Environmental Applications

# Avoid Resampling Soil Vapors: Confirm Tracer Gas in the Field Using a Leak Detector

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- Confirm system integrity before sample collection.
- Minimize resampling by detecting leaks prior to sampling.
- Eliminate costly and time-consuming lab analysis of tracer gas.

Vapor intrusion occurs when pollutants from contaminated soil or ground water migrate into buildings and ambient air. Adverse health effects can result when vapors occur in high concentrations, or if toxic volatile organics are present. These compounds are monitored using a variety of sampling procedures, including soil vapor, sub-slab, indoor, and ambient air testing. Sample collection for volatile organic compounds (VOCs) typically is performed with an air canister and passive sampling kit according to EPA Method TO-15 or a similar method.

## Costly Detection in Lab Doesn't Prevent Resampling

The primary challenge in vapor intrusion monitoring is distinguishing it from other sources of exposure. In order to establish that VOCs are from soil vapor, rather than the surrounding environment, sampling systems (ports) must be tested with tracer compounds, such as helium, and shown to be properly sealed. Sample collection system integrity can be demonstrated by including the tracer gas in the list of target analytes reported by the laboratory; however, if high levels are found the sample is rejected and costly resampling may result.

## Using a Leak Detector in the Field Saves Time and Money

Detection of tracer gas in the field is a cost-effect alternative to lab analysis that assures the integrity of the sampling system before sampling occurs. The Restek Leak Detector provides good screening of helium tracer gas at concentrations of 10%, the level at which sample port resealing is required. In addition, this unit is just a fraction of the cost of other field portable devices, such as photoionization detectors, which may be too sensitive for screening purposes.

Real-time detection of helium tracer gas in the field using a Restek Leak Detector as shown in Figure 1 is simple, inexpensive way to minimize resampling by establishing system integrity prior to sample collection. Centek Laboratories pioneered this technique and contributed to its inclusion in the New York State Department of Health method [1].

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**Figure 1** Prevent costly resampling—use a leak detector to ensure sample collection system integrity *prior* to sampling.

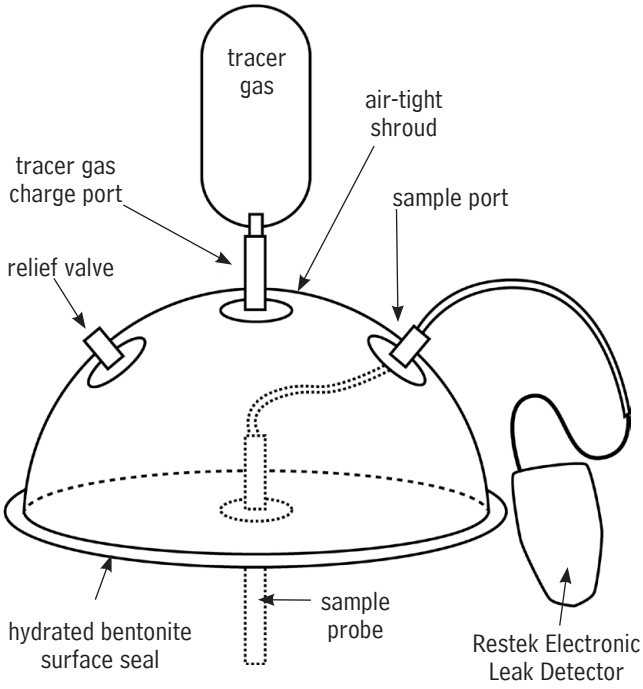
**Use a Restek Leak Detector to verify the sample port is sealed (Drawing A).**

1. Prepare sampling port by installing sample probe and shroud as described in NY DOH method.
2. Turn on Restek Electronic Leak Detector and allow it to equilibrate for a few seconds prior to use.
3. Insert leak detector probe tip into the open end of the tubing connected to the sealed sample port.
4. Wait 10 seconds and inject a charge of helium into the open space of the shroud.
5. Wait several minutes. An alarm will sound if helium is detected at >10%, indicating a leak in the sample port.

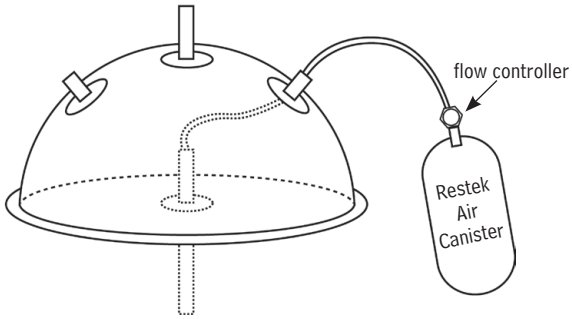
*Photos courtesy of Centek Laboratories, LLC*

**Collect sample using any Restek air canister or mini-can (Drawing B).**

**Drawing A:** Tracer Gas Detection




**Drawing B:** Sample Collection




**References**

New York State Department of Health, October 2006, Guidance for Evaluating Soil Vapor Intrusion in the State of New York, http://www.nyhealth.gov/environmental/investigations/soil_gas/svi_guidance/docs/svi_main.pdf
(accessed August 27, 2010).

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