Collection of High-Definition Screening Data to Streamline the Evaluation of Subslab Conditions at Vapor Intrusion Sites – Two Case Studies

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Background/Objectives. Vapor intrusion sites can be complicated and costly to evaluate because most often the locations of volatile organic compound (VOC) sources are poorly understood. In addition, releases of VOCs to the environment at industrial sites likely occurred long before modern environmental regulations eliminated the practice of open dumping. This means that on-site environment personnel are likely not to understand how or where VOCs were used or disposed of in the past.

Developing a thorough Conceptual Site Model (CSM) is a crucial first step in the evaluation process. However, the second step, Site Screening, is equally, or perhaps more important as it provides the information used to support and refine the CSM before moving forward in the formal assessment of the VI issues. High-definition site screening data collected in an efficient and minimally intrusive manner can cost-effectively reduce the number of unknowns, improve the CSM in the matter of a few days, and streamline the evaluation of subslab conditions at the site.

Approach/Activities. The subject of this presentation is how a high-definition site screening approach was used to evaluate subslab vapor conditions at former industrial sites in the US. The goal of these assessments was to quickly determine what, if any, steps should be taken to address potential vapor intrusion issues prior to placing the facility up for sale. The results of the initial screening efforts were available to the client within a few days of the start of work. Results of vapor samples collected for laboratory analysis were available within one week of the start of work.

In one study, a 23,000 square meter, slab-on-grade facility produced 100,000 aerosol cans per day for nearly 30 years. As a result, they used a large number of VOCs both in their products and as propellants. They had a few VOC releases to the environment such as overfilling of above ground tanks, but most of the spills and drips were contained within the building footprint. At another site, the facility manufactured rubber components for the auto industry for more than 4 decades. They wanted to understand if their activities had affected the subsurface so a strategy for the long-term disposition of the site could be made.

Results/Lessons Learned. The site screening activities provided time-critical information to the clients so that informed decisions could be made concerning the mitigation of potential for vapor intrusion issues and the marketability of their sites. In addition, the results of the screening assessment proved the information needed to conduct streamline and focused soil and groundwater sampling campaigns.