

Since 2000, vapor intrusion (VI) has been a hot topic managed outside the realm of the Occupational Safety and Health Administration's indoor air standards. VI is the general term for indoor air quality impacts by vapors from hazardous chemicals in the subsurface seeping into workplaces through foundation cracks or utility trenches. As the conceptual understanding of VI transport and its effects has developed, the U.S. EPA and many state regulatory agencies have generated a wide range of guidance materials and remediation criteria for VI issues, often contradictory.

EnSafe has 39 years' experience designing remedies to environmental issues like VI. We also have the regulatory knowledge required to address this issue in various states with differing regulatory requirements regarding VI.

VI CONTAMINANTS

Typical VI contaminants include volatile organics, such as benzene, other gasoline compounds, trichloroethylene, and chlorinated solvents. Less-common constituents include pesticides and polychlorinated biphenyls (PCBs). Some (trichloroethylene and vinyl chloride, for example) have very low risk thresholds and pose a risk to human health at low concentrations and with short-term exposures.

OPTIMAL INVESTIGATION STRATEGIES

EnSafe Inc. has:

- Experience and capability to develop the optimal investigation strategies.
- Know-how to effectively characterize the vapor migration pathway so remediation dollars are not mis-spent.
- Expertise to assess the VI pathway up front in developing the site conceptual model.
- Ability to integrate VI assessment into investigation activities, includ-

ing evaluating source characteristics, depth to groundwater, distance from the source to the exposure points, locations of preferential pathways and utilities, soil types, and moisture content.

- Creativity to design a remedy using data collected, evaluating risk to human health.
- Capability to implement the remedy to mitigate the identified risks

CUSTOM REMEDY DESIGN

The type of remedy EnSafe designs depends on what we learn about the VI issue through the conceptual site model and fate-and-transport modeling. Remedies vary, and may include simple ventilation improvements, such as increasing HVAC system air exchanges, or maintenance improvements, such as sealing cracks, conduits, or sumps. If needed, passive or active venting systems can be incorporated into new or existing structures. Deed restrictions or property covenants may be required as part of EnSafe's solution.

creative thinking. custom solutions.

Knowledge of VI's regulatory complexity
Knowledge of American Society for Testing and Materials standard (E2600) that lays out the methodology for screening property for potential VI and the process for additional assessment and mitigation
Thorough understanding of VI's impacts to short- and long-term site management
Continual monitoring of new regulatory developments

Technical Expertise

Conceptual site model development to set the strategy to address the issue
Site characterization to delineate the nature and extent of the impact
Geological expertise to cost-effectively determine the location and volume of contaminants
Fate-and-transport modeling to determine how the contaminants are moving in the subsurface environment
Industrial hygiene expertise to measure any impacts on indoor air quality
Risk assessment to evaluate the threat, if any, posed to human health and the environment
Engineering expertise to design a cost-effective remedy

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