

Highlights

- Preferential pathways may lead to the false conclusion that there are indoor sources present at a VI site.
- Preferential pathways can dramatically increase the role of advective transport, provided there is a permeable subslab region to facilitate this.
- At VI sites where advective transport potential is high, much of the observed variation may be attributed to fluctuations in building pressurization; where this potential is much lower, fluctuations in air exchange rate may significantly contribute to indoor contaminant variability.
- In the absence of a preferential pathway, indoor contaminant concentration vary roughly by up to a factor of three across a few days; up to an order magnitude variation may be expected over a week.