Vapor Intrusion at Tanks Sites in Missouri

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Regulatory Basis

- 319 RSMo
- 10 CSR 26
- MRBCA for Petroleum Storage Tanks 2004
- MRBCA for Petroleum Storage Tanks 2013
Vapor Intrusion = Indoor Inhalation
Target Levels

• Tier 1 – Risk-Based Target Levels

• Tier 2 and Tier 3 – Site-Specific Target Levels
Target Levels (cont.)

- Quantitative Toxicity Factors
- Exposure Factors
- Fate and Transport Parameters
- Physical and Chemical Properties
Target Levels (cont.)

• Mathematical Models
  – Emission Model
  – Indoor Air Mixing Model
  – Johnson and Ettinger Model (US EPA, 2001) (Does Not Include Advection or Biodegradation)
Exposure Pathways

- Current and Future Buildings
- Residential and Non-Residential
Media Sampled

- Subsurface Soil
- Groundwater
- Soil Vapor
Soil Data

- Collected Within 10 Feet Horizontally of Receptor
- Collected from Vadose Zone (Greater Than 3 Feet BGS)
- 50 x 50 Foot Exposure Domain for Future Building
- Analyzed for Petroleum COCs
- Representative Concentration Can Be Calculated From Samples Collected Within the Exposure Domain
Groundwater Data

- Collected From Registered Monitoring Wells
- Representative Concentration Can Be Calculated From Samples Collected Within the Exposure Domain
Soil Vapor Data

- Collected From Shallow and Deep Sampling Points
- Collected From Exposure Domain
- At Least Two Samples From Each Sampling Point Collected At Least Three Months Apart
- Representative Concentrations Can Be Calculated Over Exposure Domain For Each Sampling Event
Risk Assessment

• Exceedance(s)
  – Proceed to Next Tier
  – Corrective Action

• No Exceedance(s)
  – NFA
Thank You

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