This document references Chapters and Sections from the ITRC Vapor Intrusion Technical and Regulatory Guidance, and Fact Sheets and Technology Information Sheets from the ITRC Vapor Intrusion Toolkit, published January 2026. These resources can be accessed at: https://itrcweb.org/vapor-intrusion-toolkit.

REVIEWING SOIL VAPOR DATA CHECKLIST

Sample Collection Issues

Active Soil Vapor Surveys

- Did the probe rod have an inert internal tube (stainless steel, Teflon®, nylon)? ☐Yes ☐No ☐N/A
- Was the probe adequately decontaminated between samples? ☐Yes ☐No ☐N/A
- Were at least three dead volumes of the probe purged? ☐Yes ☐No ☐N/A
  - *Avoid excessive purging, unless field screening (O_2, CO_2, photoionization detector, or flame ionization detector and tracer gas) was conducted to demonstrate the absence of atmospheric air intrusion.*
- Were samples collected deep enough to minimize air infiltration? ☐Yes ☐No ☐N/A
  - *At least 5 feet below ground surface unless special precautions are used to minimize purge volume and confirm the absence of atmospheric air.*
- Did it rain shortly before the sampling event? ☐Yes ☐No ☐N/A
  - *Soil vapor sampling should be avoided following significant precipitation.*
  - *Generally, there is no consensus on how much rain can fall or how long you should wait. It depends on soil type, amount of rain, and previous soil moisture content.*
- Was a reliable method used to ensure the absence of atmospheric air leakage? ☐Yes ☐No ☐N/A
  - Was the probe sealed at the surface and throughout the borehole annulus? ☐Yes ☐No ☐N/A
  - Was tracer compound used to demonstrate no leakage down or around probe and at all sample train fittings? ☐Yes ☐No ☐N/A
- Were samples collected close to the surface (less than 3 feet below ground surface) repeated? ☐Yes ☐No ☐N/A
- Were the appropriate sample volumes collected? ☐Yes ☐No ☐N/A
- Were samples collected in appropriate containers for the contaminant(s) of concern? ☐Yes ☐No ☐N/A
- If canisters were used, was each canister certified clean or batch-tested? ☐Yes ☐No ☐N/A

- Were flow controllers and sample trains reused? ☐Yes ☐No ☐N/A
  - ➢ *If yes, they should be cleaned between samples.*
- Were vacuum pumps used in the sample collection? ☐Yes ☐No ☐N/A
- Were excessive vacuums required to obtain a sample? ☐Yes ☐No ☐N/A
  - ➢ *More than 10 inches of H_20 should be avoided.*
- Were samples collected upstream of the vacuum pump? ☐Yes ☐No ☐N/A
- Were samples analyzed on- or off-site? ☐Yes ☐No ☐N/A
- For canisters, were samples stored at ambient air temperature? ☐Yes ☐No ☐N/A
- Were samples analyzed within recommended holding times? ☐Yes ☐No ☐N/A
- If both on-site and off-site analyses were performed, do the results generally agree? ☐Yes ☐No ☐N/A

Passive Soil Vapor Surveys

- Were method and trip blanks analyzed? ☐Yes ☐No ☐N/A
  - ➢ *This is needed to show the absence of contaminants from laboratory or transportation back and forth to the site.*
- Were samplers left in the ground for consistent and sufficient time periods? ☐Yes ☐No ☐N/A
  - ➢ *This is generally a few days to two weeks.*
  - ➢ *Collect in the same sequence as they were deployed.*
- Were duplicate samples collected, and how do they compare? ☐Yes ☐No ☐N/A
- Are data used appropriately? ☐Yes ☐No ☐N/A
  - For what purpose? _____
  - Were active soil vapor samples collected for comparison? ☐Yes ☐No ☐N/A

How well do passive and active samples compare? _____

_____

- Could measured values be from infiltration of contaminated atmospheric air or from an overlying surface (e.g., asphalt, dirty soil)? ☐Yes ☐No ☐N/A
- Are relative concentrations of compounds detected consistent with expectations from other media (soil vapor, groundwater, bulk soil)? ☐Yes ☐No ☐N/A

Flux Chamber Surveys

- Were the sample locations representative? ☐Yes ☐No ☐N/A
  - Were they near vapor migration routes? ☐Yes ☐No ☐N/A
  - Were they from open ground, covered ground, cracked ground covers? ☐Yes ☐No ☐N/A
- How long was the deployment time? _____
- Was it long enough to average temporal variations? _____
  - *Match indoor air default collection times.*
- Was a sweep gas used? Was the outflow balanced to the inflow to ensure no leaks? ☐Yes ☐No ☐N/A
  - *If outflow is lower than inflow, sweep the gas exiting the bottom.*
  - Are pressure measurements adequate to test this? ☐Yes ☐No ☐N/A
- Did the chamber concentration reach high enough values to influence the flux? ☐Yes ☐No ☐N/A
  - *Should be no more than 20% of risk-based maximum flux value.*
- What volume of vapor was collected from the chamber? ☐Yes ☐No ☐N/A
  - *Volume collected should be less than 20% of chamber volume.*
- How fast was it collected? Did it create advective flow from the subsurface or sides? ☐Yes ☐No ☐N/A
  - *Flow should be less than 200 mL/min.*
- Was the chamber subjected to temperature extremes? ☐Yes ☐No ☐N/A
  - *Shield from direct sunlight.*
  - *Chamber surface must stay above dew point.*

SAMPLE ANALYSIS ISSUES

The following questions should be asked when examining the analysis of any type of soil vapor sample—active, passive, or flux chambers.

What methods are being used? _____

_____

- Can they detect the target compounds at the required levels of sensitivity? ☐Yes ☐No ☐N/A

- Have the method-required calibration standards been analyzed? ☐Yes ☐No ☐N/A
- Are the reported values within the documented calibration range of the instrument? ☐Yes ☐No ☐N/A
- Are any compounds coeluting on a nonhalogen-specific detector? ☐Yes ☐No ☐N/A
- Have the method-required QA/QC samples been analyzed (blanks, duplicates, etc.)? ☐Yes ☐No ☐N/A
- Are the calibration standards within method-required holding times and traceable to a certified source? ☐Yes ☐No ☐N/A
- What units are the data reported in (µ/L, µg/m^3, ppbv, ppmv)? _____
- For high concentrations, have large dilutions been performed? ☐Yes ☐No ☐N/A

Passive Soil Vapor Samples

In addition to the analytical issues summarized above, the following issues should be examined with passive soil vapor samples:

How are the samples desorbed from the collector? _____

_____

_____

- Is the desorption process quantitative, and does it fractionate? ☐Yes ☐No ☐N/A
- What units are the data reported in (mass, concentration in headspace, etc.)? _____

Surface Flux Chamber Samples

In addition to the analytical issues summarized above, the following issues should be examined with surface flux chamber samples:

- Is the method detection limit low enough to reach the expected chamber concentrations for the acceptable flux? ☐Yes ☐No ☐N/A
- Were soil flux samples collected during conditions most likely to result in the upward advective flux of vapor-forming chemicals in adherence to U.S. Environmental Protection Agency guidance (USEPA Office of Solid Waste and Emergency Response 2015)? ☐Yes ☐No ☐N/A

What were the wind and barometric pressure conditions/trends during the flux chamber activities? _____

_____

_____

REFERENCES

USEPA Office of Solid Waste and Emergency Response. 2015. *Technical Guide for Assessing and Mitigating the Vapor Intrusion Pathway from Subsurface Vapor Sources to Indoor Air*. U.S. Environmental Protection Agency. **https://www.epa.gov/sites/production/files/2015-09/documents/oswer-vapor-intrusion-technical-guide-final.pdf**.