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# MPCA's Vapor Intrusion Guidance

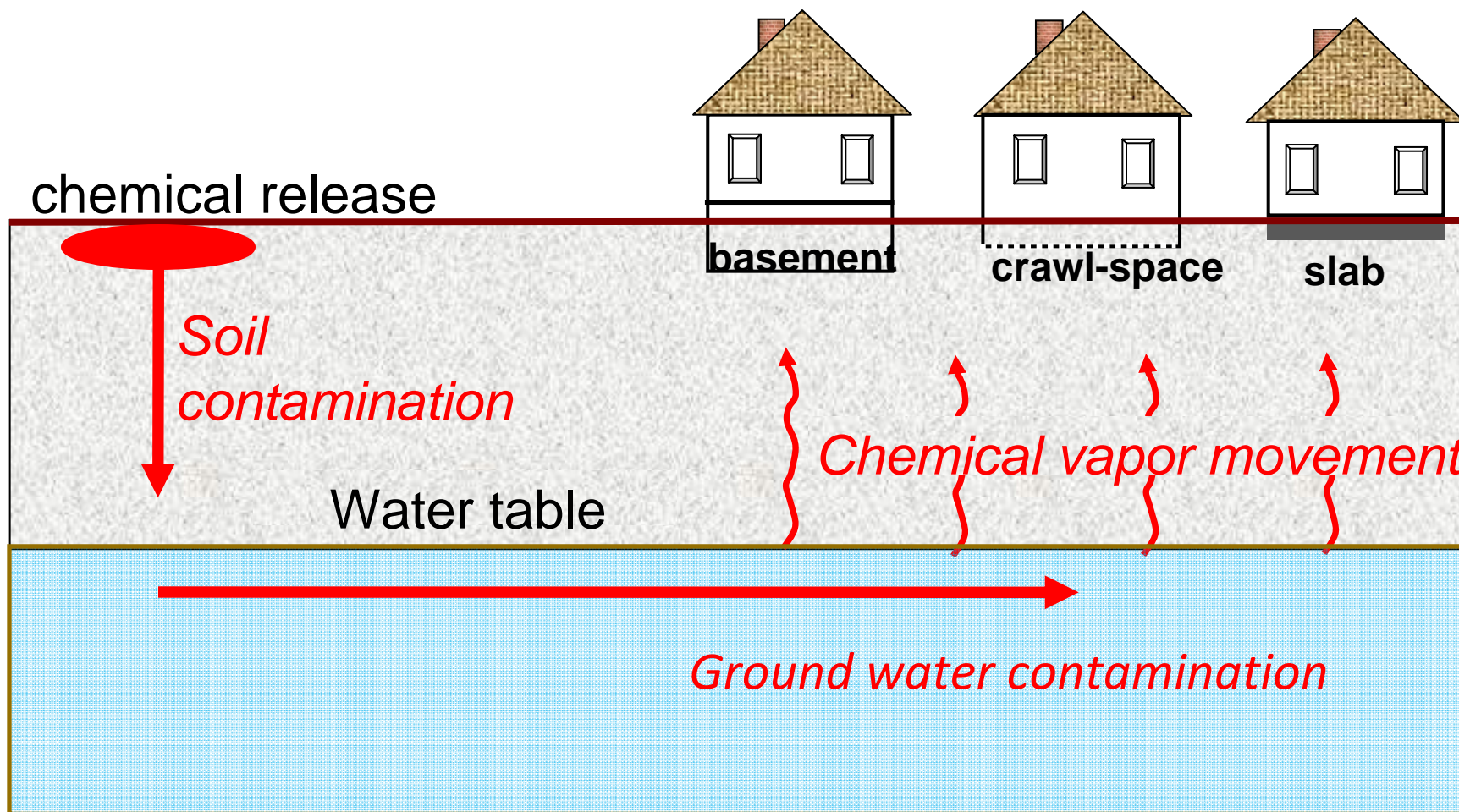
Minnesota Environmental Institute  
April 23, 2009

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Minnesota Pollution Control Agency

# What is Vapor Intrusion?



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# MPCA Vapor Intrusion Guidance

September 2008

- Superfund, RCRA, and Voluntary Cleanup Programs

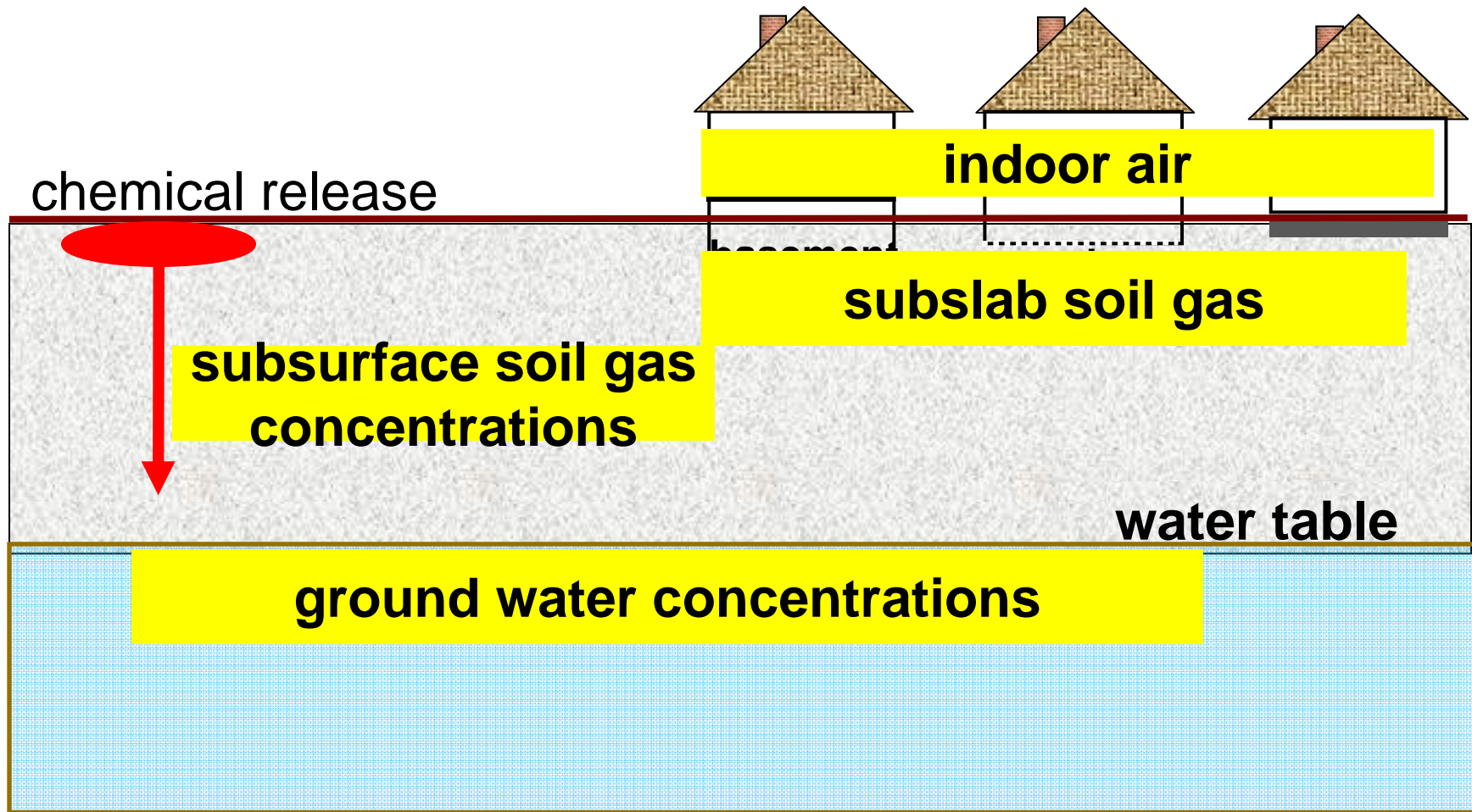
*Risk-Based Guidance for the Vapor Intrusion Pathway*

- Petroleum Remediation Program

*Vapor Intrusion Assessments Performed During Site Investigations, Guidance Document 4-01a*



# Vapor Intrusion Investigations



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# Key Features of MPCA Guidance

- Reliance on empirical field data rather than predictive models
- Screening values
- Tiered investigation framework
- Emphasis on use of multiple lines of evidence for decision making



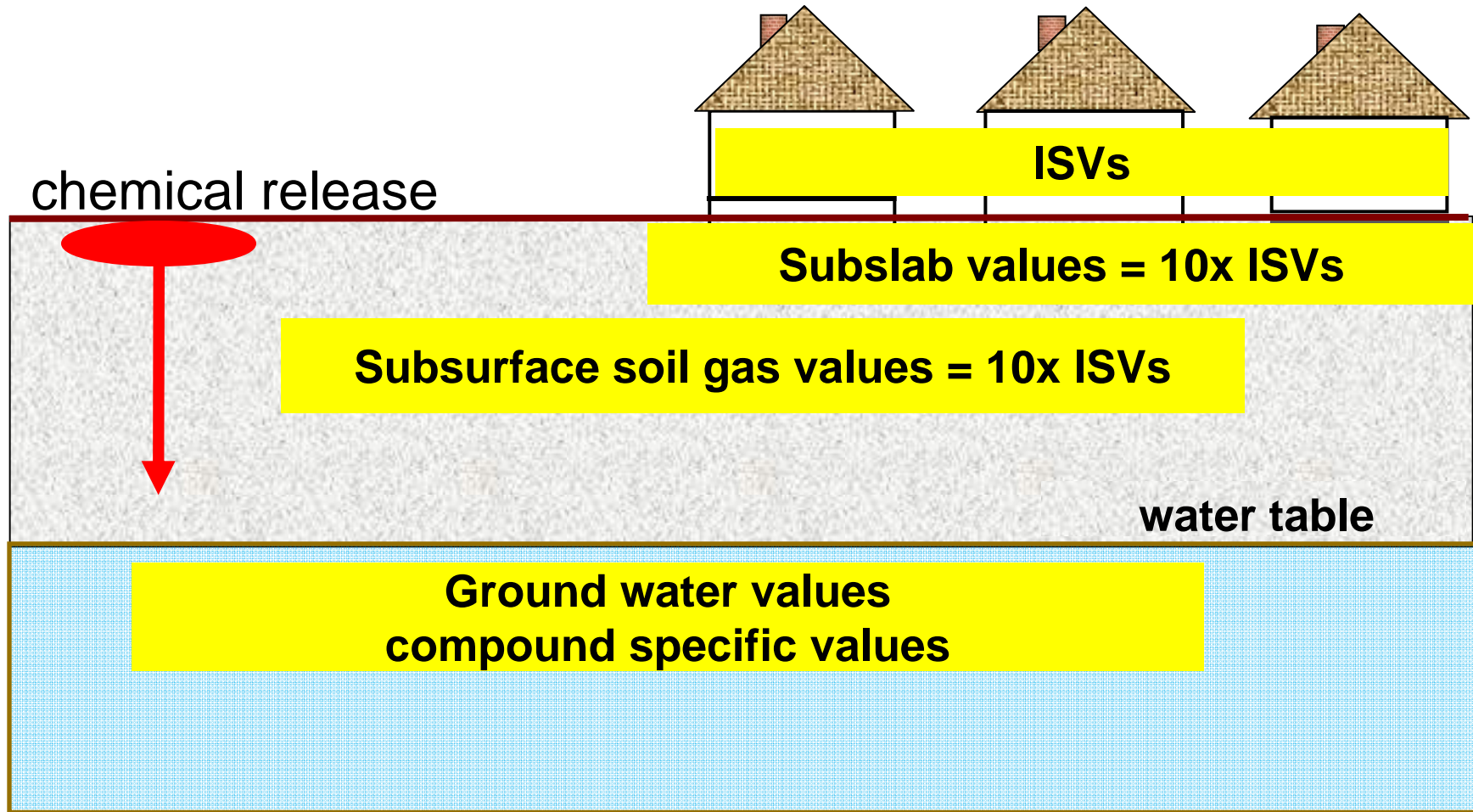
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# Intrusion Screening Values (ISVs)

- Inhalation risk values for indoor air
- Developed by MPCA in cooperation with MDH
- Uses current available toxicity information
- February 2009 ISV update now includes both residential and commercial-industrial ISVs



# Indoor Air and Media-Specific Screening Values



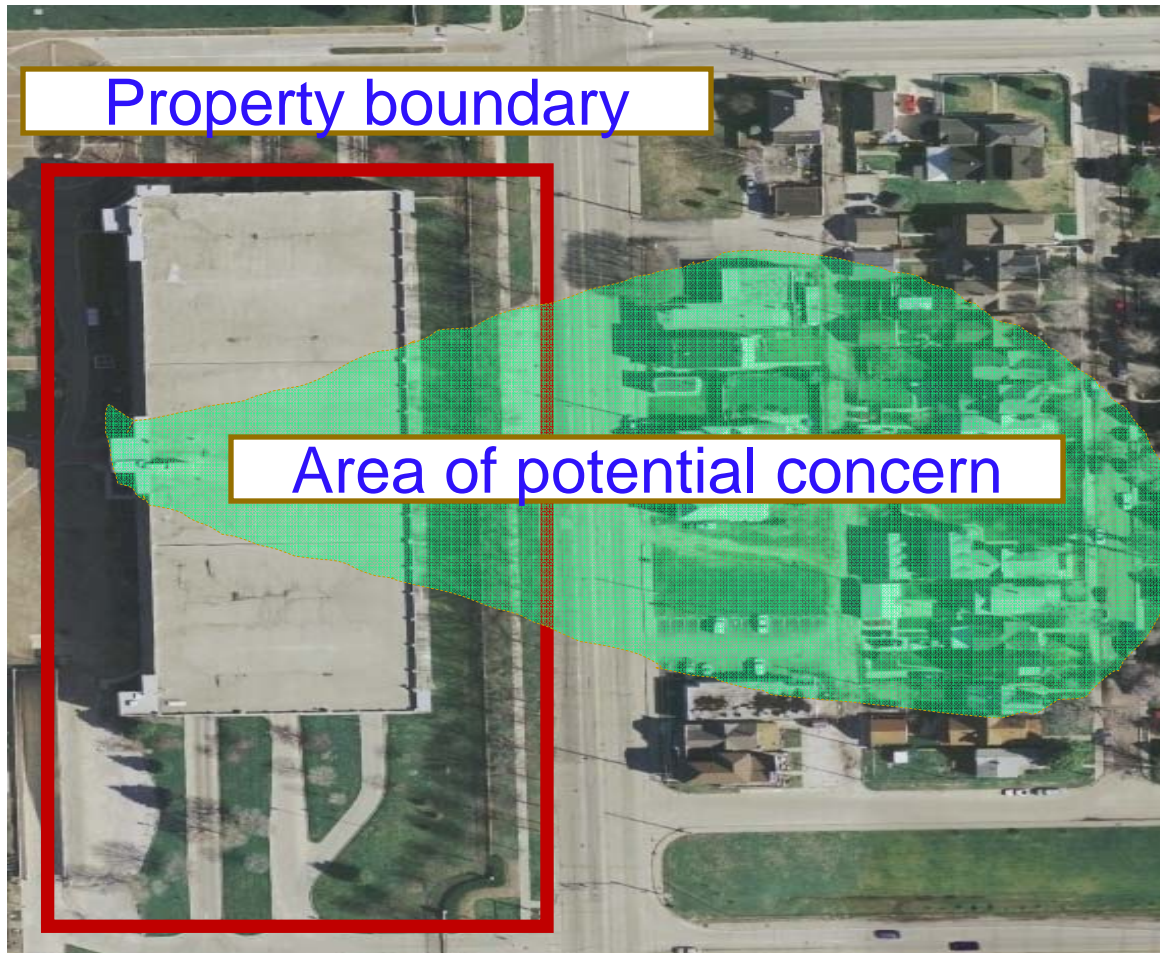
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# Tier 1: Preliminary Vapor Intrusion Screening

- Soil vapor investigations required at most sites
- Soil gas collection with initial soil and ground water sampling
- Tier 2 vapor investigation required if
  - Soil gas levels exceed 10x ISVs or
  - Ground water concentrations exceed ground water screening levels and
  - Nearby receptors



# Tier 2: Subsurface Soil Gas Investigation



- Sample radially towards nearest receptors
- Use appropriate investigation strategies
- Soil gas levels exceed 10x ISVs?



# Push Probe Collecting Soil Gas Samples



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# Tier 3: Building Specific Investigation

- Subslab soil gas sampling
- Building survey
  - Interior inspection
  - Interior air quality inventory
- Collect indoor air samples if subslab results >10x ISVs



# Sampling of Subslab and Indoor Air

## Subslab Sampling



## Indoor Air Sampling



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# Indoor Air Sampling

- Remove indoor chemical sources of contamination if possible
- Sample exterior ambient air
- Winter months recommended



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# How is Indoor Air Data Evaluated?

- Determine sources of indoor air contamination
- Background versus intrusion?
- Remedial action required if unacceptable air risks found due to vapor intrusion



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# Remedial Options

- Clean up contamination source
- Mitigate buildings
  - Subslab depressurization
  - Synthetic vapor barrier
  - Building pressurization (HVAC)
- Institutional controls



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# Community Outreach

- Increasingly important as potential risks to public health identified
- Public meetings, fact sheets, community groups
- MDH may become involved
- Access agreements for sampling and mitigation



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# Pending New Guidance and Special Projects

- Technical Support Document
- Superfund Program examining closed sites
  - Screening matrix to rank relative risk
  - Soil gas investigations at 18 sites
  - Includes high- to low-risk sites
  - Report due summer 2009
- Guidance is still evolving and updates should be expected



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# Contacts for Additional Information

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