Rubbertown Next Generation Emission Measurement Demonstration Project Provides Innovative Approaches to Protecting Air Quality

Background

Industrial facilities, regulators, and nearby communities have a mutual interest in the effective detection of fugitive emissions of volatile organic and odiferous compounds. If unanticipated emissions that require mitigation can be found and fixed in a timely manner, multiple benefits can result, such as lower air shed impacts, healthier air quality, safer working environments, cost savings through reduced product loss, and improved community relations.

Under its Next Generation Emission Measurement (NGEM) program, EPA is working to develop new sensor and modeling approaches that can assist facilities in detection and mitigation of fugitive air pollution sources from facility leaks and operational malfunctions.

To help advance NGEM research, EPA and the Louisville Metro Air Pollution Control District (LMAPCD) are working together on a research project to demonstrate NGEM approaches near facilities in the Rubbertown industrial area of Louisville, KY.

The area has faced challenges related to the control of ozone and exposure of pollutants to local communities. LMAPCD has made extensive efforts to control air toxics, including ozone precursors, in the area. Despite these efforts, fugitive emissions still remain a source of concern from both an air quality agency and a community perspective. These potential air quality challenges and the close physical proximity of industrial sources made the Rubbertown industrial area an ideal location for studying NGEM technologies.

Approach

The project team will conduct a year-long demonstration field study of select NGEM technology prototypes developed by EPA researchers and other groups. The study will start in in September 2017.

The project is a measurement study with goals to document NGEM system performance and advance NGEM methods while producing source emission case study data useful for both LMAPCD and industrial facilities.

The research supports the community, the City of Louisville, and industry by furthering the development of innovative and cost effective approaches to improve air quality monitoring that protects public health and the environment.

Scientists will measure volatile organic compounds (VOCs) and air toxics using a network of SPod fenceline sensor systems, field-packaged gas chromatographs (GC's), and open-path spectroscopic equipment. They will also perform GMAP OTM 33 mobile

SPod fenceline sensor system

measurements using vehicles equipped with time-resolved sensors that are driven downwind in relatively close proximity to potential sources.

Science questions include:

- Can emerging NGEM approaches cost effectively augment current industry work practices to help identify and reduce emissions and document the absence of such emissions?

- Can NGEM and industry information systems (on multiple temporal and spatial scales) work in concert to provide additional diagnostic power to inform the community and improve transparency?

Results and Impact

The project seeks to:

- advance prototype NGEM systems,

- Better understand emissions from facilities in the Rubbertown area, and

- Evaluate potential improvements from recent industry efforts to reduce emissions.

Because this is a limited-scope project using prototype equipment, the data generated are not intended for use in exposure assessments or as part of compliance-related activities. Instead, the data generated are intended for use in evaluating and improving NGEM approaches which, in the future, may benefit communities, industrial facilities, and regulators in minimizing emissions and protecting public health.

Contacts:
Eben Thoma
919-541-7969
thoma.eben@epa.gov

Jane Spann
404-562-9029
spann.jane@epa.gov

Tiereny Bell
404-562-9088
bell.tiereny@epa.gov

This project is funded by EPA's Regional Applied Research Effort (RARE) and the Air and Energy (AE) Research Program.