Agenda Date: January 18, 2018
Agenda Placement: Regular
Estimated Time: 20 minutes
Continued Item: No

Board Agenda Item

TO: Air Pollution Control District Board

FROM: Aeron Arlin Genet, Air Pollution Control Officer

CONTACT: Mary Byrd, Community Programs Supervisor (805-961-8833)

SUBJECT: Educational Projects with Portable Air Quality Sensors

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RECOMMENDATION:

Receive and file information about educational projects with portable air quality sensors.

DISCUSSION:

Until recently, air quality monitoring has only been performed by air quality regulatory agencies and/or regulated entities using expensive and sophisticated monitoring devices subject to strict siting and quality assurance requirements. Low-cost portable air quality sensors ($100-$2500) are now commercially available, and offer new opportunities for community involvement in data collection, particularly in understanding personal exposure to a given pollutant.

The District is interested in the potential for these sensors to provide educational opportunities and information on localized air quality issues, and has been evaluating sensors for these uses. In May of 2016, we presented information to your Board on a study comparing portable air sensors to federal reference method monitoring equipment that the District sponsored at Cuyama Valley High School. Results from this study were reported to your Board in January 2017.

Since that time, District staff have reached out to the South Coast Air Quality Management District (SCAQMD) to learn from their extensive testing of sensors, and to hear about their Science to Achieve Results (STAR) project funded by the U.S. Environmental Protection Agency. Following on those conversations, the District purchased seventeen PurpleAir PA-II: Dual Laser Air Sensors that measure particles for evaluation and use in educational settings. Mary Byrd will provide a brief overview of the District's experience with sensors. Jennifer Hernandez-Mora, Riccardo Magni, and Dr. Andrea Polidori will join Mary Byrd for the presentation. See information on co-presenters below.

CO-PRESENTERS:

Jennifer Hernandez-Mora
A senior at Santa Maria High School, she participated in Riccardo Magni's Summer Science Institute in 2016 at Allan Hancock College, doing a project measuring particles with a Dylos handheld particle sensor. In 2017 she received an honorable mention in Environmental Science for this project at the California State Science Fair, and a special $1,500 Air Quality Award from the SCAQMD. She participated in the 2017 Summer Science Institute at Allan Hancock College, and the District provided a PurpleAir sensor for her to use to compare with her 2016 results. She will report on results from this study.

Riccardo Magni
Riccardo Magni is a science teacher at Pioneer Valley High School (PVHS), and oversees the Summer Science Institute at Allan Hancock College for county science students. In 2012, Magni received a Presidential Innovation Award for Environmental Educators, and was also recognized as Santa Barbara County Teacher of the Year. He has worked with the District for more than ten years, receiving several Care for Our Earth grants. The District provided him with five PurpleAir sensors in the fall of 2017 for use with Advanced Placement Environmental Science students at PVHS. He will be coaching four teachers in the county on classroom use of sensors under a team coaching grant through the Santa Barbara County Education Office. The District is providing four PurpleAir sensors for the teachers. He will report on his experience with sensors, and his plans for sharing that with other county teachers.

Dr. Andrea Polidori
Dr. Andrea Polidori is the Atmospheric Measurements Manager for Science & Technology Advancement at the SCAQMD. His primary responsibilities include the overall management of all SCAQMD ambient air monitoring network operations, special monitoring programs, and related projects. He is currently leading the design, development and implementation of the Air Quality Sensor Performance Evaluation Center (AQ-SPEC), which conducts comprehensive performance tests of commercially available, low-cost air quality sensors. He is also the Principal Investigator of the U.S. EPA STAR grant at the SCAQMD. Dr. Polidori received his Doctor of Philosophy degree in Environmental Sciences from Rutgers University in New Jersey. Dr. Polidori will discuss the AQ-SPEC lab and the STAR project.