

Los Angeles, CA NATTS Network Assessment Review

- Established 2007: Carbonyls, Chromium VI, PAHs, PM₁₀ Metals, and VOCs
 - Chromium VI ended in in 2014
- For the NATTS Network Assessment (2007-2018):
 - 16 of 18 Method Quality Objective (MQO) Core HAPs were included in the national trends
 - Vinyl Chloride: Low completeness (under 75%) in 2016.
 - Carbon Tetrachloride: High Bias (outside ± 35%) AND completeness was 79% in 2016.
 - 191 of 210 pollutant datasets were suitable for trends analysis
 - Annual Average and 3-Year Rolling Average Concentrations were generally flat over time, with the exception of a few pollutants (benzene, 1,3-butadiene, chromium VI, naphthalene, tetrachloroethylene, and trichloroethylene).
 - 100% Reporting of Datasets
- Method Quality Objectives (MQO): 2007-2018
 - Completeness: Met 85% completeness in 183 of 212 pollutant datasets
 - Method Detection Limits: Met MDL Target Ratio of 1.00 in 191 of 215 pollutant datasets
 - Bias: Met ±25% for 124 of 146 pollutant datasets
 - Overall Method Precision: Met ≤15% CV for 81 of 157 pollutant datasets
 - Analytical Method Precision: Met ≤15% CV for 103 of 141 pollutant datasets
- Analytical Laboratories for 2018

VOC	Carbonyl	PM ₁₀ Metals	Chromium VI	PAHs
SCAQMD	SCAQMD	SCAQMD	NA	ERG

- Equipment Year Deployed

Equipment Type	VOC	Carbonyl	PM ₁₀ Metals	Chromium VI	PAHs
Sampler	2004	2018	2018	2007	2016
Analytical	2006	1999	2010	2007	2014
Preconcentrator	2017	NA	NA	NA	NA
Standards Preparation	2018	NA	NA	NA	NA
Canister Cleaning	2007	NA	NA	NA	NA
Extraction	NA	NA	2009	<2000	2004

National Summary: NATTS data were collected at 27 locations across the United States, with sites beginning in 2003 or later (Figure 1) for 19 core HAPs. Over 528,000 concentrations (primary, secondary, and replicate) were generated and analyzed for this assessment. Pollutant datasets were scored to assess whether they were suitable for trends analysis. Each pollutant dataset was evaluated against four MQOs: Completeness; Sensitivity; Bias; and Precision. Datasets that were suitable (A- or B-rated) for six consecutive years were used for national trends analysis (Table 1).

National trends were determined by comparing the most recent 3-year blocked averages (e.g., 2013-2015 vs. 2016-2018) to determine if the NATTS Trends DQO was being met:

To be able to detect a 15 percent difference (trend) between the annual mean concentrations of successive 3-year periods within acceptable levels of decision error.

Of the 19 core HAPs, 18 were assessed for the NATTS Trends DQO. Due to sampling and analytical issues, acrolein was not considered for trends analysis (Table 2). This assessment showed that across the network, 15 of those 18 pollutants were decreasing between the 3-year blocks, while two of those pollutants were increasing between the 3-year blocks. One pollutant did not exhibit a trend.

Figure 1. NATTS Site and Year Established

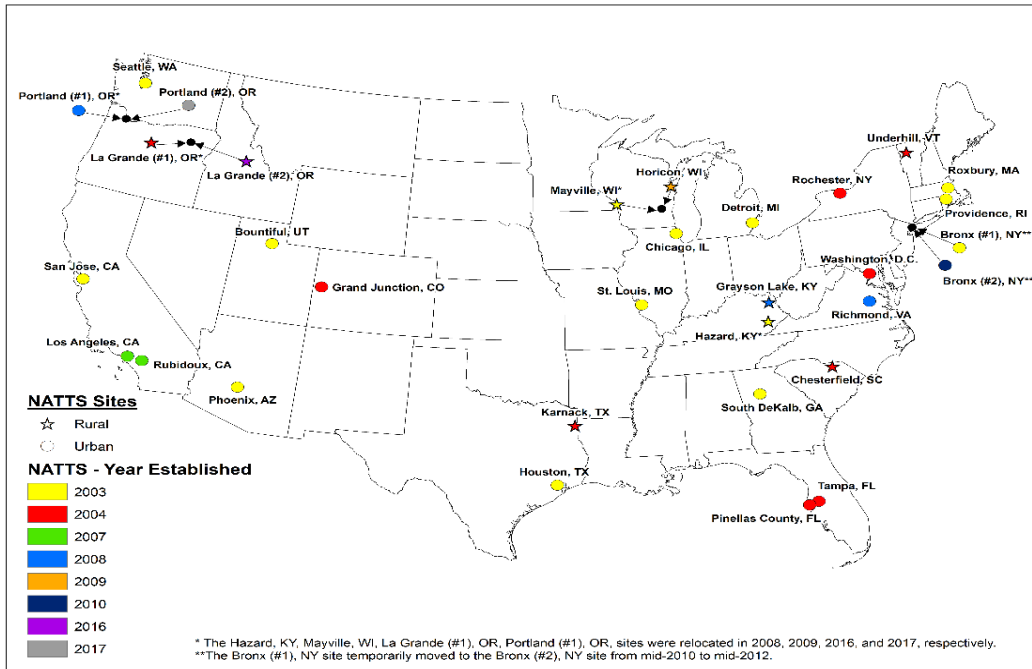


Table 1. NATTS Network Assessment: Count and Percentage of Suitable Datasets by Pollutant Group

Pollutant Group	A-rated		B-rated		Does Not Meet	
	#	%	#	%	#	%
VOCs	1,452	53%	737	27%	555	20%
Carbonyls	523	67%	193	25%	66	8%
PM ₁₀ Metals	1,418	61%	685	30%	213	9%
Chromium VI	159	74%	29	13%	27	13%
PAHs	410	74%	124	22%	18	3%
Total = 6,609	3,962	60%	1,768	27%	879	13%

Table 2. Three-Year Block Averages for National Trends

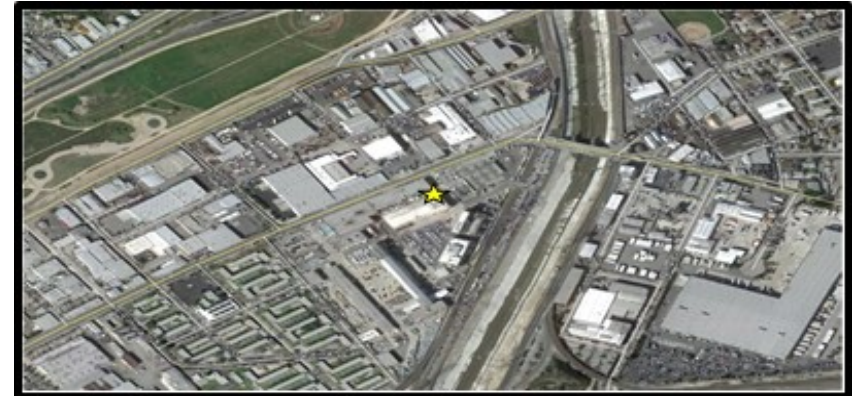
Pollutant	Units	# Sites	Block 1	Block 2	% Difference
Acetaldehyde	µg/m ³	19	1.51	1.39	-7.7%
Arsenic (PM ₁₀)	ng/m ³	21	0.71	0.68	-3.2%
Benzene	µg/m ³	19	0.65	0.59	-10.2%
Benzo(a)pyrene	ng/m ³	21	0.113	0.087	-23.2%
Beryllium (PM ₁₀)	ng/m ³	20	0.012	0.009	-26.4%
Butadiene, 1,3-	µg/m ³	19	0.071	0.063	-10.9%
Cadmium (PM ₁₀)	ng/m ³	21	0.170	0.097	-43.0%
Carbon Tetrachloride	µg/m ³	15	0.59	0.56	-4.7%
Chloroform	µg/m ³	20	0.256	0.255	-0.4%
Chromium VI	ng/m ³	18	0.029	0.026	-7.7%
Formaldehyde	µg/m ³	19	2.77	2.68	-3.3%
Lead (PM ₁₀)	ng/m ³	21	3.08	2.81	-8.9%
Manganese (PM ₁₀)	ng/m ³	20	8.06	7.93	-1.6%
Naphthalene	ng/m ³	20	66.70	51.08	-23.4%
Nickel (PM ₁₀)	ng/m ³	19	1.28	1.05	-18.0%
Tetrachloroethylene	µg/m ³	19	0.149	0.174	17.2%
Trichloroethylene	µg/m ³	19	0.020	0.022	10.7%
Vinyl Chloride	µg/m ³	17	0.0051	0.0048	-5.5%

NATTS Monitoring Site Report: Los Angeles, CA

Site Information

Region	9
NATTS Site Type	Urban
County	Los Angeles
AQS Site Code	06-037-1103
NATTS Operating Agency	South Coast AQMD
Latitude	34.06659
Longitude	-118.22688
AQS Land Use	Residential
AQS Location Setting	Urban/City Center
10-Mile Population	10,017,068

Figure 2. NATTS Site Location



Pollutant Datasets Evaluation: Suitable for Trends (Y=yes; Y(T)=yes, and used for DQO Trends; N=No; "--"=not rated)

Final Pollutant Name	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Acetaldehyde	--	--	--	--	Y	Y	Y	Y	Y	Y	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)
Arsenic (PM ₁₀)	--	--	--	--	Y	N ^a	Y	Y	Y	Y	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)
Benzene	--	--	--	--	Y	Y	Y	Y	Y	Y	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)
Benzo(a)pyrene	--	--	--	--	--	Y	Y	Y	Y	Y	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)
Beryllium (PM ₁₀)	--	--	--	--	Y	N ^a	N ^b	N ^b	Y	Y	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)
Butadiene, 1,3-	--	--	--	--	Y	Y	Y	Y	Y	Y	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)
Cadmium (PM ₁₀)	--	--	--	--	Y	N ^a	Y	Y	Y	Y	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)
Carbon tetrachloride	--	--	--	--	N ^b	N ^b	N ^b	Y	Y	Y	Y	Y	Y	N ^c	Y	Y
Chloroform	--	--	--	--	Y	Y	Y	Y	Y	Y	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)
Chromium VI	--	--	--	--	Y	Y	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	--	--	--	--
Formaldehyde	--	--	--	--	Y	Y	Y	Y	Y	Y	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)
Lead (PM ₁₀)	--	--	--	--	Y	N ^a	Y	Y	Y	Y	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)
Manganese (PM ₁₀)	--	--	--	--	N ^b	N ^a	Y	Y	Y	Y	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)
Naphthalene	--	--	--	--	--	Y	Y	Y	Y	Y	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)
Nickel (PM ₁₀)	--	--	--	--	Y	N ^a	Y	Y	Y	Y	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)
Tetrachloroethylene	--	--	--	--	Y	Y	Y	Y	Y	Y	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)
Trichloroethylene	--	--	--	--	Y	Y	Y	Y	Y	Y	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)	Y(T)
Vinyl chloride	--	--	--	--	N ^b	N ^b	N ^b	N ^b	Y	N ^b	Y	Y	Y	N ^a	Y	Y

^a: Completeness was less than 75% based on 1-in-6 day sampling

^b: Reported MDL to NATTS Target Ratio greater than 2.0

^c: Bias Percent was outside of ±35%

Table 3. NATTS Network Assessment Data (2003-2018) - National Distribution Statistics By Type^a

Analyte	Units	Site Type	# Data Records	% Detections	Arithmetic Mean ^b	Percentile Value ^c						
						5th	10th	25th	50th	75th	90th	95th
Acetaldehyde	µg/m ³	Urban	15,704	100%	1.77 ± 0.02	0.50	0.66	0.97	1.45	2.19	3.24	4.04
	µg/m ³	Rural	4,930	100%	1.20 ± 0.04	0.36	0.46	0.65	0.93	1.38	2.02	2.76
	µg/m ³	All Sites	20,634	100%	1.63 ± 0.02	0.44	0.58	0.86	1.31	2.00	3.02	3.86
Arsenic (PM ₁₀)	ng/m ³	Urban	14,968	97%	0.89 ± 0.04	0.10	0.19	0.34	0.58	0.99	1.70	2.41
	ng/m ³	Rural	4,622	96%	0.49 ± 0.02	0.04	0.08	0.17	0.35	0.59	0.94	1.28
	ng/m ³	All Sites	19,590	97%	0.79 ± 0.03	0.06	0.14	0.29	0.52	0.89	1.54	2.19
Benzene	µg/m ³	Urban	15,984	99%	0.86 ± 0.01	0.25	0.30	0.43	0.66	1.05	1.64	2.21
	µg/m ³	Rural	2,494	95%	0.43 ± 0.02	0.04	0.13	0.21	0.33	0.52	0.78	1.01
	µg/m ³	All Sites	18,478	99%	0.81 ± 0.01	0.19	0.26	0.39	0.61	0.98	1.55	2.09
Benzo(a)pyrene	ng/m ³	Urban	12,336	70%	0.096 ± 0.004	ND	ND	ND	0.04	0.11	0.24	0.37
	ng/m ³	Rural	3,179	36%	0.067 ± 0.009	ND	ND	ND	ND	0.02	0.13	0.37
	ng/m ³	All Sites	15,515	63%	0.090 ± 0.004	ND	ND	ND	0.03	0.10	0.23	0.37
Beryllium (PM ₁₀)	ng/m ³	Urban	15,783	75%	0.051 ± 0.006	ND	ND	0.00003	0.005	0.018	0.050	0.101
	ng/m ³	Rural	4,687	49%	0.023 ± 0.003	ND	ND	ND	ND	0.005	0.017	0.072
	ng/m ³	All Sites	20,470	69%	0.045 ± 0.005	ND	ND	ND	0.003	0.012	0.049	0.100
Butadiene, 1,3-	µg/m ³	Urban	15,388	81%	0.092 ± 0.002	ND	ND	0.025	0.058	0.114	0.215	0.302
	µg/m ³	Rural	2,185	29%	0.012 ± 0.001	ND	ND	ND	ND	0.017	0.046	0.059
	µg/m ³	All Sites	17,573	75%	0.082 ± 0.002	ND	ND	ND	0.049	0.104	0.199	0.287
Cadmium (PM ₁₀)	ng/m ³	Urban	16,360	92%	0.21 ± 0.02	ND	0.01	0.05	0.09	0.17	0.42	0.63
	ng/m ³	Rural	4,684	87%	0.10 ± 0.01	ND	ND	0.03	0.06	0.11	0.20	0.29
	ng/m ³	All Sites	21,044	91%	0.18 ± 0.01	ND	0.01	0.04	0.08	0.16	0.35	0.56
Carbon Tetrachloride	µg/m ³	Urban	14,713	99%	0.569 ± 0.003	0.361	0.433	0.496	0.562	0.651	0.737	0.798
	µg/m ³	Rural	2,189	92%	0.534 ± 0.016	ND	0.180	0.402	0.537	0.633	0.727	0.798
	µg/m ³	All Sites	16,902	98%	0.565 ± 0.003	0.304	0.408	0.490	0.559	0.649	0.736	0.798
Chloroform	µg/m ³	Urban	16,068	87%	0.265 ± 0.022	ND	ND	0.093	0.132	0.217	0.420	0.668
	µg/m ³	Rural	3,802	43%	0.052 ± 0.003	ND	ND	ND	ND	0.095	0.144	0.230
	µg/m ³	All Sites	19,870	79%	0.224 ± 0.018	ND	ND	0.064	0.113	0.196	0.364	0.586
Chromium VI	ng/m ³	Urban	8,414	74%	0.036 ± 0.002	ND	ND	ND	0.020	0.042	0.081	0.120
	ng/m ³	Rural	2,586	41%	0.018 ± 0.004	ND	ND	ND	ND	0.017	0.031	0.051
	ng/m ³	All Sites	11,000	66%	0.032 ± 0.001	ND	ND	ND	0.016	0.036	0.073	0.114

Table 3. NATTS Network Assessment Data (2003-2018) - National Distribution Statistics By Type^a

Analyte	Units	Site Type	# Data Records	% Detections	Arithmetic Mean ^b	Percentile Value ^c						
						5th	10th	25th	50th	75th	90th	95th
Formaldehyde	µg/m ³	Urban	16,118	100%	3.11 ± 0.04	0.66	0.99	1.60	2.47	3.84	5.63	7.25
	µg/m ³	Rural	5,002	100%	2.22 ± 0.05	0.53	0.68	1.06	1.69	2.74	4.19	5.45
	µg/m ³	All Sites	21,120	100%	2.90 ± 0.04	0.61	0.86	1.43	2.29	3.59	5.38	6.96
Lead (PM ₁₀)	ng/m ³	Urban	16,366	100%	4.21 ± 0.13	0.72	0.98	1.55	2.64	4.56	8.35	11.90
	ng/m ³	Rural	4,680	99%	2.10 ± 0.16	0.37	0.50	0.84	1.41	2.37	3.91	5.36
	ng/m ³	All Sites	21,046	99%	3.74 ± 0.11	0.55	0.80	1.31	2.31	4.04	7.41	10.56
Manganese (PM ₁₀)	ng/m ³	Urban	16,141	100%	9.80 ± 0.32	1.09	1.51	2.52	4.92	10.21	20.10	30.08
	ng/m ³	Rural	4,627	99%	3.96 ± 0.14	0.46	0.73	1.36	2.57	4.75	8.54	12.13
	ng/m ³	All Sites	20,768	100%	8.50 ± 0.25	0.85	1.23	2.15	4.18	8.89	17.98	26.70
Naphthalene	ng/m ³	Urban	12,332	100%	74.63 ± 1.14	15.62	21.27	33.55	55.89	94.64	150.05	196.16
	ng/m ³	Rural	3,301	100%	24.47 ± 1.38	3.74	4.73	7.74	13.86	26.25	50.88	79.17
	ng/m ³	All Sites	15,633	100%	64.04 ± 1.00	6.58	10.92	23.37	45.59	83.31	137.54	181.75
Nickel (PM ₁₀)	ng/m ³	Urban	16,125	97%	1.85 ± 0.05	0.25	0.41	0.67	1.11	2.00	3.52	5.27
	ng/m ³	Rural	4,623	85%	0.65 ± 0.08	ND	ND	0.10	0.28	0.64	1.15	1.89
	ng/m ³	All Sites	20,748	94%	1.58 ± 0.04	ND	0.15	0.47	0.92	1.73	3.14	4.74
Tetrachloroethylene	µg/m ³	Urban	15,612	86%	0.25 ± 0.01	ND	ND	0.06	0.13	0.25	0.48	0.74
	µg/m ³	Rural	2,272	36%	0.09 ± 0.04	ND	ND	ND	ND	0.04	0.08	0.16
	µg/m ³	All Sites	17,884	79%	0.23 ± 0.01	ND	ND	0.04	0.11	0.22	0.44	0.70
Trichloroethylene	µg/m ³	Urban	15,843	41%	0.040 ± 0.002	ND	ND	ND	ND	0.051	0.107	0.164
	µg/m ³	Rural	3,388	13%	0.021 ± 0.003	ND	ND	ND	ND	ND	0.017	0.250
	µg/m ³	All Sites	19,231	36%	0.037 ± 0.002	ND	ND	ND	ND	0.041	0.105	0.167
Vinyl Chloride	µg/m ³	Urban	14,778	19%	0.0044 ± 0.0003	ND	ND	ND	ND	ND	0.0137	0.0257
	µg/m ³	Rural	2,444	8%	0.0040 ± 0.0009	ND	ND	ND	ND	ND	ND	0.0156
	µg/m ³	All Sites	17,222	17%	0.0043 ± 0.0003	ND	ND	ND	ND	ND	0.0126	0.0254

^a Statistics presented are from pollutant datasets which were suitable for trends.

^b The arithmetic mean is the average of all samples results which include actual measured values. If no chemical was registered, then a value of zero is used when calculating the mean.

^c ND: No results of this chemical were registered by the laboratory analytical equipment.

Table 4. Summary Statistics for Los Angeles, CA

Analyte	Units	# Data Records	% Detection	Arithmetic Mean ^a	Percentile Value ^b						
					5th	10th	25th	50th	75th	90th	95th
Acetaldehyde	µg/m ³	702	100%	2.17 ± 0.10	0.57	0.76	1.17	1.84	2.83	3.93	4.87
Arsenic (PM ₁₀)	ng/m ³	671	98%	0.89 ± 0.28	0.12	0.20	0.31	0.50	0.80	1.40	2.31
Benzene	µg/m ³	668	100%	1.21 ± 0.06	0.39	0.47	0.69	1.03	1.54	2.18	2.59
Benzo(a)pyrene	ng/m ³	688	71%	0.07 ± 0.01	ND	ND	ND	0.03	0.07	0.17	0.26
Beryllium (PM ₁₀)	ng/m ³	671	74%	0.29 ± 0.09	ND	ND	ND	0.01	0.02	0.10	1.70
Butadiene, 1,3-	µg/m ³	667	92%	0.15 ± 0.01	ND	0.04	0.07	0.13	0.22	0.32	0.41
Cadmium (PM ₁₀)	ng/m ³	671	91%	0.17 ± 0.02	ND	0.02	0.07	0.10	0.20	0.30	0.60
Carbon Tetrachloride	µg/m ³	665	99%	0.50 ± 0.01	0.38	0.42	0.45	0.51	0.56	0.59	0.64
Chloroform	µg/m ³	667	99%	0.175 ± 0.007	0.097	0.098	0.102	0.150	0.204	0.288	0.339
Chromium VI	ng/m ³	618	100%	0.08 ± 0.01	0.02	0.03	0.04	0.06	0.10	0.15	0.21
Formaldehyde	µg/m ³	705	100%	4.52 ± 0.18	1.45	1.99	3.00	4.22	5.53	7.30	8.41
Lead (PM ₁₀)	ng/m ³	671	100%	5.67 ± 0.39	0.01	1.67	2.98	4.60	7.28	10.00	12.60
Manganese (PM ₁₀)	ng/m ³	671	99%	13.46 ± 0.76	1.05	3.66	7.00	11.10	18.60	24.00	30.00
Naphthalene	ng/m ³	688	100%	115.45 ± 6.09	34.44	41.62	60.93	91.96	148.80	215.25	261.17
Nickel (PM ₁₀)	ng/m ³	668	99%	3.65 ± 0.64	0.60	0.90	1.32	2.00	3.11	7.00	10.00
Tetrachloroethylene	µg/m ³	666	92%	0.199 ± 0.012	ND	0.067	0.071	0.140	0.271	0.408	0.487
Trichloroethylene	µg/m ³	667	65%	0.089 ± 0.011	ND	ND	ND	0.054	0.110	0.215	0.327
Vinyl Chloride	µg/m ³	599	4%	0.0010 ± 0.0004	ND	ND	ND	ND	ND	ND	ND

^a :The arithmetic mean is the average of all samples results which included actual measured values. If no chemical was registered, then a value of zero is used.

^b ND: No results of this chemical were registered by the laboratory analytical equipment.

Table 5. Analytical Labs Supporting this Site

Pollutant Group	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
VOCs	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD
Carbonyls	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD
PM ₁₀ Metals	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD	SCAQMD
Chromium VI	CARB	CARB	CARB	CARB	CARB	CARB	CARB	CARB	--	--	--	--
PAHs	ERG	ERG	ERG	ERG	ERG	ERG	ERG	ERG	ERG	ERG	ERG	ERG

--: Not Applicable

SCAQMD: South Coast Air Quality Management District

ERG: Eastern Research Group, Inc.

CARB: California Air Resources Board

Figure 3. Los Angeles, CA Annual Average Concentrations

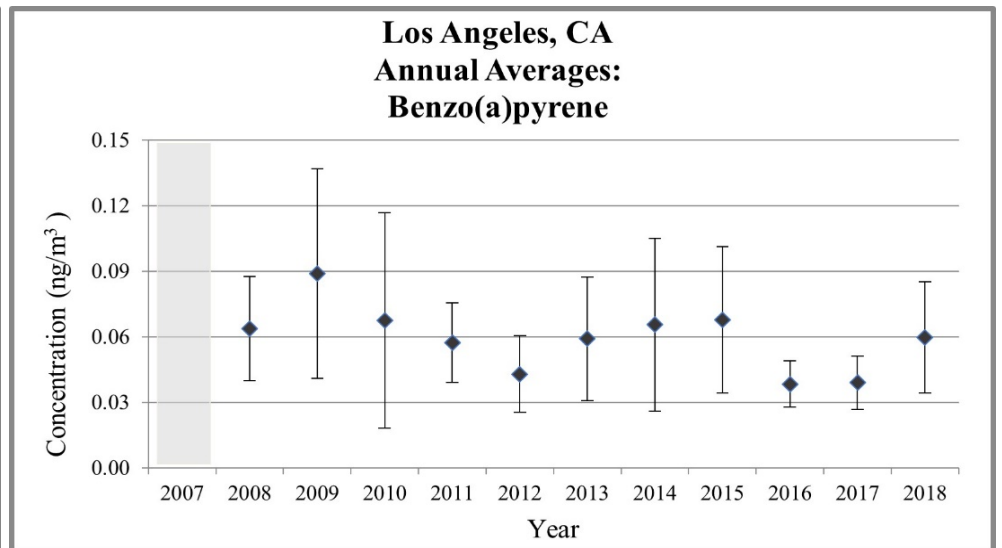
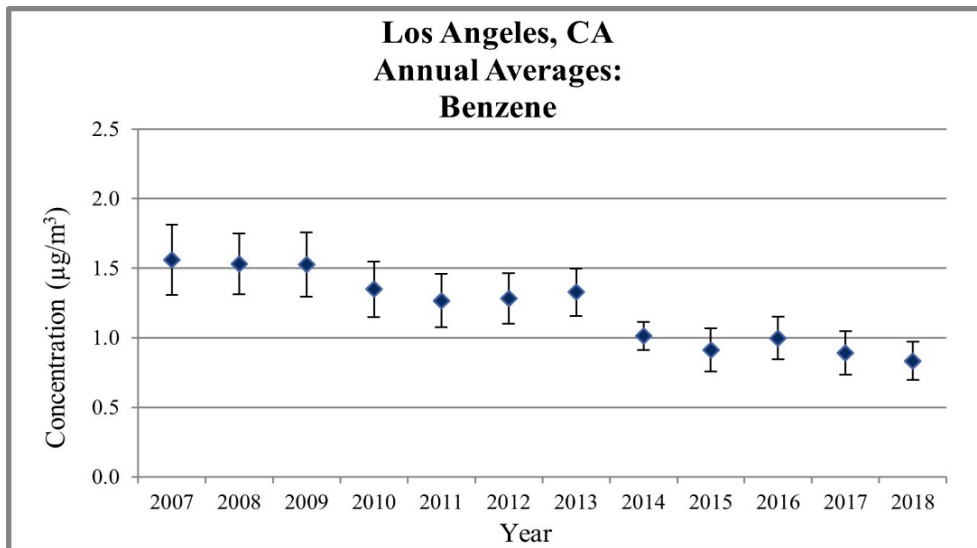
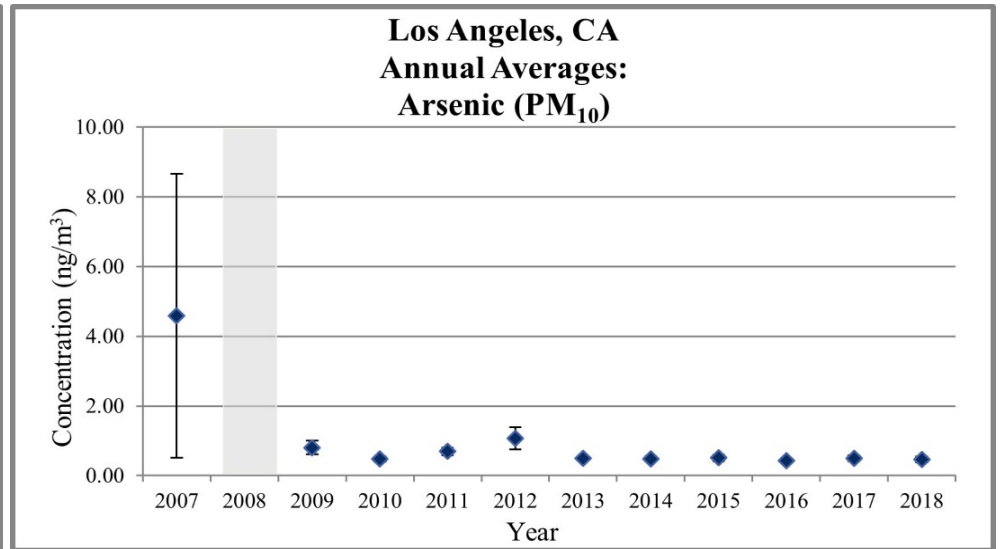
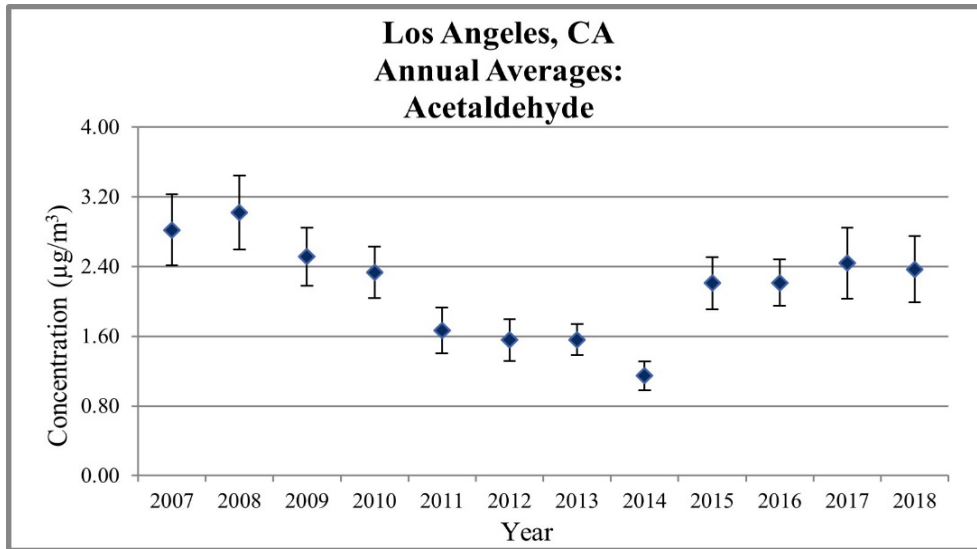


Figure 3. Los Angeles, CA Annual Average Concentrations

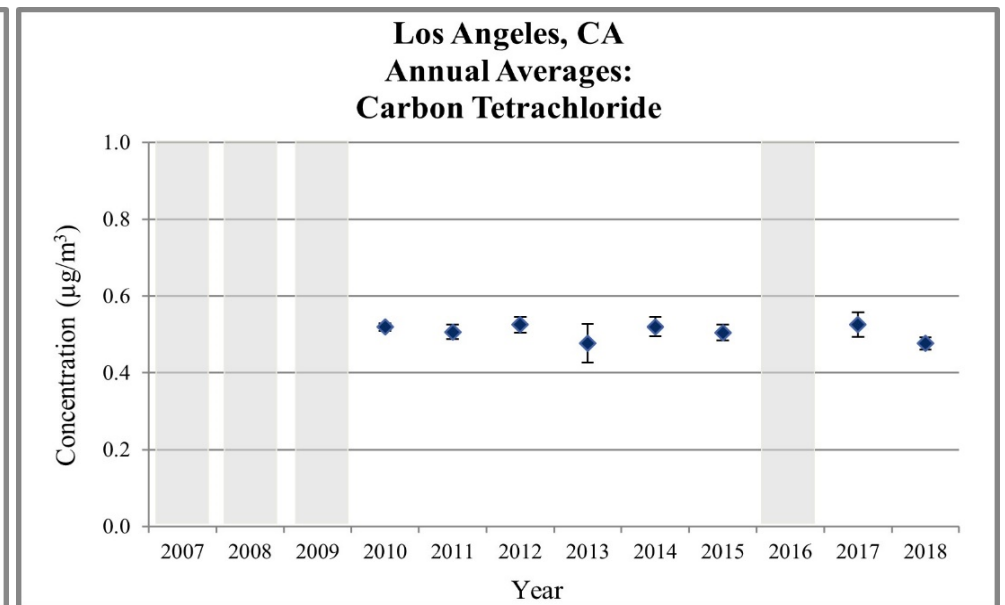
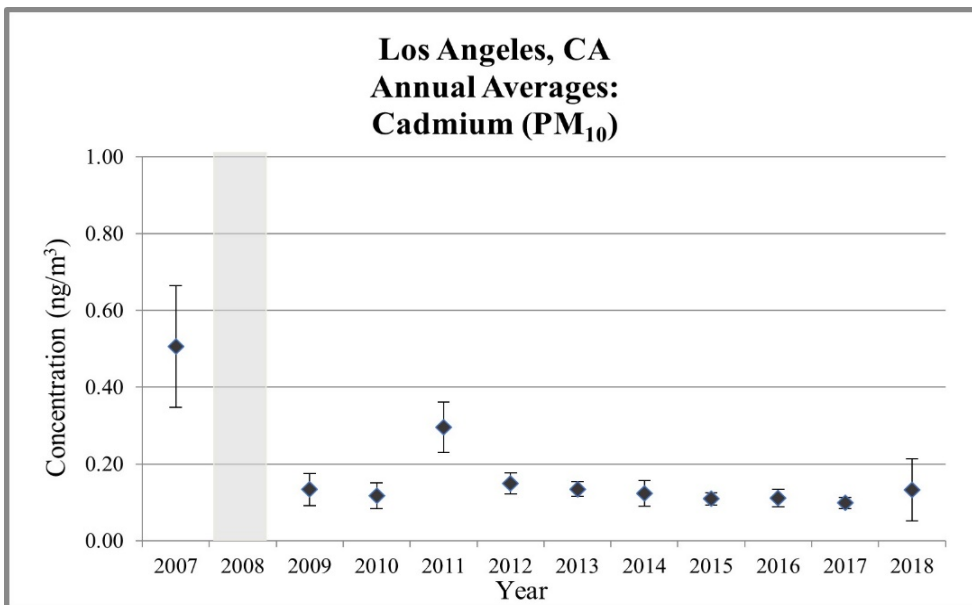
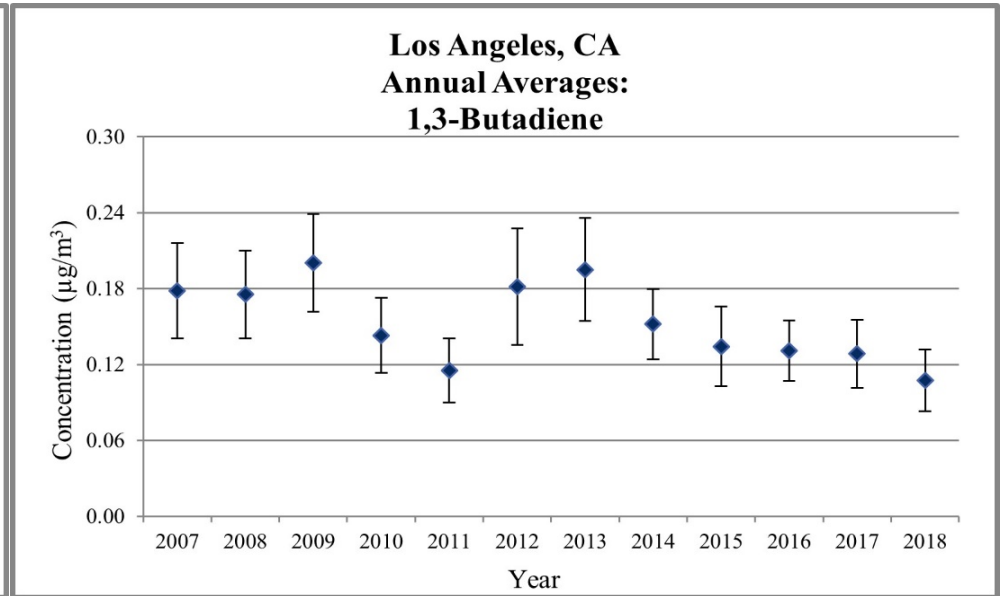
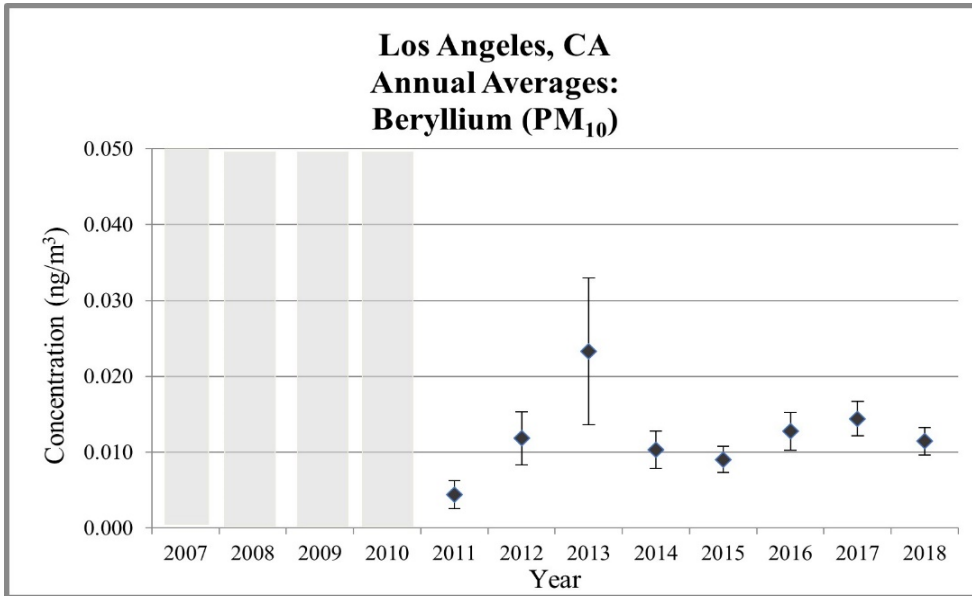


Figure 3. Los Angeles, CA Annual Average Concentrations

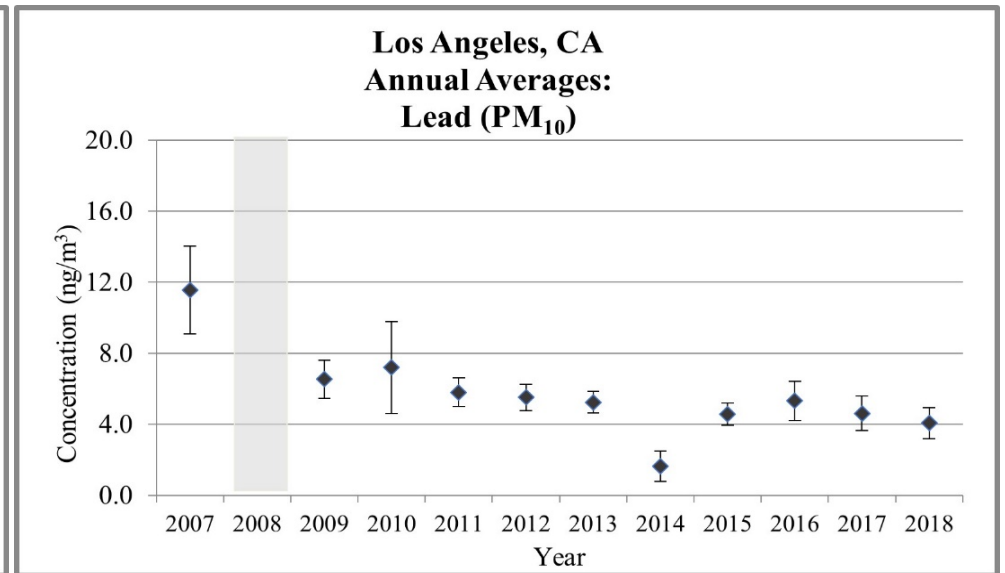
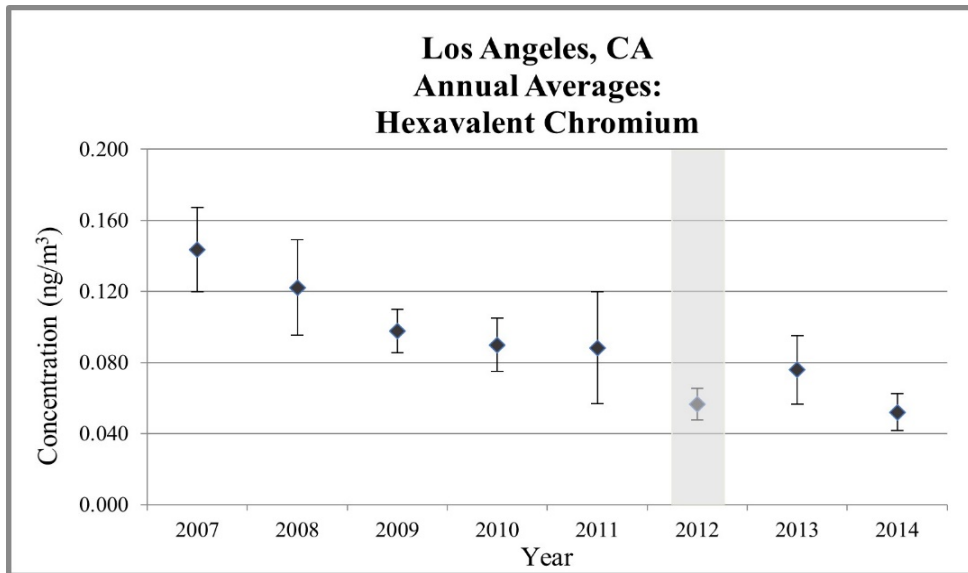
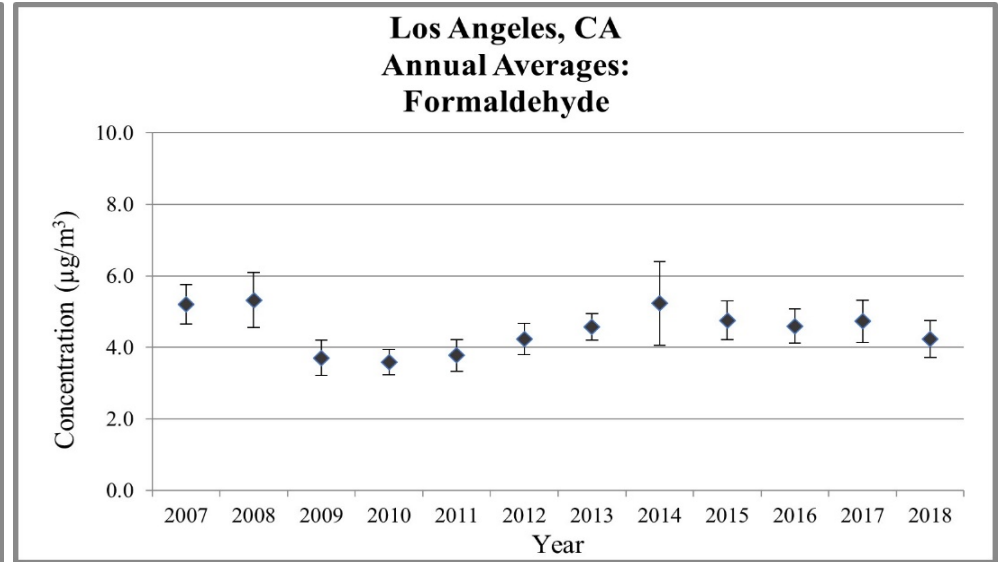
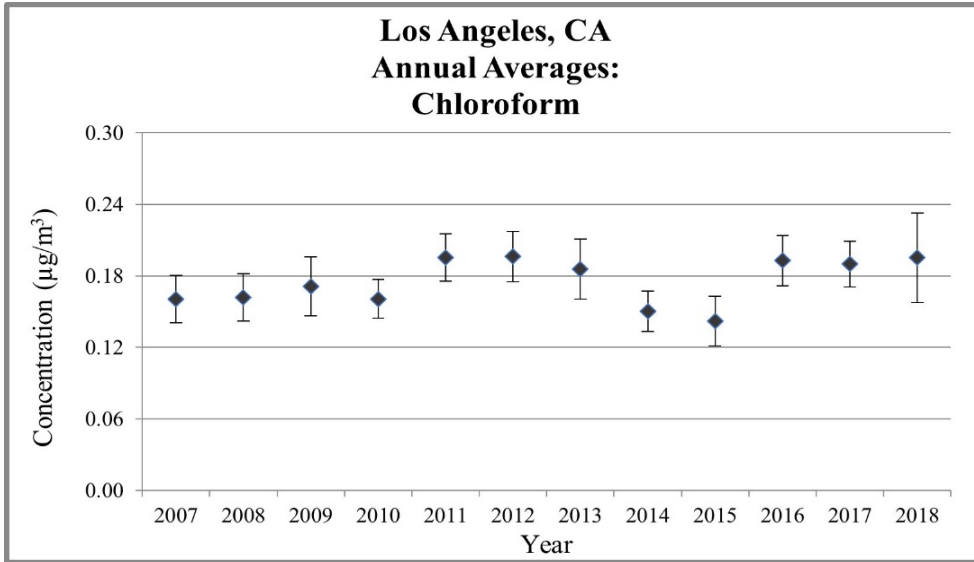


Figure 3. Los Angeles, CA Annual Average Concentrations

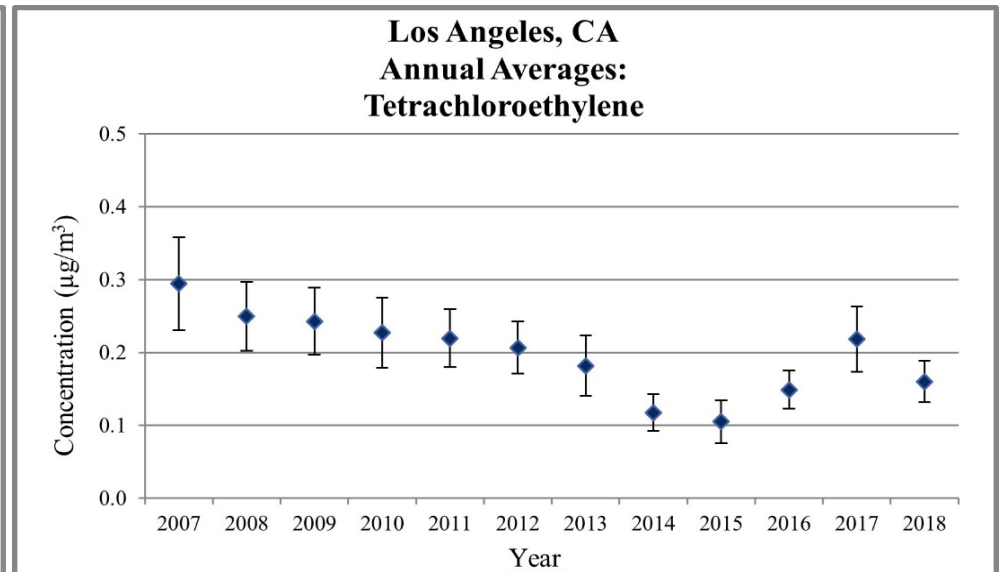
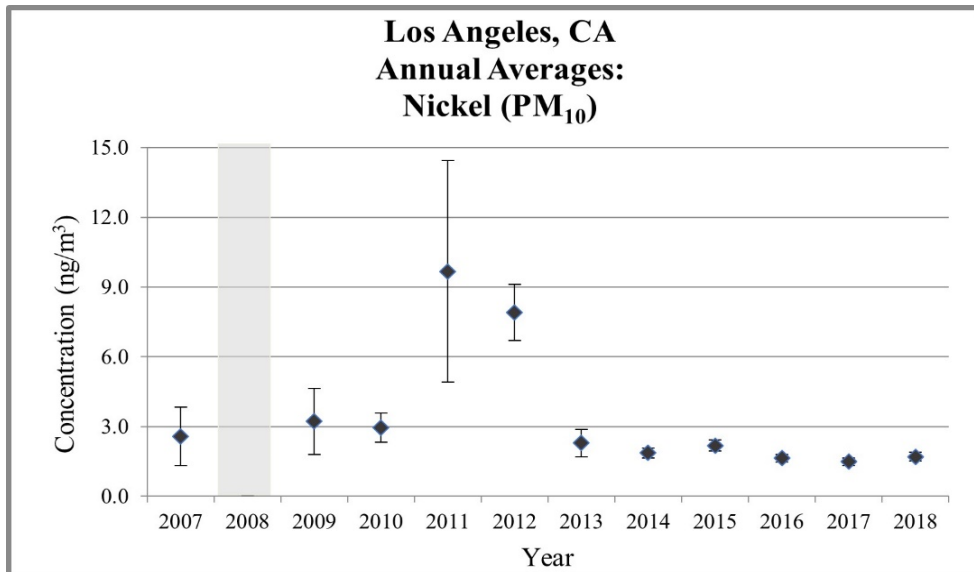
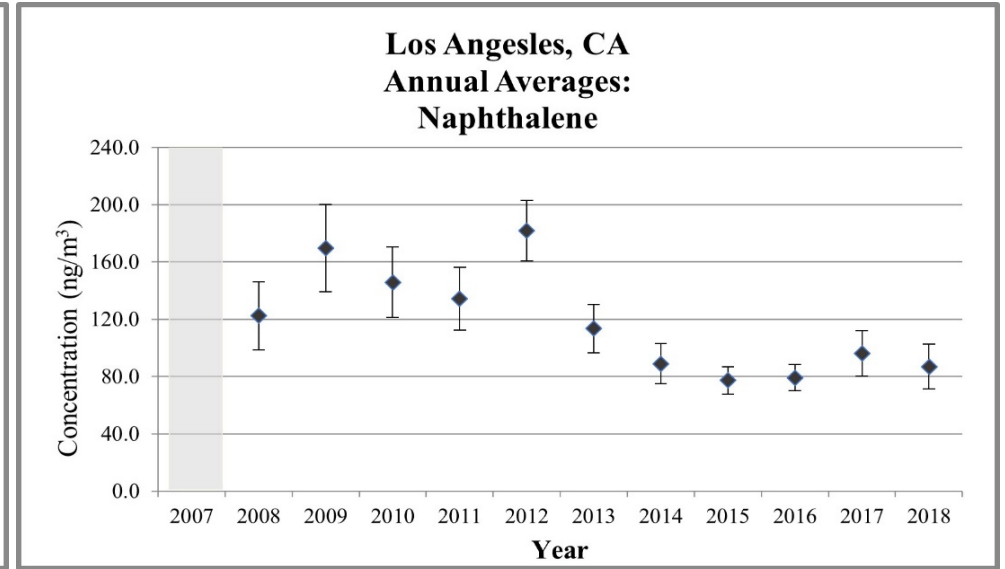
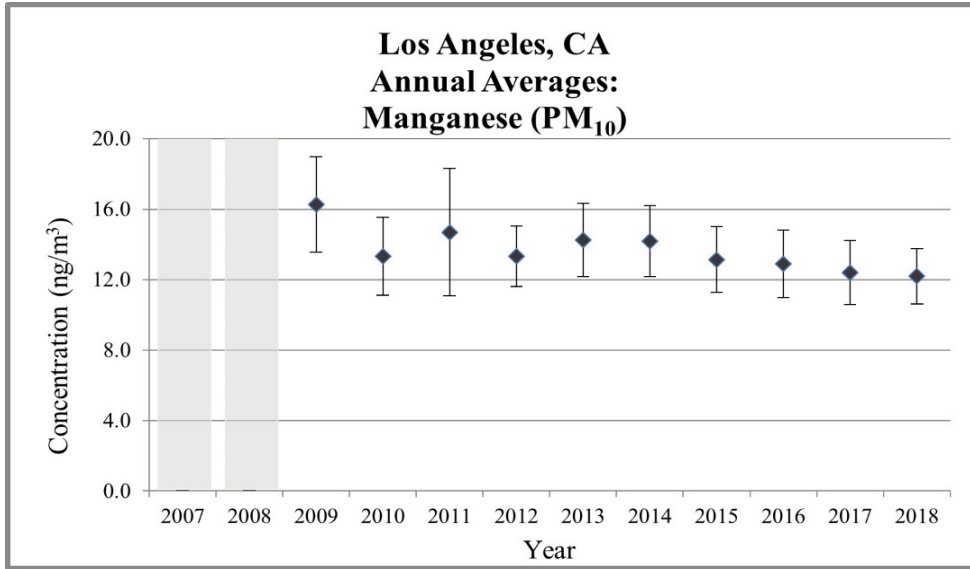
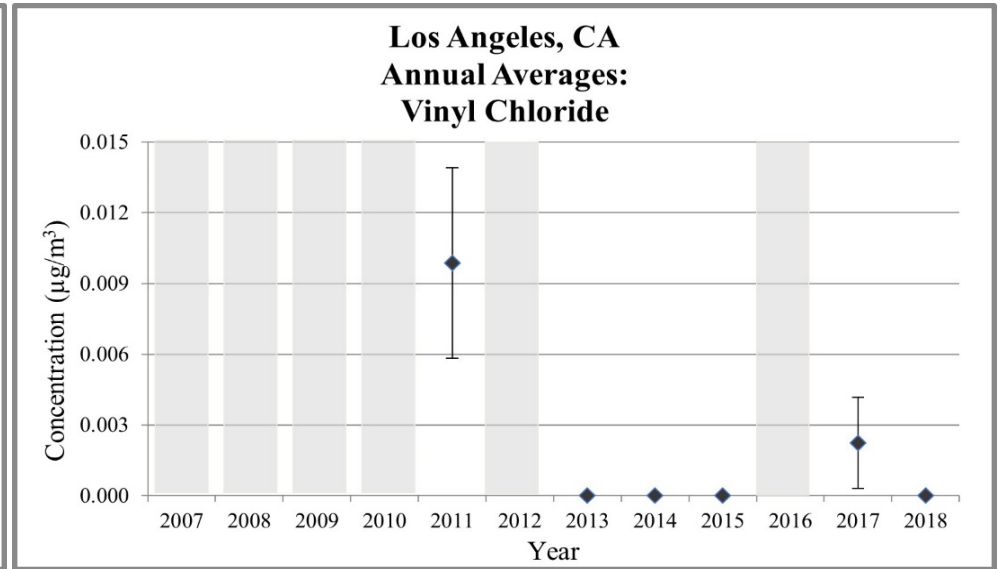
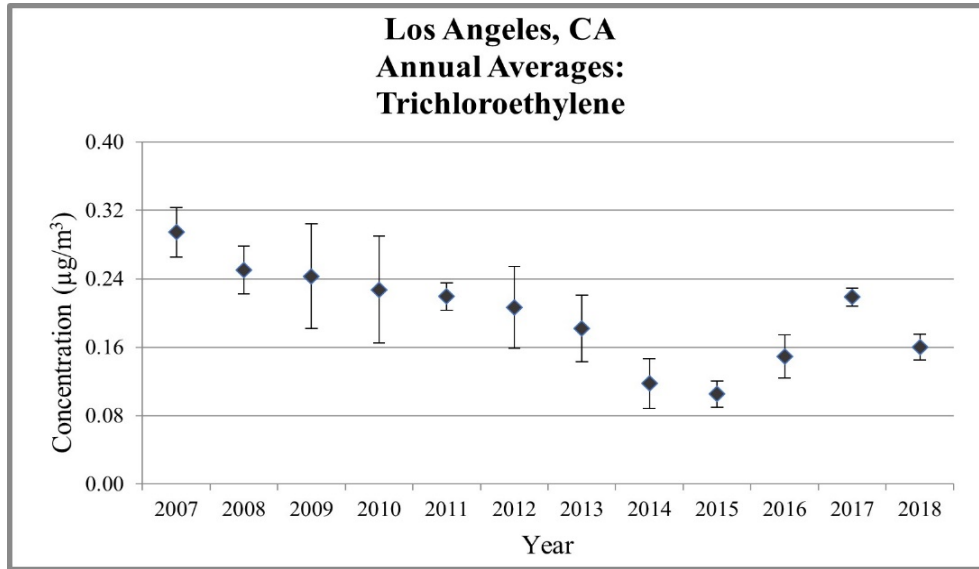


Figure 3. Los Angeles, CA Annual Average Concentrations



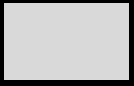
 Does not meet MQO

Figure 4. Los Angeles, CA - 3-Year Rolling Average Concentrations

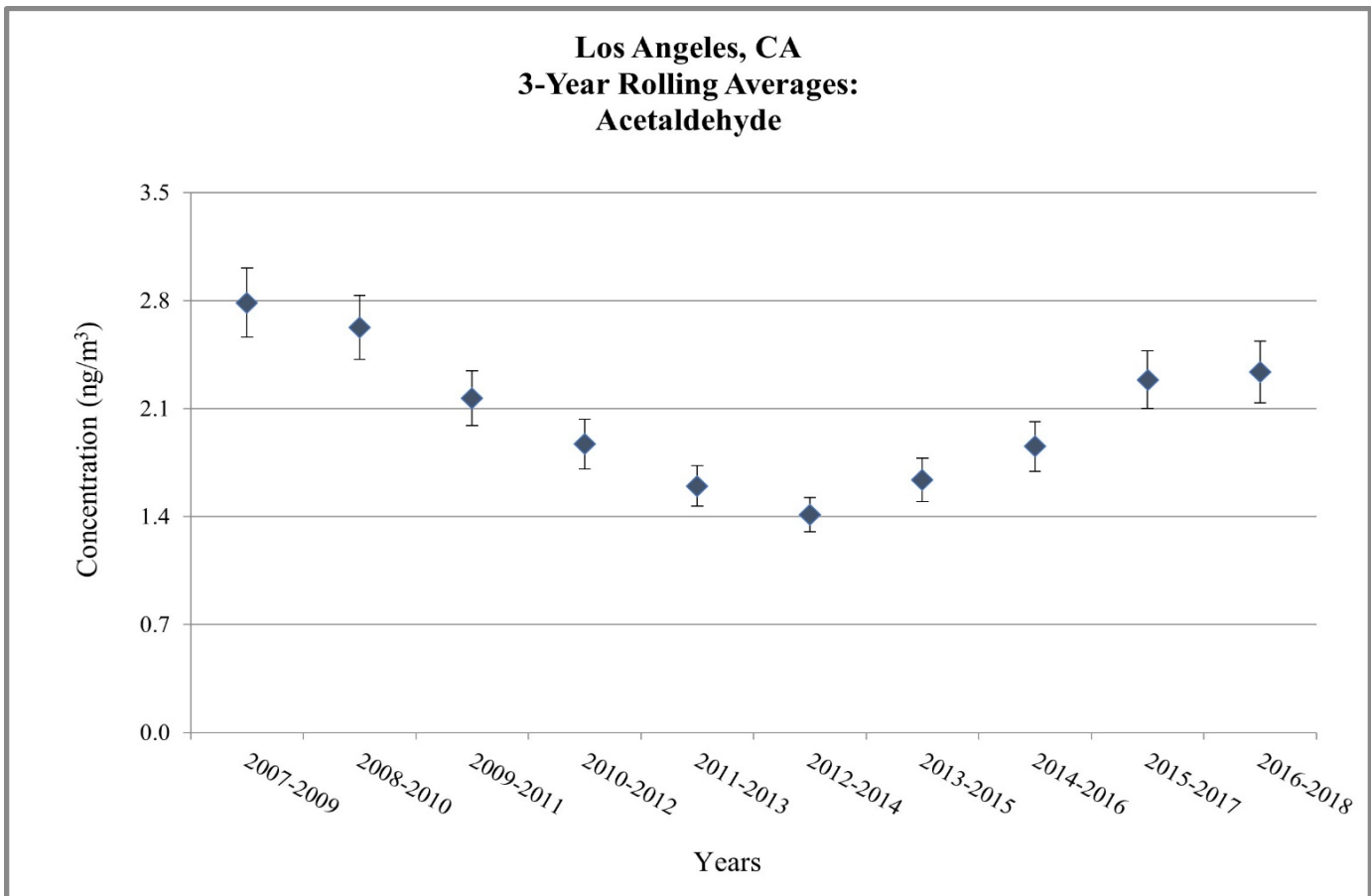
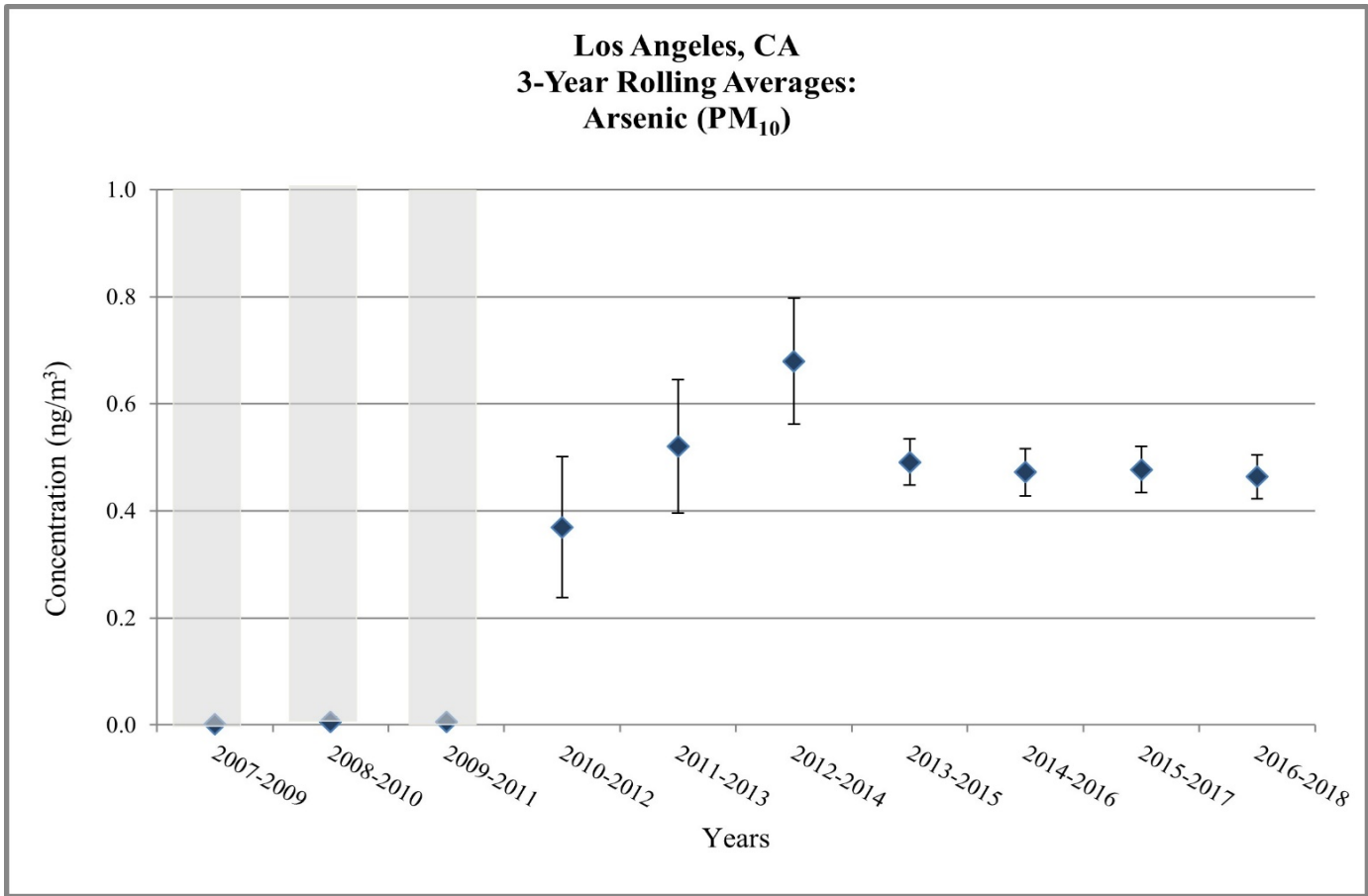


Figure 4. Los Angeles, CA - 3-Year Rolling Average Concentrations

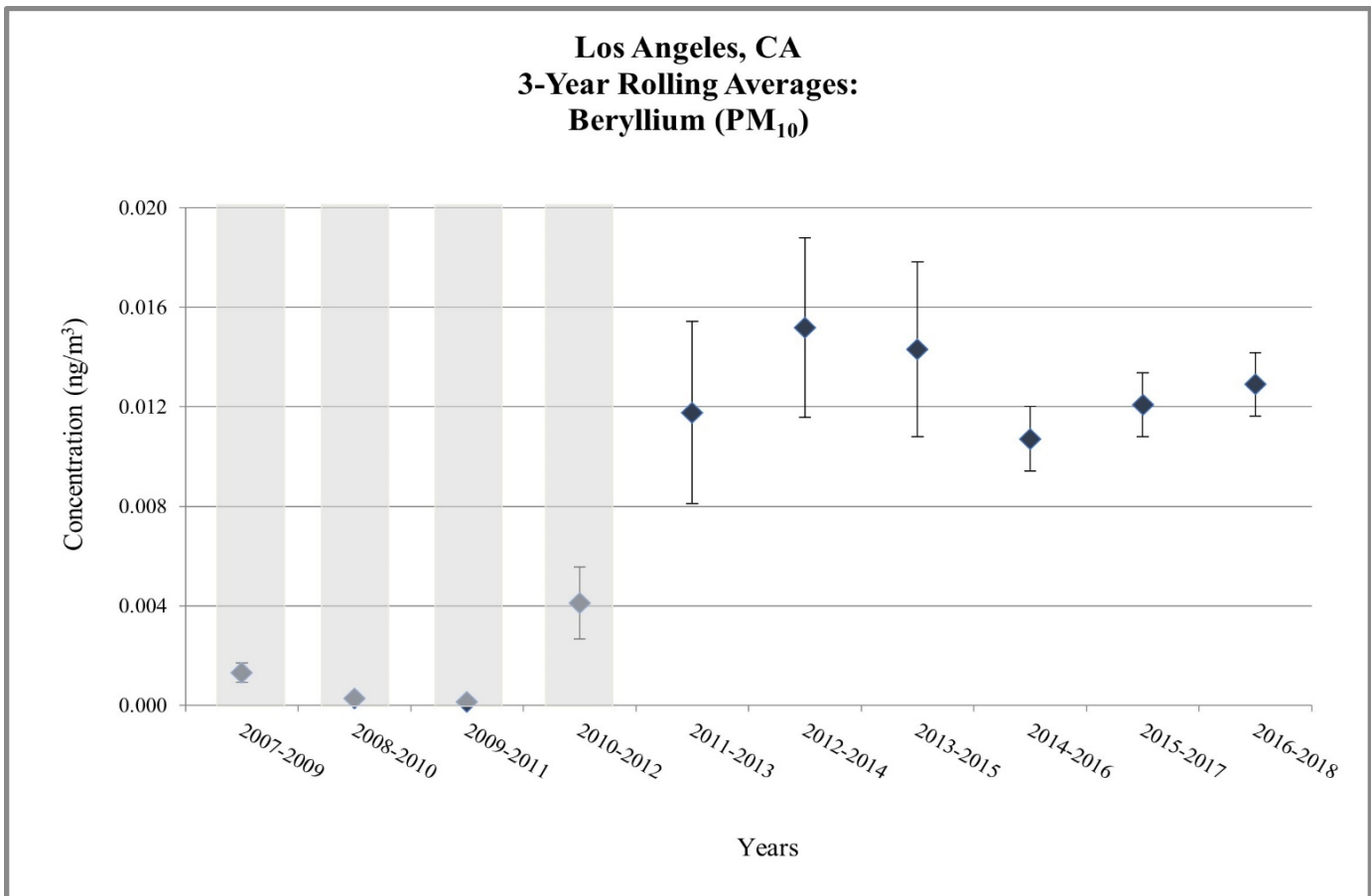
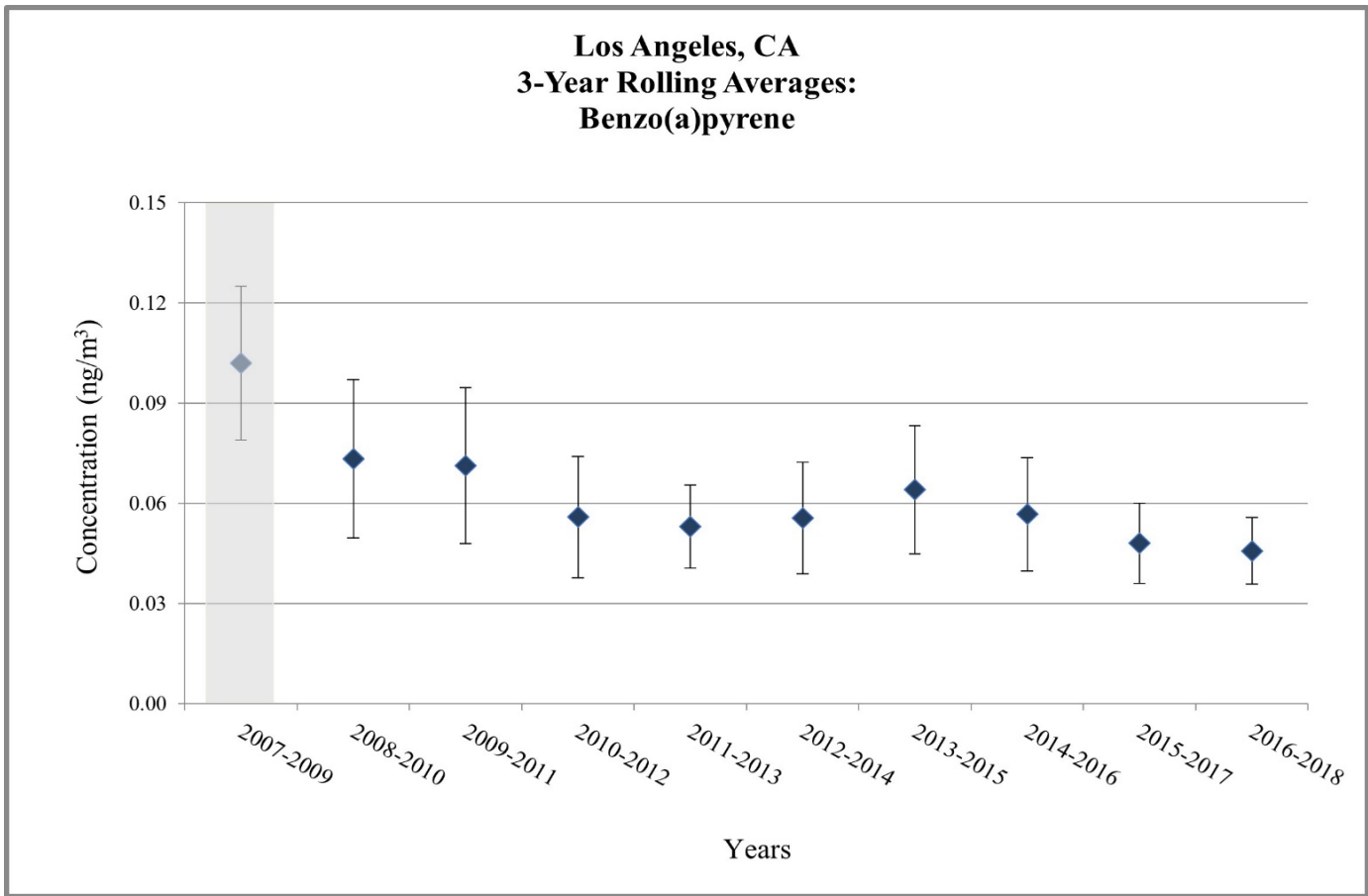


Figure 4. Los Angeles, CA - 3-Year Rolling Average Concentrations

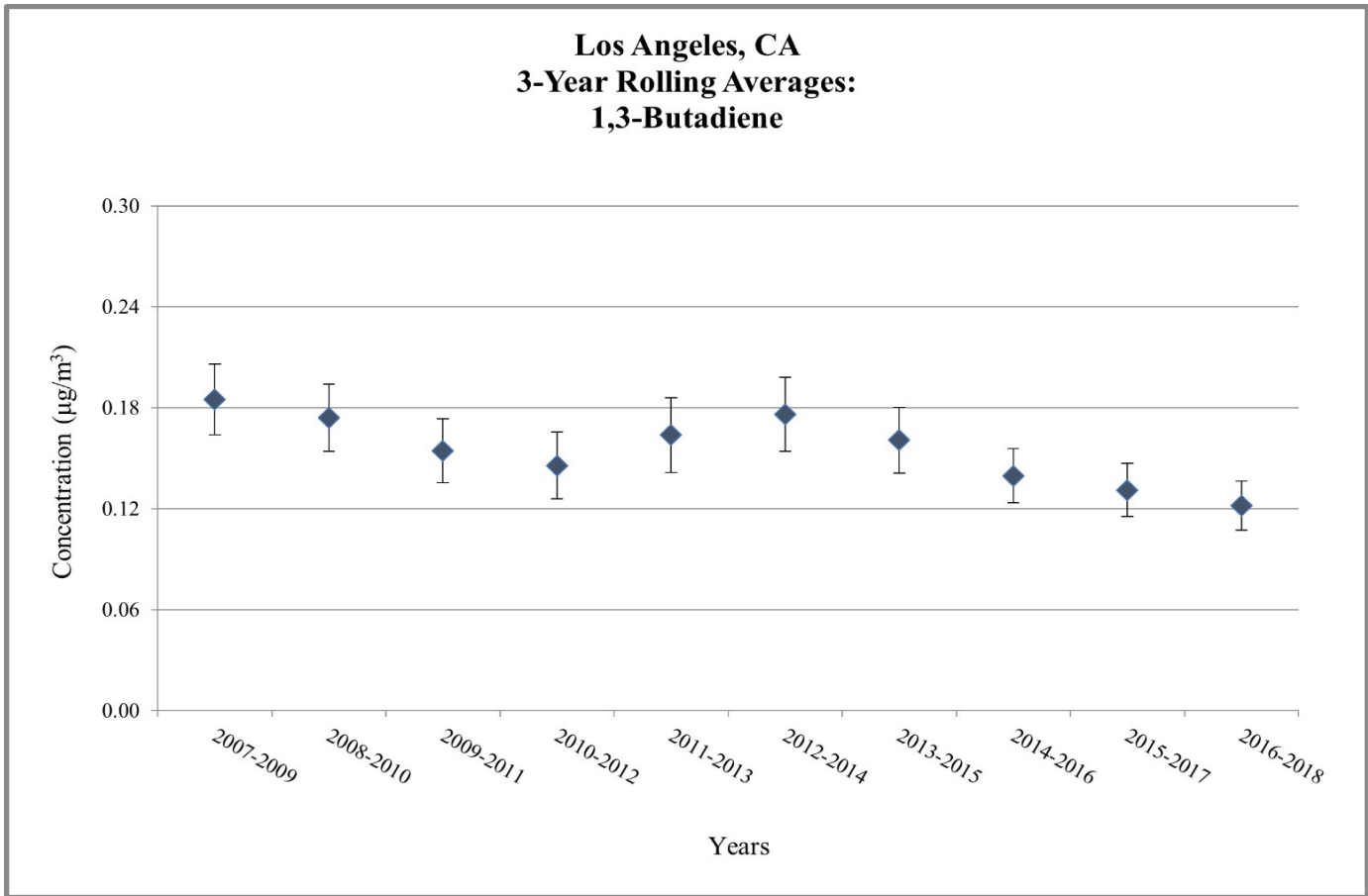
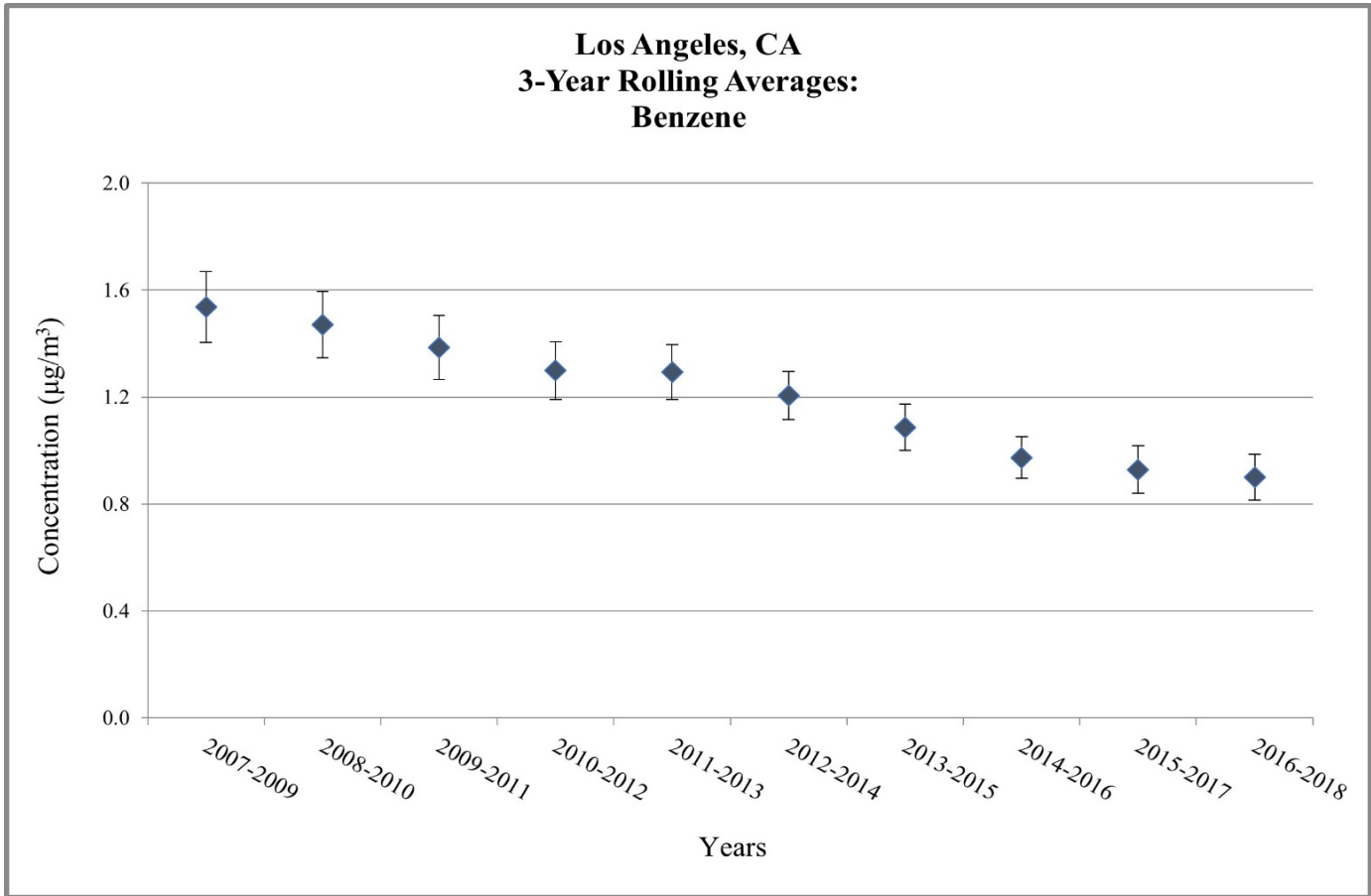


Figure 4. Los Angeles, CA - 3-Year Rolling Average Concentrations

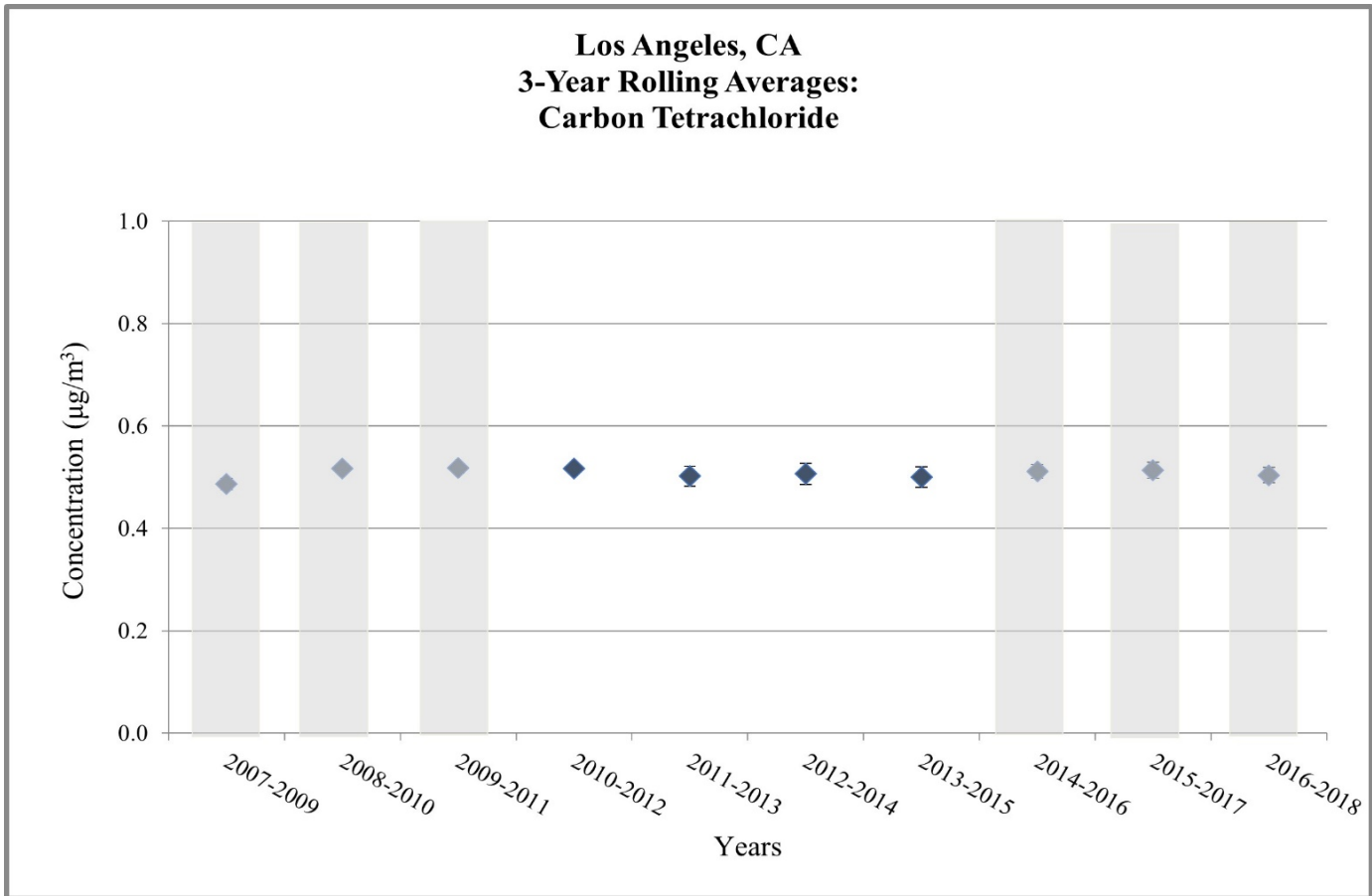
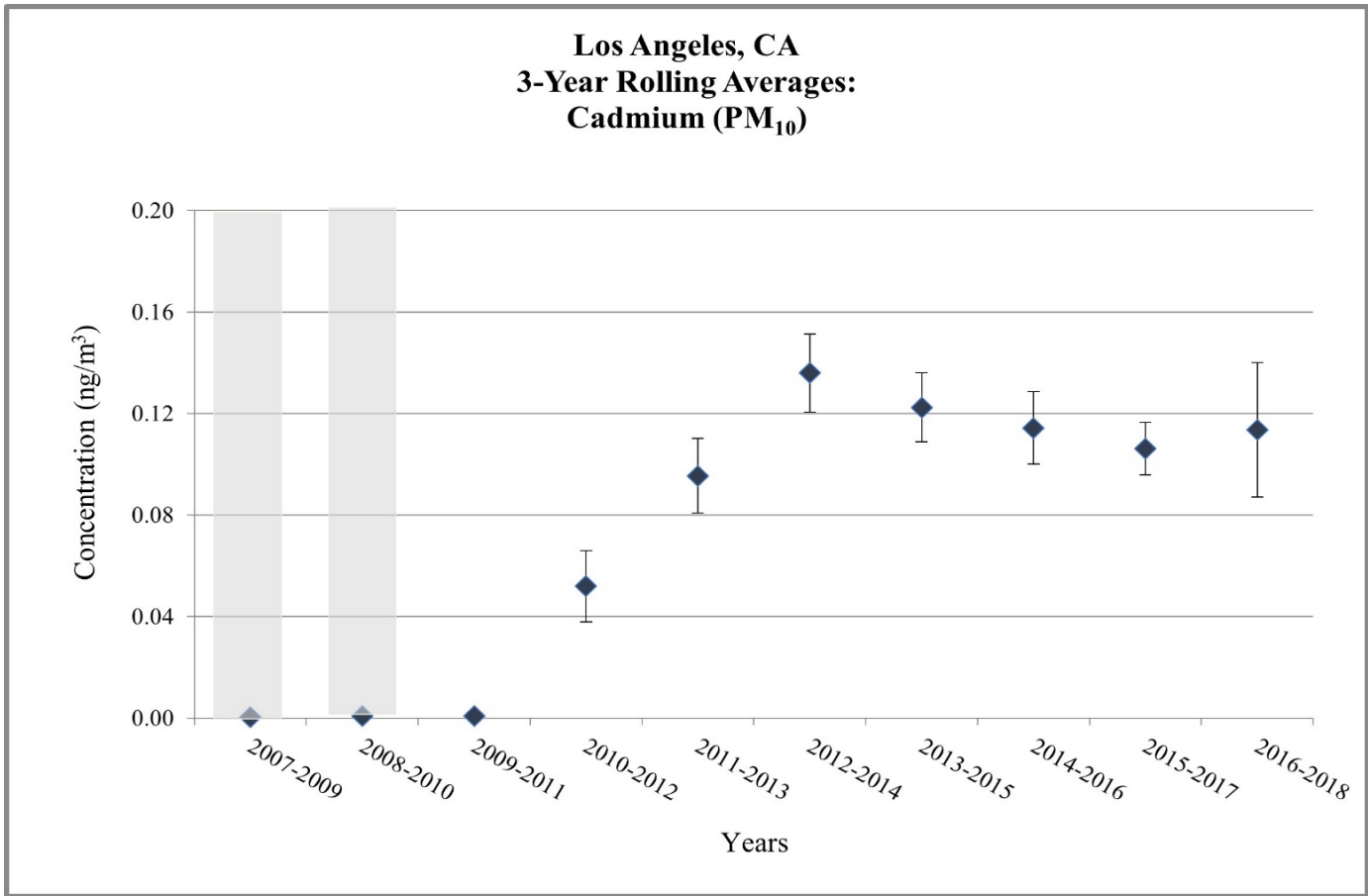


Figure 4. Los Angeles, CA - 3-Year Rolling Average Concentrations

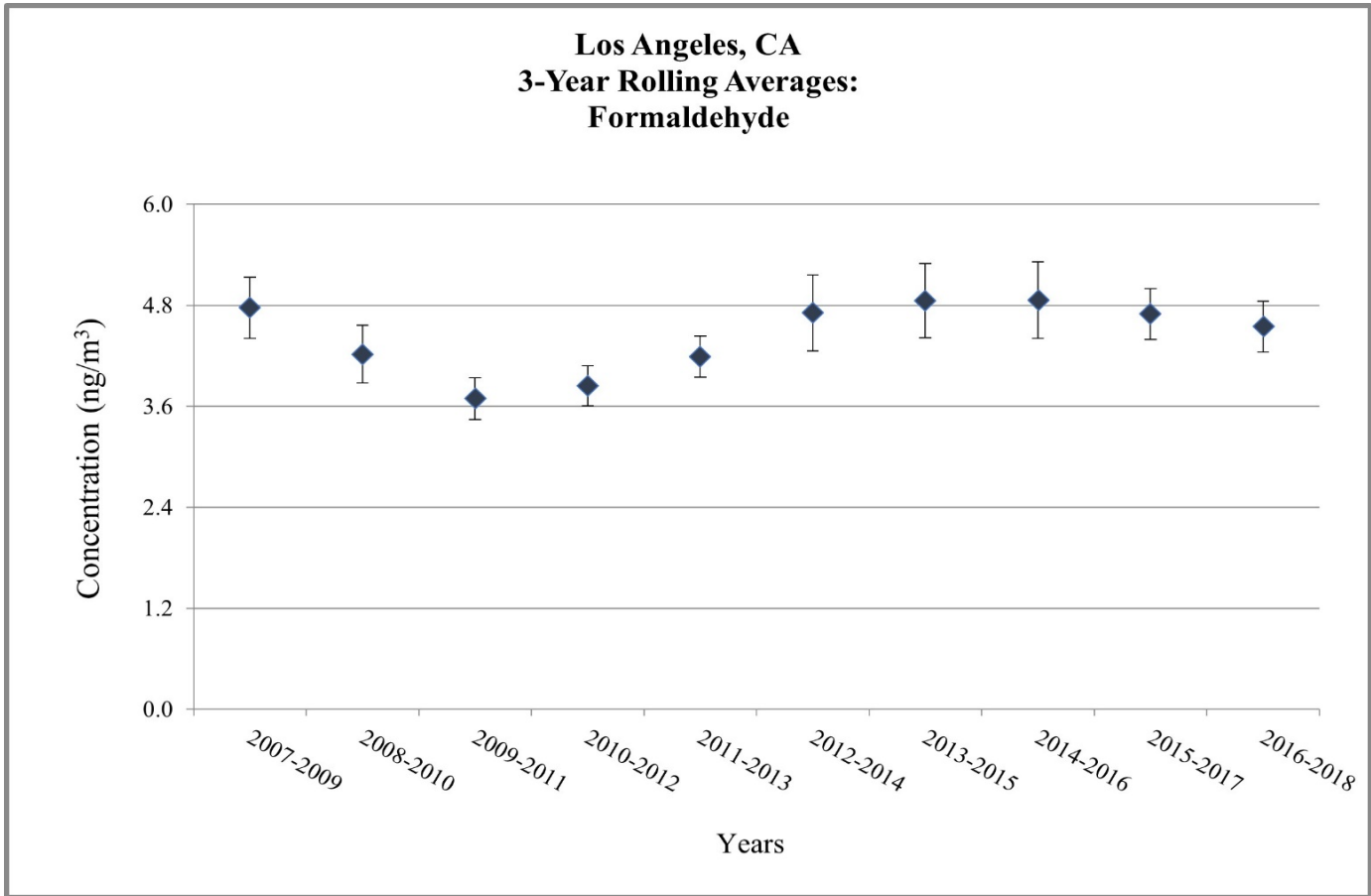
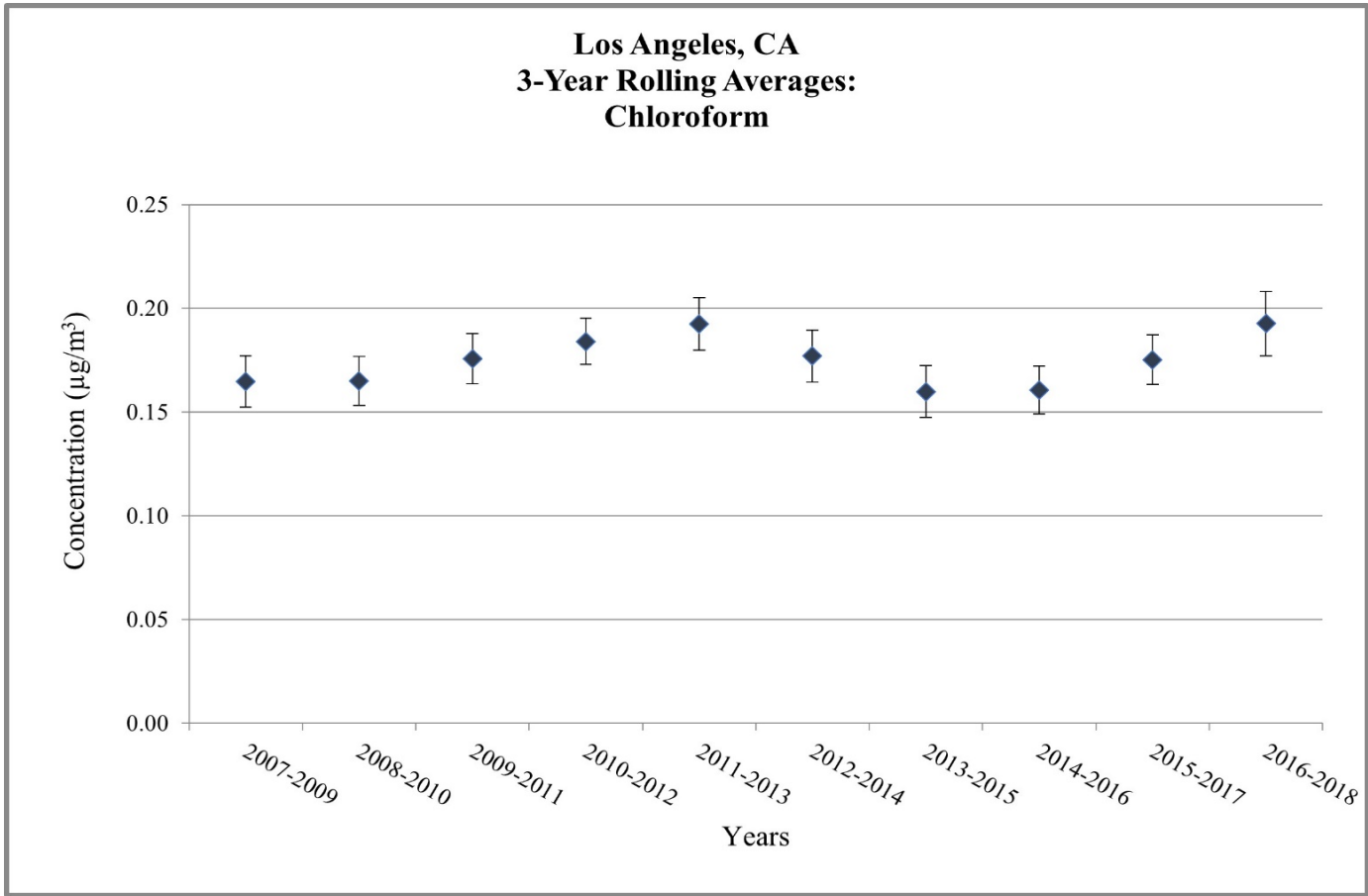


Figure 4. Los Angeles, CA - 3-Year Rolling Average Concentrations

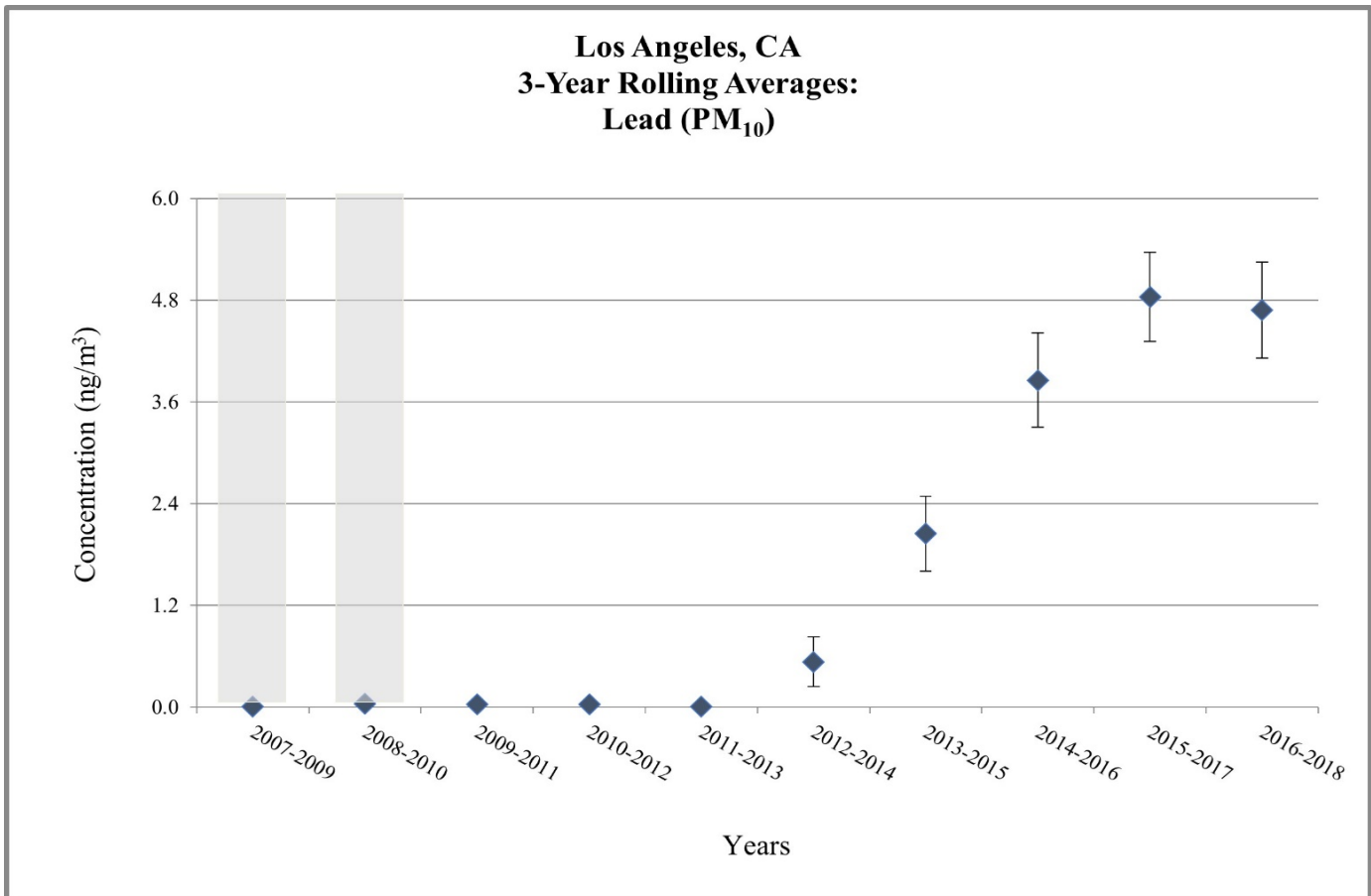
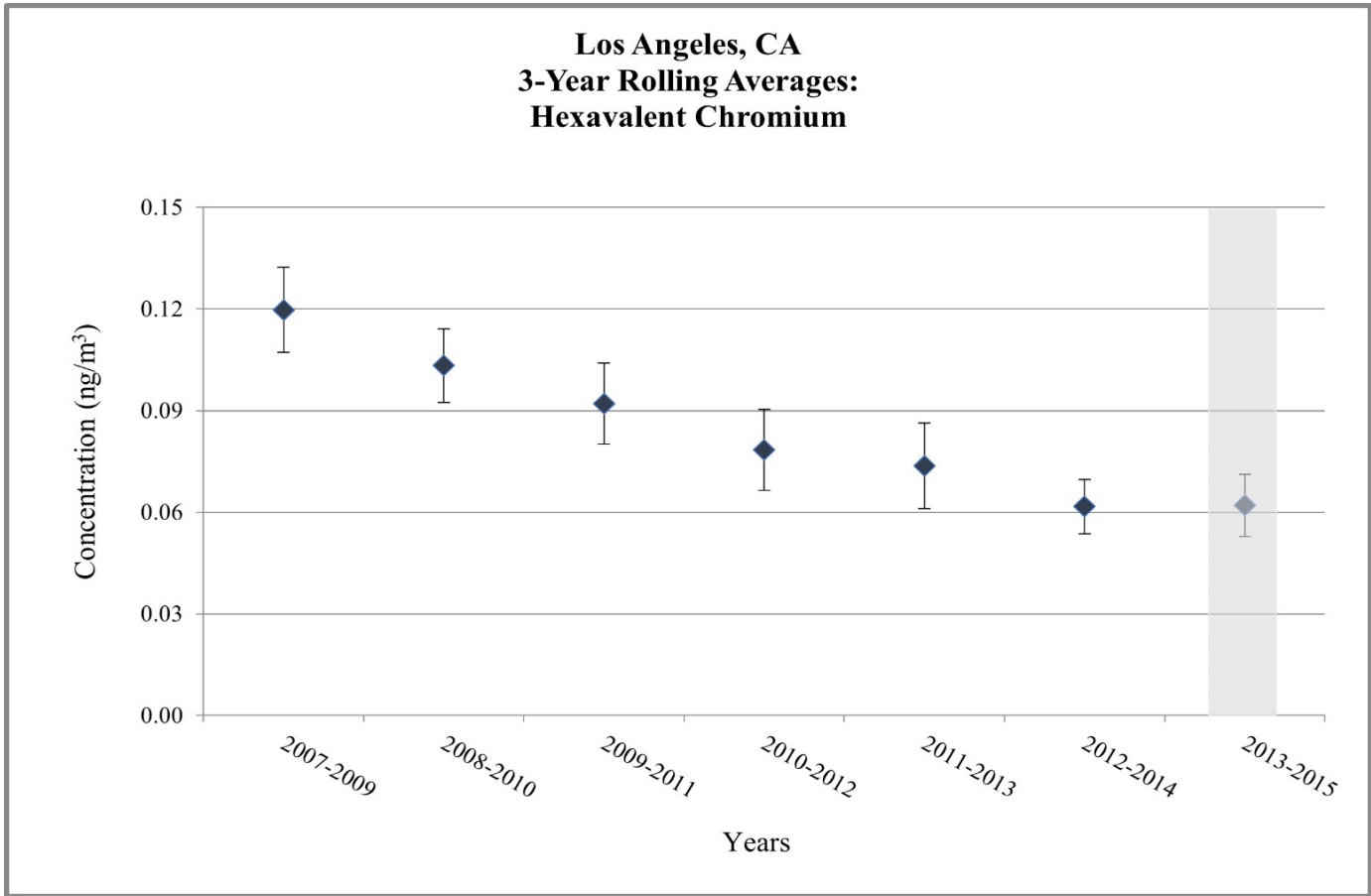


Figure 4. Los Angeles, CA - 3-Year Rolling Average Concentrations

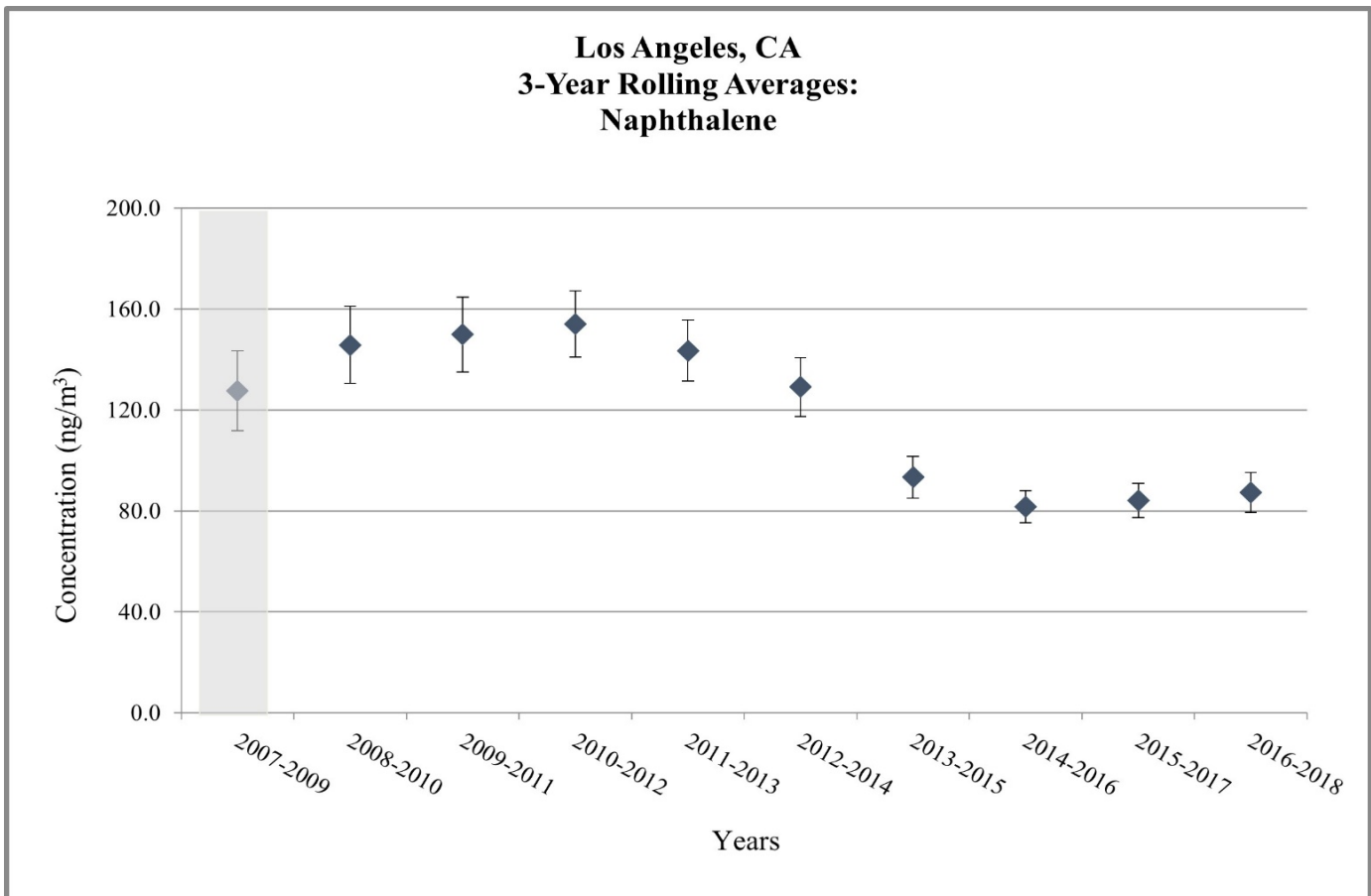
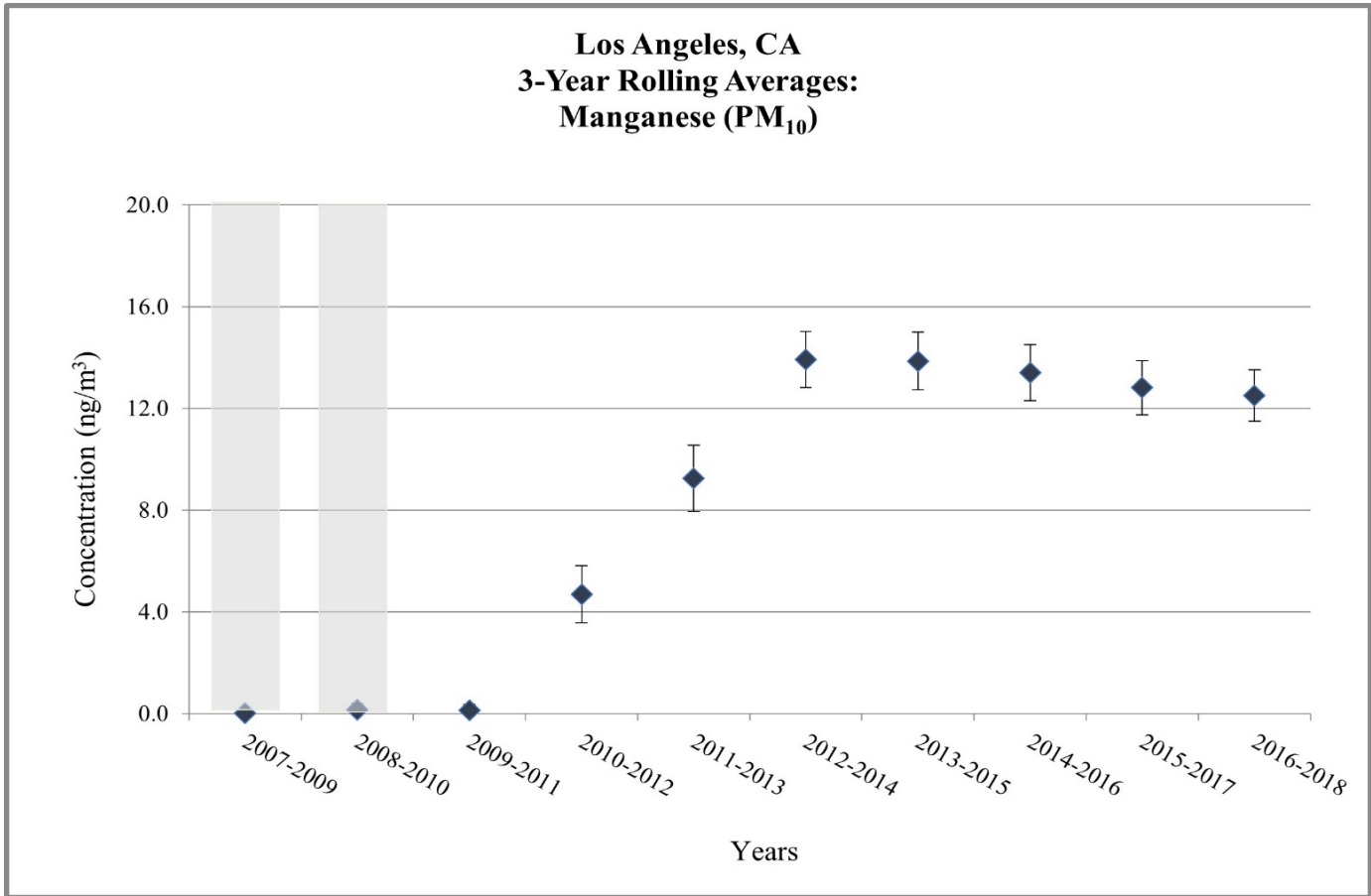


Figure 4. Los Angeles, CA - 3-Year Rolling Average Concentrations

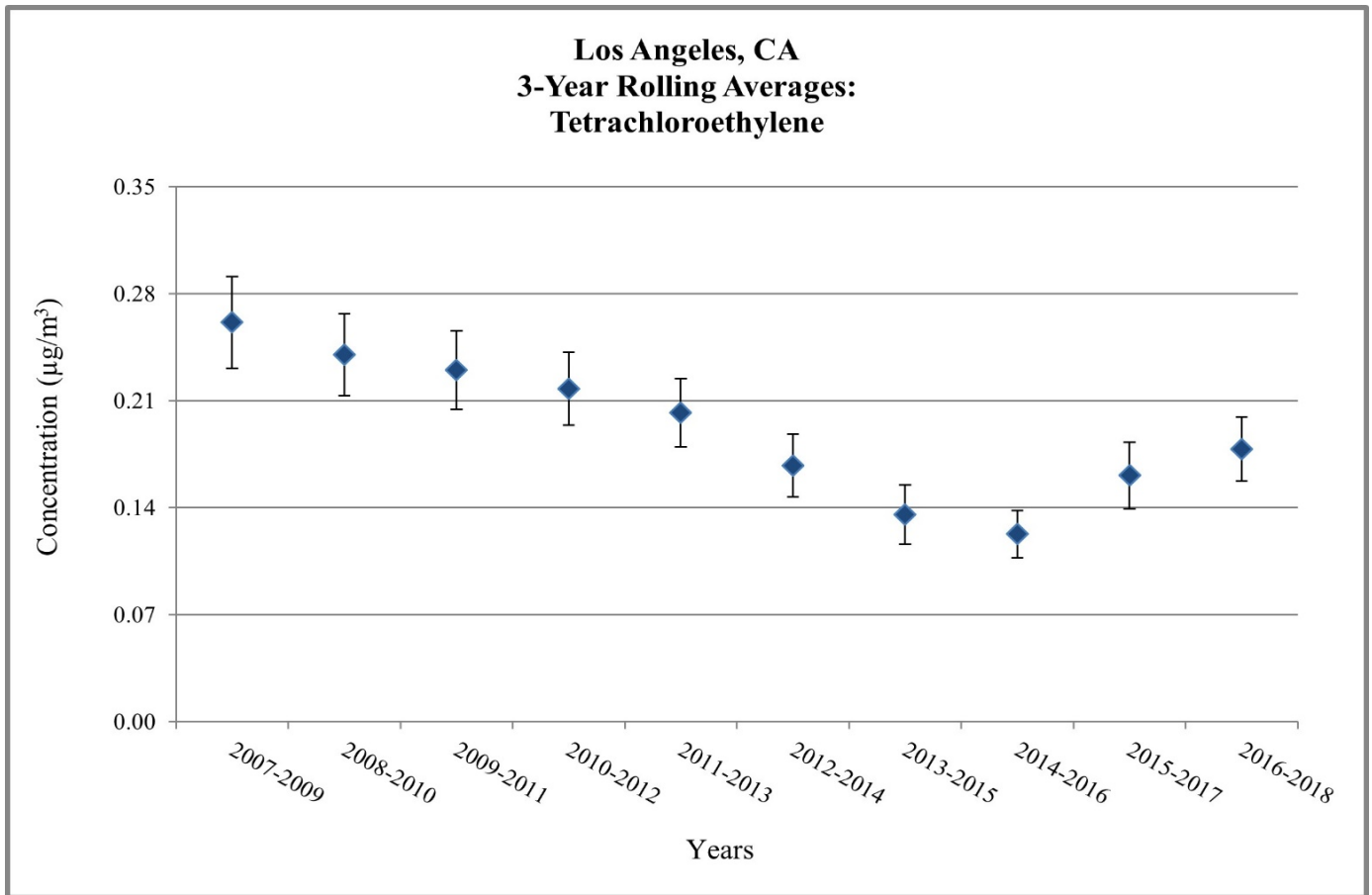
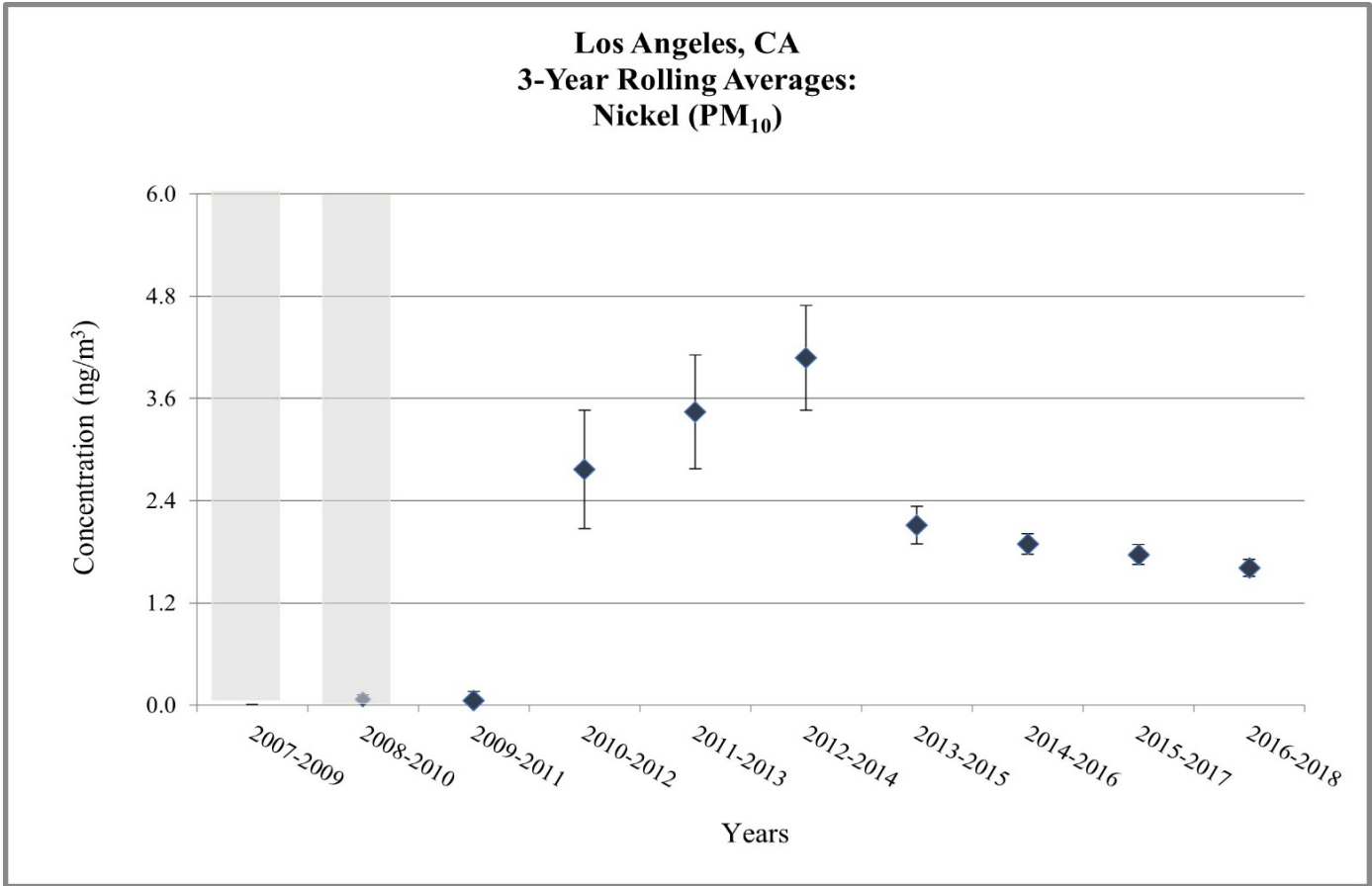
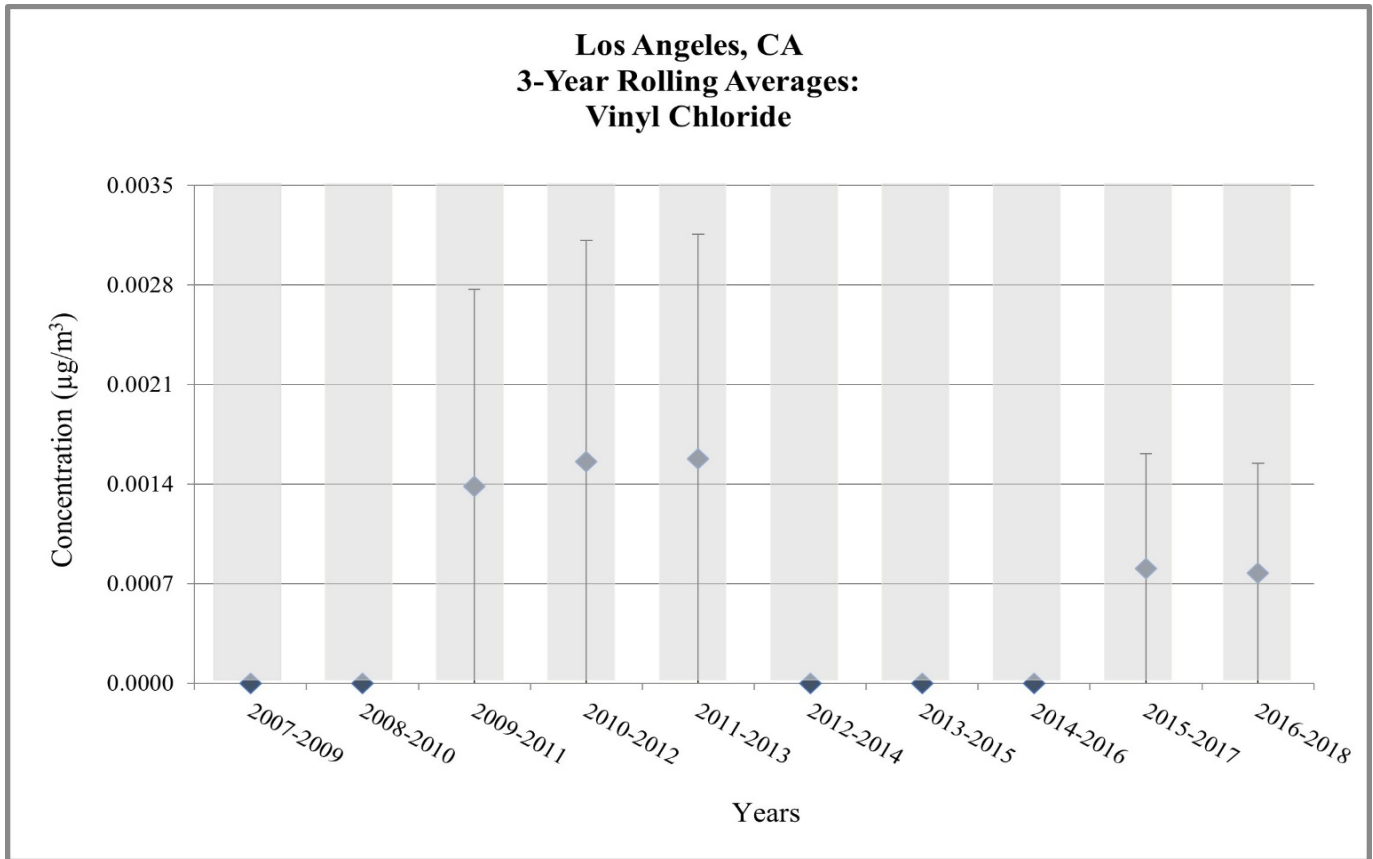
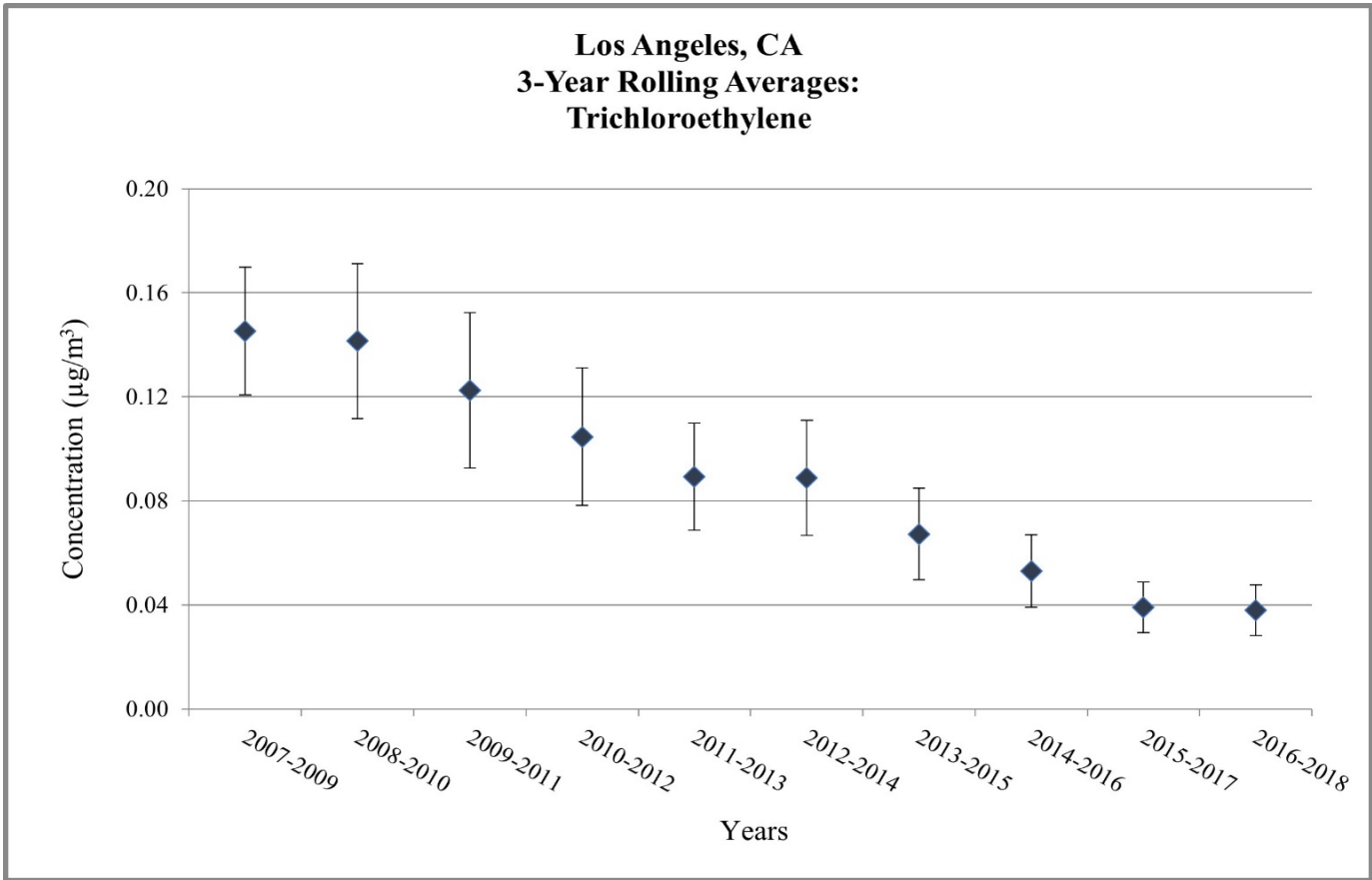


Figure 4. Los Angeles, CA - 3-Year Rolling Average Concentrations



Does not meet MQO or wasn't able to collect enough samples

Table 6. NATTS Network Assessment: MQO#1 - Completeness Percentage at Los Angeles, CA

Pollutant Group	Year	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Carbonyl	Acetaldehyde	115	100	98	97	100	79	98	98	98	98	97	75
Carbonyl	Formaldehyde	115	102	98	98	100	79	98	98	98	100	97	75
Chromium VI	Chromium VI	85	100	102	100	98	97	100	97	--	--	--	--
PAH	Benzo(a)pyrene	--	100	98	97	97	98	95	92	95	100	95	98
PAH	Naphthalene	--	100	98	97	97	98	95	92	95	100	95	98
PM ₁₀ Metals	Arsenic (PM ₁₀)	85	69	93	92	97	98	98	95	97	98	98	90
PM ₁₀ Metals	Beryllium (PM ₁₀)	85	69	93	92	97	98	98	95	97	98	98	90
PM ₁₀ Metals	Cadmium (PM ₁₀)	85	69	93	92	97	98	98	95	97	98	98	90
PM ₁₀ Metals	Lead (PM ₁₀)	85	69	93	92	97	98	98	95	97	98	98	90
PM ₁₀ Metals	Manganese (PM ₁₀)	85	69	93	92	97	98	98	95	97	98	98	90
PM ₁₀ Metals	Nickel (PM ₁₀)	85	69	93	92	97	98	93	95	97	98	98	90
VOC	Benzene	92	97	98	89	90	84	93	92	92	77	102	95
VOC	Butadiene, 1,3-	92	97	98	89	90	84	93	92	92	75	102	95
VOC	Carbon tetrachloride	98	97	97	89	90	84	93	92	92	79	100	95
VOC	Chloroform	92	97	98	89	90	84	93	92	88	79	102	95
VOC	Tetrachloroethylene	92	97	98	89	90	84	93	92	88	79	102	93
VOC	Trichloroethylene	92	97	98	89	90	84	93	92	88	79	102	95
VOC	Vinyl chloride	98	97	97	82	77	67	79	82	82	52	93	90

	A-rated: ≥85%
	B-rated: Between 75% to 85%
	Does not meet: ≤75%
--	No data available

Table 7. NATTS Network Assessment: MQO#2 - Reported Method Detection Limits (MDLs) at Los Angeles, CA

Pollutant Group	Pollutant Name	Target MDL	Units	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Carbonyl	Acetaldehyde	0.45	µg/m ³	0.40	0.40	0.40	0.40	0.02	0.02	0.02	0.02	0.04	0.08	0.02	0.08
Carbonyl	Formaldehyde	0.98/0.08 ^a	µg/m ³	0.13	0.13	0.13	0.13	0.03	0.03	0.31	0.31	0.25	0.36	0.25	0.36
Chromium VI	Chromium VI	0.08	ng/m ³	0.25	0.25	0.25	0.25	0.25	0.08	0.08	0.05	--	--	--	--
PAH	Benzo(a)pyrene	0.91	ng/m ³	0.07	0.07	0.07	0.04	0.05	0.05	0.04	0.03	0.11	0.05	0.02	0.01
PAH	Naphthalene	29.00	ng/m ³	0.002	0.015	0.009	0.011	0.003	0.004	0.005	0.012	0.005	0.021	0.056	0.058
PM ₁₀ Metals	Arsenic (PM ₁₀)	0.23	ng/m ³	1.23	1.24	1.49	1.49	0.41	0.04	0.04	0.04	0.12	0.08	0.08	0.12
PM ₁₀ Metals	Beryllium (PM ₁₀)	0.42	ng/m ³	1.12	1.13	2.52	2.52	0.22	0.02	0.02	0.02	0.068	0.046	0.023	0.023
PM ₁₀ Metals	Cadmium (PM ₁₀)	0.56	ng/m ³	0.24	0.24	0.19	0.19	0.17	0.04	0.03	0.03	0.034	0.034	0.034	0.017
PM ₁₀ Metals	Lead (PM ₁₀)	15.0	ng/m ³	0.011	0.011	0.017	0.017	0.006	0.001	0.001	0.001	0.009	0.009	0.003	0.003
PM ₁₀ Metals	Manganese (PM ₁₀)	5.0	ng/m ³	2.65	2.65	0.16	0.156	0.02	0.004	0.004	0.004	0.03	0.03	0.05	0.04
PM ₁₀ Metals	Nickel (PM ₁₀)	2.1	ng/m ³	0.10	0.10	0.15	0.154	0.04	0.05	0.05	0.05	0.20	0.22	0.15	0.15
VOC	Benzene	0.13	µg/m ³	1.23	1.23	1.23	1.23	0.64	0.64	0.64	0.64	0.98	0.98	0.49	0.25
VOC	Butadiene, 1,3-	0.10	µg/m ³	0.88	0.88	0.88	0.88	0.62	0.62	0.62	0.58	0.58	0.66	0.44	0.44
VOC	Carbon tetrachloride	0.17	µg/m ³	3.70	3.70	3.70	0.74	0.74	0.74	0.74	0.74	0.74	0.74	0.37	0.37
VOC	Chloroform	0.50	µg/m ³	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.10
VOC	Tetrachloroethylene	0.17	µg/m ³	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40
VOC	Trichloroethylene	0.5/0.2 ^a	µg/m ³	0.21	0.21	0.21	0.21	0.21	0.21	0.54	0.54	0.54	0.54	0.54	0.27
VOC	Vinyl chloride	0.11	µg/m ³	2.32	2.32	2.32	2.32	1.19	1.19	1.19	0.79	0.79	0.70	0.93	0.23

	A-rated: MDL to Target MDL ratio ≤ 1
	B-rated" MDL to Target MDL ratio between 1 and 2
	Does Not Meet MDL to Target MDL ratio>2
--	No data available

^a: For the 2012 sampling year, the Target MDL for this pollutant was reduced.

Table 8. NATTS Network Assessment: MQO#3 - Bias Percent Difference at Los Angeles, CA

Pollutant Group	Pollutant Name	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Carbonyls	Acetaldehyde	a	a	-14.2	0.8	-2.8	b	41.4	-2.3	b	-2.9	4.5	-5.3
Carbonyls	Formaldehyde	a	a	-15.7	-3.5	-2.1	b	42.6	0.7	b	-12.5	0.9	6.2
Chromium VI	Chromium VI	b	b	b	c	b	18.0	-11.8	-8.9	--	--	--	--
PAH	Benzo(a)pyrene	b	b	-1.7	-2.3	-2.1	25.2	-5.7	-16.3	-14.2	-10.5	-22.4	-14.8
PAH	Naphthalene	b	b	-7.7	-17.1	-13.9	21.4	25.5	0.7	-11.4	-9.5	-11.6	-20.7
PM ₁₀ Metals	Arsenic (PM ₁₀)	a	a	-26.0	-11.6	-15.1	-1.6	-16.0	-9.4	b	-1.6	-12.0	-7.2
PM ₁₀ Metals	Beryllium (PM ₁₀)	a	a	-35.6	-18.0	-18.9	-1.9	-9.2	d	b	-5.5	-14.1	-9.4
PM ₁₀ Metals	Cadmium (PM ₁₀)	a	a	-27.9	-9.8	-13.8	-1.1	227.0	d	b	0.8	-15.4	-15.4
PM ₁₀ Metals	Lead (PM ₁₀)	a	a	-32.2	-7.7	-10.4	8.7	0.3	7.3	b	2.3	-11.6	-8.3
PM ₁₀ Metals	Manganese (PM ₁₀)	a	a	-40.2	-13.7	-14.5	8.5	-10.3	8.4	b	5.5	-5.5	0.6
PM ₁₀ Metals	Nickel (PM ₁₀)	a	a	-42.8	-11.2	-11.1	-8.1	-13.1	c	b	20.5	9.9	10.5
VOC	Benzene	a	a	-17.6	e	9.8	b	1.9	5.7	-8.8	10.5	-17.9	-12.0
VOC	Butadiene, 1,3-	a	a	-30.6	e	1.1	b	15.2	-5.3	-25.5	-5.6	-14.4	-13.6
VOC	Carbon tetrachloride	a	a	-25.9	e	-5.1	b	3.2	-1.7	14.8	51.2	-4.6	-8.3
VOC	Chloroform	a	a	-43.8	e	-12.4	b	14.0	-4.8	-10.5	14.9	-6.0	-8.6
VOC	Tetrachloroethylene	a	a	-19.5	e	9.4	b	-4.0	3.6	-25.6	-8.7	10.8	-4.7
VOC	Trichloroethylene	a	a	-32.8	e	-11.7	b	-3.7	-6.1	-30.6	-14.0	-28.9	-26.0
VOC	Vinyl chloride	a	a	-26.8	e	-3.9	b	2.3	6.7	-5.1	1.7	-8.5	-7.5

	A-rated: ±25%
	B-rated: Between 25% to 35% or between -25% to -35%
	Does not meet: >35% or <-35%
--	No data available

^a: Due to lab constraints, EPA granted a 2-year waiver from participating the Proficiency Test program until 2009.

^b: No Proficiency Test samples were sent for this pollutant and year.

^c: Although a Proficiency Test sample was sent to the lab supporting this site and year, the results were nullified by EPA due to QA issues.

^d: The Proficiency Test sample for this pollutant was 0; the site reported a concentration as "<MDL", rather than 0. EPA accepted this result.

^e: Pollutant was sampled at this site and year, but no bias data were reported.

Table 9. NATTS Network Assessment: MQO#4 - Overall Method Precision %CV at Los Angeles, CA

Pollutant Group	Pollutant Name	Overall Method precision % CV											
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Carbonyls	Acetaldehyde	59.3	44.0	30.1	18.3	43.1	42.6	32.1	56.3	14.3	12.2	14.6	19.5
Carbonyls	Formaldehyde	45.8	47.8	34.7	19.3	25.8	34.7	19.5	34.4	16.6	13.6	10.5	14.9
Chromium VI	Chromium VI	40.8	27.6	19.2	30.3	35.3	47.5	42.0	57.6	--	--	--	--
PAH	Benzo(a)pyrene	--	--	--	--	--	--	--	--	--	--	--	--
PAH	Naphthalene	--	--	--	--	--	--	--	--	--	--	--	--
PM ₁₀ Metals	Arsenic (PM ₁₀)	28.6	14.0	34.0	7.9	17.1	13.4	2.3	4.6	3.3	12.6	8.6	5.9
PM ₁₀ Metals	Beryllium (PM ₁₀)	77.1	a	a	a	a	55.6	40.8	38.5	a	20.2	0	47.1
PM ₁₀ Metals	Cadmium (PM ₁₀)	41.6	28.3	38.9	a	5.4	29.8	10.3	10.9	4.9	27.4	3.8	9.8
PM ₁₀ Metals	Lead (PM ₁₀)	13.8	7.3	11.3	15.1	7.3	9.5	5.4	17.4	2.7	4.6	6.0	5.1
PM ₁₀ Metals	Manganese (PM ₁₀)	a	9.3	5.5	21.2	0.0	7.8	5.8	4.3	1.0	4.7	7.3	3.8
PM ₁₀ Metals	Nickel (PM ₁₀)	37.2	6.5	11.8	19.2	3.8	7.3	7.6	17.7	1.0	5.2	7.2	4.4
VOC	Benzene	14.2	8.1	10.3	7.6	18.7	15.1	19.7	19.8	19.5	21.4	21.3	22.0
VOC	Butadiene, 1,3-	30.3	14.2	23.6	20.9	51.7	28.6	14.6	33.0	25.2	28.5	14.6	28.9
VOC	Carbon tetrachloride	a	a	0.0	a	14.3	8.3	10.1	12.4	15.0	17.0	13.9	15.9
VOC	Chloroform	a	a	a	a	9.7	8.3	10.5	23.5	38.3	6.1	14.1	19.5
VOC	Tetrachloroethylene	a	5.3	10.9	17.4	9.5	0	11.8	25.2	a	0.0	29.6	26.9
VOC	Trichloroethylene	a	a	8.3	a	a	8.3	10.5	12.1	54.1	a	a	0
VOC	Vinyl chloride	a	a	a	a	a	a	a	a	a	a	a	a

	A-rated: ≤ 15% CV
	B-rated: Between 15%CV to 25% CV
	Does Not Meet: >25% CV or did not report Precision (required in the NATTS Workplan Template since 2012)
	-- No data available

^a: Although both primary and secondary data were reported, both sets of values were less than the MDL. Thus no %CV was calculated.

Table 10. NATTS Network Assessment: MQO#4 - Analytical Precision %CV at Los Angeles, CA

Pollutant Group	Pollutant Name	Analytical Method precision % CV											
		2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Carbonyls	Acetaldehyde	--	--	--	--	2.8	1.6	1.1	0.9	1.1	1.8	0.8	0.5
Carbonyls	Formaldehyde	--	--	--	--	1.0	1.7	2.1	1.9	0.7	0.4	0.5	0.3
Chromium VI	Chromium VI	2.4	5.9	3.8	4.7	--	a	a	--	--	--	--	--
PAH	Benzo(a)pyrene	--	--	--	--	--	a	9.0	4.1	b	1.7	1.0	2.0
PAH	Naphthalene	--	--	--	--	--	11.4	2.0	3.7	2.6	2.4	2.3	2.0
PM ₁₀ Metals	Arsenic (PM ₁₀)	38.0	9.7	8.8	0	5.7	11.0	a	a	8.3	5.8	3.2	5.2
PM ₁₀ Metals	Beryllium (PM ₁₀)	10.2	b	b	b	b	0	a	a	b	20.2	27.5	0.0
PM ₁₀ Metals	Cadmium (PM ₁₀)	--	--	--	0	0	32.4	a	a	17.4	6.5	8.2	5.0
PM ₁₀ Metals	Lead (PM ₁₀)	8.0	4.0	0.7	12.9	4.2	10.4	a	a	2.7	1.2	1.4	0.8
PM ₁₀ Metals	Manganese (PM ₁₀)	--	1.3	3.7	0.0	21.1	8.6	a	a	3.7	2.1	1.0	0.9
PM ₁₀ Metals	Nickel (PM ₁₀)	22.2	6.5	6.4	38.5	3.3	7.5	a	a	4.3	5.0	3.2	3.7
VOC	Benzene	--	5.1	3.5	5.3	2.6	4.0	4.5	3.5	5.2	4.2	3.2	3.5
VOC	Butadiene, 1,3-	--	12.0	b	b	11.1	18.3	14.5	20.1	14.5	5.6	15.2	14.6
VOC	Carbon tetrachloride	--	b	0	--	5.3	7.1	5.4	8.3	8.0	7.7	6.0	4.0
VOC	Chloroform	--	b	b	b	b	b	0	b	0	0	15.7	5.7
VOC	Tetrachloroethylene	--	0	b	b	b	b	b	b	b	0	0	9.0
VOC	Trichloroethylene	--	b	7.7	b	b	b	7.4	17.7	0	0	b	0
VOC	Vinyl chloride	--	b	b	b	b	b	b	b	b	b	b	b

	A-rated: ≤ 15% CV
	B-rated: Between 15%CV to 25% CV
	Does Not Meet: >25% CV or did not report Precision (required in the NATTS Workplan Template since 2012)
	-- No data available

^a: Per the NATTS Workplan template, analytical replicates were required to be reported to AQS for this sampling year

^b: The primary and/or replicate value were less than the MDL, so no calculation could be made.

Appendix A: Equipment Inventory

Pollutant Type	Year(s)	Manufacturer/Model, Extraction Type, and Year
<i>Sampling Equipment</i>		
Carbonyls	2007-2017	RM Environmental Systems 924 Toxic Air Sampler (Year Deployed: 2004)
	2018	ATEC 8000 (Year Deployed 2018)
Chromium VI	2007-2010	RM Environmental Systems 924 Toxic Air Sampler (Year Deployed: 2006)
	2011-2014	RM Environmental Systems 924 Toxic Air Sampler (Year Deployed: 2007)
PAHs	2007-2015	Thermo Andersen GPS-1 PUF Sampler (Year Deployed: 2004)
	2016-2018	Tisch Puf+ (Year Deployed: 2016)
PM ₁₀ Metals	2007-2017	Thermo-Andersen SSI PM10 Hi-VOL; Tisch TE-10557 sampler (Year Deployed: 2007)
	2018	Tisch SSI+ (Year Deployed: 2018)
VOCs	2007-2018	Xontech 910A Canister Sampler (Year Deployed: 2004)
<i>Analytical Equipment</i>		
Carbonyls	2007-2018	Waters Alliance 2690 HPLC/ model 996 PDA (Year Deployed: 1999)
Chromium VI	2007-2014	Dionex modular Ion Chromatography (Year Deployed: 2007)
PAHs	2007-2007	HP/Agilent 5890/5971 GC/MS (Year Deployed: 1990)
	2008-2013	HP/Agilent 5890/5971 GC/MS (Year Deployed: 2008)
	2014-2018	HP/Agilent 7890B/5975C GC/MS (Year Deployed: 2014)
PM ₁₀ Metals	2007-2010	LECO Renaissance TOF-ICP-MS (Year Deployed: 1998)
	2011-2018	PE ELAN ICP-MS (Year Deployed: 2010)
VOCs	2007-2018	Agilent 6890/5973 GC/MS (Year Deployed: 2006)
<i>Preconcentrator Equipment</i>		
VOCs	2007-2016	Entech 7100A (Year Deployed: 2006)
	2017-2018	Entech 7200 (Year Deployed: 2017)
<i>Standards Preparation Equipment</i>		
VOCs	2007-2017	Entech 4600 (Dynamic Dilution) (Year Deployed: 2004)
	2018	Entech 4700 (Pressure Dilution) (Year Deployed: 2018)
<i>Canister Cleaning Equipment</i>		
VOCs	2007-2018	Entech 3100A (Hot) (Year Deployed: 2007)
<i>PM₁₀ Extraction Equipment</i>		
PM ₁₀ Metals	2007-2009	CEM Mars5 (Microwave) (Year Deployed: 2002)
	2010-2018	CEM Mars5 (Microwave) (Year Deployed: 2009)
<i>Chromium VI Extraction Equipment</i>		
Chromium VI	2007-2014	Zenith Model G4-80/40 Sonicator (Year Deployed: <2000)
<i>PAHs Extraction Equipment</i>		
PAHs	2007-2018	Dionex -300 (ASE) (Year Deployed: 2004)