

Vermont

Department of Environmental Conservation

VI Assessment Draft SOP's Update

Vermont Vapor Intrusion Workshop

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We are developing Standard Operating Procedures (SOP's) to help standardize how we conduct Soil Vapor Surveys and how we assess and remediate VI issues in VT.



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The SOP's drafted to date include:

- Soil Vapor Survey
- Soil Vapor Sampling
- Building Chemical Inventory
- Sample Collection Record
- Sub-Slab Sample Collection
- Indoor Air Sample Collection

Others Still Needed?



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Soil Vapor Survey/ Sampling

- As part of a site investigation
 - Screening Level
 - Passive (AGI Sorber or equivalent)
 - Active
- As part of a Specific VI Assessment
 - Permanent or Temporary Sample Point
 - Summa Canister



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Building Chemical Inventory

- Standardized Form
 - Residential & Commercial
 - Do we need Separate Forms?

RESIDENTIAL BASEMENT AND CONSTRUCTION CHARACTERISTICS
(Check those that apply)

Below grade construction:	concrete	concrete	stone	brick
Basement type:	full	overlapped	floor slab	other
Basement floor:	concrete	slab	stone	other
Basement floor:	concrete	concrete	concrete with	
Concrete foot:	concrete	brick	concrete with	
Foundation walls:	concrete	brick	stone	other
Foundation walls:	concrete	concrete	concrete with	
The basement is:	not	above	dry	wet
The basement is:	finished	unfinished	partially finished	
Is it a crawl or ramp space? <input type="checkbox"/> Y <input type="checkbox"/> N	How many? _____			
Is there water in the ramp or crawl? <input type="checkbox"/> Y <input type="checkbox"/> N	How many? _____			

What is the condition of the slab: _____
 What is the condition of the walls: _____
 If there is a basement, what is the approximate lowest depth below grade? _____ (feet)
 Identify potential and vapor entry points and approximate size (e.g. cracks, utility ports, doors).

Sample Collection Record

- Standardized Form



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Sub-Slab Soil Vapor sampling

- When to take sample
 - Full Slab, Half Slab, Dirt Floor
 - Crawl Space
- Where to sample - How Many Samples
- Sample Methodology – Leak Detection
- Sample Collection Duration 1 hr - 8 hr – 24 hr
- Sample Port Design



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Indoor Air Sampling

- When to take sample
- Where to take sample - How many samples
- Sample Methodology
 - Active
 - Summa Canister
 - Sample Duration
 - Passive
 - When are these acceptable



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Next steps:

- External Review
 - VT Consultants
 - Others?
- Revisions
- More review
- Work Group
- More Review
- Final SOP's



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More SOP's Needed:

- SOP's for testing effectiveness of VI mitigation
- What is the performance objective?
 - Is indoor air quality an acceptable goal or does the ubiquitous presence of VOC's in every day materials create too many false positives?
 - Can we measure effectiveness by physically demonstrating vapors can't enter house (pressure differentials)?
- Other?



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SOP's for Passive Sub-Slab VI Remediation

- Many of our remedial responses to VI issues have been focused around using Active Sub-Slab Depressurization systems
- We have however also used Passive Remedial approaches and combinations of Passive and Active approaches.

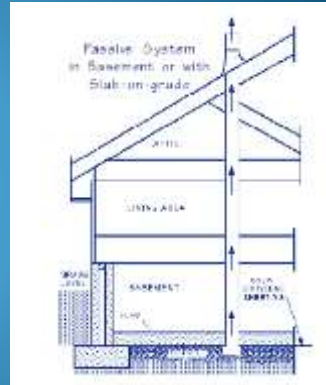


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Passive Sub-Slab Depressurization for New Construction:

Fairly “Basic” Generally:

- Physical barrier /membrane such as a landfill liner,
- Sprayed liner around penetrations of membrane with a product such as Liquid Boot™, etc.
- Passive vent system installed in sub-slab gravel or sand layer **vented to above the roof.**



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Issues with passive systems in new construction:

- Do we need formal design standards/building codes ?
- Is it necessary to test system?
- How often do we test?
 - Yearly?
 - How many years?
- How do we test the system?
 - Can we use tracers?
 - If radon issues exist, can indoor air radon be a measure ?
- Does the stack have to be in the center of the building?
- Can a membrane be used alone?



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Existing Buildings with known VI issues

- When is it acceptable to use passive VI remedial options?
 - Newer versus older building?
 - Condition of sub-slab (if a slab exists)
 - Condition of foundation
 - Type of foundation (poured, fieldstone, concrete block)
 - Are sumps present?



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Existing Buildings with known VI issues

- What options are available?
- What building modifications may be necessary?
- Can passive depressurization be used alone?
- How does a passive system react to weather changes?
- How do we test the effectiveness of the system?
 - Indoor air quality?
 - Other?



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Discussion



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Next Steps

Work Group?

Sign Up Sheet

SOP reviewers

SOP work group

Passive Remediation work group



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Questions?

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