NJDEP VAPOR INTRUSION GUIDANCE: INDOOR AIR INVESTIGATION

John E. Boyer

New Jersey Department of Environmental Protection

john.boyer@dep.state.nj.us

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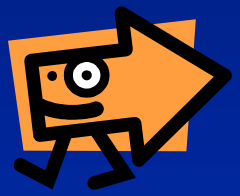
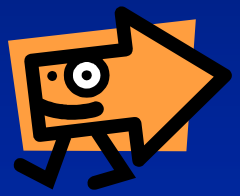
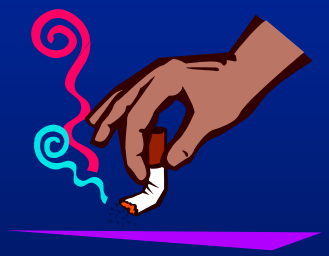
General VI Investigative Procedures

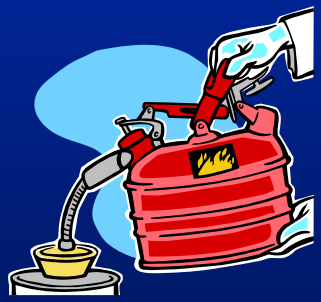
Ground Water  Soil Gas  Indoor Air

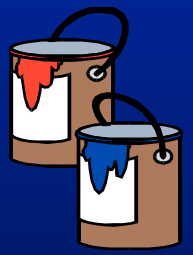
- Recommend collecting indoor air and sub-slab soil gas samples concurrently, but not required
- Consider preferential pathways when designing an investigative approach

Pre-Sample Walkthrough & Building Survey

- Complete the *Indoor Air Building Survey & Sampling form* to identify potential background sources of indoor air contamination
- Conduct walkthrough ideally 1 week BEFORE sampling event
- Remove potential background sources
- Identify sample locations in the basement based on likely vapor intrusion points (sump, utility lines entering structure) and appropriate areas within the living space.
- Discuss *Instructions for Occupants* sheet with the occupants.







Instructions to Occupants - IA Sample Event

- Close windows, doors, and vents
- Do not smoke or use fireplace
- Do not use cleaning products
- Do not use paints or varnishes
- Avoid bringing freshly dry-cleaned clothes into the building
- Do not use hair spray, nail polish, perfume, cosmetics, etc.

When NOT to Collect IA Samples

Source: Mass DEP

Indoor Air Sampling Procedures

For both Method TO-15 & TO-17:

- Collect one sample each on ground floor and basement for typical residential house.
- Collect ground floor samples from breathing zone height and basement (crawl space) samples close to source (sumps, cracks, etc.) .
- Collect air samples over a 24-hour period (minimum of 8 hours).
- Include one ambient (outdoor) air sample per sampling event.
- Determine barometric pressures readings, ambient and interior temperatures

Indoor Air Sampling Procedures (continued)

Method TO-15 Requirements:

- Employs a whole air sample where volatile organic compounds (both polar and non-polar) are concentrated on a solid multisorbent trap, refocused on a second trap, separated on a gas chromatograph column, and passed to a mass spectrometer (operated in SCAN mode) for identification and quantitation.
- Collect indoor air samples using 6 liter stainless steel canisters (Summa®) and analyze for VOCs using USEPA Method TO-15
- Air filters are recommended for canisters to prevent clogging
- All results are to be reported in $\mu g/m^3$ and also in ppbv

Indoor Air Sampling Procedures (continued)

Method TO-17 Requirements:

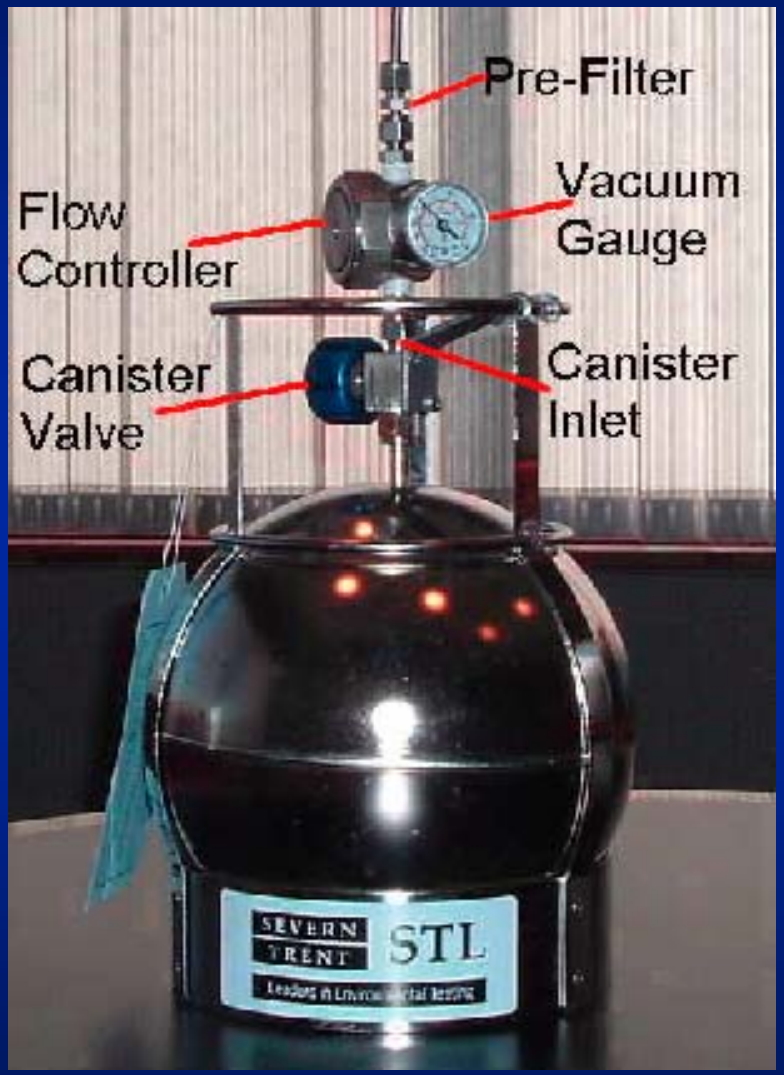
- TO-17 uses sorbent tubes for the collection of air samples
- For each sampling point, collect two sorbent tubes for each sampling point in parallel. The sorbent material in each tube must be the same material.
- The pump rate must be set so that the final calculated reporting limit used by the laboratory shall be less than or equal to 0.5 ppb
- There is a large selection of sorbents that can be matched to the contaminants of concern
- All results are to be reported in $\mu g/m^3$ and also in ppbv

Additional Indoor Air Sampling Procedures

- Full parameter list for initial round(s) of indoor air sampling
- When initial IA results that exceed RAL, confirmation samples should be collected **immediately** to verify these exceedances.
- Avoid collecting IA samples in situations where elevated concentrations are expected based on operations
- Generally, 2 rounds of IA samples is necessary (with 1 round during the worst case months of November through March) **EXCEPTION:** 1 round acceptable when IA results are an order of magnitude below screening levels for COCs.

1- and 6-Liter Stainless Steel Canisters

Typical Canister Components



Quality Assurance Issues

- Utilize lab with NJ Laboratory Certification for appropriate air method
- Full deliverables format with original and summary data packages
- Field and Trip Blanks are NOT required for indoor air samples
- Electronic Deliverables include:
    1) Hazsites Diskette
    2) Electronic data deliverable format
    3) Method TO-15 (or TO-17) Units Conversion Table

Contact Kathy Grimes (ODQ) for further information

Converting Analytical Results

Formulas are chemical-specific:

$ppbv = (\mu g/m^3 \times 24.45) / MW$

$\mu g/m^3 = (ppbv \times MW) / 24.45$

MW - Molecular weight of the compound