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Advancing Air Quality Sensing Technology:
Joint Research Project with Aclima, Inc.

EPA has a Cooperative Research and Development Agreement (CRADA) through April 2023 with Aclima, Inc., an emerging California-based technology company, to advance next generation air quality sensing technology and provide more mobile and less expensive air sensing capabilities for citizens, communities, air quality managers, businesses, and others interested in air quality issues.

A CRADA is a collaborative agreement between a federal government agency and non-federal partners to work together on research and development. It enables EPA to work with companies that have expertise in areas of research that support the development of the Agency's mission to protect public health and the environment.

Why is EPA involved in this public-private partnership?

EPA has an active research program in developing and evaluating sensor technology to measure air quality. The Agency's scientists are experts in developing and evaluating air quality methods and the application of those methods to understanding the relationships between air pollution and exposures and health. Aclima's expertise is developing and manufacturing indoor, outdoor and mobile air sensor networks and deploying sensors to better understand indoor and outdoor air quality. They specialize in managing, analyzing, visualizing, and communicating the data they generate to inform decision making.

The CRADA's research efforts are focused in three broad areas:

- Developing and evaluating a low-cost, highly portable sensor for directly measuring fine and coarse particulate matter (PM) in indoor and outdoor settings in real-time;
- Measuring multiple indoor and outdoor air pollutants using stationary and mobile sensor platforms, including air sensors mounted on vehicles;
- Developing and evaluating sensors to detect chemical components of air pollutants, including black carbon, and non- and semi-volatile PM.

The ultimate goal of this research is to address the substantial technical challenges of developing high quality and verifiable data collection by air sensor technologies to protect public health.

Study results will be made available by publication in peer-reviewed scientific journals.

How will this research advance air quality measurement capabilities?

This research will improve the ability to collect data on air pollutants needed by decision makers at EPA and states to support National Ambient Air Quality Standards. It will also help determine what types of sensors work best, and how they can be used in indoor and outdoor environments and on vehicles. Study results will provide information about how these new mobile sensors perform in comparison to reference instruments on mobile platforms and at stationary sites. Sensors will also enable individuals and communities to increase their awareness of air quality issues.

With inexpensive and reliable mobile and stationary measurement capabilities, EPA aims to obtain reliable data at a lower cost that can be used to:

- Evaluate and apply air quality modeling techniques to better understand air quality and the relationship between air quality and climate change;

- Support research to understand more about how we are exposed to air pollutants and the distribution of these exposures as they relate to health effects;

- Provide key information to support the development of cost effective and efficient emissions management control practices.

Related Links:

Air Sensor Toolbox for Citizen Scientists -- https://www.epa.gov/air-sensor-toolbox

EPA's Air Research -- https://www.epa.gov/air-research

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