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Brownfields redevelopment - Don't let vapor intrusion concerns stop you...

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For decades, the redevelopment of former industrial and commercial properties has been hindered by the presence of environmental contamination. For many of these sites, problems can persist long after the dilapidated structures are demolished and new buildings are constructed, especially sites contaminated with volatile chemicals, such as petroleum products or chlorinated solvents that may have been used by former industrial tenants. These volatile chemicals can migrate from the subsurface into the building causing what is referred to as "vapor intrusion."

Vapor intrusion can adversely impact indoor air quality. According to the Interstate Technology & Regulatory Council, "vapor intrusion requires three components: a source, an inhabited building, and a pathway from the source to the inhabitants." Common sources of vapor intrusion are chlorinated volatile organic compounds (VOCs) such as Trichloroethylene (TCE) and Tetrachloroethylene (PCE), which were commonly used in the dry cleaning industry. Even at low concentration levels, chlorinated solvent vapors can infiltrate buildings. For this reason, many developers shy away from such sites. However, the presence of chlorinated solvents or petroleum vapors should not deter site development since innovative remedial technologies and sub-slab building systems can help mitigate vapor intrusion problems.

Recently, the redevelopment of one of Boston's most contaminated sites was completed by implementing remedial strategies to dramatically reduce the source area contaminants and eliminate pathways for potential residual vapor intrusion. This site contained a former electroplating facility where chromium, cadmium, nickel, cyanide, and precious metals were used for plating and polishing. Chlorinated solvents such as TCE had been stored on site as degreasing agents and were detected at high concentrations in soil and groundwater. The site was complicated not only by the unusual combination of contaminants, but also by the magnitude of the contamination in a compact area, and multiple previous attempts at redevelopment had failed.

Such site complexities called for implementation of an innovative technology: in-situ chemical reduction (ISCR). ISCR involves chemical and biological processes that break down TCE to carbon dioxide and water. The use of ISCR drastically reduced the concentrations at the site and allowed for redevelopment/construction to continue. In addition, the design and construction of a vapor barrier and sub-slab depressurization system was implemented to mitigate potential vapor intrusion issues from residual contaminants. As a result of the remediation, the city of Boston was able to successfully redevelop the cleaned-up site into the city's first LEED Silver Certified police station, bringing a fresh start to a densely populated and culturally diverse neighborhood.

This project provides an excellent example of how site redevelopment can be accomplished despite serious existing environmental issues, and illustrates why Real Estate professionals and developers should seriously consider Brownfields sites as viable property options. Often, the cost to implement

remediation is a small percentage of the overall construction/redevelopment costs. Costs for a vapor mitigation system generally range from \$8 to \$10 per s/f.

By understanding the source of contaminants and identifying potential contaminant migration pathways, remedial technologies can be applied to allow for the revival of once abandoned, contaminated sites.

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