VAPOR INTRUSION

Status of USEPA and State Guidance

USEPA Efforts

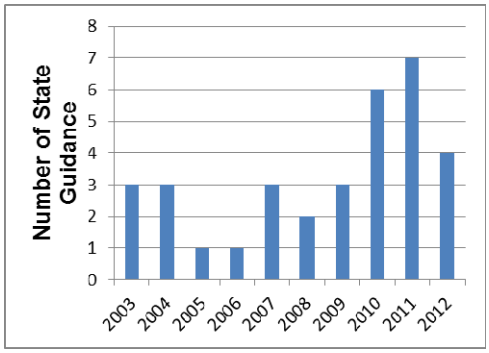
The USEPA recently issued "draft final" vapor intrusion guidance documents for public comment. The guidance is intended to 1) ***replace the 2002 draft*** currently in use and 2) help ensure vapor intrusion investigations, exposure assessments, and mitigations are ***technically, scientifically, and nationally consistent***. USEPA issued two separate draft final documents:

- OSWER Final Guidance – applicable to ***RCRA, CERCLA, Brownfield*** sites.
- Guidance for Addressing Petroleum Vapor Intrusion at Leaking Underground Storage Tank Sites – applicable to ***UST sites*** regulated under ***Subtitle I*** of the Solid Waste Disposal Act.

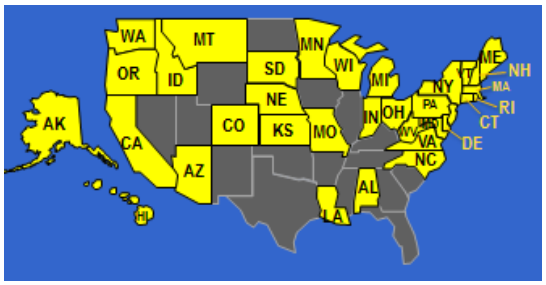
The public comment period, which ended in June, generated huge interest and more than 1500 pages of comments. USEPA has not indicated their strategy for finalizing the guidance or time frame for responding to the public comments.

State Guidance

While the USEPA works to develop final guidance, many individual states have already issued their own vapor intrusion guidance documents.



At present, 34 states have issued vapor intrusion guidance, with more than 17 new guides or updates since 2010.



Snapshot of USEPA and State Guidance

USEPA	
The Good	**The Bad**
• Comprehensive discussion of principles, tools	• Difficult to implement: lacks clear decision logic and exit ramps, requires large data collection effort, potentially with multiple rounds of testing
• Recognizes differences between petroleum VI and chlorinated VOC VI	• Guidance applicability based on regulatory program, not chemical characteristics and behavior
The Details	
Draft Final Guidance (April 2013) and Public Comments on www.regulations.gov	

States	
The Good	**The Bad**
• Step-wise processes to identify and prioritize VI risk, including screening distances and concentrations • Guidance on sampling, data interpretation procedures	• Details vary from state to state
The Details	
State Guidance Overview article on www.gsi-net.com	

Practical Considerations

Uncertainty will remain in vapor intrusion assessments and mitigation actions while the USEPA guidance development process continues. Meanwhile, delaying evaluation of the vapor intrusion pathway is not necessarily practical or prudent because of other concerns such as property transfer, litigation, and state requirements. Therefore, we recommend the following to alleviate uncertainties of vapor intrusion evaluations:

- ***Follow state guidance***: Many state guidance documents contain detailed information on sampling methods and other procedures. Even if your site is located in a state without formal guidance, reviewing other states' procedures (e.g., states in the same USEPA Region) may help with developing an action plan.
- ***Follow ITRC guidance***: ITRC is a national public-private organization which develops consensus-based guidance. The 2007 "Vapor Intrusion Pathway: A Practical Guideline" (www.itrc.org) describes various tools for investigation, data evaluation, and mitigation. The ITRC Petroleum Vapor Intrusion workgroup is currently developing guidelines specific to petroleum hydrocarbons which reflect recent research. The PVI vapor intrusion document is scheduled to be completed in 2014.
- ***Avoid common pitfalls***: One common problem with vapor intrusion investigations, for example, is interference from indoor sources of volatile organic compounds (VOCs). These indoor sources, such as consumer products (e.g., glues and household cleaners), can off-gas chemicals that can be mistaken for vapor intrusion. It is extremely difficult to identify indoor sources using conventional means. However, innovative methods are now available which address this problem.




GSI's Vapor Intrusion Toolbox

- Conventional Vapor Intrusion Investigations (soil gas/indoor air/outdoor air sampling with Summa canisters)
- Investigations utilizing Innovative Technologies
  - On-Site GC/MS (HAPSITE) Analysis: for VOC source identification*
  - Building Pressure Control: for VOC source identification and assessing temporal variability*
  - Compound-Specific Stable Isotope Analysis: for VOC source identification*
  - Hydrocarbon Fingerprinting: for VOC source identification at petroleum hydrocarbon sites
- Strategic Planning: portfolio management to prioritize buildings for assessment
- Third-party technical support, regulatory reviews, and litigation support: for "cold eye review" important because multiple-lines-of-evidence data collection and interpretation can be subjective.

** Investigation method developed by GSI through DoD ESTCP Program.*

GSI will continue to provide periodic updates regarding important regulatory developments. Should you have any questions regarding these or other upcoming issues, please feel free to contact us at (713)-522-6300.

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About GSI

GSI ENVIRONMENTAL INC. (GSI) is an environmental engineering consulting company with offices in Houston, Austin, and Newport Beach. We specialize in the management of environmental risk. Since 1986, GSI has been providing industry with innovative solutions to soil, groundwater, surface water, and air pollution problems.