

US Environmental Protection Agency (EPA) “State of VI Science” Workshop Session

**Reducing Vapor Intrusion Uncertainties by More Frequent Simple Measurements and
Community Involvement**

AEHS Spring Conference, March 22, 2021, Virtual/Online¹

Monday, March 22, 2021 – 11:30–3:30 ET (240 min)

Abstract

All conventional methods for assessing and managing vapor intrusion (VI) rely on assumptions about temporal and spatial variability because VOC measurement data are generally sparse. Building-specific measurements such as temperatures, pressures, and indoor radon levels, when properly implemented, can be relatively easily and cost-effectively applied to better understand these uncertainties, improving both initial and long-term VI assessments and management, and enabling more reliable, quantifiably confident, defensible, and protective VI decisions. This workshop session will expand the critical evaluation of existing data-rich studies of indicators, tracers, and surrogates (ITS), including temperatures, pressures and radon, as an alternative technology to improve current VI sampling practice. Previous workshops, and papers have defined ITS concepts and described our current understanding of on how VI ‘drivers’ such as temperatures and pressures affect chlorinated volatile organic compound (CVOC) VI and its assessment. In this workshop the emphasis shifts to indoor radon levels and how they can relate to indoor CVOC concentrations from VI. To do so we investigated how both CVOCs and radon are affected by temperature differentials, pressure differentials, and changes in barometric pressure, and how indoor (and differential) radon levels can help us estimate CVOC concentrations in indoor air from VI. This review has shown that the relationships between these variables and CVOC VI are building specific, generally nonlinear, and sometimes monotonic. Summary presentations will include false-negative and false-positive rates for conventional ‘random’, as well as seasonal, sampling events versus ITS-guided sampling results. This workshop session will also discuss how ‘at risk’ communities could voluntarily apply these simple ITS measurements (for example, through citizen science programs) to help ensure that Environmental Justice and other community concerns are being adequately addressed. The workshop will also provide updates on EPA-ORD research including soil vapor extraction (SVE) and VI, VI in large buildings, and potential VI for some PFAS (per- and polyfluoroalkyl substances).