

Vapor Intrusion Evaluation at a Daycare Facility in a Disadvantaged Community

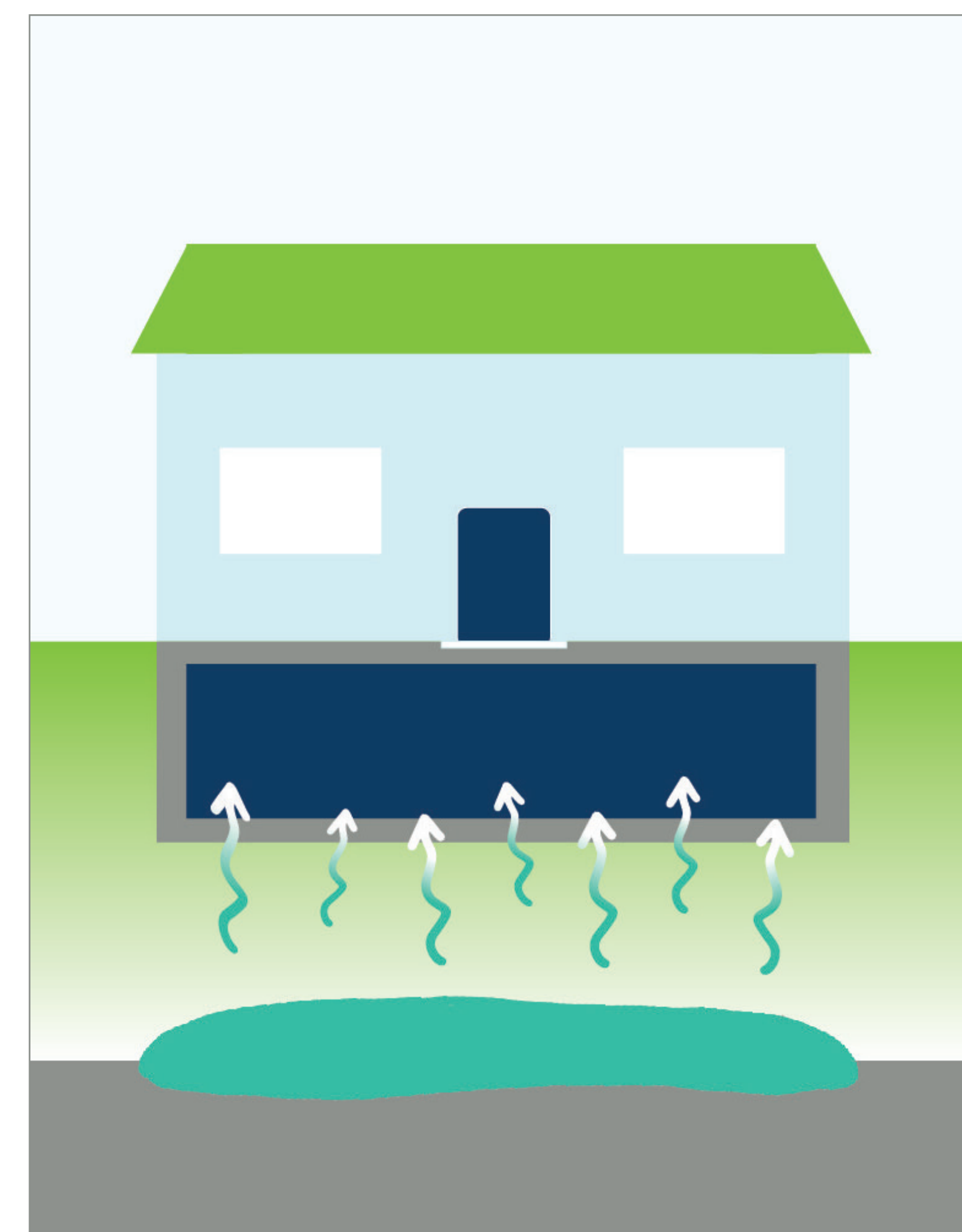
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Site-Specific Human Health Risk Assessment to Evaluate Vapor Intrusion Risks

CASE STUDY

Daycare Facility in Oakland, California

- Daycare facility is a single-story commercial building that serves low-income, multilingual children
- Property was a former fuel station and is impacted by petroleum hydrocarbons



Risk Assessment

1	Conducted a sensitivity analysis to derive health-protective levels based on feedback from daycare owners and operators
2	Evaluated multiple receptor groups based on daycare facility operational hours and policies
3	Derived site-specific attenuation factors based on radon tracer studies
4	Derived site-specific screening levels to determine potential risks and hazards
5	Compared indoor air data to site-specific screening levels to evaluate current risks
6	Compared subslab data to site-specific screening levels to evaluate future risks

Site-Specific Screening Levels for Naphthalene

Default Worker



- 25 years
- 250 days/yr
- 0.36 $\mu\text{g}/\text{m}^3$
- 12.0 $\mu\text{g}/\text{m}^3$

Daycare Occupants

Occupant Group	Age	Exposure Frequency (days/yr)	Indoor Air Screening Level ($\mu\text{g}/\text{m}^3$)	Subslab Screening Level ($\mu\text{g}/\text{m}^3$)
Child Student	4 years	250 days/yr	2.3 $\mu\text{g}/\text{m}^3$	322 $\mu\text{g}/\text{m}^3$
Janitor	2 years	235 days/yr	4.8 $\mu\text{g}/\text{m}^3$	685 $\mu\text{g}/\text{m}^3$
Office Staff	6 years	230 days/yr	1.6 $\mu\text{g}/\text{m}^3$	233 $\mu\text{g}/\text{m}^3$
Teacher	15 years	225 days/yr	0.67 $\mu\text{g}/\text{m}^3$	95.0 $\mu\text{g}/\text{m}^3$

■ Exposure Duration ■ Exposure Frequency ■ Indoor Air Screening Level ■ Subslab Screening Level

Exposure time for all occupants is 8 hours per day.

Assessing Risk while Considering Environmental Justice

Risk Communication

Close collaboration with the community and the regulatory agencies ensured site-specific screening levels were protective of actual exposures.

Risk Management

Site-specific screening levels were used for additional data collection efforts to guide decision-making.



Conclusion

The state agency approved the site-specific screening levels and allowed for reoccupancy after confirmation sampling was completed.

The facility continues to serve the disadvantaged community.

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