

# Vapor Intrusion Indoor Air Survey

*Prepared for:*



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# Purpose of the Survey

- To gather information from other regulatory jurisdictions focusing on issues that MassDEP has spent considerable time considering –
  - Appropriateness of modeling
  - Effectiveness of mitigation systems and post-installation testing
  - Closeout requirements
  - Effectiveness of soil moisture vapor barriers



# Survey Status

- It's a work in progress...
- Draft Report due April 27, 2010

# Survey Scope

- The "regulatory scheme" under which the state operates
- Status of updates to state's vapor intrusion guidance
- Existing groundwater standards for vapor intrusion
- Use of vapor intrusion modeling

# Survey Scope

- Types of engineering controls recommended and accepted
  - Active and/or passive
- How is effectiveness of engineering controls determined
- Monitoring of engineering and institutional controls

# Survey Scope

- Site closure requirements
  - Site closure with active system
- Use of institutional controls (ICs)

# Survey Scope

- Effectiveness of soil moisture vapor barriers used in construction against contaminant vapor intrusion
- Effectiveness of methane barriers against contaminant vapor intrusion

# Survey Scope

- Reviewed all 50 environmental agency websites to determine if the state has vapor intrusion guidance
  - Twenty-nine states have specific vapor intrusion guidance
  - Other states rely on EPA, ITRC and or ASTM Guidance, therefore these documents were reviewed as part of the survey

# Survey Approach

- Reviewed available vapor intrusion guidance documents
- To date, conducted phone interviews with environmental agency staff at twenty-six states
- Tabulating results

# Summary of Draft, Partial Findings

- Twenty-two states have responded that they operate with direct agency oversight of work conducted at waste sites
- Four states (Connecticut, Ohio, Michigan and Massachusetts) have responded that they have LSP-type programs

# Summary of Draft, Partial Findings

- Twenty-nine states have developed their own vapor intrusion guidance
- Eighteen of the twenty-nine have recently or are currently updating their guidance
- Many states are addressing the same issues MassDEP identified

# Summary of Draft, Partial Findings

- Twelve of the twenty-three states interviewed to date have groundwater standards that are set to be protective of the vapor intrusion pathway

# Summary of Draft, Partial Findings

- Majority of states reference modeling to evaluate vapor intrusion
- Of the states that responded to the question of whether the path forward could be determined solely by modeling:
  - eight were affirmative
  - five replied no
  - five indicated that it would be a line of evidence

# Summary of Draft, Partial Findings

- Although all states allow passive engineering controls, active or a combination of active and passive (vapor barrier with SSDS) is preferred
- Most states do not allow sites to be closed with active engineering controls

# Summary of Draft, Partial Findings

- Monitoring of effectiveness of engineered controls
  - Usually on a case-by-case basis for most states
  - Usually consists of visual inspection and a minimum of initial indoor air sampling
  - Some states also require sub-slab soil-gas sampling and SSDS sampling

# Summary of Draft, Partial Findings

- In potential vapor intrusion cases most states allow institutional controls to eliminate exposure to a potential vapor intrusion pathway by restricting building or property use
- Institutional controls are monitored by the state

# Summary of Draft, Partial Findings

- Most states include soil moisture vapor barriers in their building codes or have adopted the International Building Code
- Codes for barriers are directed at water vapor at percent levels, not potential VOC infiltration at the parts per billion levels

# Summary of Draft, Partial Findings

- Installation of soil moisture vapor barriers is based on specifications provided by the manufacturer, which is more stringent than International Building Code
- The construction process has the potential to damage vapor barriers

# Summary of Draft, Partial Findings

- Information on longevity and durability (beyond basic warranty information) is not readily available
- Products like Liquid Boot and Geo-seal provide extended warranties
  - use their installer, and conduct a smoke test, provide data

# Summary of Draft, Partial Findings

- The requirements for vapor intrusion and methane mitigation are nearly identical
- Vapor intrusion requirements may require additional material requirements for chemical compatibility of the membrane and the collection system

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# Questions?