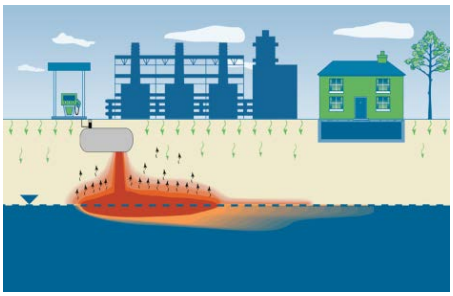
ITRC Guidance Document Information

Product Announcement | November 2014

Petroleum Vapor Intrusion:
Fundamentals of Screening, Investigation, and Management

This ITRC guidance document was developed to assist in evaluating the PVI pathway at sites where soil or groundwater is contaminated with petroleum hydrocarbons (including LNAPL). The document provides a science-based, stepwise approach for screening, investigating, and managing the PVI pathway under different regulatory frameworks. You can access this new guidance in both web-based and PDF formats at: ***www.itrcweb.org/PetroleumVI-Guidance***.



Background

Chemical contaminants in soil and groundwater can volatilize into soil gas and migrate through unsaturated soils of the vadose zone. Vapor intrusion (VI) occurs when these vapors migrate into buildings through cracks and gaps in the building floors, foundations, and utility conduits, and then contaminate indoor air. If present at sufficiently high concentrations, these vapors may threaten the health and safety of building occupants. Petroleum vapor intrusion (PVI) is a subset of VI and is the process by which volatile petroleum hydrocarbons in the subsurface, including those from light nonaqueous phase liquids (LNAPL), migrate through the vadose zone and into overlying buildings. Petroleum vapors often do not reach overlying buildings, however, because they are degraded into to nontoxic compounds by microorganisms that are ubiquitous in soils. The extent to which this natural process of biodegradation restricts PVI is not fully addressed in current guidance documents. Thus, regulatory agencies, consultants, and industry often waste both money and time evaluating PVI pathways using traditional VI approaches that, in most cases, are not necessary.

This ITRC guidance document offers a scientifically-based, eight-step approach to improve decision making at potential PVI sites. Using this approach, decision makers can confidently screen out many sites and focus limited resources on the small fraction of petroleum-contaminated sites that warrant vapor control or additional site management.

How ITRC Guidance Can Help You

This guidance will help you:

- Use resources efficiently and increase your confidence in evaluating the PVI pathway.
- Justify the use of vertical screening distances (based on empirical data and recent research).
- Screen out the PVI pathway from further investigation at many sites by accounting for the biodegradation of petroleum vapors.
- Determine appropriate investigative strategies for sites that cannot be initially screened out using vertical screening distance.
- Select appropriate vapor control and site management strategies, if warranted.

If you are working on a potential PVI site, you can achieve the maximum benefit from this guidance by taking the following actions:

- Apply the guidance to evaluate the PVI pathway at various types of petroleum contaminated sites from underground storage tanks (USTs) to larger petroleum sites (such as refineries and pipelines).
- Access free ITRC online training on the efficient use of the guidance document (encourage others to join you).
- Use ITRC guidance as a tool to develop or update existing guidance.
- Report to ITRC any successes or concerns related to this guidance, training course, or the application of this guidance at: http://www.itrcweb.org/feedback.asp.

Related ITRC Documents

- Vapor Intrusion Pathway: A Practical Guideline (VI-1, 2007)
- Vapor Intrusion Pathway: Investigative Approaches for Typical Scenarios (A Supplement to VI-1) (VI-1A, 2007)
- Evaluating LNAPL Remedial Technologies for Achieving Project Goals (LNAPL-2, 2009)

FREE Internet Training Course (Beginning January 2015)

The Internet training course and associated web-based document (PVI-1, 2014) describe the PVI pathway and the important role of biodegradation in the PVI pathway; explain the empirical basis for vertical screening distance; and provide a comprehensive methodology for screening, investigating, and managing potential PVI sites. Fact sheets are provided, which can be used to guide community engagement activities and educate stakeholders. After attending this ITRC Internet-based training, participants should be able to:

- Determine when and how to use the ITRC PVI document at their sites.
- Describe the important role of biodegradation effects on the PVI pathway (in contrast to chlorinated solvent contaminated sites).
- Understand the importance of a PVI conceptual site model and list its key components.
- Apply the eight-step decision process to screen sites for the PVI pathway, and determine actions to take if a site does not initially screen out (such as site investigation, modeling, and vapor control/site management).
- Access fact sheets to support community engagement activities at each step in the process.

Registration opens 4-6 weeks prior to class date at: http://www.clu-in.org/conf/itrc/PVI/. You can participate in the live training session from the comfort of your own office or access archives of past classes at your convenience. If you have questions after completing the online registration, please call (402) 201-2419, or send an e-mail to training@itrcweb.org.

2-Day Classroom Training Course

Starting in late 2015, ITRC will offer a two-day PVI classroom training at locations across the U.S. The classroom training will provide participants the opportunity to learn more about the PVI pathway and practice applying the ITRC PVI guidance document with a diverse group of environmental professionals. Email training@itrcweb.org if you would like to be notified when additional information is available.

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