

# How New AFIERA/RSRE Tools Help You Understand Vapor Intrusion: An Introduction and Facilitated Discussion

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## **Introduction**

In 2002, the Environmental Protection Agency's (EPA) Office of Solid Waste and Emergency Response (OSWER) announced it was developing "One Cleanup Program" for evaluating chemical vapor migration to indoor air. The U.S. Air Force is tailoring this new EPA guidance to meet its own needs and address specific Air Force environmental cleanup responsibilities. The new guidance is currently being drafted, titled "*Guidance Document for Environmental Assessment of Soil Vapor Intrusion into Buildings.*"

In addition to the *Guidance Document for Environmental Assessment of Soil Vapor Intrusion into Buildings*, several quick-reference, hands-on tools are being created to help Air Force environmental managers and supporting technical specialists deal with vapor intrusion. These tools include a vapor intrusion primer, a companion CD-ROM with an electronic copy of the complete guidance document and an interactive online flowchart of the tier-screening process.

This presentation will introduce these tools and describe how they are being designed to assist with vapor intrusion. Following the introduction, the audience will have the opportunity to provide input on the guidance and corresponding tools. This facilitated discussion is intended to raise concerns that can be addressed in the guidance, gather feedback and better understand the specific needs of Air Force environmental managers and supporting technical specialists.

## **Materials**

When a building is located above or near a contaminated site, chemical vapors can migrate through the soil and into the building. Determining the amount of chemicals that reaches the indoor air can be a difficult process, but establishing the amount is essential in assessing health risks and, if cleanup is necessary, choosing the best methods for the site.

The primer discussed in the session is an introduction to vapor intrusion—the movement of chemicals from the underground to indoor air through vapor transport. Understanding this process and its part in risk assessments will enable Air Force Remedial Program Managers (RPMs) to make an initial decision on whether a site-specific assessment or any other further action is necessary at a site.

The primer is based on the *Guidance Document for Environmental Assessment of Soil Vapor Intrusion into Buildings*, and should be used in conjunction with the full guidance. It contains the following sections:

- Historical perspective
- Indoor air must be considered in a risk assessment
- Why is indoor air a concern?
- Assessing indoor air migration using a tier screening approach
- Tier I screening
- Tier II screening
- Attenuation factors in Tier II screening—What you need to know
- Tier III screening
- State-to-state variations
- Case examples

A mini CD-ROM with a copy of the full guidance document will accompany the primer. The CD will be distributed with the primer, attached the back copy. Since the primer and complete guidance are to be used in tandem, this packaging allows users easy access to both documents.

In addition to the primer and CD-ROM, there is an interactive online resource that can take users step-by-step through an actual screening process. The tier screening process is divided into three levels, becoming progressively more site specific and data intensive as the levels progress. The complete guidance document steps through this process in great detail, from the basic screening of the site to a more detailed analysis. At each step or question in the tier screening process, the user will be informed either that the data suggests the pathway is incomplete or that the next level of screening is required.

One of the most efficient ways to step through the tier screening process is to use an automated approach. The interactive flowchart will not only allow users to go through every step of the process, but also enter real data, help avoid various pitfalls, and calculate data entries to produce a final report.

For instance, in the first tier of the screening process, the user will need information on suspected chemicals at the site. The user will also need to know whether any buildings are located above or adjacent to the site and whether people may inhabit these buildings. At this first level, suspected chemicals are screened to determine whether they have sufficient volatility or toxicity to be a possible indoor air hazard.

By using the interactive online flowchart, users can enter the names of suspected contaminants. These are automatically screened against the tabulated chemicals of concern listed in Appendix B of the complete guidance document. The Web site outputs whether the suspected chemicals are of potential concern for indoor air migration. The user then steps through additional questions, which deal primarily with the location of any buildings on or around the site and any potential problems being reported by inhabitants in these buildings.

The primer, companion CD-ROM and interactive flowchart – along with the complete guidance document – are intended to help Air Force environmental managers and supporting technical specialists develop comprehensive strategies for cost-effectively cleaning up soil and groundwater contaminated with chemicals that may adversely affect human health.

## **Discussion**

These tools, as well as the *Guidance Document for Environmental Assessment of Soil Vapor Intrusion into Buildings*, are still in draft form. The distribution of the main guidance document and corresponding materials are expected sometime in Summer 2003.

This working session will include a facilitated discussion that addresses any outstanding concerns or comments from the intended users of these tools. Understanding that the *Guidance Document for Environmental Assessment of Soil Vapor Intrusion into Buildings* is derived from EPA guidance, the audience will be asked questions that will help ensure the content is appropriate for Air Force-specific issues and addresses Air Force-specific challenges. Questions will also cover other suggestions for useful tools and ways to make the proposed tools more user-friendly. Finally, volunteers will be sought for future focus groups that will comment on final drafts of the guidance, primer, CD-ROM and Web site.

## **References**

*Guidance Document for Environmental Assessment of Soil Vapor Intrusion into Buildings*

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By Tom Robertson, Environmental Quality Management, Inc.