

# Langan Engineering and Environmental Services, Inc.

Hello,

Langan Engineering and Environmental Services, Inc. (Langan) respectfully submits our comments in the attached table for your review and consideration.

Thank you and best regards,  
Elizabeth Kimbrel

**Langan Comments**  
*Draft Guidance for Evaluating Vapor Intrusion in Washington State*  
 Washington Department of Ecology  
 November 2021

No.	Page/Section/Paragraph	Langan Engineering and Environmental Services, Inc. (Langan) Comment
1	General	Langan recommends including cross-references to sections, where appropriate.
2	General	Langan recommends defining or making the distinction between VOCs, petroleum hydrocarbons VOCs and/or chlorinated VOCs throughout the document.
3	3/1.1	The last bullet of this section references "interim actions"; please consider including a definition of interim actions
4	4/1.2.2/3rd bullet	This bullet states that indoor air sampling would not be recommended at sites where employees are routinely exposed to much higher concentrations of constituents due to facility operations, than they may otherwise be exposed to from constituents migrating into the interior space through VI. Could Ecology provide recommendations for evaluating potential contributions from constituents due to vapor intrusion and/or facility operations. Would an initial round of indoor air monitoring (and/or field screening with a portable GC/MS) be recommended for select VOCs not associated with facility operations?
5	4/1.2.2/1st bullet	We suggest including additional language to clarify the extent of coverage under OSHA standards. The chemicals used in the workplace " <i>which are fully covered by OSHA regulations (e.g., notification, training in personal protective clothing and gear, medical monitoring, documentation)</i> " are the same substances found in soil gas beneath the building.
6	2.1/3rd Bullet	This bullet notes that immediate action is needed when free product is "in contact with the building". Please define or clarify if the "building" includes subsurface features, such as deep foundation elements?
7	5/1.2.2/1st paragraph	This paragraph states that VI evaluations should be deferred until such conditions no longer apply. Is this deferral recommended even if short-term action levels for TCE are exceeded? In addition, should an evaluation that evaluates constituents not associated with facility operations still be conducted?
8	8/1.4/Preliminary Assessments	This section states that if chemicals are present and determined to be toxic and volatile, but the contamination is a sufficient distance from any occupied building, VI is unlikely and a Tier 1 evaluation is not needed. Please clarify or define a "sufficient" distance if possible. Langan recommends referencing Section 2.4 here.
9	10/2.0	Does initiation of a Preliminary Assessment require direct coordination with Ecology? If not, would Ecology be engaged prior to a Tier 1 assessment?
10	24/3.3/1st paragraph	This paragraph notes that if TCE is present in exceedance of short term action levels due to VI, a Tier 2 evaluation should not be delayed. Please clarify the recommended appropriate timing or schedule for implementing at Tier 2 evaluation (e.g. days/weeks), if possible? Is coordination and/or approval from Ecology needed to move forward with a Tier 2 evaluation in this scenario?
11	30/3.6.3/3rd paragraph 44/4.5/4th bullet	Langan notes that analysis of TPH as gasoline by EPA Method TO-3 is not listed as an analytical method in this paragraph. Please confirm that analysis for TPH as gasoline by this method is acceptable.
12	31/3.6.3/2nd paragraph	This section notes good sources of soil gas sampling guidance prepared by California's DTSC. Langan recommends also including the San Francisco Regional Water Quality Control Boards' <i>User Guide: Derivation and Application of Environmental Screening Levels (ESLs) Interim Final 2019 (Revision 1)</i> and DTSC's and California Water Resources Control Board's <i>Supplemental Guidance: Screening and Evaluation Vapor Intrusion Draft for Public Comments dated February 2020</i> .
13	32/3.6.6/3rd paragraph	This paragraph states that it may be possible to collect additional samples at various depth between initial sample and building to better determine the actual degree of attenuation; however this approach would only typically apply to sites where the contaminants of concern are petroleum hydrocarbons. However, Langan notes that attenuation of other VOCs, including chlorinated solvents, could also be occurring. Would Ecology accept results associated with additional samples collected at various depths for sites where the contaminants of concern are VOCs other than petroleum hydrocarbons?
14	34/3.8/1st Paragraph 47/4.12/1st Paragraph	This paragraph states that if maximum risk levels are exceeded, "cleanup levels must be adjusted downward using provisions in WAC 173-340-708". Could Ecology provide additional detail or information regarding downward adjustment methodologies and example scenarios for which these adjustments would need to be applied?
15	39/4.0/4th Bullet	Please confirm that the "VOC Concentrations" referred to in this bullet include petroleum hydrocarbons? This is also referenced in Section 4.2 on page 43.
16	40/4.1/Step 3	Langan notes that in certain scenarios, a formal access agreement may not be required (i.e. when the building owner or tenant has requested the Tier 2 evaluation/sampling). Does Ecology still require receipt of a signed agreement prior to conducting a pre-sampling site walk or sampling event?

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17	47/4.5.1	In addition to temporal sampling, please clarify if sampling under HVAC on and off conditions is recommended (i.e. two sampling events)? Langan notes that, in some cases, sampling under HVAC on conditions may be more representative of building conditions when occupied.
18	47/4.5.1/2nd option	Langan recommends providing additional clarification regarding how to determine the "maximum subsurface to indoor air pressure differential" or a typical range of negative pressures within buildings that may be acceptable during indoor air sampling.
19	50/4.6.1/Note	This note specifically calls out benzene, naphthalene, and <u>TCE</u> as compounds with the potential to be present in indoor air at background concentrations potentially greater than ambient air and indoor air cleanup levels, not related to VI. However, Appendix E, Table E-1 provides ranges of potential background concentrations for benzene, naphthalene, and <u>TPH</u> . Langan suggests confirming that "TCE" in the Section 4.6.1 Note should be replaced with "TPH".
20	68/6.1/1st bullet	Please clarify or define "significantly higher" in this bullet.
21	75/6.6/1st paragraph	Please clarify if there is a standard number of post-construction verification or monitoring points after mitigation systems are installed (i.e. a standard number per square foot of mitigated area)?
22	81/7.0/1st paragraph	This paragraph states that if applicable indoor air cleanup levels are exceeded, remedial action will be necessary even if a mitigation system was already installed. However, for sites with a mitigation system (e.g. VMS), prior to implementing remedial actions, would Ecology accept first making adjustments to the mitigation system to improve its efficacy in an effort to achieve applicable indoor air cleanup levels? For example, modifying a passive VMS to an active VMS through addition of a mechanical blower. If so, Langan suggests revising to paragraph to state that remedial action <i>may</i> be necessary.
23	Appendix A/Section A-3/Page A-4 of A-18/3rd Paragraph	This paragraph states that if TCE short term action levels are exceeded, prompt action must be take. Please define or clarify "prompt action" (e.g., days or weeks).
24	Appendix A/Table A-2, Sections A-4.1 and A-4.4/Pages A-3 of A-18, A-7 of A-18 and A-11 of A-18	This table (Table A-2) and section of Appendix A (Section A-4.1 and A-4.4) refer to a 3-week average TCE concentration. However, the requirements or recommended methods for obtaining the average 3-week concentration of TCE (such as using a portable GC/MS analyzer and/or passive air sampler) are not provided. Please provide details on acceptable methods for collecting the 3-week average TCE concentration.