



Session Title: Case Study: Challenges Beyond Data Analysis: Juxtaposing Privacy and Dissemination Using a Pilot CBPR Indoor Air Quality Sampling Campaign

Case Study: Indoor Air Quality Pilot Project

Project Overview: A community organization, Taking Neighborhood Health to Heart, researchers from the University of Colorado Boulder, and a partner from the American Geophysical Union’s Thriving Earth Exchange co-designed a project to collect indoor air quality data on two contaminants – radon and perchloroethylene, in 15 homes in a target area selected by the community.

Background: Perchloroethylene is an organic compound commonly used in dry cleaning and also common household products; at high levels as can occur with environmental contamination it can have adverse health effects. Radon is a naturally occurring radioactive gas that can enter and accumulate in homes; radon is the second leading cause of lung cancer in the US. The amount of radon present in the soil is determined by the geology of an area.

Study Motivation: The study was motivated by known perchloroethylene contamination in other areas of the city and the fact that our state has a high potential for dangerous levels of radon (as defined by the US EPA).

Funding: In addition to a Successful Solutions Grant from the AGU’s Thriving Earth Exchange, and funding through the CU Engage Graduate Fellowship Program, we successfully crowd-funded the project using experiment.com. (experiment.com/iaq)

Data Collection: A paid project coordinator and the science lead for the project conducted the sampling activities. We used non-intrusive passive sampling methods (e.g., no noisy pumps or frequent visits to check equipment).

Outcomes Thus Far: Sampling was successfully completed in all homes and no participants reported issues – indicating feasibility. One team member was able to get radon added to a list of work covered by an Emergency Home Repair Program specifically designed to assist low income families.

Summary of Findings

- PCE – most homes had very low levels (background levels) and no homes had levels above the amount where state health officials suggest taking action. However, an analysis of the ‘Total Indicated Compound’ Reports provided by the lab indicated other potentially harmful compound were commonly detected (e.g., benzene and toluene).
- Radon – more homes with ‘high’ levels (or levels above the amount where the US EPA recommends pursuing remediation action) than anticipated. Approximately 44% of homes in Denver County test above the ‘action level’ and the average reading is at 5 pCi/L, whereas in our study 80% of homes tested above the ‘action level’ and we found an average reading of 7.2 pCi/L. This may be an indication that the relatively small area we sampled in is a radon hot spot and would greatly benefit from additional assistance with testing and remediation.
- In general, higher levels of pollutants in homes perceived to have poorer ventilation, but no obvious relationship between home age or construction type and radon level.



After Data Collection: What we did...

1. *Shared data with participants.*
 - A team including a public health expert from TNH2H and the science lead met with each participant individually to share the results, recommendations, and resources.
 2. *Discussed potential issues regarding data dissemination with the members of TNH2H prior to discussing the data, this discussion was guided by the following four questions.*
 - In what ways do study participants and the community benefit from the results?
 - In what ways might study participants and the community be harmed by the results?
 - Were participants given adequate information for their informed participation in the study?
 - What questions would we like answered when analyzing the pilot study data?
 3. *Discussed the de-identified data with the TNH2H membership and potential next steps.*
 - We are interested in conducting education, outreach, and more testing for radon throughout the community.
 - We would like to reach out to local and state officials for support regarding education and outreach as well as to discuss additional resources that would benefit low-income communities.
 - We would like to continue sampling for compounds similar to perchloroethylene in homes and conducting education around indoor air quality in general.
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Session Discussion Questions:

- a) **What barriers exist to community ownership of data?** (e.g., involving media can lessen the community's control over how the data is framed)

- b) **How can we effectively share data with officials in a way that strengthens collaboration on solutions? Conversely, how can we deal with opposition from officials?** (e.g., discrediting results or downplaying seriousness)

- c) **How can we maximize the positive impact of data while minimizing the potential harms of sharing the results?** (e.g., mapping data may inform the community, but it may stigmatize specific blocks or even affect the property value of individual homes) Also, beyond this project, how do we shift the burden from the individual homeowners to seeing IAQ as a community-wide issue?