

Vapor intrusion refers to the situation in which harmful chemicals [such as halogenated or chlorinated volatile organic compounds (VOC) or petroleum products] in the groundwater or soil volatilize in the vadose zone and migrate into the indoor environment. These chemicals typically arise from landfills, superfund sites, RCRA sites, CERCLA sites, Brownfields, or leaking underground storage tanks. Many thousands of these sites across the nation are surrounded by residential and commercial communities that may be at risk. By measuring the indoor concentration of the chemical of interest over a relatively long time (two weeks) during each season of the year, a reasonable estimate of the annual average appropriate for estimating long-term risks can be obtained. While this approach may provide a good estimate of the occupant's risk from the chemical, it does not necessarily associate all the risk with chemicals emanating from the soil. Such measurements do not distinguish between chemicals arising from the soil and from indoor sources. Better methods for identifying the sources of these indoor contaminants are needed. This paper will describe a method of using steady-state (time-integrated) measurements of indoor radon and a volatile organic compound (VOC) in a house under two different ventilation conditions to distinguish between soil and above-ground sources of the chemical of interest. This method does not measure sub-slab concentrations, and consequently will not require drilling holes in the floor. Measurements at a few buildings will be compared with the predictions of this method.