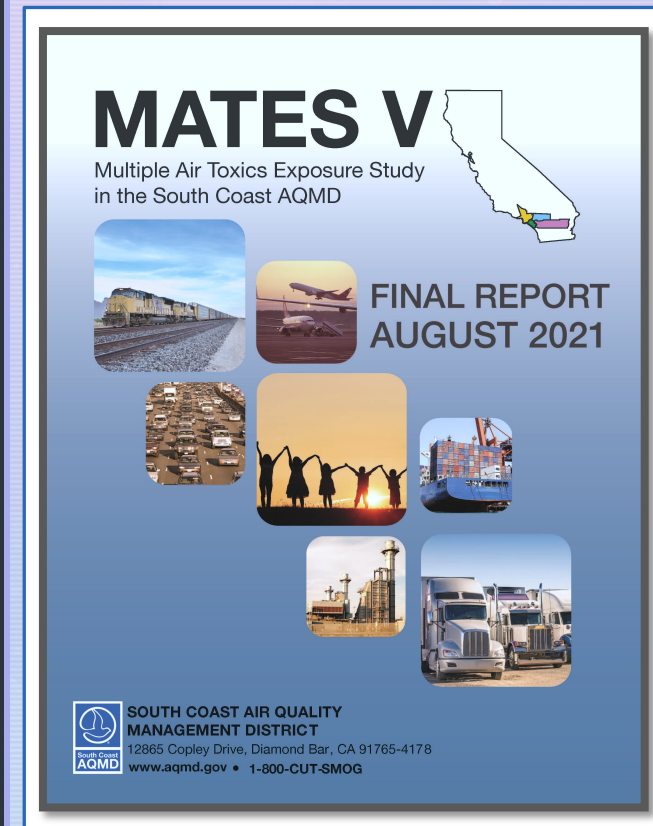


Multiple Air Toxics Exposure Study V (MATES V)

Sarah Rees Ph.D.
Deputy Executive Officer
Planning, Rule Development, and Area Sources
South Coast Air Quality Management District



NACAA Air Toxics
Committee

October 7, 2021

The South Coast AQMD



MATES Program Overview

- Board Environmental Justice Initiative
- Focuses on regional air toxics impacts

How MATES data is used:

- Provide public information about air toxics and health risks
- Evaluate progress in reducing air toxics exposure
- Provide direction to future toxics control programs



MATES V Report Components

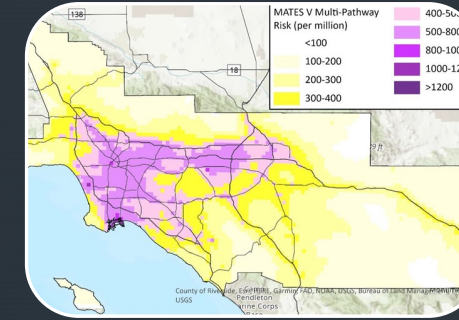
Air Monitoring



Emissions Inventory



Health Risk Modeling



- MATES analyses conducted approximately every 6 years
 - Multi-year approach provides ability to view toxics impacts through time
 - >60 staff involved
 - >100 Pollutants Measured
- Approach:
 - Year-long monitoring campaign for a comprehensive suite of toxic air pollutants with measurements every 6th day at 10 stations
 - Comprehensive modeling analysis using emissions inventories for all sources

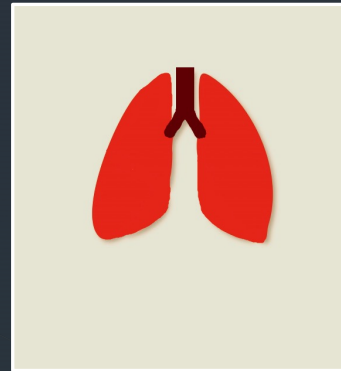
Analysis provides most comprehensive picture of cumulative air toxics risk in region

What's New in MATES V



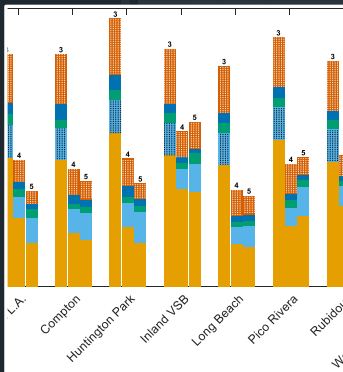
Modeling improvements

- Real-time sensor data for on-road traffic and ocean-going vessels
- Emissions from biogenic sources

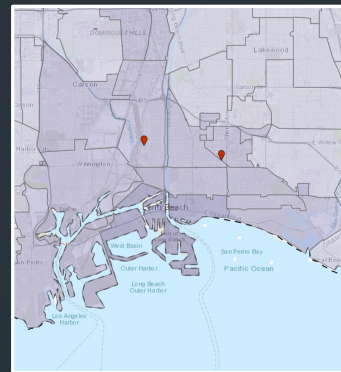


Health risk estimates

- Multiple exposure pathways
- Chronic non-cancer health impacts (hazard index)



Improved statistical methods for trend analysis



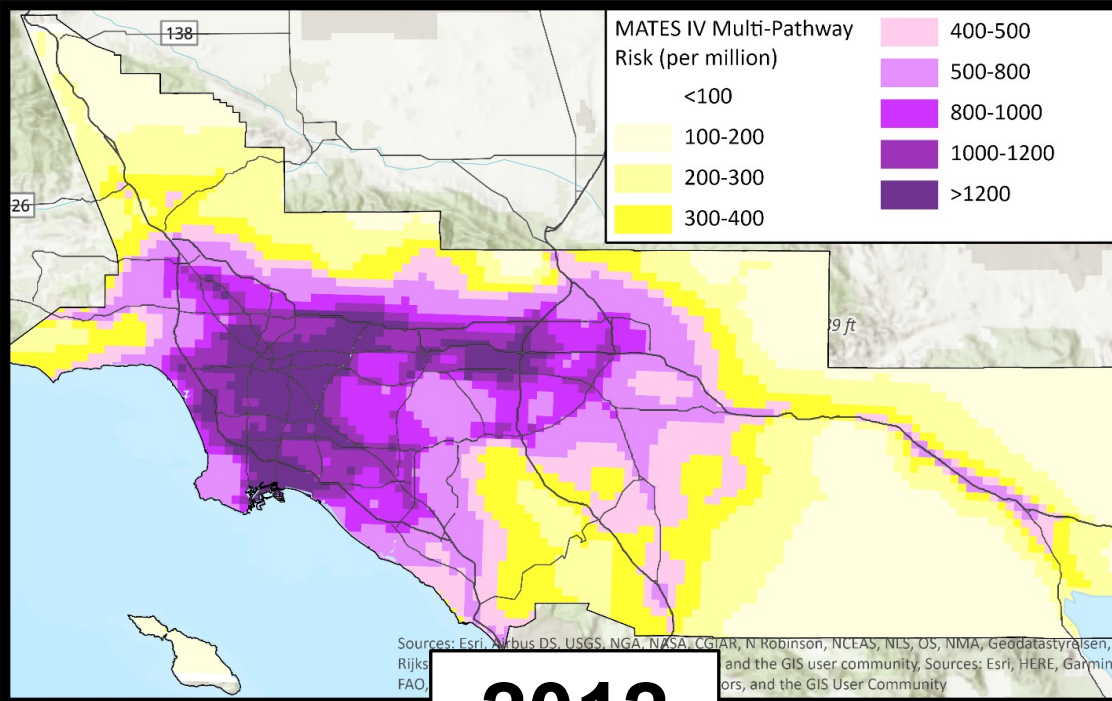
Data visualization tools

- Monitoring data dashboard
- Interactive tools

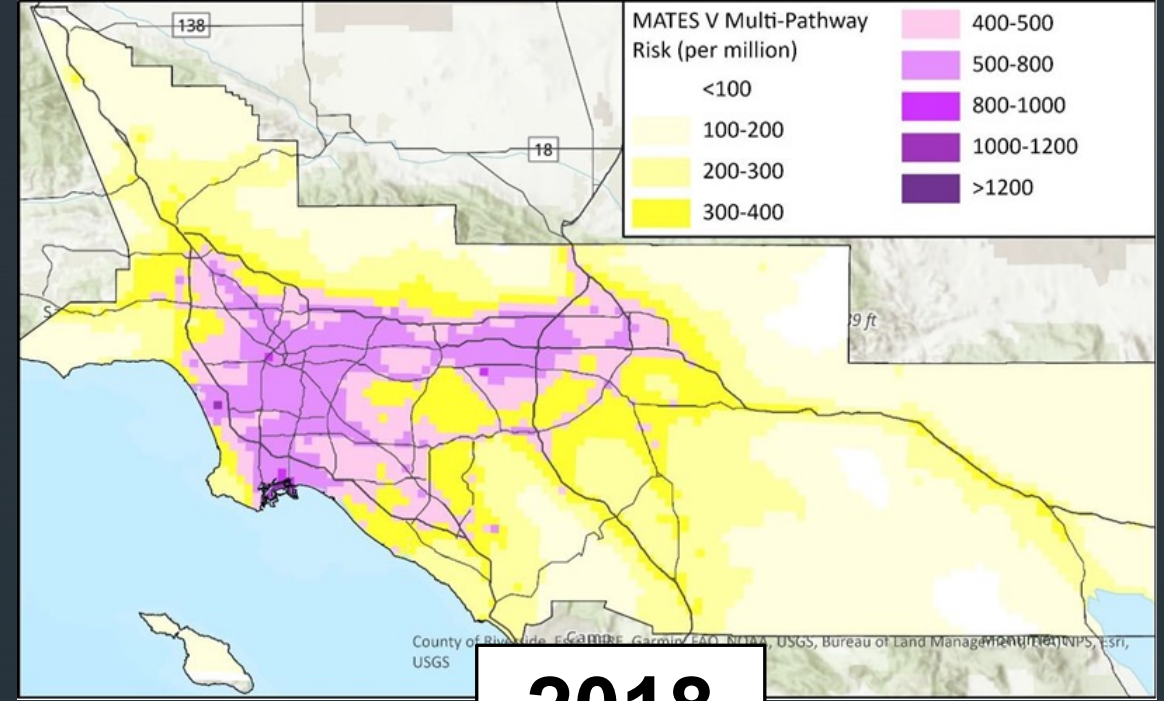
Air Toxics Cancer Risk – Modeling Data

MATES IV (population-weighted):
South Coast Air Basin: **997-in-a-million**
Coachella Valley: **357-in-a-million**

MATES V (population-weighted):
South Coast Air Basin: **455-in-a-million**
Coachella Valley: **250-in-a-million**

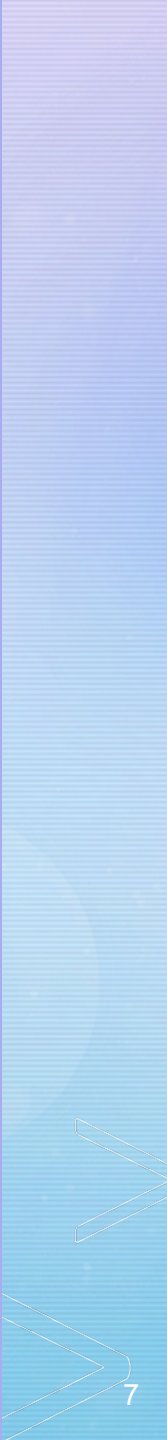
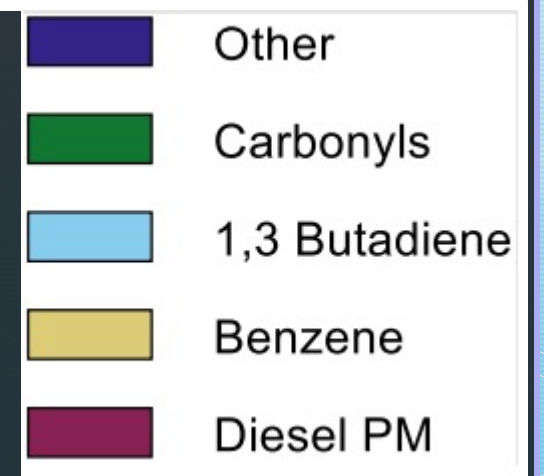
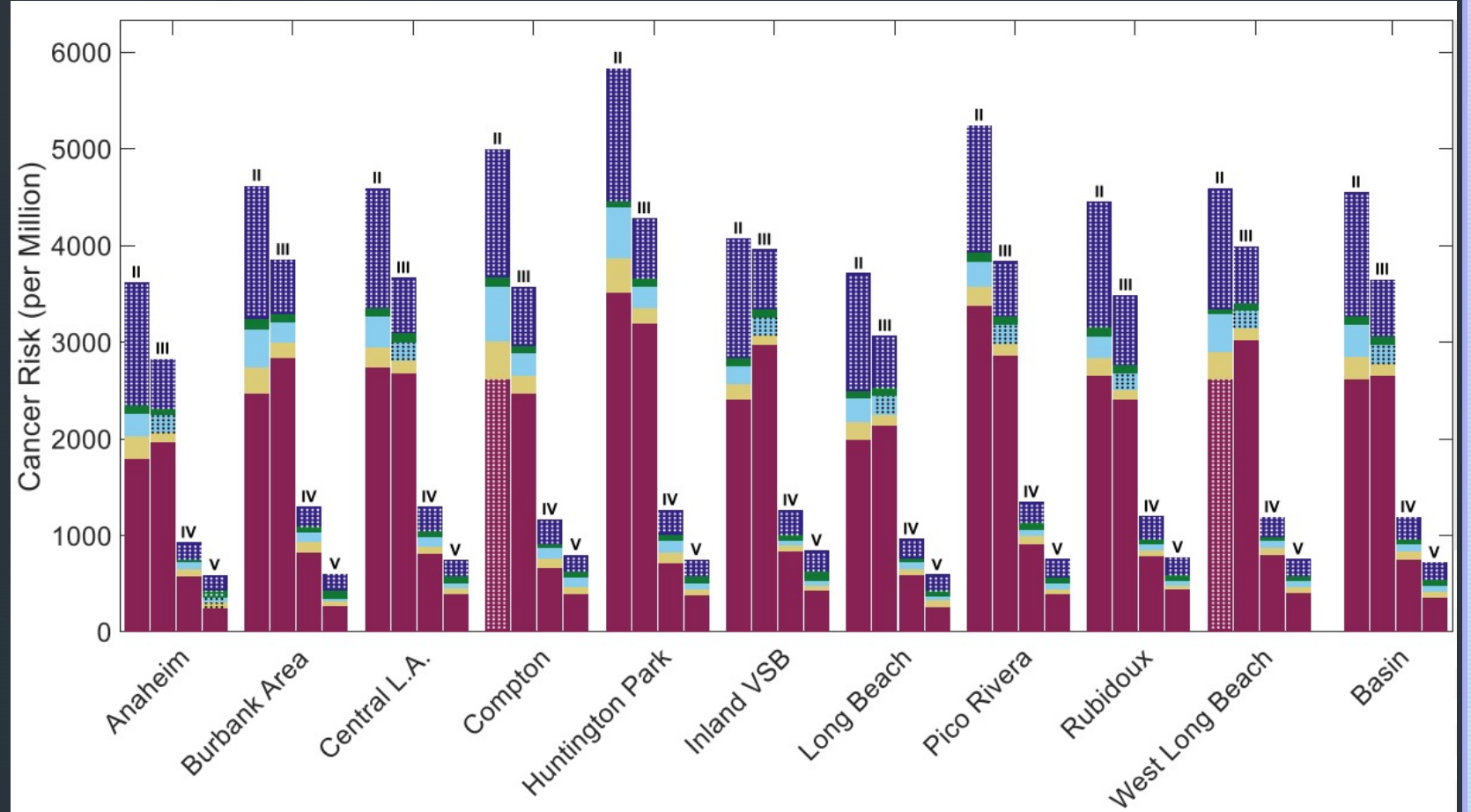


2012

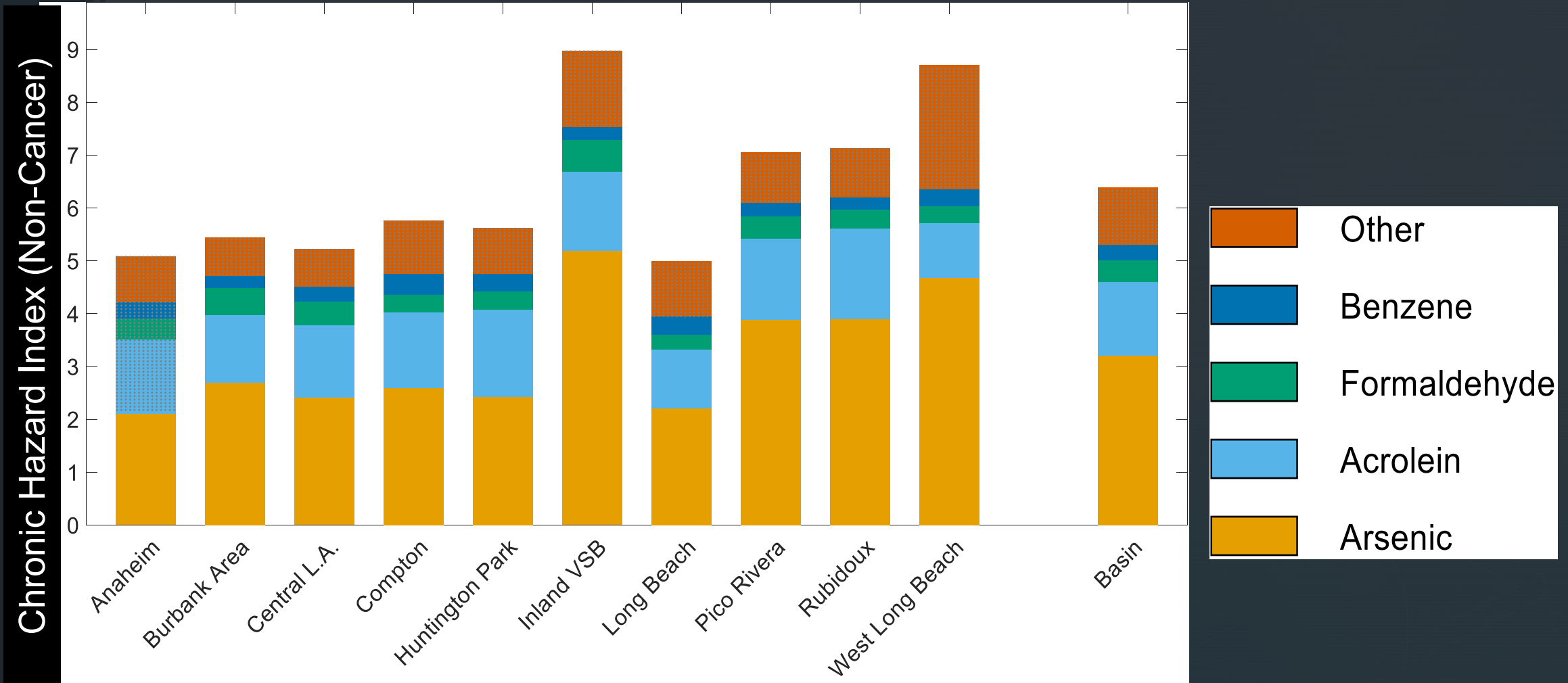


2018

Cancer Risk Trends (based on monitoring data)



Chronic Non-Cancer Risk – Monitoring Data



MATES V Data Visualization Tool & Air Monitoring Dashboard

Overview Cancer Risk Non-Cancer Health Impacts SB535 Disadvantaged Communities CalEnviroScreen 3.0

Healthy Places Index Green Space Air Toxics Trends **Gridded Cancer Risk** Criteria Pollutant Map Criteria Pollutant Trends

Residential Air Toxics Cancer Risk
Calculated from Model Data in Grid Cells

Cancer Risk [per million]

- 1601 - 4800
- 1451 - 1600
- 1301 - 1450
- 1151 - 1300
- 1001 - 1150
- 851 - 1000
- 701 - 850
- 551 - 700
- 401 - 550
- 251 - 400
- 101 - 250
- 0 - 100

MATES Version is:

Risk Calculation Type is:

[About Air Toxics Cancer Risk](#)

Start Download PDF

Esri, HERE, Garmin, FAO, USGS, EPA, NPS

MATES V
Air Monitoring Data Dashboard July 2021

Instruction Map of MATES V Air Monitoring Stations Glossary

Step 1: Select an Air Monitoring Station
Central L.A.

Step 2: Select a Pollutant Category
Total Suspended Particles (TSP)

Step 3: Select a Pollutant Sub-Category
Metals

Step 4: Select a Pollutant
Lead

Generate Plots

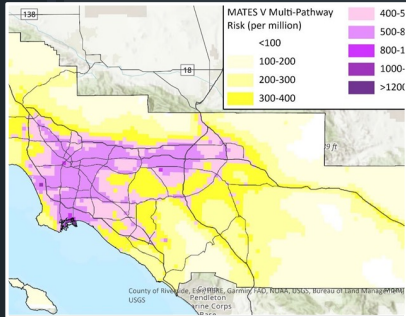
Daily Concentrations of TSP Lead at Central L.A. During MATES V

Average Concentrations of TSP Lead by Day of Week at Central L.A. During MATES V

Average Concentrations of TSP Lead by Season at Central L.A. During MATES V

The error bars denote the 95% confidence interval of the average based on bootstrap methods.

MATES V: Summary of Results



Air toxics cancer risk decreased by ~50% since 2012, but risks are still high



EJ communities also had decreased air toxics levels, but still higher compared to Basin averages



Diesel PM is the main contributor to air toxics cancer risk



Air toxics cancer risks were higher along goods movement corridors and major freeways



Chronic non-cancer health impacts were estimated for the first time, with a chronic hazard index of 5-9 across the 10 stations