Towards the Development of a Sensor Educational Toolkit to Support Community and Citizen Science

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ABSTRACT

As air quality sensors increasingly become commercially available, a deeper consideration of their usability and usefulness is needed to ensure effective application by the public. Much of the research related to sensors has focused on data quality and potential applications. While this information is important, a greater understanding of users' experience with sensors would provide complementary information. Under a U.S. EPA-funded Science to Achieve Results grant awarded to the South Coast Air Quality Management District in California, titled "Engage, Educate, and Empower California Communities on the Use and Applications of Low-Cost Air Monitoring Sensors", approximately 400 air quality sensors were deployed with 14 California communities. These communities received sensors and training, and they participated in workshops. Widely varying levels of sensor installation and engagement were observed across the 14 communities. However, despite differences between communities (in terms of participation, demographics, and socioeconomic factors), many participants offered similar feedback on the barriers to sensor use and strategies leading to successful sensor use. Here, we assess sensor use and participant feedback, as well as discuss the development of an educational toolkit titled "Community in Action: A Comprehensive Toolkit on Air Quality Sensors". This toolkit can be leveraged by future community and citizen science projects to develop networks designed to collect air quality information that can help reduce exposure to and the emissions of pollutants, leading to improved environmental and public health.