



Community Air Monitoring is a Portal to Bigger Environmental Stories

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People deserve to know what they are breathing. Where information about air pollution levels is scarce, community groups may mobilize to measure air quality themselves. Their efforts attract news coverage with good reason: communities' contributions to our collective knowledge about human exposures to pollution deserve to be recognized.

The problem is that community-scale air monitoring is commonly depicted as a solution to local environmental problems—a portrayal that edits out the structural and governance issues that motivate communities to measure air quality for themselves. Rather than presenting community air monitoring as a happy ending, environmental journalists should use it as a window into the regulatory systems, technological infrastructures, and cultural beliefs that make air pollution such an intractable and **unevenly distributed** problem. In a political climate where industry-friendly lawmakers seek to **ban community air monitoring** from public discourse, accurately representing its contexts and significance is especially vital.

Community Air Monitoring Tackles Structural and Governance Challenges

As an academic researcher following community air monitoring efforts, I have asked participants about their motives and tracked the long-term impact of monitoring. The patterns I have observed suggest the need to cover community air monitoring not as a success in itself, but as a window into structural challenges for environmental governance. Any science or environmental journalist interested in writing about community air monitoring should understand four things:

- 1. Communities' primary goal in monitoring is to breathe cleaner air.** In Pascagoula, Mississippi, the **Cherokee Forest neighborhood** breathes toxic emissions from an industrial park that includes an oil refinery, ship and auto manufacturing facilities, and a former industrial site recognized by the U.S. Environmental Protection Agency as a threat to human and environmental health. Real-time information about air quality might enable them to mitigate their pollution exposures somewhat through individual choices like staying inside or wearing masks. But in Pascagoula as elsewhere, it is not always possible to avoid pollution: pollution is a neighborhood-wide problem, and some people have jobs or care-taking responsibilities that require them to be outdoors. Even with monitoring in place, Cherokee Forest residents do not feel they can keep living there unless air quality improves; better enforcement of environmental regulations and cleaner practices by industrial facilities would be necessary. Reporting on community air monitoring is most informative when it identifies the causes of high pollution levels and the measures that decision-makers—not individual residents—could take to improve air quality.

2. **Once the data are in, communities still need to know what they mean.** Near an oil refinery in Benicia, California, a **community group oversees a monitoring station** that continuously measures nine different hazardous pollutants. However, these measurements alone cannot tell residents whether they should be worried about what they are breathing. Health-based standards for air quality could help put data in context, but only two of the nine pollutants they measure are covered by the U.S. **National Ambient Air Quality Standards (NAAQS)**. **Other agencies' standards** are more comprehensive but often disagree on safe levels for pollutants. Furthermore, the standards are expressed as 1-hour, 24-hour, or even annual averages, while the community's monitors take measurements every five minutes, making additional data analysis necessary before the numbers can be compared. Finally, even when pollution levels are below published standards, residents of Benicia and similar communities may still experience symptoms that they attribute to pollution exposures. They then have to choose between believing government pollution standards that invalidate their lived experience or finding ways to combine monitoring data with information about their symptoms in the hopes of getting standards updated. Reporting about community monitoring can add depth to the issues by explaining the challenges entailed in moving from data about air quality to helpful information about the possible health consequences of the air we breathe.
3. **Community air monitoring holds scientists to higher standards.** Pennsylvania's Lehigh Valley has just two government-run monitoring stations—not enough to understand how the booming warehouse industry has changed the distribution of pollution throughout the valley. A community-run network of low-cost particulate matter monitors **pinpointed where and when** pollution was worst, setting a higher standard for the level of detail about variation over space and time needed to inform planning decisions. Community air monitoring may also **challenge scientists' usual methods** by, for example, measuring pollution spikes that may have been hidden by averaging the data. While these efforts depart in some ways from scientists' protocols, they also highlight relevant evidence that scientists' standards may be missing. Reporting on community air monitoring should examine the considerations and tradeoffs involved in setting standards for high-quality evidence.
4. **Community air monitoring reveals missing environmental protections.** A medical sterilization facility in Allentown, Pennsylvania, releases ethylene oxide to the ambient air. **While neighbors are concerned** about their exposures to the **toxic chemical**, no federal regulation limits its ambient concentration. Even if there were a regulation, there is no guarantee that government agencies would have capacity or will to enforce it. Residents also confront technological limitations: ethylene oxide is **difficult and expensive to measure**, as are most gaseous air pollutants, and there are few widely available, easy-to-use platforms that enable community groups to store, manage, and analyze large amounts of data. As vital as they are, missing regulations, enforcement, monitoring technologies, and data infrastructures rarely make headlines; stories centered on community air monitoring can help bring them into focus.

Strengthening Coverage of Community Air Monitoring

Science and environmental reporters can improve the quality of reporting on local-level air quality issues by incorporating these findings into their coverage of community air monitoring.

Specifically, they should:

- Focus on the importance of community air monitoring for identifying and addressing root causes of pollution.
- Investigate the processes through which air monitoring data are transformed into actionable information, noting especially factors that make the transformation difficult.
- Highlight valid disagreements over what constitutes credible, relevant, adequate scientific evidence of the harms of air pollution.
- Use community monitoring to bring into focus missing elements of environmental protection, including data, standards, regulation, technology, and infrastructure.

By focusing on the structural and governance issues that both drive community air monitoring and limit its ability to produce cleaner air, science and environmental reporting can contribute to much-needed public debates about how to ensure that all communities breathe clean air.

Read more in Gwen Ottinger, “Misunderstanding Citizen Science: Hermeneutic Ignorance in U.S. Environmental Regulation.” *Science as Culture* 31, no. 4 (2022): 504–529.