Community–based Air Monitoring

The Imperial Air County Community Air Monitoring Project is an example of successful partnership between community members, researchers, and public health agencies.

Meeting the needs of multiple partner groups: It's complicated

Air quality monitoring provided by governmental agencies often depends on a few sampling devices spread out over wide areas. Scientists, local health agencies, and community groups may want to track air quality on smaller scales- something that the development of lower cost air monitors makes possible- but collaborating in a way that meets all needs can be difficult. The Imperial County Community Air Monitoring Network serves as an important success story with lessons for other groups interested in creating similar air monitoring partnerships.

Meeting the needs of community

EDGE scientists have shown that air quality varies significantly both between and within neighborhoods. Because government air quality monitors are few and far between, they rarely provide reliable information about the air quality in places of importance to communities such as schools, playgrounds, and nursing homes. Community-led monitoring efforts may help fill in information gaps, but without the scientific expertise to validate and calibrate equipment, the results may not have the rigor to make meaningful comparisons.

Meeting the needs of scientists

In general, while communities may be most interested in placing monitors where people live and spend their time, scientists are most interested in data from monitors that are spread out and represent a wide range of land uses. While scientists may not know where best to put air monitors to measure air quality in places of significance to the community, they likely have the capacity to properly validate monitors and to include spatial analysis and air monitoring best practices, so that the the data collected are reliable and useful for research.

Creating meaningful change

While the specific needs of researchers and community members may differ, both groups want results with scientific rigor and social relevance. When both these objectives are met, then the data collected from the network can complement government data to help individuals protect their own health, to create policies that improve public health, and to increase chances of support for long-term maintenance of the monitoring network and its research potential.

The Imperial County Community Air Monitoring Project

The Imperial County Community Air Monitoring Project (ICCAMP) was a five-year effort started in 2013 to fill the need for more community-level air monitoring in Imperial County, California, which has by far the highest rate of hospitalizations for asthma among school-age children in the state. The study was a collaboration among Tracking California, Comite Civico del Valle, and the University of Washington, funded by a grant from the National Institute of Environmental Health Sciences. Community advocates and concerned residents helped guide efforts through a Community Steering Committee, while outside scientists provided their expertise through a Technical Advisory Group. The project added 40 monitors that measure particulate matter to a network that previously contained only five. At the end of the study, the State of California passed a law to allocate funding for similar work- funding that, in part, will cover the maintenance of the network that ICCAMP established.

Lessons Learned

One product from the ICCAMP was a Guidebook for Developing a Community Air Monitoring Network. It includes best practices such as:
- Clearly defining the purpose for monitoring with an understanding of how data may inform action.
- Clearly defining the roles and responsibilities of all study partners.
- Presenting accurate scientific information in accessible way tailored to the community.
- Understanding that air quality monitors should not be considered reliable and accurate without rigorous calibration, testing and regular maintenance.
- Anticipating that sustaining a project after dedicated funding ends is difficult and it takes effort to ensure longevity.

For more than one third of the year residents of Imperial County, California are at risk of breathing outdoor air with levels of particulate matter that exceed the maximum standard set for California to avoid harming public health.

ABOUT EDGE & THE SETO LAB

The University of Washington Interdisciplinary Center for Exposures, Diseases, Genomics and Environment (EDGE) is committed to conducting and communicating science that reduces the burden of environmentally-related diseases through science translation into policy and practice. EDGE member, Dr. Edmund Seto studies air pollution and noise using low-cost mobile sensors, including personal mobile phone-based tools and applications. With graduate student Esther Min, Seto helped develop Washington State's new environmental justice mapping tool, showing health disparities across the state in a user-friendly web site hosted by the Washington State Department of Health (https://fortress.wa.gov/doh/wtn/WTNIBL).

LEARN MORE

Seto website: https://deohs.washington.edu/faculty/edmund-y-w-seto

ICCAMP Guidebook: https://bit.ly/2PMJ4ic

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