VAPOR INTRUSION: IMPORTANT ASPECT OF SITE DUE DILIGENCE

By Alfred E. Moffit III, C.P.G

Vapor intrusion investigation and remediation is quickly becoming one of the most important issues during the due diligence investigation of sites. The cause of vapor intrusion is volatile organic compounds (VOCs) that could be migrating into a building from soil or ground water contamination either on or near the subject property. The United States Environmental Protection Agency (USEPA), the New Jersey Department of Environmental Protection (NJDEP), and the American Society of Testing & Materials (ASTM) have published documentation outlining the investigation of vapor intrusion at sites. Health effects of these toxic vapors to the building occupants are the major concern with the vapor intrusion.

SITE INSPECTION PRIOR TO ACQUISITION

During a recent due diligence investigation of a former industrial site in Northern New Jersey, it was determined that the ground water had been impacted below the subject building from a regional chlorinated volatile organic compound (CVOC) plume and a former petroleum discharge at the site resulting in readings above the NJDEP's Ground Water Quality Standard (GWQS). This information was obtained as part of the Phase I inspection of the property prior to acquisition.

VAPOR INTRUSION GUIDANCE

The presence of ground water contamination underneath the building above NJDEP's standards mandated a vapor assessment per the NJDEP's October 2005 "Vapor Intrusion Guidance" document. The guidance document generally requires an assessment of all buildings within 100 feet of a ground water contamination plume impacted with CVOCs and within 30 feet of a plume impacted with petroleum compounds. Sub-slab air sampling was performed which determined vapors were present above the NJDEP's soil gas screening level (SGSL). Next, indoor air samples were collected to see if the compounds were migrating into the occupied tenant space. These indoor air samples showed the same compounds above the NJDEP's Non-Residential Indoor Air Screening levels (NRIASL). In order to allow the potential transaction to continue, a sub-slab depressurization system (SSDS) was proposed to mitigate the migration of vapors from the sub-slab to the indoor air.

DESIGNING SSDS TO DEAL WITH VAPORS

The results of the field pilot test indicated two different radius of influence under the concrete floors. The different radius occurred during different construction periods of the building as well as the underlying material directly below the concrete floors. This information was crucial to designing the Sub-Slab Depressurization System (SSDS) to effectively deal with the vapors underneath the building. Once the system was designed, it was quickly installed in the roughly 20,000-square-foot building within a period of 2 weeks. Two separate SSDSs were utilized (one for each of the different materials underneath the building) to remove vapors through a series of extraction pipes and into a SSDS shed installed outside the building.

Once the system was operating as intended, indoor air samples were collected to determine the effectiveness of the SSDS. The initial results indicated the removal of the CVOCs and a reduction in the petroleum compounds but not to a level below the standard. A further evaluation of the area was performed and it was determined that small holes in the ceiling were allowing petroleum vapors inside the subject building from an adjacent tenant space. The adjacent tenant conducted repairs on small engines and they stored and utilized various petroleum products. The holes between the tenant spaces were sealed and further testing indicated compliance with the NJDEP's standards. The pro-active investigation of these vapors and subsequent remediation system that was designed to mitigate the vapor intrusion allowed the acquisition to proceed on schedule. ■

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