

23 August 2012

Mr. Scott Miller
Remedial Project Manager, Superfund Division
Superfund Remedial Branch, Section C
USEPA Region 4
61 Forsyth Street, SW
Atlanta, GA 30303

Subject: Review of USEPA Vapor Intrusion Evaluation
Capitol City Plume Site
Montgomery, Alabama

Dear Mr. Miller:

On June 11, 2012, pursuant to a Freedom of Information Act (FOIA) request made by The Advertiser Company on July 29, 2011, we received copies of United States Environmental Protection Agency (USEPA) and Agency for Toxic Substances and Disease Registry (ATSDR) reviews of the August 2011 soil vapor and indoor air data collected for the Capitol City Plume Site. The following documents are attached for your reference:

- Memorandum regarding Review of Preliminary Data for Indoor Air and Soil-Gas Sampling Event, Capitol City Plume, Montgomery, AL, dated October 12, 2011, from Ofia Hodoh, Technical Services Section, Superfund Support Branch to Scott Miller, RPM, Superfund Remedial Branch (USEPA Review).
- E-Mail correspondence regarding ATSDR review of preliminary indoor air and soil-gas data, August 2011 sampling for Capitol City Plume VI, dated October 31, 2011 from Scott D. Sudweeks, Toxicologist, ATSDR to Scott Miller, RPM, Superfund Remedial Branch (ATSDR Review).

Key findings and recommendations from these documents are presented and discussed below.

This letter also comments on the attached October 26, 2011 USEPA News Release regarding soil vapor data collected from the Site.

EPA VI Evaluation Review.docx



USEPA Review

Findings

- Indoor air, subslab soil gas and soil gas data from the Montgomery County Annex III building/property showed concentrations that were either below applicable EPA risk-based screening levels or within the USEPA target cancer risk range (i.e., naphthalene).
- Indoor air and soil gas data from the Department of Public Safety (DPS) building/property showed concentrations that were either below applicable EPA risk-based screening levels or within the USEPA target cancer risk range (i.e., naphthalene).
- Based on the results of the August 2011 sampling, “no further evaluation is recommended.”
- Mitigation is unwarranted and continued monitoring of the situation should be conducted.

Comments

Geosyntec agrees that the indoor air, subslab soil gas, and soil gas data from the August 2011 investigation are below risk-based screening levels or within the USEPA target risk range. This is further supported by the results of the February 2012 USGS indoor air sampling at the Annex III building which indicated that indoor air concentrations are below risk-based levels or within the USEPA target risk range. Furthermore, as discussed in Geosyntec’s February 16, 2012 Review of the USGS August 2011 Vapor Intrusion Assessment, (i) groundwater concentrations near the Annex III and DPS buildings are below risk-based screening levels and (ii) the reported concentrations of detected compounds in indoor air are indistinguishable from background concentrations. Based on this multiple lines of evidence evaluation, Geosyntec agrees that no further evaluation is necessary. Further, the recommendation for “continued monitoring of the situation on a regular basis” presented in the conclusion section of the October 12, 2011 USEPA review is inconsistent with and not supported by the data evaluation presented in the USEPA memorandum.

ATSDR Review

Findings

- “The indoor air sampling data from the Annex III and the AL Dept of Public Safety appear to be below levels of concern for health hazards, including both cancer and non-cancer health effects.”
- PCE concentrations in indoor air at the Annex III building are “around the 50th percentile concentration in EPA’s Building Assessment Survey and Evaluation (BASE) study (<http://www.epa.gov/iaq/base/index.html>) and not atypical for large office buildings in urban settings.”
- Further investigation should be conducted regarding the concentrations of PCE detected near the former press location, mezzanine storage closet, and Tag office on the second floor of the building.
- Future indoor air sampling should be conducted using Summa canisters to collect 24-hour samples. The passive samplers used in the investigation “are more suited for screening samples since the data are concentration estimates only.”

Comments

Given the ATSDR toxicologist’s conclusions that PCE concentrations in indoor air at the Annex III building are “not atypical for large office buildings in urban settings”, the recommendation for further investigation into the source(s) of PCE concentrations is not warranted. This is further supported by the results of the February 2012 indoor air sampling conducted by USGS at the Annex III building.

The ATSDR e-mail states that “vapor intrusion is ongoing” at the Annex III building. This conclusion appears to be based on the assumption that the building overlies a groundwater plume; however, the groundwater data collected at the site do not indicate that there is a dissolved plume of PCE or TCE beneath the Annex III building (see figures presented in Technical Critique of the 2011 USGS Report Entitled: “Investigation of the Potential Source Area, Contamination Pathway, and Probable Release History of Chlorinated-Solvent-Contaminated Groundwater at the Capital City Plume Site, Montgomery, Alabama, 2008-2010, Geosyntec Consultants, June 13, 2012). Moreover, indoor air concentrations are below risk-

based screening levels and reflective of background concentrations. Consequently, the conclusion that vapor intrusion is ongoing at the Annex III building is not technically defensible.

USEPA News Release, October 26, 2011

Findings

- Concentrations of constituents detected in indoor air collected from Annex III and DPS buildings were "...at levels below the USEPA's long-term recommended remediation levels and pose no unacceptable risk to humans."
- "[W]idespread PCE and trichloroethylene (TCE) contamination was measured in soil-gas samples collected outside of the Annex III building" and "PCE, TCE, benzene, and toluene contamination was detected in soil-gas samples collected outside of the northern part of the [DPS] building."

Comments

The October 26, 2011 USEPA news release did not acknowledge that detected concentrations of PCE, TCE, benzene, and toluene in soil gas were below risk-based screening levels, even though this finding was reported in the October 12, 2011 USEPA review memorandum.¹ The comparison of the soil gas results to screening levels is an important line of evidence that indicates the vapor intrusion pathway is not of concern at the site. This key finding should have been included in the USEPA news release. The limited characterization of the vapor intrusion pathway in the news release may lead the public to misinterpret the significance of soil vapor data.

Summary

Overall, the conclusions of the reviews performed by USEPA Technical Services Section and ATSDR staff support the conclusions presented in the February 16, 2012 Geosyntec review. Specifically, the reviews find that (i) the indoor air and soil gas concentrations of the primary site constituent of potential concern (i.e., PCE) are below risk-based screening levels and do not result in unacceptable human health risks and (ii) the data collected during the investigation do not demonstrate that the vapor intrusion pathway is complete.

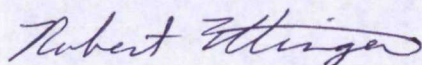
¹ Note that the ATSDR evaluation was completed after publication of the USEPA news release.

Mr. Scott Miller
23 August 2012
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The letter is submitted for inclusion in the administrative record of the Capitol City Plume Superfund Site located in Montgomery, Alabama (EPA ID: AL0001058056), pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Sections 113(j) and (k). 42 U.S.C. § 9613(j)(k).

A hard copy of this letter addressed to USEPA Region 4 will follow in the mail. Please contact me at 805-897-3800, if you have any questions or comments.

Sincerely,



Robert Ettinger
Principal

Attachments: October 12, 2011 Memorandum from Ofia Hodoh, USEPA to Scott Miller, USEPA. Subject: Review of Preliminary Data for Indoor Air and Soil-Gas Sampling Event, Capitol City Plume, Montgomery, AL

October 31, 2011 E-Mail correspondence from Scott D. Sudweeks, ATSDR to Scott Miller, USEPA. Subject: ATSDR review of preliminary indoor air and soil-gas data, August 2011 sampling for Capitol City Plume VI

October 26, 2011 USEPA News Release, EPA Sampling Results announced for Capital City Plume Site in Montgomery, AL.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY



REGION 4

61 Forsyth Street, S.W.
Atlanta, Georgia 30303

MEMORANDUM

October 12, 2011

SUBJECT: Review of Preliminary Data for Indoor Air and Soil-Gas Sampling Event
Capitol City Plume
Montgomery, AL

FROM: Ofia Hodoh
Technical Services Section
Superfund Support Branch

TO: Scott Miller, RPM
Superfund Remedial Branch

THROUGH: Glenn Adams, Chief
Technical Services Section
Superfund Support Branch

Per your request, I have reviewed the **Preliminary Data for Indoor Air and Soil-Gas Sampling Event, Selected Sites, Montgomery, Alabama, August 16-17, 2011, prepared by the USGS**. My review has focused on the human health risk aspects of the data, with particular emphasis on the indoor air and vapor intrusion pathway, as it pertains to the office worker as the "exposed population of interest". As a human health risk assessor, I have reviewed the air data in comparison to health based Removal Action Levels (RALs) and corresponding Regional Screening Levels (RSLs) for industrial air via the inhalation pathway. The soil-gas data were screened against target shallow gas concentrations based on current air toxicity values per the OSWER Vapor Intrusion Guidance Document (EPA, 2002c).

General Comments:

1. Several of the constituents detected (total petroleum hydrocarbons, undecane, tridecane, pentadecane, 1,3,5-trimethylbenzene, 2-methyl naphthalene and octane) could not be assessed quantitatively due to lack of inhalation toxicity values provided by EPA's IRIS (EPA, 2011) or other EPA recommended sources.
2. Based on the Tier 1 Screening for vapor intrusion, several of the constituents detected (undecane, tridecane, pentadecane and octane) in the soil-gas samples fail the criteria

(sufficient volatility and toxicity) thus further consideration of the vapor intrusion pathway is not warranted.

Specific Comments:

Table 1, Annex III, August 2011

The data set for this analysis included thirteen indoor air and one soil-gas sampling locations inside the Montgomery County Annex III building.

Indoor Air:

1. All thirteen indoor air sampling locations exceeded the industrial air RSL (0.36 ug/m³) for naphthalene; however, the levels detected are within the EPA target cancer risk range (1E-6 to 1E-4). No other reported detections on this table exceed risk-based RSLs (EPA, 2011) or RALs for the industrial worker via the inhalation exposure pathway.

Vapor Intrusion:

2. All detected concentrations in the soil gas sample were below their respective shallow soil-gas concentration screening level, which included an attenuation factor of 0.1 and an incremental risk of 1x10⁻⁶ or HQ of 1. Based on these results, no further evaluation is recommended.

Table 2, Annex, August 2011

The data set for this analysis included seven soil-gas sampling locations collected outside the Montgomery County Annex III building.

Vapor Intrusion:

1. All detected concentrations in the soil gas samples were below their respective shallow soil-gas concentration screening levels, which included an attenuation factor of 0.1 and an incremental risk of 1x10⁻⁶ or HQ of 1. Based on these results, no further evaluation is recommended.

Table 3, ALDOT/DPS, August 2011

The data set for this analysis included seven indoor and one aqueous (fluid) sampling located inside the Department Of Public Safety (Former ALDOT) building.

Indoor Air:

1. All seven indoor air sampling locations exceeded the industrial air RSL (0.36 ug/m³) for naphthalene however; the levels detected are within the EPA target cancer risk range (1E-6 to 1E-4). No other reported detections on this table exceed risk-based RSLs or RALs for the industrial worker via the inhalation exposure pathway.

Aqueous Fluid:

1. The data set for this analysis included one (aqueous) sample identified as “Old ALDOT basement (alleged) test lab”, in drain standing fluid. The contaminants detected include total petroleum hydrocarbons (234 ug/L), benzene (2 ug/L), toluene (6 ug/L) and trichloroethylene (6 ug/L). The remaining contaminants were reported as “below detection limit”. EPA does not have risk-based comparison screening values for this particular type of sample.

Table 4, ALDOT/DPS, August 2011

The data set for this analysis included nine soil-gas sampling locations collected outside the Department Of Public Safety (Former ALDOT) building.

Vapor Intrusion:

1. Question 4(g) of the OSWER Vapor Intrusion Guidance asks, “Do measured or reasonable estimated soil gas concentrations exceed generic target media-specific concentrations given in Tables 2(a), 2(b) or 2(c)?” The following table presents a comparison of the screening levels (modified based on current IRIS toxicity values) similar to Table 2(c) of the guidance document to the maximum detected concentrations in shallow soil vapor samples.

Analyte	Location	Concentration (ug/m ³)	Shallow soil vapor screening level (ug/m ³)	Exceed shallow soil vapor screening level
chloroform	Lawn, downgradient from former sump discharge pipe outfall	19.68	5.3E+00	YES
chloroform	Corner of Dexter and Bainbridge	6.58	5.3E+00	YES
PCE	Lawn, near former sump discharge pipe outfall	57.78	2.1E+01	YES

The screening levels presented above include an attenuation factor of 0.1 and an incremental risk of 1×10^{-6} or HQ of 1. Concentrations detected in the above two locations exceeded the chloroform criterion, and one location exceeded the PCE criterion. When samples exceed screening criteria, the user may evaluate the results using scenario-specific attenuation factors under Question 5 of the guidance document. The detected concentrations were screened against more refined screening levels (modified based on current IRIS toxicity values) similar to Table 3c-SG (Question 5 of the EPA guidance document). The most conservative vapor attenuation factor (α) was selected from Figure 3a of the guidance document based on depth to contamination (<3 ft bgs) and was determined to be 2×10^{-3} . The table below presents a comparison of the “soil gas screening levels for (α) to the concentrations detected in the shallow soil gas samples.

Analyte	Location	Concentration (ug/m ³)	Soil Gas Screening Level for α (ug/m ³)	Exceed soil gas screening level
chloroform	Lawn, downgradient from former sump discharge pipe outfall	19.68	2.7E+02	no
chloroform	Corner of Dexter and Bainbridge	6.58	2.7E+02	no
PCE	Lawn, near former sump discharge pipe outfall	57.78	1.1E+03	no

All detected results from the three locations identified in the above table were below the soil gas screening criteria. No other reported detections on Table 4 of this report exceed soil gas screening levels. Based on these results, no further evaluation is recommended.

Conclusions:

- Indoor air and one subslab sample were taken from the Montgomery County Annex III building. Indoor air and subslab samples are often coupled together to aid in the determination of vapor intrusion and to enable determination of background. Results (Tables 1 and 2) showed measurable levels in all locations however the levels were below or within EPA risk targets.
- Indoor air samples were taken from the Department Of Public Safety (Former ALDOT) building. Results (Table 3) showed measurable levels in all locations however the levels were below or within EPA risk targets.
- Elevated detections of chloroform and tetrachloroethylene (Table 4) were found in the soil-gas sample areas outside the Department Of Public Safety (Former ALDOT) building. All detected results were below the soil gas screening criteria.
- TSS recommends a consultation with a Hydrogeologist for a more in-depth understanding of the upper 3 feet of the vadose zone.
- Based on the current data, mitigation is unwarranted and continued monitoring of the situation on a regular basis is advised.
- Remove the source of vadose zone contamination and re-monitor to determine if the presence of VOCs have decreased.

If I can be of any further assistance or if you have any questions, please call me at 404 562 9176.

References:

EPA 2002c. *Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Subsurface Vapor Intrusion Guidance)*. Office of Solid Waste and Emergency Response, FR Notice November 29, 2002.

EPA 2002e. Supplemental Guidance to RAGS: Region 4 Bulletins, Human Health Risk Assessment Bulletins. EPA Region 4, Website version last updated May 2000. [<http://www.epa.gov/region4/waste/oftecsesr/healthbul.htm>]

EPA, 2003. *Memorandum Human Health Toxicity Values in Superfund Risk Assessments*, [OSWER Dir #9285.7-53]; December 5, 2003. <http://www.epa.gov/oswer/riskassessment/pdf/hhmemo.pdf>

EPA 2011. Regional Screening Levels for Chemical Contaminants at Superfund Sites, Interagency Agreement between EPA Office of Superfund and Oak Ridge National Laboratory, <http://epa-prgs.ornl.gov/chemicals/index.shtml>

IRIS, 2011. Integrated Risk and Information System, National Center for Environmental Assessment, Office of Research & Development, USEPA. <http://www.epa.gov/ncea/iris/> (updates added periodically).



**Fw: ATSDR review of preliminary indoor air and soil -gas data, August 2011
sampling for Capitol City Plume VI**

Debbie Jourdan to: Ronald Saskowski

11/09/2011 02:30 PM

Scott Miller

----- Original Message -----

From: Scott Miller

Sent: 11/09/2011 01:34 PM EST

To: Debbie Jourdan

Subject: Fw: ATSDR review of preliminary indoor air and soil-gas data,
August 2011 sampling for Capitol City Plume VI

Debbie,

Please save this to the SDMS file for Capital City Plume.

Thank you,

Scott Miller

Remedial Project Manager

Superfund Division

Superfund Remedial Branch

Section C

U.S. EPA Region 4

61 Forsyth Street, SW

Atlanta, GA 30303

Phone (404) 562-9120

Fax (404) 562-8896

----- Forwarded by Scott Miller/R4/USEPA/US on 11/09/2011 01:34 PM -----

From: "Sudweeks, Scott D. (ATSDR/DHAC/SRAB)" <zdg1@cdc.gov>

To: Scott Miller/R4/USEPA/US@EPA

Cc: Robert Safay/R4/USEPA/US@EPA, "Zarus, Gregory M. (ATSDR/DHAC/SRAB)" <gaz5@cdc.gov>

Date: 10/31/2011 05:31 PM

Subject: ATSDR review of preliminary indoor air and soil-gas data, August 2011 sampling for Capitol City
Plume VI

Hi Scott:

I've reviewed the sampling data you shared, and I'm pleased to note that the indoor air sampling data from the Annex III and AL Dept of Public Safety appear to be below levels of concern for health hazards, including both cancer and non-cancer health effects.

Some observations:

Annex III building

- PCE and TCE were detected in soil gas adjacent to the foundation and under the foundation slab. This building overlies a plume of groundwater contaminated with chlorinated VOCs including PCE and TCE. PCE was detected in building indoor air (though at low levels not posing a health hazard). Given these multiple lines of evidence, I believe that vapor intrusion is ongoing and that groundwater contamination is impacting building indoor and creating a pathway of exposure to building occupants. Although there appears to be a source of vapor intrusion, the detected PCE levels are around the 50th percentile

concentration in EPA's Building Assessment Survey and Evaluation (BASE) study (<http://www.epa.gov/iaq/base/index.html>) and not atypical for large office buildings in urban settings.

- No ambient air samples were taken near the building fresh air intake, so I am not able to state whether the BTEX and TPH compounds indoors could be attributed to outdoor air. My sense is these indoor concentrations are on scale with local urban air, but without data I can't conclude that. The levels detected are below the typical average concentrations detected in the BASE study though and don't appear unusual.
- I observed an increasing PCE trend with indoor air near the former press location (figure 1) which suggests a potential local source deserving further exploration.
- I noticed that the concentration in sample 6 (mezzanine storage closet) was 4x higher than the average (0.38 ug/m³) in the mezzanine. This deserves additional investigation to identify if a preferential pathway exists for vapor migration.
- Sample 21 (Tag office rm 430). This was the highest concentration detected and given that this was taken on the 2nd floor suggests that there may be a preferential pathway for volatiles. I have no building schematics or engineering drawings, but I would have expected the second floor to have lower concentrations than the first assuming a subsurface source. This needs further exploration.

Department of Safety (former ALDOT) building

- In figure 3, the highest soil gas detection was at sample 9 (near former sump pipe outfall) and an increasing gradient (or decreasing depending on your direction) from Dexter Ave to this point. I noticed that there is no soil gas data for the upgradient side of this sampling point. I don't know whether it's higher or not. Might be worth getting some samples on this side (east side) closer to the outfall going toward Washington Ave.
- Given that there are soil gas detections near the building foundation and the building overlies a plume, there is definitely potential for vapor intrusion. However, I cannot tell from the current data whether this is occurring. I need additional information (e.g. sub slab and indoor air samples) to make a determination. More info about the building design parameters, especially foundation construction, would be helpful.
- It's reassuring to have the passive samplers not show a detect indoors, but these samplers are more suited for screening samples since the data are concentration estimates only and not a direct mass per unit air volume quantification. I suggest future indoor air sample runs use SUMMA canisters to collect a 24-hour sample. This would have more confidence that the non-detects are truly representative of indoor air conditions and not an artifact of sampling. Passive samplers (like the Gore Sorbers used previously) give a good response when quantifying soil gas at these low concentrations, though can be subject to interference from soil moisture, so it's important to get that information during the sampling run.

General suggestions:

I recommend pursuing further investigation. A "multiple lines of evidence" approach is recommended that includes characterization of the subsurface geology and groundwater parameters, sub-slab soil gas measurements, modeling vapor intrusion potential and mass flow rates into surface buildings overlying the plume, and indoor air sampling.

1. Collect samples on multiple levels, especially in areas where PCE detected previously.
2. In identifying locations, be mindful of any preferential pathways (i.e. elevator shafts, utility corridors)
3. Collect 8-hour work-shift or 24-hour samples using SUMMA canisters.
4. Ensure analytical procedures are sensitive enough to report detection limits at or below health risk-based screening numbers.
5. When sampling, perform an inventory of VOC sources in the building (e.g. office supplies, cleaning and maintenance items)
6. Collect a concurrent sample of ambient air at building air intake to serve as "background".

Please let me know if I can be of further assistance.

Regards,

Scott

Scott Sudweeks

Toxicologist

Agency for Toxic Substances and Disease Registry

Centers for Disease Control and Prevention

Atlanta, GA

phone: 770.488.1342

Note: The findings and conclusions in this email have not been formally disseminated by the Centers for Disease Control and Prevention/Agency for Toxic Substances and Disease Registry and should not be construed to represent any agency determination or policy.



Newsroom News Releases By Date

EPA Sampling Results announced for Capital City Plume Site in Montgomery, AL

Release Date: 10/26/2011
Contact Information: James Pinkney, 404-562-9183, pinkney.james@epa.gov

(Atlanta, Ga. – October 26, 2011) Today, the U.S. Environmental Protection Agency (EPA) announced the sampling results for part of a remedial investigation of the Capital City Plume site in Montgomery, AL.

The United States Geological Survey (USGS) and EPA collected samples of indoor air, outdoor soil gas, and an indoor water sample in August 2011 in downtown Montgomery, Alabama, at two locations considered to be potential source areas for the Capital City Plume site. The major findings at both locations are listed below:

Montgomery County Annex III Building and Surrounding Area

1. Samples of air collected from multiple locations inside the current Montgomery County Annex III Building (previously occupied by the Montgomery Advertiser) indicate ongoing vapor intrusion by compounds such as perchloroethylene (PCE). However, these contaminants were detected at levels below the USEPA's long-term recommended remediation levels and pose no unacceptable risk to humans. EPA will conduct two additional rounds of indoor air quality sampling over the next two calendar quarters to monitor for any changes in indoor air quality.
2. Widespread PCE and trichloroethylene (TCE) contamination was measured in soil-gas samples collected outside of the Annex III building. Contamination by PCE also was detected beneath the building. Additional soil-gas samples will be collected over time at a dedicated soil-gas sampling network installed near the Annex.

Department of Public Safety Building and Surrounding Area

1. Samples of air collected from multiple locations inside the current Department of Public Safety Building indicate the detection of various contaminants. However, these contaminants were detected at levels below the USEPA's long-term recommended remediation levels and pose no unacceptable risk to humans. The State of Alabama has suggested that some of the contaminant detections may be related to recent building renovations, and they have committed to remediate the suspected source of contamination.
2. PCE, TCE, benzene, and toluene contamination was detected in soil-gas samples collected outside of the northern part of the building. This contamination may represent the use and disposal of solvents related to previous activities conducted at what appears to be an abandoned laboratory. A water sample collected from a drain inside the laboratory contained TCE.

Next Steps

1. EPA is collecting samples from monitoring wells during the week of October 24. The EPA will communicate the results of these samples when analysis is complete.
2. EPA will hold a public information session on Thursday, November 3rd, from 6-8 p.m. at the Montgomery Public Library located at 245 High Street. This session will have an open format, and the public is welcome anytime during the two-hour session to discuss site-related topics with members of EPA, USGS, the Alabama Department of Environmental Management, and the Agency for Toxic Substances and Disease Registry.

For more information about the site, please visit <http://www.epa.gov/region4/waste/npl/nplal/caplumal.htm>

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