

Public Participation in Air Sampling and Water Quality Test Kit Development to Enable Citizen Science

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What Is the Purpose of This Study/Review?

- To establish an academic–community partnership to address Guernsey County residents' concern regarding environmental quality near proposed and operating natural gas extraction waste sites.
- To develop a citizen science tool for water quality assessment by engagement of the local middle and high schools.

What Is the Problem?

- Natural gas extraction creates liquid, solid, and gaseous waste and the management of these wastes is a public health concern.
- Natural gas extraction waste facilities are often located in underserved areas, an environmental justice issue for these communities.
- The dramatic increase in natural gas extraction activity has caused concern among community members of Guernsey County and neighboring counties.

What Are the Findings?

- Together we selected 10 air sampling locations in proximity to current or proposed natural gas extraction sites, obtained cooperation from landowners, and conducted air quality monitoring over a 6-week period.
- Volatile organic compounds were detected at all 10 air sampling locations.
- Nineteen unique volatile organic compounds were detected; one was above the recommended exposure level.
- Water quality test kits were developed and piloted in middle school and high school classrooms.

Who Should Care Most?

- Residents, public health officials, and emergency responders in rural communities with nearby natural gas extraction activity.
- Educators and residents with an interest in participating in environmental health research via citizen science.

Recommendations for Action

- Baseline measurements should be taken at any potential natural gas extraction sites and routine monitoring be conducted thereafter to characterize long-term exposures.
- Water and soil sampling should be performed.
- Data such as truck traffic and gallons of waste injected should be documented.
- Engaging residents in research is a useful tool for increasing awareness and connecting communities to research.