

Low-Cost Sensors for Healthier Indoor Air



March 2025

ISSUE

Indoor air quality (IAQ) can affect human health. This is especially true for overburdened communities, due to factors like smaller living spaces, higher occupant numbers, poor ventilation, and less access to environmentally friendly products.

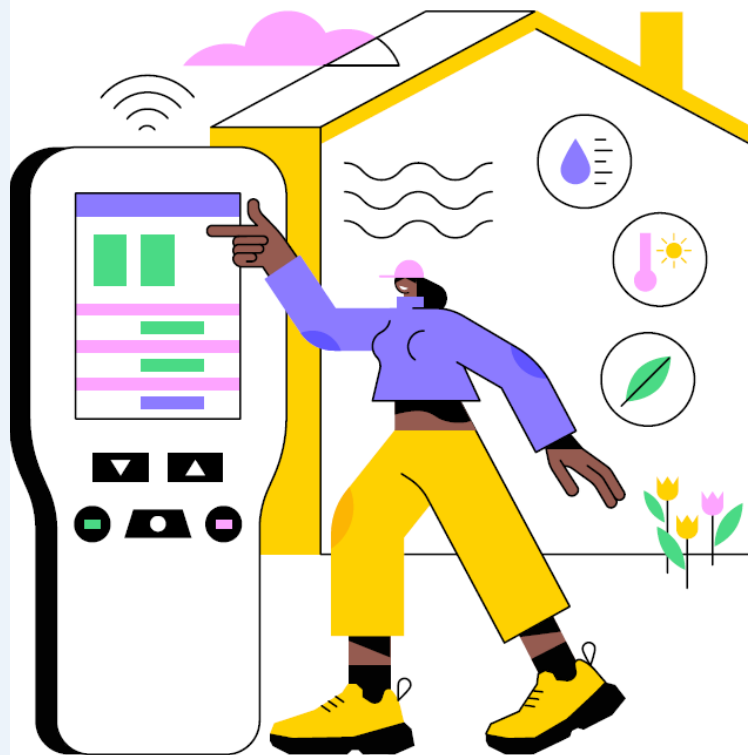
Low-cost sensors (LCS) can measure air pollutant levels in real-time. Thus, using LCS can help inform people about their indoor air quality and motivate them to take action to reduce indoor air pollution. Currently, there is limited information on how LCS can be used for IAQ monitoring, particularly within overburdened communities.

GOAL

Researchers from the University of California, Berkeley (UCB) put together a project to see whether LCS can be used as an option to improve IAQ in overburdened communities when provided to residents with proper guidance and resources.

METHOD

Researchers first wanted to see what commercially available LCS can be used to measure IAQ. They summarized key features and limitations for 30 single-pollutant and 42 multi-pollutant sensors.

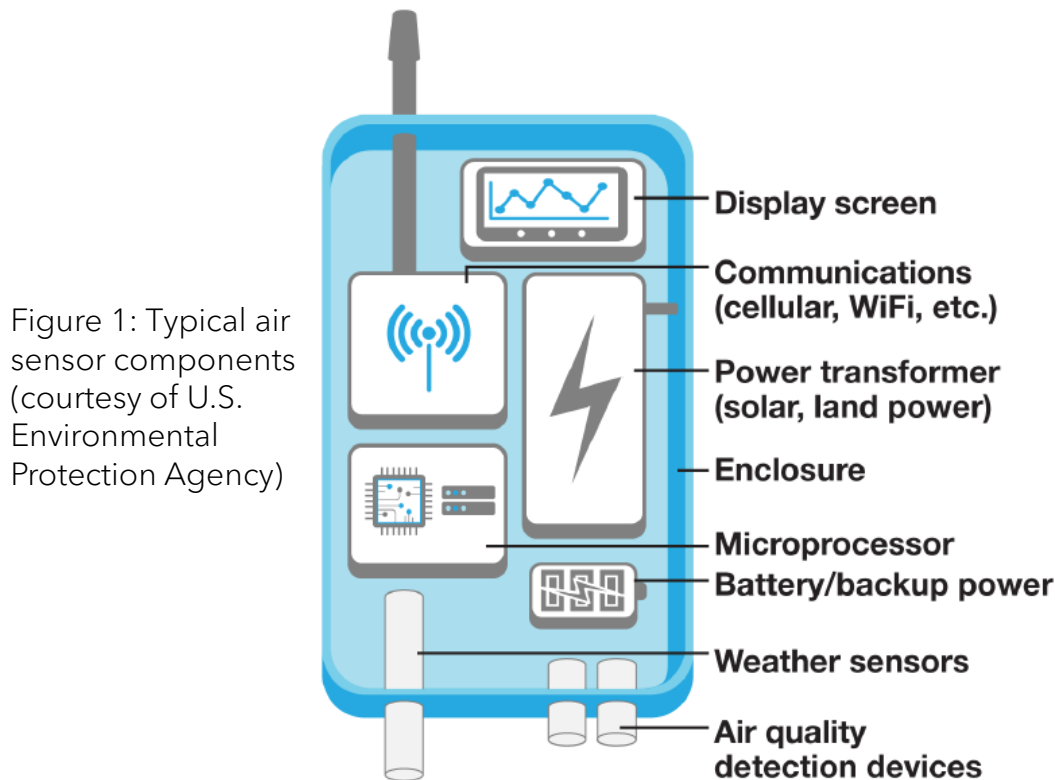


Next, the team looked into past efforts that used LCS for IAQ monitoring, focusing on efforts that engaged communities disproportionately impacted by indoor air pollution. They interviewed IAQ researchers, LCS manufacturers, members of overburdened communities, and LCS users to understand the challenges, needs, and experiences surrounding these devices.

Finally, the researchers created guidance on the importance of IAQ, sources of indoor pollutants, strategies for improving IAQ, and how to use LCS for IAQ monitoring at home.

KEY FINDINGS

- LCS can serve as valuable tools for identifying pollution trends and informing interventions for community-level IAQ efforts.
- User-friendly interfaces, reliable data, and continuous community engagement are critical to maximizing the benefits of LCS in community-facing efforts.



CONCLUSIONS

Actions that can reduce barriers to LCS use in overburdened communities include: 1. enhancement of device reliability, user-friendliness, and affordability by LCS manufacturers, 2. continuous validation of LCS performance and exploring innovative applications by researchers, 3. facilitation of education and engagement to help residents understand and utilize LCS effectively by community groups, 4. regulatory frameworks, technical assistance, and policies that promote equitable access to IAQ monitoring tools, and 5. participation of residents and workers in overburdened communities in using LCS devices to monitor IAQ.

This project highlights the importance of leveraging the capabilities and cost-effectiveness of LCS while understanding their limitations and integrating them into broader IAQ strategies. Doing so can help communities create safer indoor environments, which ultimately protect people's health, comfort, and well-being.

PROJECT DETAILS

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This project was conducted independently and not in connection with any regulatory proposal or other action considered by CARB.

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