
Los Angeles Regional Water Quality Control Board

February 2, 2017

Ms. Carol Devier-Heeney
DLA Installation Support – Energy
8725 John J. Klingman Road
Fort Belvoir, VA 22060

Mr. Steve Defibaugh
Kinder Morgan Energy Partners
1100 Town and Country Road
Orange, CA 92868

SUBJECT: REQUIREMENT FOR REVISED HUMAN HEALTH RISK ASSESSMENT FOR NO FURTHER ACTION DETERMINATION FOR SHALLOW SOIL AT THE EASTERN 15-ACRE PARCEL

CASE/SITE: DEFENSE FUEL SUPPORT POINT NORWALK, 15306 NORWALK BOULEVARD, NORWALK, CALIFORNIA (SCP NO. 0286A/B, SITE ID NO. 16638 AND 204DM00)

Dear Ms. Devier-Heeney and Mr. Defibaugh:

The California Regional Water Quality Control Board (Regional Board), Los Angeles Region, is the public agency with primary responsibility for the protection of ground and surface water quality for all beneficial uses within major portions of the Los Angeles and Ventura counties. On August 30, 2016, the Regional Board staff requested you to respond to the Office of Environmental Health Hazard Assessment (OEHHA) comments (OEHHA Memorandum dated August 2, 2016) on the following reports:

- *Human Health Risk Assessment, DLA-Energy Responsible Area of Eastern Portion for the former Defense Fuel Support Point Norwalk*, dated May 31, 2016, prepared by The Source Group, Inc. (SGI)
- *Results of Additional Soil and Soil Vapor Sampling and Human Health Risk Assessment to Support Shallow Soil Closure for the Eastern 15-Acre Parcel of Defense Fuel Support Point Norwalk*, dated June 28, 2016, prepared by CH2M

On October 12, 2016, we received a technical document titled *Response to the OEHHA Comments on the: Human Health Risk Assessment, DLA-Energy Responsible Area of Eastern Portion, dated May 31, 2016, and Results of Additional Soil and Soil Vapor Sampling and Human Health Risk Assessment to Support Shallow Soil Closure for the Eastern 15-Acre Parcel, dated June 28, 2016* (Response), prepared by SGI and CH2M. OEHHA reviewed the Response and provided the November 18, 2016, Memorandums (copies attached) to the Regional Board. Based on the OEHHA comments, additional soil and soil vapor sampling are warranted in order to complete the review of human health risk assessment for a no further action

Ms. Devier-Heeney
Mr. Steve Defibaugh

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determination for shallow soil at the eastern 15-acre parcel of the above-referenced site (Site). Therefore, submit a revised human health risk assessment for shallow soil at the eastern 15-acre parcel of the Site with additional soil and soil vapor sampling to this Regional Board by **March 15, 2017**.

If you have any questions, please contact me at (213) 576-6721 or paul.cho@waterboards.ca.gov.

Sincerely,



Paul Cho, P.G.
Site Cleanup Unit V

Attachment OEHHA Memorandum, Response to Comments: Human Health Risk Assessment – DLA-
Energy Responsible Area of the Eastern Portion Facility, November 18, 2016

OEHHA Memorandum, Response to Comments: Results of Additional Soil and Soil Vapor
Sampling and Human Health Risk Assessment to Support Shallow Soil Closure for the
Eastern 15-Acre Parcel – Kinder Morgan, November 18, 2016

cc: See Mail List

Mail List

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Office of Environmental Health Hazard Assessment

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Governor

Matthew Rodriguez
Secretary for
Environmental Protection

MEMORANDUM

TO: Paul Cho
Engineering Geologist
Site Cleanup Unit V

FROM: Nathalie Pham, Ph.D. *N.P.*
Staff Toxicologist
Integrated Risk Assessment Branch
Office of Environmental Health Hazard Assessment

DATE: November 18, 2016

SUBJECT: Responses to Comments. HUMAN HEALTH RISK ASSESSMENT – DLA
– Energy Responsible Area of the Easter Portion Facility, Defense Fuel
Support Norwalk, 15306 Norwalk Boulevard, Norwalk, CA

R4-15-077

OEHHA # 880422-00

Document reviewed

- SGI-APEX responses to Cal/EPA OEHHA's comments on Human Health Risk Assessment, Defense Fuel Support Point Norwalk, 15306 Norwalk Boulevard, Commerce, CA dated May 31, 2015 by SGI, a division of Apex Companies.
- OEHHA's updated responses are in italics. Responses by SGI-APEX that are just "comments noted" will not be included in this memo.

History

- In a memo dated July 18, 2016, the human health risk assessment report for the site Defense Fuel Support Norwalk was reviewed by Nathalie Pham.

Comments and Responses

GENERAL COMMENTS

Comment #1: It is unclear why there are overlapping categories of TPH carbon range (C23-C32, C23-C44, and C33-C44).

California Environmental Protection Agency

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SJI Response #1: The analytical data provided by the laboratory did not have overlapping TPH carbon ranges. As presented in the data tables (Table A-1 of Appendix A of Human Health Risk Assessment), the laboratory data for TPH carbon ranges C23-C32 and C33-C44 were added together to represent TPH carbon range C23-C44 for each sample. This TPH carbon range was compared with the ESL for TPH motor oil (C18-C34+).

OEHHA #1: *The response is satisfactory.*

SOIL EXPOSURE RISK ASSESSMENT

Comment #2: Table 1. The number of samples and the number of detections for the VOCs (columns 3 and 4 from the left) are incorrect. It should be clearly stated in column 4 if there are zero detections for VOCs. Column 6 from the left is also incorrect. The arithmetic mean cannot be higher than the maximum detected concentration. In Table A-2, OEHHA found multiple concentrations above the listed maximum detected concentration for acetone in Table 1. Please check accordingly for other VOCs. The values listed as maximum detected concentrations for the VOCs are incorrect in Table 1. Table A-2 has the same values listed as the mean, not the maximum concentration. Maximum = mean only if all values are the same.

SJI Response #2: For the VOC data in Table 1, the errors referenced above were the result of errors in the external links within the Excel file. The links have been corrected and the revised Table 1 is attached to this letter.

OEHHA #2: *The errors have been corrected. The response is satisfactory.*

Comment #3: The site-specific cleanup goals for the TPH ranges are inconsistent between Table 1 and Table A-1. OEHHA recommends further transparency. Soil screening levels for specific TPHs carbon ranges are not included in the reference cited (SFRWQCB, 2016). Please clarify how those ranges were deduced to match the screening levels for gasoline and diesel.

SJI Response #3: In Table 1, the site-specific cleanup goal for TPH carbon range C23-C32 was incorrectly listed as 1,000 mg/kg. As shown in Table A-1 of the Human Health Risk Assessment, the site-specific cleanup goals for TPH carbon ranges C23-C32 and C33-C44 were not available and the site-specific cleanup goal for TPH carbon range C23-C44 is 1,000 mg/kg. Table 1 has been corrected to be consistent with Table A-1, and the revised Table 1 is attached to this letter.

OEHHA #3: *The errors have been corrected. The response is satisfactory.*

Comment #4: It is a risk management decision whether or not to accept SFRWQCB levels for application to the Site. Other resources like DTSC Note 3, EPA RSLs, or OEHHA CHHSLs also provide soil screening levels.

SJI Response #4: A table summarizing the SFRWQCB, DTSC, USEPA, and OEHHA screening levels for the chemicals detected at the Site in soil and soil vapor are provided in Attachment A of this letter. For the compounds detected in soil, the Site-

specific cleanup goals and SFRWQCB ESLs were generally equal to or lower than available screening levels from DTSC, OEHHA, and USEPA. For the compounds detected in soil vapor, with the exception of 1,2,4-trimethylbenzene, the SFRWQCB ESLs were generally equal to or less than available screening levels from DTSC, OEHHA, and USEPA. For 1,2,4-trimethylbenzene, SFRWQCB or DTSC screening levels were not available, so the USEPA Regional Screening Level (RSL) was used (Attachment A).

OEHHA #4: *OEHHA confirmed the DTSC and OEHHA levels shown in the Appendix A table. However, OEHHA disagrees that the SFRWQCB ESLs were generally equal to or lower than these available screening levels. The ESLs are higher than CHHSLs across all chemicals that have values in both types of screening levels. In addition, compared to DTSC HERO levels, ESLs are only equal to DTSC HERO levels in the commercial scenario. ESLs are higher than DTSC HERO levels for all chemicals in the residential scenario. With these observations, OEHHA states that it is a risk management decision whether or not to apply SFRWQCB levels to the Site.*

Comment #5: The combined (cumulative) risks and hazards were not assessed. The sum of hazard quotients should be <1.

SGL Response #5: In response to OEHHA's Comments #7 and #11, the cumulative risks and hazards for soil and soil vapor were assessed in this letter.

OEHHA #5: *SGL included in their response to OEHHA comments calculations for cumulative risks and hazards. This is presented in Attachment B and C for the risk characterization of residential and commercial scenarios. It should be noted that the cumulative risk for soil vapor exposure to a resident exceeded the de minimis threshold of 1E-6.*

SOIL VAPOR RISK ASSESSMENT

Comment #6: Table 2, soil gas at 5' bgs. The EPC selected for each COPC was the minimum detected concentration, not the maximum detected concentration. The maximum detected concentrations for all COPC are still below the screening levels and therefore does not impact the overall conclusions.

SGL Response #6: For Table 2, the errors referenced above were the result of errors in the external links within the Excel file. The links have been corrected and the revised Table 2 is attached to this letter.

OEHHA #6: *Errors have been corrected. The response is satisfactory.*

Comment #7: Benzene levels detected at 10'bgs exceed residential screening levels (SFRWQCB, 2016).

SGL Response #7: Benzene was detected at concentrations above the residential screening level of 48 µg/m³... For the protection of a future on-site park maintenance worker, the maximum detected benzene concentrations at 5 feet bgs and 10 feet bgs were less than the commercial screening level of 420 µg/m³.

OEHHA #7: *OEHHA agrees that levels at 5' do not exceed screening levels. Since, the residential scenario is hypothetical and the future land use is recreational, the use of residential screening levels was overly conservative. If development/remediation of the Site is inconsistent with the land uses identified evaluated in this risk assessment, additional evaluation of potential health risks may be necessary. Furthermore, the deed restriction for this Site should explicitly indicate the use of this property.*

Comment #8: Cumulative risks and hazards for soil vapor for this Site was not assessed.

SGL Response #8: In response to OEHHA's comment, the cumulative risks and hazards were assessed in this letter. The excess cancer risk and noncancer hazard were estimated using the equations presented in Apex's response to OEHHA's Comment #7 above.

OEHHA #8: *SGL included calculations for cumulative risks and hazards in Attachment B and C in their response. The response is satisfactory.*

CONCLUSIONS

Comment #9: Although OEHHA found the soil EPCs to be below screening levels, OEHHA recommends Table 1 be heavily revised. There are numerous errors and inconsistencies that attribute to a lack of transparency for this risk assessment.

SGL Response #9: Table 1 has been revised and is attached to this letter.

OEHHA #9: *The response is satisfactory.*

Comment #10: The noncancer risks (hazards) were not assessed for this site.

SGL Response #10: In response to OEHHA's comment, the cumulative excess cancer risk and noncancer hazards were estimated. The results indicate that soil and soil vapor exposures do not pose a human health risk to potential residential or commercial receptors at the Site.

OEHHA #10: *The original OEHHA comment was revised in the response report. However, SGL's response was satisfactory.*

Please do not hesitate to contact me at (916) 327-7338 or by e-mail at Nathalie.Pham@oehha.ca.gov, if you have any questions related to this review.

Memo reviewed by

Hristo Hristov

Hristo Hristov, MD, PhD
Staff Toxicologist

References

DTSC, 2011. Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance). Department of Toxic Substances Control, California Environmental Protection Agency, October, 2011.

US EPA, 1996. Soil Screening Guidance: User's Guide. Office of Solid Waste and Emergency Response, July 1996.

SFRWQCB, 2016. Environmental Screening Levels Workbook. SF Bay Regional Water Quality Control Board, California Environmental Protection Agency, February 2016.

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MEMORANDUM

TO: Paul Cho
Engineering Geologist
Site Cleanup Unit V

FROM: Nathalie Pham, Ph.D. *N.P.*
Staff Toxicologist
Integrated Risk Assessment Branch
Office of Environmental Health Hazard Assessment

DATE: November 18, 2016

SUBJECT: Response to Comments. RESULTS OF ADDITIONAL SOIL AND SOIL VAPOR SAMPLING AND HUMAN HEALTH RISK ASSESSMENT TO SUPPORT SHALLOW SOIL CLOSURE FOR THE EASTERN 15-ACRE PARCEL – Kinder Morgan / SGP – Norwalk Tank Farm, Defense Fuel Support Point Norwalk, Norwalk, CA

R4-16-001

OEHHA # 880423-00

Document reviewed

- CH2M responses to Cal/EPA OEHHA's comments on Summary of Results of Additional Soil and Soil Vapor Sampling and Human Health Risk Assessment, Defense Fuel Support Point Norwalk, Norwalk, CA dated June 28, 2016 by CH2M.
- OEHHA's updated responses are in italics.

History

- In a memo dated August 2, 2016, the human health risk assessment report for the site Defense Fuel Support Norwalk was reviewed by Nathalie Pham.

Comments and Responses

GENERAL COMMENTS

Comment #1: There are five soil and three soil vapor sampling locations in an area of 60,000ft². If the most northern perimeter is at GMW-SF-10, the area would still be about

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40,000ft². The limited number of sample locations may not capture all significant contamination in the area of concern. Besides the ten groundwater monitoring wells, there is no evidence that any other previous sampling had taken place within the area.

CH2M Response #1: The number and locations of soil and soil vapor samples collected as part of the eastern 15-acre investigation were approved by the RWQCB in an email dated, April 15, 2016. Because there is no evidence of significant shallow soil contamination in eastern 15-acre parcel caused by the release of hydrocarbons at the southeastern 24-inch block valve, five soil and three soil vapor sample locations were deemed sufficient.

OEHHA #1: *OEHHA stands by our previous comment on the limitation of the current sampling plan. In addition, it is unclear what the rationale for selecting those specific locations was and why they were not sampled closer to the release from the block valve. The revision of the current sampling plan is at the discretion of the RWQCB.*

SOIL ASSESSMENT

Comment #2: It is unclear what "PZ" for sampling locations stood for.

CH2M Response #2: "PZ" is an abbreviation for piezometer or monitoring well.

OEHHA #2: *The response is satisfactory.*

Comment #3: Soil analytical results for TPH and VOCs are compared to the cleanup goals provided by the 1996 RWQCB Interim Site Assessment and Cleanup Guidebook. COPC detections in soil are below cleanup goals. OEHHA recommends more updated screening levels.

CH2M Response #3: These goals were approved by the RWQCB in its letter to DLA Energy, dated July 12, 2012 (RWQCB, 2012). OEHHA compared the soil concentrations for COPCs with available CHHSLs and DTSC's screening levels and screening levels for those COPCs were not exceeded.

OEHHA #3: *Screening levels were approved by RWQCB and were not exceeded. The response is satisfactory.*

Comment #4: The five soil sampling locations are more than 100' apart from each other. As mentioned previously, potential hot spots may be overlooked with this distance between single sampling locations.

CH2M Response #4: The occurrence of COPCs in the eastern 15-acre parcel is related to deeper soil (smear zone) and groundwater, rather than from fuel releases in shallow soil, which makes tight spacing of sample locations less critical for assessing risks. As stated above, there is no documentation to support significant shallow soil contamination in the eastern 15-acre property; therefore, the RWQCB agreed that five soil sample locations would be sufficient. The data collected from the eastern 15-acre parcel and near the southeastern 24-inch block valve (source area) do not support shallow soil contamination. In summary, shallow and deeper soil data collected by SFPP at or near the eastern 15-acre parcel between 1994 and 2016 support the conceptual site model (CSM) for this site. Soil impacts related to the 24-inch block valve

release (source area) are limited to depths greater than 18 feet bgs, and are related to the hydrocarbon constituents within the smear zone and groundwater.

OEHHA #4: *OEHHA can only comment on the delineation of the sampling locations. There is potential lateral migration of contamination over time and insufficient or non-representative data may underestimate the risk assessment results. VOCs in depth can also migrate through preferential pathways. OEHHA stands by our previous comment and recommends more sampling for the risk evaluation.*

SOIL VAPOR ASSESSMENT

Comment #5: The rationale for the number and location of the samples is not given.

CH2M Response #5: The number and locations of soil vapor samples collected as part of the eastern 15-acre investigation were approved by the RWQCB, as stated above.

OEHHA #5: *Please refer to OEHHA's previous comments (#1 and #4).*

Comment #6: It should be noted that overall variability of concentrations from a single sampling event may contribute to the potential underestimation of risk.

CH2M Response #6: The sampling results from the one event needs to be considered in light of other lines of evidence. Annual sampling near the source area at SVM-9 should also be considered. Data collected from SVM-9 since 2012 have been below screening levels as stated above.

OEHHA #6: *OEHHA agrees that other lines of evidence need to be taken into account as well. However, a single annual sampling at SVM-19 is not adequate to address the cumulative risk at a Site.*

Comment #7: The western side of the Eastern parcel (the area of concern) is not sampled for soil vapor COPCs

CH2M Response #7: As stated above, two additional soil vapor locations (SV-94 and SV-96) within the eastern 15-acre parcel were positioned approximately 220 feet to the northeast/southeast of SVM-19 to provide representation of the western portion of that area. The probes were installed and sampled by DLA Energy's consultant; results are documented in DLA-Energy's Human Health Risk Assessment Report

OEHHA #7: *These two additional locations were not presented in the original Shallow Soil report. These additions for sampling are satisfactory.*

Comment #8: Typically, a 100-foot buffer zone beyond the extent of the soil gas plume should be demonstrated at a Site (DTSC, 2011). This 100-foot buffer is warranted due to uncertainty about future soil gas migration upon redevelopment.

CH2M Response #8: As discussed in the CSM report, there have been several rounds of soil vapor monitoring which confirm the limited extent of VOCs in soil vapor potentially arising from volatilization from groundwater. In addition, an assessment of vapor intrusion was conducted in 2006 in residences adjacent and to the south of the site. The results from this assessment indicated that potential VI pathways did not

appear to be complete in those residences. These results represent a second line of evidence along with the soil vapor monitoring results indicating VI exposure pathways are unlikely to be complete. While the 100-ft distance from the extent of groundwater and soil vapor samples represents a boundary for determining when VI should be investigated, there are already multiple lines of evidence for this site which provide an understanding of the potential for VI pathways, both under current or future land use conditions.

OEHHA #8: *The multiple lines of evidence are supportive. This response is satisfactory.*

Comment #9: In addition, for a residential scenario, there should ideally be a minimum one soil gas sample location for every potential residential building. For comparison, the parcel size for most residential housing tracts in California is approximately one-eighth to one-quarter acre. Hence, the density of soil gas collection for future residential developments should be based on this type of spacing. Bear in mind that the area of concern is 15 acres.

CH2M Response #9: The eastern 15-acre parcel is zoned by the City of Norwalk as industrial/commercial, not residential, as noted in the land use restrictions for this area. Therefore, the soil gas spacing requirements under a residential scenario should not apply.

OEHHA #9: *Please refer to OEHHA's original memo (August 2, 2016). Target scenarios are not explicitly defined in reports. It is implied that scenarios include current and future residential, commercial, and construction workers. If development/remediation of the Site is inconsistent with the land uses identified evaluated in this risk assessment, additional evaluation of potential health risks may be necessary. OEHHA recommends to the RWQCB a deed restriction for the Site to indicate the need for additional site investigations in the case of a change of land use.*

Comment #10: Out of the three soil vapor locations, only one is analyzed for PAHs or PCBs. Please explain.

CH2M Response #10: One soil sample was analyzed for PAHs and PCBs at SVM-19 (5-foot depth). These analyses were specifically requested by the RWQCB. Soil vapor samples were analyzed for VOCs and TPH-g only.

OEHHA #10: *The response is satisfactory.*

Comment #11: Please clarify justification for not using the Johnson & Ettinger model to evaluate vapor intrusion of VOCs.

CH2M Response #11: A conservative assumption for the rate of biodegradation was used based on the range of rates published in the literature, and sandy soil is assumed for purposes of estimating vapor diffusion. The results of this modeling are presented in the 2015 PVI guidance as Figures 9 and 10, and EPA states these can be used to estimate values for α for situations where the total vapor concentration at the source and the vertical separation between the source and bottom building are known. This

approach was used for this site as it is considered more representative for estimating α than the standard J&E model provided by DTSC.

OEHHA #11: *If the VOCs are TPHs only and the source is a gas station, the PVI risk guidance may apply. The rationale is given. This response is satisfactory.*

Comment #12: Table 7 results are from EPA's Petroleum Vapor Intrusion model, but there are no calculations to show the derivation of these results.

CH2M Response #12: The methodology is described in the Shallow Soil Closure Report, but it is summarized below for completeness.

OEHHA #12: *A risk assessment report should be transparent and all statements should be supported and referred to the appropriate documents. The response is satisfactory.*

Comment #13: OEHHA used the J&E model to evaluate the potential risks from vapor intrusion using the COPC groundwater detections from Table 7.

CH2M Response #13: As stated above, the J&E model used by OEHHA does not address the biodegradation known to occur with petroleum hydrocarbons, and isn't recommended for assessing petroleum hydrocarbon risks. The modeling used in the Shallow Closure Report (CH2M, 2016) is consistent with the guidelines presented in EPA's PVI guidance.

OEHHA #13: *The response is satisfactory.*

Comment #14: Groundwater concentrations were based on those detected at GMW-O-15. Please explain why concentrations from this particular monitoring well (and not others) were chosen.

CH2M Response #14: As stated above, groundwater concentrations from GMW-O-15 were selected since this well had the most recent and highest detected concentrations in groundwater and therefore provided the highest overall risk.

OEHHA #14: *This response is satisfactory.*

Comment #15: A current SFPP remediation system is mentioned in the Conclusions of the report, but the types of controls are not explicitly stated or described.

CH2M Response #15: SFPP's remediation systems in the southeastern area (SVE and total fluids extraction) will continue to operate for hydrocarbon mass removal and groundwater containment in the uppermost groundwater zone.

OEHHA #15: *This response is satisfactory.*

EDITORIAL COMMENTS

Comment #16: Page 4 of the report states "one ambient air sample was collected on each day of sampling and analyzed." The language indicates that there may be more than one sample collected, but only one ambient air sample is shown in Table 6.

CH2M Response #16: Comment noted. Only one day was required to complete sampling; therefore, only one ambient air sample was collected.

Paul Cho
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OEHHA #16: *Response is noted. More ambient samples may need to be collected pending future assessment.*

Please do not hesitate to contact me at (916) 327-7338 or by e-mail at Nathalie.Pham@oehha.ca.gov, if you have any questions related to this review.

Memo reviewed by

Hristo Hristov

Hristo Hristov, MD, PhD.
Staff Toxicologist

References

DTSC, 2011. Final Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Vapor Intrusion Guidance). Department of Toxic Substances Control, California Environmental Protection Agency, October, 2011.

US EPA, 1996. Soil Screening Guidance: User's Guide. Office of Solid Waste and Emergency Response, July 1996.

CH2M HILL (CH2M). 2016. Results of September 2015 Soil Vapor Monitoring at the South-Central and Southeastern Areas of the SFPP Norwalk Pump Station, Norwalk, California.