



# MDHSS Involvement and Recommendations for Vapor Intrusion Investigations

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## Missouri Department of Health and Senior Services (MDHSS)

MDHSS has primary responsibility for safeguarding the health of the people of Missouri.

### Bureau of Environmental Epidemiology (BEE)

BEE has responsibility for the investigation and prevention of illnesses and medical conditions related to the environment.

### Health and Risk Assessment Program (HRAP)

HRAP is responsible for evaluating human exposure to hazardous substances in the environment and for making health-protective recommendations regarding actions needed.

# Human Health Risk Assessments (HHRA)

- HHRA evaluate potential risks from current and potential future exposures and provide a quantitative estimate of the likelihood of health problems occurring over time if no actions were taken to clean up contamination. Important to note that results of a risk assessment are estimates of the potential for adverse effects, not certainties.
- A tool used in cleanup decision-making.

# Public Health Assessments (PHA) & Public Health Consultations (PHC)

- PHAs evaluate potential health outcomes resulting from past, current, and potential future exposures and addresses community concerns.
- PHCs differ from PHAs in that the consultation focuses on a specific question or issue and provides a more rapid response.
- PHAs and PHCs provide specific recommendations on actions to be taken to protect public health.

# MDHSS Role in Risk Management

## RISK & HEALTH ASSESSMENT (MDHSS Role)

- Unbiased scientific approach to assessing potential health risks.

## RISK MANAGEMENT (Regulator's Role)

- The process of weighing policy alternatives and selecting the most appropriate regulatory action by integrating the results of risk assessment with other considerations, such as feasibility, cost, etc.

# MDHSS Role in Vapor Intrusion (VI)

- Evaluate sites for potential VI risks and make recommendations for VI investigations.
- Participate in planning phases for VI investigations and review work plans.
- Assist in community outreach planning and participate in outreach activities.
- Review sampling results and make recommendations on actions needed.
- Address health concerns and provide health education to communities.

# MDHSS VI Recommendations

## **VI is evaluated using a tiered approach:**

- **A preliminary analysis to determine the potential for VI.**
  - Comparison of available groundwater data to generic screening levels developed using conservative default attenuation factors that reflect generally reasonable worst-case conditions.
  - If concentrations are above these generic screening levels, additional sampling and further evaluation is typically recommended.
- **A detailed VI investigation accounting for potential seasonal variation and using a multiple lines of evidence approach, including concurrent collection of sub-slab soil gas, indoor air, and ambient air samples, to determine whether the VI exposure pathway is complete.**
  - Concurrent sampling allows for data comparison and accurate assessment of the risks of VI, as well as timely response to any health hazards.

# MDHSS VI Recommendations

## **VI investigations need to address potential mitigation actions:**

- If exposures are found to be occurring from vapor intrusion, it would not be acceptable to delay planning for and implementing mitigation.**
- The need for mitigation action needs to be considered and agreed upon upfront. MDHSS recommends development of a decision matrix.**



# MDHSS VI Recommendations

**MDHSS recommends a decision matrix be developed to determine response actions and further recommends VI comparison levels include screening levels and action levels:**

- **Screening levels are typically based on a cancer risk (CR) of  $1E-6$  and non-cancer hazard quotient (HQ) of 1, while VI action levels are based on the lower of a CR of  $1E-5$  or HQ of 1.**
  - If screening levels are exceeded, periodic monitoring is recommended.
  - If action levels are exceeded, actions to mitigate risk are recommended.
  - Preemptive mitigation is also recommended if site data/conditions indicate a high threat for VI to occur in the future.

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## VI Risk Management Decision Matrix

		Indoor Air (IA)		
		IA < 1E-6 Cancer Risk & < Hazard Quotient of 1	IA ≥ 1E-6 Cancer Risk & ≤ Hazard Quotient of 1	IA > 1E-5 Cancer Risk or > Hazard Quotient of 1
Sub-Slab Soil Gas (SS) (attenuation factor of 0.03)	SS < 1E-6 Cancer Risk & < Hazard Quotient of 1	No Additional Action	No Additional Action (Potential Indoor Source)	No Additional Action (Potential Indoor Source)
	SS ≥ 1E-6 Cancer Risk & ≤ Hazard Quotient of 1	Further Assessment	Further Assessment	Further Assessment and Potential Mitigation (Potential Indoor Source)
	SS > 1E-5 Cancer Risk or > Hazard Quotient of 1	Further Assessment / Preemptive Mitigation	Preemptive Mitigation	Mitigate

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## Community Outreach Recommendations

- **Knowledge about the community should be obtained upfront and considerable planning should be put into community outreach.**
- **Potential questions and answers should be considered and talking points should be developed prior to making contact with the community.**

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## Case Examples

- **Residential Sites**
- **Commercial / Industrial Sites**
- **Other Sites**



# QUESTIONS

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