EPA Vapor Intrusion Workshop
Measurement-Based Methods for Protective & Defensible Chlorinated VI Exposure Determinations

Review of the Redfield Site, Denver, CO
IECC Zone 5(B)

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References


• Redfield Site Website; http://www.redfieldsite.org/

• Indoor Air Vapor Intrusion Database; https://iavi.rti.org/workshops.html
All of Alaska is in Zone 7 except for the following boroughs in Zone 8:
Bethel, Northwest Arctic, Dillingham, Southeast Fairbanks, Fairbanks N. Star, Wade Hampton, Nome, Yukon-Koyukuk, North Slope

Zone 1 includes Hawaii, Guam, Puerto Rico, and the Virgin Islands

Image: https://basc.pnnl.gov/images/iecc-climate-zone-map
Site Background

- VOC impacted groundwater plume (1,1-DCE, 1,1,1-TCA, TCE)
- Variable geology; sand, silt, clay, weathered sedimentary rock
- Variable depth to groundwater (10’ to 50’)
- Variable building construction and characteristics
- On- and off-site groundwater treatment
Case Study: Folkes et al., 2009

Groundwater derived soil gas concentration versus pre-mitigation indoor air concentration of 1,1-DCE (1998-2003)
Case Study: Folkes et al., 2009

- Evaluation of 45 unmitigated homes
  - 2 to 10 years indoor air data (7.8 year average)
  - 715 indoor air measurements
  - Average annual 1,1-DCE indoor air concentration, 0.023 to 0.27 µg/m³
Case Study: Folkes et al., 2009
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Folkes et al., 2009
Site Background

• Indoor air sampling, 1998 – Present
  • > 11,500 samples collected
  • > 9,600 indoor air samples
  • > 750 buildings sampled (~99% residential)
  • 387 mitigation systems installed
Looking Forward

• Evaluation of seasonality and weather patterns – historical records and on-site meteorological station
Summary and Conclusions

• Large residential VI dataset (>20 years), including pre- and post mitigation monitoring
  • Opportunity to evaluate historical weather data, including temperature, wind, and barometric pressure

• Previous study (Folkes et al., 2009) shows seasonal differences in indoor air concentrations; 2-3X annual average
Questions?

Thank you,

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