



Goods Movement and Public Health

Faster Freight, Cleaner Air Summit
January 30, 2006



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USC Children's Health Study

New England Journal of Medicine, Sept 2004

- Lower lung-function growth rate associated with PM₁₀, PM_{2.5}, NO₂ and acid vapor
- “By age 18, lungs of many children growing up in smoggy areas are underdeveloped and will likely never recover”
- Pollutants of harm “derive from vehicle-related emissions and combustion of fossil fuels”



“When we began the study 10 years ago, we had no idea we would find effects on the lung this serious.”

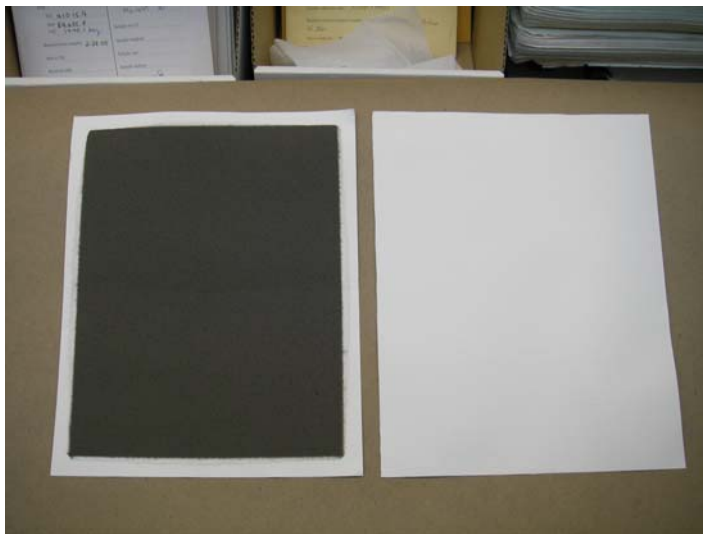
— John Peters, M.D., study's senior author

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AQ-Related Health Studies PUBLISHED 2005

- Mortality and Air Pollution in SoCal
 - USC School of Medicine (Jerrett)
- Coronary Heart Disease and Particulates
 - Loma Linda School of Public Health (Chen)
- Atherosclerosis and Air Pollution in SoCal Residents
 - USC School of Medicine (Künzli)
- Atherosclerosis and Particulates, laboratory animal study
 - NYU School of Medicine (Sun)

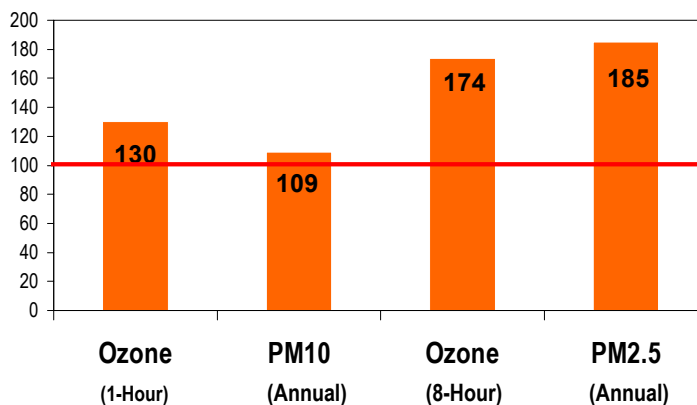
Breathing Soot



Left: Actual typical non-rainy wintertime day PM10 sample, Long Beach
Right: Blank filter

Ozone and PM

Max. Concentration as Percent of Federal Standard



Ozone 2004, PM 2003

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Where Do We Rank Nationally?

Exceedances of 8-hr. Fed. Ozone Standard

Ranking	City	Urbanized Area	Average Annual Exceedances, Period 2003-05
1	Arvin	Bakersfield CA	91
2	Crestline	Riverside-San Bernardino CA	68
3	Santa Clarita	Los Angeles CA	55
4	Redlands	Riverside-San Bernardino CA	51
5	Banning	Riverside-San Bernardino CA	46
6	Rubidoux	Riverside-San Bernardino CA	43
7	San Bernardino	Riverside-San Bernardino CA	37
8	Palm Springs	Palm Springs CA	36
9	Yucca Valley	Riverside-San Bernardino CA	35
10	Fontana	Riverside-San Bernardino CA	31

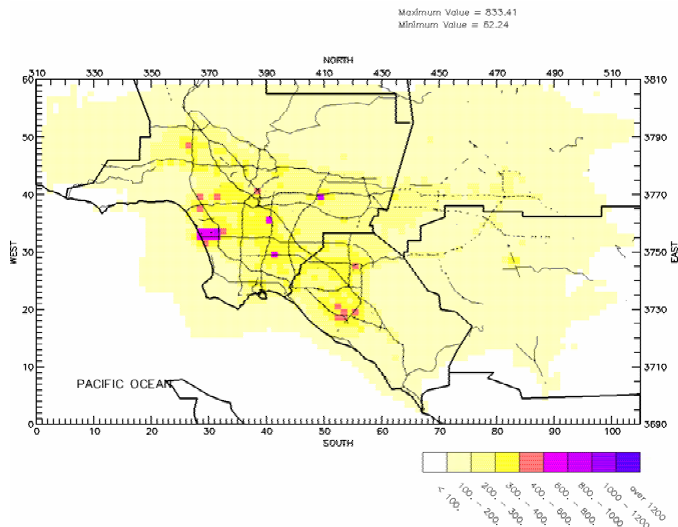
Where Do We Rank Nationally? (cont.)

PM2.5 Annual Average Concentrations $\mu\text{g}/\text{m}^3$

Ranking	City	Urbanized Area	Annual Average Concentration Period 2003-2005
1	Rubidoux	Riverside-San Bernardino CA	27.7
2	Riverside	Riverside-San Bernardino CA	26.0
3	Ontario	Riverside-San Bernardino CA	25.2
4	San Bernardino	Riverside-San Bernardino CA	24.7
5	Fontana	Riverside-San Bernardino CA	23.8
6	Burbank	Los Angeles CA	23.6
7	Pico Rivera	Los Angeles CA	23.3
8	Lynwood	Los Angeles CA	22.7
9	Los Angeles	Los Angeles CA	22.1
10	Azusa	Los Angeles CA	22.0
11	Bakersfield	Bakersfield CA	21.8
12	Visalia	Visalia CA	21.3
13	Liberty	Pittsburgh PA	21.2
14	Long Beach	Los Angeles CA	20.4
15	Birmingham	Birmingham, AL	20.3

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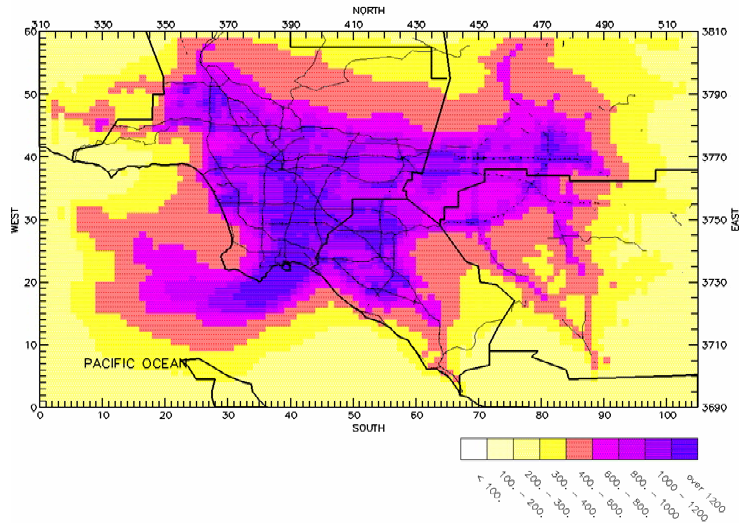
Modeled Cancer Risk Excluding Diesel



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Modeled Cancer Risk: All Sources

Maximum Value = 5800.21
Minimum Value = 184.94



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Top Ten California Counties Having High Diesel PM Emissions

	County	Air Basin	tons/year
1	Los Angeles	South Coast	4490
2	Orange	South Coast	1670
3	San Diego	San Diego	1527
4	Fresno	San Joaquin Valley	1006
5	Riverside	South Coast	996
6	Alameda	San Francisco Bay Area	914
7	Santa Clara	San Francisco Bay Area	904
8	San Bernardino	South Coast	795
9	San Francisco	San Francisco Bay Area	764
10	Kern	San Joaquin Valley	749

Source: CARB 2004

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Key Health Impact Assessments

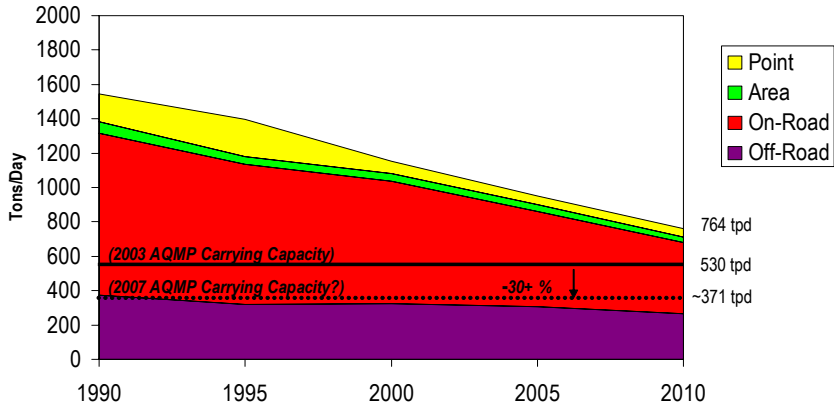
- CARB: Diesel PM causes 1,700 premature deaths per year in South Coast Air Basin
- CARB Facility Risk Assessments:
 - LA Ports
 - Roseville Railyard
 - Risks > 500 in a million

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NOx Emissions

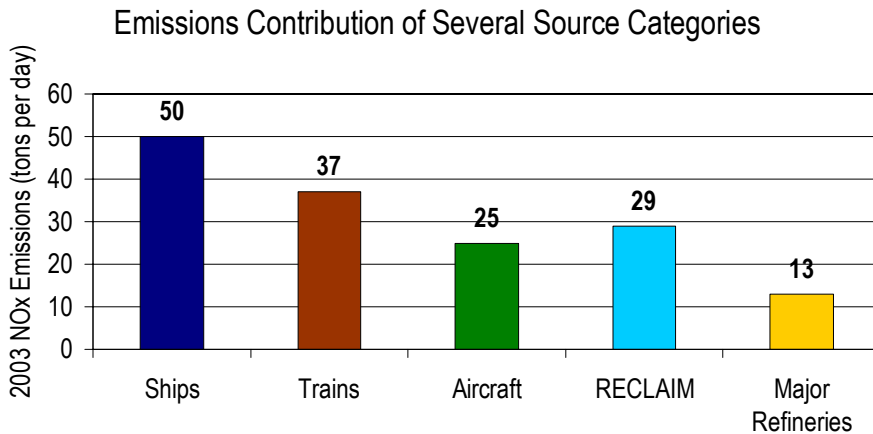
Projections Based on Adopted Regulations



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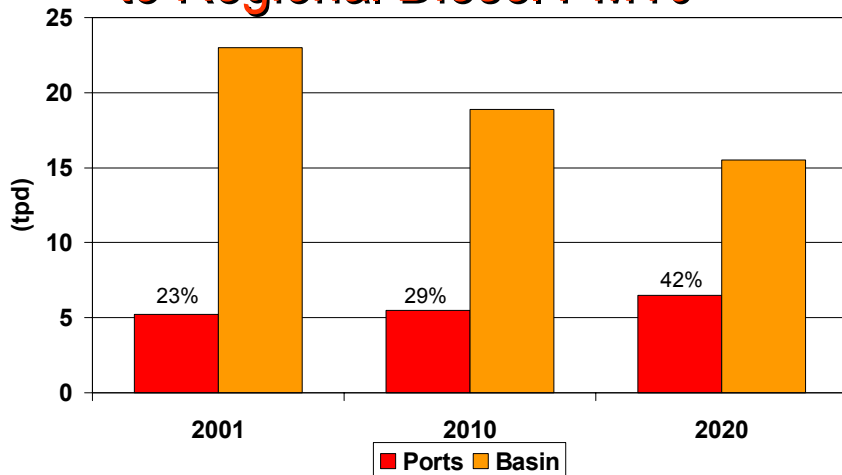
Comparison of Key NOx Sources

2003, Tons Per Day



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Contribution of Port-Related Sources to Regional Diesel PM10 *



*Assuming ports' recent baseline inventories and 2003 AQMP growth and control factors. ¹⁵

Goods Movement

Single largest
opportunity
to improve
South Coast
air quality



***The future
is what we
make of it.***

