

SCAQMD Response to Fire at Port of Los Angeles

Upon finding out about the fire at the Port of Los Angeles, Berth 177, SCAQMD dispatched an inspector to the scene of the fire. The inspector and LA County Fire staff took 4 canister air samples, which were returned to the SCAQMD lab for analysis. One of the 2 samples collected in the community showed slightly elevated levels of Naphthalene (a chemical compound made from crude oil or coal tar and used in mothballs, also a toxic gas formed when things are burned) and other toxic hydrocarbons. The sample from inside the warehouse closest to the fire had higher toxic hydrocarbon concentrations than those outside the warehouse.

Additional SCAQMD staff were deployed to the scene of the fire first thing Tuesday morning with portable monitoring equipment for particulate matter (PM) and hydrocarbons, using gas chromatograph/mass spectrometer (GC/MS) measurements. The fine particulate matter (PM with diameter size of 2.5 microns or smaller, or PM_{2.5}) results at the site of the fire are reported as a multiplier of typical background concentration, an average value that the instruments measured in the area in the absence of smoke. The average PM_{2.5} was calculated over the duration of the entire time of measurements and the maximum instantaneous is the highest one minute average PM_{2.5} result during the measurement period. The preliminary results are summarized in the below tables:

Tuesday Approximate Time	Location	Map Location Number	Average PM _{2.5} (x background)	Maximum Instantaneous PM _{2.5} (x background)
10:00 – 10:30 AM	Near fire (at dock)	1	6	14
10:30 – 11:20 AM	Dock Entrance (downwind)	2	22	180
11:20 – 12:20 PM	Dock Entrance (downwind)	2	16	50
12:40 – 4:30 PM	Dock Entrance (plume aloft, reduced)	2	1	1.5

The preliminary results of the PM_{2.5} monitoring away from the site of the fire are summarized below:

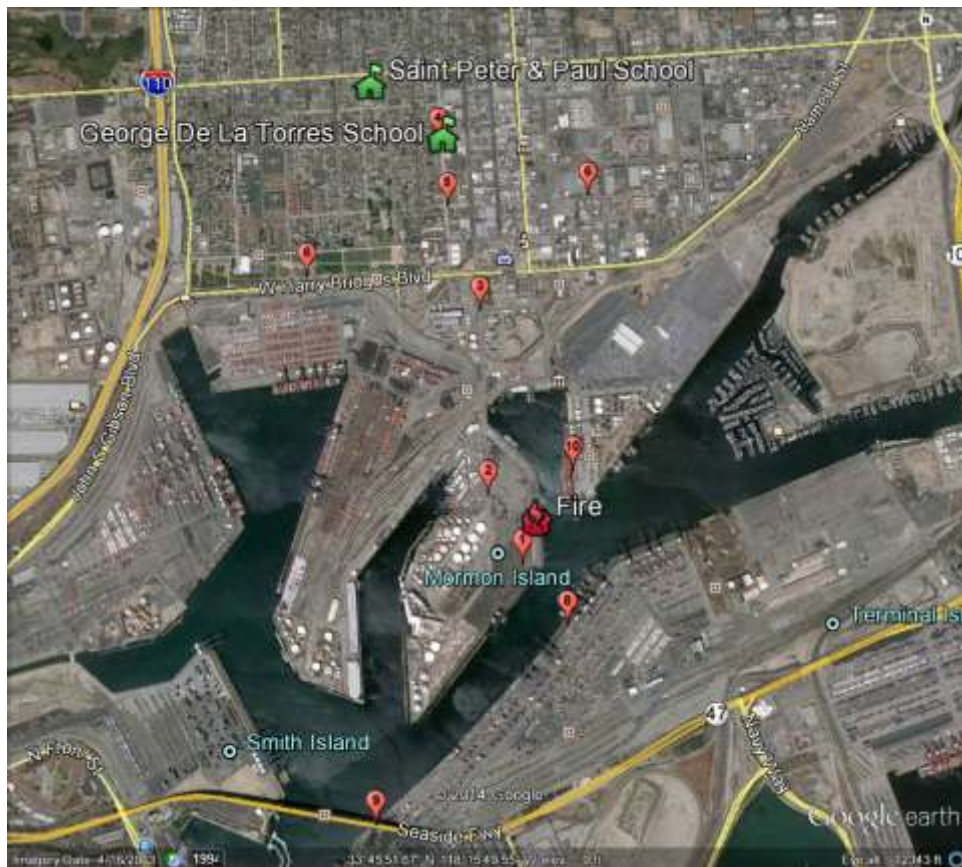
Tuesday Approximate Time	Location	Map Location Number	Average PM _{2.5} (x background)	Maximum Instantaneous PM _{2.5} (x background)
10:45 – 11:15 AM	Fries and A Street	3	5	12
11:15 – 11:50 AM	George De La Torre School	4	6	15
11:50 – 12:15 PM	George De La Torre School	4	2	4
4:00 - 4:30 PM	George De La Torre School	4	1	1

The portable GC/MS measures a variety of air toxic compounds (e.g. benzene, toluene, naphthalene). As noted above, the initial canister samples showed elevated levels of Naphthalene, so this chemical was used as a marker for the potential fire impacts to the community. The Naphthalene levels and measurement locations are shown in the table below:

Tuesday Approximate Time	Location	Map Location Number	Naphthalene (parts per billion - ppb)
9:20 AM	Inside warehouse	1	> 100
10:30 AM	George De La Torre School (Fries & W. F Street)	4	50
11:05 AM	Island and D Street	5	10
11:50 AM	Wilmington Waterfront Park	6	< 10 *
12:30 PM	Lamke and D Streets	7	< 10 *
2:15 PM	George De La Torre School	4	< 10 *
3:55 PM	Dock Entrance	2	< 10 *
Following measurements requested by Fire and Police personnel			
5:55 PM	NYK Terminal (downwind of fire)	8	50
6:40 PM	Evergreen Terminal under Vincent Thomas Bridge (upwind)	9	< 10 *
7:40 PM	Vopak Terminal (downwind)	10	< 10 *

* below detection limit

The measurements locations are identified in the map below:



Detailed summary of measurements in response to the fire at the Port of Los Angeles

PM2.5 Monitoring

South Long Beach Air Monitoring Station

PM2.5 measurements taken at the SCAQMD South Long Beach air monitoring station indicated that hourly average of particulate concentrations increased to hourly maximum of 47 micrograms per cubic meter (ug/m³) at 9am and then declined steadily through the afternoon. The South Long Beach air monitoring station is 5 miles northeast of the location of the fire. Typical concentrations are between 10 and 20 ug/m³ with daily maximum hourly concentrations around 30 ug/m³. Although there were elevated PM2.5 concentrations for a few hours, the 24 hour average levels have not exceeded the state and national health standards. The PM2.5 measurement at the station is a Federal Equivalent Method (FEM) which meets U.S. EPA standards for having results that can be used for comparing against the National Ambient Air Quality Standards (NAAQS).

Portable PM2.5 Monitors (Dustrak)

Measurements using Portable PM2.5 monitors were conducted to assess the pollution from particulates in the nearby area of the fire. Two instruments were deployed and had conducted quality control checks on site and comparisons between the two. These are survey instruments used to primarily measure estimates of PM2.5 concentrations.

PM Monitoring at the Site of Fire

In the morning, from 10 am to 10:30 am, PM concentrations were about 6 times the background concentration with an instantaneous maximum concentration of 14 times higher (208 ug/m³).

Measurements were then taken at a more downwind location near the entrance of the facility, and while the monitor was downwind of the smoke plume (10:36 am to 11:18 am), average PM2.5 concentrations observed were almost 22 times background levels whereby the highest instantaneous reading was over 180 times (2,870 ug/m³).

The winds shifted at about 11:25 am, blowing the plume due north and the PM2.5 levels at the entrance declined to lower levels, about 1.5 times background levels, with a maximum of 5 times (85 ug/m³). As the winds became more calm and stagnant, concentrations briefly increased from 12:18 pm to 12:39 pm to 16 times typical PM2.5 background levels with a maximum instantaneous reading of over 50 times background values (823 ug/m³).

The smoke intensity then started declining along with the observed PM2.5 concentrations from 12:40 pm to 2:20 pm, the average PM2.5 and the maximum concentration observed were in the typical background PM2.5 concentration range. Monitoring continued at the location until past 4:30 pm which showed PM2.5 concentrations within typical ambient values.

PM Monitoring Away from the Fire

After quality control checks were done, the second PM monitor was deployed at Fries and A Street and observed levels that were on average almost five times background levels from 10:43 to 11:15 am with the highest instantaneous reading 12 times higher (192 ug/m³).

The monitor then was moved to George De La Torre Junior Elementary School. Initial readings were elevated from 11:15 to 11:50 am for which the average was 5.5 times background levels with a maximum instantaneous level showing 15 times background levels (243 ug/m³). PM levels then declined from 11:51 am to 12:12 pm which the average was 1.6 times background levels and the maximum instantaneous observed was 3.5 times

background levels (56 ug/m³). PM measurements were taken again at the school at 4:30 pm and showed concentrations (10 ug/m³) that are consistent with typical ambient levels.

Canister Samples

On Monday evening at approximately mid-night 4 canister samples were collected at the site of the fire as follows:

- One canister collected by LA County Fire staff inside the transit warehouse at Berth 177.
- One canister collected by LA County Fire staff at the NE exterior corner of the transit warehouse at Berth 177
- One canister collected at the corner of Harry Bridges Blvd and S. Fries, and
- One canister collected at the intersection of C Street and Neptune Ave (Wilmington)

Canisters were delivered to the SCAQMD lab Tuesday morning. Since samples collected in close proximity to a source typically contain higher concentrations of contaminants, the first two samples were screened and analyzed for a limited set of targeted species. The other two samples were analyzed by GC/MS.

Canister Sample Results

Community Samples

Samples of air collected in the community away from the fire are expected to have lower levels of hydrocarbons, and thus these samples were sent directly to the GC/MS for a detailed analysis.

The canister collected near the intersection of Harry Bridges and S. Fries contained roughly 70 parts per billion (ppb) C₂ species (organic compounds with two carbon atoms), 20 ppb C₃ compounds (organic compounds with three carbon atoms), 9 ppb acetone. Benzene was 11 ppb, Toluene was 4 ppb, Ethylbenzene was 0.5 ppb, Xylenes were 1.8 ppb (BTEX); Styrene was 0.9 ppb. Naphthalenes were measured at 21 ppb.

The canister collected near the intersection of C Street and Neptune contained roughly 70 ppb C₂ species, 20 ppb C₃ compounds, 9 ppb acetone. Benzene was 0.3 ppb, Toluene was 0.3 ppb, Ethylbenzene was 0.1 ppb, Xylenes were 0.3 ppb (BTEX); Styrene was 0.1 ppb. Naphthalenes were measured at 0.7 ppb.

Near-source Samples

Samples collected in or very near an active fire will yield concentrations that are too high for certain laboratory-based instruments such as a GC/MS designed for ambient air analysis. The samples collected at the fire were sent to a screening analysis, which does not include Styrene and Naphthalene.

The canisters collected at the fire site inside the warehouse contained approximately 7.5 parts per million (ppm) C₂, 1 ppm C₃ compounds. Benzene was 0.9 ppm, Toluene was 0.2 ppm, Ethylbenzene was 0.04 ppm, and Xylenes were 0.07 ppm (BTEX).

The canisters collected at the fire site outside the warehouse contained approximately 3 ppm C₂, 0.4 ppm C₃ compounds. Benzene was 0.3 ppm, Toluene was 0.07 ppm, Ethylbenzene and Xylenes were not detected (BTEX).

Note these concentrations are orders of magnitude higher than the community samples (ppm vs. ppb).

Portable GC/MS Hydrocarbon Sampling

Based on the canister sample results, it was determined that Naphthalene would be an identifying marker for the fire. Therefore, while other compounds were measured, only naphthalene is reported below as both an indicator of exposure to the community as well as fire activity. Listed times are approximate.

9:20 am - Initial sampling was conducted at the fire site, inside the structure by fire department personal, using SCAQMD measuring equipment. Naphthalene values were too high for the portable GC/MS to accurately quantify, but were definitely over 100 ppb.

10:30 am - Sample was collected at George De La Torre School (Fries & W. F Street) Naphthalene was approximately 50 ppb.

11:05 am - Sample collected at Island & D Street. Naphthalene concentration was about 10 ppb.

11:50 am - Sample collected at Wilmington Waterfront Park. Naphthalene was < 10 ppb (below instrument's detection limit).

12:30 pm - Sample collected at Lamke and D Streets Naphthalene was < 10 ppb (below instrument's detection limit).

2:15 pm - Sample was collected at George De La Torre School. Naphthalene was < 10 ppb (below instrument's detection limit).

3:55 pm - Entrance to the dock where the fire was. Naphthalene was < 10 ppb (below instrument's detection limit).

4:45 pm - Port of LA headquarters building. Sample file appears to be corrupted – results of the two runs (two attempts at sampling) may not be retrievable.

Sampling Sites requested by LA City Fire personnel on the wharf

5:55 pm – The sample was collected downwind and near the smoldering portion of the fire. Sample was approximately 50 ppb naphthalene.

6:40 pm – Sample collected at a dock, under Vincent Thomas Bridge, upwind of the smoldering area, between two ships. Naphthalene was < 10 ppb (below instrument's detection limit).

7:40 pm – Sample collected at the Vopak terminal. Naphthalene was < 10 ppb (below instrument's detection limit).