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New ASTM Standard for Assessment of Vapor Intrusion

ASTM International (ASTM) has issued a final standard for assessing the risks associated with vapor intrusion in real property transactions. The final standard, ASTM E2600-08 Standard Practice for Assessment of Vapor Intrusion into Structures on Property Involved in Real Estate Transactions (Standard), was released on March 3, 2008, and establishes a flexible, tiered approach for evaluating the potential for vapor intrusion to adversely impact property.

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 (i.e., 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 U.S. Environmental Protection Agency (EPA) and several states designed to analyze whether subsurface vapors are intruding into indoor air spaces.

Development of the Standard

In 2005, ASTM created a specific task group 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 E1527-05 Standard Practice for Environmental Site Assessments (ESA): Phase I Environmental Site Assessment Process. ASTM released an internal draft vapor intrusion standard in January 2007 that contemplated using a tiered approach to assess the potential for vapor intrusion to be classified as an REC.

The final Standard adopted a flexible, four-tiered approach that evaluates the presence of vapor intrusion conditions (VIC) in a multiple-step process.

Tier One Evaluation

A Tier One evaluation requires an initial, non-numerical screening of the site, similar to a Phase I ESA, to determine if a potential VIC exists in connection with a target property. If the Tier One evaluation concludes that a potential VIC exists, further investigation such as a Tier Two evaluation is warranted.

Tier Two Evaluation

A Tier Two evaluation is a more refined screening approach that applies semi-site specific numeric screening criteria to existing or newly collected soil, soil gas, and/or groundwater testing results to assess whether or not a VIC exists. If the Tier Two evaluation indicates that applicable risk-based concentrations are exceeded at the property, then further evaluation, including a Tier Three evaluation, may be conducted to determine whether a VIC exists.

Tier Three Evaluation

A Tier Three evaluation is a more sophisticated analysis that focuses on site-specific numerical screening, mandating on-site sampling and comparison of collected vapor intrusion data with predetermined state-specific screening levels. If the results of the Tier Three evaluation indicate that a VIC exists, then a Tier Four evaluation may be appropriate.

Tier Four Evaluation

Tier Four evaluations will evaluate proper mitigation techniques in the event a VIC is identified under Tiers One through Three.

By following the steps set forth in the Standard, a potential purchaser can determine whether a VIC issue exists at a property, and what potential mitigation may be appropriate to address the issue.

Regulation of Vapor Intrusion

Federal Regulation

No final federal guidance has been published. EPA's Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils (Draft Guidance) issued in November 2002 has been criticized for its use of conservative assumptions related to contaminants and exposure levels. Most recently, on March 4, 2008, the EPA Office of Solid Waste issued a draft Vapor Intrusion Database document that provided an update on EPA's efforts in collecting site-specific vapor intrusion and attenuation of vapor data. This site-specific data is a necessary component of any future vapor-intrusion guidance issued by EPA. EPA will begin seeking public comments on approaches for updating the Draft Guidance at the Interstate Technology & Regulatory Council's March 2008 meeting.

State Regulation

Nearly half of the states already have established vapor intrusion regulations or have issued guidance on vapor intrusion, including California, Connecticut, Delaware, Kansas, New Jersey, and Ohio, and many other states currently are in the process. Some states, including New York, have begun evaluating or reopening cleanup sites formerly considered "closed."

Practical Considerations

Vapor intrusion is of particular concern at or near locations where i) remediation was completed without an assessment of the vapor intrusion pathway; ii) the property currently is undergoing remediation; or iii) the property is located in an area with historic contamination in the soil and/or the groundwater. However, simple and cost-effective solutions to vapor migration might be available

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during construction or 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. To that end, even if the target property or neighboring properties are “closed,” a purchaser should consider reevaluating the site(s) for this newly articulated risk early in the due-diligence process. States recently have increased their efforts to “map” contaminated sites; as a result, the process of identifying potential migrating contamination that could pose a risk to indoor air quality may be more effective.

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. We have noticed a trend in construction best practices to incorporate vapor-mitigation systems as a low-cost prophylactic measure in all new construction, effective for both vapor intrusion from contamination as well as naturally occurring radium. These systems are fairly simple to design and add little cost if installed during the construction (or renovation) of the building.

Conclusion

Vapor intrusion presents potential liability concerns for prospective purchasers. The new ASTM Standard provides potential purchasers with an important tool to evaluate and, where necessary, mitigate the vapor-intrusion risk. Assessment of this risk will continue to evolve as states issue final rules and EPA continues to evaluate whether additional controls or guidance are necessary.