



# Applying the Hazard Ranking System (HRS) to Vapor Intrusion Sites

*Presented by Kenyon Larsen*

*DynCorp*

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# The HRS and Air Releases



“The air migration pathway evaluates the relative threat resulting from releases or potential releases of hazardous substances . . . to the air.” (55 FR 51579)

“Establish an observed release to the atmosphere by demonstrating that the site has released a hazardous substance to the atmosphere.” (55 FR 51651)

# Characteristics of vapor intrusion sites

- Shallow, contaminated ground water (or soil)
- Permeable soil
- Homes close to source/plume
- Volatile or semi-volatile substances

# How do I approach scoring a vapor intrusion site?

- Most vapor intrusion sites will be scored with the air migration pathway
- Site scores will be low unless an observed release to air is documented
- Score the soil exposure pathway if contaminants exist within 2 feet of the ground surface and is not covered

# Complexities of Scoring Vapor Intrusion Sites

- Observed Releases:
  - Attribution of indoor contamination
  - Background levels indoors
  - Sample Similarity
- Targets: Distance Categories
- Ground Water Plume sites will score differently than Identified Source Sites

# How Might the New Jersey Site Score using the HRS

- Some of the facts Ken mentioned:
  - PCE is primary contaminant, some TCE
  - Moderate waste quantity
  - Approximately 13 homes with indoor samples meeting OR criteria
  - Furthest home with an air observed release (OR) is  $\frac{1}{4}$ - $\frac{1}{2}$  mile from sources
  - No HRS air benchmarks for PCE in SCDM

# HRS Air Pathway Score Likelihood of Release

- Observed release to the atmosphere based on chemical analysis in homes
- PCE from ground water is attributed to the site
- LR = 550

# HRS Air Pathway Score

## Waste Characteristics

- Moderate hazardous waste quantity (factor value of 100)
- PCE has moderate toxicity (100) and high air mobility (1)
- $WC = 10$

# HRS Air Pathway Score Targets

- PCE concentrations document Level II concentrations in homes
- According to the HRS, all people living within ½ mile from the site are exposed at Level II\*
- Targets:
  - Nearest individual = 45 points
  - Level II = all residents within ½ mile

\* Distance categories are based on atmospheric dispersion. Targets for indoor air sites should be site-specific.

# Air Pathway & Site Score

$$\frac{LR \times WC \times T}{82,500} = \text{Pathway Score}$$

$$\frac{550 \times 10 \times 855}{82,500} = 57$$

$$\text{Site Score} = 28.5$$

# Summary

- Attributing contaminants in homes and establishing background levels for observed releases may be difficult
- Ground water plume sites are scored differently than identified source sites
- Use this scoring scenario in unique instances