

APPENDIX VI

Details of Microscale Study

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In this appendix, sub-grid scale modeling is performed for each microscale monitoring site using a local emission inventory derived through a survey and site visit. The purpose of this modeling is to assess the contribution of potentially uninventoried emissions to the local exposure. In addition the measured toxic concentrations at the microscale and its nearest fixed site are compared statistically in order to note if potential "hot spots" are evident from the measured data. After some introductory material, the remainder of the document is organized alphabetically by microscale site.

Background

The microscale portion of MATES-II employed mobile platforms at 14 communities for limited, but more intensive sampling, than occurred at the 10 fixed sites. Typical sampling periods were four to five weeks, with two to three samples per week. This differed from the fixed site schedule of one sample every sixth day for a full year. At the outset, the microscale samples were collected to optimize field efficiency, irrespective of the fixed site schedule. It was noted by the ATSTRG that a better approach would be to have as many samples coincide with the fixed site schedule to gain a greater number of comparative samples. Thus, for the first six months of the study, two to three samples collected at a microscale site were taken on the same days as fixed site sampling. For the latter six months, the number of coincidental samples increased to five.

Nine microscale sites were selected, as described earlier, to be in residential areas immediately downwind of clusters of facilities known to be emitting toxic compounds. Two sites (Montclair and Norwalk) were selected to be in residential areas immediately downwind of major freeways. One site (Rialto) was selected to be downwind of a major railway facility and freeway. The remaining two sites (Hawthorne and Pacoima) were selected to sample on the microscale schedule, but to include one monthly sampling period in each calendar quarter to better represent a "hybrid" approach between the fixed and microscale sampling designs.

Local-Scale Modeling

To investigate the impact of toxic emitting facilities at the sub-grid level, a Gaussian dispersion model is used to model microscale concentrations. Version 3 (dated, 99155) of the U.S. EPA approved air quality model called Industrial Source Complex (i.e., ISC3) is used for the subgrid level modeling presented here. The ISC3 model is included in the U.S. EPA "Guideline on Air Quality Models" (U.S. EPA, 1996a) and has been widely used for regulatory air quality assessment. The model is also recommended by the California Air Pollution Control Officers Association (CAPCOA) for estimating exposure to toxic air contaminants (CAPCOA, 1992). The model is a steady-state Gaussian plume model, which can be used to assess pollutant concentration from a wide variety of sources, associated with an industrial source complex. The model simulates the dispersion of emissions from point, area, and volume sources and can account for building downwash, dry deposition, and decay of chemicals. The short-term version of the model (ISCST3) accepts hourly meteorological data records to define the conditions of plume rise, transport, and diffusion. The model estimates hourly concentrations for each source and receptor combination and calculates averages for various user-selected short-term periods and for annual or longer averaging periods. The model is appropriate for transport distances less

than 50 kilometers. The short-term version of the model is applied using hourly meteorological data at the microscale monitoring sites in the Basin. Important model options employed include: urban dispersion parameters (i.e., URBAN) and no calm wind processing (i.e., NOCALM). All other model options assumed the default values.

Since detailed stack information was not collected during the emission inventory development, facility emissions are simulated using a ground-based volume source treatment in ISCST3. The volume source dimensions for all the sources are assumed to be 15 m by 15 m horizontal dimensions and 6 m vertical dimension. This is a conservative assumption, since most sources are likely to be larger or taller than that. The operating hours per day are unique for each facility but all facilities are assumed to operate 365 days per year. The daily emissions are adjusted to insure that total annual emissions modeled equal the annual estimated values.

A cartesian coordinate receptor grid is used to estimate peak concentrations in the local area within and surrounding the facilities modeled. The receptor spacing assumed is 25 m with all receptors placed at ground-level. The horizontal extent of the modeling domain is such that all the sources are within its boundaries. Each facility is assumed to have a 25 m property line from the center of the volume source. In other words, impacts from the facility are estimated at receptors greater than 25 m from the center of the source. Flat terrain is assumed, since emissions are treated as a non-buoyant volume source.

ISCST3 is applied with two distinctly different meteorological data sets: one based on the 1981 calendar year and another for the period April 1998 to March 1999. The District has 1981 meteorological data (i.e., hourly winds, temperature, atmospheric stability, and mixing heights) at 35 sites in the Basin. This data is available at the District's web site (www.aqmd.gov/metdata) and is in a format that can be directly read by ISCST3. This data is typically used by permit applicants to satisfy the modeling requirements of Regulations XIII, XIV, XVII, and XX. The site used for each microscale inventory is shown in Table 1.

Table 1. 1981 Meteorological Data Used for Microscale Modeling.

Microscale Site	Meteorological Data Used for Modeling
Boyle Heights	Downtown Los Angeles
Corona	Norco
Costa Mesa	Costa Mesa
Montclair	Upland
Pacoima	Burbank
Rialto	Riverside
San Pedro	Long Beach
South El Monte	Pico Rivera
Torrance	King Harbor
Van Nuys	Canoga Park

As discussed in Chapter 5 of the main document, hourly three-dimensional fields of wind and temperature and hourly two-dimensional fields of mixing depth and atmospheric stability were developed for the period April 1998 to March 1999 for the Urban Airshed Model simulations.

The meteorological model called CALMET was used to develop these fields. This hourly meteorological data is extracted from each grid cell containing the microscale site and reformatted for ISCST3 input. Therefore annual simulations are performed using both the 1981 meteorological data and the 1998/99 meteorological data. Results of both simulations are provided next.

Site Descriptions and Analyses

This section contains the complete modeling results and relevant background information, including the following for each microscale site:

- Name and location of the microscale site and the nearest fixed site.
- Distance between the microscale and fixed sites.
- Sampling period for the microscale site
- Wind rose for the microscale sampling period.
- Statistical comparison of the measured toxic concentrations at the microscale site and the nearest fixed site.
- Emissions for each of the facilities surveyed.
- ISCST3 estimated pollutant concentrations at the peak receptor and at the microscale monitoring site.
- Tabular summary of inhalation cancer risks.

For each microscale site, there is a table, which provides statistical comparisons between the microscale site and its nearest MATES-II fixed site. Since microscale sites were sampled more intensively (2-3 days per week) as compared to the fixed sites (every six days), there are much lower numbers of sampling days at the fixed sites for the coincident period of microscale sampling. To allow for a greater number of sampling days to include in these analyses without compromising seasonal variability, the window period for including data from the fixed sites was expanded to include two weeks before and after the paired microscale sampling period. For example, if the microscale site collected 12 samples during the month of July, there would only be four or five corresponding fixed site samples. By extending the period of including fixed site samples to mid-June through mid-August, up to eight corresponding fixed sites samples could be used for comparative purposes.

Data are summarized for each of 24 gaseous compounds, and 5 metals. Each summary shows statistical indicators of the data, including the number of samples (N), the mean values, the standard deviations (S.D.), and the 90 percent confidence interval. The confidence interval is a statistical measure of the variability of the data such that any value within the range is considered, with 90 percent confidence, to be part of the data reflected by the mean. When comparing the mean values from each pair of sites, if the intervals overlap, we cannot conclude with statistical confidence that the mean values are different from each other. Where intervals do not overlap, we have a statistical significance at the 90 percent level that the mean values are indeed different, and that the levels at one site are higher than at the corresponding site. In most

applications, a more rigorous statistical confidence level of 95 percent is used. Here, 90 percent levels are used in order to focus more broadly on differences between paired sites. Shading is used to highlight compounds for which the microscale site is statistically higher than the corresponding paired fixed site. Boxes are used in the reverse, where the fixed site is statistically higher than the microscale site.

The total inhalation cancer risks shown here are simply the summation of the cancer risks from the individual species as determined from its ISCST3 predicted concentration times its unit risk factor (URF). The URFs used are those contained in the District's *Risk Assessment Procedures for Rule 1401 and 212*. The modeling results are given at the monitor location, identified as "At Monitor" in the tables, and the at the peak receptor, identified as "Maximum" in the tables. One should keep in mind that the monitoring site was chosen to represent a residential area downwind of the inventoried industrial area, whereas the receptor network used to identify the peak impacts represents worker or commercial exposure.

A summary of the microscale emission inventory by site is given in Table 2. Sources of emissions were identified in only 10 of the 14 sites. Figure 1 is a map of the Basin showing the locations of the microscale sites. The individual site descriptions and analyses are provided next in alphabetical order.

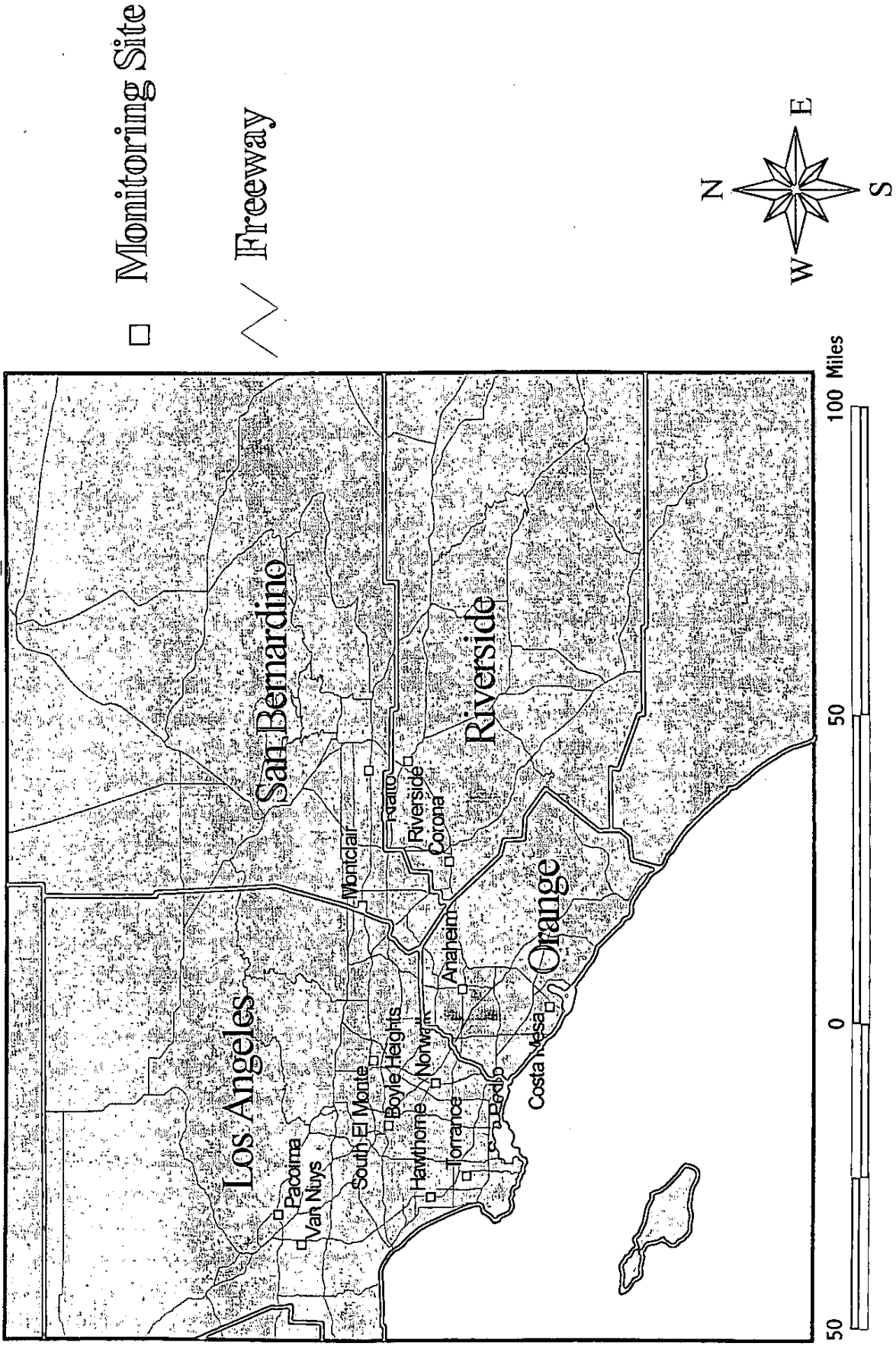


Figure 1. Regional map showing the locations of the 14 microscale monitoring sites.

Table 2. Summary of Microscale Emissions Inventories by Site.*

Pollutant	Emissions (lbs/year)									
	Boyle Heights	Corona	Costa Mesa	Montclair	Pacoima	Rialto	San Pedro	South El Monte	Torrance	Van Nuys
1,3-Butadiene	--	--	0.70	--	--	--	--	0.01	2.29	--
1,4-Dioxane	--	--	--	--	--	--	--	--	10.48	--
2- butoxyethanol	--	--	--	--	--	--	--	131.04	--	--
Acetaldehyde	0.27	--	--	--	--	--	--	--	--	--
Acetone	116.48	1.25	--	--	61.15	--	--	4630.08	2812.99	--
Acrylonitrile	--	--	0.00	--	--	--	--	--	2.91	--
Aldehydes	--	--	--	--	0.05	--	--	--	--	--
Ammonia	--	--	--	--	124.80	--	--	2.75	--	--
Benzene	0.36	5.85	0.25	8.74	1.84	0.19	0.43	0.01	0.01	5.85
Benzo[a]pyrene	--	0.00	--	--	0.00	0.01	0.01	--	--	--
Cadmium	--	--	--	--	--	--	--	--	0.02	--
Carbon black	0.96	--	--	--	0.06	--	--	--	0.01	--
Chromic acid	--	--	--	--	--	--	--	1.41	--	--
Chromium, hexavalent	0.92	--	--	--	--	--	--	--	0.01	--
Cobalt	--	--	--	--	--	--	--	0.01	--	--
Copper	--	--	--	--	0.01	--	--	--	0.04	--
Cyclohexane	--	--	--	--	--	--	--	778.44	--	--
Dibutyl phthalate	--	--	--	--	22.71	--	--	--	--	--
Diesel, particulate	87.36	--	--	--	--	0.52	--	--	--	--
EGBE	--	--	--	--	--	--	--	148.51	--	--
Ethyl benzene	--	--	--	--	--	--	--	122.30	--	--
Formaldehyde	1.19	0.06	0.00	--	0.00	0.08	0.04	--	691.44	--
Furan	--	0.38	--	--	0.09	0.76	1.12	--	--	--
Glycol ethers	--	15.60	--	--	10.48	--	--	--	76.88	--
Hexamethylene-1,6	--	--	0.05	--	--	--	--	--	--	--
Hexane	--	--	--	--	18.35	--	--	--	2795.52	--
Hydrofluoric acid	--	--	--	--	--	--	--	0.05	--	--
Isopropanol	95.68	--	--	--	200.93	--	--	410.59	480.48	--
Lead	--	--	--	--	0.44	--	--	--	--	--
Manganese	0.78	--	--	--	--	0.64	--	0.01	0.05	--
Methanol	--	--	--	--	79.50	--	--	--	1135.68	--
Methyl ethyl ketone	--	--	194.69	--	253.34	--	--	--	--	--
Methylene chloride	95.68	24.96	--	--	--	--	13.00	--	--	--
Naphthalene	1.86	--	--	--	--	--	--	--	--	--
Nickel	1.13	--	--	--	--	--	--	--	0.00	--
Nickel acetate	--	--	--	--	--	--	--	0.79	--	--
Nitric acid	--	--	--	--	--	--	--	0.79	--	--
PAH	2.04	0.09	--	--	0.02	0.17	--	--	--	--
Perchloroethylene	1787.50	--	--	--	234.00	--	--	0.73	--	--
Phosphoric acid	--	--	--	--	0.42	--	--	0.00	--	--
POM	0.09	--	0.00	--	--	--	--	--	0.00	--
Propylene glycol	--	--	--	--	60.19	--	--	--	--	--
Propylene oxide	--	--	--	--	22.71	--	--	--	0.06	--
Silica	0.64	--	0.00	--	--	0.52	--	--	0.14	--
Silicon	0.05	--	--	--	--	0.04	--	--	--	--
Silver	--	--	--	--	--	--	--	--	0.00	--
Sodium hydroxide	--	--	--	--	--	--	--	18.30	--	--
Styrene	--	--	--	--	--	--	--	0.00	0.16	--
Sulfates	--	--	--	--	--	--	--	11.65	--	--
Sulfuric acid	--	--	--	--	2.50	--	--	41.60	--	--

Table 2. Summary of Microscale Emissions Inventories by Site.*

Pollutant	Emissions (lbs/year)									
	Boyle Heights	Corona	Costa Mesa	Montclair	Pacoima	Rialto	San Pedro	South El Monte	Torrance	Van Nuys
Toluene	372.69	0.62	--	1.92	410.99	0.43	0.05	227.14	59.40	175.40
Trichloroethane [1,1,2]	--	--	--	--	--	--	--	--	366.91	--
Trichloroethylene	--	--	--	--	--	--	--	7.25	--	--
Vinyl acetate	--	--	--	--	--	--	--	0.00	--	--
Xylenes	132.11	1.31	85.28	0.96	139.98	0.21	0.04	1257.98	--	1.31

* No emissions were found near Anaheim, Hawthorne, Norwalk, and Riverside.

Microscale Site: Anaheim

Site Location: 1316 Paradise Court, Anaheim, CA 92806
(see Figure 2)

Sampling Period: 12/31/98 – 2/2/99

Nearest (paired) MATES-II Fixed Site: Anaheim
1010 S. Harbor Blvd., Anaheim, CA

Approximate Distance between Microscale and Fixed Site Locations: 3.3 miles

Special Considerations: Scheduled for wintertime sampling when wind conditions are more common from the north through east (offshore flow). There is a cluster of facilities and freeways located to the northeast of the site as well as clusters of facilities to the west-northwest of the site.

Wind Data: Winds were predominately from the northwest to the north-northwest and from the south-southwest to the west-southwest with wind speeds ranging from 0 to 5 mph. These winds are indicative of the predominant onshore influence, but winds from all directions occurred at least some time during the sampling period. (See the wind rose in Figure 3.)

Statistical Comparisons of Measured Data: Microscale site has localized influence from a source of styrene emissions, and exhibits higher influence from mobile sources than observed at the fixed site (see Table 3). Figure 4 shows three of the highest emitting styrene facilities are located upwind of the fixed and microscale monitoring sites. Note that the styrene facilities are in closer proximity to the microscale site thus explaining the significantly higher concentrations observed at the microscale site relative to the fixed site (see Table 3).

Microscale Emissions Inventory: There are no toxic emission sources in the immediate vicinity of the microscale site.

Modeling Results: Microscale modeling was not performed since there are no toxic emission sources in the local area.

Summary:

- Localized influence from a source or sources of styrene has been detected. A larger-scale map indicates additional styrene sources upwind of the microscale site (see Figure 4).
- Mobile source influences (excluding diesel) are greater than stationary source influences.
- Emission inventories consistent with measurements, when upwind sources of styrene are accounted for.
- Sources treated in the regional modeling analysis are likely more dominant than localized contributions, except for styrene.

Table 3. Comparison of observed concentrations at the microscale and fixed sites in Anaheim.

Pollutant	Units	Microscale Site - Anaheim			Fixed Site - Anaheim			Statistically significant?*		
		Mean	S.D.	N	90% Conf. Interval	Mean	S.D.		N	90% Conf. Interval
Chloromethane	ppb	0.66	0.10	12	0.596 - 0.721	0.70	0.15	7	0.559 - 0.841	No
Chloroethene	ppb	0.10	0.00	12	0.100 - 0.100	0.10	0.00	7	0.100 - 0.100	No
1,3 Butadiene	ppb	0.41	0.17	12	0.305 - 0.515	0.27	0.13	7	0.155 - 0.391	No
1,1 Dichloroethene	ppb	0.05	0.00	12	0.050 - 0.050	0.05	0.00	7	0.050 - 0.050	No
Methylene Chloride	ppb	0.95	0.62	12	0.557 - 1.343	0.38	0.16	7	0.228 - 0.529	Yes (micro > fixed)
1,1 Dichloroethane	ppb	0.05	0.00	12	0.050 - 0.050	0.05	0.00	7	0.050 - 0.050	No
Chloroform	ppb	0.05	0.00	12	0.050 - 0.050	0.05	0.00	7	0.050 - 0.050	No
Ethylene Dichloride	ppb	0.05	0.00	12	0.050 - 0.050	0.05	0.00	7	0.050 - 0.050	No
Benzene	ppb	1.24	0.37	12	1.009 - 1.479	0.99	0.22	7	0.783 - 1.189	No
Carbon Tetrachloride	ppb	0.10	0.00	12	0.100 - 0.100	0.10	0.00	7	0.100 - 0.100	No
Trichloroethene	ppb	0.06	0.02	12	0.042 - 0.072	0.14	0.05	7	0.093 - 0.192	Yes (fixed > micro)
Toluene	ppb	3.21	1.41	12	2.317 - 4.111	2.26	0.80	7	1.516 - 2.999	No
Ethylene Dibromide	ppb	0.05	0.00	12	0.050 - 0.050	0.05	0.00	7	0.050 - 0.050	No
Perchloroethylene	ppb	0.54	0.32	12	0.335 - 0.740	0.28	0.17	7	0.123 - 0.434	No
Ethylbenzene	ppb	0.32	0.17	12	0.214 - 0.428	0.26	0.12	7	0.149 - 0.380	No
(m+p)-Xylene	ppb	1.44	0.69	12	0.998 - 1.874	1.13	0.50	7	0.667 - 1.590	No
Styrene	ppb	5.04	4.35	12	2.278 - 7.805	0.71	0.60	7	0.151 - 1.264	Yes (micro > fixed)
o-Xylene	ppb	0.51	0.25	12	0.357 - 0.671	0.39	0.18	7	0.222 - 0.550	No
p-Dichlorobenzene	ppb	0.07	0.03	12	0.049 - 0.084	0.05	0.00	7	0.050 - 0.050	No
o-Dichlorobenzene	ppb	0.05	0.00	12	0.050 - 0.050	0.05	0.00	7	0.050 - 0.050	No
Formaldehyde	ppb	8.49	2.95	12	6.610 - 10.361	3.74	1.23	7	2.602 - 4.884	Yes (micro > fixed)
Acetaldehyde	ppb	3.28	1.48	12	2.336 - 4.222	1.49	0.56	7	0.970 - 2.002	Yes (micro > fixed)
Acetone	ppb	13.68	8.13	12	8.510 - 18.846	1.81	1.67	7	0.265 - 3.363	Yes (micro > fixed)
MEK	ppb	1.91	1.17	12	1.172 - 2.656	0.36	0.29	7	0.099 - 0.627	Yes (micro > fixed)
Hexavalent chromium	ng/m ³	0.21	0.15	12	0.119 - 0.303	0.19	0.14	7	0.066 - 0.320	No
Arsenic	ng/m ³	2.00	0.00	10	2.000 - 2.000	1.50	0.00	5	1.500 - 1.500	No
Nickel	ng/m ³	7.89	5.17	10	4.184 - 11.588	4.19	2.47	5	1.126 - 7.250	No
Selenium	ng/m ³	1.00	0.00	10	1.000 - 1.000	0.50	0.00	5	0.500 - 0.500	No
Cadmium	ng/m ³	5.00	0.00	10	5.000 - 5.000	5.00	0.00	5	5.000 - 5.000	No

* Statistical significance determined by non-overlapping confidence intervals.

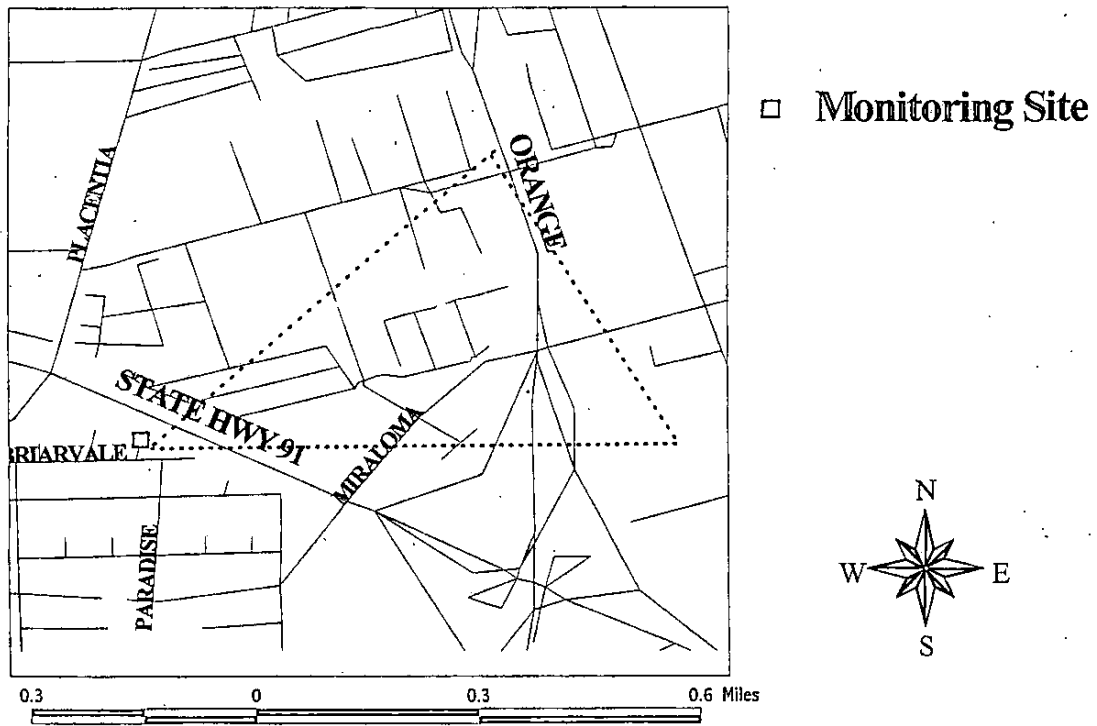


Figure 2. Local map showing the Anaheim microscale monitoring site and vicinity.

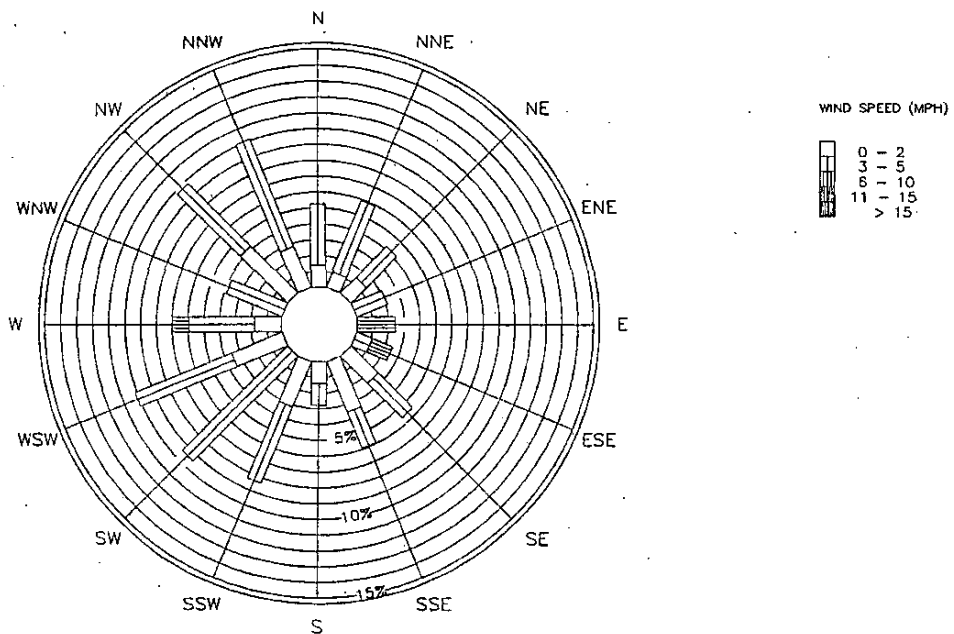


Figure 3. Wind rose for the period 12/31/98 to 2/2/99 at the Anaheim microscale monitoring site.

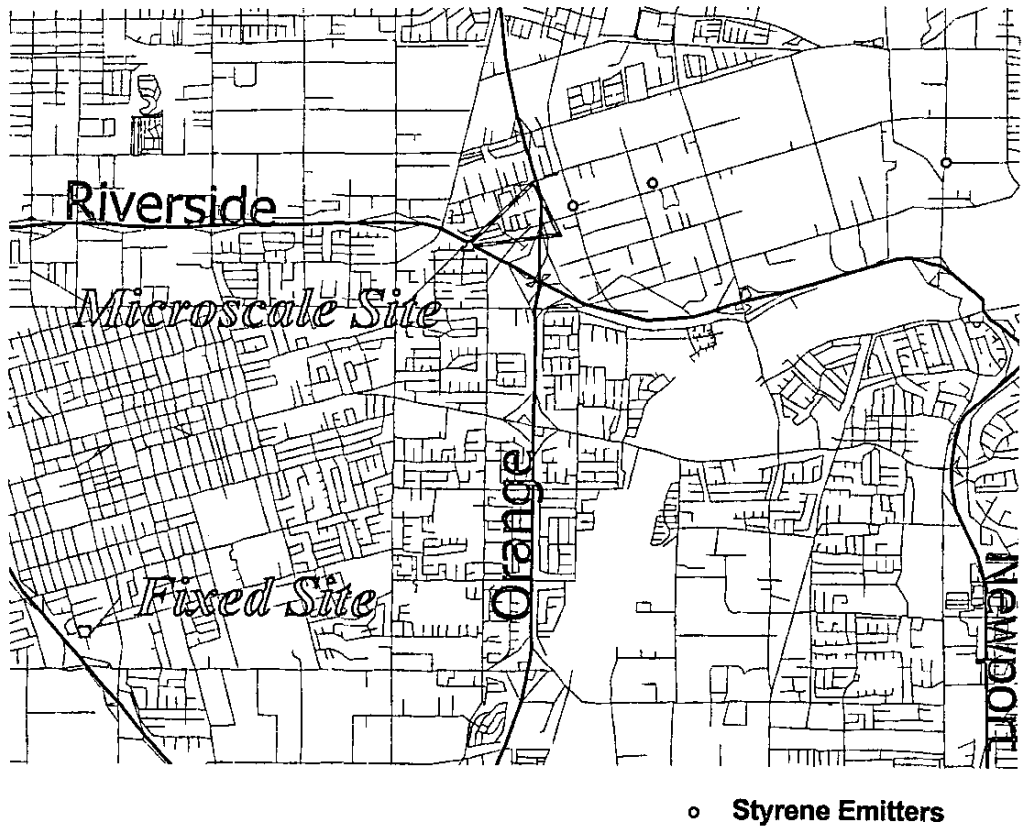


Figure 4. Local map showing styrene sources relative to the Anaheim microscale and fixed monitoring sites.

Microscale Site: Boyle Heights

Site Location: 1100 Spense Street, Los Angeles, CA 90023
(see Figure 5)

Sampling Period: 9/26/98 – 10/29/98

Nearest (paired) MATES-II Fixed Site: Huntington Park
6301 S. Sante Fe Avenue, Huntington Park

Approximate Distance between Microscale and Fixed Site Locations: 3.2 miles

Special Considerations: Sampling occurred during the mid-fall period, when predominant sea breeze conditions from the west-southwest still occur. Site was located in a residential area immediately downwind of a large cluster of facilities in the City of Vernon.

Wind Data: Winds were predominantly from the west-southwest approximately 20% of the time, and southwesterly about 18% of the time, with winds ranging from 0-10 mph. Lighter drainage winds from the north and northeast (offshore), combined, accounted for 22% of the sampling interval, mostly during the night and early morning hours. (See wind rose in Figure 6.)

Statistical Comparisons of Measured Data: No significant differences observed for any compounds except for acetone, which is not considered to be an air toxic. Significantly higher acetone concentrations were observed at Boyle Heights relative to its fixed pair at Huntington Park (see Table 4). This difference may be an artifact of the different sampling methods. The fixed site sampling consists of 24-hr cumulative samples whereas the microscale site consists of three 8-hr cumulative samples. The 24-hr average concentration from the three 8-hr samples tends to be higher than the 24-hr cumulative sample. This appears to be the cause of the significantly higher acetone concentrations at Boyle Heights. The Huntington Park site has a greater mobile source influence.

Microscale Emissions Inventory: 19 pollutants were inventoried from the local environment, including nine carcinogens. The total inventoried emissions are summarized in Table 2; individual facility emissions are provided in Table 5.

Modeling Results: As seen in Table 6, the predicted concentrations and locations of the maximum are similar for both meteorological data sets. The microscale monitoring site is within about a kilometer of all sources inventoried and modeled. In spite of the proximity of the sources to the monitor, there is still more than a factor of 100 decrease in concentrations from the peak receptor to the microscale monitoring site. It should be noted that this degree of spatial variability was not observed in any of the sites sampled throughout the study.

Predicted concentrations at the maximum receptor and at the monitor site from the microscale emission inventory are much lower than concentrations predicted by UAM using the basinwide emission inventory or the average concentrations observed at the nearest fixed site of Huntington Park. This is to be expected since the microscale emission inventory only consists of the local

stationary sources. Both sources upwind of the microscale site and local mobile sources are not simulated in the ISCST3 modeling. The only exception is for hexavalent chromium. Maximum predicted hexavalent chromium concentrations are more than ten times the observed value of 0.22 ng/m³ at Huntington Park and nearly 20 times the UAM-predicted concentration of 0.16 ng/m³ for Boyle Heights.

Risks for the modeled carcinogens are shown in Table 7. Estimated cancer risks using the two different meteorological data sets are shown. As with the concentrations, the two data sets yield similar cancer risks. Total cancer risks, at the peak receptor, range from 464 to 588 in one million with more than 99 percent of the risk attributed to hexavalent chromium emissions. Total cancer risks at the monitor site, which is approximately 0.6 km (0.3 mi) away from the peak receptor, are only 4 to 5 in one million. In other words, impacts are reduced by a factor of 100 within 600 m of the source. This clearly illustrates that the impacts from these relatively small local sources are focused to a very small area.

Summary:

- There does not appear to be a significant difference between the Boyle Heights microscale site and the Huntington Park fixed site in terms of the observed pollutant concentrations.
- ISCST3 modeling with meteorological data from two different annual time periods (i.e., 1981 and 1998/99) yielded similar concentrations and the same locations for the peaks.
- Except for hexavalent chromium, predicted concentrations from the local emissions are much less than average concentrations observed at Huntington Park or concentrations predicted by UAM using basinwide emissions.
- For this microscale site, predicted cancer risks are primarily determined by hexavalent chromium. Peak cancer risks occur in the immediate vicinity of the source but decrease by more than a factor of 100 within one kilometer of the source.

Table 4. Comparison of observed concentrations for the microscale and fixed site pair of Boyle Heights and Huntington Park.

Pollutant	Units	Microscale Site - Boyle Heights			Fixed Site - Huntington Park			Statistically significant?*		
		Mean	S.D.	N	90% Conf. Interval	Mean	S.D.		N	90% Conf. Interval
Chloromethane	ppb	0.62	0.08	15	0.572 - 0.665	0.70	0.21	7	0.507 - 0.893	No
Chloroethene	ppb	0.10	0.00	15	0.100 - 0.100	0.10	0.00	7	0.100 - 0.100	No
1,3 Butadiene	ppb	0.56	0.22	15	0.442 - 0.683	0.73	0.38	7	0.381 - 1.088	No
1,1 Dichloroethene	ppb	0.05	0.00	15	0.050 - 0.050	0.05	0.00	7	0.050 - 0.050	No
Methylene Chloride	ppb	0.68	0.30	15	0.515 - 0.843	0.90	0.53	7	0.408 - 1.392	No
1,1 Dichloroethane	ppb	0.05	0.00	15	0.050 - 0.050	0.05	0.00	7	0.050 - 0.050	No
Chloroform	ppb	0.05	0.00	15	0.049 - 0.053	0.09	0.09	7	-0.002 - 0.173	No
Ethylene Dichloride	ppb	0.05	0.00	15	0.050 - 0.050	0.05	0.00	7	0.050 - 0.050	No
Benzene	ppb	1.66	0.62	15	1.316 - 2.008	2.39	1.33	7	1.159 - 3.612	No
Carbon Tetrachloride	ppb	0.10	0.00	15	0.100 - 0.100	0.10	0.00	7	0.100 - 0.100	No
Trichloroethene	ppb	0.05	0.01	15	0.049 - 0.055	0.07	0.03	7	0.047 - 0.096	No
Toluene	ppb	4.68	1.94	15	3.608 - 5.752	8.34	3.77	7	4.853 - 11.832	No
Ethylene Dibromide	ppb	0.05	0.00	15	0.050 - 0.050	0.05	0.00	7	0.050 - 0.050	No
Perchloroethylene	ppb	0.30	0.16	15	0.209 - 0.389	0.57	0.42	7	0.187 - 0.955	No
Ethylbenzene	ppb	0.65	0.28	15	0.498 - 0.804	1.14	0.60	7	0.588 - 1.697	No
(m+p)-Xylene	ppb	2.50	1.03	15	1.931 - 3.071	4.23	2.22	7	2.176 - 6.281	No
Styrene	ppb	0.22	0.09	15	0.165 - 0.267	0.27	0.22	7	0.067 - 0.476	No
o-Xylene	ppb	0.84	0.36	15	0.647 - 1.042	1.46	0.74	7	0.776 - 2.139	No
p-Dichlorobenzene	ppb	0.20	0.11	15	0.137 - 0.256	0.39	0.22	7	0.183 - 0.589	No
o-Dichlorobenzene	ppb	0.05	0.00	15	0.050 - 0.050	0.05	0.00	7	0.050 - 0.050	No
Formaldehyde	ppb	7.94	2.07	12	6.624 - 9.257	6.75	3.41	7	3.602 - 9.904	No
Acetaldehyde	ppb	3.64	1.41	12	2.738 - 4.536	2.69	1.28	7	1.510 - 3.879	No
Acetone	ppb	8.95	2.67	12	7.251 - 10.646	3.23	2.94	7	0.508 - 5.952	Yes (micro > fixed)
MEK	ppb	1.10	0.46	12	0.806 - 1.391	0.46	0.49	7	0.008 - 0.921	No
Hexavalent chromium	ng/m ³	0.18	0.06	12	0.148 - 0.220	0.31	0.21	7	0.120 - 0.502	No
Arsenic	ng/m ³	2.00	0.00	13	2.000 - 2.000	1.50	0.00	7	1.500 - 1.500	No
Nickel	ng/m ³	10.36	4.62	13	7.565 - 13.148	14.21	7.62	7	7.163 - 21.261	No
Selenium	ng/m ³	4.63	3.87	13	2.291 - 6.967	5.54	7.21	7	-1.129 - 12.204	No
Cadmium	ng/m ³	5.00	0.00	13	5.000 - 5.000	5.00	0.00	7	5.000 - 5.000	No

* Statistical significance determined by non-overlapping confidence intervals.

**BOYLE HEIGHTS MICRO-SCALE SITE
Inventory of Toxics (MATES Tables) and Sources of Potential Impact 5/14/1999**

fac.SIC	Activity type	Activity duration in hrs/day, days/wk, wks/yr	Main Mates II Pollutant Emitted	Emissions in Lbs/Month	Emission lbs/hr, calcd.	Methodology, (comments)
	Inactive Site		none	0	0	FLD/TC/AQMD
	Inactive site		none	0	0	FLD/TC (Inactive)
8741	Management		none	0	0	FLD/TC
	Inactive site		none	0	0	FLD/TC(Inactive)
	Inactive site		none	0	0	FLD/TC(Inactive)
1731	Instal/repairs	8,5,52	none	0	0	FLD/TC (Two wrk vehicles)
5169	Wholesale	8,5,52	none	0	0	FLD/TC (Office activities only)
	Sales only	8,5,52	none	0	0	FLD/TC
3398	N.G.comb/h.t. & tempering	8,5,52	Formaldehyde	1.8×10^2	1.15×10^{-4}	FLD/TC
			Benzene	7.0×10^{-3}	4.4×10^{-5}	
			PolM	7.0×10^{-3}	4.4×10^{-5}	
	Quench/water	8,5,52	none	0	0	
	Quench/ oil	8,5,52	none	0	0	
	Sales/service	8,5,52	none	0	0	FLD/TC

**BOYLE HEIGHTS MICRO-SCALE SITE
Inventory of Toxics (MATES Tables) and Sources of Potential Impact 5/14/1999**

Sales Only	8,5,52	none	0	0	FLD/TC
Inactive Site		none	0	0	FLD/TC/AQMD (Inactive)
Sales (Cloth)	8,5,52	none	0	0	FLD/TC
5541 Diesel	24,7,52	Diesel	7.5	1.0×10^{-2}	FLD/TC/AQMD
Gsin Disp/stg	24,7,52	Benzene	9.4×10^{-3}	1.4×10^{-5}	(Est. sales).
		Toluenes	2.0×10^{-3}	3.0×10^{-6}	
		Xylenes	1.0×10^{-3}	1.5×10^{-6}	
1791 Welding	8,5,52	Manganese	6.0×10^{-2}	3.75×10^{-4}	FLD/TC
		Silicon	3.48×10^{-3}	2.2×10^{-5}	(est. usage)
		Trace elements	Trace	Trace	
Degreasing	8,5,52	none	0	0	
Open spray	8,5,52	Silica	5.0×10^{-2}	3.1×10^{-4}	
Inactive		none	0	0	Fid/TC (Inactive)
3444 Powder Cing	8,5,52	lead, chromates	trace	trace	FLD/TC/AQMD (Est. use)
		Carbon	7.2×10^{-2}	4.5×10^{-4}	
N.G comb.	8,5,52	Formaldehyde	4.9×10^{-2}	3.1×10^{-4}	(Est. fr. Firing rates)
		Benzene	4.9×10^{-4}	3.1×10^{-6}	
		PoM	6.7×10^{-5}	4.2×10^{-7}	
Bm off/aftbrmr	3,1,12	Carbon	1.6×10^{-3}	5.3×10^{-4}	(Est. residuals)
		lead, chrom, other trace met.	trace	trace	
3452 Stamping		none	0	0	FLD/TC(Inactive site)

BOYLE HEIGHTS MICRO-SCALE SITE
Inventory of Toxics (MATES Tables) and Sources of Potential Impact 5/14/1999

Shearing	none	0	0	
AB2588				AB2588
AB2588	(chromium 0.8 lbs/yr; in chart form example stated as 8.0)			AB2588
Inactive site		0	0	FLD/TC (Inactive site)
AB2588	(Mn site 179,000 amp-hrs/m; Hx.v chr.is 1.8x 10 ² lbs/m)			AB2588
8099 Screening	none	0	0	FLD/TC (Inactive site)
Inactive site	none	0	0	FLD/TC (Inactive site)
AB2588				AB2588
AB2588				AB2588
AB2588				AB2588
3429 Spray coating	Xylenes	0.4	2.5x10 ⁻³	
	Toluenes	1.7	1.1x10 ⁻²	
Inactive site	none	0	0	FLD/TC (Inactive site)

BOYLE HEIGHTS MICRO-SCALE SITE

Inventory of Toxics (MATES Tables) and Sources of Potential Impact 5/14/1999

2599	Glue appl.	8,5,52	none	none	none	FLD/TC/AQMD
	Finishing	8,5,52	Acetone	8.9	5.6x10 ⁻²	(Estim. Usage and MSDS)
			Isopropanol	7.3	4.6x10 ⁻²	
			Xylenes	9.7	6.1x10 ⁻²	
			Toluene	4.6	2.9x10 ⁻²	
	Inactive Site		none	0	0	FLD/TC (Inactive site)
	Inactive site		none	0	0	FLD/TC (Inactive site)
5812	Charbroiling (Inactive)		none	0	0	FLD/TC/AQMD (Inactive)
7219	Combustion	8,5,52	formaldehyde	trace	trace	FLD/TC/AQMD (Boiler seldom used).
			benzene	trace	trace	
			PoM	trace	trace	
	Dyeing	1,1,52	trace elements	0	0	(Seldom done)
	Inactive site		none	0	0	FLD/TC/AQMD (Inactive)
	Inactive site		none	0	0	FLD/TC/AQMD (Inactive)
	Inactive Site		none	0	0	FLD/TC/AQMD (Inactive)
	Inactive site		none	0	0	FLD/TC/AQMD (Inactive)

**BOYLE HEIGHTS MICRO-SCALE SITE
Inventory of Toxics (MATES Tables) and Sources of Potential Impact 5/14/1999**

4923	Emrg Gen test	1/2,1,12	Benzene	trace	trace	FLD/AQMD
			Aldehydes	trace	trace	
			propylene	trace	trace	
			hexane	trace	trace	
			PAH, PoM, & other	trace	trace	
	Inactive site		none	0	0	FLD/TC/AQMD (Inactive)
	AB2588					
	Inactive site		none	0	0	FLD/TC/AQMD (Inactive)
	AB2588					
	Chr. Plating	8,5,52	Hexv. Chr	0	0	FLD/TC/AQMD(est. Amp-hrs)
	Nickle Pltng	8,5,52	Nickel	0	0	(Est. Amps & hrs)
	Inactive site		none			
3444	Prep. and coat	8,5,52	Methylene chloride	7.4	4.6x10-2	FLD/AQMD (Est. usage eport
			Toluene	4.1	2.6x10-2	less waste)
	Inactive site		none	0	0	FLD/TC/AQMD (Inactive)
	Inactive site		none	0	0	FLD/TC/AQMD (Inactive)

Table 6. Annual Concentrations at Boyle Heights from the Microscale Emissions Inventory.

Pollutant	Obs. Conc. at Fixed Site (ug/m3)		UAM Pred. Conc. (ug/m ³)		ISCST3 Pred. Conc. - 1981 Meteorology			ISCST3 Pred. Conc. - 1998/99 Meteorology		
	Fixed Site (ug/m3)	Conc. (ug/m ³)	At Monitor ¹ (ug/m ³)	Maximum (ug/m ³)	UTM-E (km)	UTM-N (km)	At Monitor ¹ (ug/m ³)	Maximum (ug/m ³)	UTM-E (km)	UTM-N (km)
Acetaldehyde	2.38E+00	5.23E+00	7.30E-06	1.90E-03	389.3	3764.7	6.90E-06	2.70E-03	389.3	3764.7
Acetone	4.32E+00	2.73E+00	2.60E-03	4.80E-01	388.9	3764.6	2.80E-03	5.70E-01	388.9	3764.6
Benzene	5.27E+00	3.28E+00	6.70E-06	9.90E-04	389.3	3764.7	8.20E-06	1.40E-03	389.3	3764.7
Carbon black	n.s.	n.m.	2.50E-05	6.40E-03	389.0	3764.6	2.30E-05	8.90E-03	389.0	3764.6
Chromium hexavalent	2.16E-04	1.57E-04	2.80E-05	3.10E-03	389.1	3764.6	2.40E-05	3.90E-03	389.1	3764.6
Diesel particulate	n.s.	3.33E+00	8.80E-04	5.50E-01	388.4	3764.4	2.00E-03	7.90E-01	388.4	3764.4
Formaldehyde	3.82E+00	5.82E+00	2.90E-05	4.40E-03	389.0	3764.6	2.80E-05	6.00E-03	389.0	3764.6
Isopropanol	n.s.	n.m.	2.10E-03	4.00E-01	388.9	3764.6	2.30E-03	4.70E-01	388.9	3764.6
Manganese	2.60E-02	n.m.	2.90E-05	5.30E-03	389.0	3764.6	2.60E-05	7.00E-03	389.0	3764.6
Methylene chloride	3.79E+00	1.15E+00	1.00E-03	7.10E-01	388.6	3764.5	1.70E-03	9.20E-01	388.6	3764.5
Napthalene	n.s.	n.m.	5.10E-05	1.30E-02	389.3	3764.7	4.80E-05	1.90E-02	389.3	3764.7
Nickel	1.17E-02	6.00E-03	4.40E-05	5.20E-03	389.1	3764.7	4.30E-05	6.90E-03	389.1	3764.7
PAH	n.s.	n.m.	5.60E-05	1.50E-02	389.3	3764.7	5.20E-05	2.10E-02	389.3	3764.7
Perchloroethylene	2.68E+00	2.14E+00	5.40E-02	6.30E+00	389.1	3764.7	5.30E-02	8.50E+00	389.1	3764.7
PoM	n.s.	n.m.	1.50E-06	6.50E-04	388.4	3764.7	1.70E-06	9.10E-04	388.4	3764.7
Silica	n.s.	n.m.	2.40E-05	4.40E-03	389.0	3764.6	2.10E-05	5.80E-03	389.0	3764.6
Silicon	2.77E+00	n.m.	1.70E-06	3.10E-04	389.0	3764.6	1.50E-06	4.10E-04	389.0	3764.6
Toluene	2.18E+01	1.43E+01	6.50E-03	1.00E+00	388.6	3764.7	9.40E-03	1.30E+00	388.6	3764.7
Xylenes	1.71E+01	n.m.	2.90E-03	5.40E-01	388.9	3764.6	3.20E-03	6.30E-01	388.9	3764.6

¹ Location of the monitor site is 389.17 km UTM-E & 3765.09 UTM-N.
n.a. = not applicable; n.s. = not sampled; n.m. = not modeled

Table 7. Inhalation Cancer Risks at Boyle Heights from the Microscale Emissions Inventory.

Pollutant	Predicted Risks using 1981 Meteorology		Predicted Risks using 1998/99 Meteorology	
	At Monitor ¹	Maximum ²	At Monitor ¹	Maximum ³
Acetaldehyde	1.98E-11	4.15E-11	1.86E-11	3.08E-11
Benzene	1.94E-10	5.26E-10	2.37E-10	5.16E-10
Chromium, hexavalent	4.15E-06	4.63E-04	3.57E-06	5.85E-04
Diesel, particulate	2.65E-07	1.24E-06	5.87E-07	1.52E-06
Formaldehyde	1.77E-10	2.57E-09	1.69E-10	2.79E-09
Methylene chloride	1.01E-09	2.83E-09	1.67E-09	2.77E-09
Nickel	1.16E-08	1.19E-08	1.12E-08	1.84E-08
PAH	6.13E-08	1.29E-07	5.77E-08	9.54E-08
Perchloroethylene	3.21E-07	3.30E-07	3.12E-07	5.12E-07
Total Cancer Risks	4.81E-06	4.64E-04	4.54E-06	5.88E-04

¹ Location is 389.17 km UTM-E & 3765.09 UTM-N

² Location is 389.05 km UTM-E & 3764.55 UTM-N

³ Location is 389.05 km UTM-E & 3764.55 UTM-N

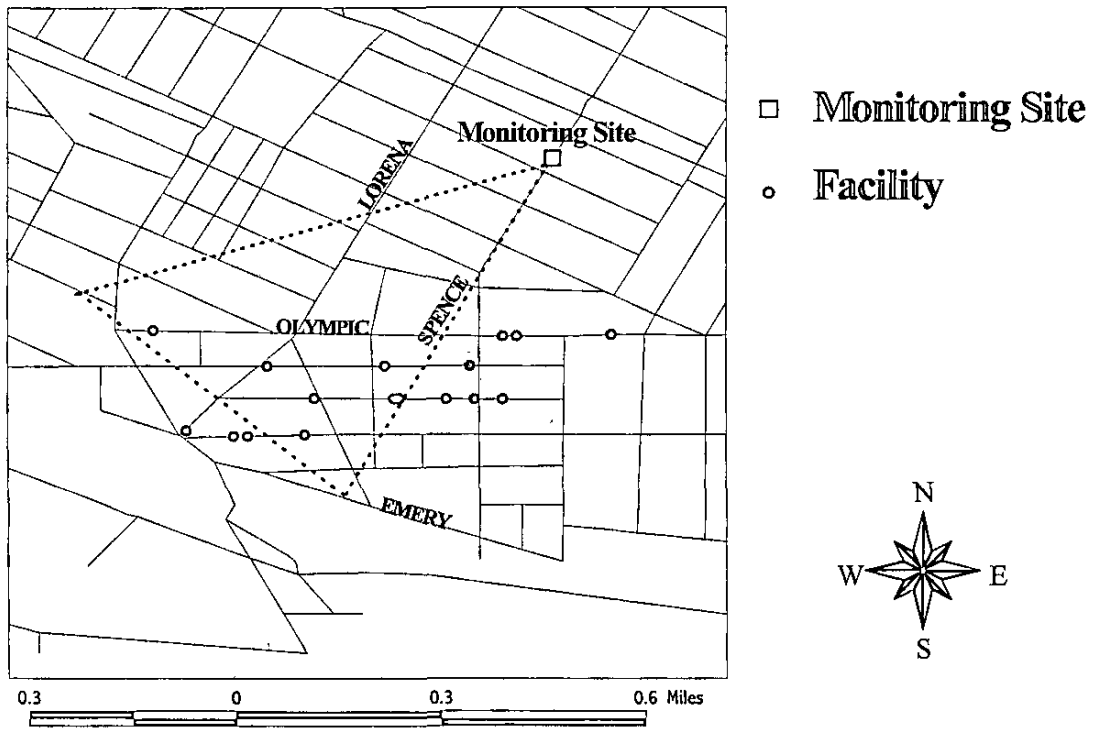


Figure 5. Local map showing the Boyle Heights microscale monitoring site and vicinity.

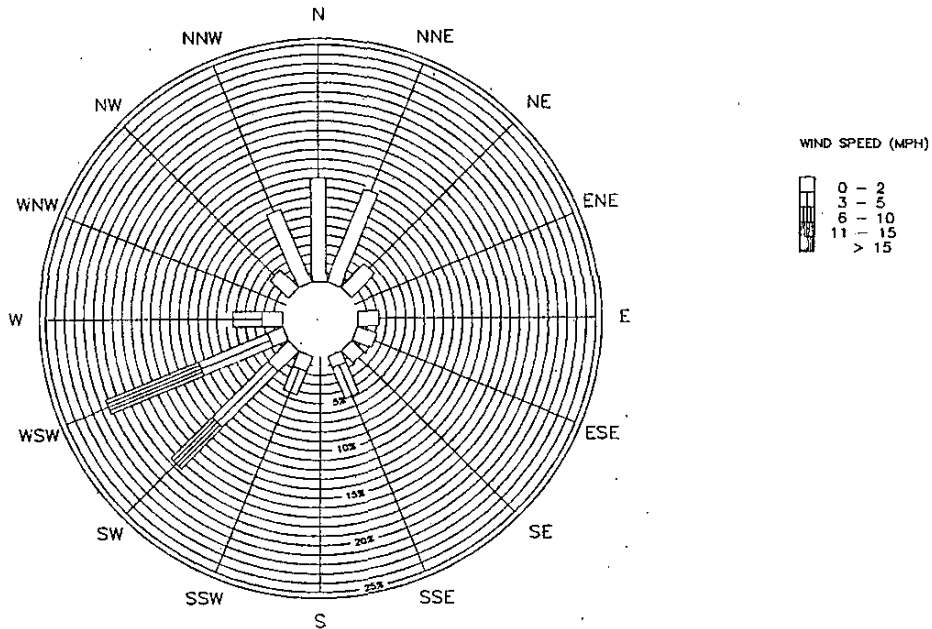


Figure 6. Wind rose for the period 9/26/98 to 10/29/98 at the Boyle Heights microscale monitoring site.

Microscale Site: Corona

Site Location: 1080 Pomona Road, Corona, CA 91720
(see Figure 7)

Sampling Period: 10/22/98 – 11/25/98

Nearest (paired) MATES-II Fixed Site: Rubidoux
5888 Mission Blvd., Rubidoux

Approximate Distance between Microscale and Fixed Site Locations: 12.5 miles

Special Considerations: Sampling occurred during the late fall period. In the inland areas, offshore flows tend to be more frequent this time of year, and so a northerly wind component was anticipated. A more typical onshore flow from the west-northwest was the dominant wind direction. As a result, the alignment of the site relative to the industrial cluster of facilities was not ideally situated.

Wind Data: Winds were predominantly from the west-northwest approximately 14 percent of the time, with speeds ranging from 0 to 10 mph (as an hourly average). Lighter nighttime winds, primarily from the southeast and south-southeast, occurred a combined 18 percent of the time. (See wind rose in Figure 8.)

Statistical Comparisons of Measured Data: The microscale site at Corona may have higher concentrations of styrene, formaldehyde, and acetone than the fixed site at Rubidoux (see Table 8). It should be noted that styrene and acetone are not carcinogens. High levels of other pollutants, such as 1,3 butadiene and benzene do not support the high levels of formaldehyde; 1,3 butadiene, benzene, and formaldehyde are associated with on-road mobile sources. It is possible that the high formaldehyde and acetone concentrations are an artifact of the differences in the microscale and fixed site sampling. The fixed site sampling consists of 24-hr cumulative samples whereas the microscale site consists of three 8-hr cumulative samples. The 24-hr average concentration from the three 8-hr samples tends to be higher than the 24-hr cumulative sample. This appears to be the cause of the significantly higher formaldehyde and acetone concentrations at Corona. (See also Chapter 6 of the main report for a discussion of this issue.)

Microscale Emissions Inventory: Ten pollutants were inventoried from the local sources, including five carcinogens. The total inventoried emissions are summarized in Table 2; individual facility emissions are provided in Table 9.

Modeling Results: As seen in Table 10, generally higher concentrations are predicted using the 1998/99 meteorological data. The microscale monitoring site is within about 300 m of all sources inventoried and modeled. In spite of the proximity of the sources to the monitor, concentrations decrease by a factor of 3 to nearly 50 at the monitor depending on the proximity of the source to the monitor. It should be noted that this degree of spatial variability was not observed in any of the sites sampled throughout the study (see main report).

Predicted concentrations at the maximum receptor and at the monitor site from the microscale emission inventory are much lower than concentrations predicted by UAM using the basinwide emission inventory or the average concentrations observed at the nearest fixed site of Rubidoux. This is to be expected since the microscale emission inventory only consists of the local stationary sources. Both sources upwind of the microscale site and local mobile sources are not simulated in the ISCST3 modeling.

Inhalation risks for the modeled carcinogens are shown in Table 11; estimated cancer risks using the two different meteorological data sets are shown. Using the 1998/99 meteorological data yields somewhat higher risks. Total risks, at the peak receptor, are 1-2 in one million and are 0.5-0.6 in one million at the monitor site.

Summary:

- The relatively high styrene concentrations observed at the Corona are likely from a local source of styrene emissions.
- The mobile source contribution to the cancer risks is similar at both Corona and Rubidoux.
- The 1998/99 meteorology yields somewhat greater predicted concentrations and inhalation risks than the 1981 meteorology.
- The microscale emission inventory for Corona contributes little to the observed cancer risks.

Table 8. Comparison of observed concentrations for the microscale and fixed site pair of Corona and Rubidoux.

Pollutant	Units	Microscale Site - Corona				Fixed Site - Rubidoux				Statistically significant?*
		Mean	S.D.	N	90% Conf. Interval	Mean	S.D.	N	90% Conf. Interval	
Chloromethane	ppb	0.64	0.09	13	0.584 - 0.688	0.62	0.29	7	0.357 - 0.886	No
Chloroethene	ppb	0.10	0.00	13	0.100 - 0.100	0.10	0.00	7	0.100 - 0.100	No
1,3 Butadiene	ppb	0.27	0.13	13	0.196 - 0.349	0.29	0.20	7	0.102 - 0.479	No
1,1 Dichloroethene	ppb	0.05	0.00	13	0.050 - 0.050	0.05	0.00	7	0.050 - 0.050	No
Methylene Chloride	ppb	0.89	0.57	13	0.541 - 1.236	0.56	0.32	7	0.261 - 0.854	No
1,1 Dichloroethane	ppb	0.05	0.00	13	0.050 - 0.050	0.05	0.00	7	0.050 - 0.050	No
Chloroform	ppb	0.05	0.00	13	0.048 - 0.054	0.05	0.00	7	0.050 - 0.050	No
Ethylene Dichloride	ppb	0.05	0.00	13	0.050 - 0.050	0.05	0.00	7	0.050 - 0.050	No
Benzene	ppb	1.05	0.34	13	0.843 - 1.254	1.09	0.46	7	0.660 - 1.511	No
Carbon Tetrachloride	ppb	0.10	0.00	13	0.100 - 0.100	0.10	0.00	7	0.100 - 0.100	No
Trichloroethene	ppb	0.05	0.00	13	0.048 - 0.054	0.05	0.00	7	0.050 - 0.050	No
Toluene	ppb	3.07	1.23	13	2.328 - 3.815	3.41	1.67	7	1.867 - 4.961	No
Ethylene Dibromide	ppb	0.05	0.00	13	0.050 - 0.050	0.05	0.00	7	0.050 - 0.050	No
Perchloroethylene	ppb	0.26	0.13	13	0.185 - 0.340	0.24	0.15	7	0.106 - 0.380	No
Ethylbenzene	ppb	0.38	0.18	13	0.274 - 0.495	0.40	0.20	7	0.215 - 0.585	No
(m+p)-Xylene	ppb	1.57	0.68	13	1.163 - 1.981	1.64	0.77	7	0.935 - 2.351	No
Styrene	ppb	1.39	1.40	13	0.545 - 2.242	0.31	0.22	7	0.113 - 0.515	Yes (micro > fixed)
o-Xylene	ppb	0.57	0.24	13	0.424 - 0.717	0.57	0.27	7	0.323 - 0.820	No
p-Dichlorobenzene	ppb	0.07	0.02	13	0.052 - 0.081	0.05	0.00	7	0.050 - 0.050	No
o-Dichlorobenzene	ppb	0.05	0.00	13	0.050 - 0.050	0.05	0.00	7	0.050 - 0.050	No
Formaldehyde	ppb	10.47	3.59	17	8.625 - 12.313	4.00	2.83	8	1.628 - 6.367	Yes (micro > fixed)
Acetaldehyde	ppb	4.12	1.73	17	3.230 - 5.011	2.08	1.51	8	0.820 - 3.337	No
Acetone	ppb	14.78	8.71	17	10.299 - 19.257	3.71	2.81	8	1.359 - 6.054	Yes (micro > fixed)
MEK	ppb	1.24	0.65	17	0.905 - 1.575	0.58	0.45	8	0.198 - 0.954	No
Hexavalent chromium	ng/m ³	0.19	0.11	16	0.128 - 0.242	0.32	0.25	9	0.128 - 0.507	No
Arsenic	ng/m ³	2.00	0.00	18	2.000 - 2.000	1.50	0.00	9	1.500 - 1.500	No
Nickel	ng/m ³	9.68	5.66	18	6.869 - 12.501	10.77	6.39	9	5.859 - 15.690	No
Selenium	ng/m ³	1.10	1.43	18	0.393 - 1.813	1.59	1.67	9	0.305 - 2.867	No
Cadmium	ng/m ³	5.34	1.44	18	4.623 - 6.057	5.00	0.00	9	5.000 - 5.000	No

* Statistical significance determined by non-overlapping confidence intervals.

**CORONA MICRO-SCALE SITE
Inventory of Toxics (MATES Tables 1 & 2) and Sources of Potential Impact 5/27/1999**

fac.SIC	Activity type	Activity duration in hrs/day, days/wk, wks/yr	Main Mates II Pollutant Emitted	Emissions in Lbs/Month	Emish n lbs/hr, calc'd.	Methodology, (comments)
5812	Charbroiling	7,16,52	PAH	6.5×10^{-3}	1.5×10^{-5}	FLD/AQMD/TC, (2)
			B(a)P	3.5×10^{-4}	0.8×10^{-6}	(Estimated monthly use,
			Furans	3.0×10^{-2}	6.5×10^{-5}	operating parameters)
	N.G. Comb.	7,16,52	Formaldehyde	3.0×10^{-3}	6.5×10^{-6}	(Main specs. of ROG)
5541	Fuel stg/desp.	7,24,52	Benzene	0.45	6.7×10^{-4}	FLD/AQMD/TC
			Toluenes	4.8×10^{-2}	7.1×10^{-5}	(Estimated monthly sales,
			Xylenes	9.9×10^{-2}	1.5×10^{-4}	operating sched.)
5169	Wholesale	8,5,52	None	None	None	(Env. Chem. Wholesale)
3930						(AB2588)
5531	Sales	8,6,52	1,3-butadiene,toluene,styrene,mercaptans, other resid.mon. and plasticisers.	traces	traces	FLD/TC (From products profile)
3931	Spray Pnt&Siv	8,5,52	Acetone	1.0	0.6×10^{-2}	FLD/AQMD/TC
			Glycol ethers	1.2	7.5×10^{-3}	(Estimated usage, profiles,
			Methylene chloride	2.0	1.2×10^{-2}	and operating parameters).
5141	Sales	8,5,52	None	0	0	FLD/TC
5075	Sales	8,5,52	None	0	0	FLD/TC

Table 10. Annual Concentrations at Corona from the Microscale Emissions Inventory.

Pollutant	Obs. Conc. at UAM Pred.		ISCST3 Pred. Conc. - 1981 Meteorology				ISCST3 Pred. Conc. - 1998/99 Meteorology			
	Fixed Site (ug/m3)	Conc. (ug/m ³)	At Monitor ¹ (ug/m ³)	Maximum (ug/m ³)	UTM-E (km)	UTM-N (km)	At Monitor ¹ (ug/m ³)	Maximum (ug/m ³)	UTM-E (km)	UTM-N (km)
Acetone	7.48E+00	2.76E+00	2.87E-04	1.04E-02	445.95	3749.13	4.76E-04	1.35E-02	445.95	3749.15
Benzene	2.78E+00	2.29E+00	8.63E-04	3.90E-02	446.23	3748.90	5.34E-04	5.77E-02	446.23	3748.93
Benzo[a]pyrene	n.s.	n.m.	2.08E-05	5.91E-05	446.13	3749.20	2.73E-05	6.91E-05	446.13	3749.20
Formaldehyde	5.16E+00	4.51E+00	2.53E-04	7.21E-04	446.13	3749.20	3.33E-04	8.42E-04	446.13	3749.20
Furan	n.s.	n.m.	1.69E-03	4.80E-03	446.13	3749.20	2.22E-03	5.61E-03	446.13	3749.20
Glycol ethers	n.s.	n.m.	3.59E-03	1.30E-01	445.95	3749.13	5.95E-03	1.69E-01	445.95	3749.15
Methylene chloride	1.98E+00	5.50E-01	5.75E-03	2.08E-01	445.95	3749.13	9.51E-03	2.71E-01	445.95	3749.15
PAH	n.s.	n.m.	3.90E-04	1.11E-03	446.13	3749.20	5.12E-04	1.30E-03	446.13	3749.20
Toluene	1.05E+01	7.46E+00	9.14E-05	4.14E-03	446.23	3748.90	5.66E-05	6.11E-03	446.23	3748.93
Xylenes	6.73E+00	n.m.	1.93E-04	8.74E-03	446.23	3748.90	1.20E-04	1.29E-02	446.23	3748.93

¹ Location of the monitor site is 446.12 km UTM-E & 3749.23 UTM-N.
n.a. = not applicable; n.s. = not sampled; n.m. = not modeled

Table 11. Inhalation Cancer Risks at Corona from the Microscale Emissions Inventory.

Pollutant	Predicted Risks using 1981 Meteorology		Predicted Risks using 1998/99 Meteorology	
	At Monitor ¹	Maximum ²	At Monitor ¹	Maximum ³
Benzene	2.50E-08	2.91E-08	1.55E-08	1.67E-06
Benzo[a]pyrene	2.29E-08	6.50E-08	3.01E-08	2.14E-10
Formaldehyde	1.52E-09	4.32E-09	2.00E-09	1.42E-11
Methylene chloride	5.75E-09	7.25E-09	9.51E-09	7.20E-10
PAH	4.29E-07	1.22E-06	5.64E-07	4.01E-09
Total Cancer Risks	4.84E-07	1.33E-06	6.21E-07	1.68E-06

¹ Location is 446.12 km UTM-E & 3749.23 UTM-N

² Location is 446.13 km UTM-E & 3749.20 UTM-N

³ Location is 446.23 km UTM-E & 3748.93 UTM-N

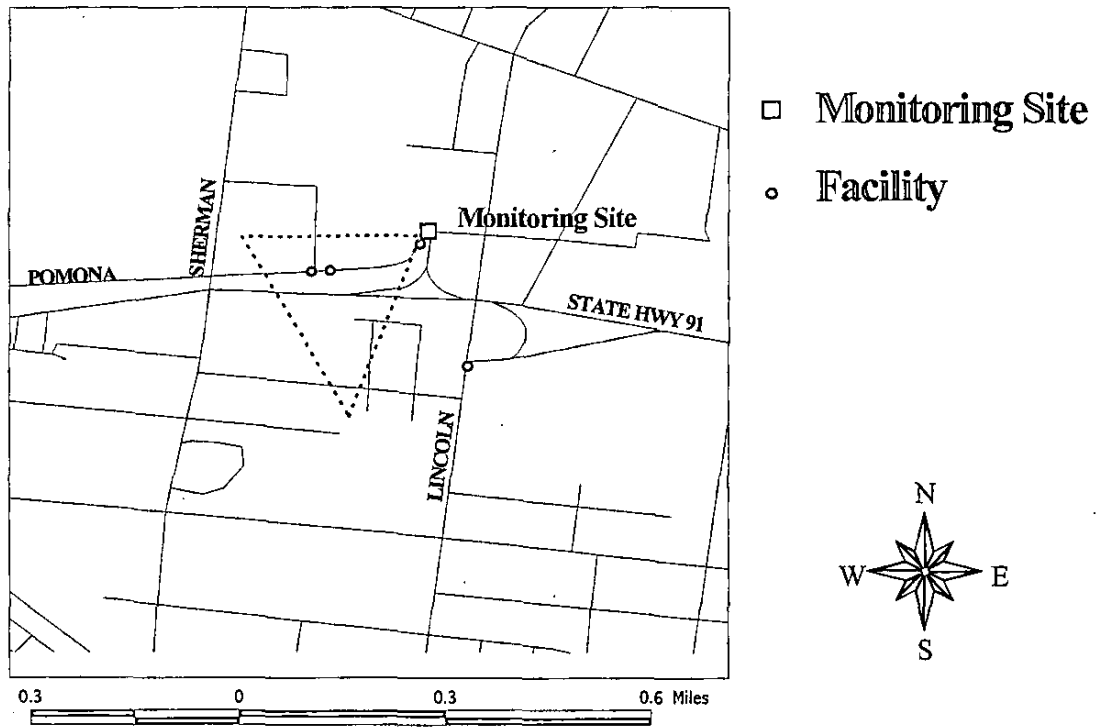


Figure 7. Local map showing the Corona microscale monitoring site and vicinity.

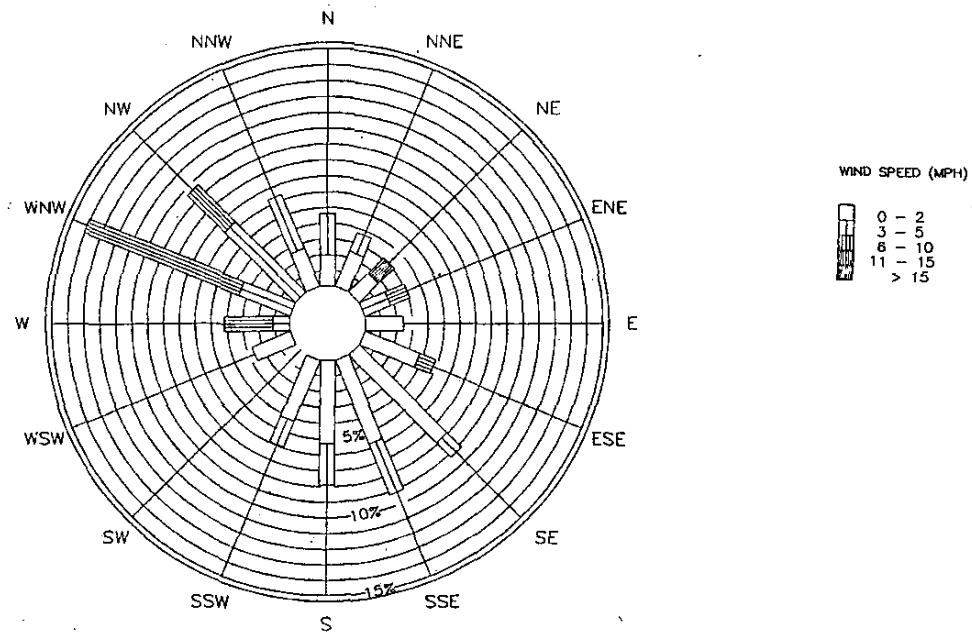


Figure 8. Wind rose for the period 10/22/98 to 11/25/98 at the Corona microscale monitoring site.

Microscale Site: Costa Mesa

Site Location: 2045 Meyer Street, Costa Mesa, CA 92627
(see Figure 9)

Sampling Period: 8/15/98 – 9/8/98

Nearest (paired) MATES-II Fixed Site: Anaheim
1010 S. Harbor Blvd., Anaheim

Approximate Distance between Microscale and Fixed Site Locations: 11.9 miles

Special Considerations: Sampling at this site occurred during the summer when onshore flows are very persistent during the daytime hours. The site was located several blocks to the northeast of a cluster of facilities. Except for San Pedro, this site is the closest to the shoreline of the microscale sites.

Wind Data: Winds were predominantly from the west-southwest approximately 31 percent of the time, indicating persistent daytime seabreezes during the sampling period. Very little nighttime drainage conditions (from the north through east) are evident. Some south-southeasterly winds occurred about 11 percent of the time, reflecting conditions of a "catalina eddy" wind circulation on occasion. (See wind rose in Figure 10.)

Statistical Comparisons of Measured Data: Observed concentrations of benzene, trichloroethylene, toluene, perchloroethylene, ethylbenzene, and xylene were higher at the fixed site of Anaheim, indicating that Anaheim has higher industrial, commercial, and mobile source activity relative to the microscale site of Costa Mesa (see Table 12).

The higher formaldehyde and acetone concentrations observed at Costa Mesa (Table 12) are probably an artifact of the differences in the microscale and fixed site sampling, as discussed earlier. The fixed site sampling consists of 24-hr cumulative samples whereas the microscale site consists of three 8-hr cumulative samples. The 24-hr average concentration from the three 8-hr samples tends to be higher than the 24-hr cumulative sample. This appears to be the cause of the significantly higher formaldehyde and acetone concentrations at Costa Mesa. (See also Chapter 6 of the main report for a discussion of this issue.)

Microscale Emissions Inventory: Nine pollutants were inventoried from the local sources, including four carcinogens. The total inventoried emissions are summarized in Table 2; individual facility emissions are provided in Table 13.

Modeling Results: As seen in Table 14, the predicted concentrations and locations of the maximum are similar for both meteorological data sets, although the 1998/99 meteorology yields higher predicted concentrations. With the exception of methyl ethyl ketone (MEK), predicted concentrations at the maximum receptor and at the monitor site from the microscale emission inventory are much lower than concentrations predicted by UAM using the basinwide emission inventory or the average concentrations observed at the nearest fixed site of Anaheim. Peak

predicted MEK concentrations are equivalent to average measured concentrations at Anaheim. It should be noted that the peak MEK concentration decreases by a factor of 400 between the source of the MEK and microscale monitoring site about one kilometer away. This degree of spatial variability was not observed in any of the sites sampled throughout the study.

Inhalation risks for the modeled carcinogens are shown in Table 15 for the two different meteorological data sets. Using the 1998/99 meteorological data yields somewhat higher risks. Total risks, at the peak receptor, are approximately 1 in one million and are much less than 1 in one million at the monitor site.

Summary:

- Measured concentrations indicate more industrial, commercial, and on-road activity at Anaheim than at Costa Mesa.
- The 1998/99 meteorology yields somewhat greater predicted concentrations and inhalation risks than the 1981 meteorology.
- The microscale emission inventory for Costa Mesa contributes very little to the observed cancer risks.

Table 12. Comparison of observed concentrations for the microscale and fixed site pair of Costa Mesa and Anaheim.

Pollutant	Units	Microscale Site - Costa Mesa			Fixed Site - Anaheim			Statistically significant?*		
		Mean	S.D.	N	90% Conf. Interval	Mean	S.D.		N	90% Conf. Interval
Chloromethane	ppb	0.53	0.20	10	0.392 - 0.674	0.57	0.05	6	0.512 - 0.621	No
Chloroethene	ppb	0.10	0.00	10	0.100 - 0.100	0.10	0.00	6	0.100 - 0.100	No
1,3 Butadiene	ppb	0.08	0.06	10	0.038 - 0.119	0.18	0.08	6	0.104 - 0.262	No
1,1 Dichloroethene	ppb	0.05	0.00	10	0.050 - 0.050	0.05	0.00	6	0.050 - 0.050	No
Methylene Chloride	ppb	0.73	0.71	10	0.221 - 1.239	0.40	0.13	6	0.267 - 0.533	No
1,1 Dichloroethane	ppb	0.05	0.00	10	0.050 - 0.050	0.05	0.00	6	0.050 - 0.050	No
Chloroform	ppb	0.05	0.00	10	0.050 - 0.050	0.05	0.00	6	0.050 - 0.050	No
Ethylene Dichloride	ppb	0.05	0.00	10	0.050 - 0.050	0.05	0.00	6	0.050 - 0.050	No
Benzene	ppb	0.32	0.22	10	0.159 - 0.471	0.72	0.20	6	0.502 - 0.931	Yes (fixed > micro)
Carbon Tetrachloride	ppb	0.10	0.00	10	0.100 - 0.100	0.10	0.00	6	0.100 - 0.100	No
Trichloroethene	ppb	0.05	0.00	10	0.050 - 0.050	0.15	0.08	6	0.069 - 0.231	Yes (fixed > micro)
Toluene	ppb	1.08	0.70	10	0.577 - 1.576	2.42	0.78	6	1.597 - 3.236	Yes (fixed > micro)
Ethylene Dibromide	ppb	0.05	0.00	10	0.050 - 0.050	0.05	0.00	6	0.050 - 0.050	No
Perchloroethylene	ppb	0.10	0.08	10	0.041 - 0.152	0.28	0.10	6	0.180 - 0.387	Yes (fixed > micro)
Ethylbenzene	ppb	0.13	0.08	10	0.073 - 0.190	0.48	0.28	6	0.191 - 0.776	Yes (fixed > micro)
(m+p)-Xylene	ppb	0.66	0.51	10	0.294 - 1.026	1.58	0.70	6	0.849 - 2.318	No
Styrene	ppb	0.26	0.44	10	-0.057 - 0.570	0.28	0.33	6	-0.063 - 0.629	No
o-Xylene	ppb	0.22	0.13	10	0.123 - 0.314	0.52	0.17	6	0.336 - 0.697	Yes (fixed > micro)
p-Dichlorobenzene	ppb	0.07	0.03	10	0.051 - 0.093	0.14	0.11	6	0.030 - 0.254	No
o-Dichlorobenzene	ppb	0.05	0.00	10	0.050 - 0.050	0.12	0.11	6	0.003 - 0.230	No
Formaldehyde	ppb	7.97	1.58	11	6.907 - 9.026	3.98	1.93	6	1.956 - 6.011	Yes (micro > fixed)
Acetaldehyde	ppb	2.52	0.93	11	1.893 - 3.144	1.90	1.00	5	0.668 - 3.140	No
Acetone	ppb	5.42	1.78	11	4.219 - 6.612	1.00	0.44	6	0.536 - 1.461	Yes (micro > fixed)
MEK	ppb	0.49	0.31	11	0.280 - 0.702	0.23	0.18	6	0.032 - 0.418	No
Hexavalent chromium	ng/m ³	0.21	0.21	10	0.064 - 0.358	0.18	0.07	6	0.100 - 0.254	No
Arsenic	ng/m ³	2.00	0.00	15	2.000 - 2.000	1.50	0.00	8	1.500 - 1.500	No
Nickel	ng/m ³	7.85	3.00	15	6.189 - 9.509	10.40	3.53	8	7.445 - 13.348	No
Selenium	ng/m ³	1.73	1.29	15	1.011 - 2.444	2.25	0.77	8	1.610 - 2.891	No
Cadmium	ng/m ³	5.00	0.00	15	5.000 - 5.000	5.00	0.00	8	5.000 - 5.000	No

* Statistical significance determined by non-overlapping confidence intervals.

**COSTA MESA MICRO-SCALE SITE
Inventory of Toxics (MATES Tables 1 & 2) and Sources of Potential Impact 2/12/1999**

fac.SIC	Activity type	Activity duration in hrs/day, days/wk, wks/yr	Main Mates II Pollutant Emitted	Emissions in Lbs/Month	Emission lbs/hr, calcd.	Methodology, (comments)
7532	Freon recov.	1,3,52	None	0	0	
	Spray booth	8,5,52	Xylene	6.6	4.1X10 ⁻²	FLD/AQMD/TC, ⁽²⁾
			Silica	2.0x10 ⁻⁴	1.3x10 ⁻⁶	(Process rate,MSDS,Operating parameters).
	Drying Oven	2,3,52	Hexamethylene diisocyanate	3.5x10 ⁻³	2.2x10 ⁻⁵	
			POM	4.4x10 ⁻⁷	1.8x10 ⁻⁹	
			Benzene	6.0x10 ⁻³	1.67x10 ⁻⁴	
			Formaldehyde	5.2x10 ⁻⁷	2.1X10 ⁻⁸	
3084	Pl./fiberglass tube	8,6,50	Acrylonitrile	5.8x10 ⁻⁵	3.0x10 ⁻⁷	FLD/TC,
			1,3-Butadiene	5.3x10 ⁻²	2.8x10 ⁻⁴	(Process rate, consumption, MSDS,emission profiles)
			MEK	14.8	7.8x10 ⁻²	
	Steam boiler	8,6,52	POM	1.1x10 ⁻⁶	5.73x10 ⁻⁹	
			Benzene	1.5x10 ⁻²	7.8x10 ⁻⁵	
			Formaldehyde	1.3x10 ⁻⁶	6.8x10 ⁻⁹	
7216	Dry cleaning	8,5,50	Perchloroethylene	0	0	FLD/AQMD/TC, (Purchasing info)
7389	Packaging	8,5,52	None	0	0	FLD/TC (common space with Costa Mesa Packaging). (Purchasing info.)
7389	Packaging	8,5,52	None	0	0	FLD/TC (common space with Ameri-Pak Industries.-- Facil. Info.)

Table 14. Annual Concentrations at Costa Mesa from the Microscale Emissions Inventory.

Pollutant	Obs. Conc. at UAM Pred.		ISCST3 Pred. Conc. - 1981 Meteorology				ISCST3 Pred. Conc. - 1998/99 Meteorology			
	Fixed Site (ug/m3)	Conc. (ug/m ³)	At Monitor ¹ (ug/m ³)	Maximum (ug/m ³)	UTM-E (km)	UTM-N (km)	At Monitor (ug/m ³)	Maximum (ug/m ³)	UTM-E (km)	UTM-N (km)
1,3-Butadiene	6.54E-01	3.70E-01	1.51E-05	6.05E-03	413.68	3722.93	1.61E-05	7.05E-03	413.68	3722.93
Acrylonitrile	n.s.	n.m.	1.62E-08	6.48E-06	413.68	3722.93	1.72E-08	7.55E-06	413.68	3722.93
Benzene	3.36E+00	3.14E+00	5.41E-06	1.71E-03	413.68	3722.93	5.82E-06	1.99E-03	413.68	3722.93
Formaldehyde	4.57E+00	4.48E+00	5.18E-10	1.50E-07	413.68	3722.93	5.59E-10	1.75E-07	413.68	3722.93
Hexamethylene-1,6	n.s.	n.m.	1.06E-06	3.11E-04	413.68	3723.00	1.18E-06	3.56E-04	413.68	3723.00
Methyl ethyl ketone	1.09E+00	1.20E+00	4.20E-03	1.68E+00	413.68	3722.93	4.48E-03	1.96E+00	413.68	3722.93
POM	n.s.	n.m.	4.39E-10	1.27E-07	413.68	3722.93	4.73E-10	1.47E-07	413.68	3722.93
Silica	n.s.	n.m.	6.26E-08	1.84E-05	413.68	3723.00	6.95E-08	2.11E-05	413.68	3723.00
Xylenes	7.95E+00	n.m.	1.97E-03	5.79E-01	413.68	3723.00	2.19E-03	6.64E-01	413.68	3723.00

¹ Location of the monitor site is 414.32 km UTM-E & 3723.39 UTM-N.

n.a. = not applicable; n.s. = not sampled; n.m. = not modeled

Table 15. Inhalation Cancer Risks at Costa Mesa from the Microscale Emissions Inventory.

Pollutant	Predicted Risks using 1981 Meteorology		Predicted Risks using 1998/99 Meteorology	
	At Monitor ¹	Maximum ²	At Monitor ¹	Maximum ³
1,3-Butadiene	2.57E-09	1.03E-06	2.73E-09	1.20E-06
Acrylonitrile	4.69E-12	1.88E-09	5.00E-12	2.19E-09
Benzene	1.57E-10	4.96E-08	1.69E-10	5.78E-08
Formaldehyde	3.11E-15	9.01E-13	3.35E-15	1.05E-12
Total Cancer Risks	2.73E-09	1.08E-06	2.91E-09	1.26E-06

¹ Location is 414.32 km UTM-E & 3723.39 UTM-N

² Location is 413.68 km UTM-E & 3722.93 UTM-N

³ Location is 413.68 km UTM-E & 3722.93 UTM-N

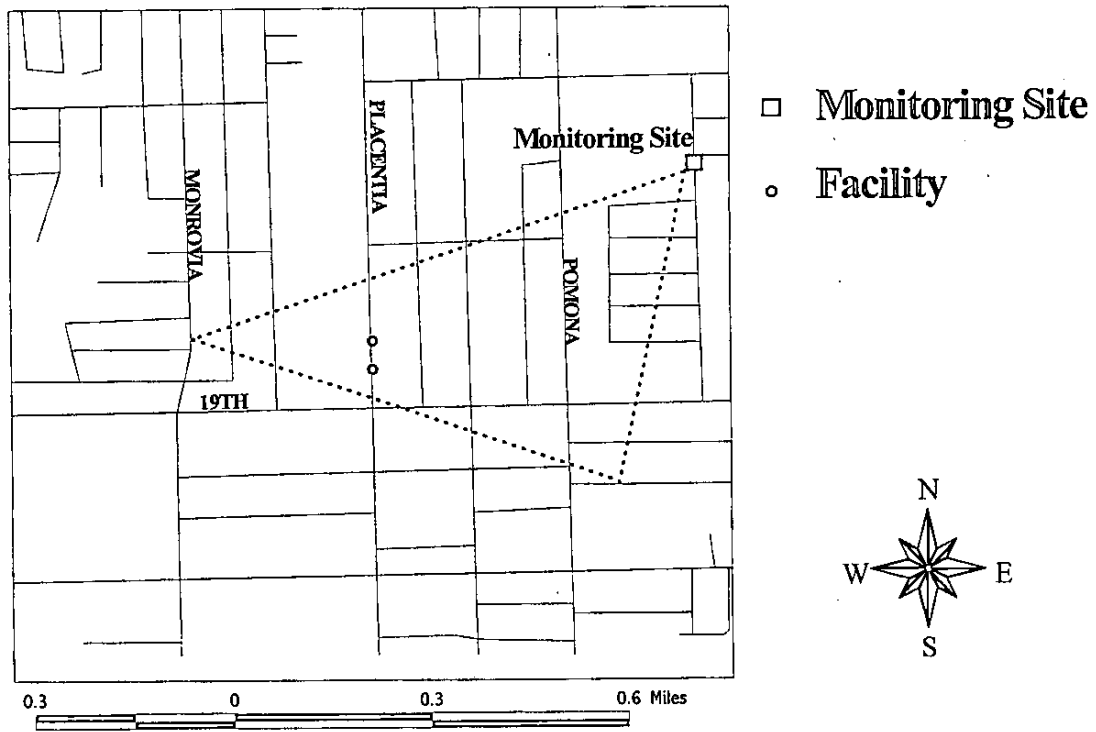


Figure 9. Local map showing the Costa Mesa microscale monitoring site and vicinity.

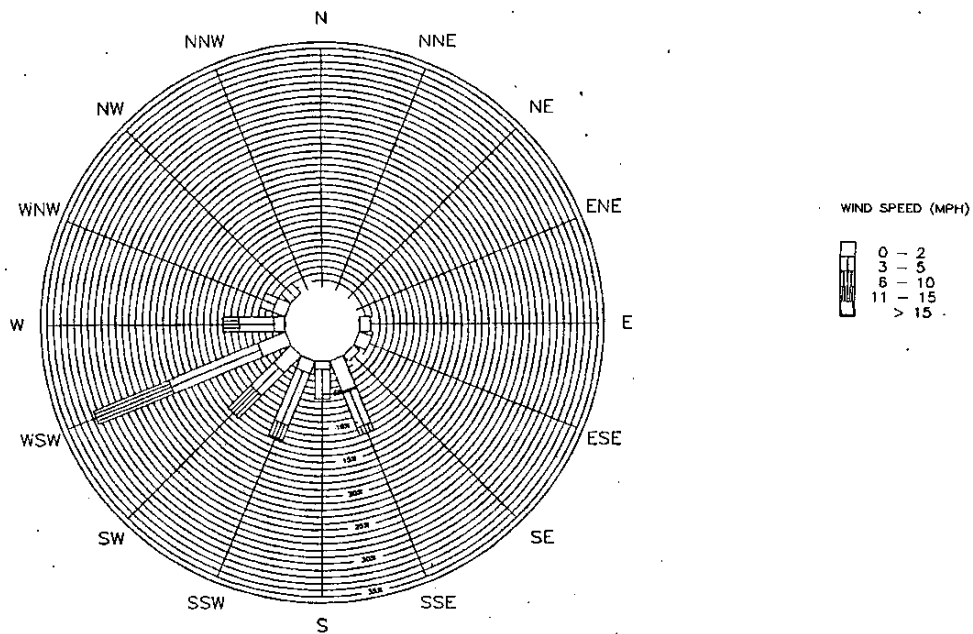


Figure 10. Wind rose for the period 8/15/98 to 9/8/98 at the Costa Mesa microscale monitoring site.

Microscale Site: Hawthorne

Site Location: 5234 W. 120th Street, Hawthorne, CA
(see Figure 11)

Sampling Period: (Seasonal Site)
5/9/98 – 6/2/98
7/13/98 – 8/13/98
10/7/98 – 11/11/98
1/6/99 – 2/23/99

Nearest (paired) MATES-II Fixed Site: Compton
720 N. Bullis Road, Compton, CA

Approximate Distance Between Microscale and Fixed Site Locations: 6.6 miles

Special Considerations: Hawthorne was selected as one of the "hybrid" microscale sites because: (1) it is at an existing AQMD air monitoring station (to maximize use of existing facilities); (2) it is in an area which is not associated with many stationary source facilities and therefore could be used more as a "background" site; and (3) the site serves as an EPA-designated "PAMS" site which has a historical record of speciated VOC's, including several key toxic compounds. Sampling occurred during each of the four seasons.

Wind Data: The wind rose in Figure 12 represents the period 7/1/98 to 3/31/99. The influence of the ocean is clearly evident. The sea breeze regime is seen from the predominance of southwest to west winds. The nighttime land breeze, from the northeast quadrant, is much less frequent and also the wind speeds are lighter than those associated with the sea breeze.

Statistical Comparisons of Measured Data: Concentrations of nine compounds were significantly higher at the fixed site (Compton) as compared to the microscale site (Hawthorne) as shown in Table 16. These pollutants include those associated with mobile sources (i.e., benzene, toluene, xylene, formaldehyde, and acetaldehyde) and others associated with stationary sources (i.e., methylene chloride and perchloroethylene). It appears that both stationary and mobile source influences are greater at Compton.

Microscale Emissions Inventory: No sources of toxic emissions were surveyed.

Modeling Results: No microscale modeling was performed since there were no local toxic emissions.

Summary:

- Measured concentrations indicate more industrial, commercial, and mobile source activity at Compton (fixed site) than at Hawthorne (microscale site).

Table 16. Comparison of observed concentrations for the microscale and fixed site pair of Hawthorne and Compton.

Pollutant	Units	Microscale Site - Hawthorne			Fixed Site - Compton			Statistically significant?*		
		Mean	S.D.	N	90% Conf. Interval	Mean	S.D.		N	90% Conf. Interval
Chloromethane	ppb	0.61	0.15	43	0.569 - 0.661	0.70	0.22	19	0.595 - 0.805	No
Chloroethene	ppb	0.10	0.00	43	0.100 - 0.100	0.10	0.00	19	0.100 - 0.100	No
1,3 Butadiene	ppb	0.36	0.37	43	0.248 - 0.476	0.62	0.42	19	0.415 - 0.824	No
1,1 Dichloroethene	ppb	0.05	0.00	43	0.050 - 0.050	0.05	0.00	19	0.050 - 0.050	No
Methylene Chloride	ppb	0.33	0.30	43	0.242 - 0.425	0.76	0.46	19	0.537 - 0.978	Yes (fixed > micro)
1,1 Dichloroethane	ppb	0.05	0.00	43	0.050 - 0.050	0.05	0.00	19	0.050 - 0.050	No
Chloroform	ppb	0.05	0.01	43	0.051 - 0.056	0.05	0.01	19	0.047 - 0.058	No
Ethylene Dichloride	ppb	0.05	0.00	43	0.050 - 0.051	0.05	0.00	19	0.050 - 0.050	No
Benzene	ppb	0.96	0.89	43	0.689 - 1.240	1.73	0.98	19	1.253 - 2.200	Yes (fixed > micro)
Carbon Tetrachloride	ppb	0.10	0.01	43	0.099 - 0.102	0.10	0.00	19	0.100 - 0.100	No
Trichloroethene	ppb	0.05	0.01	43	0.050 - 0.055	0.07	0.06	19	0.038 - 0.094	No
Toluene	ppb	2.64	2.23	43	1.951 - 3.322	5.42	3.18	19	3.885 - 6.947	Yes (fixed > micro)
Ethylene Dibromide	ppb	0.05	0.00	43	0.050 - 0.050	0.05	0.00	19	0.050 - 0.050	No
Perchloroethylene	ppb	0.26	0.22	43	0.187 - 0.323	0.51	0.33	19	0.349 - 0.672	Yes (fixed > micro)
Ethylbenzene	ppb	0.33	0.28	43	0.249 - 0.420	0.83	0.45	19	0.608 - 1.045	No
(m+p)-Xylene	ppb	1.38	1.13	43	1.032 - 1.728	3.17	1.74	19	2.333 - 4.014	Yes (fixed > micro)
Styrene	ppb	0.19	0.17	43	0.138 - 0.241	0.36	0.26	19	0.233 - 0.483	No
o-Xylene	ppb	0.49	0.37	43	0.374 - 0.601	1.05	0.59	19	0.771 - 1.335	Yes (fixed > micro)
p-Dichlorobenzene	ppb	0.12	0.07	43	0.097 - 0.141	0.25	0.15	19	0.174 - 0.321	Yes (fixed > micro)
o-Dichlorobenzene	ppb	0.06	0.03	43	0.049 - 0.065	0.08	0.09	19	0.035 - 0.118	No
Formaldehyde	ppb	1.84	2.20	41	1.150 - 2.538	5.11	2.41	18	3.912 - 6.308	Yes (fixed > micro)
Acetaldehyde	ppb	0.89	0.97	36	0.565 - 1.224	2.13	1.27	18	1.498 - 2.758	Yes (fixed > micro)
Acetone	ppb	1.24	1.76	39	0.670 - 1.809	1.63	1.29	18	0.990 - 2.274	No
MEK	ppb	0.30	0.32	30	0.177 - 0.419	0.40	0.37	18	0.211 - 0.579	No
Hexavalent chromium	ng/m ³	0.17	0.06	40	0.155 - 0.193	0.21	0.09	16	0.163 - 0.264	No
Arsenic	ng/m ³	2.00	0.00	30	2.000 - 2.000	1.50	0.00	12	1.500 - 1.500	No
Nickel	ng/m ³	8.77	5.55	30	6.701 - 10.846	9.23	7.58	12	4.410 - 14.048	No
Selenium	ng/m ³	2.62	2.64	30	1.637 - 3.612	2.17	3.40	12	0.010 - 4.331	No
Cadmium	ng/m ³	5.00	0.00	30	5.000 - 5.000	5.00	0.00	12	5.000 - 5.000	No

* Statistical significance determined by non-overlapping confidence intervals.

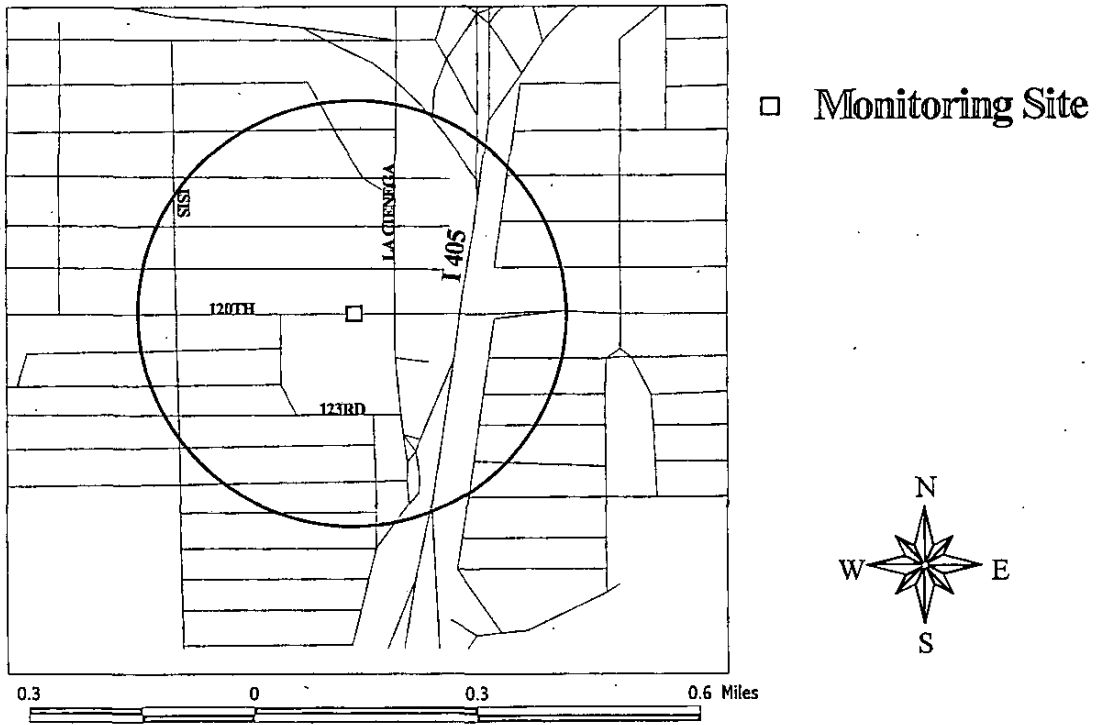


Figure 11. Local map showing the Hawthorne microscale monitoring site and vicinity.

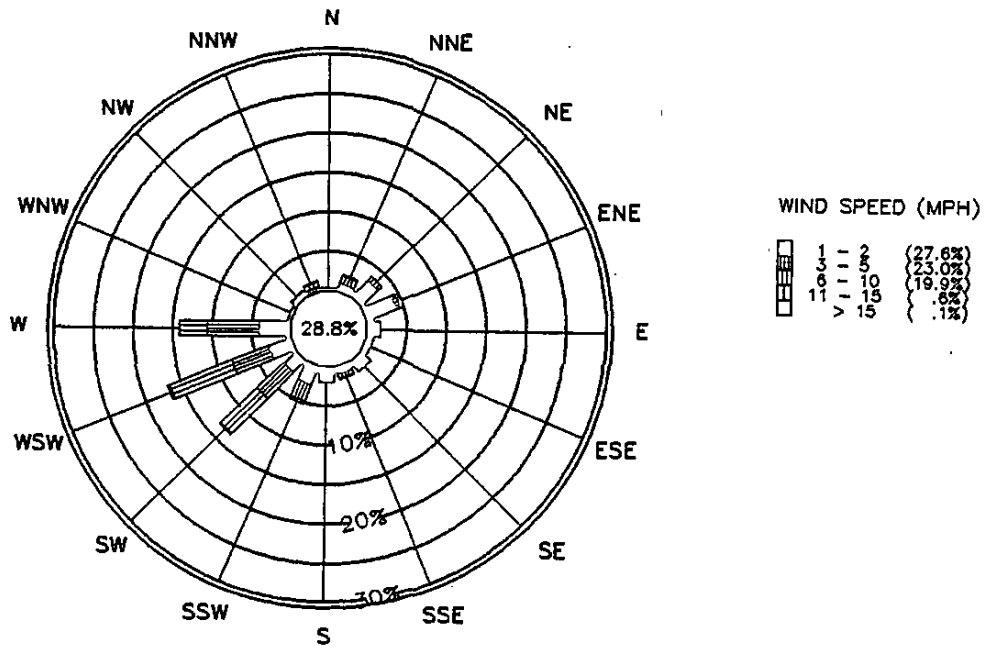


Figure 12. Wind rose for the Hawthorne microscale monitoring site.

Microscale Site: Montclair

Site Location: 5450 Deodar Street, Montclair, CA 91763
(see Figure 13)

Sampling Period: 7/2/98 – 8/1/98

Nearest (paired) MATES-II Fixed Site: Fontana
14360 Arrow Highway, Fontana

Approximate Distance Between Microscale and Fixed Site Locations: 11.3 miles

Special Considerations: Montclair was located immediately adjacent to the I-10 freeway, and was selected because of its proximity to mobile, rather than stationary sources. A residential area, where the platform was situated, was directly to the south and east of the freeway. Sampling was conducted in the summer when seabreeze conditions are dominant.

Wind Data: Winds were from the west to west-northwest a combined 65% of the time, indicating very strong persistence of the seabreeze during the sampling period. The wind direction was ideal to obtain influences from the freeway. (See the wind rose in Figure 14.)

Statistical Comparisons of Measured Data: As seen in Table 17, Montclair has greater mobile source influence as compared to Fontana, especially for formaldehyde. Although chloroform and trichloroethylene concentrations at Montclair are significantly higher than at Fontana, the results are deceiving since all measurements at Fontana (fixed site) and most of the measurements at Montclair were below the instrument detection level. This results in a comparison of two very similar means each with very small standard deviations. The levels of these two compounds are similar to those observed at other fixed sites.

Microscale Emissions Inventory: Three pollutants were inventoried from the local sources, including only one carcinogen. The total inventoried emissions are summarized in Table 2; individual facility emissions are provided in Table 18.

Modeling Results: As seen in Table 19, the predicted concentrations and locations of the maximum are similar for both meteorological data sets, although the 1981 meteorology yields higher predicted concentrations. Predicted concentrations at the maximum receptor and at the monitor site from the microscale emission inventory are much lower than concentrations predicted by UAM using the basinwide emission inventory or the average concentrations observed at the nearest fixed site of Fontana.

Inhalation risks for the modeled carcinogens are shown in Table 20 for the two different meteorological data sets. Using the 1981 meteorological data yields somewhat higher risks. Total risks, at the peak receptor, are approximately 2-3 in one million and are less than 1 in one million at the monitor site.

Summary:

- Measured concentrations indicate more on-road activity at Montclair than at Fontana.
- The 1981 meteorology yields somewhat greater predicted concentrations and inhalation risks than the 1998/99 meteorology.
- The microscale emission inventory for Montclair contributes very little to the observed cancer risks.

Table 17. Comparison of observed concentrations for the microscale and fixed site pair of Montclair and Fontana.

Pollutant	Units	Microscale Site - Montclair				Fixed Site - Fontana				Statistically significant?*
		Mean	S.D.	N	90% Conf. Interval	Mean	S.D.	N	90% Conf. Interval	
		Chloromethane	ppb	0.50	0.13	14	0.425 - 0.580	0.47	0.13		7	0.355 - 0.587	No
Chloroethene	ppb	0.10	0.00	14	0.100 - 0.100	0.10	0.00	7	0.100 - 0.100	No
1,3 Butadiene	ppb	0.31	0.23	14	0.171 - 0.441	0.13	0.07	7	0.064 - 0.193	No
1,1 Dichloroethene	ppb	0.05	0.00	14	0.050 - 0.050	0.05	0.00	7	0.050 - 0.050	No
Methylene Chloride	ppb	0.56	0.20	14	0.442 - 0.670	0.41	0.20	7	0.234 - 0.595	No
1,1 Dichloroethane	ppb	0.05	0.00	14	0.050 - 0.050	0.05	0.00	7	0.050 - 0.050	No
Chloroform	ppb	0.06	0.02	14	0.053 - 0.075	0.05	0.00	7	0.050 - 0.050	Yes (micro > fixed)
Ethylene Dichloride	ppb	0.05	0.00	14	0.050 - 0.050	0.05	0.00	7	0.050 - 0.050	No
Benzene	ppb	0.79	0.22	14	0.662 - 0.914	0.56	0.22	7	0.351 - 0.763	No
Carbon Tetrachloride	ppb	0.10	0.00	14	0.100 - 0.100	0.10	0.00	7	0.100 - 0.100	No
Trichloroethene	ppb	0.07	0.02	14	0.054 - 0.078	0.05	0.00	7	0.050 - 0.050	Yes (micro > fixed)
Toluene	ppb	3.31	1.20	14	2.617 - 4.007	2.50	1.11	7	1.470 - 3.530	No
Ethylene Dibromide	ppb	0.05	0.00	14	0.050 - 0.050	0.05	0.00	7	0.050 - 0.050	No
Perchloroethylene	ppb	0.34	0.16	14	0.243 - 0.428	0.21	0.14	7	0.075 - 0.339	No
Ethylbenzene	ppb	0.55	0.19	14	0.445 - 0.665	0.39	0.13	7	0.261 - 0.510	No
(m+p)-Xylene	ppb	2.24	0.91	14	1.719 - 2.764	1.24	0.47	7	0.806 - 1.679	Yes (micro > fixed)
Styrene	ppb	0.16	0.10	14	0.107 - 0.223	0.09	0.05	7	0.043 - 0.142	No
o-Xylene	ppb	0.86	0.30	14	0.691 - 1.033	0.46	0.25	7	0.234 - 0.695	No
p-Dichlorobenzene	ppb	0.26	0.11	14	0.192 - 0.320	0.24	0.13	7	0.125 - 0.361	No
o-Dichlorobenzene	ppb	0.09	0.05	14	0.059 - 0.112	0.07	0.06	7	0.019 - 0.124	No
Formaldehyde	ppb	14.78	4.26	6	10.312 - 19.248	4.47	3.84	5	-0.058 - 8.990	Yes (micro > fixed)
Acetaldehyde	ppb	6.46	2.07	6	4.284 - 8.638	2.71	2.76	5	-0.711 - 6.135	No
Acetone	ppb	9.53	2.26	6	7.163 - 11.905	1.95	1.24	5	0.409 - 3.483	Yes (micro > fixed)
MEK	ppb	0.78	0.40	6	0.353 - 1.198	0.27	0.15	3	-0.113 - 0.646	No
Hexavalent chromium	ng/m ³	0.20	0.00	10	0.200 - 0.200	0.21	0.11	7	0.113 - 0.313	No
Arsenic	ng/m ³	2.00	0.00	6	2.000 - 2.000	1.50	0.00	7	1.500 - 1.500	No
Nickel	ng/m ³	8.58	2.31	6	6.151 - 11.001	15.46	4.98	7	10.847 - 20.066	No
Selenium	ng/m ³	3.53	0.55	6	2.959 - 4.110	3.66	1.54	7	2.236 - 5.079	No
Cadmium	ng/m ³	5.00	0.00	6	5.000 - 5.000	5.00	0.00	7	5.000 - 5.000	No

* Statistical significance determined by non-overlapping confidence intervals.

**MONTCLAIR MICRO-SCALE SITE
Inventory of Toxics (WATES Tables 1 & 2) and Sources of Potential Impact 5/24/1999**

fac.SIC	Activity type	Activity duration in hrs/day, days/wk, wks/yr	Main Mates II Pollutant Emitted	Emissions in Lbs/Month	Emiss'n lbs/hr, calc'd.	Methodology, (comments)
5541	Storage/fueling	24,7,52	Benzene	0.675	1×10^{-3}	FLD/AQMD/TC, (Through-
			Toluene	0.149	2.2×10^{-4}	put, sales estimates)
			Xylene	7.2×10^{-2}	1.1×10^{-4}	
	Maint & Repair	10,6,52	Xylene, Toluene, MEK, Isopropyl Alcohol, Methylene Chloride, 1,1,1-Trichloroethane	Traces	Trace	(1/2 pints per month)
	Waste Oil	24,7,52	Toluene, Xylene, trace metals	Trace	Trace	(blow by resid. Evap.)
			BaP.			

Table 19. Annual Concentrations at Montclair from the Microscale Emissions Inventory.

Pollutant	Obs. Conc. at UAM Pred.		ISCST3 Pred. Conc. - 1981 Meteorology			ISCST3 Pred. Conc. - 1998/99 Meteorology				
	Fixed Site (ug/m3)	Conc. (ug/m ³)	At Monitor ¹ (ug/m ³)	Maximum (ug/m ³)	UTM-E (km)	UTM-N (km)	At Monitor ¹ (ug/m ³)	Maximum (ug/m ³)	UTM-E (km)	UTM-N (km)
Benzene	2.36E+00	2.39E+00	8.38E-04	1.09E-01	436.43	3771.83	7.11E-04	8.91E-02	436.40	3771.80
Toluene	9.12E+00	8.08E+00	1.84E-04	2.39E-02	436.43	3771.83	1.56E-04	1.96E-02	436.40	3771.80
Xylenes	5.43E+00	n.m.	9.21E-05	1.20E-02	436.43	3771.83	7.82E-05	9.80E-03	436.40	3771.80

¹ Location of the monitor site is 436.79 km UTM-E & 3771.63 UTM-N.
n.a. = not applicable; n.s. = not sampled; n.m. = not modeled

Table 20. Inhalation Cancer Risks at Montclair from the Microscale Emissions Inventory.

Pollutant	Predicted Risks using 1981 Meteorology		Predicted Risks using 1998/99 Meteorology	
	At Monitor ¹	Maximum ²	At Monitor ¹	Maximum ³
Benzene	2.43E-08	3.15E-06	2.06E-08	2.58E-06
Total Cancer Risks	2.43E-08	3.15E-06	2.06E-08	2.58E-06

¹ Location is 436.79 km UTM-E & 3771.63 UTM-N

² Location is 436.43 km UTM-E & 3771.83 UTM-N

³ Location is 436.40 km UTM-E & 3771.80 UTM-N

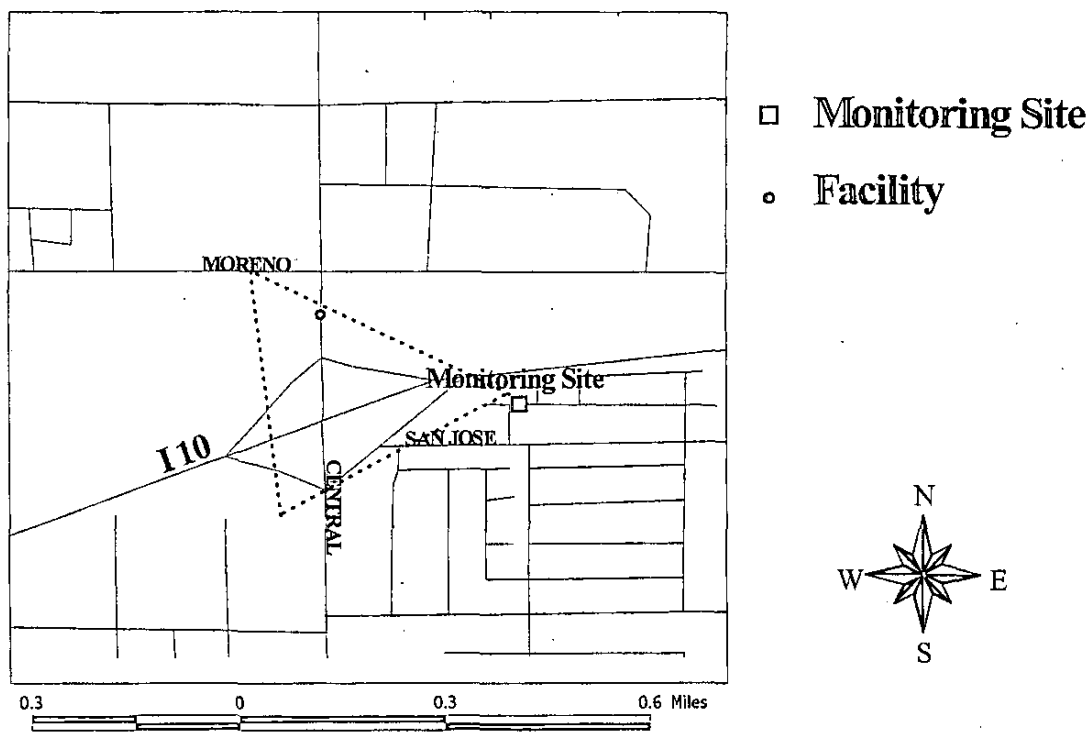


Figure 13. Local map showing the Montclair microscale monitoring site and vicinity.

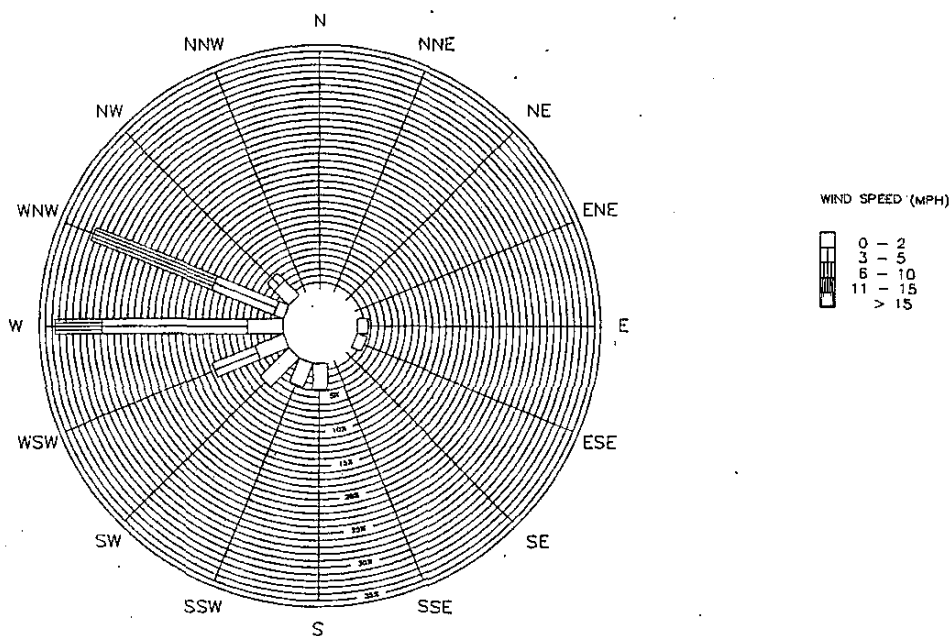


Figure 14. Wind rose for the period 7/2/98 to 8/1/98 at the Montclair microscale monitoring site.

Microscale Site: Norwalk

Site Location: 12901 Hoxie Avenue, Norwalk, CA 90650
(see Figure 15)

Sampling Period: 11/13/98 – 12/16/98

Nearest (paired) MATES-II Fixed Site: Compton
720 N. Bullis Road, Compton, CA

Approximate Distance between Microscale and Fixed Site Locations: 9.2 miles

Special Considerations: The platform was situated in a little-used area of a "park and ride" lot, immediately to the southeast of the intersection of the 605 and 105 freeways. A residential area was located just east of the platform. This site was selected specifically due to the potential dominant influence from mobile sources. Sampling occurred during the late fall season when more stagnant conditions tend to prevail.

Wind Data: Winds tended to be very light, with hourly winds in excess of 5 mph occurring only about 3 percent of the time. Winds were spread in virtually all directions, with north winds predominant, occurring 14 percent of the time. Secondly, winds from the west occurred about 10 percent of the time. The ideal wind direction from the west-northwest occurred only about 2 percent of the time, although the westerly winds would also be favorable for detecting influences from the 604 freeway. (See wind rose in Figure 16.)

Statistical Comparisons of Measured Data: As seen in Table 21, measured trichloroethylene, acetaldehyde, and acetone concentrations were higher at Norwalk. The trichloroethylene results are deceiving since all measurements at Compton and most of the measurements at Norwalk were below the instrument detection level. This results in a comparison of two very similar means each with very small standard deviations. The significant differences in the acetaldehyde and acetone concentrations may be an artifact of the different sampling methods for the two sites as discussed earlier. The fixed site sampling (Compton) consists of 24-hr cumulative sample whereas the microscale site (Norwalk) consists of three 8-hr cumulative samples. The 24-hr average from the three 8-hr samples tends to higher than the 24-hr cumulative sample. Note that although Norwalk was selected because of its proximity to mobile sources (at the convergence of the 105 and 605 freeways), there are no appreciable differences in observed levels of key mobile source compounds.

Microscale Emissions Inventory: No sources of toxic emissions were surveyed.

Modeling Results: No microscale modeling was performed since there were no local toxic emissions.

Summary:

- Although Norwalk was chosen because of its proximity to mobile sources, the observed concentrations of key mobile source constituents (i.e., 1,3 butadiene, benzene, and toluene) are very similar to those at the nearest fixed site of Compton.

Table 21. Comparison of observed concentrations for the microscale and fixed site pair of Norwalk and Compton.

Pollutant	Units	Microscale Site - Norwalk			Fixed Site - Compton			Statistically significant?*		
		Mean	S.D.	N	90% Conf. Interval	Mean	S.D.		N	90% Conf. Interval
Chloromethane	ppb	0.71	0.11	12	0.633 - 0.778	0.71	0.13	7	0.590 - 0.839	No
Chloroethene	ppb	0.10	0.00	12	0.100 - 0.100	0.10	0.00	7	0.100 - 0.100	No
1,3 Butadiene	ppb	0.73	0.28	12	0.557 - 0.913	0.88	0.47	7	0.442 - 1.314	No
1,1 Dichloroethene	ppb	0.05	0.00	12	0.050 - 0.050	0.05	0.00	7	0.050 - 0.050	No
Methylene Chloride	ppb	0.96	0.56	12	0.603 - 1.319	0.86	0.59	7	0.316 - 1.399	No
1,1 Dichloroethane	ppb	0.05	0.00	12	0.050 - 0.050	0.05	0.00	7	0.050 - 0.050	No
Chloroform	ppb	0.06	0.02	12	0.048 - 0.079	0.05	0.00	7	0.050 - 0.050	No
Ethylene Dichloride	ppb	0.05	0.00	12	0.050 - 0.050	0.05	0.00	7	0.050 - 0.050	No
Benzene	ppb	2.17	0.89	12	1.606 - 2.733	2.27	0.98	7	1.361 - 3.182	No
Carbon Tetrachloride	ppb	0.10	0.00	12	0.100 - 0.100	0.10	0.00	7	0.100 - 0.100	No
Trichloroethene	ppb	0.06	0.01	12	0.053 - 0.069	0.05	0.00	7	0.050 - 0.050	Yes (micro > fixed)
Toluene	ppb	6.36	2.92	12	4.505 - 8.211	7.51	3.56	7	4.224 - 10.805	No
Ethylene Dibromide	ppb	0.05	0.00	12	0.050 - 0.050	0.05	0.00	7	0.050 - 0.050	No
Perchloroethylene	ppb	0.59	0.34	12	0.372 - 0.803	0.66	0.44	7	0.247 - 1.067	No
Ethylbenzene	ppb	0.85	0.43	12	0.573 - 1.125	1.27	0.42	7	0.880 - 1.663	No
(m+p)-Xylene	ppb	3.56	1.76	12	2.446 - 4.677	4.91	1.87	7	3.188 - 6.641	No
Styrene	ppb	0.37	0.24	12	0.218 - 0.518	0.34	0.24	7	0.117 - 0.568	No
o-Xylene	ppb	1.19	0.56	12	0.837 - 1.549	1.50	0.75	7	0.810 - 2.190	No
p-Dichlorobenzene	ppb	0.12	0.07	12	0.079 - 0.165	0.29	0.14	7	0.161 - 0.425	No
o-Dichlorobenzene	ppb	0.05	0.00	12	0.050 - 0.050	0.10	0.13	7	-0.022 - 0.222	No
Formaldehyde	ppb	8.19	3.24	12	6.127 - 10.247	5.13	2.29	7	3.009 - 7.249	No
Acetaldehyde	ppb	3.69	1.47	12	2.759 - 4.630	2.23	0.54	7	1.733 - 2.732	Yes (micro > fixed)
Acetone	ppb	10.03	4.89	12	6.925 - 13.135	3.45	2.36	7	1.263 - 5.628	Yes (micro > fixed)
MEK	ppb	1.12	0.77	12	0.631 - 1.607	0.65	0.39	7	0.288 - 1.014	No
Hexavalent chromium	ng/m ³	0.19	0.13	12	0.104 - 0.267	0.28	0.14	7	0.146 - 0.408	No
Arsenic	ng/m ³	2.00	0.00	11	2.000 - 2.000	1.50	0.00	7	1.500 - 1.500	No
Nickel	ng/m ³	8.41	5.29	11	4.852 - 11.960	9.26	9.64	7	0.347 - 18.179	No
Selenium	ng/m ³	2.26	1.75	11	1.086 - 3.436	3.61	4.25	7	-0.323 - 7.541	No
Cadmium	ng/m ³	5.00	0.00	11	5.000 - 5.000	5.00	0.00	7	5.000 - 5.000	No

* Statistical significance determined by non-overlapping confidence intervals.

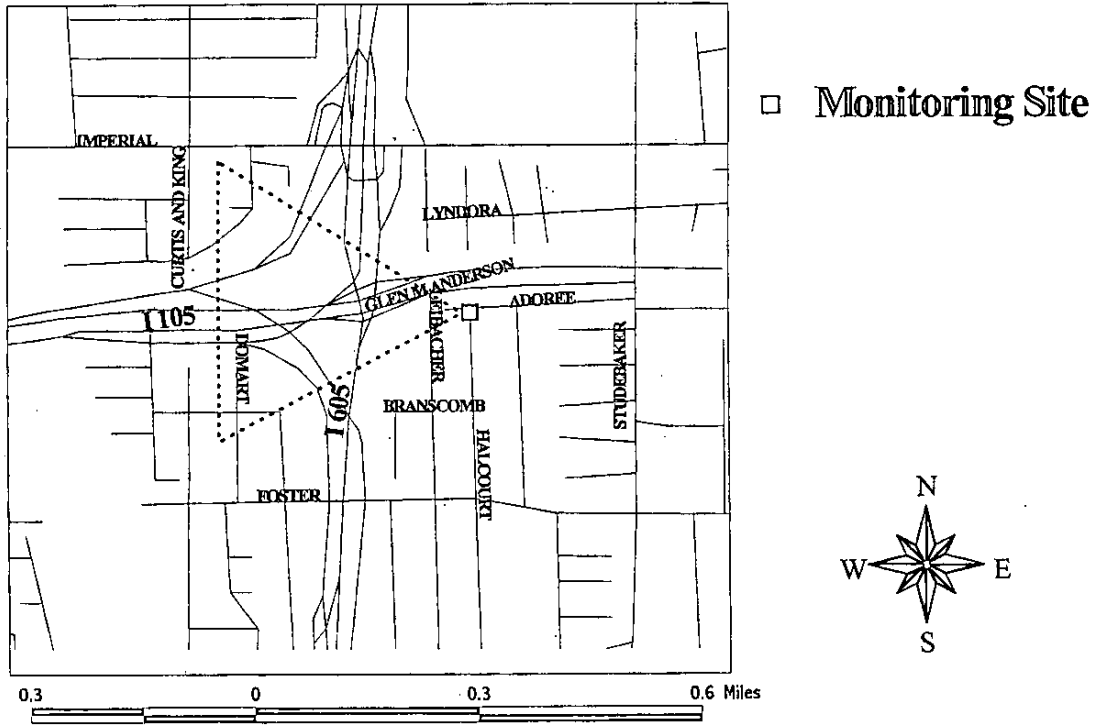


Figure 15. Local map showing the Norwalk microscale monitoring site and vicinity.

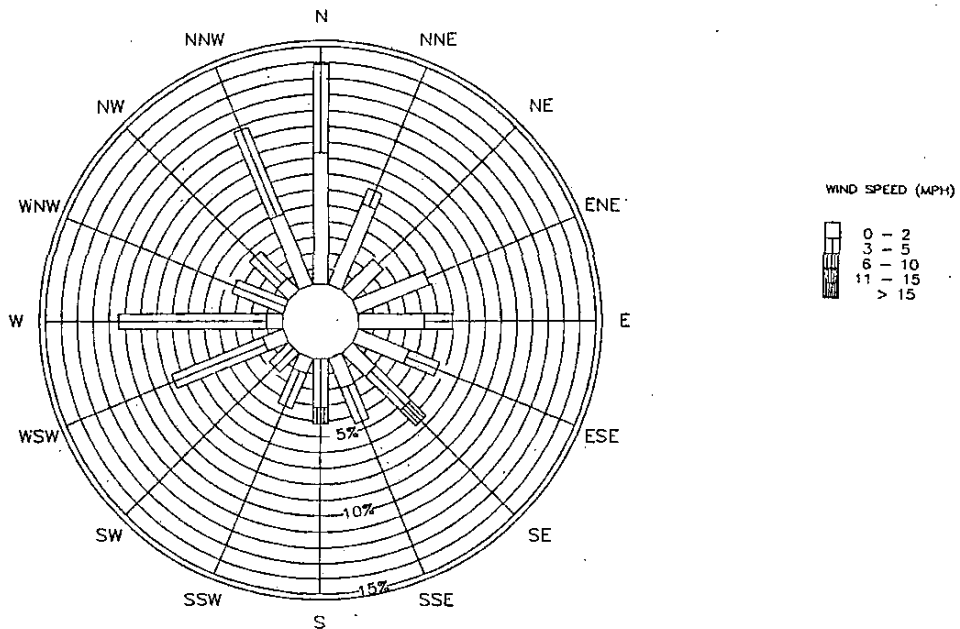


Figure 16. Wind rose for the period 11/13/98 to 12/16/98 at the Norwalk microscale monitoring site.

Microscale Site: Pacoima

Site Location: 11251 Glenoaks Blvd., Pacoima, CA 91331
(see Figure 17)

Sampling Period: (Seasonal site)
6/27/98 – 9/14/98
11/18/98 – 12/13/98
1/15/99 – 2/23/99

Nearest (paired) MATES-II Fixed Site: Burbank
228 W. Palm Avenue, Burbank

Approximate Distance Between Microscale and Fixed Site Locations: 8.7 miles

Special Considerations: Pacoima was selected as one of the "hybrid" microscale sites to obtain data over at least one month in each of the four seasons. Because the site did not begin operating until early summer, the initial sampling period was extended for a full 3-month period. The site was situated in a lot next to a youth group facility, and across the street from a senior citizens' center. Residences were located immediately to the west of the site.

Wind Data: The wind rose in Figure 18 represents the period 7/22/98 to 2/26/99. The wind conditions at Pacoima are determined by two dominant flow regimes. Daytime flow is predominately from the south-southeast to south directions, whereas nighttime flow is from the north-northeast. Wind speeds are lighter at night, rarely getting above 2 mph. The daytime wind speeds are somewhat stronger, most often in the range from 3 to 5 mph.

Statistical Comparisons of Measured Data: Very similar, except that Burbank has significantly greater levels of perchloroethylene and formaldehyde (see Table 22).

Microscale Emissions Inventory: 24 pollutants were inventoried from the local environment, including seven carcinogens. The total inventoried emissions are summarized in Table 2; individual facility emissions are provided in Table 23.

Modeling Results: As seen in Table 24, the predicted concentrations and locations of the maximum are similar for both meteorological data sets, although the 1998/99 meteorology more often yields higher predicted concentrations. Except for methyl ethyl ketone and perchloroethylene, predicted concentrations at the maximum receptor and at the monitor site from the microscale emission inventory are generally much lower than concentrations predicted by UAM using the basinwide emission inventory or the average concentrations observed at the nearest fixed site of Burbank.

Inhalation risks for the modeled carcinogens are shown in Table 25 for the two different meteorological data sets. Using the 1998/99 meteorological data yields higher risks at the peak receptor whereas the 1981 meteorology yields slightly higher risks at the monitor. Total risks, at the peak receptor, are 14-21 in one million and are less than 1 in one million at the monitor site.

Summary:

- Measured toxic concentrations are very similar at Pacoima and Burbank except for perchloroethylene and formaldehyde, which are higher at Burbank.
- Overall the 1998/99 meteorological data yields higher predicted concentrations and risk than the 1981 meteorological data.
- Except for the pollutants of methyl ethyl ketone and perchloroethylene, predicted concentrations from the local emissions are much lower than average concentrations observed at Burbank or concentrations predicted by UAM using basinwide emissions.

Table 22. Comparison of observed concentrations for the microscale and fixed site pair of Pacoima and Burbank.

Pollutant	Units	Microscale Site - Pacoima			Fixed Site - Burbank			Statistically significant?*		
		Mean	S.D.	N	90% Conf. Interval	Mean	S.D.		N	90% Conf. Interval
Chloromethane	ppb	0.59	0.16	43	0.543 - 0.642	0.63	0.17	21	0.554 - 0.713	No
Chloroethene	ppb	0.10	0.00	43	0.100 - 0.100	0.10	0.00	21	0.100 - 0.100	No
1,3 Butadiene	ppb	0.35	0.20	43	0.291 - 0.415	0.46	0.34	21	0.302 - 0.614	No
1,1 Dichloroethene	ppb	0.05	0.00	43	0.050 - 0.050	0.05	0.00	21	0.050 - 0.050	No
Methylene Chloride	ppb	0.51	0.24	43	0.438 - 0.585	0.86	0.68	21	0.548 - 1.167	No
1,1 Dichloroethane	ppb	0.05	0.00	43	0.050 - 0.050	0.05	0.00	21	0.050 - 0.050	No
Chloroform	ppb	0.05	0.01	43	0.049 - 0.056	0.06	0.02	21	0.054 - 0.075	No
Ethylene Dichloride	ppb	0.05	0.00	43	0.050 - 0.050	0.05	0.00	21	0.050 - 0.050	No
Benzene	ppb	1.06	0.47	43	0.913 - 1.200	1.35	0.91	21	0.932 - 1.763	No
Carbon Tetrachloride	ppb	0.10	0.00	43	0.100 - 0.100	0.10	0.00	21	0.100 - 0.100	No
Trichloroethene	ppb	0.06	0.03	43	0.051 - 0.071	0.05	0.01	21	0.047 - 0.057	No
Toluene	ppb	3.49	1.29	43	3.087 - 3.883	4.90	3.28	21	3.404 - 6.391	No
Ethylene Dibromide	ppb	0.05	0.00	43	0.050 - 0.050	0.05	0.00	21	0.050 - 0.050	No
Perchloroethylene	ppb	0.31	0.18	43	0.256 - 0.367	0.68	0.59	21	0.408 - 0.949	Yes (fixed > micro)
Ethylbenzene	ppb	0.49	0.22	43	0.424 - 0.559	0.59	0.36	21	0.422 - 0.749	No
(m+p)-Xylene	ppb	2.01	0.83	43	1.752 - 2.261	2.29	1.49	21	1.613 - 2.967	No
Styrene	ppb	0.15	0.09	43	0.123 - 0.180	0.30	0.50	21	0.075 - 0.525	No
o-Xylene	ppb	0.75	0.35	43	0.639 - 0.855	0.80	0.50	21	0.579 - 1.031	No
p-Dichlorobenzene	ppb	0.18	0.13	43	0.138 - 0.217	0.17	0.13	21	0.110 - 0.233	No
o-Dichlorobenzene	ppb	0.06	0.02	43	0.050 - 0.061	0.06	0.04	21	0.046 - 0.078	No
Formaldehyde	ppb	2.83	1.82	43	2.275 - 3.395	6.12	2.94	20	4.743 - 7.500	Yes (fixed > micro)
Acetaldehyde	ppb	4.25	6.36	38	2.158 - 6.340	3.00	1.45	20	2.319 - 3.681	No
Acetone	ppb	1.87	2.26	43	1.172 - 2.562	2.87	2.49	20	1.705 - 4.040	No
MEK	ppb	0.44	0.46	34	0.277 - 0.596	0.65	0.60	16	0.323 - 0.967	No
Hexavalent chromium	ng/m ³	0.20	0.08	43	0.174 - 0.224	0.25	0.12	19	0.188 - 0.305	No
Arsenic	ng/m ³	2.00	0.00	28	2.000 - 2.000	1.50	0.00	17	1.500 - 1.500	No
Nickel	ng/m ³	7.63	5.45	28	5.519 - 9.743	9.74	5.57	17	6.874 - 12.604	No
Selenium	ng/m ³	1.47	1.64	28	0.833 - 2.102	2.43	2.00	17	1.406 - 3.459	No
Cadmium	ng/m ³	5.00	0.00	28	5.000 - 5.000	16.04	45.53	17	-7.368 - 39.455	No

* Statistical significance determined by non-overlapping confidence intervals.

**PACOIMA MICRO-SCALE SITE (Within 1/3 Mile radius from monitor / circumscribed area---year round)
Inventory of Toxics (MATES Tables) and Sources of Potential Impact 5/14/1999**

fac.SIC	Activity type	Activity duration in hrs/day, days/wk, wks/yr	Main Mates II Pollutant Emitted	Emissions in Lbs/Month	Emiss'n lbs/hr, calcd.	Methodology, (comments)
8211	gas comb.	8,5,48	benzene	2.9x10-4	1.8x10-6	FLD/TC/AQMD
			formaldehyde	2.9x10-6	1.8x10-8	
			otr.VOC and PAH trace pol.	trace	trace	
	maintenance	8,5,48	none	0	0	(N.G. feedback ...negl)
	Gasoline/gen		none	0	0	(not used or tested in yr)
3599	soldrng/levelng	12,5,52	lead	0.046	1.3x10-4	FLD/TC/AQMD
			HCL	trace	trace	(Permit evals)
	etchng	12,5,52	copper	trace	trace	
			ammonia	10	4.0x10-2	
	plng/stpr/rnse	8,5,52	phosphoric acid	3.2x10-2	2x10-4	
			copper	6.2x10-3	3.9x10-6	
			lead	9.4x10-3	1.5x10-5	
			sulfuric acid	0.19	1.2x10-3	
	wste wtr trtmt	24,7,52	ammonia	trace	trace	
			copper	trace	trace	
			lead	trace	trace	
			HCL	trace	trace	
			Sulfuric acid	trace	trace	
			phosphoric acid	trace	trace	
5541	fuelng/stg	24,7,52	benzene	6.8x10-2	1.0x10-4	FLD/TC/AQMD
			toluene	1.4x10-2	2.2x10-5	(est. mnthly throughputs)
			xylene	7.2x10-3	1.1x10-5	
			EDB	traces	traces	
			EDC	traces	traces	
	maintenance	8,5,52	none	0	0	
5541	fuelng/stg	24,7,52	benzene	7.5x10-2	1.1x10-4	FLD/TC/AQMD
			toluene	1.6x10-2	2.4x10-5	(No fuels since 2/99)
			xylene	8.0x10-3	1.2x10-5	
			EDB	traces	traces	
			EDC	traces	traces	

**PACOIMA MICRO-SCALE SITE (Within 1/3 Mile radius from monitor / circumscribed area---year round)
Inventory of Toxics (MATES Tables) and Sources of Potential Impact 5/14/1999**

	maintenance	8,5,52	none	0	0		
7216	Perc. dry cln	3,6,52	perchloroethylene	28	0.25	FLD/TC/AQMD	
8211	N.G. comb.	8,5,48	benzene	3.3x10-4	2.1x10-6	FLD/TC/AQMD	
			formaldehyde	3.3x10-6	2.1x10-8		
			oth. VOC and PAH trace pol.	trace	trace		
	maintenance		none	0	0	(N.G. feedback....negl)	
	gasol. Gen		none	0	0	(No run/fest per maint. Dept.)	
	Charbroiling	16,7,52	PAH	1.4x10-3	3.2x10-6	FLD/TC/AQMD	
			P(a)B	7.9x10-5	1.8x10-7		
			furans	6.7x10-3	1.5x10-5		
	N.G. comb./oth		aldehydes	4.2x10-3	8.8x10-6		
			benzene	trace	trace		
3479	coatings/clng	7,24,52	propylene oxide	1.74	2.6x10-3	FLD/TC/AQMD	
			propylene glycol	4.0	6.0x10-3	(Estim. usage and MSDS)	
			isopropanol	15.2	2.3x10-2	(some open	
			toluene	31.6	4.7x10-2	spray)	
			MEK	19.3	2.9x10-2		
			xylene	10.9	1.6x10-2		
			dibutyl phthalate	1.72	2.6x10-3		
			carbon black	4.3x10-3	6.4x10-6		
			hexane	1.4	2.1x10-3		
			methanol	6.1	9.1x10-3		
			propyl glycol monmethyl acetate	0.6	8.9x10-4		
			glycol ether	0.8	1.2x10-3		
			silica	trace	trace		
			acetone	4.7	7.0x10-3		
			urethane	trace	trace		
			acrylonitrile	trace	trace		

**PACOIMA MICRO-SCALE SITE (Within 1/3 Mile radius from monitor / circumscribed area---year round)
Inventory of Toxics (MATES Tables) and Sources of Potential Impact 5/14/1999**

Service	none	0	0	0	FLD/TC
Service	none	0	0	0	FLD/TC
5541 Inactive site		0	0	0	FLD/TC/AQMD
3499 N.G.comb. burn off/aft brn pwrdr spr ctng oven,pdr ctng Zinc die cstrng	8,5,52 Formaldehyde,benzene, dioxins, furans, phosgene silicon,trace metals benzene, phenol Arsenic, cadmium	0	0	0	FLD/TC/AQMD (fully on line in 1/99...negl operation during monitoring yr.)...secured data for '99.
7394 was inactive '98		0	0	0	FLD/TC/AQMD (new Appl filed 2/99)

Table 24. Annual Concentrations at Pacoima from the Microscale Emissions Inventory.

Pollutant	Obs. Conc. at Fixed Site (ug/m3)		UAM Pred. Conc. (ug/m ³)		ISCST3 Pred. Conc. - 1981 Meteorology			ISCST3 Pred. Conc. - 1998/99 Meteorology		
	Obs. Conc. at Fixed Site (ug/m3)	UAM Pred. Conc. (ug/m ³)	At Monitor ¹ (ug/m ³)	Maximum (ug/m ³)	UTM-E (km)	UTM-N (km)	At Monitor ¹ (ug/m ³)	Maximum (ug/m ³)	UTM-E (km)	UTM-N (km)
Acetone	6.53E+00	2.07E+00	3.60E-03	6.10E-01	370.30	3793.43	5.00E-03	8.10E-01	370.33	3793.38
Aldehydes	n.s.	n.m.	5.00E-05	5.50E-04	370.13	3793.28	3.70E-05	3.90E-04	370.15	3793.23
Ammonia	n.s.	n.m.	7.70E-03	1.50E+00	370.43	3792.85	9.10E-03	1.40E+00	370.45	3792.80
Benzene	4.06E+00	2.30E+00	1.10E-03	1.30E-02	370.08	3793.25	1.20E-03	9.00E-03	370.08	3793.25
Benzofluorene	n.s.	n.m.	1.00E-06	1.10E-05	370.13	3793.28	7.50E-07	7.90E-06	370.15	3793.23
Carbon black	n.s.	n.m.	3.30E-06	5.60E-04	370.30	3793.43	4.50E-06	7.40E-04	370.33	3793.38
Copper	5.23E-02	n.m.	5.00E-07	9.70E-05	370.43	3792.85	5.90E-07	8.80E-05	370.45	3792.80
Dibutyl phthalate	n.s.	n.m.	1.30E-03	2.30E-01	370.30	3793.43	1.80E-03	3.00E-01	370.33	3793.38
Formaldehyde	6.47E+00	4.43E+00	8.30E-10	3.60E-07	369.68	3792.90	1.60E-09	6.70E-07	369.68	3792.90
Furans	n.s.	n.m.	8.60E-05	9.30E-04	370.13	3793.28	6.20E-05	6.60E-04	370.15	3793.23
Glycol ethers	n.s.	n.m.	6.20E-04	1.10E-01	370.30	3793.43	8.50E-04	1.40E-01	370.33	3793.38
Hexane	n.s.	n.m.	1.10E-03	1.80E-01	370.30	3793.43	1.50E-03	2.40E-01	370.33	3793.38
Isopropanol	n.s.	n.m.	1.20E-02	2.00E+00	370.30	3793.43	1.60E-02	2.70E+00	370.33	3793.38
Lead	1.74E-02	4.10E-02	2.70E-05	5.20E-03	370.43	3792.85	3.20E-05	4.70E-03	370.45	3792.80
Methanol	n.s.	n.m.	4.70E-03	8.00E-01	370.30	3793.43	6.50E-03	1.00E+00	370.33	3793.38
Methyl ethyl ketone	1.65E+00	1.43E+00	1.50E-02	2.50E+00	370.30	3793.43	2.10E-02	3.30E+00	370.33	3793.38
PAH	n.s.	n.m.	1.80E-05	2.00E-04	370.13	3793.28	1.30E-05	1.40E-04	370.15	3793.23
Perchloroethylene	3.60E+00	1.88E+00	0.00E+00	2.40E+00	370.00	3793.38	0.00E+00	3.60E+00	370.00	3793.38
Phosphoric acid	n.s.	n.m.	2.60E-05	5.00E-03	370.43	3792.85	3.00E-05	4.50E-03	370.45	3792.80
Propylene glycol	n.s.	n.m.	3.60E-03	6.00E-01	370.30	3793.43	4.90E-03	7.90E-01	370.33	3793.38
Propylene oxide	n.s.	n.m.	1.30E-03	2.30E-01	370.30	3793.43	1.80E-03	3.00E-01	370.33	3793.38
Sulfuric acid	n.s.	n.m.	1.50E-04	3.00E-02	370.43	3792.85	1.80E-04	2.70E-02	370.45	3792.80
Toluene	1.57E+01	8.28E+00	2.50E-02	4.10E+00	370.30	3793.43	3.40E-02	5.40E+00	370.33	3793.38
Xylenes	1.06E+01	n.m.	8.40E-03	1.40E+00	370.30	3793.43	1.10E-02	1.80E+00	370.33	3793.38

¹ Location of the monitor site is 370.01 km UTM-E & 3793.34 UTM-N.
n.a. = not applicable; n.s. = not sampled; n.m. = not modeled

Table 25. Inhalation Cancer Risks at Pacoima from the Microscale Emissions Inventory.

Pollutant	Predicted Risks using 1981 Meteorology		Predicted Risks using 1998/99 Meteorology	
	At Monitor ¹	Maximum ²	At Monitor ¹	Maximum ³
Benzene	3.10E-08	1.90E-08	3.40E-08	2.20E-08
Benzo[a]pyrene	1.10E-09	7.80E-10	8.20E-10	7.20E-10
Formaldehyde	5.00E-15	4.80E-15	9.90E-15	9.70E-15
Lead	3.20E-10	2.90E-10	3.80E-10	3.50E-10
PAH	2.00E-08	1.40E-08	1.50E-08	1.30E-08
Perchloroethylene	0.00E+00	1.40E-05	0.00E+00	2.10E-05
Propylene oxide	5.00E-09	7.90E-09	6.80E-09	7.10E-09
Total Cancer Risks	5.80E-08	1.40E-05	5.70E-08	2.10E-05

¹ Location is 370.01 km UTM-E & 3793.34 UTM-N

² Location is 370.00 km UTM-E & 3793.38 UTM-N

³ Location is 370.00 km UTM-E & 3793.38 UTM-N

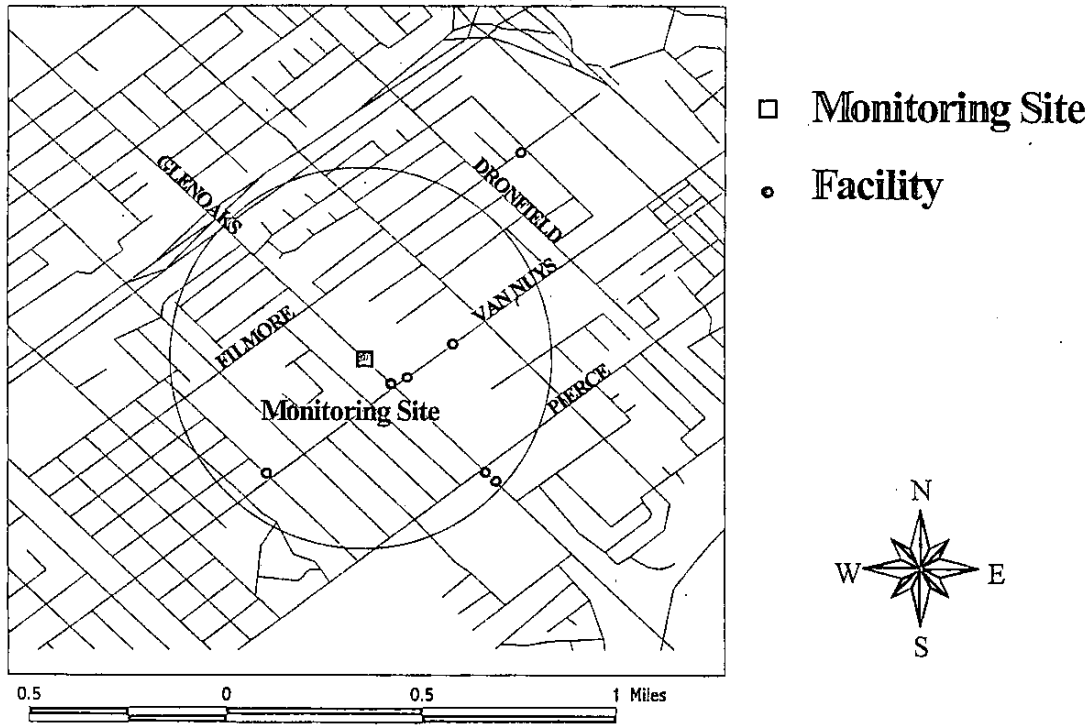


Figure 17. Local map showing the Pacoima microscale monitoring site and vicinity.

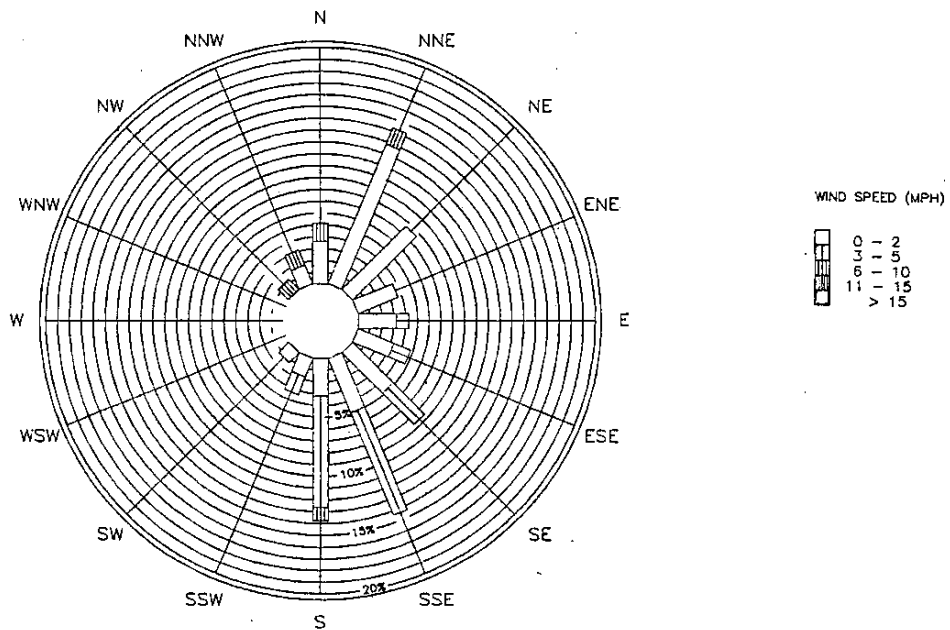


Figure 18. Wind rose for the Pacoima microscale monitoring site.

Microscale Site: Rialto

Site Location: 200 W. Valley Blvd., Rialto, CA 91720
(see Figure 19)

Sampling Period: 3/19/99 – 4/30/99

Nearest (paired) MATES-II Fixed Site: Fontana
14360 Arrow Highway, Fontana

Approximate Distance Between Microscale and Fixed Site Locations: 7.4 miles

Special Considerations: Sampling occurred during early spring when strong sea breezes can occur. This site was located to the north of the I-10 freeway, and northeast of a major railway center. The site was selected because of mobile source contributions from both the freeway and the railroad.

Wind Data: Winds were predominantly from the expected direction of west-southwesterly, and such direction occurred 19 percent of the time. Combined, southwest through west winds occurred 45 percent of the time. Drainage winds from the northeast through east, common in the night and morning hours, occurred about 15 percent of the time. North winds in excess of 15 mph, indicating Santa Ana wind conditions, occurred about 3 percent of the time. (See wind rose in Figure 20.)

Statistical Comparisons of Measured Data: No significant differences observed for any compounds (see Table 26).

Microscale Emissions Inventory: 11 pollutants were inventoried from the local environment, including five carcinogens. The total inventoried emissions are summarized in Table 2; individual facility emissions are provided in Table 27.

Modeling Results As seen in Table 28, the predicted concentrations and locations of the maximum are similar for both meteorological data sets, although the 1981 meteorology more often yields higher predicted concentrations. Predicted concentrations at the maximum receptor and at the monitor site from the microscale emission inventory are generally much lower than concentrations predicted by UAM using the basinwide emission inventory or the average concentrations observed at the nearest fixed site of Fontana.

Inhalation risks for the modeled carcinogens are shown in Table 29 for the two different meteorological data sets. Using the 1981 meteorological data yields higher risks at both the peak receptor and at the monitor. Total risks, at the peak receptor, are approximately 2 in one million and are less than 1 in one million at the monitor site.

Summary:

- Measured toxic concentrations are very similar at Rialto and Fontana.

- Overall the 1981 meteorological data yields higher predicted concentrations and risk than the 1998/99 meteorological data.
- Predicted concentrations from the local emissions are much lower than average concentrations observed at Fontana or concentrations predicted by UAM using basinwide emissions.

Table 26. Comparison of observed concentrations for the microscale and fixed site pair of Rialto and Fontana.

Pollutant	Units	Microscale Site - Rialto			Fixed Site - Fontana			Statistically significant?*	
		Mean	S.D.	N	Mean	S.D.	N		
					90% Conf. Interval	90% Conf. Interval			
Chloromethane	ppb	0.61	0.03	5	0.70	0.10	3	0.452 - 0.948	No
Chloroethene	ppb	0.10	0.00	5	0.10	0.00	3	0.100 - 0.100	No
1,3 Butadiene	ppb	0.19	0.04	5	0.23	0.03	3	0.172 - 0.298	No
1,1 Dichloroethene	ppb	0.05	0.00	5	0.05	0.00	3	0.050 - 0.050	No
Methylene Chloride	ppb	0.23	0.11	5	0.47	0.21	3	-0.050 - 0.984	No
1,1 Dichloroethane	ppb	0.05	0.00	5	0.05	0.00	3	0.050 - 0.050	No
Chloroform	ppb	0.05	0.00	5	0.05	0.00	3	0.050 - 0.050	No
Ethylene Dichloride	ppb	0.05	0.00	5	0.05	0.00	3	0.050 - 0.050	No
Benzene	ppb	0.78	0.17	5	1.07	0.25	3	0.442 - 1.692	No
Carbon Tetrachloride	ppb	0.10	0.00	5	0.10	0.00	3	0.100 - 0.100	No
Trichloroethene	ppb	0.05	0.00	5	0.05	0.00	3	0.050 - 0.050	No
Toluene	ppb	1.43	0.54	5	2.80	1.00	3	0.316 - 5.284	No
Ethylene Dibromide	ppb	0.05	0.00	5	0.05	0.00	3	0.050 - 0.050	No
Perchloroethylene	ppb	0.06	0.02	5	0.20	0.10	3	-0.048 - 0.448	No
Ethylbenzene	ppb	0.11	0.05	5	0.23	0.12	3	-0.054 - 0.520	No
(m+p)-Xylene	ppb	0.59	0.28	5	1.03	0.21	3	0.516 - 1.550	No
Styrene	ppb	0.13	0.08	5	0.20	0.00	3	0.200 - 0.200	No
o-Xylene	ppb	0.19	0.09	5	0.30	0.10	3	0.052 - 0.548	No
p-Dichlorobenzene	ppb	0.05	0.00	5	0.05	0.00	3	0.050 - 0.050	No
o-Dichlorobenzene	ppb	0.05	0.00	5	0.05	0.00	3	0.050 - 0.050	No
Formaldehyde	ppb	2.36	0.92	5	5.27	2.97	3	-2.112 - 12.646	No
Acetaldehyde	ppb	2.54	0.34	5	2.30	1.31	3	-0.958 - 5.558	No
Acetone	ppb	3.62	1.12	5	4.57	1.40	3	1.086 - 8.047	No
MEK	ppb	0.50	0.45	5	0.77	0.42	3	-0.268 - 1.801	No
Hexavalent chromium	ng/m ³	0.16	0.05	4	0.13	0.01	3	0.119 - 0.148	No
Arsenic	ng/m ³	2.00	0.00	5	1.50	0.00	3	1.500 - 1.500	No
Nickel	ng/m ³	5.28	2.25	5	7.46	2.47	3	1.324 - 13.602	No
Selenium	ng/m ³	0.98	1.07	5	0.50	0.00	3	0.500 - 0.500	No
Cadmium	ng/m ³	5.00	0.00	5	5.00	0.00	3	5.000 - 5.000	No

* Statistical significance determined by non-overlapping confidence intervals.

**RIALTO MICRO-SCALE SITE
Inventory of Toxics (MATES Tables 1 & 2) and Sources of Potential Impact 5/14/1999**

fac.SIC	Activity type	Activity duration in hrs/day, days/wk, wks/yr	Main Mates II Pollutant Emitted	Emissions in Lbs/Month	Emission lbs/hr, calcd.	Methodology, (comments)
3442						FLD/AQMD/TC, (AB2588) (some data secured)
4212	Maintenance	8,5,52	Methylene chloride, MEK 1,4-Dioxane, 1,1,1-Tri, Xylene Toluene.	trace trace trace	trace trace trace	FLD/TC,(Usage&MSDS used) (Pints;less than gallon a yr. Toluene, Xylene, & MEK (Mobile source, trucks) (Mobile source) (Mobile source)
	Storage	24,7,52	Diesel/fugitives	.....	.....
	Comb./Idling	1,5,52	Several/Diesel Exhaust	.....	.....
	Dust	24,7,52	Several/Trace elements	.....	.....
1791	Constr. Equip.			0	0	AQMD/TC,(inactive)
4225	Draining/stg veh. & mach'ry.	24,7,52	Diesel /fugitives	4x10 ³	6x10 ⁻⁵	FLD/AQMD/TC, (Was Desert Steel Fab. site id # 63360--serv tnk out. Now only expor t/ wholesale)
4212	Fugitives	8,5,52	Diesel	.....	.....	FLD/AQMD/TC, (was ID #
	Combustion	1,2,52	Several/Diesel Exhaust	.....	.....	68162, Douglas) (Mobile)
	Maintenance	1,5,52	None	0	0	(Maint. Elsewhere)
5812	Charbroiling	.....	PAH, P(a)B	0	0	FLD/AQMD/TC
	Nat. Gas comb	.....	Benzene	0	0	(Stated non-use of char- broiler)
		.....	Formaldehyde	0	0	
		.....	B(a)P	0	0	
5812	Charbroiling	16,7,52	PAH	1.3x10 ⁻²	2.9x10 ⁻⁵	FLD/AQMD/TC
			B(a)P	7x10 ⁻⁴	1.6x10 ⁻⁶	(Through put estimates, speciation data, Similar
			Furans	6.0x10 ⁻²	1.3x10 ⁻⁴	

Table 28. Annual Concentrations at Rialto from the Microscale Emissions Inventory.

Pollutant	Obs. Conc. at Fixed Site (ug/m3)		UAM Pred. Conc. (ug/m ³)		ISCST3 Pred. Conc. - 1981 Meteorology			ISCST3 Pred. Conc. - 1998/99 Meteorology		
	Fixed Site (ug/m3)	Conc. (ug/m ³)	At Monitor ¹ (ug/m ³)	Maximum (ug/m ³)	UTM-E (km)	UTM-N (km)	At Monitor ¹ (ug/m ³)	Maximum (ug/m ³)	UTM-E (km)	UTM-N (km)
Benzene	2.36E+00	2.01E+00	7.80E-05	2.90E-03	466.33	3769.83	1.30E-04	2.60E-03	466.33	3769.85
Benzo[a]pyrene	n.s.	n.m.	7.00E-06	1.10E-04	466.00	3769.83	4.20E-06	8.70E-05	466.00	3769.85
Diesel particulate	n.s.	3.16E+00	6.30E-05	5.40E-03	465.73	3769.83	3.70E-05	5.40E-03	465.73	3769.85
Formaldehyde	4.54E+00	4.24E+00	5.70E-05	8.60E-04	466.00	3769.83	3.40E-05	7.10E-04	466.00	3769.85
Furans	n.s.	n.m.	5.70E-04	8.60E-03	466.00	3769.83	3.40E-04	7.10E-03	466.00	3769.85
Manganese	6.99E-02	n.m.	5.50E-06	3.50E-03	465.00	3769.85	5.20E-06	1.10E-02	464.98	3769.88
PAH	n.s.	n.m.	1.30E-04	1.90E-03	466.00	3769.83	7.70E-05	1.60E-03	466.00	3769.85
Silica	n.s.	n.m.	4.50E-06	2.80E-03	465.00	3769.85	4.20E-06	9.10E-03	464.98	3769.88
Silicon	3.97E+00	n.m.	3.20E-07	2.00E-04	465.00	3769.85	3.00E-07	6.50E-04	464.98	3769.88
Toluene	9.12E+00	6.33E+00	1.70E-04	6.50E-03	466.33	3769.83	2.80E-04	5.70E-03	466.33	3769.85
Xylenes	5.43E+00	n.m.	8.50E-05	3.20E-03	466.33	3769.83	1.40E-04	2.80E-03	466.33	3769.85

¹ Location of the monitor site is 466.12 km UTM-E & 3769.84 UTM-N.

n.a. = not applicable; n.s. = not sampled; n.m. = not modeled

Table 29. Inhalation Cancer Risks at Rialto from the Microscale Emissions Inventory.

Pollutant	Predicted Risks using 1981 Meteorology		Predicted Risks using 1998/99 Meteorology	
	At Monitor ¹	Maximum ²	At Monitor ¹	Maximum ³
Benzene	2.30E-09	9.30E-10	3.70E-09	1.50E-09
Benzo[a]pyrene	7.70E-09	1.20E-07	4.70E-09	9.60E-08
Diesel particulate	1.90E-08	3.80E-08	1.10E-08	2.10E-08
Formaldehyde	3.40E-10	5.10E-09	2.10E-10	4.20E-09
PAH	1.40E-07	2.10E-06	8.40E-08	1.70E-06
Total Cancer Risks	1.70E-07	2.30E-06	1.00E-07	1.90E-06

¹ Location is 466.12 km UTM-E & 3769.84 UTM-N

² Location is 466.00 km UTM-E & 3769.83 UTM-N

³ Location is 466.00 km UTM-E & 3769.85 UTM-N

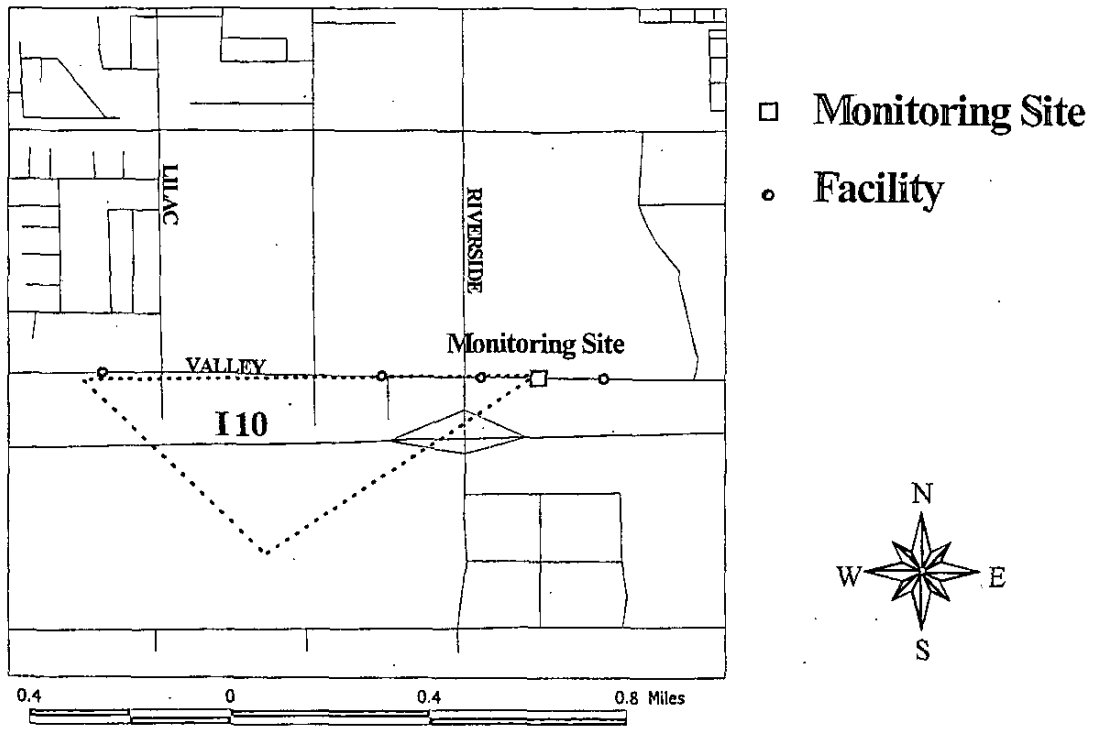


Figure 19. Local map showing the Rialto microscale monitoring site and vicinity.

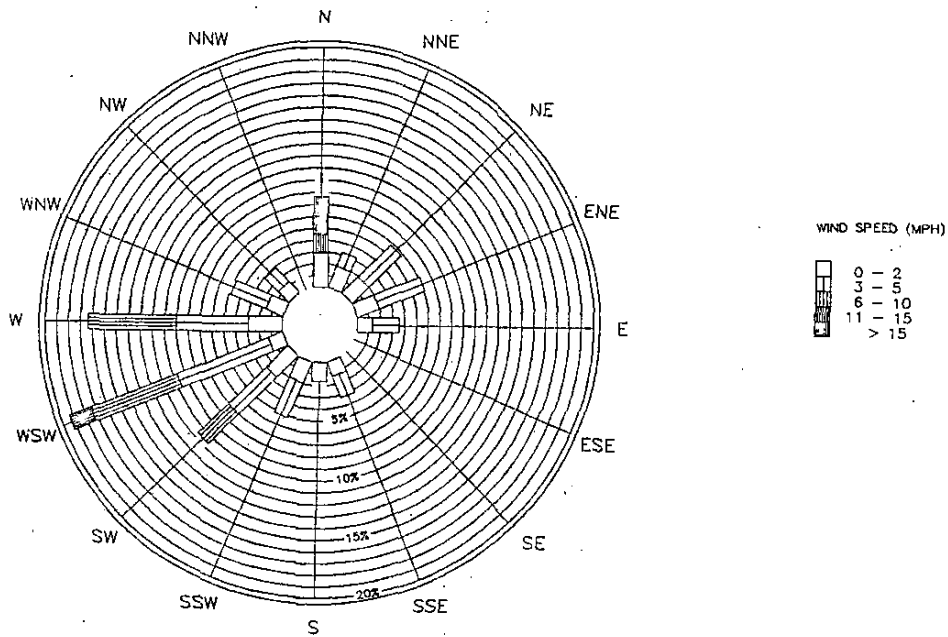


Figure 20. Wind rose for the period 3/19/99 to 4/30/99 at the Rialto microscale monitoring site.

Microscale Site: Riverside

Site Location: 1150 3rd Street, Riverside, CA 92507 [J.W. North High School]
(see Figure 21)

Sampling Period: 3/10/99 – 4/21/99

Nearest (paired) MATES-II Fixed Site: Rubidoux

Approximate Distance between Microscale and Fixed Site Locations: 4.3 miles

Special Considerations: The sampling platform was located at a high school situated to the east of a cluster of facilities, although the number of such facilities was less and more separated than other microscale sites. Sampling occurred during the late winter and early spring period.

Wind Data: Winds were predominantly from the west, approximately 17 percent of the time. Onshore flow was dominant during the sampling period, with southwest through northwest winds accounting for 40 percent of all wind conditions. Winds from the south and south-southeast occurred 15 percent of the time. Indications of Santa Ana winds were not evident during this period. (See wind rose in Figure 22)

Statistical Comparisons of Measured Data: No significant differences observed for any compounds, although key mobile source compounds (i.e., 1,3 butadiene and benzene) tend to be higher at Rubidoux (see Table 30).

Microscale Emissions Inventory: *There are no toxic emission sources in the immediate vicinity of the microscale site.*

Modeling Results: Microscale modeling was not performed since there are no toxic emission sources in the local area.

Summary:

- No significant differences observed for any of the toxic compounds measured.

Table 30. Comparison of observed concentrations for the microscale and fixed site pair of Riverside and Rubidoux.

Pollutant	Units	Microscale Site - Riverside			Fixed Site - Rubidoux			Statistically significant?*		
		Mean	S.D.	N	90% Conf. Interval	Mean	S.D.		N	90% Conf. Interval
Chloromethane	ppb	0.61	0.04	8	0.579 - 0.646	0.68	0.05	4	0.595 - 0.755	No
Chloroethene	ppb	0.10	0.00	8	0.100 - 0.100	0.10	0.00	4	0.100 - 0.100	No
1,3 Butadiene	ppb	0.16	0.07	8	0.100 - 0.223	0.27	0.09	4	0.123 - 0.416	No
1,1 Dichloroethene	ppb	0.05	0.00	8	0.050 - 0.050	0.05	0.00	4	0.050 - 0.050	No
Methylene Chloride	ppb	0.26	0.09	8	0.186 - 0.344	0.50	0.20	4	0.182 - 0.818	No
1,1 Dichloroethane	ppb	0.05	0.00	8	0.050 - 0.050	0.05	0.00	4	0.050 - 0.050	No
Chloroform	ppb	0.05	0.00	8	0.050 - 0.050	0.05	0.00	4	0.050 - 0.050	No
Ethylene Dichloride	ppb	0.05	0.00	8	0.050 - 0.050	0.05	0.00	4	0.050 - 0.050	No
Benzene	ppb	0.70	0.20	8	0.535 - 0.873	1.15	0.39	4	0.534 - 1.766	No
Carbon Tetrachloride	ppb	0.10	0.00	8	0.100 - 0.100	0.10	0.00	4	0.100 - 0.100	No
Trichloroethene	ppb	0.05	0.00	8	0.050 - 0.050	0.05	0.00	4	0.050 - 0.050	No
Toluene	ppb	1.29	0.68	8	0.725 - 1.858	2.75	1.24	4	0.769 - 4.731	No
Ethylene Dibromide	ppb	0.05	0.00	8	0.050 - 0.050	0.05	0.00	4	0.050 - 0.050	No
Perchloroethylene	ppb	0.08	0.04	8	0.048 - 0.115	0.16	0.08	4	0.043 - 0.282	No
Ethylbenzene	ppb	0.14	0.10	8	0.064 - 0.223	0.26	0.15	4	0.025 - 0.500	No
(m-p)-Xylene	ppb	0.65	0.37	8	0.345 - 0.959	1.10	0.55	4	0.228 - 1.972	No
Styrene	ppb	0.31	0.31	8	0.052 - 0.569	0.23	0.19	4	-0.076 - 0.526	No
o-Xylene	ppb	0.23	0.12	8	0.127 - 0.327	0.40	0.20	4	0.082 - 0.716	No
p-Dichlorobenzene	ppb	0.05	0.00	8	0.050 - 0.050	0.05	0.00	4	0.050 - 0.050	No
o-Dichlorobenzene	ppb	0.05	0.00	8	0.050 - 0.050	0.05	0.00	4	0.050 - 0.050	No
Formaldehyde	ppb	4.48	1.46	7	3.124 - 5.828	5.60	2.22	4	2.070 - 9.130	No
Acetaldehyde	ppb	2.15	0.83	7	1.384 - 2.925	2.38	1.08	4	0.654 - 4.096	No
Acetone	ppb	6.95	2.24	7	4.875 - 9.025	4.05	1.32	4	1.945 - 6.155	No
MEK	ppb	0.75	0.22	7	0.548 - 0.947	0.73	0.30	4	0.250 - 1.200	No
Hexavalent chromium	ng/m ³	0.13	0.04	7	0.092 - 0.165	0.25	0.06	3	0.089 - 0.404	No
Arsenic	ng/m ³	2.00	0.00	5	2.000 - 2.000	1.50	0.00	3	1.500 - 1.500	No
Nickel	ng/m ³	3.79	1.48	5	1.955 - 5.631	7.70	4.54	3	-3.591 - 18.987	No
Selenium	ng/m ³	0.50	0.00	5	0.500 - 0.500	0.50	0.00	3	0.500 - 0.500	No
Cadmium	ng/m ³	5.00	0.00	5	5.000 - 5.000	5.00	0.00	3	5.000 - 5.000	No

* Statistical significance determined by non-overlapping confidence intervals.

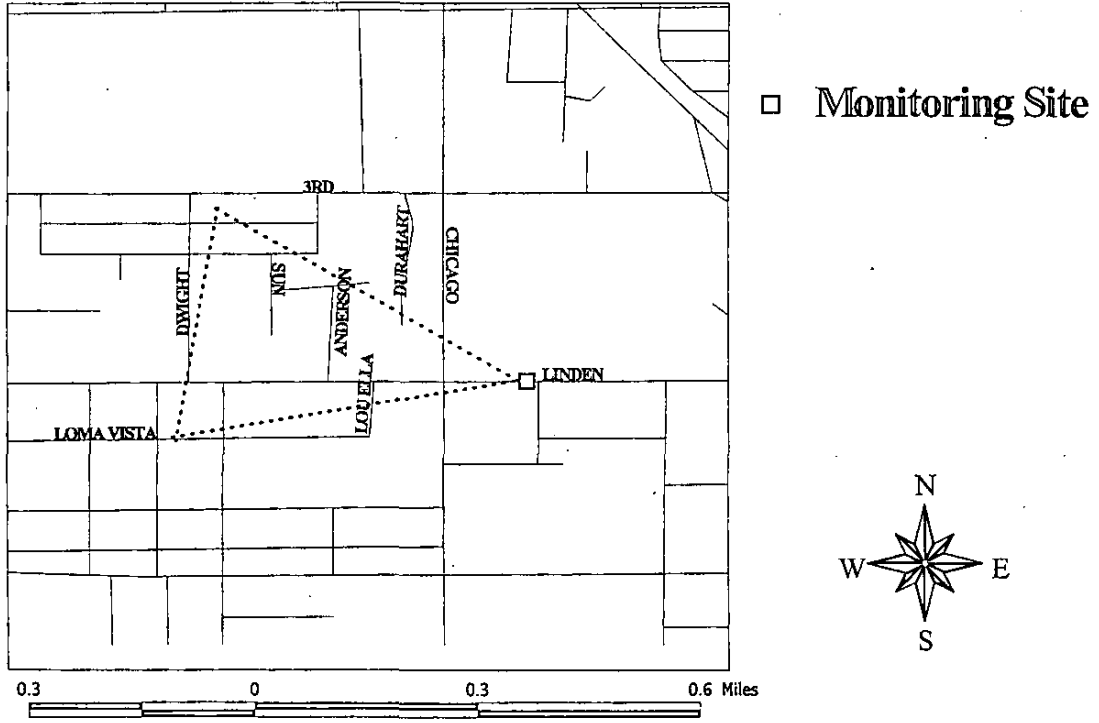


Figure 21. Local map showing the Riverside microscale monitoring site and vicinity.

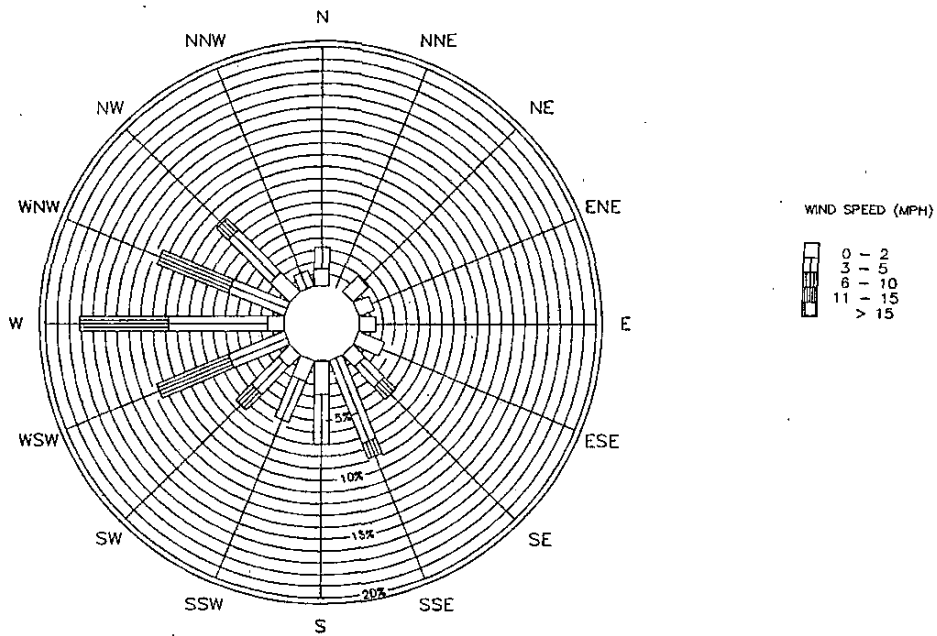


Figure 22. Wind rose for the period 3/10/99 to 4/21/99 at the Riverside microscale monitoring site.

Microscale Site: San Pedro

Site Location: 202 S. Palos Verdes Street, San Pedro, CA 90731
(see Figure 23)

Sampling Period: 3/25/99 – 4/27/99

Nearest (paired) MATES-II Fixed Site: Wilmington
900 E. Lomita Blvd., Wilmington

Approximate Distance between Microscale and Fixed Site Locations: 2.9 miles

Special Considerations: San Pedro was selected because of its proximity to the harbor area. Sampling occurred during the early spring period. Because the fixed site MATES-II network concluded at the end of March 1999, only the earliest samples are available for comparison to the nearest fixed site location in Wilmington.

Wind Data: Winds were predominantly from the west-northwest approximately 17 percent of the time. In general, this area experiences two predominant directions: west-northwest and southerly. This is because the Palos Verdes Peninsula forces low level winds to move around the hills, which extend above 2000 feet in elevation. Depending upon the weather pattern, either flow could be predominant on any given day. During the sampling period, which occurred during early spring, the west-northwesterly winds occurred more frequently than did the southerly winds. Winds of 11-15 mph occurred about 7 percent of the time, with lighter winds occurring at all other times. (See wind rose in Figure 24.)

Statistical Comparisons of Measured Data: (See Table 31.) This pair had a very limited number of comparative samples. Where comparisons are available, very high levels of formaldehyde (as compared to all other sites) were observed at San Pedro. Levels observed are not only statistically higher than its paired site at Wilmington, but the levels measured during this period were considerably higher than at any other fixed site in the network, and more than 25 times higher than the 10 in-one-million risk level for formaldehyde. The carbonyl data at San Pedro are examined in Table 32. What is unusual about the formaldehyde data is that there appears to be decreasing levels over time. If the source of formaldehyde was local, there would likely be significant changes among the three time periods as winds changed from daytime to nighttime flows. Since the within-day levels are reasonably constant, but the changes from the beginning of the sampling period in March to the end of the period in April are substantial, an extremely close source is suspected. The San Pedro site was located on a vacant lot near an apartment complex, so there are no known nearby sources to account for the observed levels. Initially it was suspected that modifications made to the platform might have caused "outgassing" of formaldehyde. Building materials and certain adhesives found in carpeting outgass formaldehyde for a limited period of time. However, modifications to the platform in response to meeting city permit criteria involved only electrical modifications, which are typically not a source of formaldehyde. Thus, it is suspected that the cause of the high formaldehyde concentrations is some sort of instrument contamination. Decreasing levels of formaldehyde over time coupled with insensitivity to wind directional changes are not

characteristics of local source influences. Also the relationship between formaldehyde and acetaldehyde, which was shown in the fixed network to be highly correlated, did not exhibit the same relationship at the San Pedro site. Therefore, it is concluded that these data are not representative of ambient conditions in the Basin, but rather an artifact of sample contamination.

Microscale Emissions Inventory: Eight pollutants were inventoried from the local environment, including four carcinogens. The total inventoried emissions are summarized in Table 2; individual facility emissions are provided in Table 33.

Modeling Results: Table 34 shows that the predicted concentrations and the locations of the maximum are similar for both meteorological data sets, although the 1981 meteorology more often yields higher predicted concentrations. Predicted concentrations at the maximum receptor and at the monitor site from the microscale emission inventory are much lower than concentrations predicted by UAM using the basinwide emission inventory or the average concentrations observed at the nearest fixed site of Wilmington.

Inhalation risks for the modeled carcinogens are shown in Table 35 for the two different meteorological data sets. The 1981 meteorological data set gives higher risks at the maximum receptor whereas the 1998/99 meteorological data gives higher risks at the monitor site. Total risks, at the peak receptor, are 2-4 in one million and are less than 1 in one million at the monitor site.

Summary:

- The significantly higher carbonyl (i.e., formaldehyde, acetaldehyde, and acetone) concentrations observed at San Pedro are likely the result of instrument contamination.
- Overall, applying the 1981 meteorological data gives higher predicted concentrations than the 1998/99 meteorological data.
- Predicted concentrations from the local emissions are much lower than average concentrations observed at Wilmington or concentrations predicted by UAM using basinwide emissions.

Table 31. Comparison of observed concentrations for the microscale and fixed site pair of San Pedro and Wilmington.

Pollutant	Units	Microscale Site - San Pedro			Fixed Site - Wilmington			Statistically significant?*		
		Mean	S.D.	N	90% Conf. Interval	Mean	S.D.		N	90% Conf. Interval
Chloromethane	ppb	0.66	0.08	3	0.447 - 0.864	0.80	--	1	--	No
Chloroethene	ppb	0.10	0.00	3	0.100 - 0.100	0.10	--	1	--	No
1,3 Butadiene	ppb	0.13	0.08	3	-0.071 - 0.327	0.31	--	1	--	No
1,1 Dichloroethene	ppb	0.05	0.00	3	0.050 - 0.050	0.05	--	1	--	No
Methylene Chloride	ppb	0.24	0.12	3	-0.046 - 0.535	0.60	--	1	--	No
1,1 Dichloroethane	ppb	0.05	0.00	3	0.050 - 0.050	0.05	--	1	--	No
Chloroform	ppb	0.05	0.00	3	0.050 - 0.050	0.05	--	1	--	No
Ethylene Dichloride	ppb	0.05	0.00	3	0.050 - 0.050	0.05	--	1	--	No
Benzene	ppb	0.68	0.31	3	-0.092 - 1.447	1.50	--	1	--	No
Carbon Tetrachloride	ppb	0.10	0.00	3	0.100 - 0.100	0.10	--	1	--	No
Trichloroethene	ppb	0.05	0.00	3	0.050 - 0.050	0.05	--	1	--	No
Toluene	ppb	1.32	0.97	3	-1.081 - 3.725	2.60	--	1	--	No
Ethylene Dibromide	ppb	0.05	0.00	3	0.050 - 0.050	0.05	--	1	--	No
Perchloroethylene	ppb	0.07	0.00	3	0.067 - 0.067	0.20	--	1	--	No
Ethylbenzene	ppb	0.14	0.10	3	-0.104 - 0.381	0.20	--	1	--	No
(m+p)-Xylene	ppb	0.67	0.55	3	-0.705 - 2.049	1.20	--	1	--	No
Styrene	ppb	0.08	0.02	3	0.042 - 0.125	0.50	--	1	--	No
o-Xylene	ppb	0.24	0.18	3	-0.198 - 0.687	0.40	--	1	--	No
p-Dichlorobenzene	ppb	0.07	0.03	3	-0.005 - 0.138	0.05	--	1	--	No
o-Dichlorobenzene	ppb	0.05	0.00	3	0.050 - 0.050	0.05	--	1	--	No
Formaldehyde	ppb	34.62	0.92	2	26.358 - 42.876	3.23	1.62	3	-0.790 - 7.257	Yes (micro > fixed)
Acetaldehyde	ppb	6.43	0.38	2	3.045 - 9.822	1.37	0.64	3	-0.211 - 2.944	Yes (micro > fixed)
Acetone	ppb	14.40	0.05	2	13.976 - 14.824	1.57	0.57	3	0.154 - 2.979	Yes (micro > fixed)
MEK	ppb	1.18	0.21	2	-0.723 - 3.089	0.33	0.12	3	0.046 - 0.620	No
Hexavalent chromium	ng/m ³	0.10	0.03	2	-0.154 - 0.354	0.10	0.01	3	0.089 - 0.118	No
Arsenic	ng/m ³	2.00	0.00	3	2.000 - 2.000	1.50	0.00	3	1.500 - 1.500	No
Nickel	ng/m ³	4.02	2.08	3	-1.160 - 9.194	10.21	8.10	3	-9.924 - 30.335	No
Selenium	ng/m ³	0.50	0.00	3	0.500 - 0.500	0.50	0.00	3	0.500 - 0.500	No
Cadmium	ng/m ³	5.00	0.00	3	5.000 - 5.000	5.00	0.00	3	5.000 - 5.000	No

* Statistical significance determined by non-overlapping confidence intervals.

Table 32
Carbonyl Results at San Pedro Site

Date Field	Station	see below Interval	Cartridge	Formaldehyde		Acetaldehyde		Acetone		MEK	
				(ppbv)	MDL	(ppbv)	MDL	(ppbv)	MDL	(ppbv)	MDL
3/25/99	San Pedro	8A	826A	32.0	0.1	6.6	0.1	16.3	0.1	1.1	0.1
3/25/99	San Pedro	8B	827A	33.9	0.1	5.2	0.1	10.8	0.1	0.8	0.1
3/25/99	San Pedro	8C	828A	36.0	0.1	6.7	0.1	16.0	0.1	1.2	0.1
3/28/99	San Pedro	8A	845A	36.6	0.1	8.8	0.1	20.1	0.1	1.7	0.1
3/28/99	San Pedro	8B	846A	34.0	0.1	5.3	0.1	10.3	0.1	1.2	0.1
3/28/99	San Pedro	8C	847A	35.2	0.1	6.0	0.1	12.9	0.1	1.1	0.1
4/3/99	San Pedro	8A	862A	22.2	0.1	4.6	0.1	11.2	0.1	0.7	0.1
4/3/99	San Pedro	8B	863A	20.6	0.1	3.5	0.1	6.5	0.1	0.6	0.1
4/3/99	San Pedro	8C	864A	13.8	0.1	2.5	0.1	4.1	0.1	0.4	0.1
4/6/99	San Pedro	8A	857A	17.1	0.1	3.6	0.1	7.7	0.1	0.6	0.1
4/6/99	San Pedro	8B	858A	20.0	0.1	3.5	0.1	7.1	0.1	0.7	0.1
4/6/99	San Pedro	8C	859A	17.8	0.1	3.3	0.1	6.2	0.1	0.5	0.1
4/9/99	San Pedro	8A	855A	11.3	0.1	2.4	0.1	4.6	0.1	0.4	0.1
4/9/99	San Pedro	8B	884A	11.4	0.1	2.5	0.1	4.8	0.1	0.4	0.1
4/9/99	San Pedro	8C	885A	12.1	0.1	2.7	0.1	4.5	0.1	0.4	0.1
4/12/99	San Pedro	8A	873A	14.9	0.1	3.9	0.1	8.6	0.1	0.6	0.1
4/12/99	San Pedro	8B	874A	14.3	0.1	3.0	0.1	5.9	0.1	0.5	0.1
4/12/99	San Pedro	8C	875A	14.0	0.1	2.9	0.1	5.9	0.1	0.5	0.1
4/15/99	San Pedro	8A	887A	17.7	0.1	5.6	0.1	11.3	0.1	1.4	0.1
4/15/99	San Pedro	8B	888A	19.3	0.1	8.4	0.1	12.9	0.1	3.6	0.1
4/15/99	San Pedro	8C	889A	13.6	0.1	5.1	0.1	10.0	0.1	1.4	0.1
4/18/99	San Pedro	8A	890A	14.0	0.1	6.7	0.1	14.5	0.1	1.6	0.1
4/18/99	San Pedro	8B	891A	17.4	0.1	8.1	0.1	13.7	0.1	2.5	0.1
4/18/99	San Pedro	8C	892A	12.5	0.1	4.9	0.1	10.4	0.1	1.3	0.1
4/21/99	San Pedro	8A	893A	NS	0.1	NS	0.1	NS	0.1	NS	0.1
4/21/99	San Pedro	8B	894A	NS	0.1	NS	0.1	NS	0.1	NS	0.1
4/21/99	San Pedro	8C	895A	7.6	0.1	2.0	0.1	3.9	0.1	0.6	0.1
4/24/99	San Pedro	8A	896A	6.5	0.1	2.0	0.1	3.6	0.1	0.4	0.1
4/24/99	San Pedro	8B	897A	6.5	0.1	1.8	0.1	2.9	0.1	0.5	0.1
4/24/99	San Pedro	8C	908A	6.6	0.1	2.0	0.1	3.5	0.1	0.5	0.1
4/27/99	San Pedro	8A	910A	6.6	0.1	2.0	0.1	4.1	0.1	0.7	0.1
4/27/99	San Pedro	8B	911A	8.1	0.1	2.9	0.1	5.4	0.1	0.9	0.1
4/27/99	San Pedro	8C	912A	6.1	0.1	1.7	0.1	3.2	0.1	0.5	0.1

Interval = 8-hour, A=0000 to 0800; B=0800 to 1600 and C=1600 to 2400 hours

SAN PEDRO MICRO-SCALE SITE
Inventory of Toxics (MATES Tables 1 & 2) and Sources of Potential Impact 5/28/1999

fac.SIC	Activity type	Activity duration in hrs/day, days/wk, wks/yr	Main Mates II Pollutant Emitted	Emissions in Lbs/Month	Emiss'n lbs/hr, calcd.	Methodology, (comments)
7699	Restorations	8,5,52	Methylene chloride	1.0	6.25x10 ⁻³	FLD/TC
5810	Charbroiling	16,7,52	PAH	6.5x10 ⁻³	Trace	FLD/AQMD
			B(a)P	3.5x10 ⁻⁴	Trace	(Estim. Default broiler firing rate and relevant source test)
			Furans	3.0x10 ⁻²	Trace	
	N.G.Comb.	16,7,52	Formaldehyde	3.0x10 ⁻³	Trace	
9224	Gasln stg/disp	24,7,52	Benzene	3.6X10 ⁻²	Trace	FLD/AQMD
			Toluenes	4.5X10 ⁻³	Trace	(Estimated fuel use and operating parameters)
			Xylenes	3.4X10 ⁻³	Trace	(Minimal use).
	Maintenance	8,5,52	Xylene , Toluene, Isopropyl alcohol, Methylene chloride	Traces	Traces	
				Traces	Traces	
9224	Heating	8,5,52	Benzene, Toluene, Xylene	Traces	Traces	FLD/AQMD
	Maintenance	8,5,52	Benzene, Toluene, Xylene	Traces	Traces	
9224	Heating	8,5,52	Benzene, Toluene, Xylene	Traces	Traces	FLD/AQMD
	Maintenance	8,5,52	Benzene, Toluene, Xylene	Traces	Traces	
7011	Charbroiling	16,7,52	PAH	1.3x10 ⁻²	2.9x10 ⁻⁵	FLD/AQMD
			B(a)P	7x10 ⁻⁴	1.6x10 ⁻⁶	(Used default estim.)
			Furans	6.0x10 ⁻²	1.3x10 ⁻⁴	
	Emerg. Gener.	1/2hr/mnth	Benzene, formaldehyde	0	0	FLD/AQMD/TC (Not run)

SAN PEDRO MICRO-SCALE SITE
Inventory of Toxics (MATES Tables 1 & 2) and Sources of Potential Impact 5/28/1999

7538	Auto Repairs	None	0	0	FLD (Closed)
	Sales only	None	0	0	FLD

This demonstrates that there are few relevant sources within the prescribed area and of negligible activity and emissions. The predominant emissions at this site are combustion and fugitive emissions from mobile sources and from major "permitted" bulk storage and handling facilities upwind. "Area Sources" address fuel combustion emissions from mobile sources however cargo emissions for other than liquid fuels may not be covered. Rail, ships (Barges /lug boats), and trucks may entail some emissions from cargo. Additionally, large numbers of cars are involved at the cruise centers and elsewhere in the vicinity. This site is close to Pasha Honda Center, and is down wind from such major sources as Mobile Bulb Terminal, Southwest Marine Shipyard, Westway Liquid Bulk Terminal, GATX Liquid Bulk Terminal, and SSA Break Bulk/ Neabulk Terminal.

Table 34. Annual Concentrations at San Pedro from the Microscale Emissions Inventory.

Pollutant	Obs. Conc. at Fixed Site (ug/m3)		UAM Pred. Conc. (ug/m ³)		ISCST3 Pred. Conc. - 1981 Meteorology			ISCST3 Pred. Conc. - 1998/99 Meteorology		
	Fixed Site (ug/m3)	Conc. (ug/m ³)	At Monitor ¹ (ug/m ³)	Maximum (ug/m ³)	UTM-E (km)	UTM-N (km)	At Monitor ¹ (ug/m ³)	Maximum (ug/m ³)	UTM-E (km)	UTM-N (km)
Benzene	4.06E+00	1.89E+00	5.64E-05	3.91E-03	381.58	3733.90	3.59E-05	3.23E-03	381.58	3733.93
Benzo[a]pyrene	n.s.	n.m.	6.40E-07	1.70E-04	381.40	3733.68	9.38E-07	1.15E-04	381.40	3733.68
Formaldehyde	3.33E+00	5.41E+00	1.72E-06	5.54E-04	381.45	3733.68	2.43E-06	3.39E-04	381.45	3733.68
Furan	n.s.	n.m.	5.30E-05	1.38E-02	381.40	3733.68	7.76E-05	9.31E-03	381.40	3733.68
Methylene chloride	2.36E+00	4.00E-01	2.13E-04	5.51E-02	381.08	3733.63	4.54E-04	1.34E-01	381.10	3733.60
PAH	n.s.	n.m.	1.17E-05	3.07E-03	381.40	3733.68	1.71E-05	2.08E-03	381.40	3733.68
Toluene	1.38E+01	3.98E+00	7.14E-06	4.95E-04	381.58	3733.90	4.55E-06	4.09E-04	381.58	3733.93
Xylenes	1.03E+01	n.m.	5.41E-06	3.75E-04	381.58	3733.90	3.45E-06	3.10E-04	381.58	3733.93

¹ Location of the monitor site is 381.38 km UTM-E & 3734.08 UTM-N.
n.a. = not applicable; n.s. = not sampled; n.m. = not modeled

Table 35. Inhalation Cancer Risks at San Pedro from the Microscale Emissions Inventory.

Pollutant	Predicted Risks using 1981 Meteorology		Predicted Risks using 1998/99 Meteorology	
	At Monitor ¹	Maximum ²	At Monitor ¹	Maximum ³
Benzene	1.64E-09	3.17E-09	1.04E-09	1.63E-09
Benzo[a]pyrene	7.04E-10	1.86E-07	1.03E-09	1.26E-07
Methylene chloride	2.13E-10	9.15E-10	4.54E-10	1.33E-09
PAH	1.29E-08	3.38E-06	1.89E-08	2.28E-06
Total Cancer Risks	1.54E-08	3.57E-06	2.14E-08	2.41E-06

¹ Location is 381.38 km UTM-E & 3734.08 UTM-N

² Location is 381.40 km UTM-E & 3733.68 UTM-N

³ Location is 381.40 km UTM-E & 3733.68 UTM-N

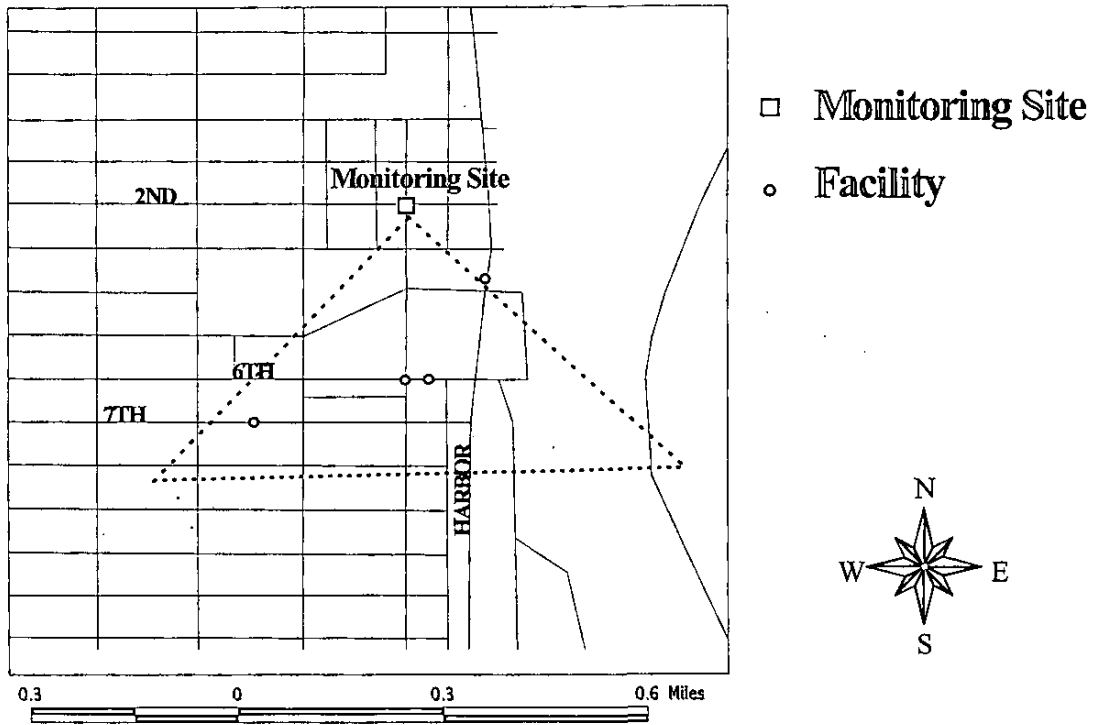


Figure 23. Local map showing the San Pedro microscale monitoring site and vicinity.

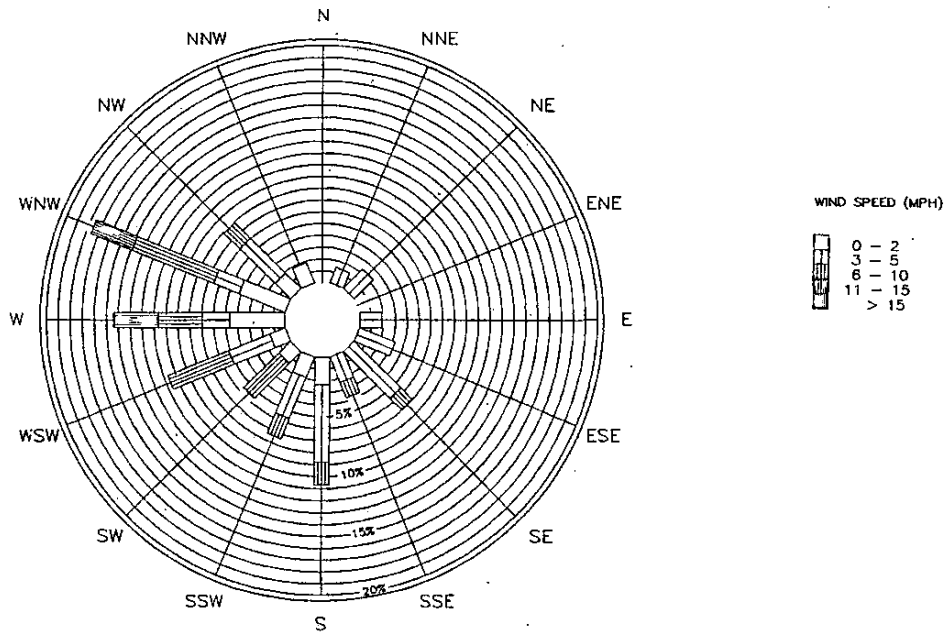


Figure 24. Wind rose for the period 3/25/99 to 4/27/99 at the San Pedro microscale monitoring site.

Microscale Site: South El Monte

Site Location: 2550 Edwards Avenue, South El Monte, CA 91722
(see Figure 25)

Sampling Period: 5/9/99 – 6/11/99

Nearest (paired) MATES-II Fixed Site: None, sampling was performed after fixed site monitoring program was terminated

Approximate Distance Between Microscale and Fixed Site Locations Not applicable

Special Considerations: South El Monte was the last of the microscale sites to be located, with sampling occurring during the late spring. Logistical difficulties with the siting of other sites precluded an earlier sampling at this site. As a result, there are no fixed sites for comparability, since the MATES-II network concluded at the end of March, 1999. The site was located in a residential area immediately to the east of a cluster of facilities.

Wind Data: Winds were predominantly from the west-northwest approximately 35% of the time, and westerly about 25% of the time, indicating a very persistent seabreeze during the sampling period. This is entirely expected of late spring conditions in the Basin. (See wind rose in Figure 26.)

Statistical Comparisons of Measured Data: There are no fixed sites for comparability, since the MATES-II network concluded before this site was installed.

Microscale Emissions Inventory: 25 pollutants were inventoried from the local environment, including five carcinogens. The total inventoried emissions are summarized in Table 2; individual facility emissions are provided in Table 36.

Modeling Results: Table 37 shows that the predicted concentrations and the locations of the maximum are similar for both meteorological data sets, although the 1998/99 meteorology almost always yields higher predicted concentrations. Except for acetone, predicted concentrations at the maximum receptor and at the monitor site from the microscale emission inventory are lower than concentrations predicted by UAM using the basinwide emission inventory. ISCST3-predicted acetone concentrations are estimated to be 28.9 and 0.6 $\mu\text{g}/\text{m}^3$ at the peak receptor and the monitoring location, respectively. However, UAM-predicted acetone concentrations at South El Monte are 2.4 $\mu\text{g}/\text{m}^3$. Thus, in this instance, local sources of acetone may be a significant contributor to the ambient concentrations.

Inhalation risks for the modeled carcinogens are shown in Table 38 for the two different meteorological data sets. The 1998/99 meteorological data set gives higher risks at both the maximum receptor and the monitor site. Total risks, at the peak receptor are approximately 2 in one million and are less than 1 in one million at the monitor site.

Summary:

- The South El Monte microscale site was located after the fixed site monitoring program was terminated, so it does not have a fixed site match to compare to.
- Overall, applying the 1998/99 meteorological data gives higher predicted concentrations than the 1981 meteorological data.
- Except for acetone, predicted concentrations from the local emissions are lower than average concentrations predicted by UAM using basinwide emissions.

**SOUTH EL MONTE MICRO-SCALE SITE
Inventory of Toxics (MATES Tables) and Sources of Potential Impact 5/27/1999**

fac.SIC	Activity type	Activity duration in hrs/day, days/wk, wks/yr	Main Mates II Pollutant Emitted	Emissions in Lbs./Month	Emiss'n lbs/hr, calcd.	Methodology, (comments)
7389	Cutting	8,5,52	none	0	0	FLD/TC/AQMD
	Glueing	8,5,52	none	0	0	(as reported)
	cleaning	8,5,52	none	0	0	
2511	fabrication	8,5,52	none	0	0	FLD/TC/AQMD
	coating/clng	24,7,52	xylenes	44	6.5x10-2	(est. ave. daily usage and
			acetone	208	0.31	
			isopropanol	17	2.5x10-2	
			ethyl benzene	9.2	1.4x10-2	
			2- butoxyethanol	10.3	1.5x10-2	
			silica	trace	trace	
			vinyl acetate	trace	trace	
	Printing/inks	8,5,52	cobalt	8.8x10-4	5.5x10-6	FLD/TC/AQMD
			manganese	8.8x10-4	5.5x10-6	
			carbon black	trace	trace	
	slvnt use&clng	24,7,52	benzene	5.6x10-4	8.3x10-7	
			perc	5.6x10-2	8.3x10-5	
			trichloroethylene	0.56	8.3x10-4	
	Inactive site		none	0	0	FLD/TC (Inactive site)
2396	silk scrn'g/inks	8,5,52	none	0	0	FLD/TC
	clng/preping	8,5,52	cyclohexane	0.3	4.5x10-4	(Est. usage and MSDS)
			benzene	trace	trace	
	Mist adhesive	24,7,52	styrene	3.4x10-4	5.1x10-9	
			butadiene	6.8x10-4	1.0x10-6	
			cyclohexane	5.0	8.9x10-2	
3599	Cleaning	8,5,52	none	0	0	FLD/TC (No cleaners)
	deburring	8,5,52	none	0	0	

**SOUTH EL MONTE MICRO-SCALE SITE
Inventory of Toxics (MATES Tables) and Sources of Potential Impact 5/27/1999**

4225	Warehousing/ wholesale		none	0	0	FLD/TC/AQMD
	Fabrication cleaning	8,5,52 1,5,52	none none	0	0	FLD/TC
	Sales only		none			FLD/TC (Inactive site)
3471	anodizing	16,5,52	Nitric acid ammonia Chromic acid (trivalent) Phosphoric acid sulfates sodium hydroxide sulfuric acid hydrofluoric acid Nickle acetate Butoxyethanol	.06 0.21 0.11 0.21 0.9 1.41 3.51 0.004 0.06 trace	1.9x10-4 6.6x10-4 3.4x10-4 1.1x10-6 2.8x10-3 4.4x10-3 0.01 1.3x10-5 1.9x10-4 trace	FLD/TC/AQMD (Eng. Ev. Emissions revised cntrl est to estimated relative monthly purchases)
	Inactive site		none	0	0	FLD/TC/AQMD
7641	Fabrication surf/coating	8,5,52 24,7,52	none toluene Xylene acetone isopropanol ethylene glycol mnbetyl ether Vinyl acetate	0 176 53 148 14.6 12 3.2x10-4	0 2.6x10-1 7.9x10-2 2.2x10-1 2.2x10-2 1.7x10-2 4.8x10-7	FLD/TC/AQMD (Est. usage and MSDS).
	Inactive site		none	0	0	FLD/TC/AQMD (Inactive site)
	Inactive site		none	0	0	FLD/TC/AQMD

**SOUTH EL MONTE MICRO-SCALE SITE
Inventory of Toxics (MATES Tables) and Sources of Potential Impact 5/27/1999**

							(active site in Azusa)
	Inactive site	none	0	0			FLD/TC/AQMD
	Inactive site	none	0	0			FLD/TC (inactive)
	Inactive site	none	none	none			FLD/TC/AQMD (inactive)
2337	Sewing/sales	8,5,52	none	none			FLD/TC
5084	Sewing mach.	8,5,52	ethyln glycl monobutyl ether	trace	trace		FLD/TC (testing--seldom).

Table 37. Annual Concentrations at El Monte from the Microscale Emissions Inventory.

Pollutant	Obs. Conc. at Fixed Site (ug/m3)		UAM Pred.				ISCST3 Pred. Conc. - 1981 Meteorology				ISCST3 Pred. Conc. - 1998/99 Meteorology				
			Conc. (ug/m ³)	At Monitor ¹ (ug/m ³)	Maximum (ug/m ³)	UTM-E (km)	UTM-N (km)	At Monitor ¹ (ug/m ³)	Maximum (ug/m ³)	UTM-E (km)	UTM-N (km)	At Monitor ¹ (ug/m ³)	Maximum (ug/m ³)	UTM-E (km)	UTM-N (km)
1,3-Butadiene	n.a.		0.32	1.57E-07	8.63E-05	402.38	3768.65	1.81E-07	9.49E-05	402.38	3768.65	1.81E-07	9.49E-05	402.38	3768.65
2- butoxyethanol	n.a.		n.m.	1.79E-02	1.80E+00	402.93	3768.75	2.12E-02	1.94E+00	402.93	3768.75	2.12E-02	1.94E+00	402.93	3768.75
Acetone	n.a.		2.43	5.69E-01	2.89E+01	402.93	3768.75	6.48E-01	3.09E+01	402.93	3768.75	6.48E-01	3.09E+01	402.93	3768.75
Ammonia	n.a.		n.m.	2.10E-04	2.59E-02	402.85	3768.73	2.70E-04	3.24E-02	402.80	3768.70	2.70E-04	3.24E-02	402.80	3768.70
Benzene	n.a.		2.97	9.45E-07	5.32E-05	402.93	3768.58	8.40E-07	5.54E-05	402.93	3768.58	8.40E-07	5.54E-05	402.93	3768.58
Chromic acid	n.a.		n.m.	1.08E-04	1.33E-02	402.85	3768.73	1.39E-04	1.67E-02	402.80	3768.70	1.39E-04	1.67E-02	402.80	3768.70
Cobalt	n.a.		n.m.	1.49E-06	8.40E-05	402.93	3768.58	1.32E-06	8.74E-05	402.93	3768.58	1.32E-06	8.74E-05	402.93	3768.58
Cyclohexane	n.a.		n.m.	1.25E-02	6.86E+00	402.38	3768.65	1.44E-02	7.55E+00	402.38	3768.65	1.44E-02	7.55E+00	402.38	3768.65
EGBE	n.a.		n.m.	3.05E-02	1.52E+00	403.15	3768.65	3.33E-02	1.70E+00	403.10	3768.60	3.33E-02	1.70E+00	403.10	3768.60
Ethyl benzene	n.a.		n.m.	1.67E-02	1.68E+00	402.93	3768.75	1.98E-02	1.81E+00	402.93	3768.75	1.98E-02	1.81E+00	402.93	3768.75
Hydrofluoric acid	n.a.		n.m.	4.13E-06	5.10E-04	402.85	3768.73	5.32E-06	6.38E-04	402.80	3768.70	5.32E-06	6.38E-04	402.80	3768.70
Isopropanol	n.a.		n.m.	6.93E-02	3.04E+00	402.93	3768.75	7.84E-02	3.24E+00	402.93	3768.75	7.84E-02	3.24E+00	402.93	3768.75
Manganese	n.a.		n.m.	1.49E-06	8.40E-05	402.93	3768.58	1.32E-06	8.74E-05	402.93	3768.58	1.32E-06	8.74E-05	402.93	3768.58
Nickel acetate	n.a.		n.m.	6.04E-05	7.45E-03	402.85	3768.73	7.78E-05	9.32E-03	402.80	3768.70	7.78E-05	9.32E-03	402.80	3768.70
Nitric acid	n.a.		n.m.	6.04E-05	7.45E-03	402.85	3768.73	7.78E-05	9.32E-03	402.80	3768.70	7.78E-05	9.32E-03	402.80	3768.70
Perchloroethylene	n.a.		1.94	9.45E-05	5.32E-03	402.93	3768.58	8.40E-05	5.54E-03	402.93	3768.58	8.40E-05	5.54E-03	402.93	3768.58
Phosphoric acid	n.a.		n.m.	3.49E-07	4.32E-05	402.85	3768.73	4.50E-07	5.40E-05	402.80	3768.70	4.50E-07	5.40E-05	402.80	3768.70
Sodium hydroxide	n.a.		n.m.	1.40E-03	1.73E-01	402.85	3768.73	1.80E-03	2.16E-01	402.80	3768.70	1.80E-03	2.16E-01	402.80	3768.70
Styrene	n.a.		0.53	8.01E-10	4.40E-07	402.38	3768.65	9.22E-10	4.84E-07	402.38	3768.65	9.22E-10	4.84E-07	402.38	3768.65
Sulfates	n.a.		n.m.	8.90E-04	1.10E-01	402.85	3768.73	1.15E-03	1.37E-01	402.80	3768.70	1.15E-03	1.37E-01	402.80	3768.70
Sulfuric acid	n.a.		n.m.	3.18E-03	3.92E-01	402.85	3768.73	4.09E-03	4.91E-01	402.80	3768.70	4.09E-03	4.91E-01	402.80	3768.70
Toluene	n.a.		11.55	4.66E-02	2.32E+00	403.15	3768.65	5.09E-02	2.60E+00	403.10	3768.60	5.09E-02	2.60E+00	403.10	3768.60
Trichloroethylene	n.a.		0.27	9.45E-04	5.32E-02	402.93	3768.58	8.40E-04	5.54E-02	402.93	3768.58	8.40E-04	5.54E-02	402.93	3768.58
Vinyl acetate	n.a.		n.m.	8.60E-07	4.29E-05	403.15	3768.65	9.40E-07	4.80E-05	403.10	3768.60	9.40E-07	4.80E-05	403.10	3768.60
Xylenes	n.a.		n.m.	2.19E-01	7.92E+00	402.93	3768.75	2.47E-01	8.45E+00	402.93	3768.75	2.47E-01	8.45E+00	402.93	3768.75

¹ Location of the monitor site is 403.25 km UTM-E & 3768.92 UTM-N.
n.a. = not applicable; n.s. = not sampled; n.m. = not modeled

Table 38. Inhalation Cancer Risks at El Monte from the Microscale Emissions Inventory.

Pollutant	Predicted Risks using 1981 Meteorology		Predicted Risks using 1998/99 Meteorology	
	At Monitor ¹	Maximum ²	At Monitor ¹	Maximum ³
1,3-Butadiene	2.67E-11	6.32E-11	3.07E-11	6.61E-11
Benzene	2.74E-11	3.88E-11	2.43E-11	2.82E-11
Nickel acetate	1.57E-08	1.94E-06	2.02E-08	2.42E-06
Perchloroethylene	5.58E-10	7.89E-10	4.95E-10	5.73E-10
Trichloroethylene	1.89E-09	2.68E-09	1.68E-09	1.94E-09
Total Cancer Risks	1.82E-08	1.94E-06	2.24E-08	2.43E-06

¹ Location is 403.25 km UTM-E & 3768.92 UTM-N

² Location is 402.85 km UTM-E & 3768.73 UTM-N

³ Location is 402.80 km UTM-E & 3768.70 UTM-N

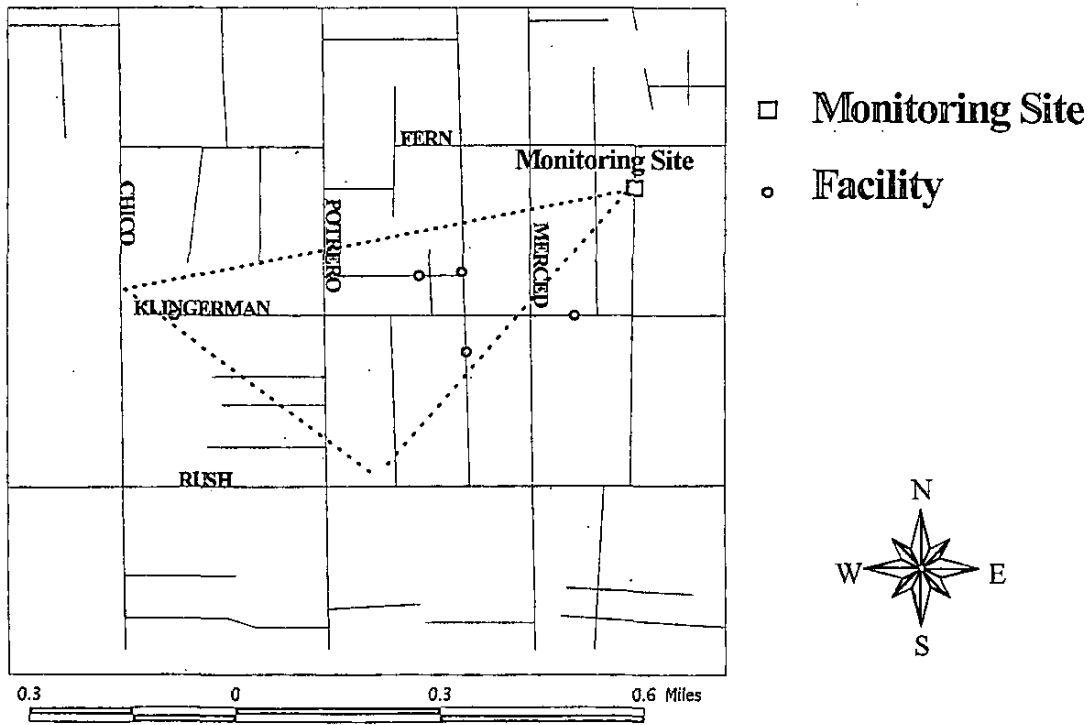


Figure 25. Local map showing the South El Monte microscale monitoring site and vicinity.

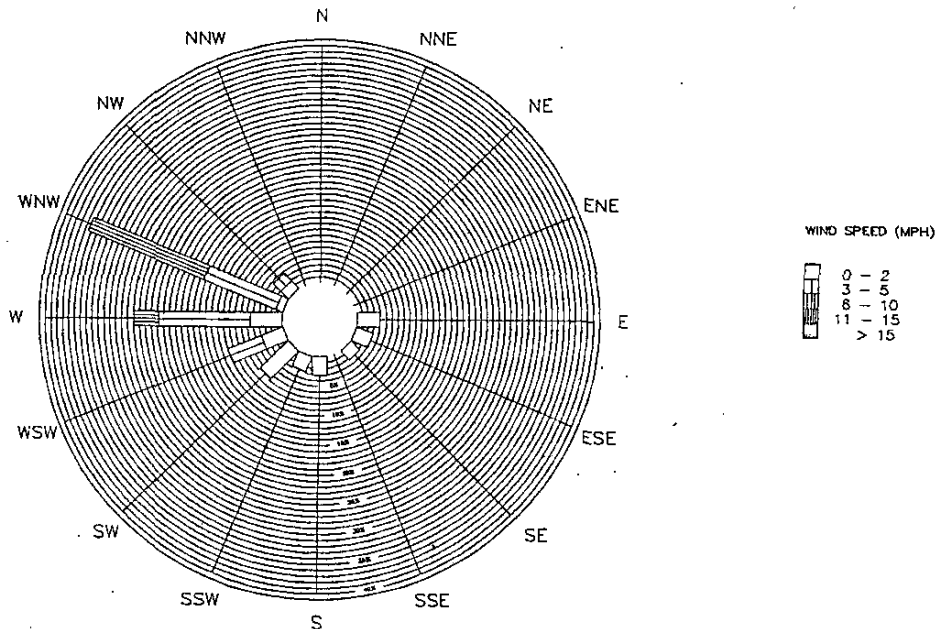


Figure 26. Wind rose for the period 5/9/99 to 6/11/99 at the South El Monte microscale monitoring site.

Microscale Site: Torrance

Site Location: 631 Border Avenue, Torrance, CA 90503
(see Figure 27)

Sampling Period: 7/21/98 – 9/5/98

Nearest (paired) MATES-II Fixed Site: Compton
720 N. Bullis Road, Compton

Approximate Distance Between Microscale and Fixed Site Locations: 5.4 miles

Special Considerations: Sampling was conducted during the summer months. The site was located in a residential area immediately to the east-southeast of a major refinery and clusters of other facilities. Expected wind directions were from the northwest, but actual winds were very persistent from the west. As a result, the influence from the refinery is likely to be less. However, since the residential area is close to the refinery, the site is appropriately indicative of such influences upon adjacent residents.

Wind Data: Winds were westerly an overwhelming 55 percent of the time, with west-northwesterly winds occurring 9 percent of the time. Thus winds were very persistent during both day and night hours, unlike most of the other microscale sites. About 30 percent of the time, hourly winds averaged between 6 and 10 mph. (See wind rose in Figure 28.)

Statistical Comparisons of Measured Data: Compton shows greater influence from mobile sources. Levels of mobile source emissions, mainly benzene and 1,3-butadiene, are especially low at Torrance (see Table 39).

Microscale Emissions Inventory: 23 pollutants were inventoried from the local environment, including ten carcinogens. The total inventoried emissions are summarized in Table 2; individual facility emissions are provided in Table 40.

Modeling Results: Table 41 shows that the predicted locations of the maximum are similar for both meteorological data sets. However, the 1998/99 meteorology almost always yields higher predicted concentrations. Peak predicted concentrations of 1,4 dioxane, acetone, hexavalent chromium, and formaldehyde are higher than concentrations predicted by UAM using the basinwide emissions inventory. Thus, local source of 1,4 dioxane, acetone, hexavalent chromium, and formaldehyde may be a significant contributor to ambient conditions. It should be noted that these peak values are very localized. The microscale monitoring site is within about a kilometer of all sources inventoried and modeled. In spite of the proximity of the sources to the monitor, there is still a factor 10 (for formaldehyde) to 1000 (for 1,4 dioxane, acetone, and hexavalent chromium) decrease in concentrations from the peak receptor to the microscale monitoring site. It should be noted that this degree of spatial variability was not observed in any of the sites sampled throughout the study.

Inhalation risks for the modeled carcinogens are shown in Table 42 for the two different meteorological data sets. The 1998/99 meteorological data set gives higher risks at both the maximum receptor and the monitor site. Total risks, at the peak receptor are 37-44 in one million and are 3-4 in one million at the monitor site.

Summary:

- Lower concentrations of benzene and 1,3 butadiene at Torrance indicate lesser contribution from mobile sources at Torrance than at the fixed site of Compton.
- ISCST3 modeling using the 1998/99 meteorological data yields higher concentrations than the 1981 meteorological data.
- Microscale sources of 1,4 dioxane, acetone, hexavalent chromium, and formaldehyde may contribute substantially local ambient concentrations; sources of the other contaminants contribute little to the local ambient concentrations.
- Total inhalation risks from the microscale emissions inventory contribute up to 44 in one million at the peak receptor but only 4 in one million at the microscale monitoring site.

Table 39. Comparison of observed concentrations for the microscale and fixed site pair of Torrance and Compton.

Pollutant	Units	Microscale Site - Torrance				Fixed Site - Compton				Statistically significant?*
		Mean	S.D.	N	90% Conf. Interval	Mean	S.D.	N	90% Conf. Interval	
Chloromethane	ppb	0.42	0.14	16	0.350 - 0.500	0.60	0.33	6	0.249 - 0.951	No
Chloroethene	ppb	0.10	0.00	16	0.100 - 0.100	0.10	0.00	6	0.100 - 0.100	No
1,3 Butadiene	ppb	0.06	0.04	17	0.042 - 0.087	0.23	0.16	6	0.058 - 0.399	No
1,1 Dichloroethene	ppb	0.05	0.00	16	0.050 - 0.050	0.05	0.00	6	0.050 - 0.050	No
Methylene Chloride	ppb	0.26	0.20	16	0.158 - 0.367	0.55	0.26	6	0.278 - 0.822	No
1,1 Dichloroethane	ppb	0.05	0.00	16	0.050 - 0.050	0.05	0.00	6	0.050 - 0.050	No
Chloroform	ppb	0.05	0.00	16	0.049 - 0.053	0.05	0.00	6	0.050 - 0.050	No
Ethylene Dichloride	ppb	0.05	0.00	16	0.050 - 0.050	0.05	0.00	6	0.050 - 0.050	No
Benzene	ppb	0.29	0.21	16	0.173 - 0.398	0.85	0.29	6	0.548 - 1.152	Yes (fixed > micro)
Carbon Tetrachloride	ppb	0.10	0.00	16	0.100 - 0.100	0.10	0.00	6	0.100 - 0.100	No
Trichloroethene	ppb	0.05	0.00	16	0.049 - 0.053	0.10	0.10	6	-0.005 - 0.205	No
Toluene	ppb	1.01	0.66	16	0.662 - 1.368	2.82	1.08	6	1.686 - 3.948	Yes (fixed > micro)
Ethylene Dibromide	ppb	0.05	0.00	16	0.050 - 0.050	0.05	0.00	6	0.050 - 0.050	No
Perchloroethylene	ppb	0.11	0.08	16	0.065 - 0.154	0.28	0.13	6	0.144 - 0.423	No
Ethylbenzene	ppb	0.21	0.13	16	0.142 - 0.279	0.43	0.21	6	0.217 - 0.650	No
(m+p)-Xylene	ppb	1.10	1.28	16	0.421 - 1.784	1.62	0.66	6	0.929 - 2.305	No
Styrene	ppb	0.09	0.09	16	0.048 - 0.140	0.20	0.11	6	0.085 - 0.315	No
o-Xylene	ppb	0.32	0.22	16	0.205 - 0.434	0.63	0.25	6	0.371 - 0.896	No
p-Dichlorobenzene	ppb	0.09	0.08	16	0.051 - 0.132	0.25	0.16	6	0.078 - 0.422	No
o-Dichlorobenzene	ppb	0.07	0.05	16	0.045 - 0.095	0.08	0.06	6	0.011 - 0.139	No
Formaldehyde	ppb	4.36	1.48	20	3.674 - 5.056	5.05	3.05	6	1.845 - 8.248	No
Acetaldehyde	ppb	1.83	0.66	20	1.521 - 2.143	1.86	1.86	6	-0.086 - 3.809	No
Acetone	ppb	3.75	1.41	20	3.096 - 4.412	0.84	0.37	6	0.454 - 1.233	Yes (fixed > micro)
MEK	ppb	0.47	0.29	20	0.333 - 0.608	0.26	0.38	6	-0.136 - 0.663	No
Hexavalent chromium	ng/m ³	0.16	0.15	21	0.089 - 0.221	0.19	0.14	5	0.015 - 0.369	No
Arsenic	ng/m ³	2.00	0.00	20	2.000 - 2.000	1.50	0.00	3	1.500 - 1.500	No
Nickel	ng/m ³	8.68	4.09	20	6.769 - 10.593	10.49	7.78	3	-8.845 - 29.831	No
Selenium	ng/m ³	1.74	1.21	20	1.176 - 2.306	1.83	1.23	3	-1.217 - 4.874	No
Cadmium	ng/m ³	5.00	0.00	20	5.000 - 5.000	5.00	0.00	3	5.000 - 5.000	No

* Statistical significance determined by non-overlapping confidence intervals.

**TORRANCE MICRO-SCALE SITE
Inventory of Toxics (MATES Tables) and Sources of Potential Impact 6/1/1999**

fac.SIC	Activity type	Activity duration in hrs/day, days/wk, wks/yr	Main Mates II Pollutant Emitted	Emissions in Lbs/Month	Emiss'ns lbs/hr, calcd.	Methodology, (comments)
3714	Welding	8,5,52	manganese	3.9x10 ⁻³	2.4x10 ⁻⁵	FLD/TC/AQMD (Est. Usage and MSDS)
			silica	2.9x10 ⁻³	2.4x10 ⁻⁵	
			copper	3.3x10 ⁻³	2.1x10 ⁻⁵	
			chromium	trace	trace	
			other trace metals	trace	trace	
	Machining	1,5,52	Trace metals	trace	trace	
	Spray coating	24,7,52	Glycol ethr fam(2-BtxyEthnl)	5.9	8.8x10 ⁻³	
3699	Wholesale		none	0	0	FLD/TC
	Sales only		none	0	0	FLD/TC
	Inactive site		none	0	0	FLD/TC
	Inactive site		none	0	0	FLD/TC/AQMD (Inactive site)
	Sales only		none	0	0	FLD/TC/AQMD
	Sales only		none	0	0	FLD/TC/AQMD
	Sales only		none	0	0	FLD/TC/AQMD
	Sales only		none	0	0	FLD/TC/AQMD
	Sales only		none	0	0	FLD/TC/AQMD

**TORRANCE MICRO-SCALE SITE
Inventory of Toxics (MATES Tables) and Sources of Potential Impact 6/1/1999**

2821	Strge, Mldng and extruding	8,5,52	styrene	1.2x10-2	7.5x10-5	FLD/TC/AQMD (Monthly usage and MSDS)
			butadiene	0.18	1.1x10-3	
			acrylonitrile	0.23	1.4x10-3	
			propylene	5x10-3	3.1x10-5	
			aldehydes	trace	trace	
	Purging pellets		none	0	0	
	Pigments		carbon black	1.0x10-3	6.3x10-6	
			Silica (inTiO2)	6.0x10-3	3.8x10-5	
			chromium (trivalent)	4.0x10-3	6.3x10-6	
	Sales only		none	0	0	FLD/TC/AQMD
	Sales only		none	0	0	FLD/TC/AQMD
	Sales only		none	0	0	FLD/TC/AQMD
	Sales only		none	0	0	FLD/TC/AQMD
	Sales only		none	0	0	FLD/TC/AQMD
	Sales only		none	0	0	FLD/TC/AQMD
5031	Wd fabrication	8,5,52	none	0	0	FLD/TC/AQMD
	Adhesives	24,7,52	Formaldehyde	53.3	7.9x10-2	
	Hardners	24,7,52	Ammonia	trace	trace	
	Sales only		none	0	0	
	Sales only		none	0	0	FLD/TC/AQMD
	Sales only		none	0	0	FLD/TC

**TORRANCE MICRO-SCALE SITE
Inventory of Toxics (MATES Tables) and Sources of Potential Impact 6/1/1999**

Sales only		none	0	0	0	FLD/TC
Sales only		none	0	0	0	FLD/TC
Sales only		none	0	0	0	FLD/TC
silica handling	8,5,52	silica	1.2x10 ⁻³	7.5x10 ⁻⁶		FLD/TC (Av. Usage and
column poking	24,7,52	acetone	176	0.26		MSDS)
		hexane	220	0.32		
		methanol	87.8	0.13		
Sales only		none	0	0	0	FLD/TC
Sales only		none	0	0	0	FLD/TC
3471 Electroless plit	3,5,52	Ammonia	trace	trace		FLD/TC/AQMD
		Nickel	trace	trace		(Est. usages, Amp-hrs, contrl
		phosphine	trace	trace		controls, MSDS)
Nickel plating	5,5,52	Nickel	7.4x10 ⁻⁵	7.4x10 ⁻⁷		
Pot slvr Cyan	5,5,52	cyanide	trace	trace		
		silver	8.7x10 ⁻⁵	8.7x10 ⁻⁷		
Copper plating	5,5,52	copper	9.5x10 ⁻⁵	9.5x10 ⁻⁷		
Cr. conv. Coat	1,5,52	chromium	traces	traces		
		Nitric acid	traces	traces		
Cad Plt/g/hdng	8,5,52	Cadmium	1.5x10 ⁻³	9.4x10 ⁻⁶		
N.G. combust.	5,5,52	Formaldehyde	0.1	1.0x10 ⁻³		
		Benzene	1.0x10 ⁻³	1.0x10 ⁻⁵		
		PoM	1.4x10 ⁻⁴	1.4x10 ⁻⁶		
wste wtr treat.	24,7,52	Ni,Cd, Nitric acid, ammonia,	traces	traces		
		chromium, cyanide,sulfates	traces	traces		

**TORRANCE MICRO-SCALE SITE
Inventory of Toxics (WATES Tables) and Sources of Potential Impact 6/1/1999**

Sales only	none	0	0	0	FLD/TC
Service	none	0	0	0	FLD/TC
Service	none	0	0	0	FLD/TC
Sales/service	none	0	0	0	FLD/TC
Inactive site	none	0	0	0	FLD/TC/AQMD (Inactive site)
Sales only	none	0	0	0	FLD/TC
Sales only	none	0	0	0	FLD/TC
Sales only	none	0	0	0	FLD/TC
Inactive site	none	0	0	0	FLD/TC/AQMD (Inactive site)
Sales only	none	0	0	0	FLD/TC
Sales only	none	0	0	0	FLD/TC

**TORRANCE MICRO-SCALE SITE
Inventory of Toxics (MATES Tables) and Sources of Potential Impact 6/1/1999**

2599	Adhesives	24,7,52	Dioxane	0.8	1.2x10 ⁻³	FLD/TC/AQMD
	Diluents	24,7,52	1,1,1-trichloroethane	28.3	4.2x10 ⁻²	(Est. usage and MSDS)
	Spray coating	24,7,52	acetone	41.8	6.2x10 ⁻²	
			Isopropanol	37.1	5.5x10 ⁻²	
			Toluene	4.6	6.8x10 ⁻³	

Table 41. Annual Concentrations at Torrance from the Microscale Emissions Inventory.

Pollutant	Obs. Conc. at Fixed Site (ug/m3)		UAM Pred.		ISCST3 Pred. Conc. - 1981 Meteorology			ISCST3 Pred. Conc. - 1998/99 Meteorology		
	Fixed Site (ug/m3)	Conc. (ug/m ³)	At Monitor ¹ (ug/m ³)	Maximum (ug/m ³)	UTM-E (km)	UTM-N (km)	At Monitor ¹ (ug/m ³)	Maximum (ug/m ³)	UTM-E (km)	UTM-N (km)
1,3-Butadiene	1.39E+00	1.85E-01	9.87E-06	1.40E-02	377.63	3745.40	1.72E-05	1.52E-02	377.63	3745.40
1,4-Dioxane	n.s.	1.20E-02	8.84E-05	6.41E-02	377.55	3745.53	2.09E-04	7.64E-02	377.55	3745.53
Acetone	4.63E+00	1.10E+00	1.48E-02	1.54E+01	377.50	3745.65	4.12E-02	2.12E+01	377.50	3745.65
Acrylonitrile	n.s.	n.m.	1.26E-05	1.78E-02	377.63	3745.40	2.19E-05	1.93E-02	377.63	3745.40
Benzene	5.75E+00	1.90E+00	7.18E-07	9.33E-05	377.63	3745.18	4.96E-07	1.07E-04	377.63	3745.18
Cadmium	5.00E-03	1.00E-03	1.08E-06	1.40E-04	377.63	3745.18	7.46E-07	1.60E-04	377.63	3745.18
Carbon black	n.s.	n.m.	5.65E-08	8.03E-05	377.63	3745.40	9.87E-08	8.71E-05	377.63	3745.40
Chromium, hexavalent	2.30E-04	6.29E-05	5.65E-08	8.03E-05	377.63	3745.40	9.87E-08	8.71E-05	377.63	3745.40
Copper	1.89E-02	n.m.	6.19E-07	2.23E-04	377.63	3745.28	6.24E-07	2.98E-04	377.60	3745.30
Formaldehyde	5.90E+00	3.78E+00	4.28E-01	3.82E+00	377.75	3745.10	5.99E-01	5.14E+00	377.75	3745.10
Glycol ethers	n.s.	n.m.	9.69E-04	3.93E-01	377.63	3745.28	1.02E-03	5.24E-01	377.60	3745.30
Hexane	n.s.	n.m.	1.36E-02	2.04E+01	377.50	3745.65	4.06E-02	2.81E+01	377.50	3745.65
Isopropanol	n.s.	n.m.	4.05E-03	2.94E+00	377.55	3745.53	9.60E-03	3.50E+00	377.55	3745.53
Manganese	2.69E-02	n.m.	6.29E-07	2.55E-04	377.63	3745.28	6.59E-07	3.40E-04	377.60	3745.30
Methanol	n.s.	n.m.	3.40E-03	5.11E+00	377.50	3745.65	1.01E-02	7.01E+00	377.50	3745.65
Nickel	8.70E-03	3.00E-03	5.31E-08	6.90E-06	377.63	3745.18	3.67E-08	7.89E-06	377.63	3745.18
POM	n.s.	n.m.	1.01E-07	1.31E-05	377.63	3745.18	6.95E-08	1.49E-05	377.63	3745.18
Propylene oxide	n.s.	???	2.78E-07	3.95E-04	377.63	3745.40	4.86E-07	4.28E-04	377.63	3745.40
Silica	n.s.	n.m.	1.05E-06	4.92E-04	377.63	3745.40	1.48E-06	5.43E-04	377.63	3745.40
Silver	0.0025	n.m.	6.25E-08	8.12E-06	377.63	3745.18	4.32E-08	9.27E-06	377.63	3745.18
Styrene	1.53	2.00E-01	6.73E-07	9.56E-04	377.63	3745.40	1.18E-06	1.04E-03	377.63	3745.40
Toluene	19.14	5.46E+00	5.01E-04	3.63E-01	377.55	3745.53	1.19E-03	4.33E-01	377.55	3745.53
Trichloroethane	n.s.	n.m.	3.09E-03	2.24E+00	377.55	3745.53	7.33E-03	2.67E+00	377.55	3745.53

¹ Location of the monitor site is 377.85 km UTM-E & 3745.08 UTM-N.
n.a. = not applicable; n.s. = not sampled; n.m. = not modeled

Table 42. Inhalation Cancer Risks at Torrance from the Microscale Emissions Inventory.

Pollutant	Predicted Risks using 1981 Meteorology		Predicted Risks using 1998/99 Meteorology	
	At Monitor ¹	Maximum ²	At Monitor ¹	Maximum ³
1,3-Butadiene	1.68E-09	1.81E-08	2.93E-09	4.75E-08
1,4-Dioxane	6.81E-10	4.93E-07	1.61E-09	5.88E-07
Acrylonitrile	3.64E-09	3.93E-08	6.36E-09	1.03E-07
Benzene	2.08E-11	3.26E-12	1.44E-11	9.35E-12
Cadmium	4.54E-09	7.10E-10	3.13E-09	2.04E-09
Chromium, hexavalent	8.48E-09	9.15E-08	1.48E-08	2.40E-07
Formaldehyde	2.57E-06	4.07E-08	3.59E-06	1.19E-07
Nickel	1.38E-11	2.16E-12	9.55E-12	6.20E-12
Propylene oxide	1.03E-12	1.11E-11	1.80E-12	2.91E-11
Trichloroethane	4.95E-08	3.59E-05	1.17E-07	4.28E-05
Total Cancer Risks	2.64E-06	3.66E-05	3.74E-06	4.39E-05

¹ Location is 377.85 km UTM-E & 3745.08 UTM-N

² Location is 377.55 km UTM-E & 3745.53 UTM-N

³ Location is 377.55 km UTM-E & 3745.53 UTM-N

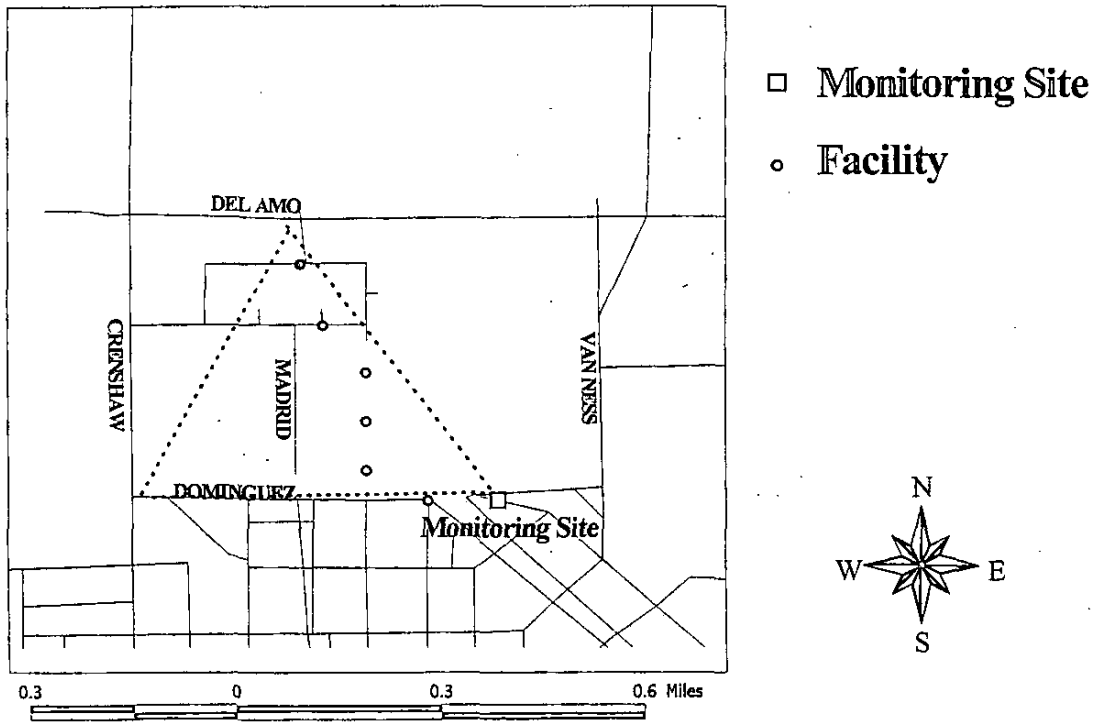


Figure 27. Local map showing the Torrance microscale monitoring site and vicinity.

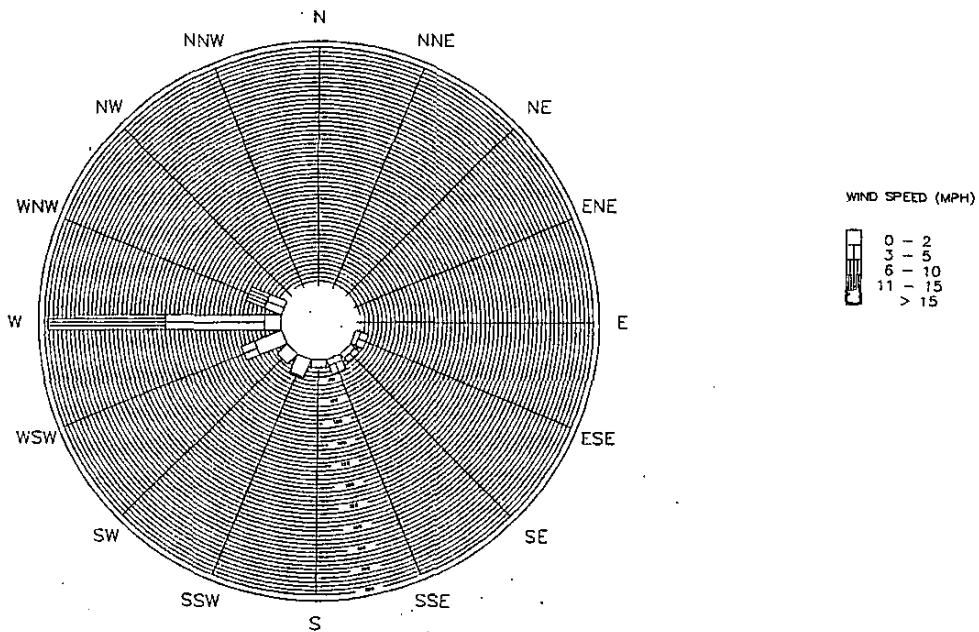


Figure 28. Wind rose for the period 7/21/98 to 9/5/98 at the Torrance microscale monitoring site.

MICROSCALE SITE DESCRIPTION AND ANALYSIS

Microscale Site: Van Nuys

Site Location: 16101½ Roscoe Blvd., Van Nuys, CA 91406
(see Figure 29)

Sampling Period: 1/9/99 – 2/17/99

Nearest (paired) MATES-II Fixed Site: Burbank
228 W. Palm Avenue, Burbank

Approximate Distance Between Microscale and Fixed Site Locations: 10.4 miles

Special Considerations: This site was specifically selected for winter sampling to be located south of a cluster of facilities, and also generally south and southeast of the Van Nuys Airport. During summer months, winds are more predominantly from the southeast, but during the winter months winds tend to be more northerly, which are needed for the siting objectives.

Wind Data: Winds were from the north approximately 25 percent of the time, and from the north-northwest, another 12 percent of the time. Winds were favorable for the siting criteria for the monitoring platform. To a much lesser extent, winds occurred from all other directions. Southeasterly winds occurred 7 percent of the time, indicating typical summer sea breeze conditions did not occur very often during the sampling period, which took place during the middle of the winter. (See wind rose in Figure 30.)

Statistical Comparisons of Measured Data: No significant differences observed for any compounds, although Burbank shows greater mobile source influence (see Table 43).

Microscale Emissions Inventory: Three pollutants were inventoried from the local environment, including only one carcinogen. The total inventoried emissions are summarized in Table 2; individual facility emissions are provided in Table 44.

Modeling Results: Table 45 shows that the locations of the maximum are similar for both meteorological data sets. The 1998/99 meteorology more often yields higher predicted concentrations. Predicted concentrations at the maximum receptor and at the monitor site from the microscale emissions inventory are much lower than concentrations predicted by UAM using the basinwide emission inventory or the average concentrations observed at the nearest fixed site of Burbank.

Inhalation risks for the modeled carcinogens are shown in Table 46 for the two different meteorological data sets. The 1981 meteorological data set gives higher risks at the monitor site, whereas the 1998/99 meteorological data gives higher risks at the maximum receptor. Total risks, at the peak receptor are approximately 2 in one million and are less than 1 in one million at the monitor site.

Summary:

- Measured concentrations at Van Nuys and Burbank are similar
- Overall, using the 1998/99 meteorological data for the microscale modeling gives higher predicted concentrations than the 1981 meteorological data.
- The microscale emission inventory for Van Nuys contributes little to the observed cancer risks.

Table 43. Comparison of observed concentrations for the microscale and fixed site pair of Van Nuys and Burbank.

Pollutant	Units	Microscale Site - Van Nuys				Fixed Site - Burbank				Statistically significant?*
		Mean	S.D.	N	90% Conf. Interval	Mean	S.D.	N	90% Conf. Interval	
Chloromethane	ppb	0.67	0.13	13	0.592 - 0.744	0.73	0.09	8	0.651 - 0.799	No
Chloroethene	ppb	0.10	0.00	13	0.100 - 0.100	0.10	0.00	8	0.100 - 0.100	No
1,3 Butadiene	ppb	0.34	0.24	13	0.201 - 0.486	0.71	0.32	8	0.447 - 0.975	No
1,1 Dichloroethene	ppb	0.05	0.00	13	0.050 - 0.050	0.05	0.00	8	0.050 - 0.050	No
Methylene Chloride	ppb	0.48	0.41	13	0.236 - 0.733	1.21	0.86	8	0.497 - 1.928	No
1,1 Dichloroethane	ppb	0.05	0.00	13	0.050 - 0.050	0.05	0.00	8	0.050 - 0.050	No
Chloroform	ppb	0.06	0.02	13	0.048 - 0.076	0.06	0.02	8	0.043 - 0.082	No
Ethylene Dichloride	ppb	0.05	0.00	13	0.050 - 0.050	0.05	0.00	8	0.050 - 0.050	No
Benzene	ppb	1.04	0.66	13	0.646 - 1.438	1.84	0.84	8	1.137 - 2.538	No
Carbon Tetrachloride	ppb	0.10	0.00	13	0.100 - 0.100	0.10	0.00	8	0.100 - 0.100	No
Trichloroethene	ppb	0.05	0.00	13	0.050 - 0.050	0.05	0.00	8	0.050 - 0.050	No
Toluene	ppb	2.33	1.75	13	1.274 - 3.385	6.18	3.50	8	3.252 - 9.098	No
Ethylene Dibromide	ppb	0.05	0.00	13	0.050 - 0.050	0.05	0.00	8	0.050 - 0.050	No
Perchloroethylene	ppb	0.22	0.19	13	0.104 - 0.329	0.80	0.58	8	0.317 - 1.283	No
Ethylbenzene	ppb	0.27	0.21	13	0.142 - 0.391	0.64	0.41	8	0.292 - 0.983	No
(m+p)-Xylene	ppb	1.12	0.89	13	0.588 - 1.658	2.49	1.79	8	0.994 - 3.981	No
Styrene	ppb	0.31	0.46	13	0.030 - 0.589	0.41	0.58	8	-0.079 - 0.892	No
o-Xylene	ppb	0.40	0.31	13	0.213 - 0.584	0.81	0.60	8	0.310 - 1.315	No
p-Dichlorobenzene	ppb	0.07	0.02	13	0.056 - 0.086	0.08	0.05	8	0.030 - 0.120	No
o-Dichlorobenzene	ppb	0.05	0.00	13	0.050 - 0.050	0.05	0.00	8	0.050 - 0.050	No
Formaldehyde	ppb	5.00	2.80	13	3.303 - 6.689	6.46	2.76	5	3.033 - 9.887	No
Acetaldehyde	ppb	2.58	1.62	13	1.600 - 3.556	3.00	1.34	5	1.341 - 4.659	No
Acetone	ppb	6.14	4.18	13	3.613 - 8.668	2.94	1.67	5	0.869 - 5.011	No
MEK	ppb	1.08	0.78	13	0.612 - 1.557	0.70	0.37	5	0.244 - 1.156	No
Hexavalent chromium	ng/m ³	0.18	0.07	13	0.134 - 0.221	0.21	0.15	5	0.025 - 0.391	No
Arsenic	ng/m ³	2.00	0.00	10	2.000 - 2.000	1.50	0.00	4	1.500 - 1.500	No
Nickel	ng/m ³	3.22	2.91	10	1.135 - 5.297	6.76	5.49	4	-1.968 - 15.488	No
Selenium	ng/m ³	0.75	0.79	10	0.185 - 1.314	1.92	1.87	4	-1.044 - 4.893	No
Cadmium	ng/m ³	5.00	0.00	10	5.000 - 5.000	5.00	0.00	4	5.000 - 5.000	No

* Statistical significance determined by non-overlapping confidence intervals.

Table 45. Annual Concentrations at Van Nuys from the Microscale Emissions Inventory.

Pollutant	Obs. Conc. at		UAM Pred.			ISCST3 Pred. Conc. - 1981 Meteorology			ISCST3 Pred. Conc. - 1998/99 Meteorology		
	Fixed Site (ug/m3)		Conc. (ug/m ³)	At Monitor ¹ (ug/m ³)	Maximum (ug/m ³)	UTM-E (km)	UTM-N (km)	At Monitor ¹ (ug/m ³)	Maximum (ug/m ³)	UTM-E (km)	UTM-N (km)
Benzene	4.06E+00		4.06	9.91E-04	6.41E-02	363.30	3787.15	4.99E-04	8.25E-02	363.28	3787.13
Toluene	1.57E+01		15.42	4.46E-03	1.09E+00	363.35	3786.95	1.13E-02	2.10E+00	363.38	3786.98
Xylenes	1.06E+01		n.m.	2.22E-04	1.44E-02	363.30	3787.15	1.12E-04	1.85E-02	363.28	3787.13

¹ Location of the monitor site is 363.39 km UTM-E & 3787.47 UTM-N.
n.a. = not applicable; n.s. = not sampled; n.m. = not modeled

Table 46. Inhalation Cancer Risks at Van Nuys from the Microscale Emissions Inventory.

Pollutant	Predicted Risks using 1981 Meteorology		Predicted Risks using 1998/99 Meteorology	
	At Monitor ¹	Maximum ²	At Monitor ¹	Maximum ³
Benzene	2.87E-08	1.86E-06	1.45E-08	2.39E-06
Total Cancer Risks	2.87E-08	1.86E-06	1.45E-08	2.39E-06

¹ Location is 363.39 km UTM-E & 3787.47 UTM-N

² Location is 363.30 km UTM-E & 3787.15 UTM-N

³ Location is 363.28 km UTM-E & 3787.13 UTM-N

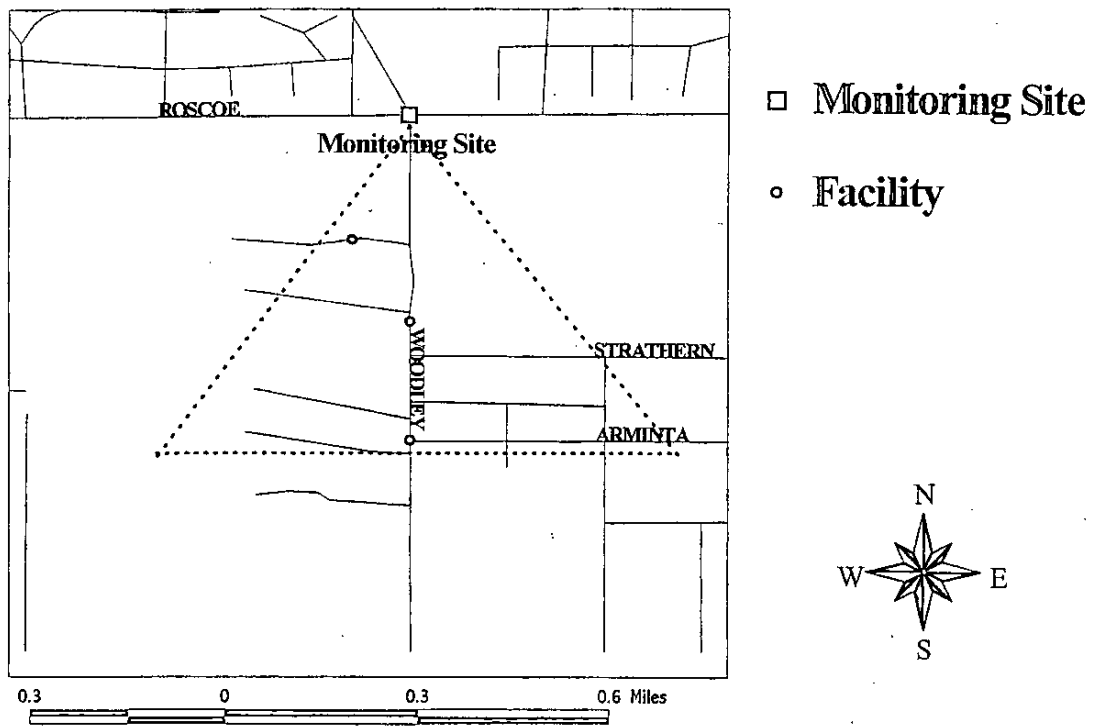


Figure 29. Local map showing the Van Nuys microscale monitoring site and vicinity.

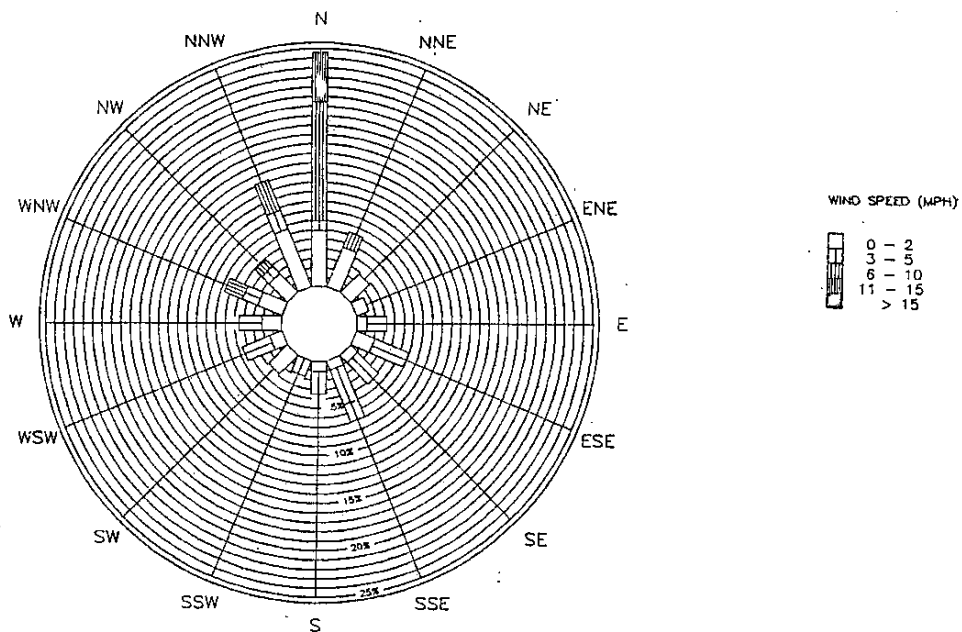


Figure 30. Wind rose for the period 1/9/99 to 2/17/99 at the Van Nuys microscale monitoring site.