

Monitoring Project Option #2: PM Impacts from Coal Operations

The Steering Committee identified questions and air quality concerns around coal operations in the Richmond-San Pablo area, including:

- What impact do Levin Terminal and related coal operations have on local air quality? Some specific concerns at the terminal include coal loading and unloading, windblown dust from coal piles, and marine operations.
- Can coal dust be detected in the air along railways that transport coal to the terminal?

The air monitoring project outlined below uses multiple measurement methodologies to help inform these concerns by evaluating the impact that coal operations have on particulate matter (PM).

Monitoring Objective

Quantify the contribution of coal dust emissions from trains transporting coal and from Levin Terminal operations on ambient PM concentrations near those activities

Desired Action

Inform development and implementation of PM emissions reduction efforts on coal operations

Data Products

- Mobile air monitoring using the Air District van to drive through the study area to measure levels of PM and black carbon through location and time-stamped data
- Portable air monitoring to measure PM levels and PM physical and chemical characteristics at specific locations over longer durations of time
- Meteorological conditions (wind speed and direction, temperature, humidity) associated with air quality measurements



Map of the area around Levin Terminal, including adjacent rail lines and shipping waterways. Numerous other potential sources of PM are also located in this area. The exact monitoring project study area will be defined as the project plan is developed.

Considerations and Expected Challenges

- Robustly characterizing PM impacts from coal operations may require monitoring for up to a year. However, preliminary data could be informative in three months depending on conditions during the study time.
- There are many sources of PM in the area including: coal terminal and operations, metal recycling facility, aggregate facilities, tank terminals, a cement plant, a gypsum facility, a wastewater plant, traffic (including I-580 and I-80), rail operations, other port and shipping operations, and housing construction.
- Discerning between fresh fugitive coal dust emissions and re-suspended coal dust from historical emissions is very difficult, and methodologies to do so are not well proven and come with increased data uncertainty.
- Weather conditions, such as wind direction and precipitation, may not be conducive for short-term studies, possibly requiring additional time to collect sufficient measurement data.
- Logistical considerations such as availability and access to possible monitoring locations.

Project Phases

PHASE 0: Project planning (approximately 1-2 months)

- Define a study area and specific data objectives needed to inform development and implementation of emissions reduction efforts on coal operations
- Evaluate potential PM emission sources in the study area and chemical and physical properties of those PM emissions
- Design a detailed plan for PM measurements related to coal operations that includes a project timeline, locations and duration of monitoring, instrumentation, monitoring and analysis methods, quality assurance and quality control measures, data reporting and intended data uses

PHASE 1: Screen for detailed PM information (approximately 3-6 months)

- Mobile measurements using the Air District's mobile van will take place throughout the defined study area. When possible, data will be collected during a mix of meteorological conditions, and upwind and downwind of facilities, to provide information about air pollutants coming from a specific facility or characterize the local background concentration of pollutants.
- Areas of higher concentrations, either identified by Air District mobile monitoring or by the initial monitoring efforts will be investigated further by making repeat monitoring passes. Short-duration (on the order of minutes) stationary monitoring by the mobile lab may be employed to check intermittence of high concentrations and collect meteorology data at the location.
- Measure physical and chemical characteristics of PM coal emissions through other types of sample analyses, source testing, or materials testing.

PHASE 2: Verification and short-term trends of PM (approximately 3-12 months)

- Measurements using portable monitors and/or short-term monitoring platforms may collect samples over longer periods of time at areas of high PM concentration identified in Phase 1 to provide additional information that can help characterize coal contribution to PM, such as PM size distribution, and other physical and chemical properties.
- Portable monitors may be deployed at locations upwind of facilities to provide information on local background of pollutants, or in areas of low pollutant concentration identified in Phase 1 to evaluate potential differences in pollutant speciation and investigate whether low concentrations continue over time.