Western San Bernardino County AQMD Town Hall Meeting

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Key Air Pollutants

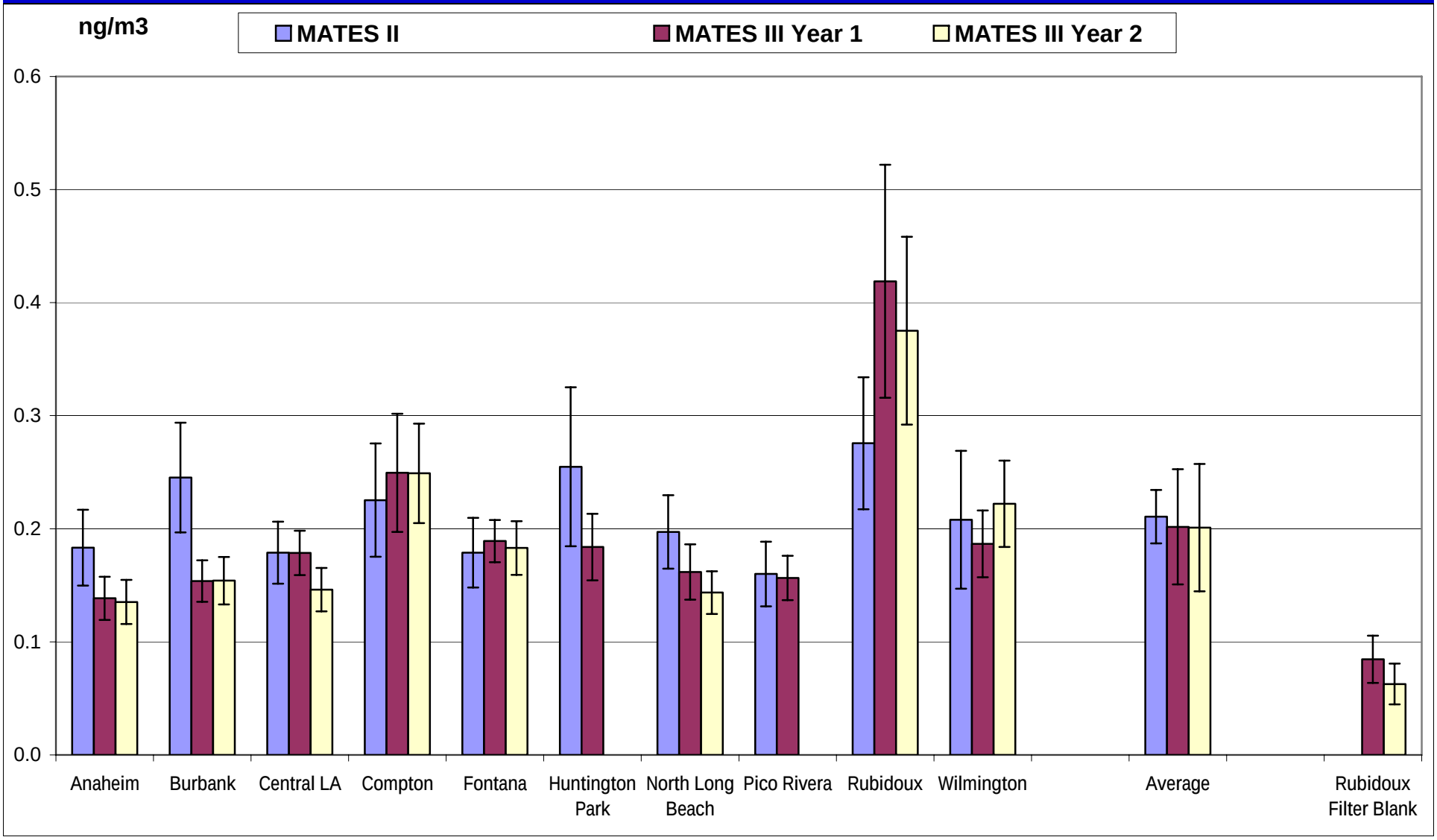
Historic

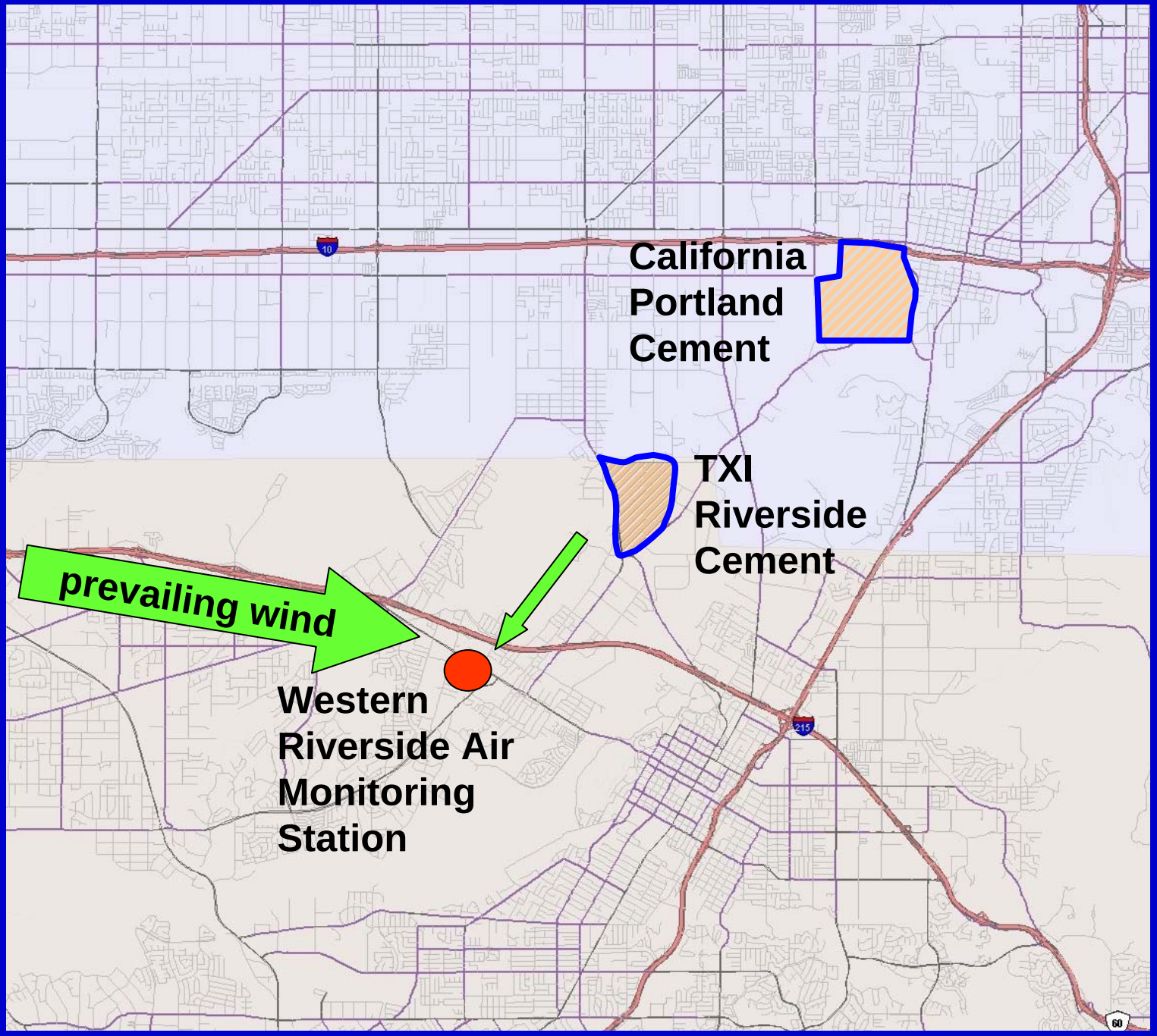
- Smog (Ozone)
- Fine Particulate (PM2.5)
- Air Toxics (Carcinogens)

Emerging

- Climate Change (Greenhouse Gases)

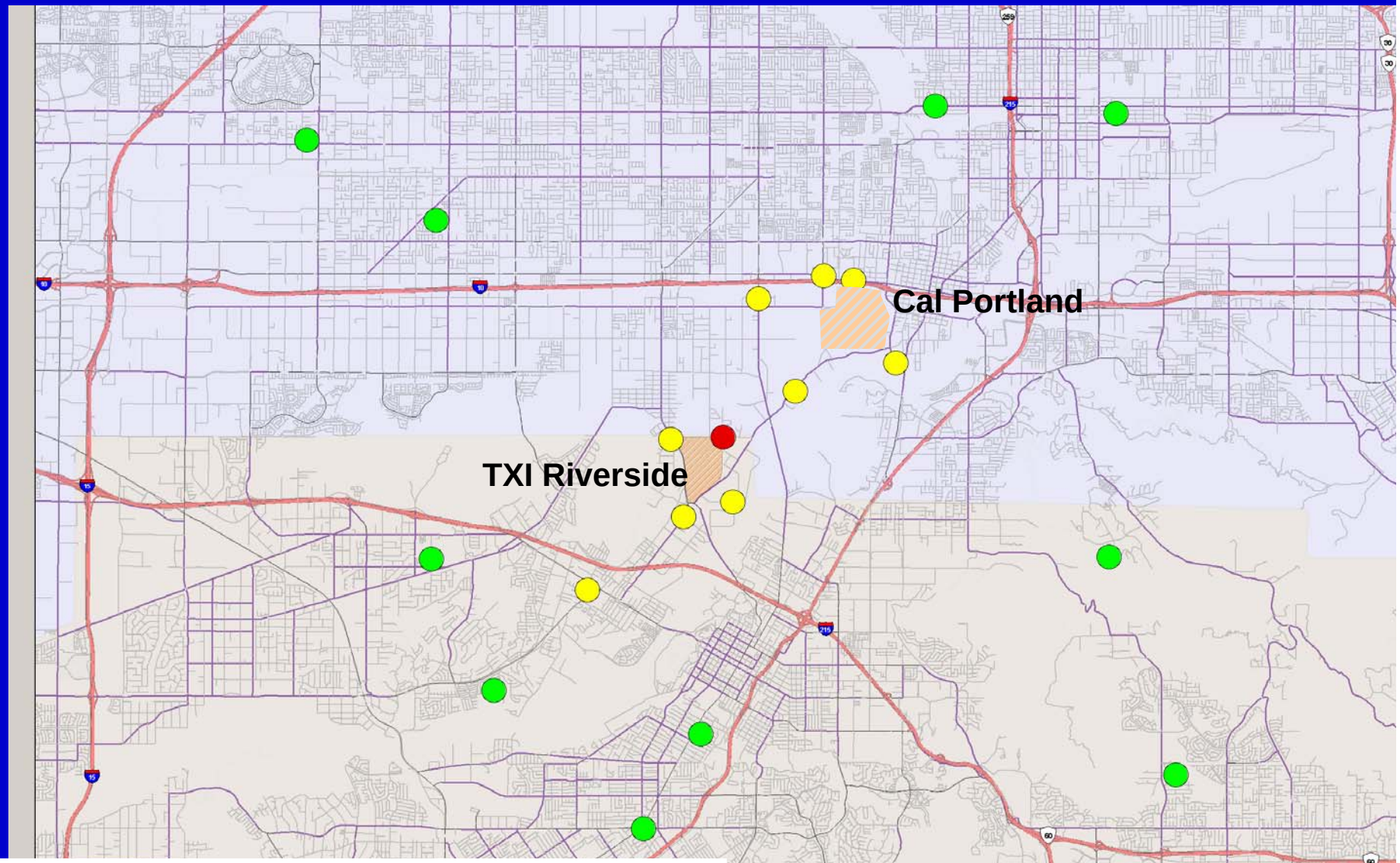
Hexavalent Chromium
MATES-III




California
Portland
Cement
TXI
Riverside
Cement
prevailing wind
Western
Riverside Air
Monitoring
Station
10
215
60

Initial Actions

- Permit Records
- Survey of Area
- Literature Review
- Wind Analysis
- Deposition Plates



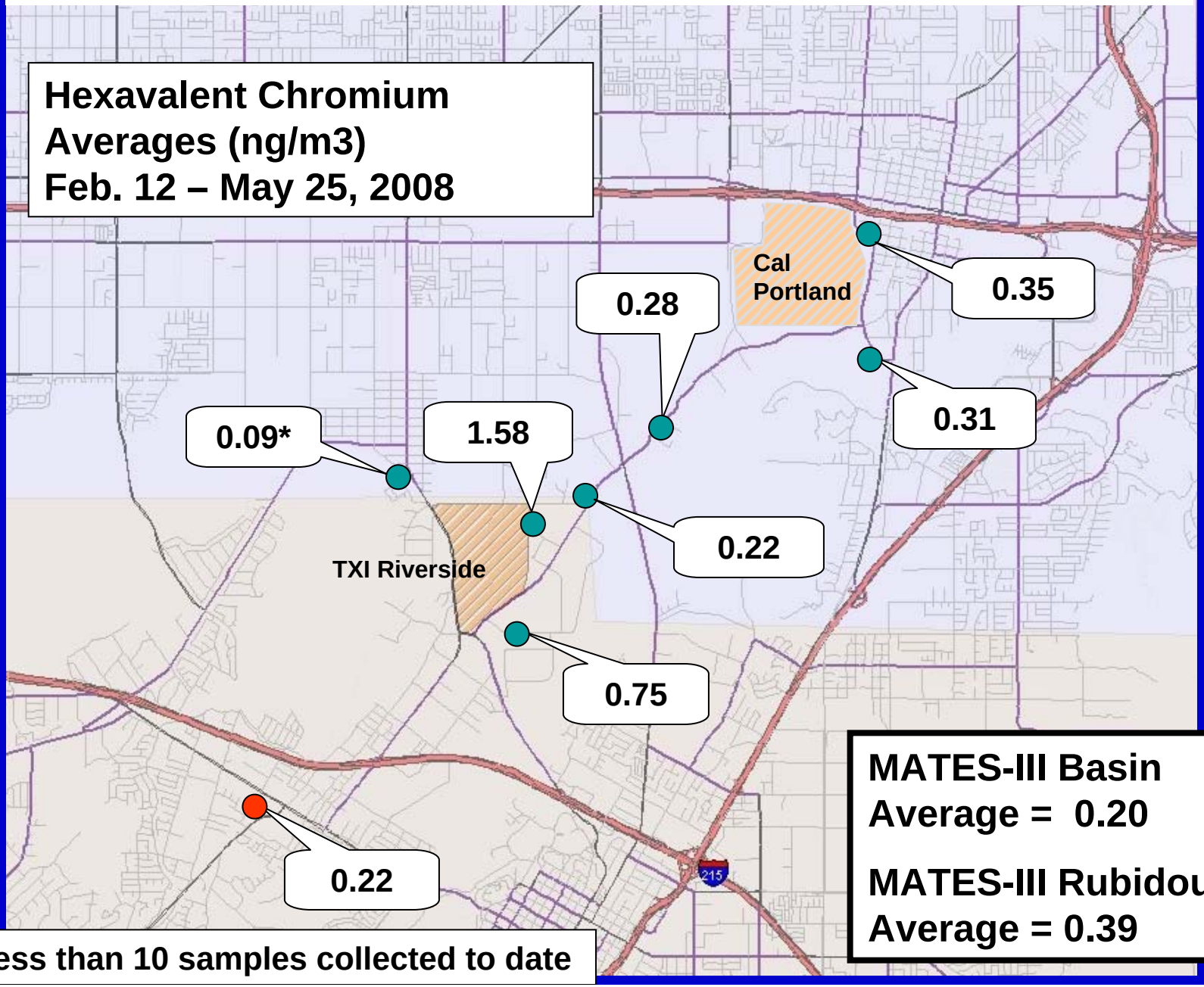
Cr6 Deposition Plate Results - Round 3

Highest

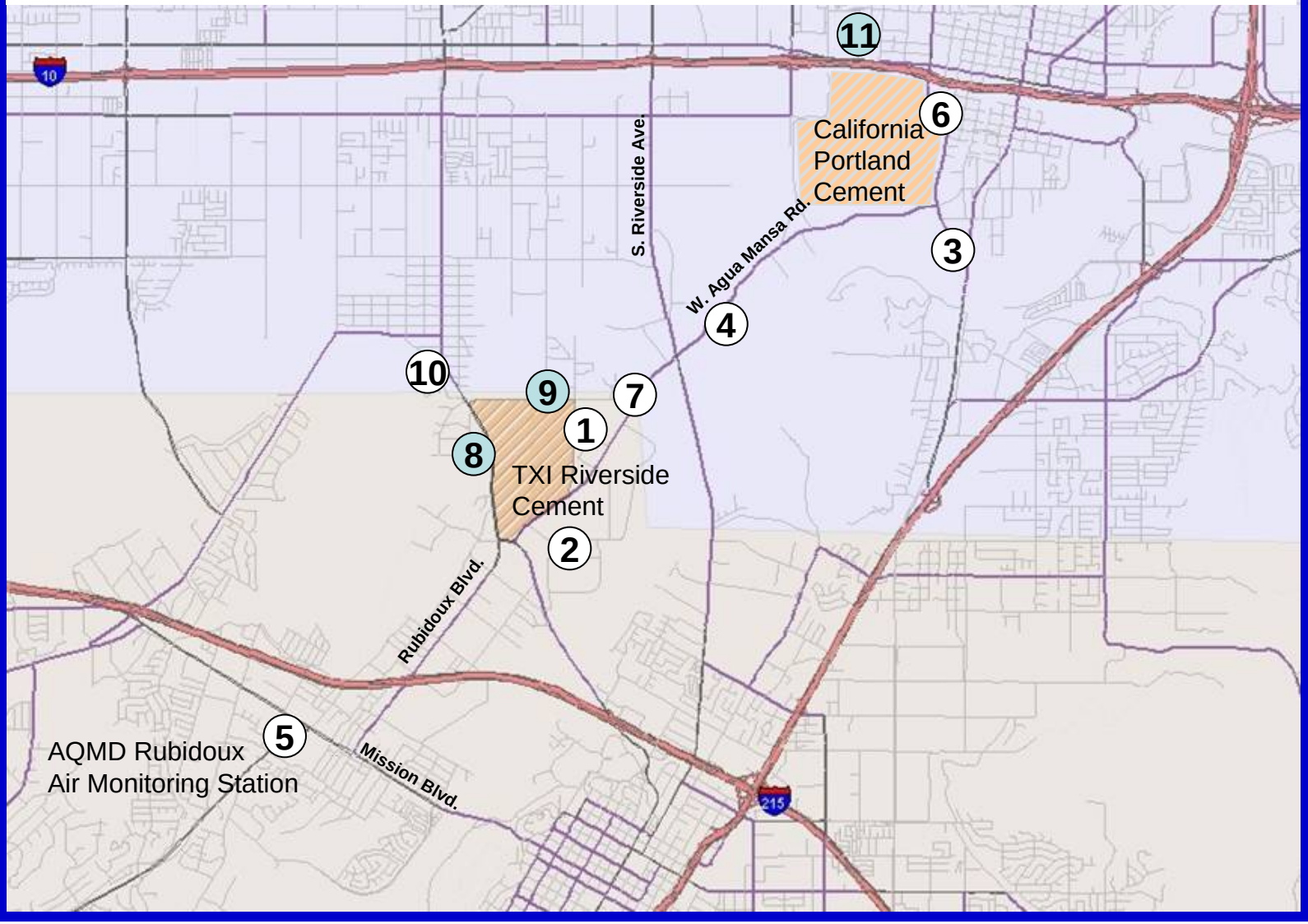
Middle

Lowest

PM samplers for Hexavalent Chromium



Current or Planned Sampling Locations for Hexavalent Chromium in Western Riverside



Additional Actions

- Area sweep in more than 50 square mile area around cement facilities
- Testing of TXI cement kiln and fuels
- Top down inspections of TXI Riverside and Cal Portland

Bulk Material Samples

- Collected samples from both Cement Facilities and Batch Plants
  - Soil
  - Finished product
  - Clinker storage piles
  - Bag-house fall-out
  - Raw materials
- Gray cement materials were higher in hexavalent chromium
- Initially, not enough hexavalent chromium to produce observed concentrations at sampling sites

Gray Clinker Storage Piles

Monitoring Location

Upon Further Analysis…

- Separated larger pieces of TXI storage pile gray clinker from fine dust material using a sieve

- Fine dust showed much higher hexavalent chromium content
- Fine dust is more likely to become airborne and blow offsite
- Observed concentrations at sampling sites now within the range of model predictions

TXI Riverside	Bulk samples	Sieved Samples
		(<44 µm)
	Cr+6	Cr+6
Location	(ppb)	(ppb)
Bay A surface	500	
Bay A sub-surface	750	3980
Bay B surface	800	3350
Bay B sub-surface	870	
Bay H surface	1320	6830
Bay H sub-surface	2030	
Bay I surface	1140	2070
Bay I sub-surface	1120	
Bay J surface	1670	15000
Bay J sub-surface	1740	

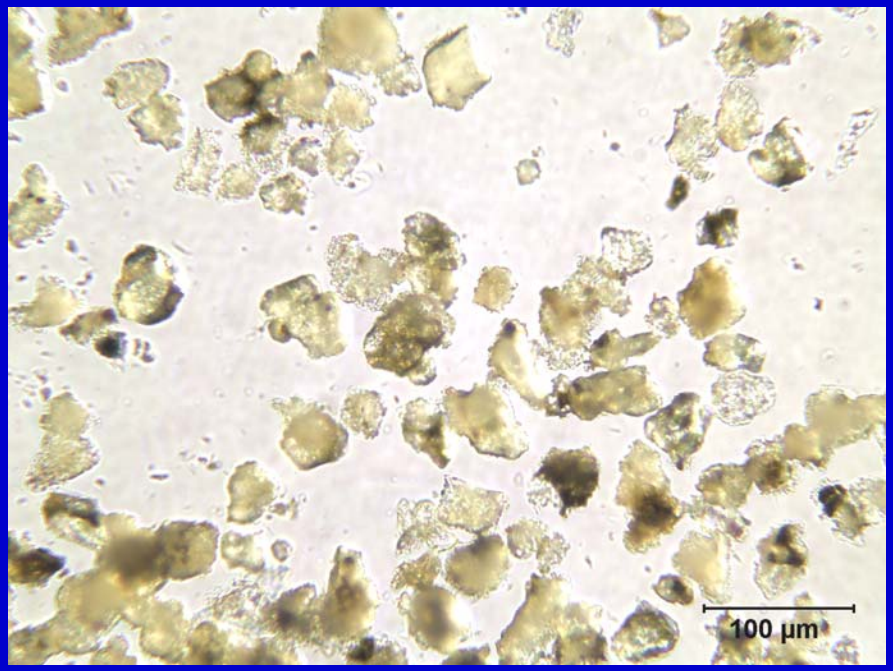
Cal Portland Clinker

- Fine dust also showed higher hexavalent chromium content than total sample
- On average, hexavalent chromium content of Cal Portland clinker is about 20% lower than TXI Riverside
- Lower dust emission potential as most clinker storage is indoors

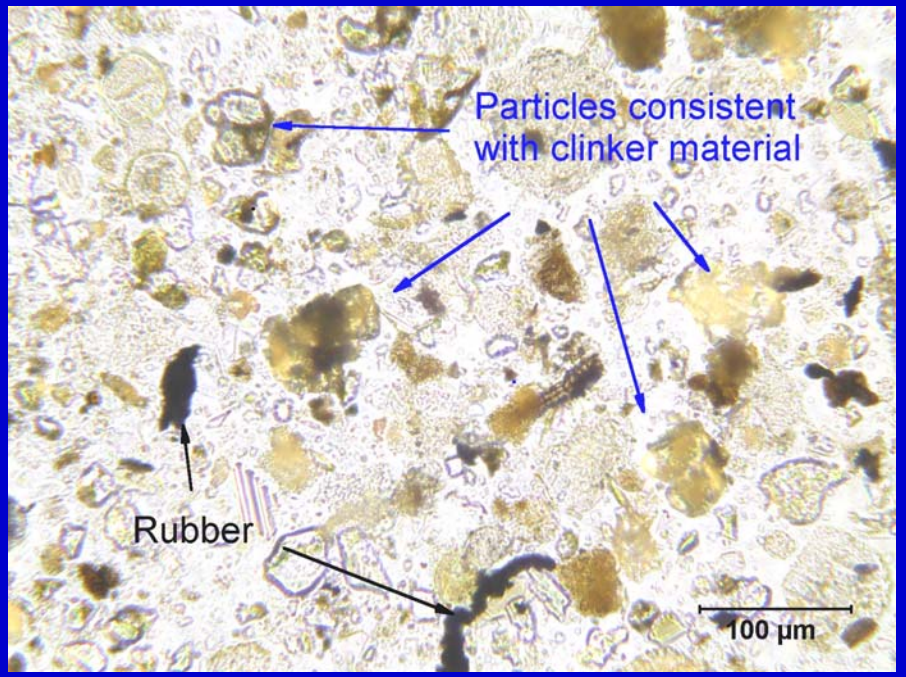
Fingerprinting

- Microscopically examined gray clinker fine dust and particles on the deposition plates

Gray Clinker Fine Dust

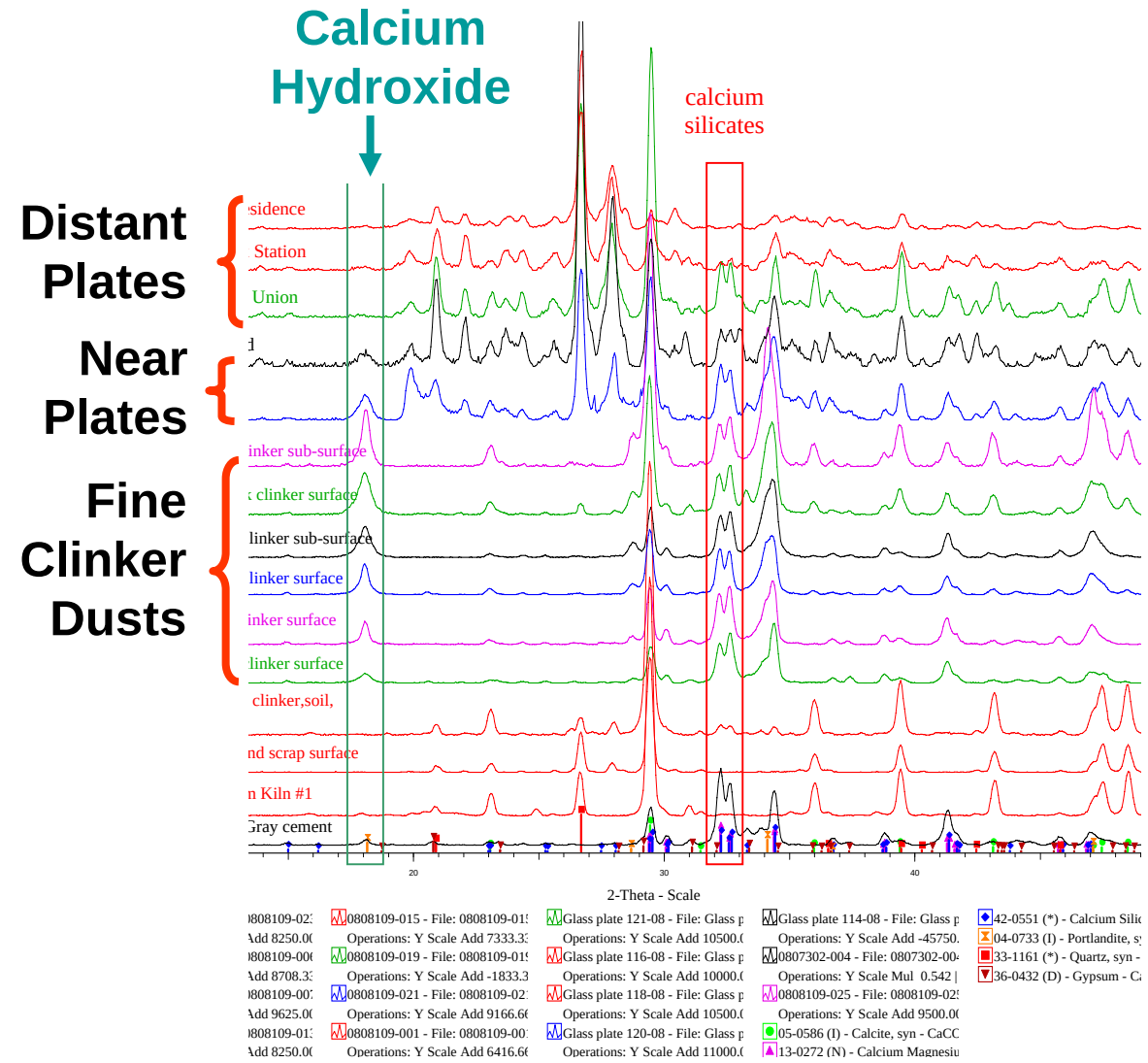


Deposition Plate Adjacent to TXI Riverside Cement

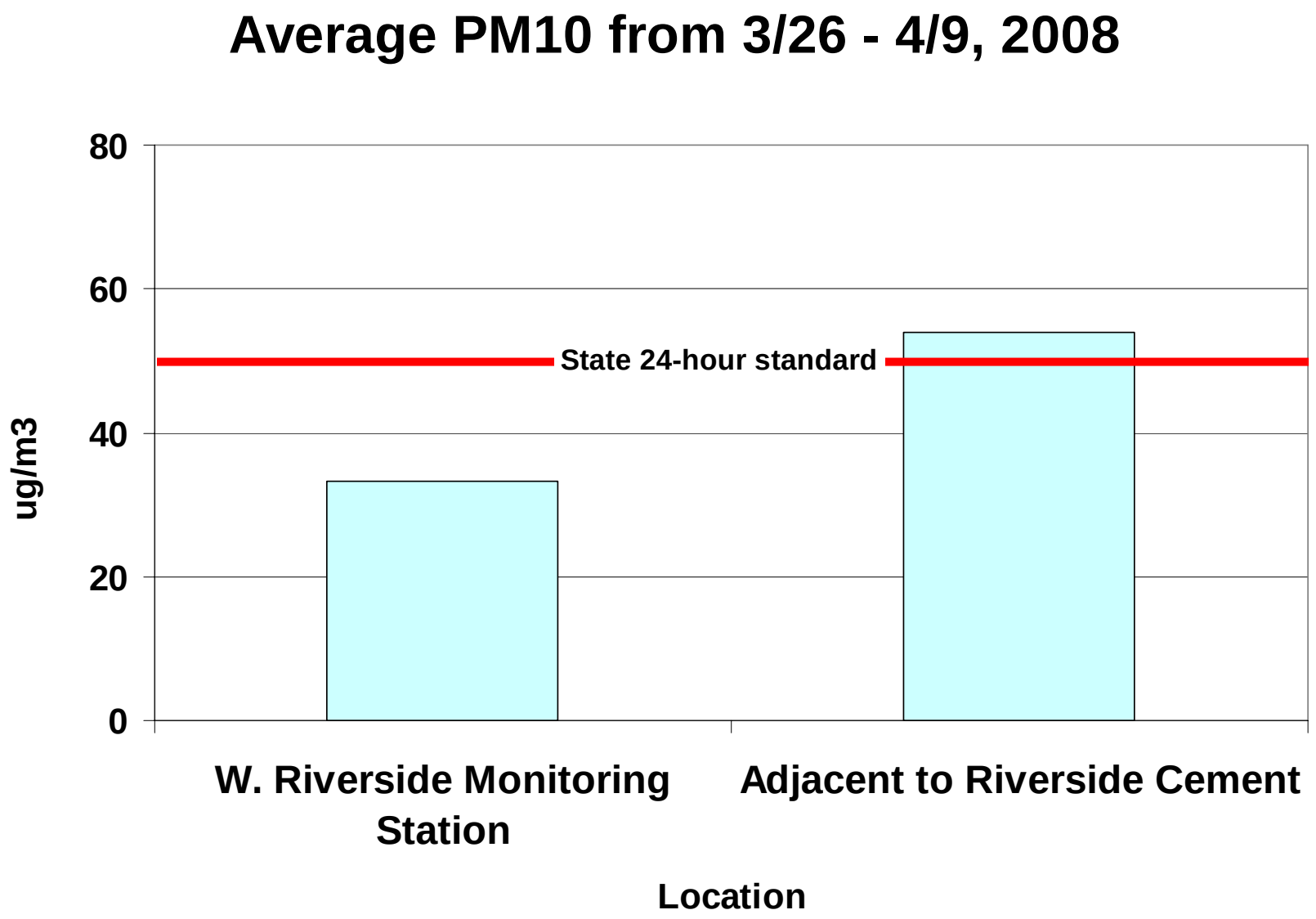


More Fingerprinting

- X-Ray Diffraction (XRD) to measure chemical composition and crystal structure
- Calcium hydroxide a marker for fine clinker dust
- Found on deposition plates nearer TXI Riverside



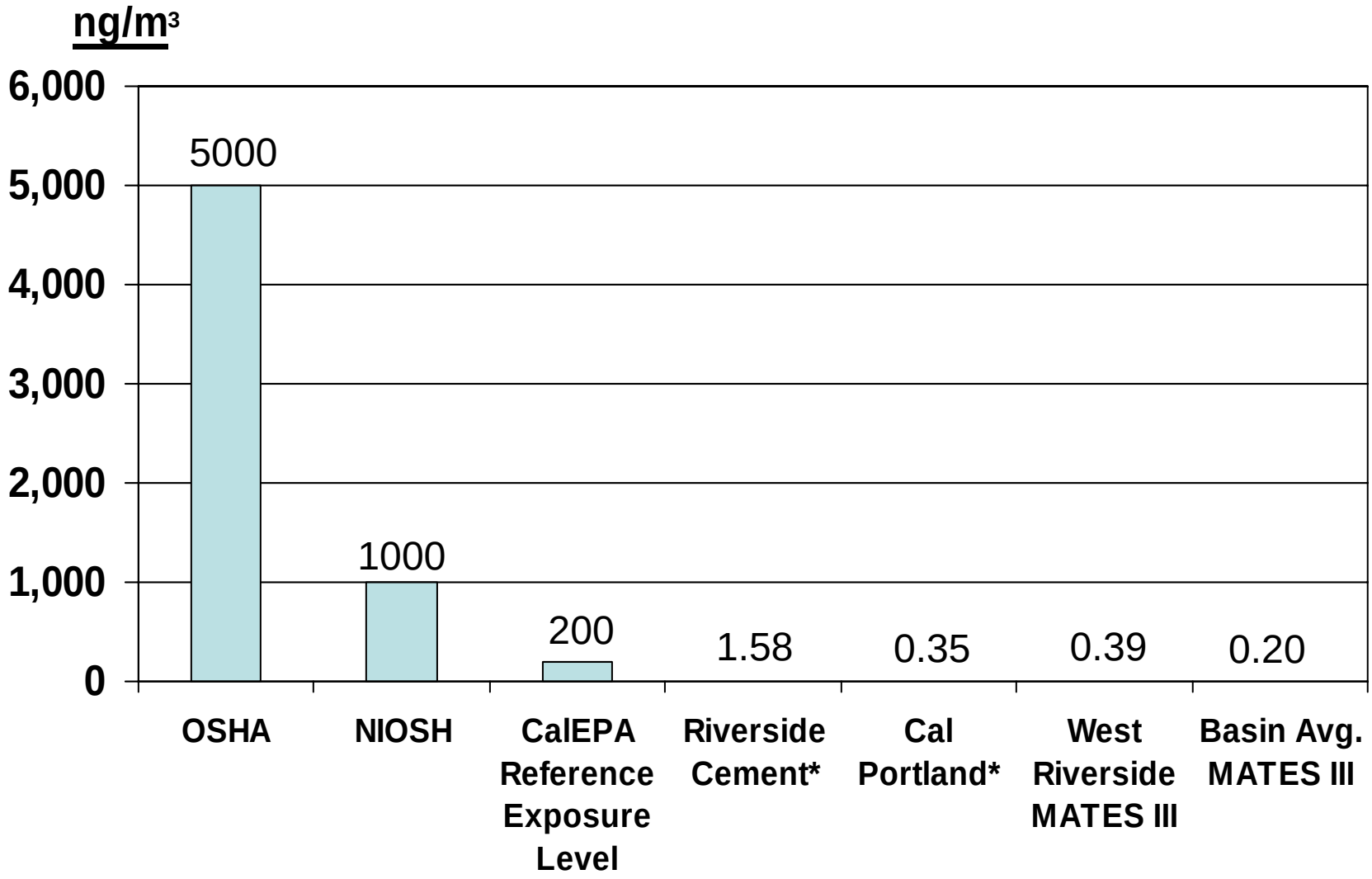
Dust Emissions (PM10)



Cancer Risk

- Lifetime cancer risk based on 70 years of continuous exposure
- Basin-wide average is ~1200 in one million
- Only 15 weeks of data collected to date
- Immediately adjacent to the site
  - 250 to 500 in one million
- Similar to risk next to a busy freeway, a rail yard or a chrome plating facility
- Cancer risk calculations method under review

Hexavalent Chromium
Regulatory Levels and Monitored Levels



*Samples taken adjacent and downwind of cement facilities

Next Steps

- Aggressive action to reduce the hexavalent chromium emissions from Cement handling and production, and to lower the risk levels in the community
  - Notices of Violation for visible dust emissions
  - Potentially modify permit requirements
  - New regulations specific to cement handling and production
  - Continued and additional sampling in the community for hexavalent chromium and dust (PM10)
  - Ongoing field surveillance and inspections

Summary

- Fine clinker dust from TXI Riverside Cement is a source of airborne hexavalent chromium
- Cal Portland Cement emissions appear to be less than TXI
  - Better dust control
  - Indoor storage of clinker
  - Longer distance between potential emission points and the fenceline
  - Additional monitoring will be conducted

Airborne Hexavalent Chromium Concentrations through May 25, 2008