GeorgiaBrownfield
ASSOCIATION

September 25, 2020

Ms. Amy Potter
Response and Remediation Program, Land Protection Branch
Georgia Environmental Protection Division
2 Martin Luther King, Jr. Drive SE
Suite 1054
Atlanta, Georgia 30334

Submitted electronically to *amy.potter@dnr.ga.gov*

RE: Georgia Brownfield Association's Comments on EPD's Draft Guidance for Evaluating the Vapor Intrusion Exposure Pathway

Dear Ms. Potter:

On behalf of the Georgia Brownfield Association (GBA), I am submitting our group's comments on EPD's Draft Guidance for Evaluating the Vapor Intrusion Exposure Pathway dated July 10, 2020 (the Guidance). The GBA appreciates the opportunity to provide its input on the Guidance as well as the Georgia Environmental Protection Division (EPD)'s willingness to provide GBA with an extension to submit these comments.

GBA is strongly supportive of both the Guidance and the process by which the Guidance was created. We believe that this document is clear, practical, and technically sound, and will be immensely helpful to those undertaking vapor intrusion evaluations in Georgia. We also appreciate EPD's decision to form a Technical Advisory Committee (TAC) of stakeholders and vapor intrusion experts at the outset to work with EPD to conceptualize and draft the Guidance. Judging by the quality of the Guidance, this approach appears to have been very successful, and we are hopeful that EPD will continue to use TACs on future agency guidance.

As EPD works to refine the draft Guidance, we submit the following comments for EPD's consideration:

Comment 1. Broaden Applicability to Comprehensive Environmental Response Compensation and Liability Act (CERCLA or "Superfund") Sites (Sec. 1.0 Introduction, page 1)

The Guidance is applicable to various Georgia programs including the delegated portions of the U.S. Environmental Protection Agency (USEPA) Resource Conservation and Recovery Act (RCRA) hazardous waste management rules (codified in Georgia at Chap. 12-3-11). Unfortunately, the Guidance does not include potential applicability to the USEPA CERCLA (Superfund) program. Another recent EPD (2020) guidance document does include potential applicability to the USEPA CERCLA (Superfund) program.

USEPA (2018a, Sec. 4.8.1) recommends that the June 2015 Technical Guide (USEPA, 2015) be used to assess the vapor intrusion pathway. USEPA (2018a, Sec. 4.8.2) continues by also recommending that five technical support documents be used during the assessment process. Except for USEPA's August 2015 version of "Frequently Asked Questions about VI"[1] all the other five technical support documents are discussed and referenced in the Guidance.

Recommendation: The Guidance should also be applicable to CERCLA (Superfund) sites in Georgia where EPD provides oversight as a support agency.

Comment 2. Clarify that the Guidance is Applicable to Residential and Non-Residential Settings (Sec. 1.0 Introduction, page 1)

The Guidance states that it should not be used to assess exposure to employees in occupational settings.[2] If an occupational assessment is being considered, the Guidance recommends that EPD be contacted. Because the reference here to "occupational settings" could be interpreted to include industrial and commercial buildings, EPD should clarify the use of the word "occupational" by stating that the Guidance is not intended to be used in place of Occupational Safety and Health Administration (OSHA) permissible exposure limits (PELs) in occupational situations where indoor air quality concerns result from the volatilization of chemicals currently used or processed in a workplace.

Recommendation: The Guidance should clearly state that is intended to evaluate indoor air exposures from vapor intrusion from contaminated soil or groundwater into residential and non-residential (*e.g.,* commercial, industrial and occupational) settings but not to assess worker exposure to chemicals used or processed in the workplace under OSHA.

Comment 3. Broaden Applicability to All Volatile Chemicals (Sec. 1.0 Introduction, page 2)

The Guidance states that its focus is vapor intrusion from: (1) chlorinated volatile organic compounds (VOCs) or (2) petroleum hydrocarbons not covered by EPD's regulations for registered underground storage tanks (USTs). But the analytical test methods in the Guidance (*e.g.,* USEPA Methods TO-14a, TO-15, TO-17 and 8260) can include results for non-chlorinated VOCs.

There are potentially numerous situations where non-chlorinated volatile organic or inorganic chemicals unrelated to releases from registered USTs could pose a potential vapor intrusion threat. For example, there are 209 chemicals listed in the VISL Calculator database (USEPA, 2020) that are considered volatile chemicals (with a Henry's Law constant > 1 x 10^{-5} atm-m^3/mole or a vapor pressure > 1 mm Hg) and they have an associated inhalation unit risk (IUR) value for risk assessment purposes. Slightly more than half of these chemicals are not chlorinated nor are they exclusively petroleum related. Selected chemicals from this third set of chemicals include: mercury, benzene, 1,4-dioxane, methyl ethyl ketone (MEK), etc.

[1] The August 2015 version of "Frequently Asked Questions about VI" is no longer available on USEPA's website. However, similar information is currently available; see "VISL Frequently Asked Questions, May 2020" accessed here: https://www.epa.gov/vaporintrusion/visl-frequently-asked-questions

[2] Merrian-Webster.com defines occupational as "of or relating to a job or occupation."

Recommendation: The scope of the Guidance should be expanded to include the assessment of any volatile chemical with an IUR. The release of volatile petroleum hydrocarbons from a registered UST should be assessed according to EPD's registered UST Management Program.

Comment 4. Multiple Lines of Evidence Approach (Section 2 Overview of Assessment Approach, page 2 and Table 1, page 5)

The Guidance is focused on sampling and analysis of multiple media (*e.g.,* chemistry). While chemistry is one line of evidence, the USEPA Guidance (USEPA, 2015) recommends multiple lines of evidence. The decision logic presented in this section should incorporate other lines of evidence such as building science [*e.g.,* air exchange rate, air changes per hour (ACH)/heating, ventilating and air conditioning (HVAC) zones, etc.], building construction (presence of footers, sumps, slab integrity, etc.), geology/hydrogeology, preferential pathways, etc.

Recommendation: Consider describing a multiple lines of evidence approach in this section and/or Section 3 (Conceptual Site Model). In addition, consider adding other important elements of a CSM to Table 1 to match the added discussion on a multiple lines of evidence approach.

Comment 5. Soil Gas Probe Equilibration (Section 4.2 Soil Gas Sampling Considerations, pages 8 and 9 and Section 4.2.3 Equilibration Time, page 10)

The Guidance recommends minimum equilibration times prior to sampling a newly installed soil vapor implant. In addition to this minimum criterion, consider adding a second option of purging and screening soil gas until readings are stable to demonstrate equilibration. USEPA (2006b) simulated purging via mass-balance calculations and noted that extracting five purge volumes of the tubing and probe prior to sampling were likely sufficient to ensure that sampled gas would be 99 percent of undisturbed soil gas concentrations, even if probe installation had completely diluted the air surrounding the probe.

Recommendation: We suggest adding a discussion with a suggestion to purge and screen soil gas prior to sampling.

Comment 6. Effect of Elevated Reporting Limits (Sec. 4.4 Analytical Methods, page 14)

The occurrence of elevated reporting limits can have a detrimental effect on subsequent risk assessment calculations. If the reporting limit is substantially higher than the risk-based screening level, then it is a common practice to use one-half of the reporting limit (or another surrogate estimation method) in the risk assessment calculations. Unfortunately, this approach can lead to calculating "artificially" elevated risks when one-half of the reporting limit is higher than the risk-based screening level. The concentration of the chemical of interest could be zero or less than the risk-based screening level. However, the elevated reporting limit used as the exposure point concentration masks this important information on the actual concentration of the chemical of interest.

Recommendation: The Guidance should emphasize the importance of archiving the lowest practical reporting limit for subsequent risk assessment purposes.

Comment 7. Using Sampling Results for Commercial Buildings (Table 7 Sources for VISL Calculator Inputs, page 17)

The last row of Table 7 and the table footnote indicate that it may be appropriate to consider representative concentrations, other than the maximum measured concentration, to estimate exposures in large commercial buildings. The text in the table lists the 95% UCL statistic as an example; however, the footnote is highly prescriptive and focuses exclusively on the 95% UCL statistic.

Recommendation: The footnote should be revised to clarify that there may also be other acceptable methods for the development of exposure point concentrations used in the risk-based evaluation of VI data. It might also be helpful to include examples of exposure point concentration calculations in Appendix C.

Comment 8. Modeling for Residential Structures (Section 5.1.2 Use of Modeling, page 19)

The Guidance recommends the use of modeling be limited to commercial buildings that may not be well-represented by the USEPA (2012) attenuation factor database. While this is true for commercial buildings, residential structures in the southeast U.S., including Georgia, are also not well-represented in the USEPA database.

Recommendation: Given the uncertainties and limitation of the USEPA (2012) attenuation factor database with respect to conditions in Georgia, the Guidance should include flexibility for modeling residential structures in Georgia.

Comment 9. Intrinsically Safe Blowers (Section 6.3 Mitigation System Design, Diagnostic Testing and Verification, page 24)

The Guidance at Section 6.3 states that intrinsically safe blowers are recommended for situations where petroleum hydrocarbons or methane may be present. The requirement for intrinsically safe blowers will depend on the magnitude of concentration of petroleum hydrocarbons and/or methane.

Recommendation: The ITRC Petroleum Vapor Intrusion Guidance (ITRC, 2014) recommends the use of intrinsically safe equipment at sites that contain compounds near or within their explosive limits. The ITRC Petroleum VI Guidance (2014) also recognizes methane generation by anaerobic biodegradation and recommends that the lower explosive limit of methane (5 percent) be used to select equipment. EPD should consider adding similar language to the ITRC guidance on when to use intrinsically safe equipment.

Comment 10. Shut Down of VI Mitigation Systems (Section 6.3 Mitigation System Design, Diagnostic Testing and Verification, page 24)

The Guidance does not provide recommended methods to demonstrate that a VI mitigation system is no longer required to mitigate the VI pathway.

Recommendation: Consider adding a brief discussion on the lines of evidence that EPD may accept when proposing to shut down a VI mitigation system.

Comment 11. Errata to USEPA Technical Guidance (References, page 28)

On January 29, 2018, USEPA (2018b) issued errata for portions of their June 2015 technical guidance (USEPA, 2015).

Recommendation: The reference section of the Guidance should include a copy of the January 29, 2018, errata.

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Note that references to sources cited in these comments are included as an attachment.

GBA is prepared to discuss its comments and recommendations on the Guidance, or any other topic, at EPD's convenience. Thank you for affording GBA the opportunity to comment on the draft Guidance.

Sincerely,

Dustin J. Heizer, President, Georgia Brownfield Association
On behalf of the Georgia Brownfield Association Board of Directors

cc: Kelly Andrews Saunders, HL Strategy
Jason Metzger, Georgia EPD

Attachment

Attachment—References

Interstate Technology & Regulatory Council (ITRC). 2014. Petroleum Vapor Intrusion, Fundamentals of Screening, Investigation, and Management; Publ. No.: PVI-1. Accessed at: https://www.itrcweb.org/PetroleumVI-Guidance/#Welcome.htm%3FTocPath%3D 1

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Ohio Environmental Protection Agency (OEPA). 2020. Sample Collection and Evaluation of Vapor Intrusion to Indoor Air for Remedial Response, Resource Conservation and Recovery Act and Voluntary Action Programs; dated March. Accessed at: https://epa.ohio.gov/portals/30/vap/docs/VI%20guidance%20Final%203-6-2020.pdf

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USEPA. 2006b. Assessment of Vapor Intrusion in Homes Near the Raymark Superfund Site Using Basement and Sub-Slab Air Samples, Publ. No.: EPA/600-05/147; dated March. Accessed here: https://nepis.epa.gov/Exe/ZyPDF.cgi/2000D268.PDF?Dockey=2000D268.PDF

USEPA. 2012. EPA's Vapor Intrusion Database: Evaluation and Characterization of Attenuation Factors for Chlorinated Volatile Organic Compounds and Residential Buildings, Publ. No.: EPA 530-R-10-002; dated March 16. Accessed here: https://www.epa.gov/sites/production/files/2015-09/documents/oswer_2010_database_report_03-16-2012_final_witherratum_508.pdf

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USEPA. 2018a. Region 4 Human Health Risk Assessment Supplemental Guidance, March 2018 Update. Accessed here: https://www.epa.gov/risk/regional-human-health-risk-assessment-supplemental-guidance

USEPA. 2018b. Errata for OSWER Technical Guide for Assessing and Mitigating The Vapor Intrusion Pathway From Subsurface Vapor Sources To Indoor Air (OSWER Publication 9200.2-154); dated January 28. Accessed here: https://www.epa.gov/sites/production/files/2016-10/documents/errata.pdf

USEPA. 2020. VISL Calculator. Accessed here: https://www.epa.gov/vaporintrusion/vapor-intrusion-screening-level-calculator