



2015

Environmental Report Card

FOR LOS ANGELES COUNTY

AUTHORS | EDITORS
Mark Gold
Stephanie Pincetl
Felicia Federico

CONTRIBUTING AUTHORS
Anuradha Singh
Olivia Jenkins
Flora Zepeda Torres
Samuel Hirsch
Jeffrey Wolf
Alycia Cheng



UCLA
Institute of the
Environment and
Sustainability



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AIR



Overview

The improvement of air quality in the Los Angeles region is one of the great environmental success stories in our nation's history. The days of public schools frequently cancelling outdoor physical education and athletics because of extremely poor air quality are long gone.

The success story is testament to effective regulation by EPA, the California Air Resources Board and the South Coast Air Quality Management District under the Clean Air Act and state laws. Los Angeles was one of the first regions in the country to develop an air quality district before the Clean Air Act was even passed. The environmental and research communities also have contributed greatly to this effort. However, despite the success story, the Los Angeles region still has

some of the worst air quality in the nation because of our climate and topography, mobile sources like cars and trucks, a large industrial sector, and the two major ports. Days exceeding state and federal air quality standards ("non-attainment days") for ozone and particulate matter occur frequently, and air toxics continue to pose a major health risk, especially in low income communities. Climate change induced heat will create conditions for higher ozone concentrations, a criteria pollutant

the region is still combating. Other major factors affecting air quality include the vehicle fleet mix and energy source, as well as energy use by buildings.



Ambient Air Quality

Air pollution can cause or contribute to a range of health impacts, from watery eyes and fatigue to respiratory disease, lung damage, cancer, birth defects, heart attacks, and premature death. The American Lung Association State of the Air 2014 Report¹² puts Los Angeles County among the top 5 polluted areas in the country for ozone and PM_{2.5}.

Air pollution in the County is primarily monitored by the South Coast Air Quality Management District (SCAQMD), which oversees all of the urban portions of LA, Riverside and San Bernardino counties, and all of Orange County. A small area in Northwest LA County is under the Antelope Valley AQMD (AVAQMD).

We base this discussion on criteria set by the Clean Air Act and the state implementation plan. USEPA designates areas of the country where air pollution

levels persistently exceed the national ambient air quality standards as “nonattainment.” Portions of the South Coast Air Basin are listed as ‘extreme non-attainment’ for ozone (8hr), and ‘moderate non-attainment’ for PM_{2.5} (particulate matter with diameter equal to or less than 2.5 microns). State and federal law requires these areas to meet clean air standards by the year 2015 for PM_{2.5}, and by 2023 for ozone. EPA lowered the annual standard for PM_{2.5} in 2012 (from 15 to 12 ug/m³), and

with the likely toughening of the Federal ozone standard this year due to extensive research demonstrating human health risks at lower ambient ozone concentrations, even more of the region will be in non-attainment soon. LA County also is designated as “partial non-attainment” for lead based on two source-specific monitors in the Los Angeles County Cities of Vernon and Industry; all other areas are in attainment.

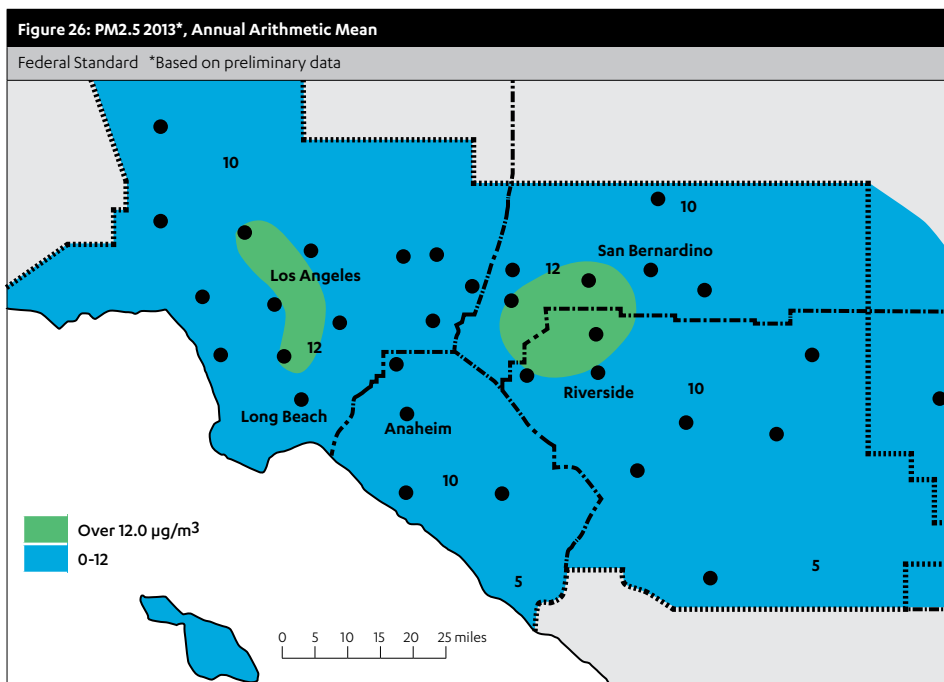
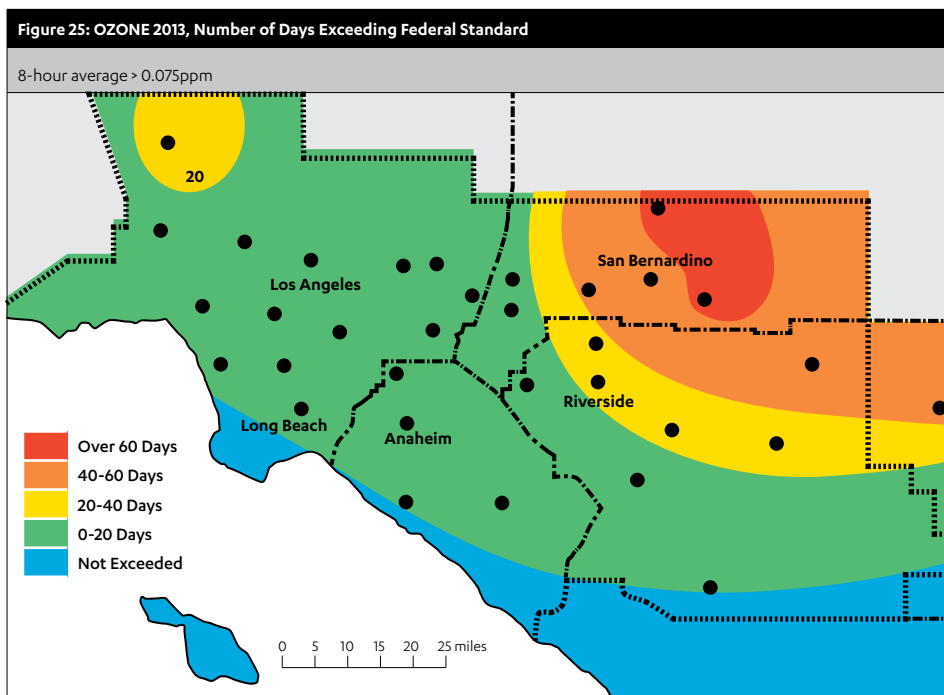
Data

We have chosen to show ambient air quality at the basin scale rather than just within LA County due to downwind impacts of pollutants originating in LA County. SCAQMD-created maps¹³ for 2013 show the geographical distribution of days exceeding the Federal ozone standard and areas where the annual mean PM_{2.5} concentrations exceed the Federal standard. We compiled data from 38 locations throughout the four-county area where SCAQMD monitors air quality, as well as the one location in LA County monitored by AVAQMD, as provided in these agencies' annual reports^{14,15}. Results are shown for ozone, PM₁₀, and PM_{2.5} for 2013 by monitoring location for all sites. Trends since 2009 are shown just for LA County monitoring locations for seven "criteria contaminants": ozone, particulate matter (10 and 2.5), lead, carbon monoxide, nitrogen oxides (specifically NO₂) and sulfur dioxide. Figures for NO₂, CO, SO₂, and lead are based on maximum concentrations observed.

We also looked at results of the draft Multiple Air Toxics Exposure Study (MATES) IV conducted by SCAQMD¹⁶. Started in 1986, MATES studies aim to determine the basin-wide risks associated with major airborne carcinogens. MATES IV monitoring and evaluation results are based on a one-year study (2012-13) of air toxics, and a comparison of these results with previous studies from 2005 (MATES III) and 1998 (MATES II). For the first time, MATES IV included ultrafine particle concentrations, specifically diesel particulate matter (DPM). Sources of DPM include Point Sources (facilities with equipment permitted by AQMD), Area Sources (small sources that can have collective impact), On-Road Sources (cars, trucks, buses and motorcycles), and Off-Road Sources.

Findings

• Overall, the LA Basin continues to demonstrate air quality improvements for both national ambient air standards and for air toxics. However, the region is still in non-attainment for ozone and particulate matter. Also, diesel particulate is still a major health concern



SCAQMD AIR MONITORING NETWORK
 - - - - - South Coast Air Basin (SCAB)
 - - - - - County Lines
 ● Air Monitoring Station

despite reductions in its emissions.

- All SCAQMD counties had exceedance days for the 1-hr (70 total days) and 8-hr (119 total days) ozone State standard in 2013. In both cases, the highest individual values were over 160% of the standards (Table 21, Fig 27). A total of 88 days in 2013 exceeded the less-stringent Federal 8-hr standard for ozone. (Fig 25, Table 21)
- Ozone exceedances extend through San Bernardino and Riverside Counties valleys in the eastern Basin, as well as the northeast (Santa Clarita and Antelope Valleys, and East San Gabriel Valley had the highest exceedance rates) and northwest portions of Los Angeles County in the foothill and valley area. (Figures 25 and 27, Table 21)

- All counties had exceedance days for the 24-hr PM10 State standard (East San Gabriel Valley was the highest in the County) (Table 21, Fig 28, but there were no exceedances for the much less stringent Federal PM10 standard in 2013.
- All counties had exceedance days for the 24-hr PM2.5 Federal standard in 2013 (13 total days). The highest 24-hr concentration was 172% of the standard. Exceedances are focused in areas around downtown Los Angeles and the San Fernando Valley, as well as in San Bernardino and Riverside Counties (Figures 26 and 29, Table 21).
- NO₂, CO, SO₂, and lead concentrations have been well within Federal and State standards since 2009. PM10 and PM2.5 show generally declining trends, although with some increases over the last few years. Ozone levels have shown small decreases in 2013 compared to 2009, although with variations in the intervening years. (Figures 30-33)
- The carcinogenic risk from air toxics in the Basin is estimated at 418 cancer cases per million in 2012, which is 65% lower than the monitored average in 2005. This risk refers to the expected number of additional cancers in a population of one million individuals if they were exposed to these levels over a 70-year lifetime. (Figure 34)
- About 90% of the risk in 2012 is attributed to emissions associated with mobile sources, with the remainder attributed to toxics emitted from stationary sources, which include large industrial operations such as refineries and metal processing facilities, as well as smaller businesses such as gas stations and chrome plating. (Fig 35)
- While diesel PM exposure decreased by ~70% over the last seven years, it still dominates the overall cancer risk from air toxics. (Fig 34) Highest risk areas are near ports and transportation corridors. Risk from other air toxics continue to decline, with limited exceptions. Ultrafine Particle measurements show higher levels in areas with higher population and traffic density. (Fig 36)

Table 21: Number of exceedances of non-attainment pollutants. Source: SCAQMD 2013 Annual Report

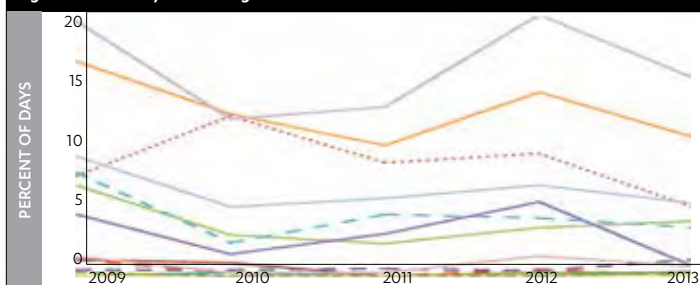
		% Days Ozone Exceedance - Federal 8 hr (>0.075ppm)	% Days Ozone Exceedance State 8 hr (>0.070 ppm)	% Samples PM10 Exceedences State 24 hr (>50 µg/m3)	% Samples PM2.5 Exceedences Federal 24 hr (>35 µg/m3)
LOS ANGELES COUNTY					
1	Central LA	0.0	0.0	2.0	0.3
2	Northwest Coastal LA County	0.0	0.3	-	-
3	Southwest Coastal LA County	0.3	0.3	0.0	-
4	South Coastal LA County 1	0.0	0.4	0.0	0.6
	South Coastal LA County 2	-	-	2.0	0.3
	South Coastal LA County 3	0.0	0.0	-	-
6	West San Fernando Valley	3.5	5.8	-	0.8
7	East San Fernando Valley	1.7	4.7	2.0	1.2
8	West San Gabriel Valley	0.0	0.8	-	0.0
9	East San Gabriel Valley 1	1.7	4.1	10.0	0.0
	East San Gabriel Valley 2	7.5	11.8	-	-
10	Pomona/Walnut Valley	4.4	6.2	-	-
11	South San Gabriel Valley	0.0	0.8	-	0.0
12	South Central LA County	0.4	0.3	-	0.9
13	Santa Clarita Valley	11.0	16.8	0.0	-
14	Antelope Valley	0.4	1.4	4.3	0.0
ORANGE COUNTY					
16	North Orange County	0.3	0.5	-	-
17	Central Orange County	0.0	0.0	2.0	0.3
18	North Coastal Orange County		0.6	-	-
19	Saddleback Valley	0.6	1.4	2.0	0.0
RIVERSIDE COUNTY					
22	Norco/Corona	-	-	4.0	-
23	Metropolitan Riverside County 1	7.8	10.4	8.0	1.7
	Metropolitan Riverside County 2	-	-	-	0.9
	Mira Loma	6.0	9.4	24.0	2.5
24	Perris Valley	10.0	16.6	18.0	-
25	Lake Elsinore	3.5	6.8	-	-
26	Temecula	0.9	3.4	-	-
29	Banning Airport	17.0	18.1	2.0	-
30	Coachella Valley 1	12.9	22.5	5.0	0.0
	Coachella Valley 2	4.9	10.4	19.0	0.0
SAN BERNARDINO COUNTY					
32	Northwest San Bernardino Valley	7.8	12.1	-	-
33	Southwest San Bernardino Valley	-	-	5.0	0.9
34	Central San Bernardino Valley 1	12.2	18.6	31.0	0.8
	Central San Bernardino Valley 2	10.7	14.5	5.0	0.9
35	East San Bernardino Valley	17.9	25.5	3.0	-
37	Central San Bernardino Mountains	19.8	27.9	0.0	-
38	East San Bernardino Mountains	-	-	-	1.7

Data Limitations

- Monitoring locations differ widely in terms of monitoring frequency, pollutants and sampling techniques; this is apparent in the differences in data available in Figures 27-33.

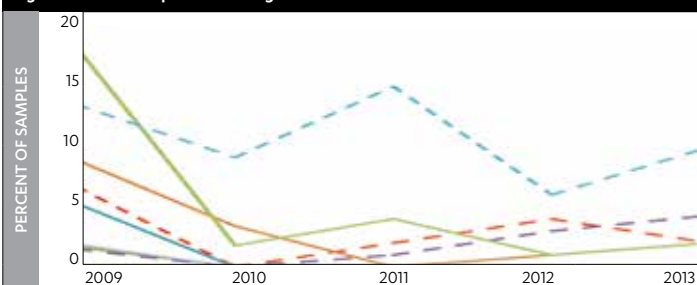
- The MATES IV report is based on the results of only 10 fixed sites designed to represent varying land-use types and geography across the Basin.

Figure 27: % of Days Exceeding State 8-Hour Standard for Ozone



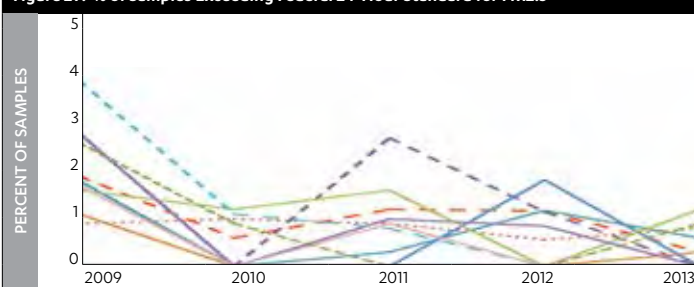
- Central LA
- NW Coastal LA Co.
- SW Coastal LA Co.
- Antelope Valley
- S. Coastal LA Co. 1
- S. Coastal LA Co. 2
- S. Coastal LA Co. 3
- W. San Fern. Valley
- W. San Gab. Valley
- E. San Fern. Valley
- E. San Gab. Valley 1
- E. San Gab. Valley 2
- Pomona/Walnut Valley
- S. San Gabriel Valley

Figure 28: % of Samples Exceeding State 24-Hour Standard for PM10



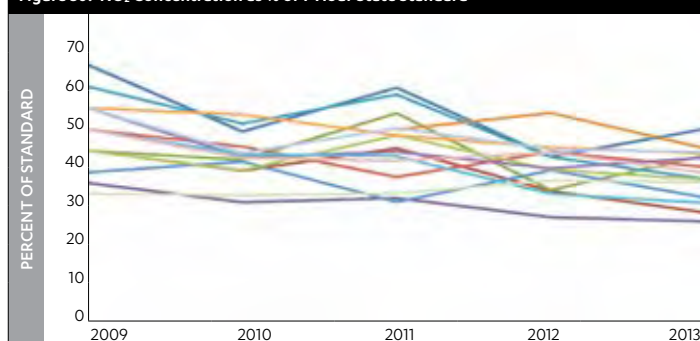
- Central LA
- NW Coastal LA Co.
- SW Coastal LA Co.
- Antelope Valley
- S. Coastal LA Co. 1
- S. Coastal LA Co. 2
- S. Coastal LA Co. 3
- W. San Fern. Valley
- W. San Gab. Valley
- E. San Fern. Valley
- E. San Gab. Valley 1
- E. San Gab. Valley 2
- Pomona/Walnut Valley
- S. San Gabriel Valley

Figure 29: % of Samples Exceeding Federal 24-Hour Standard for PM2.5



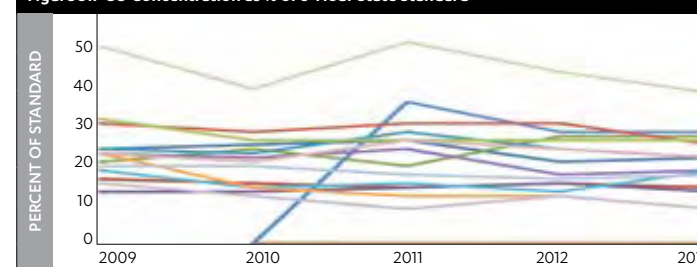
- Central LA
- NW Coastal LA Co.
- SW Coastal LA Co.
- Antelope Valley
- S. Coastal LA Co. 1
- S. Coastal LA Co. 2
- S. Coastal LA Co. 3
- W. San Fern. Valley
- W. San Gabriel Valley
- E. San Fern. Valley
- E. San Gabriel Valley 2
- E. San Gabriel Valley 1

Figure 30: NO₂ Concentration as % of 1-Hour State Standard



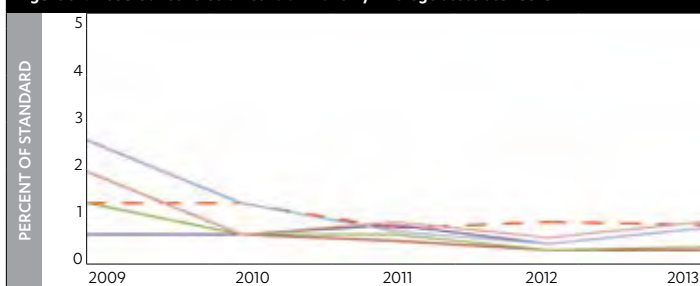
- Central LA
- NW Coastal LA Co.
- SW Coastal LA Co.
- Antelope Valley
- S. Coastal LA Co. 1
- S. Coastal LA Co. 3
- W. San Fern. Valley
- E. San Fern. Valley
- W. San Gab. Valley
- E. San Gab. Valley 1
- E. San Gab. Valley 2
- Pomona/Walnut Valley
- S. San Gabriel Valley
- S. Central LA County
- Santa Clarita Valley

Figure 31: CO Concentration as % of 8-Hour State Standard



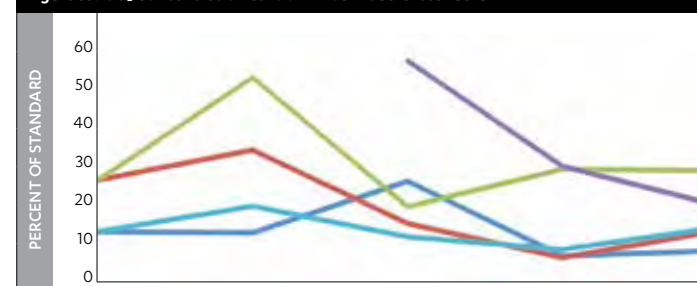
- Central LA
- NW Coastal LA Co.
- SW Coastal LA Co.
- Antelope Valley
- S. Coastal LA Co. 1
- S. Coastal LA Co. 2
- S. Coastal LA Co. 3
- W. San Fern. Valley
- W. San Gab. Valley
- E. San Fern. Valley
- E. San Gab. Valley 2
- Pomona/Walnut Valley
- S. San Gabriel Valley
- S. Central LA County
- Santa Clarita Valley

Figure 32: Lead Concentration as % of Monthly Average State Standard



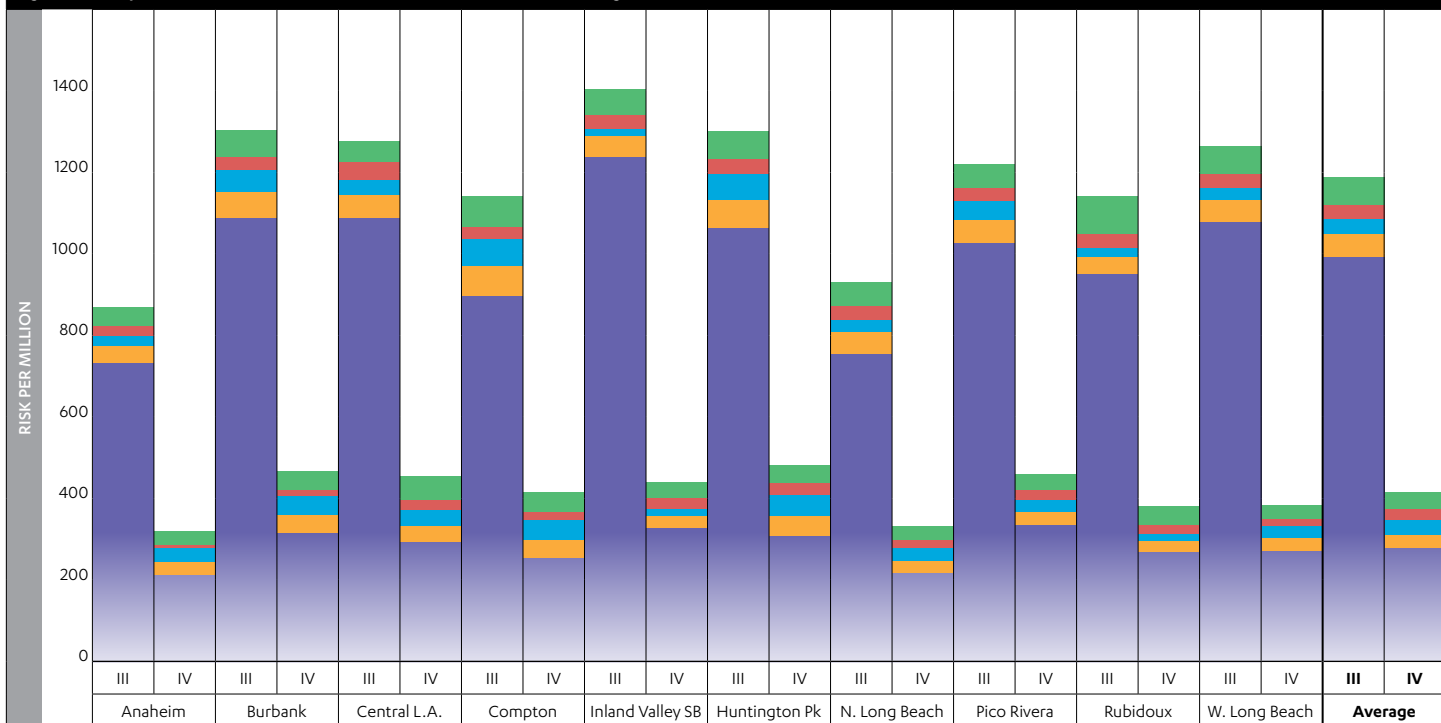
- Central LA
- SW Coastal LA Co.
- S. Coastal LA Co. 1
- S. Coastal LA Co. 2
- E. San Fern. Valley
- E. San Gabriel Valley 1
- S. San Gabriel Valley
- South Central LA Co.

Figure 33: SO₂ Concentration as % of 1-Hour Federal Standard



- Central LA
- Southwest Coastal LA County
- South Coastal LA County 1
- South Coastal LA County 3
- East San Fernando Valley

Figure 34: Comparison of Estimated 70-Year Risk from MATES III & IV Monitoring Data



■ Diesel PM
■ Benzene
■ 1,3 Butadiene
■ Carbons
■ Other

Figure 35: Cancer Potency Weighted Emission Comparison of MATES II, MATES III and MATES IV

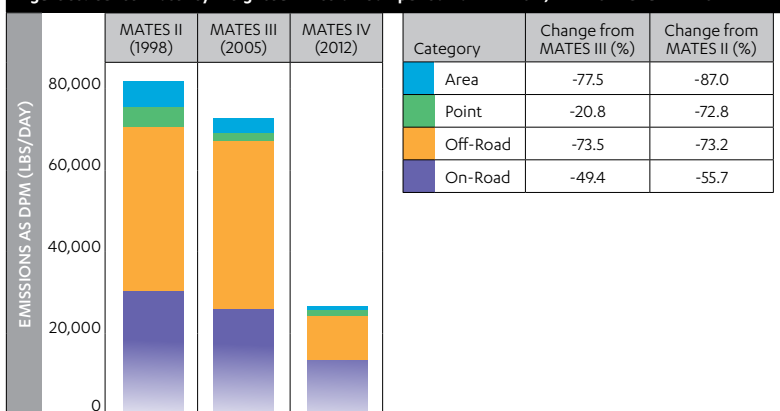
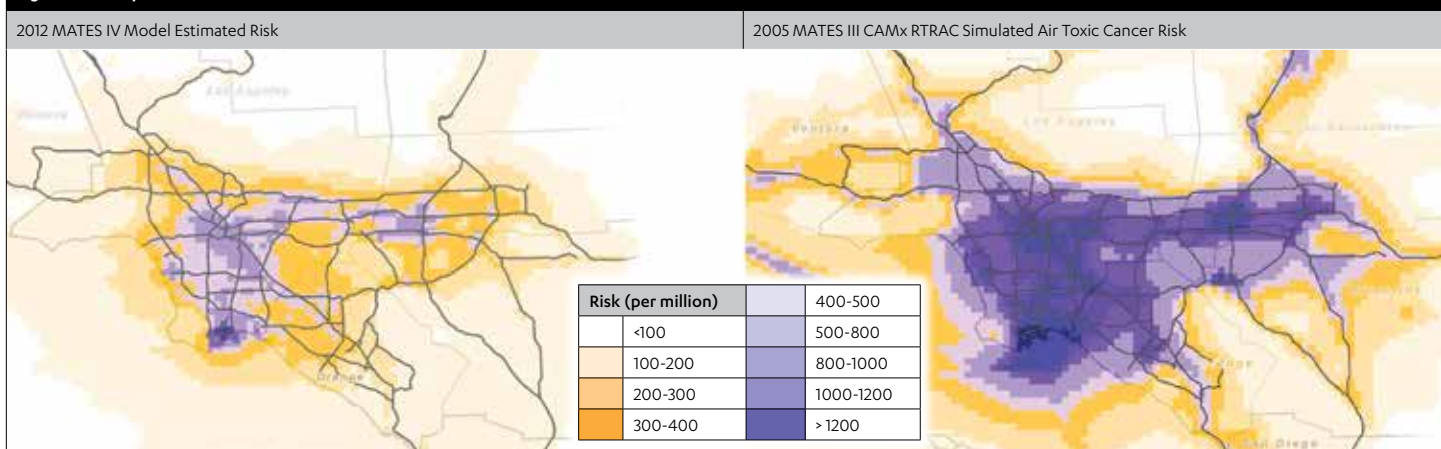


Figure 36: Comparison of Estimated Risk for MATES IV and MATES III



Stationary Source Toxic Emissions

Toxic air emissions from stationary sources are a leading indicator for air quality, and provide additional details on the spatial distributions, sources, and mass emissions of a variety of toxic chemical constituents. Los Angeles County remains the largest industrial manufacturing center in the United States with the most employment in this sector. This raises questions into the future about the role of this sector in the economy and its impacts.

Data

We used the Toxic Release Inventory (TRI)¹⁷ data submitted to EPA on an annual basis by facilities which come under this regulation¹⁸. We included data from the TRI reports for Toxic Air Contaminants (TACs) as defined by the CA Health and Safety Code¹⁹, as well as for Federally-defined Hazardous Air Pollutants (HAPs)²⁰ released in significant amounts within the County. The top three emitting facilities were identified for each of the eight most emitted contaminants in Los Angeles County in 2013.

Findings

- Reported air emissions of many pollutants have increased significantly since 2009, including methanol, methylene chloride, styrene, and vinyl acetate. (Table 22)
- The five chemicals with mass emissions greater than 10,000 pounds per year in 2013 in descending order are: methanol, methylene chloride, styrene, toluene and benzene. (Table 22)

Table 22: Total Releases of Toxic Air Contaminants in Pounds by TRI-Reporting Facilities (2009-2013)

Pollutant	2009	2010	2011	2012	2013
Methanol	9,628	7,374	223,857	228,104	141,199
Methylene chloride	4	4	1,268	20,932	138,075
Styrene	1,490	2,052	162,252	162,433	136,517
Toluene	27,437	34,262	117,570	109,587	92,351
Benzene	200	220	21195	18,013	10,860
Vinyl Acetate	0	0	6057	5,581	3,354
Lead and Lead Compounds	638	634	781	830	1405
Nickel and Nickel Compounds	19	14	890	756	983
1,3-butadiene	0	0	1962	1,895	738
Formaldehyde	2,327	2,103	1,813	2,091	716
Ethylene Oxide	0	0	384	679	530
Chromium	6	6	364	105	435
Perchloroethylene	1	1	906	472	287
Trichloroethylene	0	0	283	250	250
Chloroform	0	0	0	0	73
Arsenic and Arsenic Compounds	3	4	1,207	199	9
Cadmium	421	7	5	3	2
Dibenzo - p - dioxins and Dibenzofurans	<1	<1	2	2	1
Hexavalent chromium (Cr (VI))	0	0	0	0	0
Chromium compounds	0	0	95	111	0
Asbestos	0	0	0	0	0

Table 23: Top 3 Emitting Facilities for the Eight Most Emitted Contaminants, 2013.

Pollutant	Facility	Pounds	Facility	Pounds	Facility	Pounds
Methanol	Phillips 66 LA Refinery Carson Plant	40,000	ExxonMobil Oil Corporation Torrance Refinery	25,000	Air Products & Chemicals Inc	16,622
Methylene Chloride	Polypeptide Group	137,049	IPS Corporation**	750	IPS Corporation	250
Styrene	Custom Fibreglass Manufacturing Co	51,870	GB Manufacturing Inc. California Acrylic Industries Inc (DBA Cal Spas)	14,291	Americh Corporation	13,624
Vinyl Acetate	Arkema Coating Resins Plant	2,450	Engineered Polymer Solutions Inc.	904		
Benzene	ExxonMobil Oil Corporation Torrance Refinery	3,700	Chevron Products Company Division of Chevron USA	790	Equilon Carson Terminal	750
Lead and Lead Compounds	Valley Processing*	637	Exide Technologies*	283	Tesoro Los Angeles Refinery Calciner Operations*	80
Toluene	Fabri Cote	27,174	Johnson Laminating & Coating Inc	12,451	ExxonMobil Oil Corporation Torrance Refinery	7,400
Nickel and Nickel Compounds	Alcoa Global Fasteners Inc	400	ExxonMobil Oil Corporation Torrance Refinery*	170	Chevron Products Company Division of Chevron USA*	120

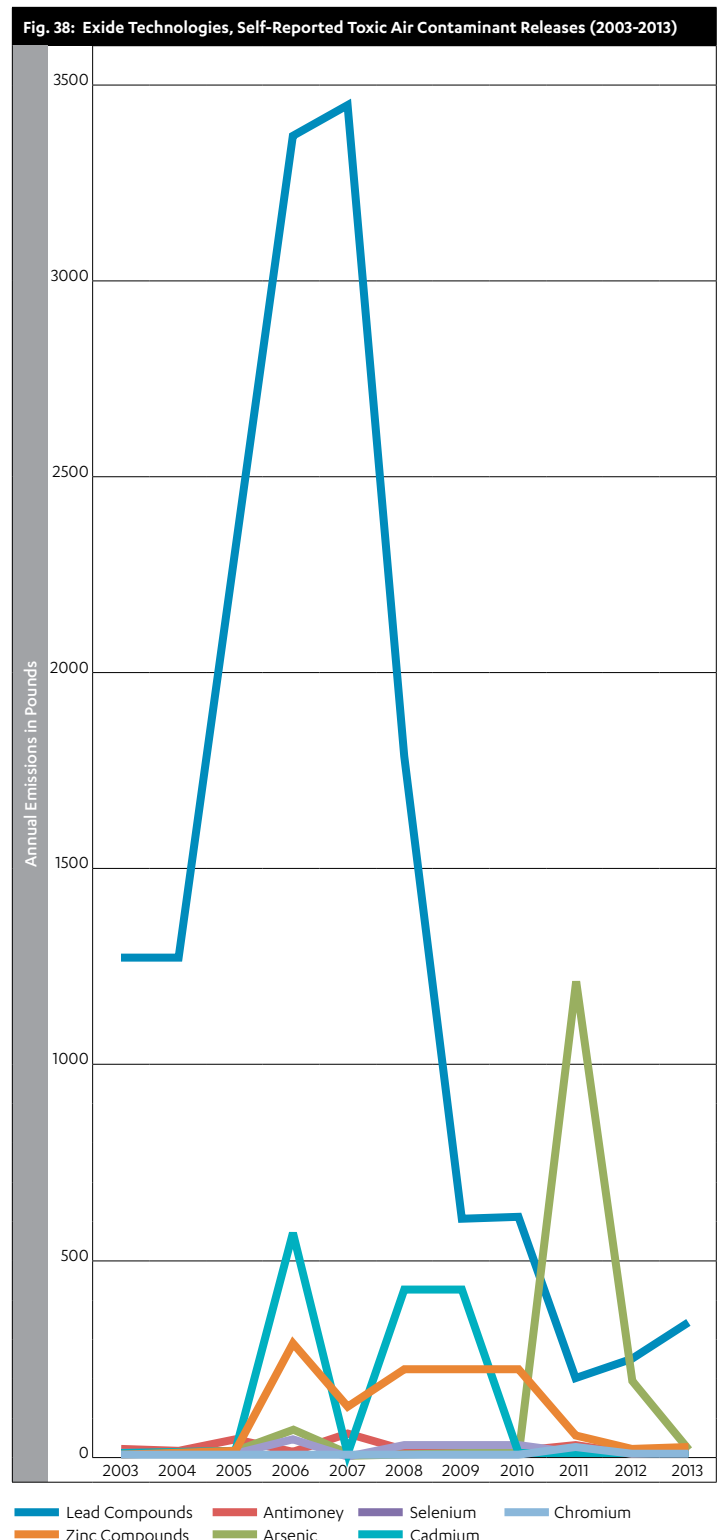
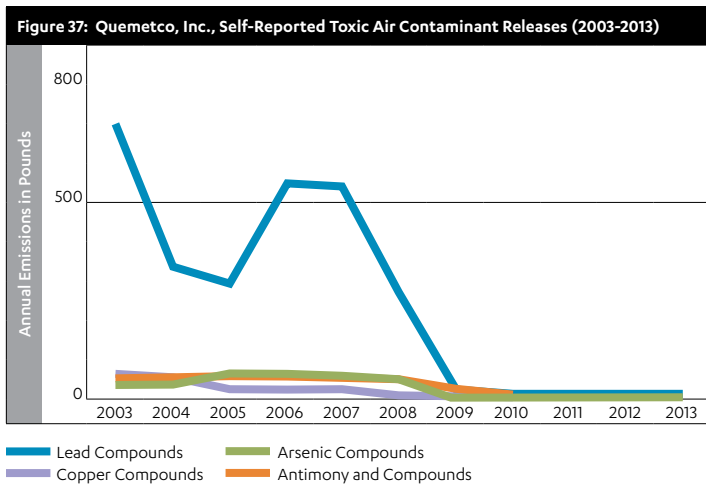
**IPS Corp was listed two times for Methylene Chloride, though there is no difference in address, facility id, type of emission etc.

*For compounds

- Reported air emissions of a few pollutants have decreased since 2009, including formaldehyde and cadmium. (Table 22)
- The top three emitters comprise over half of the annual emissions for nearly all of the top eight chemicals discharged. (Table 23)
- Changes from year to year in calculation methods, global economic conditions, facility operations and clean-up activities may all influence the reported values, making it challenging to identify trends.
- Quemetco and Exide, two large battery recyclers, have historically been two of the largest emitters of metals (lead and arsenic in particular) (Fig 37 and 38), but enforcement actions and changes to facility operations have reduced emissions over the last several years. (Exide is now permanently closed due to chronic air quality and hazardous materials regulatory compliance issues. The enormous potential liability led Exide to acknowledge criminal conduct and commit to demolishing and cleaning up the facility in exchange for avoiding criminal prosecution from the US Department of Justice)

Data Limitations

- TRI data are based on facility self-reporting, and therefore represents a non-standardized methodology. Furthermore, TRI regulations do not require facilities to conduct any additional monitoring beyond what is required by other regulations.
- While emissions from mobile sources pose a higher overall risk compared to stationary source emissions, we do not have comparable data on mobile source emissions.





Grade for Air = C+

We acknowledge and applaud the undisputable progress that has occurred over the past 40 years on smog, lead, other air toxics, and diesel particulates. The positive results of these improvements are exemplified by a recent long term study by researchers at USC that demonstrated that lung performance of adolescents improved with improved air quality in the Los Angeles basin²¹.

However, air quality continues to be frequently dangerous in some parts of the region, and has negative impacts on surrounding natural areas as well. Achieving attainment with air quality standards is also becoming more difficult due to tougher new, health-based standards and the contribution of overseas pollution, such as from China²².

We are especially concerned about the prospective impacts on air quality of increased heat incidences due to climate change; warmer temperatures have been shown to increase surface ozone and future

increases are expected to be greatest in urban areas²³. Regional prevailing winds push air pollution inland where there are more lower income residents, and health impacts are likely to be aggravated into the future unless much greater strides are taken to reduce pollutants from all sources.

Moreover there is a strong relationship between the location of polluting industrial manufacturing and our goods movement facilities and corridors and low-income residents of color²⁴. More protective polices, more inspections and better enforcement of existing

regulations continues to be a major need, as is the need for more standardized, comprehensive monitoring and reporting requirements. More research on chemical toxicity is needed, especially on cumulative and synergistic impacts of exposure. More research on clean manufacturing – which has lagged – is also needed. However, continued progress on reduction of diesel particulates, efforts like the Clean Up Green Up initiative²⁵, and the transformation of the transportation sector to zero emission vehicles provides promise for better grades in future years.

UCLA Institute of the Environment and Sustainability
La Kretz Hall, Suite 300
Box 951496
Los Angeles, CA 90095-1496
Tel: (310) 825-5008
Fax: (310) 825-9663
events@ioes.ucla.edu
www.environment.ucla.edu