

# ***Following the Vapor Intrusion Path***

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Even deep below the ground, hazardous volatile chemicals don't stay put. Groundwater fouled by chlorinated solvents or other volatile organic compounds is the beginning of a long and circuitous path through the subsurface that, in the worst-case scenario, ends with the accumulation of potentially harmful toxic vapors in homes and other buildings. This is the so-called vapor intrusion pathway.

In extreme cases, vapors may accumulate to levels that pose serious health safety hazards. But, not all homes and buildings located near a contaminated site are at risk. How to best determine which dwellings and occupied buildings are most likely to be impacted by hazardous vapor intrusion was the theme of a two-day workshop sponsored by the EPA's Office of Solid Waste and Emergency Response (OSWER). More than one hundred attendees from state and federal regulatory agencies and private environmental consulting firms participated in the OSWER Workshop at this year's International Soils, Sediments and Water Conference.

Workshop speakers and attendees discussed the vapor intrusion state of the science and offered recommendations for improving the OSWER draft guidance document entitled, "Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils." The OSWER vapor intrusion guidance document is intended to be used as a tool to aid users in determining whether a vapor intrusion pathway is complete and, if so, whether the completed pathway poses an unacceptable risk to human health. The Workshop, according to Henry

Schuer of OSWER, was an opportunity to improve the draft guidance document and make it a more useful tool by bringing together the people who produced the document with the environmental professionals responsible for on-the-ground assessment of vapor intrusion cases.

The idea that vapors from contaminated groundwater could have negative health effects is relatively new. Concrete evidence of vapor intrusion was recently discovered near contaminated sites in New York, Colorado and California, and that generated a lot of activity within the environmental remediation community, says Schuer. Since the vapor intrusion issue has taken center stage, there has been "improved comprehensiveness in assessing human exposure to contaminated sites," he said. But, with this improved comprehensiveness comes another challenge: how to assess the risk at hundreds of sites across the country where vapor intrusion is a potential health hazard.

Indoor air quality is the concern, but because volatile chemicals are common in a variety of household products including paints and glues, indoor air sampling is not sufficient to assess the impact of vapor intrusion from contaminated groundwater. Instead, environmental professionals use a complicated model to predict indoor air concentrations of hazardous chemicals based on known groundwater data. The modeling method permits rapid assessment of a large number of sites so that investigators can focus on the homes and buildings that are at greatest risk of experiencing negative health effects from vapor intrusion. However, some residents in the impacted communities have expressed concern that the vapor intrusion model is too complex and prone to misuse.

The OSWER Workshop on Vapor Intrusion is one way to address these concerns. By bringing together such a large group of professionals, researchers and community advocates, the organizers hope to significantly improve the procedure for evaluating the vapor intrusion risk. 