

**Multiple Air Toxics
Exposure Study
(MATES-II)
in the
South Coast Air Basin**

Presentation by
Mel Zeldin

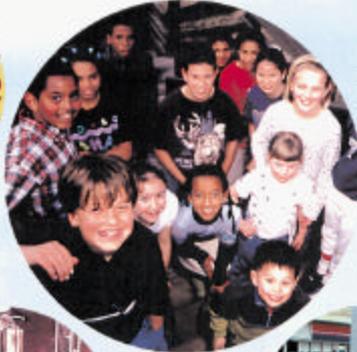
South Coast Air Quality Management District
at the

6th Diesel Engine Emissions Reduction Workshop
San Diego, CA
August 22, 2000

DRAFT FINAL REPORT

Multiple Air Toxics Exposure Study
in the South Coast Air Basin

MATES-II



NOVEMBER 1999



South Coast Air Quality Management District

21865 E. Copley Drive,
Diamond Bar, CA 91765-2079

MATES II

Components

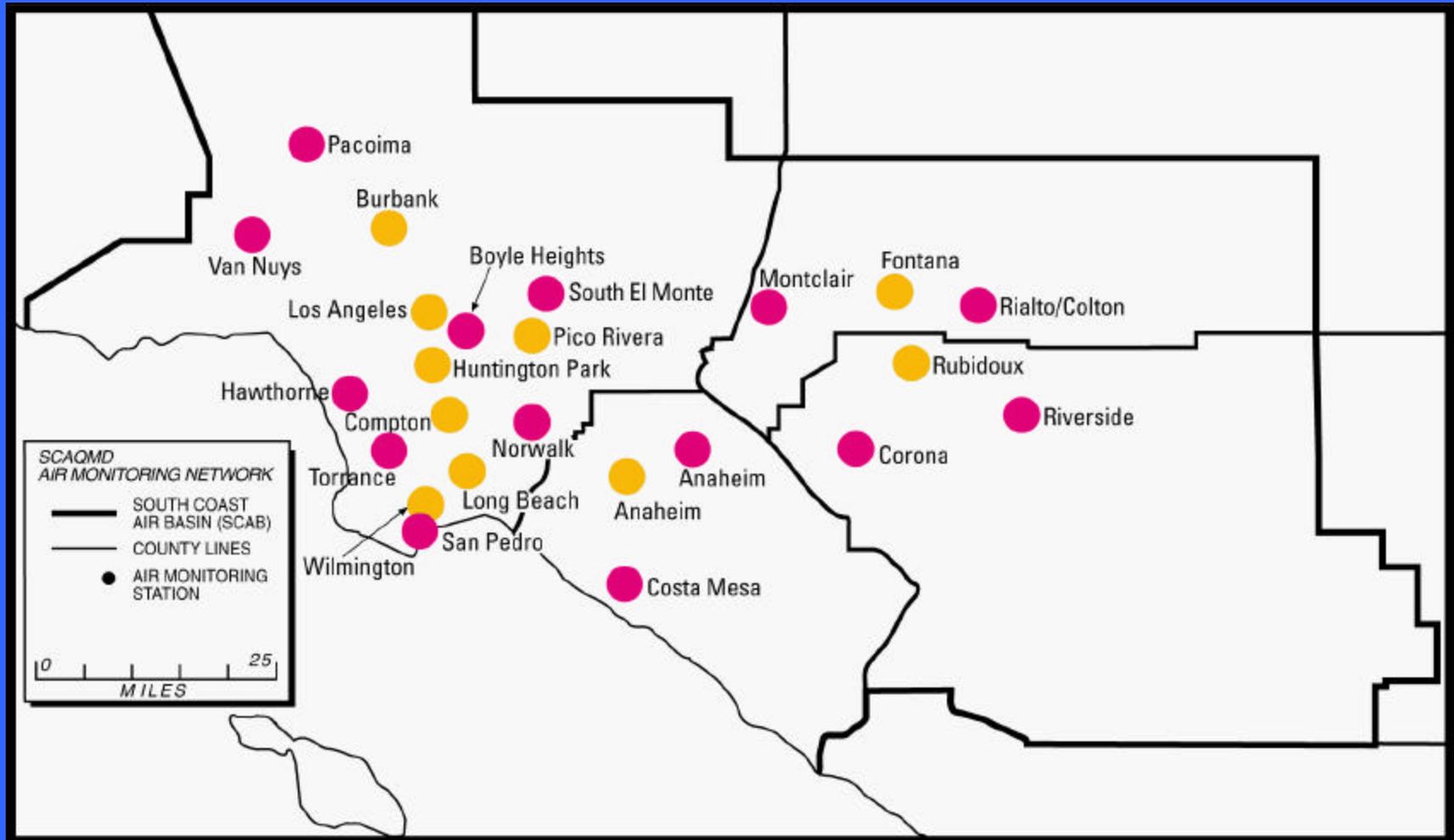
- Ambient Toxics Monitoring
- Toxics Emissions Inventory
- Modeling/Risk Assessment

MATES-II

Background

- One Year Toxics Monitoring at 10 Sites
- Complementary One-Month Sampling
 - 3 Mobile Platform
 - 14 Communities
- Over 30 Toxic Pollutants Measured
 - Gaseous
 - Particulates

MATES II Monitoring Network



● Fixed Sites

● Microscale Sites

MATES-II

Background (Continued)

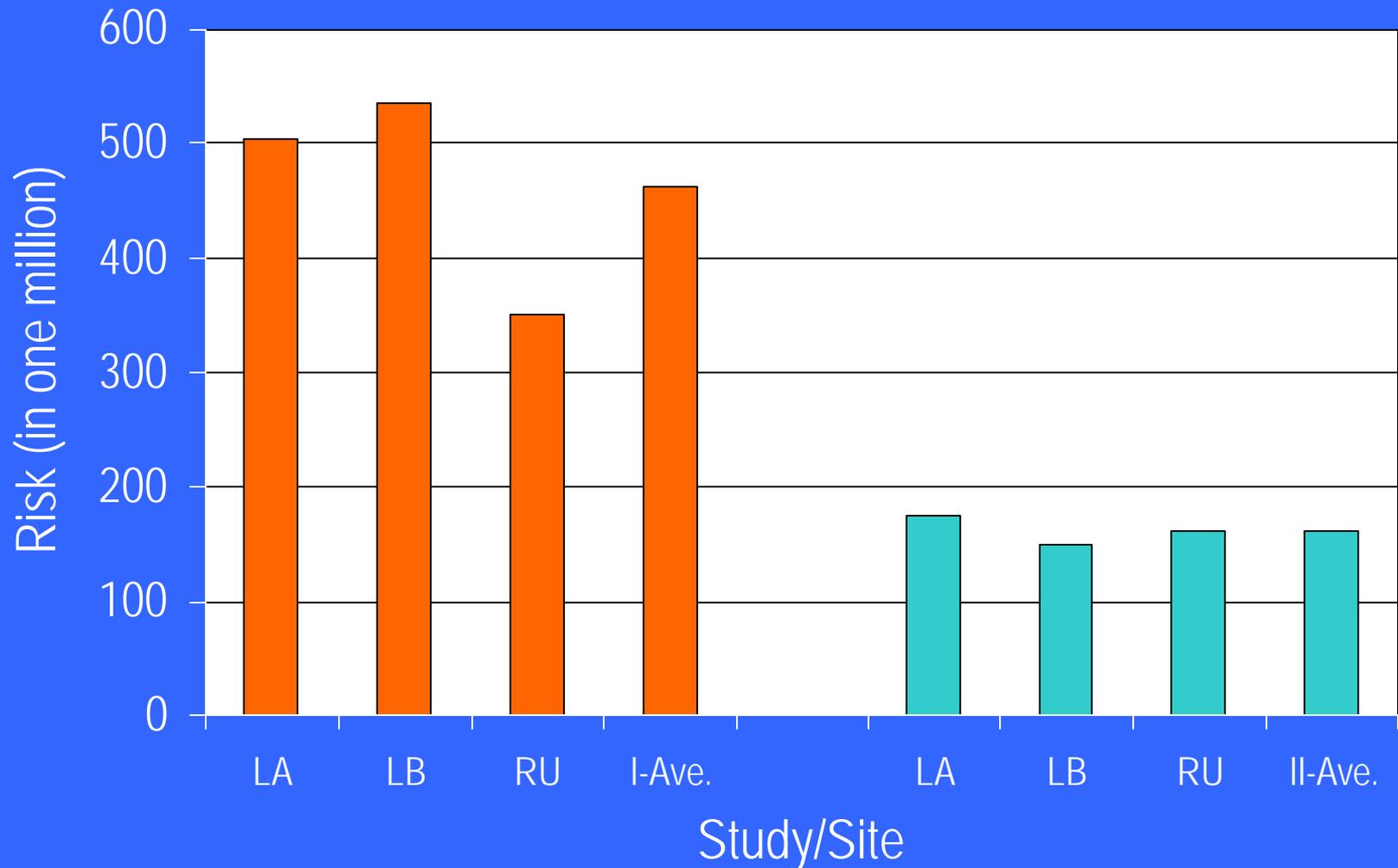
- Program Review by Panel of Experts
 - Academia
 - Environmental Groups
 - Industry & Private Sector
 - Federal, State, Local Agencies
- Sampling Period: April, 1998 to March, 1999

Comparison of Cancer Risks

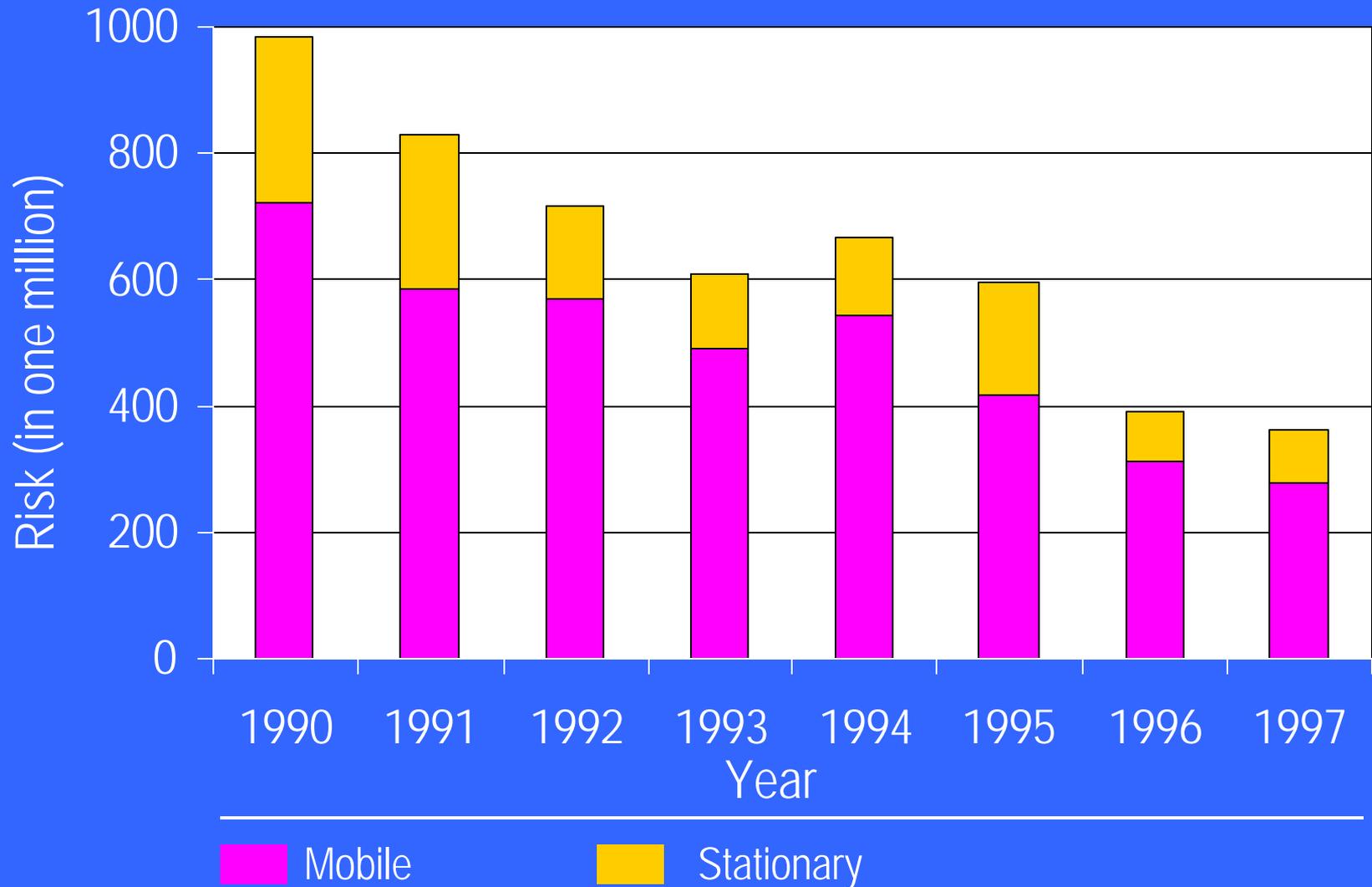
MATES - I

vs

MATES - II



Trends in Cancer Risk at Burbank



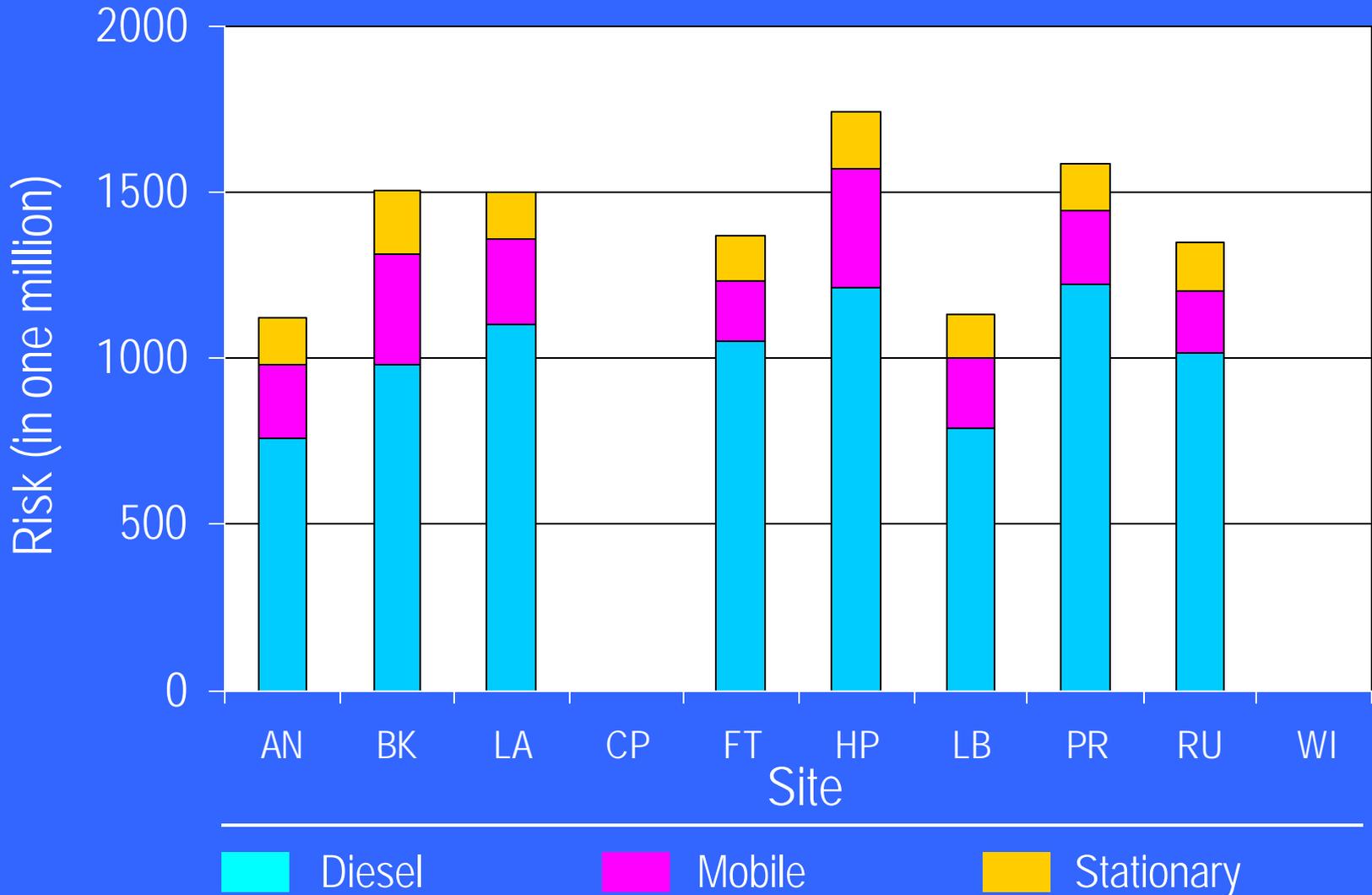
Cancer Risks

(Excluding Diesel)



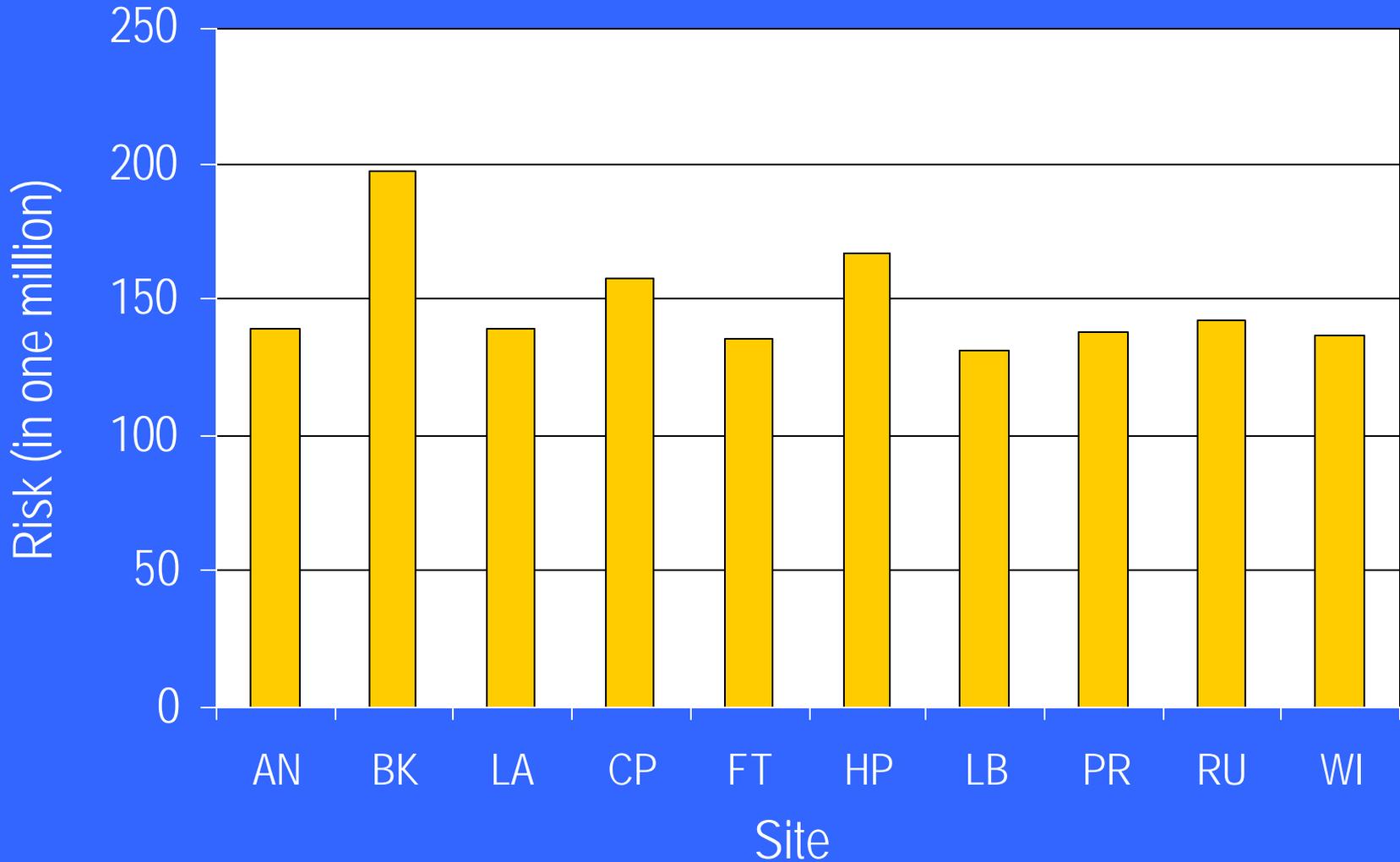
Cancer Risks

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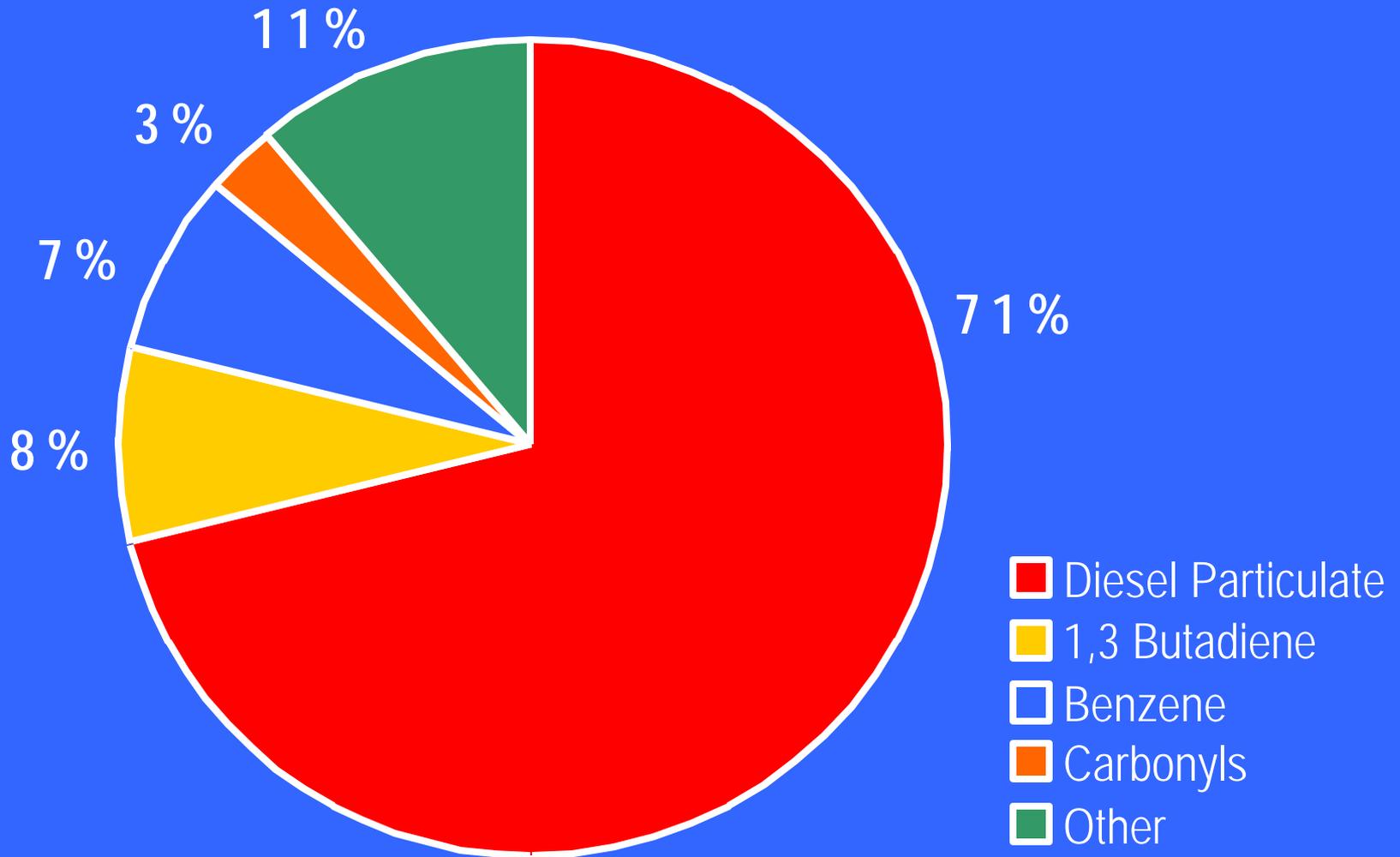


Cancer Risks

(Stationary Sources Only)

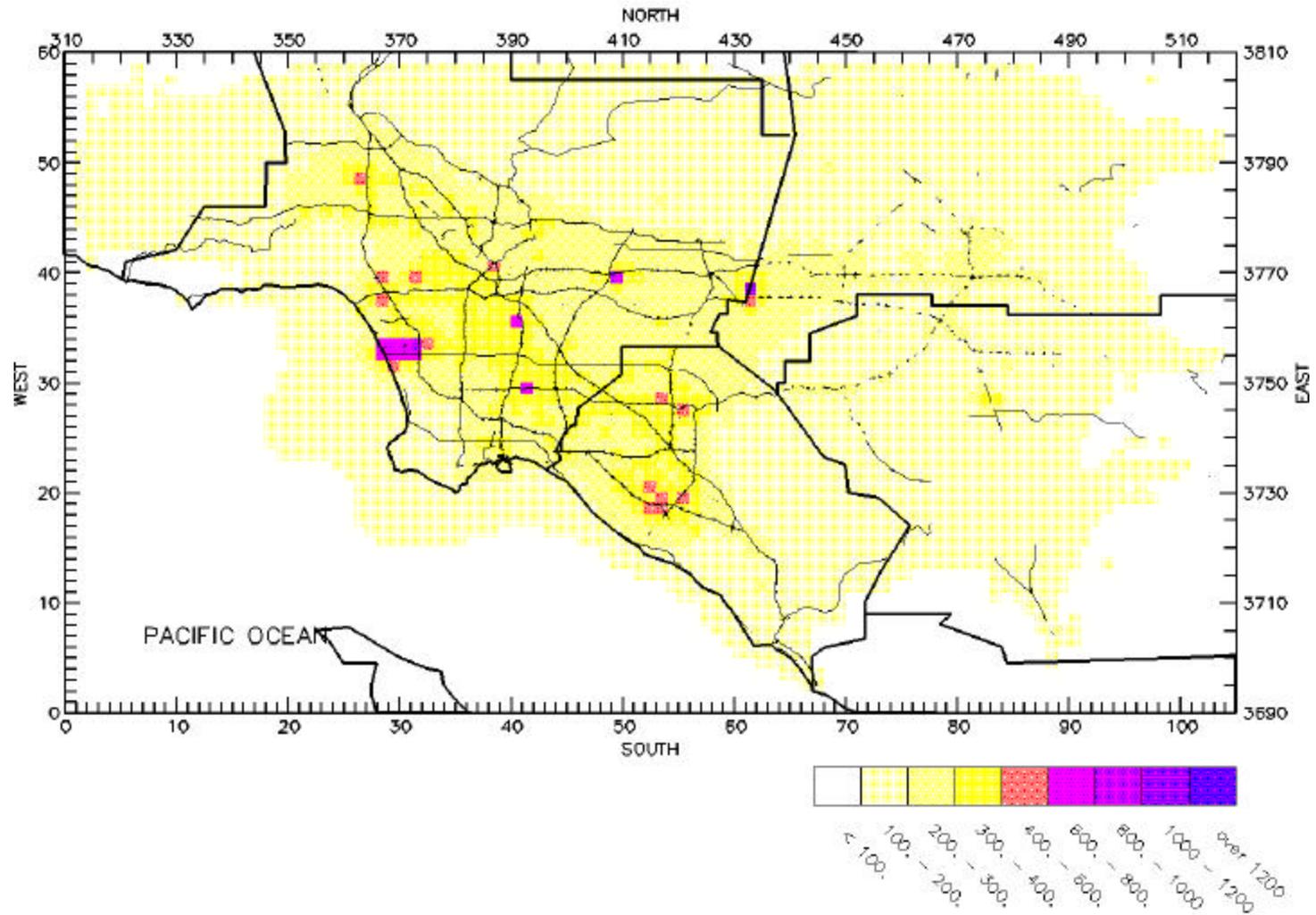


Basinwide Cancer Risks* ~ 1400 in a Million

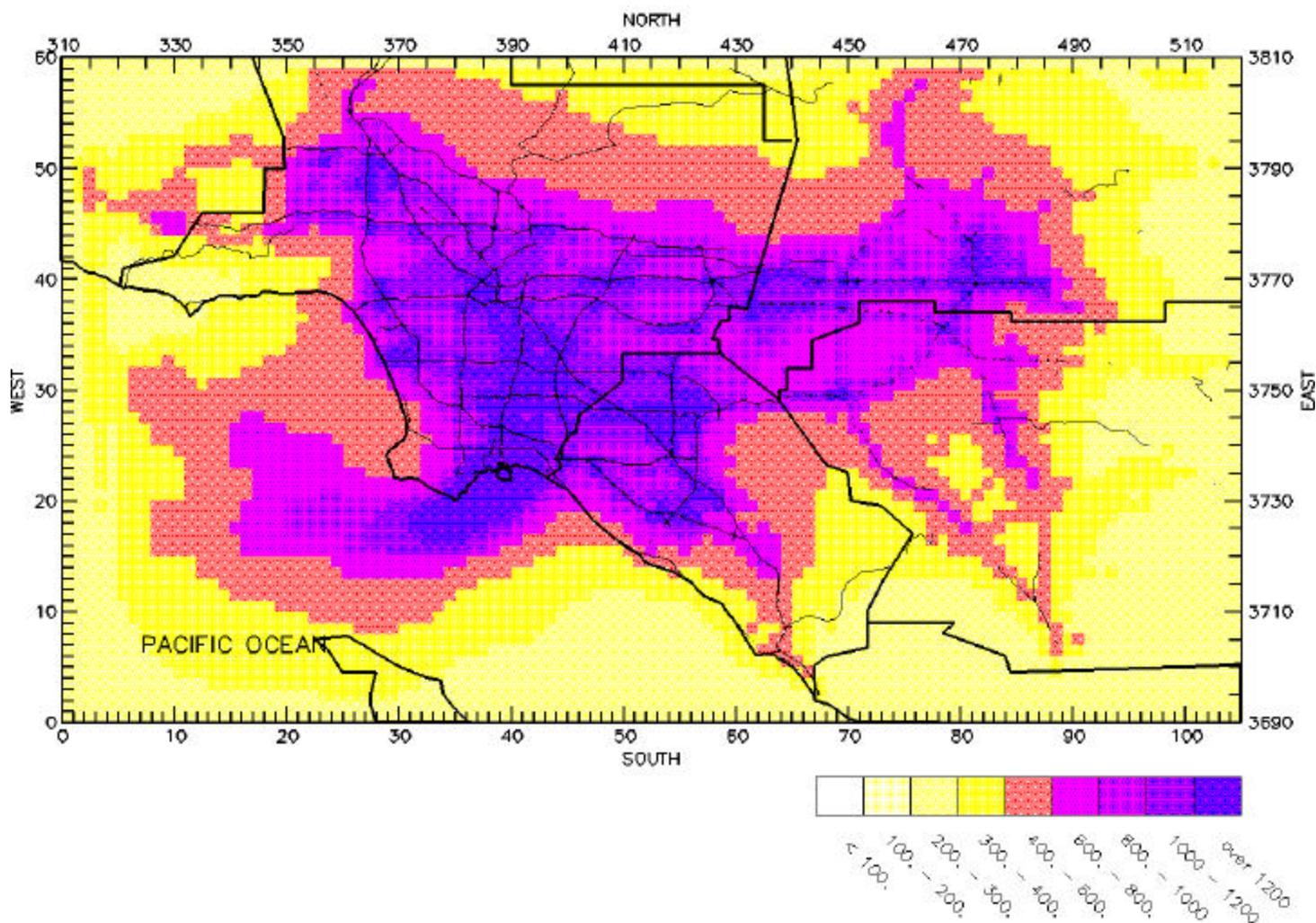


*Based on average concentrations at 8 sites.

Model Estimated Risk Excluding Diesel Sources



Model Estimated Risk From All Emission Sources



MATES-II Results (Fixed Sites)

- Risk Levels Consistent with Downward Trends
- Mobile Sources are Dominant Contributors to Risk
- Diesel Particulates Account for ~ 70% of Total Risk

MATES-II Results

(Fixed Sites Continued)

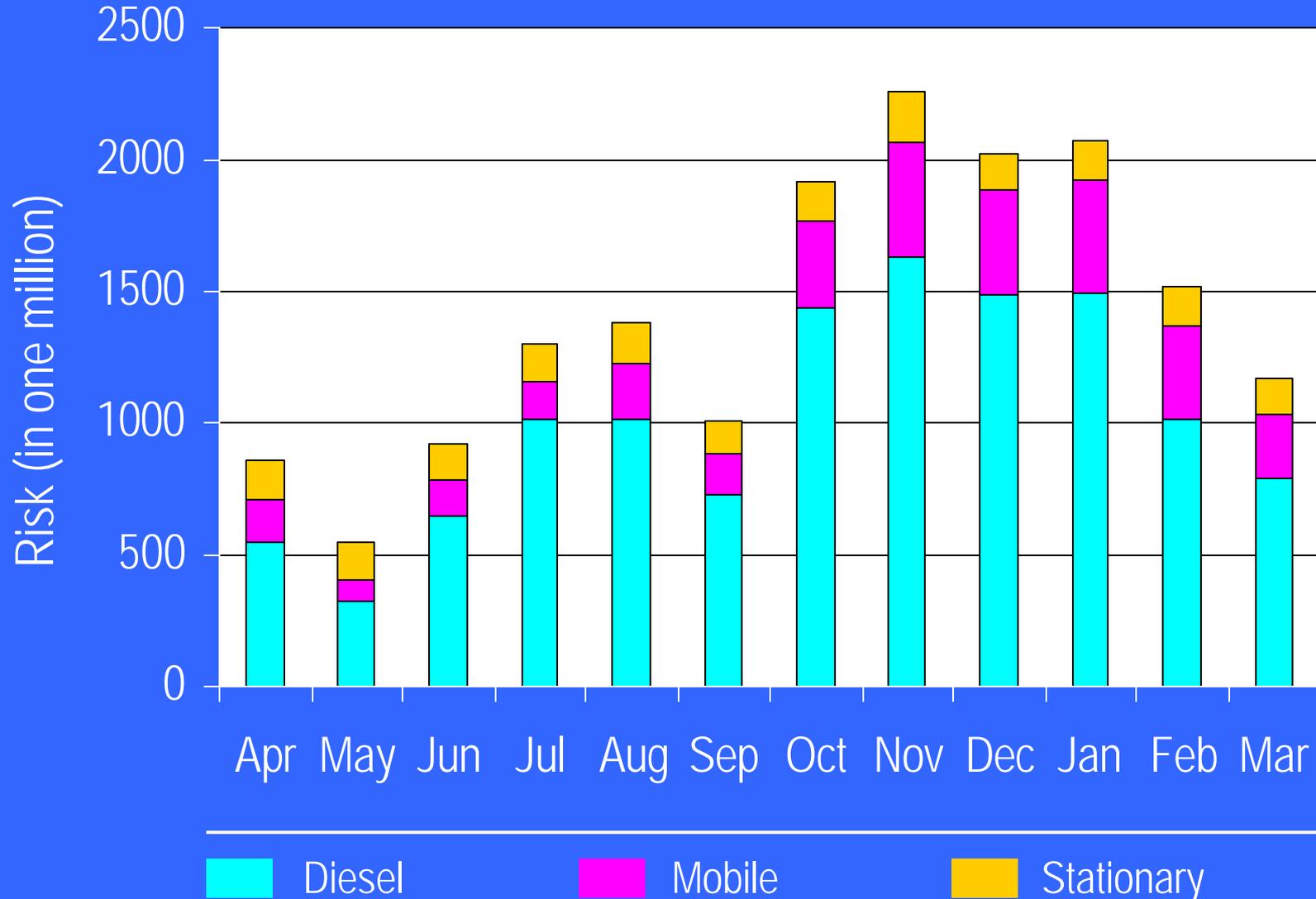
- Generally Higher Risk in Urban Core Areas Due to Greater Mobile Source Influence
- Risk from Stationary Sources Rather Homogeneous Across Basin

MATES-II Results

(Fixed Sites Continued)

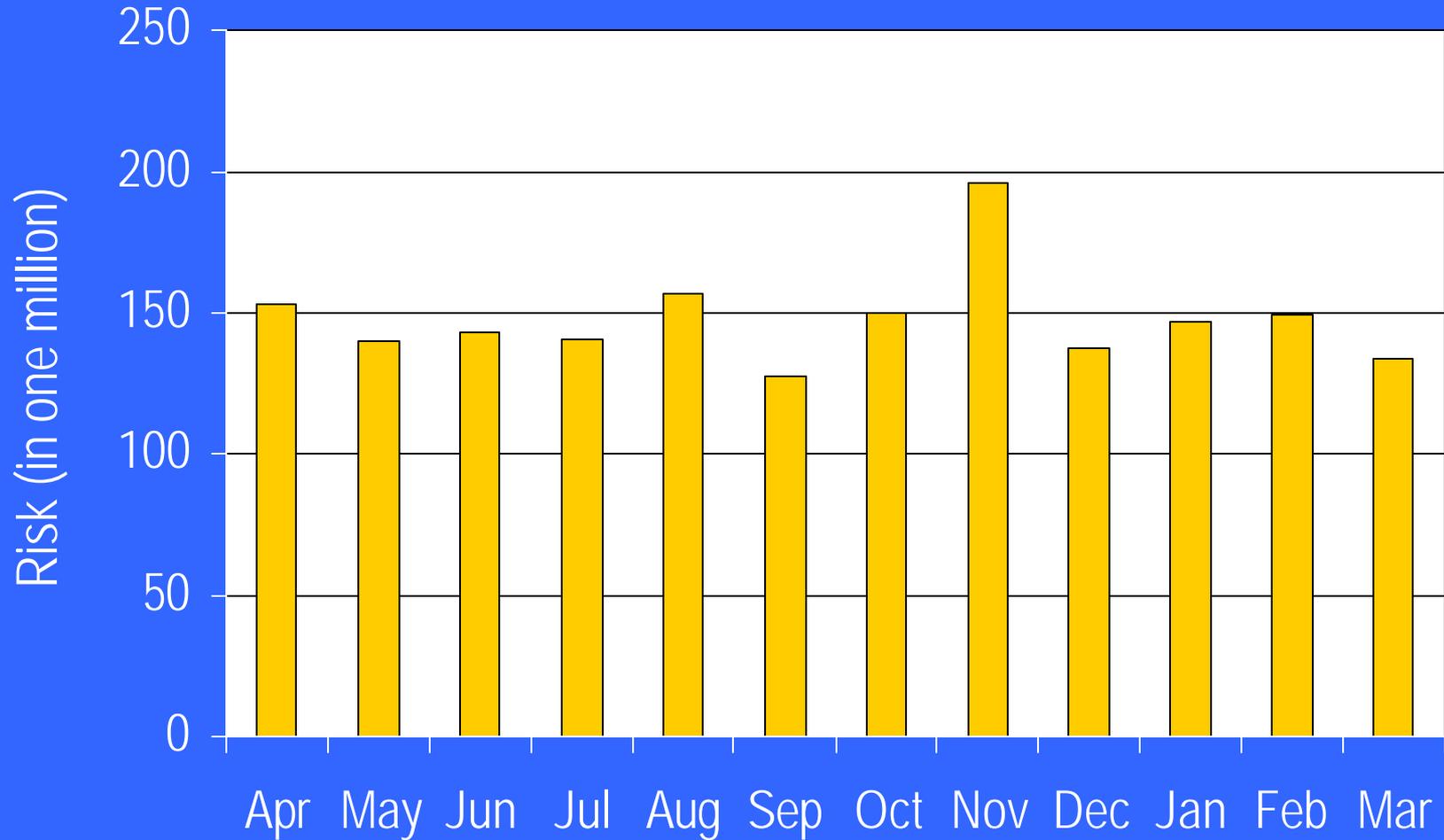
- Modeling Consistent with Measurement
 - Risk Estimates Close
 - Diesel is Major Contributor to Risk

Seasonal Risk Levels



Seasonal Risk Levels

(Stationary Sources Only)



MATES-II Results

(Fixed Sites Continued)

- Strong Seasonal Variations in Toxic Risk Attributed Mostly to Mobile Sources
- Toxic Emissions from Stationary Sources Do Not Show Large Seasonal Variability

Microscale Study

MATES-II Results

Microscale Study

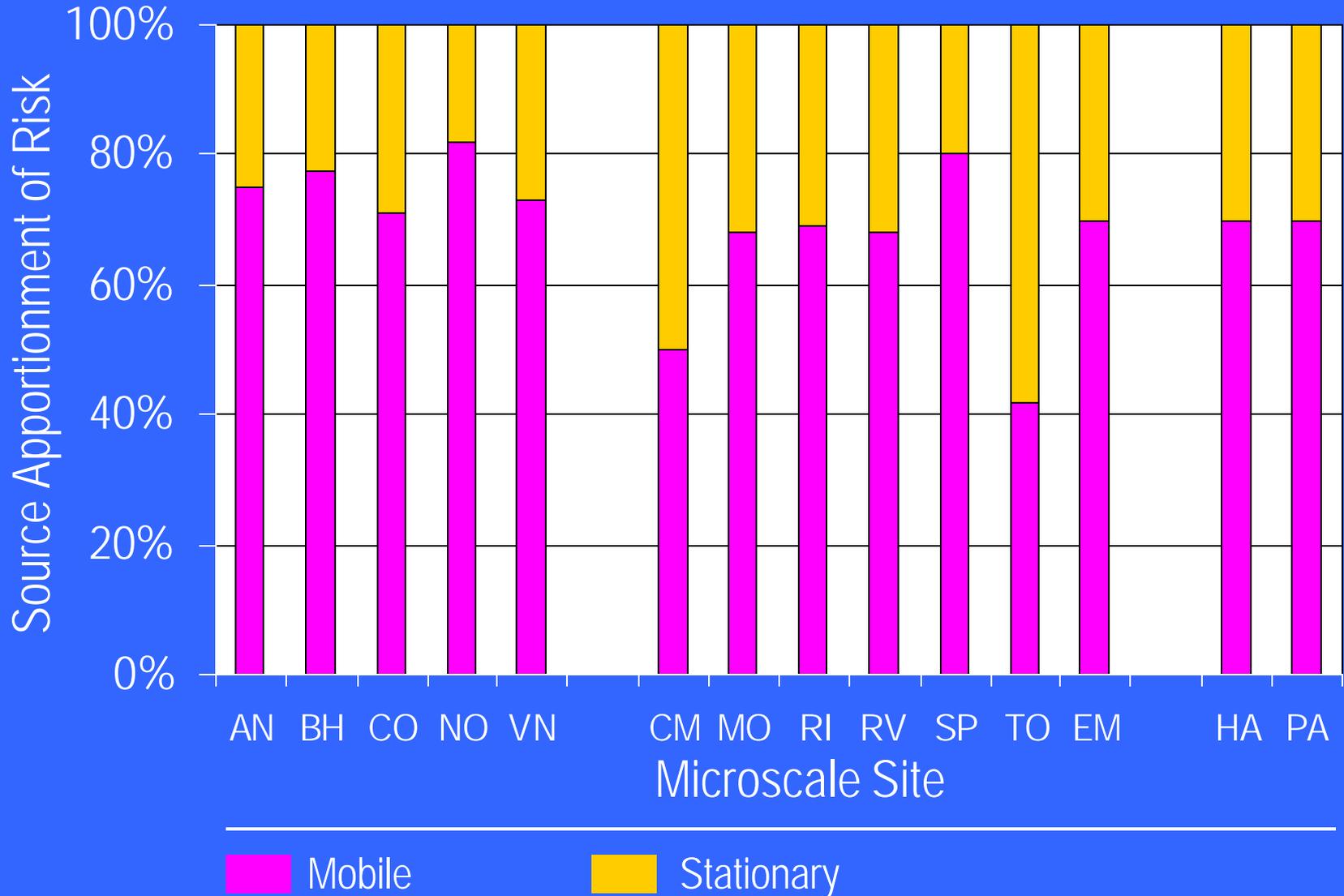
- Models Show Facility Risks Greatest Near “Fencelines”
- Locally Higher Levels Shown by Models, but Difficult to Detect with Limited Monitoring

MATES-II Results

Microscale Study

- Only One High Concentration Situation Measured (for Styrene in Anaheim)
- Finding Confirmed by Local Inventories

Source Influence at Microscale Sites



Uncertainties

- (1) Indirect Measurement of Diesel Particulates
- (2) Determination of Risk Values (URF's)
- (3) Laboratory/Measurement Processes
- (4) Model Inputs
- (5) Model Computational Algorithms

Summary

- Diesel Particulate Most Significant Contributor to Cancer Risk
- Mobile Sources Account for ~90% of Cancer Risks
- Strong Seasonality for Mobile Source TAC's
- Arrays of Monitors Needed for Local "Hot Spot" Monitoring