conducted under regulatory oversight by Alameda County Department of Environmental Health (ACDEH).

Air Sampling Results

Some petroleum vapors were detected in the indoor air samples at fairly low levels that do not pose an immediate health risk. Of note, the benzene levels in indoor air samples were similar to those detected in the outdoor air samples. These measurements are not considered unusual in an urban setting proximal to a busy Interstate highway. The table below identifies the specific indoor air and outdoor air sample results.

<i>Sample</i>	<i>TPHg</i>	<i>B</i>	<i>T</i>	<i>E</i>	<i>X</i>	<i>MTBE</i>	<i>Naphthalene</i>	<i>1,2-DCA</i>	<i>EDB</i>
Indoor Air									
645 4th	36	1.8	5.4	1.2	5.4	<3.6	<0.05	<0.08	<0.03
380 MLK	17	2.0	5.4	1.2	4.9	<3.6	<0.05	<0.08	<0.03
638 3rd	<9.8	1.2	<3.8	<0.87	<8.6	<3.6	<0.05	<0.08	<0.03
Outdoor Air									
Roof (R-1)	<9.8	0.78	<3.8	<0.87	<8.6	<3.6	<0.05	<0.08	<0.03
Roof (R-2)	<9.8	1.2	<3.8	<0.87	<8.6	<3.6	<0.05	<0.08	<0.03
Screening Levels									
ESLs	100	0.42	1,300	4.9	440	47	0.36	0.58	0.17

Notes:

Samples collected December 5, 2015

All results in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$)

<### = Not detected at or above indicated detection limit.

ESLs = Environmental Screening Levels for Indoor Air (Commercial Use) (SFBRWQCB 2013)

Current Risk Assessment

The air sample results were compared to currently used Environmental Screening Levels (ESLs) published by the San Francisco Bay Regional Water Quality Control Board, which are very conservative values intended to be protective of potential decades long exposure to any given chemical. Benzene was the only constituent in both in both indoor and outdoor air samples that slightly exceeded the ESL for commercial use.

In addition to comparing individual constituents to screening levels, the cumulative risk for each sample was calculated. The cumulative cancer risk is defined as the incremental probability of an individual developing cancer in a lifetime as a result of exposure to potential carcinogens. The commonly used goal is a risk less than one in one-million (i.e. $< 1 \times 10^{-6}$). In other words, the increased risk on top of that for an average population risk would be one in one-million. The cumulative risk for non-carcinogenic chronic toxic effects is calculated as the hazard index. The commonly used goal for the hazard index is equal to or less than one (i.e. ≤ 1.0). The following cumulative risks and hazard indices for commercial use settings for the three indoor air samples were calculated as:

<i>Building</i>	<i>Cumulative Risk</i>	<i>Hazard Index</i>
645 4 th St.	5.0×10^{-6}	0.96
380 MLK Jr. Way	5.5×10^{-6}	0.47
638 3 rd St.*	3.5×10^{-6}	0.29

(*It is notable that the outdoor air samples pose essentially same risk as the 638 3rd Street sample due to similarity of results.)

The cumulative risk values slightly exceed the goal of less than one in one-million; however, the hazard indices achieve the goal of less than one. The following table shows recommended responses to numerical risk and hazard evaluations, as published in the DTSC Guidance Document:

<u><i>Vapor Intrusion Risk / Hazard</i></u>	<u><i>Risk Management Decision</i></u>	<u><i>Activities</i></u>
<u>$\text{Risk} < 1 \times 10^{-6}$</u> <u>$\text{Hazard Index} \leq 1.0$</u>	<u>No Further Action</u>	<ul style="list-style-type: none"> • <u>None</u>
<u>$1 \times 10^{-6} < \text{Risk} < 1 \times 10^{-4}$</u> <u>$\text{Hazard Index} > 1.0$</u>	<u>Evaluate Need for Action</u>	<u>Possible Actions:</u> <ul style="list-style-type: none"> • <u>Additional Data Collection</u> • <u>Monitoring</u> • <u>Additional Risk Characterization</u> • <u>Mitigation</u> • <u>Source Remediation</u>
<u>$\text{Risk} > 1 \times 10^{-4}$</u>	<u>Response Action Needed</u>	<ul style="list-style-type: none"> • <u>Vapor Intrusion Mitigation</u> • <u>Source Remediation</u>

As shown in the matrix above, the cumulative risks and hazard indices calculated for the samples collected within 645 4th Street, 380 MLK Jr Way, and 638 3rd Street, while not greatly in excess of screening criteria, do indicate that the appropriate risk management decision would be to evaluate the need for action. Based on the results of this evaluation, possible response activities include: additional data collection, monitoring, additional risk characterization, mitigation, and source remediation. The results of additional evaluation could also show that no additional investigative or mitigation activity is possible or warranted.

Planned Activities

A second indoor and outdoor air sampling event has been approved by the ACDEH. Indoor air samples will again be collected from the interior spaces of 645 4th Street, 380 MLK Jr. Way, and 638 3rd Street, and two outdoor air samples will also be collected. The recommended work will serve to supplement these initial findings and increase the air sample data set for further evaluation. The next sampling event is tentatively planned to occur within the next month or two, and the results of that event will again be communicated by a Fact Sheet such as this.

Where to Find More Information

Technical documents and additional information related to this investigation can be found online (ACDEH case RO0003001 and GeoTracker Global ID T10000001072).

The State Water Resources Control Board GeoTracker web-site for this project is:
http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T10000001072

The Alameda County LOP web-site is:
<http://gis.acgov.org/DEH/InspectionResults/?SITE=LOP>
Under the Business Name search for “Terradev Jefferson LLC”

Who to Contact for More Information

If you have questions regarding the slab and indoor air sampling, please contact:
Sara May, the Terradev Jefferson LLC property manager, at 510-839-4000 or
smay@metrovation.com

If you have general questions or would like additional information regarding this fuel leak case, please contact: Anne Jurek, the ACDEH case manager, at 510-567-6721 or anne.jurek@acgov.org.