



The Richmond Youth Air Quality Initiative

Project Description

The Richmond Youth Air Quality Initiative employed a youth participatory action research (YPAR) model to investigate air quality and environmental justice challenges across two neighborhoods facing heightened adversity in Richmond, CA. Researchers from the UC Berkeley's [Center for Environmental Research and Children's Health \(CERCH\)](#) partnered with [RYSE](#), a youth-centered community organization in Richmond that promotes social justice and skills development opportunities. The program was funded by the Bay Area Air Quality Management District (BAAQMD).

Over the course of the project, we facilitated Richmond youth in: 1) environmental health literacy (EHL) education, empowerment, professional development and college application support; 2) designing and conducting scientific research on air quality and community-level health risk factors; 3) interpretation and dissemination of research findings; and 4) youth-driven community education. EHL curriculum engaged Richmond youth as active co-researchers and was led by CERCH staff (Dr. Kim Harley, PI; Dr. Eric Coker and Mr. James Nolan, Study Managers) in collaboration with RYSE (Media, Arts and Communications Department, Dan Reilly) and BAAQMD experts. CERCH researchers with expertise in air quality research led the air quality community science component, training youth researchers to assess environmental conditions using scientific-grade air samplers. Youth researchers learned techniques to collect, analyze and understand air quality data, focusing on NO₂ and SO₂, air pollutants that are both meaningful for BAAQMD and address local community concerns surrounding air quality and health. Drawing on findings, RYSE staff will be collaborating with youth and CERCH researchers to develop materials that communicate findings to local community members and governmental officials.



Research needs

Richmond is considered an at-risk community due to local air quality problems, a variety of emissions sources, and population-level vulnerabilities to the effects of poor air quality, according to BAAQMD. The proposed project combines scientific methods with community engagement to better understand between-neighborhood differences in outdoor air quality and to show whether spatial variability in pollutant levels contributes to potential



population exposure disparities within Richmond, as well as to better understand how spatial variability in multiple outdoor air pollutants correspond with Richmond's community-level risk factors. The project addressed these research needs with the aim of engaging youth, informing the local community on specific air quality issues, and to foster a youth- and community-driven process of air quality mitigation.

Goals

The goals of the proposed project were to:

- Enhance environmental health literacy of youth from impacted communities, developing youth researcher leaders concerned about environmental justice
- Characterize the potential for population-level disparities in human exposure to poor air quality
- Foster community involvement around understanding and addressing air quality issues in Richmond

Selection of NO₂ and SO₂ as key pollutants was determined by: 1) known relationships with localized traffic- and industry-related emissions sources; 2) potential for human health impacts; 3) potential for spatial heterogeneity in concentrations; 4) potential as a target for future pollutant mitigation efforts; and 5) their ability to be reliably measured with low-cost sampling devices. Since passive samplers are shown to be reliable for air pollution measurement and are well suited for community-involved research, we deployed 12 Ogawa passive samplers sited in the residential neighborhoods just south of Atchison Village up through North Richmond, and one control sampler.

In addition to air quality data, we collected and analyzed data on community-level risk factors in the sampled communities to help identify cumulative neighborhood vulnerabilities. A Community Mapping and PhotoVoice record was synthesized to highlight combined neighborhood risk factors and air quality. Drawing from these findings, we developed multimedia presentations and materials to facilitate dissemination of research findings, including a made by hand "zine" elaborating on findings and incorporating the youth's perspectives on air quality in their community through the arts.

Questions?

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