



## Vapor Intrusion (VI) Exposures – The Challenges of, Need for, and Benefits of Long Term Stewardship (The 24th Annual International Conference on Soil, Water, Energy, and Air—March 18, 2014, San Diego, CA)

This one-day technical workshop is focused on featuring scientific observations and evidence regarding the accessibility and predictability of vapor intrusion (VI) exposures. Many practitioners currently use a limited number of short duration samples for a limited-duration/one-time characterization and decision approach. The workshop will present the evidence for the optimal condition and frequency of ongoing monitoring and protection from VI exposure under both natural (varying) and engineered (controlled) attenuation scenarios. Presentations will also focus on evidence for temporal changes in VI primarily associated with natural factors affecting such parameters as: 1) VI sources; 2) subsurface contaminant migration; 3) building/structure behavior; and 4) atmospheric effects. Recent and future developments are anticipated to improve knowledge of toxicity and exposure durations of concern, as well as assessment and monitoring methodologies. These topics and more will be discussed throughout the workshop. The workshop will include panel discussions on how the evidence relates to some of the more important related risk management decision-making and response actions (i.e., balancing criteria) for VI mitigation strategies including: 1) long-lasting, 2) protective, and 3) cost-effective. Both disruptions and benefits to the building occupants and others will also be discussed. In addition, practical experiences of federal, state and local decision-makers in the use of engineered controls to mitigate any future VI exposures will be presented, including long-term benefits. Case studies of long term management and refinement of mitigation approaches also will be presented.

### **8:30–9:20 Introduction**

- 8:30–8:40 Welcome and history of EPA’s VI workshops  
*Doug Grosse, Brian Schumacher, U.S. EPA ORD*
- 8:40–9:00 U.S. EPA and state updates—TCE short-term exposure concern and other VI updates  
*Alana Lee, U.S. EPA Region 9; Marcia Bailey, U.S. EPA Region 10; Paul Locke, Mass DEP*
- 9:00–9:20 Overview of long term stewardship (LTS): a perspective for vapor intrusion  
*Henry Schuver, U.S. EPA OSWER*

### **9:20–12:00 Updated Evidence from Continuous Monitoring of (Primarily) Natural Attenuation**

- 9:20–10:00 Four winters of continuous vapor intrusion monitoring in Indianapolis –temporal variability in indoor air  
*Brian Schumacher, John Zimmerman, U.S. EPA ORD; Chris Lutes, ARCADIS; Robert Truesdale, RTI*
- 10:00–10:30 **BREAK**
- 10:30–11:10 Sun Devil Manor, Layton, UT—implications of natural temporal variability for accuracy in decision making; the influence of depressurization; and the effects of preferential pathways and subsurface modifications  
*Paul Johnson, Arizona State University*
- 11:10–11:30 Adding the evidence from short and long term verification-monitoring of radon  
*Dan Steck, St. John's University*
- 11:30–11:45 Evidence from large multi-family and nonresidential buildings  
*Chris Lutes, ARCADIS; Kyle Hoylman, Protect Environmental Service*

- 11:45-12:00 The challenges of using low-density monitoring data under natural conditions as a control to meet LTS goals: evidence from ‘data-rich’ studies: *a panel discussion*. *Lutes, Johnson, Truesdale*
- 12:00–1:05 *LUNCH*
- 1:05–1:45 Legal & Institutional Controls for Ongoing Protection and LTS: Case Examples**
- 1:05–1:20 Layering institutional controls – example vapor intrusion area in EPA Region 9 and periodic assessments and monitoring (e.g., 5-year reviews)  
*Alana Lee, U.S. EPA Region 9*
- 1:20–1:35 MassDEP regulatory requirements for LTS at vapor intrusion sites  
*Paul Locke, MassDEP*
- 1:35–1:45 Requirements for long term O&M and monitoring, with an example from Indiana  
*David Gillay, Barnes & Thornburg, LLP*
- 1:45–3:55 Physical & Engineering Controls for Ongoing Protection and LTS: Case Examples**
- 1:45-2:05 Sub-slab depressurization (SSD): highlights and hurdles in EPA New England  
*Jim DiLorenzo, U.S. EPA Region 1*
- 2:05-2:25 Long term stewardship through engineering controls: 16 year case history  
*Dave Folkes, Geosyntec Consultants*
- 2:25-2:40 Soil gas/VI Mitigator’s Credential (improving the quality of soil gas/VI mitigation)  
*American Association of Radon Scientists and Technologists (AARST):  
Kyle Hoylman, Protect Environmental; Tony McDonald, A-Z Solutions, Inc.*
- 2:40–3:00 Research for improving the effectiveness, efficiency, and sustainability of mitigation  
*Todd McAlary, Geosyntec Consultants*
- 3:00–3:30 *BREAK*
- 3:30–3:50 Telemetric management of sustainable vapor intrusion mitigation systems –  
*Tom Hatton, Clean Vapor LLC*
- 3:50-4:10 Informational Devices for Improved Awareness and Enhanced Protection (LTS)**
- 3:50-3:55 Mapping: sites, ICs, proximate community/receptor characteristics and health outcomes (spatially + temporally associated); and ‘Soil Gas Safe’ communities  
*Henry Schuver, U.S. EPA ORCR*
- 3:55–4:10 Report out from Monday’s Stakeholders’ Forum and perspectives on IC controls  
*Lenny Siegel, Center for Public Environmental Oversight (CPEO)*
- 4:10-4:40 Benefits and Costs of LTS Controls for VI – Conceptual Discussions**
- 4:10–4:25 Documenting the benefits of regulatory program/PRP/community efforts to control VI. Tables and/or maps of people, buildings, and acres known to be protected by: legal-institutional and/or physical-engineering controls, and supported by informational devices.  
*Henry Schuver, U.S. EPA ORCR; Robert Truesdale, RTI*

4:25–4:40 Collateral benefits of active soil depressurization for VI mitigation  
*Bill Angell, University of Minnesota*

**4:40–5:30 Panel Discussion — ‘Balancing Criteria’ for Selecting LTS Controls**

What does the evidence suggest is needed to provide LTS that is:

- “Promptly” implementable and continuous – *Alana Lee, U.S. EPA Region 9; Marcia Bailey, U.S. EPA Region 10; Paul Locke, MassDEP*
- Verifiable as (e.g., 95% confident) – *Paul Johnson, ASU; Chris Lutes, ARCADIS*
- Cost-effective – *Ian Hers, Golder Associates*
- Long-lasting/sustainable/optimized – *Dave Folkes, Jeff Kurtz, Todd McAlary, Geosyntec Consultants*
- Least disruptive/most beneficial – for occupants, owners, and communities – *Lenny Siegel, CPEO*

**5:30 Workshop Ends**

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**For more information, please contact:**

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