



# **Benicia Air Monitoring Station Preliminary Results**

**Benicia Community Meeting**

**May 6, 2009**

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# Findings

- Benicia correlates well with other specific Air Monitoring Network Stations
- For those stations that correlate with Benicia, typical concentrations are higher
- Associated risks are comparatively low for Benicia



# Background

- Worked with the City of Benicia, the community and Valero to develop a monitoring strategy
- The Air District was not a signatory on the Valero Improvement Project (VIP) agreement
- Financed and built a mobile air monitoring station for installation on agreed upon site
- Capital cost of the mobile air monitoring station is approximately \$250,000
- Costs to operate the station fully covered by the Air District
- Collocated open path Hound instrument with Air District instrumentation

The image shows the Golden Gate Bridge in San Francisco, partially obscured by a thick layer of fog or low clouds. The bridge's towers and suspension cables are visible against a light sky.

# Background (Continued)

- Measured criteria pollutants (ozone, NO<sub>x</sub>, SO<sub>2</sub>, CO and PM<sub>10</sub>)
- Measured continuous PM<sub>2.5</sub> (also known as a beta attenuation monitor or BAM)

Once every six days for a period of 24-hours -

- Measured a suite of 19 organic compounds
- Measured carbonyl compounds
- Measured elemental carbon and organic carbon (EC/OC)
- Measured for a suite of metals
- Measured additional ions
- Site began operation on 4/1/07

The image shows the Golden Gate Bridge in San Francisco, California, partially obscured by a thick layer of white fog or mist. The bridge's towers and suspension cables are visible against a pale blue sky. The overall scene is hazy and atmospheric.

# Analysis

- CO, NO<sub>2</sub> and benzene concentrations were among the lowest in the Bay Area indicating a smaller vehicle contribution than most sites
- Other organic compounds were well below the Bay Area average
- Metals results are unremarkable with one exception
- PM<sub>10</sub> concentrations were among the lowest in the Bay Area
- SO<sub>2</sub> concentrations were higher at Crockett, Pittsburg and Richmond

The image shows the Golden Gate Bridge in San Francisco, California, partially obscured by a thick layer of white fog or smog. The bridge's towers and suspension cables are visible against a pale blue sky. The fog covers the water and the surrounding land, creating a hazy atmosphere.

# Analysis

- Ozone concentrations at Benicia are above the Bay Area average, but not among the highest
- Ozone concentrations at the Concord station are well correlated with Benicia and are typically higher
- When concentrations of ozone are above 65 ppb, Concord recorded higher concentrations in all but one case
- Met the National 8-hour standard of 75 ppb for ozone for 2007 and 2008 (fourth highest day)



# Ozone

Bay Area sites with highest 4<sup>th</sup> high 8-hour ozone, 2007-2008\*

Site	4 <sup>th</sup> highest 8-hr ozone (ppb)		
	2007	2008	2-yr ave
Livermore	67	87	77.0
Concord	71	78	74.5
Bethel Island	71	76	73.5
San Martin	71	71	71.0
Gilroy	68	72	70.0
Benicia	61	75	68.0
Pittsburg	67	67	67.0
Los Gatos	59	74	66.5
Fairfield	62	68	65.0

\* Sites with ozone as high or higher than Benicia's in 2007 and/or 2008.



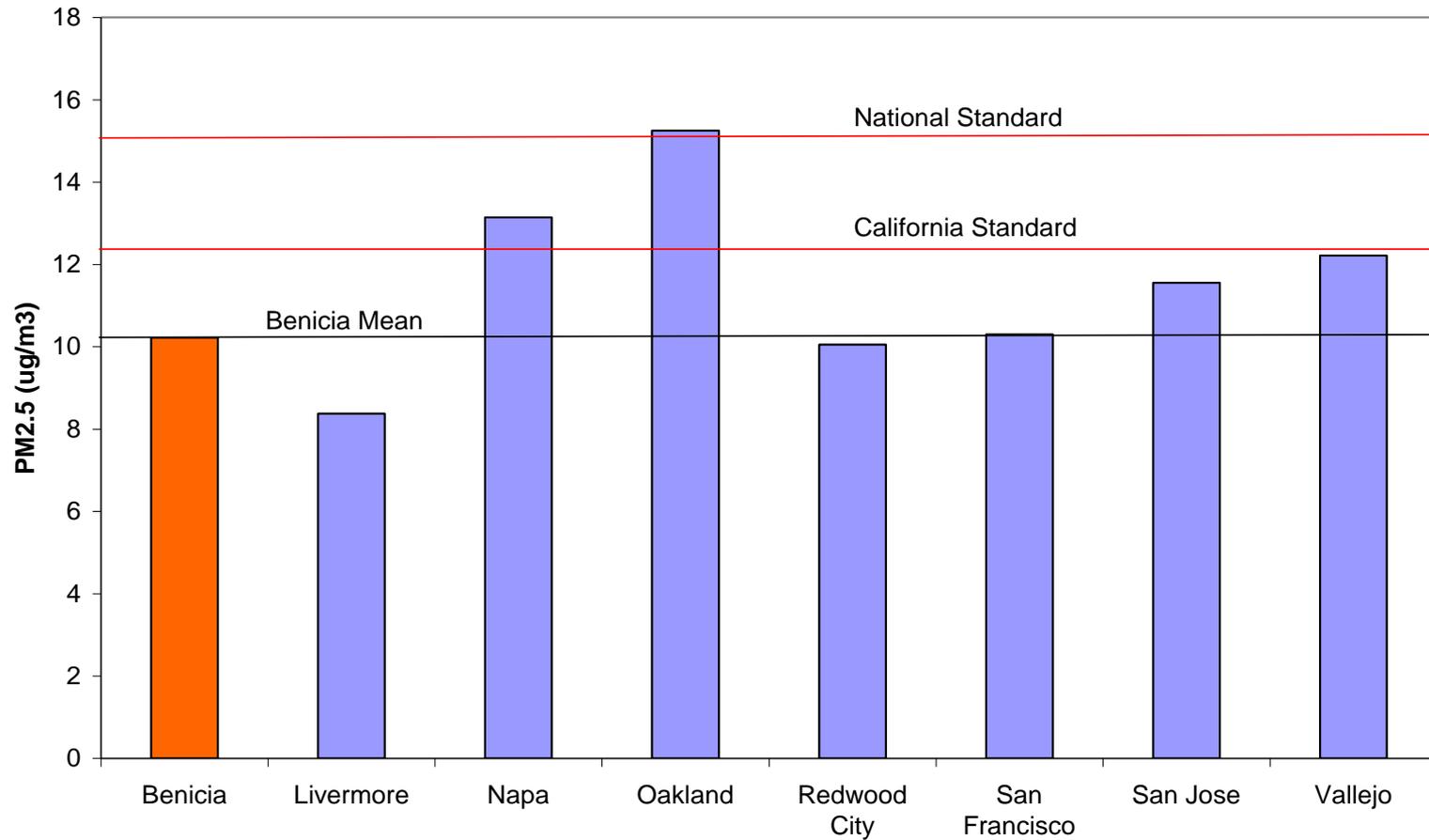
# Analysis

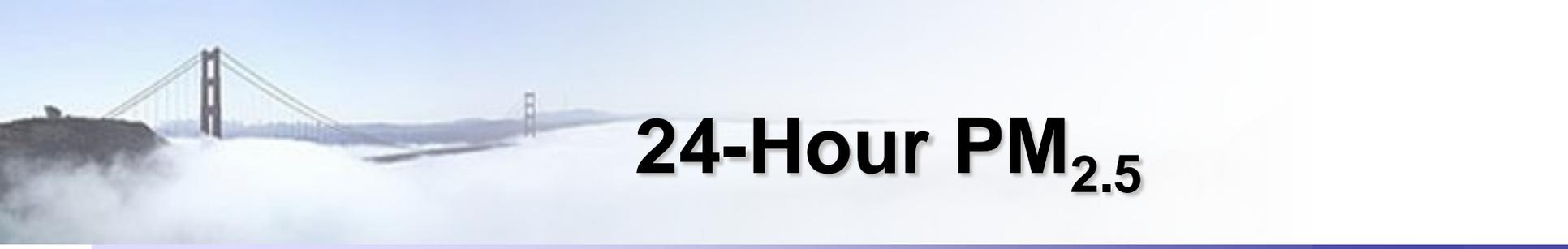
- Excepting wild fire impacted days, Benicia and Vallejo  $PM_{2.5}$  are reasonably well correlated, with Vallejo having higher concentrations on higher days
- Benicia would have met the 24-hour National Standard for  $PM_{2.5}$  with a 98<sup>th</sup> percentile concentration of 27  $\mu g/m^3$
- Benicia experience the highest  $PM_{2.5}$  concentrations in the Bay Area during the 6/22/08 – 6/27/08 wildfire episode



# Annual PM<sub>2.5</sub>

**Annual PM<sub>2.5</sub> Means at Bay Area Sites**  
Quarterly averaged PM<sub>2.5</sub> concentrations from BAM units for 2007-2008

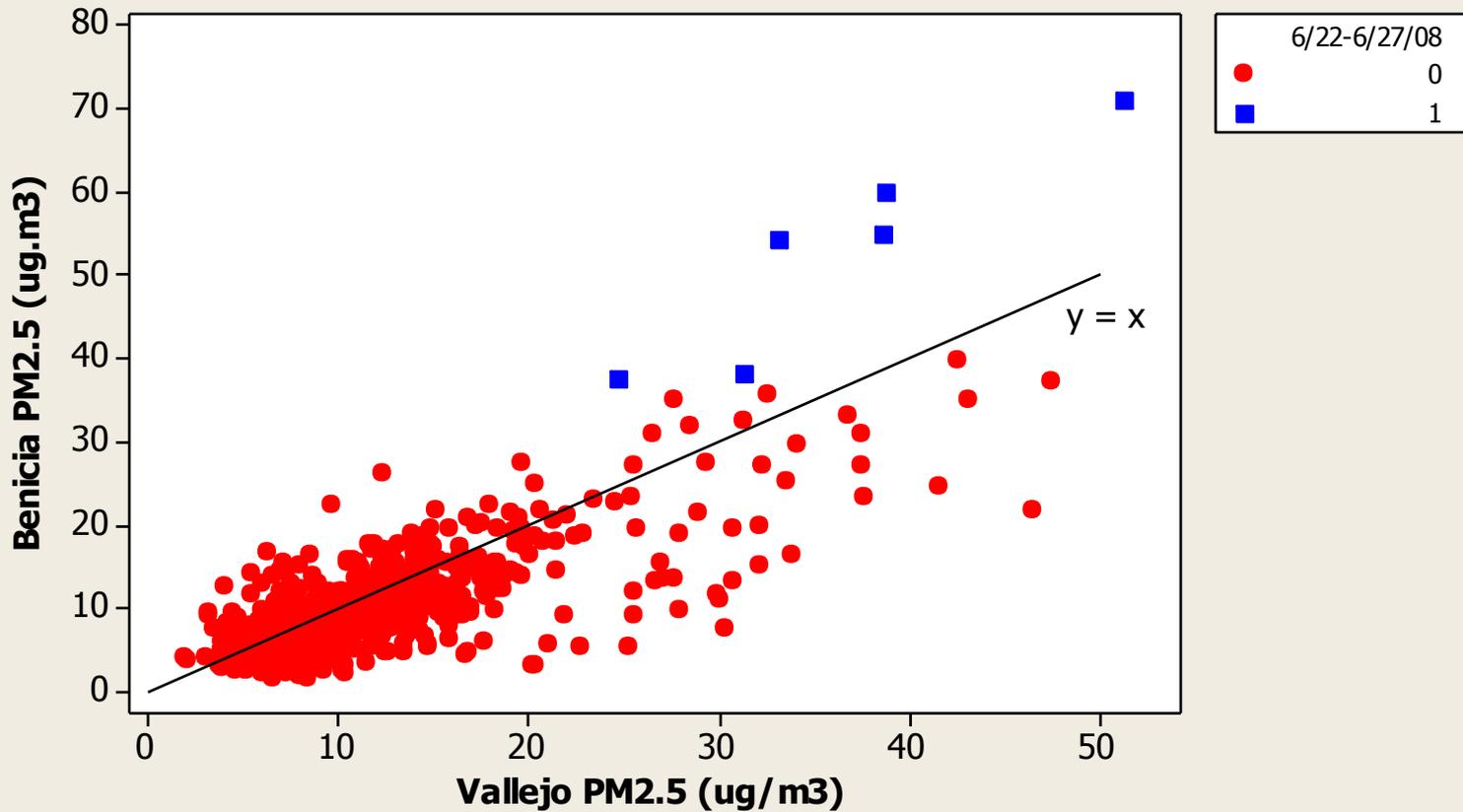




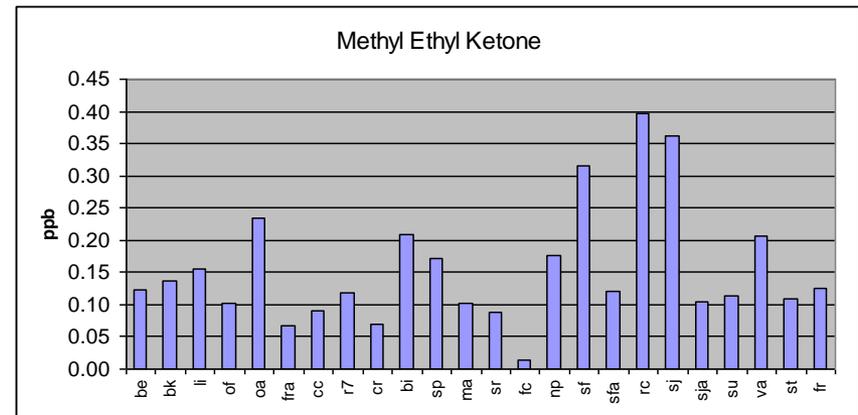
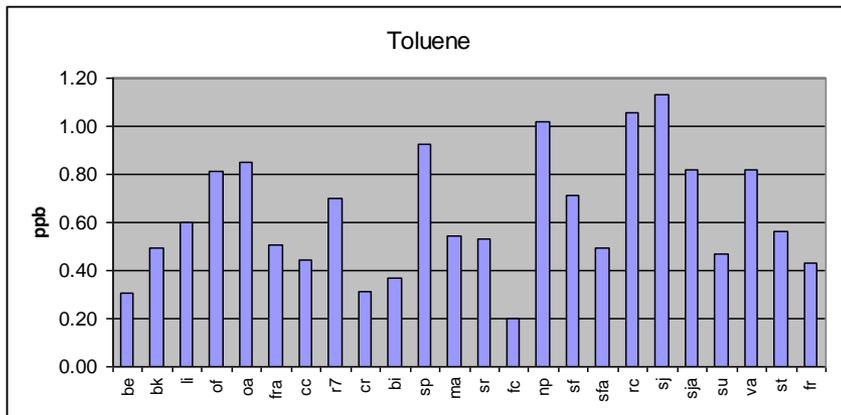
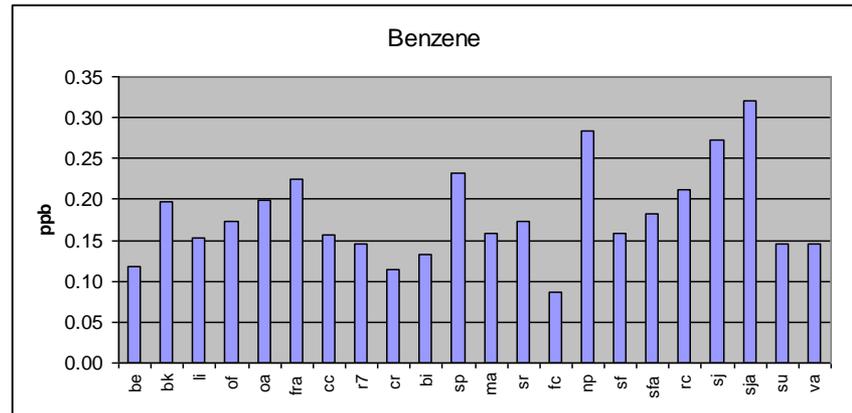
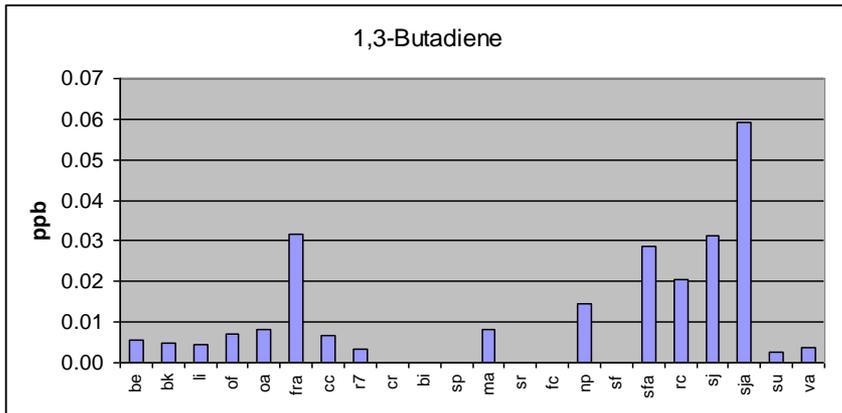
# 24-Hour PM<sub>2.5</sub>

## Comparison of Benicia and Vallejo BAM Measurements

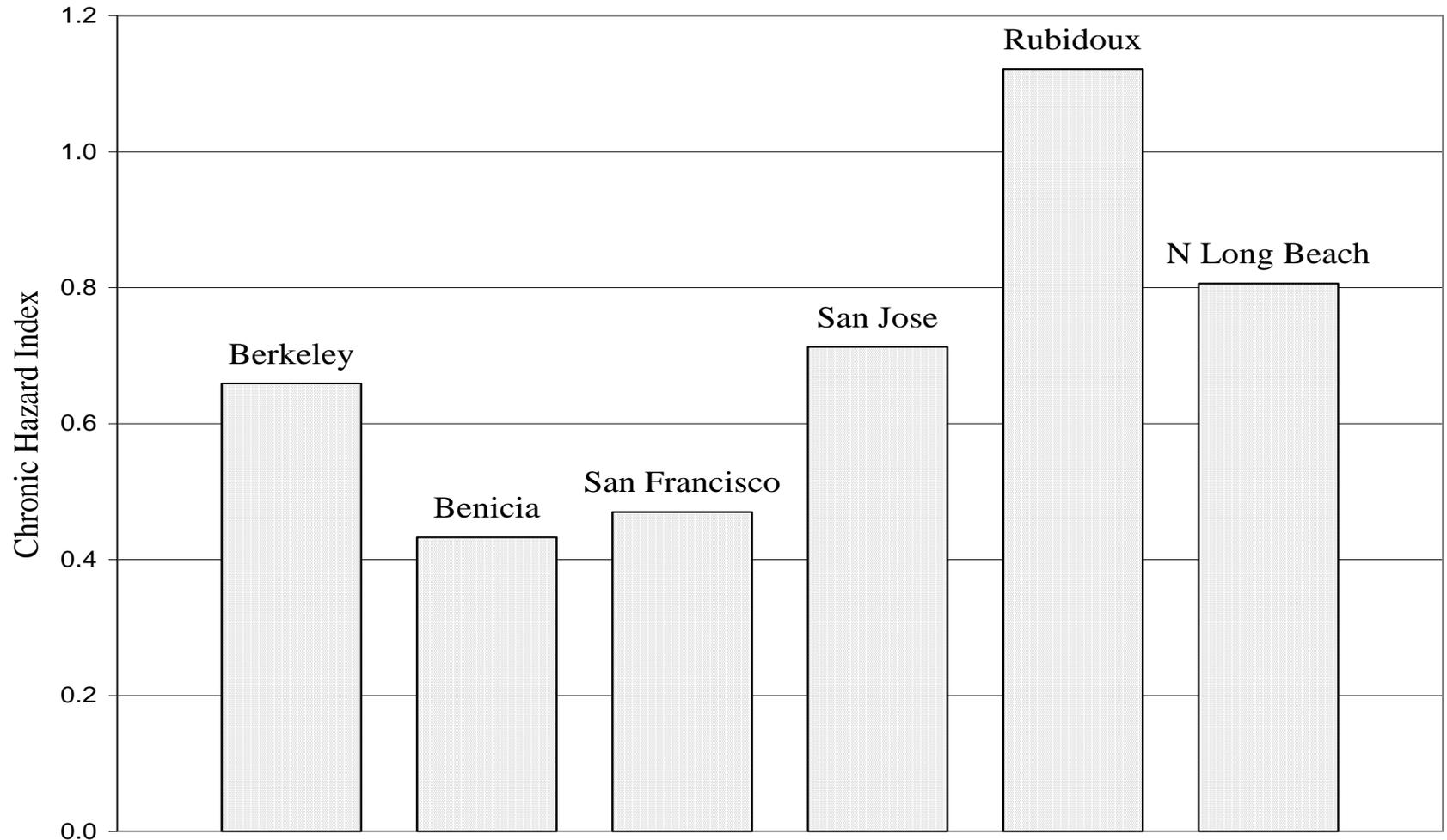
4/1/2007 - 12/31/2008



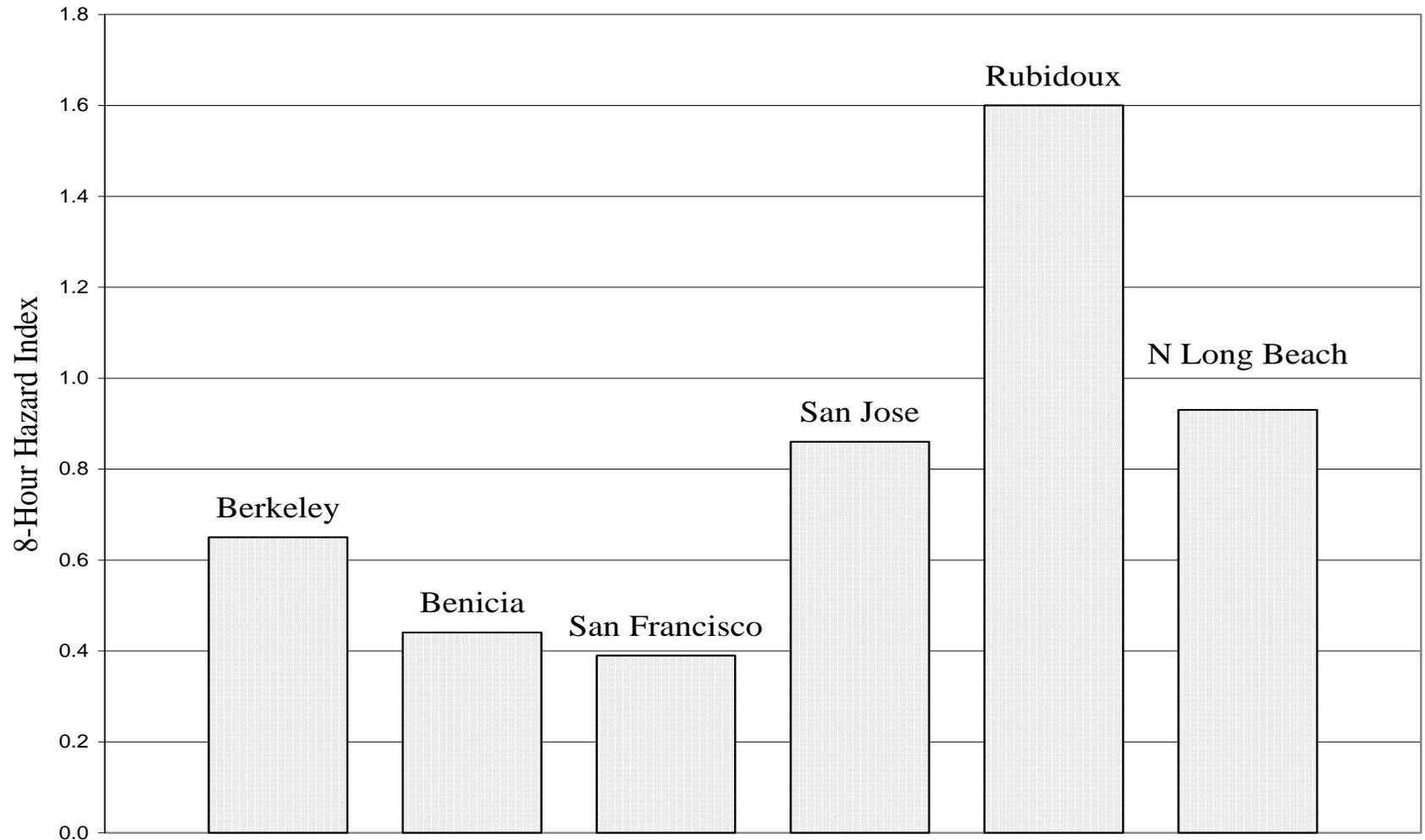
# Organic Compounds



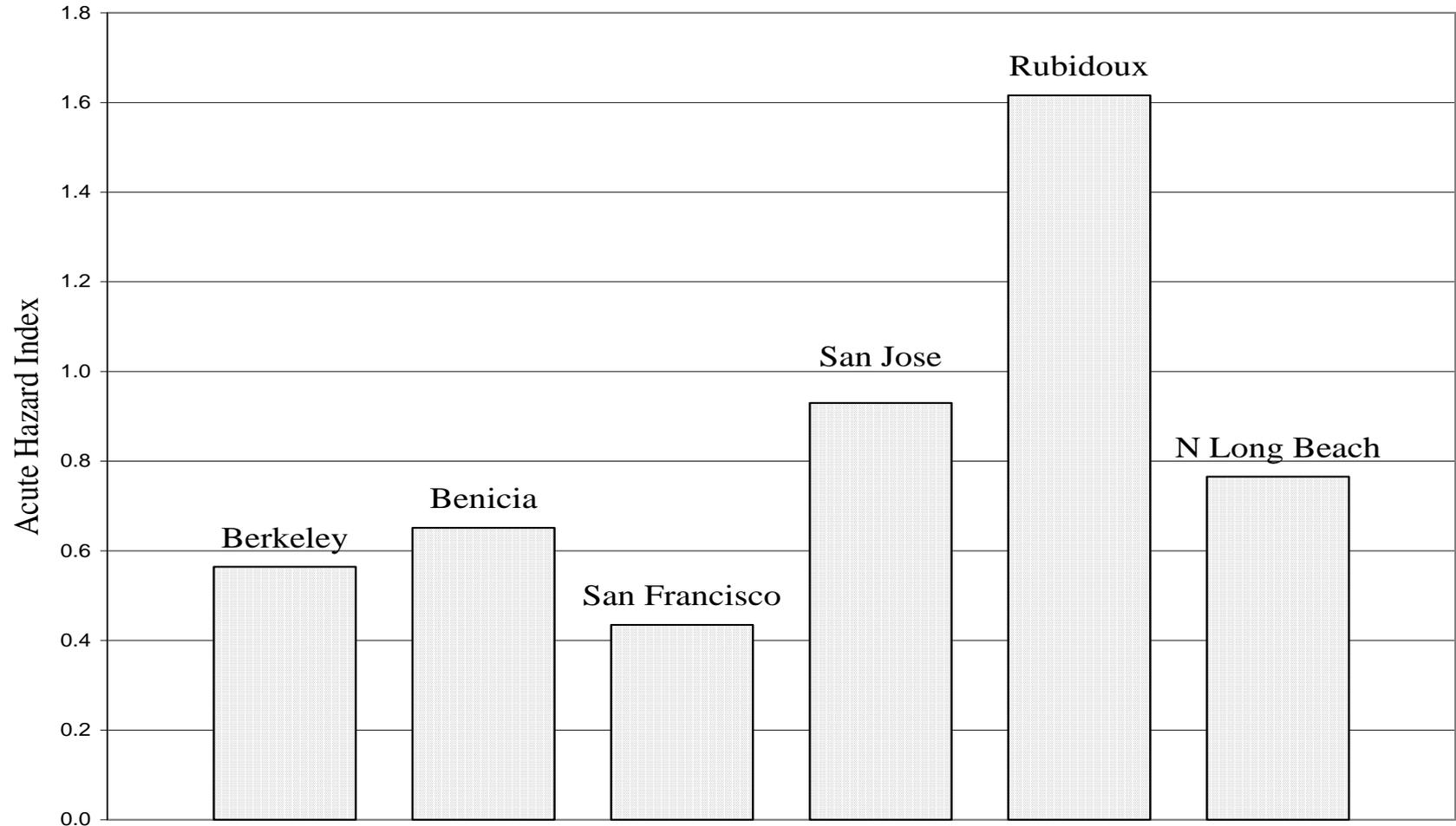
# Chronic Noncancer Risk



# 8-Hour Noncancer Risk



# Acute Noncancer Risk





# Metals

Manganese TSP (ng/m3) - 2008

