Introduction: Motivation and Challenges

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U.S. EPA "State of VI Science" Workshop

Reliable Ongoing Human Exposure Protection to Vapor Intrusion Using Cleanup as the Simplest Approach

Disclaimer: The views expressed in this presentation are those of the author and do not necessarily represent the views or policies of U.S. EPA.

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Motivation and Challenges

- Characterization of Vapor Contamination
  - Appropriately evaluate sites
  - Identify all buildings with significant risk
  - Conceptual Site Model (CSM)
  - Finding Simple, Long-Term Solutions
  - Many sites not yet assessed for VI risk
  - Previously assessed sites used under protective assessment
- Ensuring Optimal Protection
  - Do we focus on monitoring or preventing VI exposures?
  - How can we ensure we accurately estimate exposures?
- Regulatory Framework
  - Addressing the challenges and limitations of the current regulatory framework
  - Suggesting the need for a more effective system of managing vapor intrusion risks

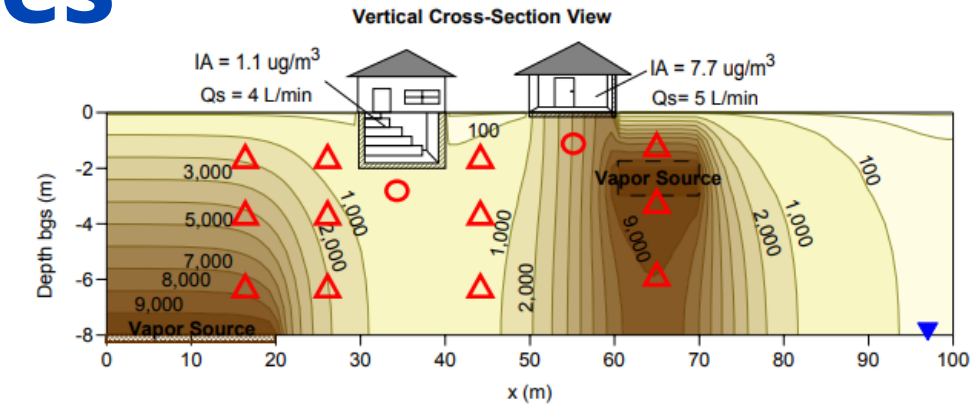
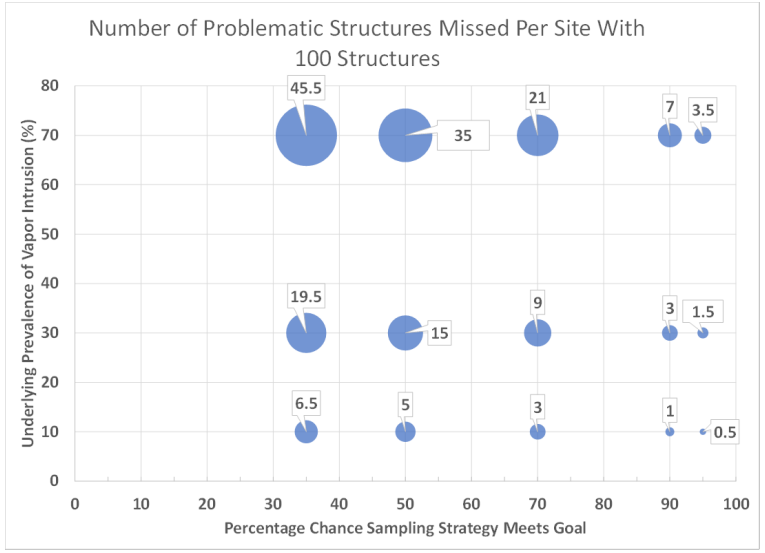


Figure 56. Scenario with multiple buildings and multiple sources. The symbols highlight areas for comparing soil vapor concentrations.
Circles are sub-slab locations; triangles are exterior locations.

Conceptual Model Scenarios
for the Vapor Intrusion Pathway
US EPA (2012)
https://www.epa.gov/sites/default/files/2015-09/documents/vi-cms-v11final-2-24-2012.pdf

Current State and Technical Challenges

- Economical Site Assessment:
  - It may cost more to assess the problem then fix it.
  - Can we select sampling strategies for efficient and economical vapor intrusion site assessment

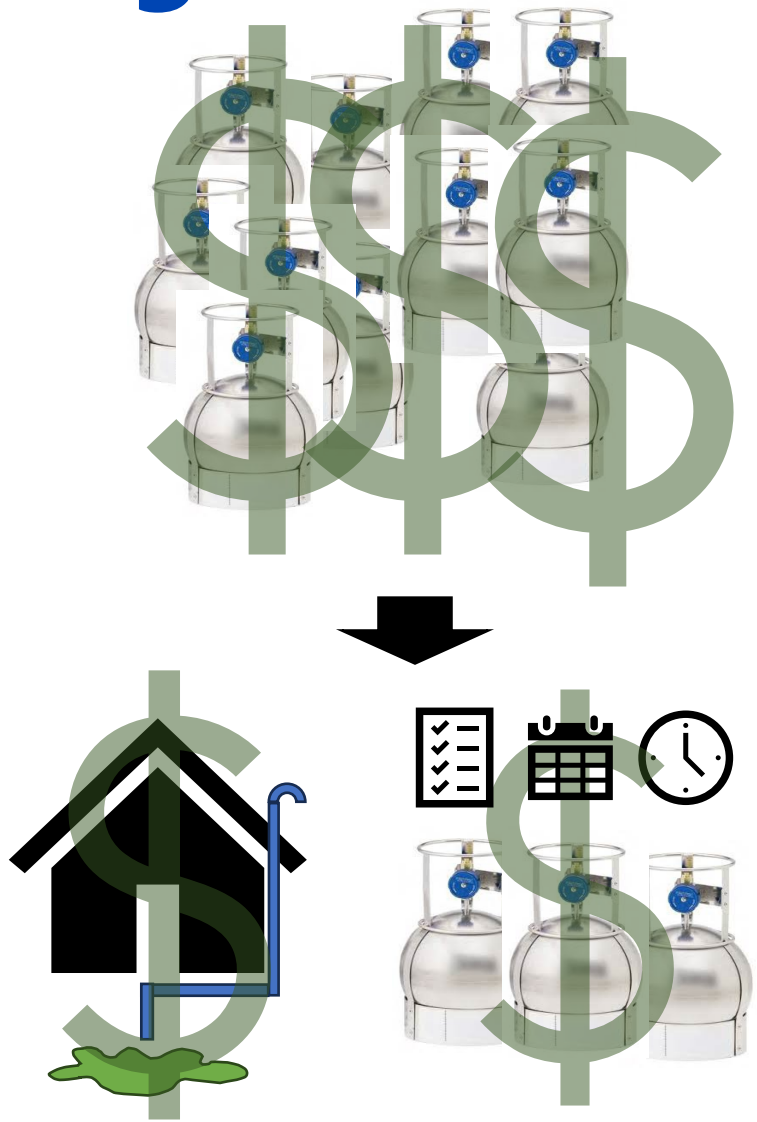


- Temporal and Spatial Variability
  - Different CSMs with different sources/vapor pathways will have different patterns of temporal and spatial variability
  - Indoor air quality fluctuates a lot and can appear random

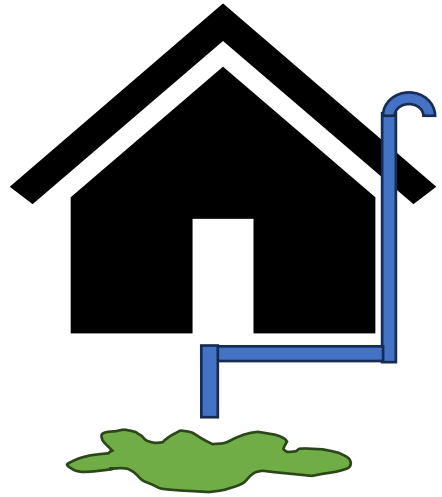
- Need for Comprehensive Monitoring
  - Across all sites
  - Across all buildings
  - Over time

Proposed Solutions and Strategies

- Multiple Lines of Evidence to Improve Characterization of Vapor Contamination
  - Long duration
  - Indicator and tracer targeted
  - CSM guided sampling
- Engineering Controls
  - mitigation where necessary for the short/medium term;
  - remediation wherever feasible and
  - needed to eliminate long term uncertainty
- Public Education



Importance of Cleanup



- Most effective long-term solution for vapor intrusion
- Ensures that the source of contamination is addressed
- Reduced reliance on timing indoor air samples correctly
- Economics
  - May be cheaper then extensive long term sampling needed to ensure protectiveness
  - Results are very sensitive to the action levels selected and the details of a given buildings concentration distribution.
  - More cases should be analyzed

Questions to move us forward

- Are there limitations to the current commonly implemented VI assessment strategies?
- Could practitioners and site specific regulators make wiser decisions within the current regulatory frameworks to better achieve the intent of the laws and regulations?
- Can EPA and states better incentivize and track more cost effective, and protective VI site management?
- Is selecting sampling strategies for efficient and economical vapor intrusion site assessment the best path forward?
- How can we move closer to durable protection?

Session	Start Time	End Time	Time	Presenter (s)	Presentation Title
Workshop 5	1:30	1:45	0:15	AJ Kondash	Introduction & Agenda (THIS TALK)
	1:45	2:10	0:25	Chase Holton	Refining the Vapor Intrusion Conceptual Site Model to Account for Unanticipated Sources and Pathways
	2:10	2:40	0:30	Henry Schuver	Overview of the Problem & Solutions
	2:40	3:10	0:30	Chris Lutes	Indoor and Subslab Concentration Distributions: The Reality and What That Means for Site Assessment Strategies
	3:10	3:20	0:10	Break	
	3:20	3:50	0:30	Chris Lutes	How, where, and when should we be sampling?
	3:50	4:15	0:25	Bo Stewart	Concepts for VI Source Containment or Interception
	4:15	4:45	0:30	Moderated	Group discussion of concept for a soil gas control environmental indicator
	4:45	5:00	0:15	Henry Schuver	Summary and wrap it up! Final questions