

1. Section A. Page 1, Special Industrial Areas:

It seems reasonable to use the procedures of this guidance to evaluate immediate, direct or imminent threat to public health from vapor intrusion under the Special Industrial Areas Standard of Act 2. However, this guidance only discusses the Statewide Health and Site-Specific Standards.

2. Section A. Page 1, Future Development:

How does a party determine whether a portion of a property could be developed? Must one assess the whole site or just parts that are planned for development?

3. Section A. Page 1, Future Development:

Some properties cannot be improved with a building due to a property's physical constraints, zoning, or other factors. Examples include properties with an extreme grade, within a floodplain, or zoned as undeveloped space. For an undevelopable property that has soil or groundwater exceeding vapor intrusion screening levels, is an environmental covenant necessary?

4. Section A. Page 2, Reopeners:

"If a site characterization report has been submitted and approved by the Department prior to the effective date of this guidance, the remediator should update the VI evaluation portion of the report only."

This section should be clarified to state that approved Act 2 Final Reports do not require updating for vapor intrusion. Given how much this guidance differs from the previous 2004 Vapor Intrusion Guidance, grandfathering reports that have already been approved is appropriate. Full compliance with the proposed guidance for sites that are far along in the Act 2 process could be very disruptive given the conservative nature of the updated soil and groundwater screening values.

5. Section B. Page 3, Acceptable Soil or Soil-Like Material:

This definition states that 5 feet of buffer of soil or soil-like material must be present to use the groundwater screening values, which cannot exhibit "staining." Staining is a very subjective term and is not a reliable indicator of contamination or vapor intrusion potential. We suggest that a more objective criteria be proposed such as, "condition indicative of contaminant saturation" or similar term.

6. Section B. Page 3, Acceptable Soil or Soil-Like Material:

What is the basis of the 100 parts per million by volume field screening value used to determine acceptable soil or soil-like material? No examples of "appropriate field screening instruments" for conducting this screening are provided.

7. Section B. Page 4, Acceptable Soil or Soil-Like Material:

"For the purposes of the petroleum substance vertical proximity distances described below, the Department further defines acceptable soil or soil-like material as exhibiting greater than 2% oxygen in soil gas near the building slab."

What is the basis for 2% oxygen in soil gas near the building slab to define acceptable soil or soil-like material? No reference noted.

8. Section C. Page 6, Immediate Threats:

We would appreciate clarification on what conditions constitute immediate threats to human health or safety.

9. Section C.1. Page 7, Elements of CSM:

"Fate and transport—biodegradation of petroleum hydrocarbons".

This list item should also include "transformation to daughter compounds."

10. Section C.2. Page 7, Screening Values and Points of Application:

The guidance says that the groundwater screening values apply to "...an interval within 10 feet or less of the water table." The guidance should specify that vapor intrusion is not a concern if a clean water lens can be demonstrated on the top of the water table, as discussed in the USEPA's June 2015 "OSWER Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air". As stated in the USEPA guidance a clean water lens as thin as a foot can be sufficient to prevent volatilization of compounds from groundwater to soil gas.

11. Section C.3. Page 10, Combination of Standards:

"Under the Statewide Health Standard a remediator cannot evaluate the VI pathway without also evaluating soil and groundwater because Act 2 does not define indoor air or soil gas as environmental media."

We request further clarification to state that this does not mean that groundwater must be sampled. If no groundwater sampling triggers are present, groundwater does not need to be sampled and a single media (soil only) Statewide Health Standard attainment demonstration can be made without testing of groundwater.

12. Section D. Page 12, Preferential Pathways:

"If there are no screening values exceedances or excessive risks at the first potential receptor, then the remediator is generally not expected to investigate the next potential receptor(s) near the preferential pathway."

We suggest this be clarified as follows:

"If there are no screening values exceedances or excessive risks at the first potential receptor along the identified preferential pathway, then the remediator

is generally not expected required to investigate the next potential receptor(s) near along the preferential pathway.”

13. Section G. Page 18, Alternative VI Assessment Options

The guidance should consider cases where the VI pathway is incomplete due to characteristics of the building, including ventilated structures (open garages) on the lower level, buildings with existing sub-slab depressurization systems or vapor barriers, and buildings that are over-pressurized.

14. Section G.2. Page 20, Using an OSHA Program to Address VI:

“It is also expected that a quantitative analysis of indoor air data using occupational screening values will be included in the VI assessment.”

If the facility’s OSHA program does not require sampling and analysis, what is the reasoning for requiring indoor air data under this guidance? Documentation of an active OSHA Program in place for VI contaminants of concern should be all this is required.

15. Section G.3. Page 20, Soil Gas and Indoor Air Sampling:

The Department should specify the minimum number of samples recommended for a building based on footprint square footage, to provide more clear guidance and reduce potential for disagreements upon review of a characterization.

16. Section G.3. Page 21, Point of Application:

“The POA for near-source soil gas is at least five feet below grade (Figure 1).”

We suggest the following edit for clarification: “The POA for near-source soil gas is at least 5 feet below grade—the base of the building foundation (Figure 1).”

17. Section G.3. Page 21, Indoor Air:

“The indoor air data collected for screening purposes should be collected with the daily average outdoor temperature is at least 15° F below the minimum indoor temperature in the occupied space and the heating system is operating normally.”

“The remediator may initially characterize VI with a minimum of two rounds of near-source soil gas, sub-slab soil gas or indoor air sampling....The two sampling events should occur at least 45 days apart for statistical independence.”

These statements indicate that for indoor air sampling two sampling events must be collected in the cool season to demonstrate attainment of the indoor air screening level. We recommend that only one of the two samples be required in the cool season. Allowing a sampling event in other months will allow for a representation of seasonal variability and provide a better understanding of average conditions.

The criteria for cool season should not be dependent on the temperature inside the building. Some buildings are not consistently heated or maintain lower temperatures than typical residential buildings.

18. Section H. Page 23, Mitigation:

"For residential buildings, standard radon-type mitigation systems may be installed by individuals or firms certified by DEP for radon mitigation pursuant to 25 Pa. Code Chapter 240"

We suggest the following edit: "For residential buildings, standard radon-type mitigation systems ~~may~~ must be installed by individuals or firms certified by DEP for radon mitigation pursuant to 25 Pa. Code Chapter 240." Can a reference be provided where these firms can be identified?

19. Section H. Page 24, Environmental Covenants:

"In most cases the environmental covenant does not need to include language requiring periodic monitoring or reporting to DEP."

What cases would require monitoring and reporting?

20. Section H. Page 24, Environmental Covenants:

"Vapor barriers should be designed and manufactured for use in VOC mitigation. The material should be chemically resistant and have a demonstrated low permeability for the VOCs present."

The minimum specific requirements for vapor barriers for VOC mitigation should be provided.

21. Section H. Page 24, Environmental Covenants:

Residential property owners are likely to have concerns with attaching environmental covenants to the deed for mitigation systems. This could be a barrier to completing an Act 2 remediation. Environmental covenants are not required for similar systems installed for radon mitigation.

22. Section K.1. Page 27, Risk Assessments for Site-Specific Standard:

"These screening values are not appropriate for use in risk assessments being performed under the site-specific standard because the Statewide health standard target risk levels and MSCs may not be sufficiently conservative to account for cumulative risks to receptors from multiple contaminants and/or multiple pathways."

This is inconsistent with the approach under the Statewide Health Standard, where these screening levels can be applied even if there are multiple contaminants and/or multiple pathways.

23. Section K.4. Page 28 and 29, Site-Specific Standard VI Screening:

Page 28: *"The Statewide health standard VI screening values listed in Tables 1 through 5 may not be used for site-specific standard screening."*

Page 29: *"Select the appropriate values for soil, groundwater, near-source soil gas, sub-slab soil gas, or indoor air from Table 1 through 5 and reduce them by a factor of 10."*

These statements appear contradictory.

24. Table 7. Page 55 and 56.

It is unclear when the near-source soil gas, sub-slab soil gas, or indoor air sampling falls under the "Characterization Data" category versus "Monitoring Data" category.

25. Appendix X. Page 70, Attenuation Factor Summary:

The 95th percentile of the empirical values for attenuation factors from the USEPA 2012 Vapor Intrusion Database were used for calculating screening values for groundwater and sub-slab soil gas, representing worst case vapor intrusion conditions. These are conservative attenuation factors, representing the fringe of the dataset. This seems overly-conservative, especially with uncertainty regarding the representativeness of the data in the EPA Vapor intrusion database due to background indoor air sources (See: Brewer, R., Nagashima, J., Rigby, M. Schmidt, M., and H. O'Neill. 2014. "Estimation of Generic Subslab Attenuation Factors for Vapor Intrusion Investigations." Groundwater Monitoring & Remediation, Volume 34, No. 4 pages 79-92.)

26. Appendix Y. Page 75, Vapor Intrusion Modeling Guidance:

"Remediators should use DEP's versions of the model which are based on EPA's advanced model version 3.1 spreadsheets. These versions are posted on DEP's website, and they will be updated periodically with current scientific information when Ch. 250 MSCs are revised."

We searched the PADEP website and were not able to find the Pennsylvania-specific J&E models for download.

27. Appendix Y. Page 76, J&E Model Assumptions:

"For Statewide health standard evaluations the user compares the predicted indoor air concentration on the RESULTS sheet to the Statewide health standard indoor air screening value (SVIA) (Table 5)."

In the USEPA spreadsheets, predicted indoor air concentrations are found on the INERCALCS tab, not the RESULT tab.

28. Appendix Z. Page 92, Pre-Sampling Survey:

The pre-sampling surveys should include a chemical inventory and removal of these chemicals, if possible, from the premises prior to sampling. The

statements that structures containing the chemicals being investigated should not be sampled should be re-written to note that they should not be sampled if the chemicals cannot be removed with sufficient time to aerate the structure and allow for representative samples to be collected.

29. Appendix Z. Page 93, Sampling Equipment:

Tygon tubing is specifically named as not acceptable for sampling. However, there are many grades of Tygon tubing, some which are very inert and used in environmental sampling.

30. Appendix Z. Page 96, Sampling Rates:

"Sample duration should be determined by sample volume, but it is recommended to be at least 30 minutes."

The sampling duration should be clarified. For one-liter Summa Canisters, which are often used for soil gas sampling, a 30-minute sampling duration would result in a low sampling rate of 33 milliliters per minute. For one-liter canisters we typically have a sampling duration of at least five minutes for soil gas, which corresponds to a flow rate of no more than 200 milliliters per minute.

31. Appendix Z. Page 97, Analytical Methods:

Much of the details in this Appendix refer to collecting samples with canisters for analysis by USEPA methods TO-15 and TO-17. However, the guidance includes screening levels for compounds, including 2-methylnaphtalene and polychlorinated biphenyls (PCBs), that require different analytical methods such as USEPA Methods TO-10 and TO-13. Methods TO-10 and TO-13 require large volume of air sample to be purged through absorbent cartridges. This Appendix should be clarified to state that the sampling recommendations pertain to samples that will be analyzed by USEPA Methods TO-15 and TO-17 only.