Improving Detection of Toxic Air Contaminants

Background

The Toxic-metal Aerosol Real-Time Analysis (TARTA) instrument is a portable, briefcase-sized device that can detect and quantify certain airborne metals. It was developed through a previous CARB contract (17RD022), and several units are currently deployed across California. While TARTA has proven to be an effective monitoring tool, additional research is needed to expand its detection capabilities to include a broader range of toxic air contaminants.

Main Question: Can additional analytical techniques be incorporated into TARTA to enhance its capability to detect a broader range of toxic air contaminants?

Key Research Plans

Researchers will explore integrating ultraviolet detection of arsenic into TARTA, evaluate methods for measuring airborne hexavalent chromium (Cr VI), and assess techniques to quantify toxic volatile organic compounds present in the particle phase.

TARTA instrument (top), photo credit: Tiffany Dobbyn, UCD. Graduate student Alex Sanchez setting up TARTA at a home in Vallejo (bottom), photo credit: Michaela Anang, UCD.

Expected Impacts

The results will expand the detection capabilities and quantification techniques of future TARTA instruments, enabling the development of cost-effective tools for accurately measuring harmful air pollutants. These advancements have the potential to empower communities with greater access to near-real-time air quality data and support informed decision-making to protect public health.

More Information

This project is led by Anthony Wexler from the University of California, Davis. Contract 24RD011. Visit our website or contact us by e-mail.

arb.ca.gov/research
research@arb.ca.gov