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The New Vapor-Intrusion Standard

Learn the ins and outs of ASTM's recently released benchmark for toxic-vapor assessment

By **Joe Derhake,** president, Partner Engineering and Science

The migration of toxic vapors into structures and breathing zones has long been a significant concern associated with environmentally impacted real estate. This past March, the American Society of Testing and Materials (ASTM) published a new standard dealing with vapor intrusion — "ASTM E2600-08 Standard Practice for Assessment of Vapor Intrusion into Structures on Property Involved in a Real Estate Transaction."

The standard creates a legal duty of disclosure from sellers to buyers and from landlords to tenants. Property-owners therefore must investigate and disclose vapor intrusion if it exists on their real estate. Otherwise, they risk incurring negligent or intentional nondisclosure liability.

Given that vapor testing in commercial real estate transactions is now likely to increase significantly, you should know how the ASTM standard works. That way, you can answer questions your clients may have.

Vapor intrusion's impact

Many people are still unclear about what vapor intrusion is. Essentially, it occurs when toxic chemicals migrate through the floor of a structure or through utility conduits into breathing zones of a site's occupants. Vapor migrates in many directions. In other words, while liquid-phase contaminants generally migrate down and dissolved-phase contaminants migrate with the flow of groundwater, vapor-phase contaminants migrate in all directions — including up.

In the past 10 years, science has advanced to show that soil-vapor concentrations are of great concern to building occupants. As a result, more than 20 states have set specific allowable levels for vapor concentrations of toxic chemicals. They set these levels by assessing the cancer risks for building tenants and other people who are regularly exposed to the property conditions.

In January 2005, for example, the California Environmental Protection Agency published its standards for human health screening levels in the state. It set acceptable levels for indoor air and soil gas for 54 different chemicals such as those found in gasoline, dry cleaner solvents and industrial solvents. The agency analyzed what levels of chemicals can cause elevated cancer risk for above-ground site-users. According to the California standard, the threshold for elevated cancer is any exposure that produces a lifetime cancer risk of one in a million.

How the standard works

ASTM's new standard will determine if a vapor-intrusion condition (VIC) exists on a property. A VIC occurs when the subsurface contaminants produce an unacceptable health risk to occupants.

The standard lays out the methodology to evaluate the potential for vapor intrusion from on-site and off-site sources of contamination. It can be used in conjunction with the Phase I environmental site assessment to evaluate a site with potential vapor-intrusion conditions, or it can stand alone. Tenants who are leasing space, however, may be more inclined to request a vapor-intrusion assessment than a Phase I, given that their primary goal is to ensure that their customers and employees have a safe place to work.

The vapor-intrusion standard provides four tiers of analysis. Tier No. 1 evaluates the potential for vapor-intrusion risk quickly and inexpensively by determining the presence of contaminated plumes beneath or in close proximity to the property. The most basic Tier No. 1 analysis can be provided for a relatively inexpensive fee. Of course, if a site requires additional analysis or site-specific data, the fees will be greater.

The first-tier analysis considers depth of groundwater, preferential migration pathways and the nature of the contaminants. An environmental professional conducting a Tier No. 1 will recommend no further action or conclude that there is a potential vapor-intrusion condition. Potential conditions can include contaminated sites, sites where regional groundwater-contamination plumes have spread to the groundwater under the building and sites where the neighboring property is known or suspected to be contaminated.

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Tier No. 2 requires that environmental professionals collect site-specific data, review files and analyze hydrogeological conditions. This analysis allows for the collection of new site-specific data, but it does not require new data collection if enough information is available through old reports and file reviews.

In Tier No. 3, an environmental professional collects soil, gas and/or indoor air samples. Through collecting and modeling data, environmental professionals will determine if the buildings on-site have a vapor-intrusion condition.

The final tier is Tier No. 4. It addresses mitigation measures such as vapor barriers, passive venting, active venting and site remediation. In some instances, buyers may opt to skip directly to this level of analysis, as it sets out to create a safe building.

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The more-technical applications of the ASTM standard are in the third and fourth tiers. As such, borrowers seeking these levels of analysis should request a registered engineer or an appropriately qualified professional.

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Will vapor-intrusion studies become as common in commercial real estate as the Phase I and Phase II? Although it is too early to tell, a recent survey published by the Environmental Bankers Association reported that 86 percent of its members thought vapor intrusion was an issue of concern in real estate lending. A big change could be coming to environmental due diligence in commercial real estate.

The ASTM standard exists, in part, to address the concerns of real estate investors, lenders, tenants and other people involved in commercial real estate. It enables these parties to assess the sometimes-nebulous concept of environmental risk through common analytical tools. And that is good for everyone.

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