



COMMUNITY-ENGAGED AIR POLLUTION MONITORING

Some communities are disproportionately burdened by air pollution but often lack resources to measure it. Low-cost particulate matter (PM) sensors enable citizen scientists to monitor air quality, but they are typically deployed in more affluent areas and can't differentiate between locally emitted PM and secondary PM formed elsewhere.

THE PROJECT

Berkeley Lab is partnering with community-based organizations (CBOs) to measure local air quality. Researchers developed low-cost sensors to measure black carbon (BC), a proxy for locally emitted pollution from sources like diesel engines and residential wood burning. CBOs assist in using this technology to support advocacy and outreach. Since 2016, Berkeley researchers have worked with CBOs in West Oakland, Richmond, Modesto, and San Francisco to design BC monitoring networks. CBOs recruit sensor hosts while Berkeley Lab researchers provide the technology and analysis. This collaboration informs policies to reduce pollution, reduce residents exposure, and curb its negative health impacts.



BETTER
health



IMPROVED
outdoor air quality

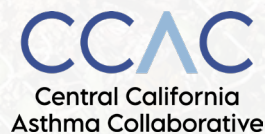


MITIGATE
local sources of air pollution

+ WE PARTNERED WITH +



West Oakland
Environmental
Indicators
Project



BACKGROUND

As a National Laboratory funded by the U.S. Department of Energy, Berkeley Lab is committed to a just and equitable energy transition. We strive to ensure that the impacts of our research benefit all communities, as well as future generations. To meet these goals, we partner with community-based organizations, public, and private agencies to help make clean energy technologies and resources accessible to all.

In these projects, Berkeley Lab partnered with UC Berkeley and deployed sensors in historically underserved communities to monitor air quality and track air pollution at the neighborhood level. The projects produced neighborhood-specific data that could be used to create policies to improve air quality and reduce the health impacts in communities most affected by pollution.

[Visit Berkeley Lab's Air Pollution Science and Technology Website](#)



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Sugrue, RA; Preble, CV; Butler, JDA; Redon-Gabel, AJ; Marconi, P; Shetty, KD; Hill, LAL; Smith, AM; Lukanov, BR; Kirchstetter, TW. (2024) **The value of adding black carbon to community monitoring of particulate matter.** *Atmos. Environ.*, 325, 120434. DOI: 10.1016/j.atmosenv.2024.120434.

Caubel, JJ; Cados, TE; Preble, CV; Kirchstetter, TW (2019) **A Distributed Network of 100 Black Carbon Sensors for 100 Days of Air Quality Monitoring in West Oakland, California,** *Environ. Sci. Technol.*, doi:10.1021/acs.est.9b00282

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