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## Vapor Intrusion: New Regulatory Efforts

Contamination migrating as vapors into houses and businesses (vapor intrusion) can threaten human health and result in significant potential cost and liability to owners and occupants. The U.S. Environmental Protection Agency (EPA) and most states are initiating new efforts to address vapor intrusion.

Some states are re-opening or re-evaluating remediation sites where the state previously determined that no further action was needed to address soil or groundwater contamination issues. In addition, more stringent regulation from EPA and guidelines from ASTM International (ASTM) are expected in the near future.

### Background

Vapor intrusion occurs when volatile organic compounds (VOCs) found in underlying contaminated soil and/or groundwater migrate as vapor through soils into the indoor air spaces of overlying or adjacent buildings. In many cases, it is most cost effective to evaluate the potential for indoor air contamination from vapor intrusion early in the scope of any investigation. This is a challenging task, however, in part because background levels of VOCs in the ambient indoor air (for example, from consumer products, art supplies, or dry-cleaned clothes) may compete with, or hinder, identification of an underground source of contamination. Nevertheless, there are direct and indirect vapor intrusion methodologies provided by the EPA and several states designed to analyze whether subsurface vapors are intruding into indoor air spaces.

### Regulation of Vapor Intrusion

#### Current Regulation

In November 2002, U.S. EPA issued a Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (the Draft Guidance). The Draft Guidance sets forth a three-tiered investigative approach: Tier 1 requires a preliminary screening to determine

whether a potential for vapor intrusion exists based upon knowledge of the site's subsurface conditions. Tier 2 uses modeling based upon measured concentrations of target chemicals in soil and groundwater to compare to targeted indoor air concentrations for individual lifetime cancer risk levels identified in the Draft Guidance. Tier 3 encompasses a more site-specific assessment of vapor migration and the potential for human exposure.

No final federal guidance has been published. However, an increasing number of states have established vapor intrusion regulations or issued guidance on vapor intrusion. State vapor intrusion guidance and regulations warrant particular attention, as they vary substantially in approach and are constantly updated. For example, as recently as March 2007, Delaware issued a policy for the investigation, risk determination, and remediation of the vapor intrusion pathway.

## **Pending Federal Regulation**

The federal Draft Guidance has fallen under criticism for its use of conservative assumptions about contaminants and exposure levels when evaluating vapor intrusion. The EPA is currently working on a revision to its Draft Guidance and predicts that it will have a draft available for public comment by early 2007. Current working documents indicate that the revised guidance establishes, among other things, a new four-tiered site assessment approach that places greater emphasis on (i) site-specific measurements at the point of exposure, (ii) the comparison of site-specific data with an expanding database of vapor intrusion observations from analogous sites, and (iii) the use of better and more accurate predictive models.

## **Pending Standards**

In October 2005, an ASTM task group was created to develop an ASTM standard to assess vapor intrusion as it relates to property transactions and to determine whether vapor intrusion is a recognized environmental condition (REC) under ASTM Practice E1527-05. ASTM released an internal draft vapor intrusion standard in January 2007. The final standard likely will adopt a flexible four-tiered approach for evaluating the presence of vapor intrusion conditions (VIC). The draft

document provides that Tier 1 requires an initial, non-numerical screening of the site to determine appropriate minimum search distances for vapor intrusion. Tiers 2 and 3 are projected to focus on site-specific numerical screening, mandating on-site sampling and comparisons of collected vapor intrusion data with predetermined state-specific screening levels. Lastly, Tier 4 will evaluate proper mitigation techniques in the event a VIC is identified under Tiers 1–3. A final draft standard is expected by July 2007, and publication of the final ASTM vapor intrusion standard is expected by the end of 2007.

## **Practical Considerations**

### **Past, Present, and Future Remediation Sites**

Potential vapor intrusion may be a concern at, or near, locations where (i) a VOC remediation was previously completed, but without consideration of the vapor migration pathway; (ii) property is currently the subject of a cleanup; or (iii) a party is considering the purchase of a property that may be subject to remediation.

Some states have recently begun evaluating or reopening cleanup sites formerly considered complete. For example, New York recently announced that because of increased awareness and recent improvements in analytical techniques, it plans to reopen over 400 sites that had previously received "no further action" letters. The increased attention on a federal level could drive additional states to do the same.

State regulators may raise a concern over vapor migration seemingly late in the process at sites that are nearing completion of investigation and remediation. Simple and cost-effective solutions to vapor migration might be available before construction or during renovation of a property, but only if the issue is identified early in the investigation process. If the issue is raised later in a redevelopment project, the remedy may be more costly, disruptive, and time consuming. The lack of clear standards makes the issue even more difficult to address late in the process, when the simple solutions may no longer be practical.

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## Litigation and Enforcement Risk

The risk of toxic tort claims and claims for diminution in property values related to vapor intrusion is particularly exacerbated by the lack of clear and uniform standards, the substantial debate regarding acceptable risks associated with indoor vapors, and the continuing development of vapor intrusion modeling and assessment practices. In addition, state and federal enforcement actions may result from failing to adequately mitigate the risk from vapor intrusion.

## Conclusion

Vapor intrusion can impose significant liability risks for owners and prospective purchasers of contaminated property. In light of the rapidly evolving state and federal regulatory framework, such individuals should stay abreast of their state's current vapor intrusion guidance and regulations to confirm that vapor intrusion assessments are properly implemented on their properties.