Maywood-Vernon-Bell-East Commerce Community Air Monitoring Project

Air Monitoring Options Paper – September 2023

Background

In late 2022, U.S. EPA awarded a grant to the California Air Resources Board (CARB) for $250,000 to build community capacity to conduct air monitoring in the communities of Maywood-Vernon-Bell-East Commerce.

The goal of this project is to form partnerships with local community members and groups to build community capacity to plan and conduct air quality monitoring in Maywood-Vernon-Bell-East Commerce.

Through previous community engagement, CARB understands that particulate matter, and air toxics, such as hexavalent chromium, metals, and ethylene oxide (EtO) are of primary concern to many community residents.

Community members will guide the process by determining:

- The types of equipment/samplers to purchase or lease
- The air pollutants to monitor for
- Locations of air monitoring

Monitoring Plan Options

Based on the awarded grant and previous community engagement, the following information provides four monitoring options identifying various air toxics and related air toxics monitoring equipment.

The following information also lays out related equipment costs, capabilities, and other things to consider when considering priorities for community air monitoring. This information is intended to help community members make a more informed decision when determining their air monitoring priorities. **This information will be presented during a community meeting on September 18, 2023.**

Option 1 - Cooper Xact 625I equipment which can monitor metals, such as nickel, cadmium, copper, etc. Budget outlined is for 1 year of monitoring.

Option 2 - PQ 200 PM Sampler equipment which monitors Hexavalent Chromium. Budget outlined is for 3 years of monitoring.

Option 3 - Picarro 2920 equipment which monitors EtO. Includes 3 different options and budgets: 3a) Lease of equipment for 1.5 years of monitoring, 3b) Complete fenceline system lease for 10 months of monitoring, and 3c) Equipment purchase.

Option 4 - Canister based monitoring for EtO. Budget outlined is for 1.5 years of monitoring.

Details on the above options can be found in the following Monitoring Options document

Monitoring Options

Option 1: Cooper Xact 625I Real-time Metals Monitoring

Benefits

- Monitors up to 72 metals, such as nickel, cadmium, copper, etc.
- Includes meteorology (weather) sensor
- Less labor intensive. Don't have to regularly collect sample and send to lab for analysis

To Consider

- Sampler needs a temperature-controlled environment
- Equipment siting requirements

South Coast AQMD has conducted metals monitoring for a year in the community using the same equipment. Presentation on SCAQMD monitoring can be found here: http://www.aqmd.gov/docs/default-source/ab-617-ab-134/steering-committees/southeast-los-angeles/presentation-june22-2023.pdf?sfvrsn=14

Approximate Cost Breakdown

Cooper Xact 625i monitor	$130,000
Monitor enclosure	$15,000
Materials: filter tape (enough for a year), calibration standards, electricity	$18,000
X-ray source replacement with calibration	$9,000
TOTAL COST (1 year of monitoring):	**$175,000**
Money remaining for stipends	$74,550

Option 2: PQ 200 PM Sampler Hexavalent Chromium Monitoring

Benefits

- Easier operation than Cooper XRF

To Consider

- Need someone to collect and ship samples to lab for analysis
- Need to purchase additional equipment (flow standard and meteorological station)
- Need upwind and downwind locations to determine source
- Equipment siting requirements

Approximate Cost Breakdown

PQ200 ambient air PM sampler and accessories	$13,000/sampler
Contract lab for filter analysis	$100/sample
Met Station	$5,000
Flow standard	$3,600
Standard maintenance	$505/annually
Total cost (121 samples/year, 3 PQ200s for 3 years)[1]	**$132,015**
Money remaining for stipends	$117,535

[1] Following EPA 1-in-3 sampling schedule

Option 3: Picarro 2920 gas analyzer Real-time Ethylene oxide (EtO) Monitoring

Benefits	To Consider
• Real-time measurements of EtO • Small size equipment • Reliable performance	• Equipment siting requirements

Approximate Cost Breakdown

Option 3a: Lease Picarro equipment for 1.5 years of monitoring

Picarro 2920 gas analyzer lease: – PI2920 CRDA analyzer and zero reference module – Shipping, installation, and training	$7,500/month
TOTAL COST (1.5 years of monitoring)	**$135,000**
Money remaining for stipends	$114,550

Option 3b: Lease Picarro Complete Fenceline System for 10 months of monitoring

Complete Fenceline System lease: – Real-time monitoring PI2920 CRDS analyzer – System Commissioning & Training	$17,500/month
TOTAL COST (10 months of monitoring)	**$175,000**
Money remaining for stipends	$74,550

Option 3c: Purchase Picarro equipment

Picarro 2920 analyzer purchase – EtO gas kit, consumables, and accessories – Service plan, shipping, installation, and training – Annual maintenance kit (free as part of the service plan)	
TOTAL COST	**$191,201**
Money remaining for stipends	$58,349
Calibration cylinders required for all options: EtO standards	TBD

Option 4: Canister-based Ethylene Oxide Monitoring

Benefits

- Laboratory method has long been used
- SCAQMD EtO investigation in Carson and Vernon utilize this method

To Consider

- Need upwind and downwind locations to determine source
- Equipment siting requirements

Approximate Cost Breakdown

TO-15 laboratory analysis: canister handling and cleaning, GC/MS analysis, monthly data validation and reporting, sample shipping	$330/sample
Xonteck 901	$12,000/sampler
Flow standard	$3,700
Standard maintenance	$505/annually
TOTAL COST (1.5 years of monitoring)[2]	**$148,325**
Money remaining for stipends	$101,225

[2] Following EPA 1-in-3 sampling schedule