

Using [Vapor Pins® Sampling Devices](#) for Long Term Monitoring

Vapor Pins® sampling devices are ideally suited for pinpointing sources of vapor contamination beneath floors, as described in *Using Vapor Pins for Source Characterization*, because they can be installed quickly, and removed and reused elsewhere. But Vapor Pins® sampling devices are equally useful for long-term monitoring, such as verifying the continued presence of vacuums beneath buildings with vapor or radon mitigation systems.

Most vapor-intrusion mitigation systems consist of subslab depressurization systems, the same as those used for radon mitigation. Ordinarily, indoor air is tested for vapors one to several times after system installation to verify system effectiveness. Depending on the applicable guidance, testing must be repeated every year or two indefinitely. Unfortunately, collecting indoor-air samples for vapor intrusion is costly and complex. The analytical cost for high-quality samples, including the rental of sample canisters, typically exceeds US \$200 per sample. Costs are further increased by the need to collect indoor-air samples over the course of 8 or 24 hours. Additionally, the presence of chemicals from indoor sources, known as “background”, complicates data interpretation, and may inconvenience building occupants by having to avoid the use of vapor-containing chemicals for several days prior to sampling.

An alternative for long-term post-mitigation testing is to collect subslab pressure measurements via Vapor Pin® sampling device. Vapor Pins® sampling devices are widely used for Pressure Field Extension (PFE) tests of radon and vapor-mitigation systems. The PFE test (also called a “Suction Field Extension Test” or “Communication Test”) ensures that the subslab depressurization (SSD) system creates sufficient vacuum everywhere beneath a floor. By installing Vapor Pins® sampling devices in the flush-mount configuration, they can remain in place during PFE testing, hardware is below grade, posing no trip hazards or other inconvenience to building occupants.

As discussed in Massachusetts’ Draft Vapor Intrusion Guidance¹, *“Once SSD system effectiveness has been demonstrated through concurrent indoor air sampling and collection of sub-slab differential pressure measurements, indoor air quality should continue to be acceptable as long as the differential pressures identified as being adequate during the initial sampling are maintained at the soil vapor monitoring locations across the slab. Such pressure field measurements can be used to monitor the system following the initial evaluation.”*

The guidance goes on to say, direct measurement of vacuum pressures beneath the slab is more diagnostic than verifying the presence of a vacuum at the system’s extraction point.

Another advantage of verifying SSD system operation via subslab pressure is that vacuum readings don’t require doors and windows to be closed prior to testing. Indoor air testing for radon and vapor intrusion requires that doors and windows be closed for at least 12 hours prior to sampling, which may be difficult to monitor and enforce. The indoor-air test duration is at least 8 hours for vapor intrusion, and 48 hours for radon. In contrast, subslab pressures can be tested in minutes, using hand-held equipment. But as always, we recommend you follow applicable guidance requirements for post-mitigation system verification.

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¹ Massachusetts Department of Environmental Protection, 2014. Public Review Draft Vapor Intrusion Guidance WSC#-14-435, October 2014.