

2009 Air Quality Data Report

Hamilton County Department
of Environmental Services



HAMILTON COUNTY
ENVIRONMENTAL
S E R V I C E S
Air Quality • Solid Waste

Table of Contents

Forward	3
Monitoring and Analysis	4
AQMD Hotline Numbers/Website	4
Monitoring Site Map	5
Criteria Pollutants	6
Air Quality Index	8
Ozone	10
The Continuous Monitoring Network	12
The Intermittent Monitoring Network	14
Total Suspended Particulate Results	16
Air Toxics Monitoring Data	17
Pollen and Mold	20

Air Quality Terms

AQMD	Air Quality Management Division
AQI	Air Quality Index
HCDOES	Hamilton County Department of Environmental Services
M&A	Monitoring and Analysis
NAAQS	National Ambient Air Quality Standards
Ohio EPA	Ohio Environmental Protection Agency
TSP	Total Suspended Particulates
USEPA	United States Environmental Protection Agency



This 2009 Edition of the Annual Data Report is produced by the Hamilton County Department of Environmental Services (HCDOES). The report, a summary of the thousands of data points collected by the ambient air monitors in the four southwest Ohio counties, are used for many purposes: alert the public to the current status of the Air Quality Index, compare levels of pollutants to emissions from sources, used in health research projects, validate air quality models, and determine attainment of the National Ambient Air Quality Standards (NAAQS).

It is the responsibility of the Monitoring and Analysis Section to ensure the data produced by and collected from the ambient air monitors is quality assured defensible data. The data generated from the continuous particulate matter and ozone analyzers is available for public review on our website: www.hcdoes.org. Hourly concentrations associated with the appropriate air quality index color are displayed in maps plotting the monitor locations. This same information is forwarded to U.S. EPA's website, www.arinow.gov, mapping the air quality not only on a local but also on a national level. Air quality forecasts are also available at both locations. Real time data availability places a demand on staff to review the data in a timely manner and to utilize new technologies to deliver the data appropriately.

The year 2009 saw a number of reviews and new proposals of the NAAQS for several of the criteria pollutants: nitrogen dioxide, sulfur dioxide, ozone and lead. While the data show lowered concentrations of the criteria pollutants, the standards themselves are continuing to be lowered as health studies are showing adverse health effects to specific members of the population at lower concentrations. The proposed changes to the standards are scheduled to become final in 2010. Staff members are currently preparing for those changes as they will pose new challenges to overcome.

New standards for new pollutants combined with new monitoring technologies will continue to challenge the Monitoring & Analysis Staff. In meeting these challenges, staff members are committed to data quality as well as providing the public information resulting from our monitoring efforts.

As you review this report, should you have any questions, please do not hesitate to contact myself or a member of the Monitoring & Analysis Staff. We will be happy to provide you with the answers to your questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Anna L. Kelley". The signature is fluid and cursive.

Anna L. Kelley
Monitoring & Analysis Supervisor

Monitoring

To determine the air quality in Southwest Ohio, the Air Quality Management Division (AQMD) maintains monitors in four counties—Butler, Clermont, Hamilton and Warren. There are two types of monitors:

- Continuous monitors: Operate constantly and measure ozone, sulfur dioxide, carbon monoxide, oxides of nitrogen and inhalable particulates. Eighteen continuous monitors are located in Southwest Ohio.
- Intermittent monitors: Collect airborne particles at 24-hour intervals from eleven locations in the area. Air toxic monitoring data is also collected from intermittent monitors at four locations.

Air Quality Hotline Numbers/Website

Air Quality Index/ Pollen and Mold Hotline	513-946-7753
Smog Information	800-621-SMOG (7664)
24-Hour Complaint Hotline	513-946-7777 800-889-0474 (toll areas)
To order a Living With Allergies Brochure	513-946-7747

Please visit AQMD's website to learn more about air quality in Southwest Ohio. You can download this and other publications, check daily AQI forecasts and much more when you visit our website at www.hcdoes.org.

Analysis

The Monitoring and Analysis (M&A) Section maintains the air quality monitoring network, provides analytical laboratory support services, monitors all facility stack tests, tracks industrial emissions data and conducts quality assurance checks and audits for all data generated by the section.

Compliance Status Summary

In Compliance	
yes	Nitrogen Dioxide, NO ₂
yes	Sulfur Dioxide, SO ₂
yes	Carbon Monoxide, CO
yes	Lead
yes	Particulate Matter, PM ₁₀
yes	Particulate Matter, PM _{2.5}
no	24-hour average 35µg/m ³ annual average 15µg/m ³
no	Ozone, O ₃
no	8-hour 0.08 parts per million 8-hour 0.075 parts per million

Monitoring Site Map



Colerain Continuous Air Monitor Site

Monitoring Site Map Key

Code	Location	County	SO ₂	O ₃	NO _x	CO	PM ₁₀	TSP	PM _{2.5}	
Continuous Air Monitor Sites										NCORE
A	Hamilton	Butler		×						
B	Middletown	Butler	×	×					×	
C	Batavia	Clermont		×					×	
E	Colerain	Hamilton	×	×						×
G	Taft (HCDOES)	Hamilton		×	×		×		×	
I	Post Office (Downtown)	Hamilton				×				
K	Sycamore	Hamilton		×					×	
L	Lebanon	Warren		×					×	
Intermittent High-Volume Network Sites										TOXICS
1	Library (Hamilton County Public)	Hamilton						×		
5	Lockland	Hamilton					×			
6	Carthage	Hamilton					×		×	×
12	St. Bernard	Hamilton							×	
18	Verity School (Middletown)	Butler					×		×	
33	Norwood (Health Department)	Hamilton							×	
63	Ohio Bell (Middletown)	Butler					×	×		
64	Taft (HCDOES)	Hamilton					×		×	
66	Lower Price Hill	Hamilton							×	×
68	Sacred Heart School (Hamilton)	Butler							×	
69	Winton (Waldorf School)	Hamilton								×
70	Addyston	Hamilton								×

Criteria Pollutants

The USEPA has classified six different compounds as “criteria pollutants” due to their potential to affect human health and the environment: carbon monoxide, lead, nitrogen dioxide, ozone, sulfur dioxide and particulate matter. In order to protect public health, the USEPA has established the National Ambient Air Quality Standards (NAAQS), which set the “maximum allowable levels” for each pollutant.

If measured levels of the criteria pollutants are below the maximum allowable levels, the area is in “attainment” status. If levels rise above allowable amounts,

the area is in “nonattainment.” The Greater Cincinnati area is in attainment status for all criteria pollutants except for 8-hour ozone and annual PM2.5 standards.

On March 12, 2008, the USEPA announced a more stringent 8-hour ozone standard. The new standard lowered the allowable concentration of ozone to no more than .075 parts per million, compared to the old standard of .08 parts per million.

NAAQS Standards

Carbon Monoxide (CO)	
Standard:	9 parts per million (8-hour avg. not to be exceeded more than once per year)
Standard:	35 parts per million (1-hour avg. not to be exceeded more than once per year)
Source:	Vehicle exhaust
Effects:	Replaces oxygen in the blood, causing dizziness, unconsciousness or death.
Particulates	
(PM ₁₀) Standard:	50 micrograms per cubic meter (max. annual arithmetic mean)
(PM ₁₀) Standard:	150 micrograms per cubic meter (24-hour concentration not to be exceeded more than once per year)
(PM _{2.5}) Standard:	15 micrograms per cubic meter (max. annual arithmetic mean)
(PM _{2.5}) Standard:	35 micrograms per cubic meter (24-hour average)
Source:	Industrial processes, heating boilers, engines, dust
Effects:	Can clog lung sacs. May pass into bloodstream. Often carry toxic and carcinogenic materials.
Nitrogen Dioxide (NO₂)	
Standard:	0.053 parts per million (max. annual arithmetic mean)
Source:	Industrial processes; vehicle exhaust
Effects:	Structural damage to lungs. Lowers resistance to respiratory infections. Reacts with hydrocarbons to form smog. Causes acid rain.
Ozone (O₃)	
Current Standard:	0.075 parts per million (max. 8-hour average based on highest three-year average of the fourth highest 8-hour concentration)
Former Standard:	0.12 parts per million (max. one-hour avg. not to be exceeded more than three times over the three most recent years)
Source:	Formed when hydrocarbons and nitrogen dioxide react in sunlight.
Effects:	Main component of smog. Irritates mucous membranes, causing coughing, choking and impaired lung function. Aggravates asthma and bronchial conditions.
Sulfur Dioxide (SO₂)	
Standard:	0.03 parts per million (max. annual arithmetic mean) / 0.14 parts per million (max. 24-hour avg. concentration not to be exceeded more than once per year)
Source:	Burning coal and oil, industrial processes
Effects:	Corrosive to outdoor structures. Aggravates lung conditions. Causes acid rain.

Comparison to the Standards

2007-2009 Fourth Highest 8-Hour Ozone Concentration Per Year**

Site Code*	C	G	A	L	B	K	E
Site Name	Batavia	Taft	Hamilton	Lebanon	Middletown	Sycamore	Colerain
2007	0.086	0.086	0.091	0.088	0.091	0.089	0.086
2008	0.071	0.080	0.071	0.082	0.079	0.086	0.077
2009	0.069	0.074	0.073	0.077	0.076	0.072	0.065
Average	0.075	0.080	0.078	0.082	0.082	0.082	0.076
Meets Old Standard (0.08)	Yes	Yes	Yes	yes	Yes	Yes	Yes
Meets New Standard (0.075)	Yes	No	No	No	No	No	No

* Please see page 5 for the monitoring site map and codes.

** An exceedance is any value over 0.084 ppm using a three-year average of the fourth highest 8-hour daily concentration.

2009 Nitrogen Dioxide (NO₂)

Site Code*	Site Name	Standard	Annual Average	Meets Standard
G	Taft	0.053 ppm	0.014 ppm	Yes

2009 Carbon Monoxide (CO)

Site Code*	Site Name	8-hr. Standard	8-hr. High	Meets Standard	1-hr. Standard	1-hr. High	Meets Standard
I	Post Office	9 ppm	1.0 ppm	Yes	35 ppm	2.3 ppm	Yes

2009 Sulfur Dioxide (SO₂)

Site Code*	Site Name	Annual Average Standard	Annual Average	Meets Standard	24 hr. Standard	24 hr. High	Meets Standard
B	Middletown	0.03 ppm	0.002 ppm	Yes	0.14 ppm	0.011 ppm	Yes

For PM_{2.5} data, please see page 15.

Air Quality Index

The Air Quality Index (AQI) was created by the USEPA to inform the public about their local air quality conditions and what these conditions mean to their health.



The AQI reports on the main air pollutants regulated by the Clean Air Act, including: ground-level ozone, particulate matter, carbon monoxide, sulfur dioxide and nitrogen dioxide. Seven days a week, the AQMD's instruments measure the level of each of the pollutants at sites located throughout the four-county region.

The daily AQI is based on the single pollutant with the highest air quality index. The AQI for the Greater Cincinnati area is generally based on ozone or particulate matter. The AQI is then reported in newspapers, local television and radio weather reports. AQI Hotline is 513-946-7753; and our website is www.hcdoes.org.

2009 Air Quality Index Data

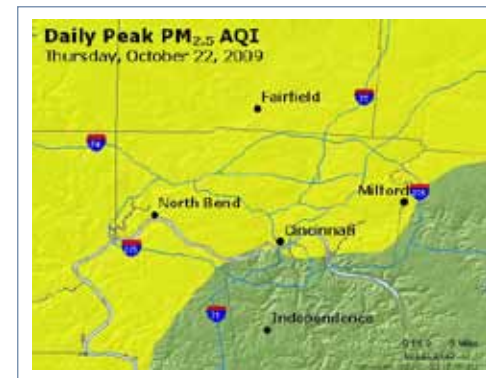
Month	Low	High	Average
January	37	92	61
February	41	114	61
March	41	108	64
April	36	96	60
May	48	109	70
June	35	111	73
July	31	77	56
August	33	113	68
September	27	80	56
October	33	73	50
November	37	103	67
December	24	72	53

Ozone Readings Map



For local ozone maps, visit www.hcdoes.org.

Particulate Pollution Map



For local particulate maps, visit www.hcdoes.org.

Air Quality Index for Particulate Matter and Ozone

Air Quality	Index	Health Guide for Particulate Matter	Health Guide for Ozone
Good	0 - 50	None	None
Moderate	51 - 100	Unusually sensitive people should consider limiting prolonged outdoor exertion.	Unusually sensitive people should consider limiting prolonged outdoor exertion.
Unhealthy for Sensitive Groups	101 - 150	People with heart or lung disease, older adults and children should reduce prolonged or heavy exertion.	Active children and adults, and people with respiratory disease, such as asthma, should limit prolonged or heavy exertion.
Unhealthy	151 - 200	People with heart or lung disease, older adults and children should avoid prolonged or heavy exertion. Everyone else should reduce prolonged or heavy exertion.	Active children and adults, and people with respiratory disease, such as asthma, should avoid prolonged outdoor exertion. Everyone else, especially children, should limit prolonged outdoor exertion.
Very Unhealthy	201 - 300	People with heart or lung disease, older adults and children should avoid all physical activity outdoors. Everyone else should avoid prolonged or heavy exertion.	Active children and adults, and people with respiratory disease, such as asthma, should avoid all outdoor exertion. Everyone else, especially children, should limit prolonged outdoor exertion.

2009 AQI Summary

AQI Level	Description	Number of Days
0-50	“Good”	97
51-100	“Moderate”	254
101-150	“Unhealthy for Sensitive Groups”	14
151-200	“Unhealthy”	0
201-300	“Very Unhealthy”	0

2009 Ozone

Ozone is measured between April 1 and October 31, 2009

2000-2009 8-Hour Ozone Exceedances per Year

Site Code*	C	E	G	A	L	B	K	Total
Site Name	Batavia	Colerain	Taft	Hamilton	Lebanon	Middletown	Sycamore	
2000**	9	1	4	3	4	2	2	25
2001**	2	2	3	2	5	6	4	24
2002**	12	12	14	18	16	19	18	109
2003**	5	4	2	5	10	3	7	36
2004**	0	1	0	1	2	1	0	5
2005**	2	4	8	5	6	7	8	40
2006**	1	2	1	1	4	1	0	10
2007**	5	4	5	6	6	6	6	38
2008	0	7	7	1	12	7	12	46
2009	0	0	2	2	5	4	2	15
Total	36	37	46	44	70	56	59	348

An exceedance of the 8-hour ozone standard is a reading of 75 ppb (or a 101 on the AQI) or higher.

* Please see page 5 for the monitoring site map and codes. ** 2000 through 2007 data is based on the previous 0.085 standard.

Maximum 8-Hour ppm

Site Code*	C	E	G	A	L	B	K
Site Name	Batavia	Colerain	Taft	Hamilton	Lebanon	Middletown	Sycamore
April	0.067	0.065	0.065	0.064	0.071	0.068	0.068
May	0.067	0.065	0.073	0.079	0.075	0.076	0.072
June	0.071	0.066	0.077	0.078	0.080	0.078	0.080
July	0.062	0.066	0.065	0.063	0.065	0.068	0.065
August	0.063	0.069	0.064	0.072	0.066	0.071	0.068
September	0.066	0.063	0.066	0.069	0.069	0.069	0.068
October	0.039	0.035	0.034	0.035	0.037	0.036	0.036
November	NA	0.043	NA	NA	NA	NA	NA
December	NA	0.030	NA	NA	NA	NA	NA
Highest	0.071	0.069	0.077	0.079	0.080	0.078	0.080

* Please see page 5 for the monitoring site map and codes.

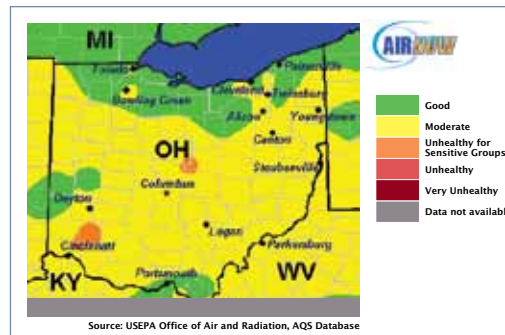
2009 Ozone Monthly Averages ppm

Site Code*	C	E	G	A	L	B	K
Site Name	Batavia	Colerain	Taft	Hamilton	Lebanon	Middletown	Sycamore
April	0.041	0.031	0.035	0.035	0.037	0.036	0.038
May	0.037	0.025	0.032	0.034	0.035	0.035	0.033
June	0.041	0.034	0.037	0.037	0.039	0.038	0.039
July	0.030	0.021	0.027	0.028	0.029	0.030	0.029
August	0.029	0.020	0.027	0.026	0.028	0.027	0.028
September	0.030	0.019	0.026	0.024	0.028	0.026	0.027
October	0.020	0.014	0.014	0.016	0.019	0.017	0.016
Highest	0.033	0.023	0.028	0.029	0.031	0.030	0.030

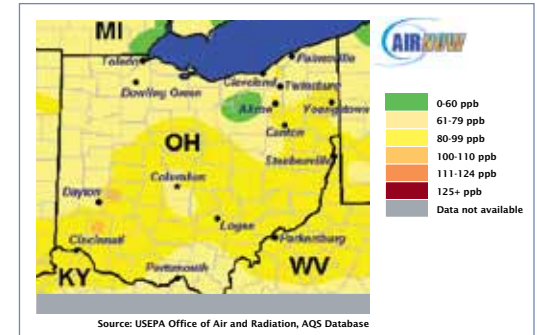
* Please see page 5 for the monitoring site map and codes.

For state and national maps, visit www.airnow.gov. Visit www.hcdoes.org under Air Quality Index to view maps of current ozone concentrations.

Ozone Peak AQI



Ozone 1-hour Average Peak Concentration



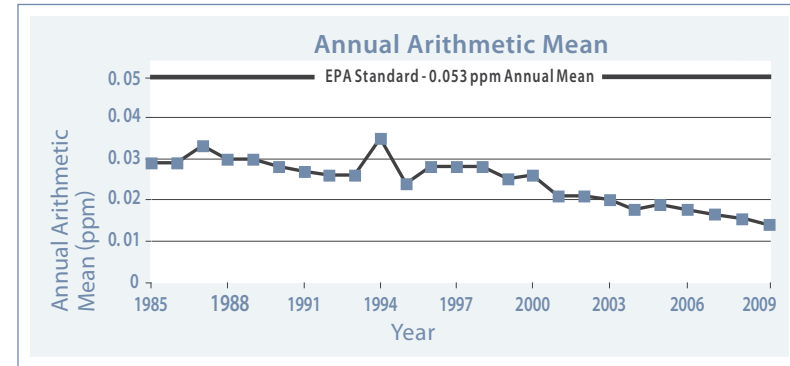
The Continuous Monitoring Network

Seventeen air samplers continuously monitor ozone, sulfur dioxide, carbon monoxide, nitrogen dioxide and continuous particulate matter in the four-county area. Ambient concentration of the pollutants are recorded continuously at each site, along with the hourly averages for each day.



Continuous Monitor

Nitrogen Dioxide (NO₂)



2009 Nitric Oxide (NO)

Site G: Taft

	Maximum 1-Hour ppm	Maximum 24-Hour ppm	Monthly Averages ppm
January	0.061	0.020	0.005
February	0.092	0.017	0.004
March	0.310	0.070	0.007
April	0.095	0.019	0.003
May	0.114	0.023	0.004
June	0.074	0.010	0.002
July	0.057	0.014	0.003
August	0.102	0.024	0.005
September	0.090	0.024	0.004
October	0.158	0.034	0.009
November	0.244	0.093	0.017
December	0.131	0.046	0.009
Highest	0.310	0.093	Annual Average 0.006

* Please see page 5 for the monitoring site map and codes.

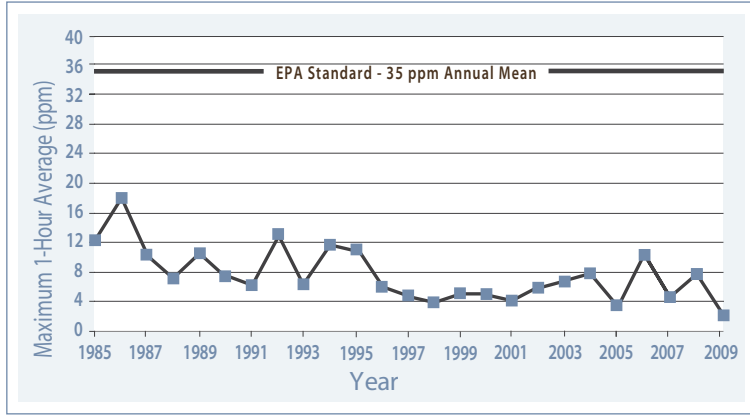
2008 Nitrogen Dioxide (NO₂)

Site G: Taft

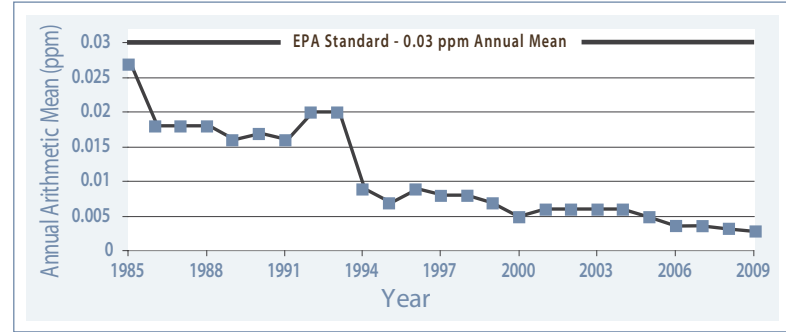
	Maximum 1-Hour ppm	Maximum 24-Hour ppm	Monthly Averages ppm
January	0.041	0.025	0.016
February	0.039	0.024	0.013
March	0.045	0.025	0.014
April	0.054	0.023	0.011
May	0.056	0.026	0.013
June	0.048	0.026	0.012
July	0.050	0.024	0.013
August	0.055	0.022	0.012
September	0.053	0.028	0.013
October	0.041	0.027	0.015
November	0.049	0.031	0.019
December	0.041	0.031	0.015
Highest	0.056	0.031	Annual Average 0.014

* Please see page 5 for the monitoring site map and codes.

Carbon Monoxide (CO)



Sulfur Dioxide (SO₂)



2009 Carbon Monoxide (CO)

Site I: Post Office

	Maximum 1-Hour ppm	Maximum 8-Hour ppm	Monthly Averages ppm
January	0.6	0.5	0.3
February	0.9	0.5	0.3
March	0.9	0.6	0.2
April	0.8	0.4	0.1
May	1.7	0.7	0.0
June	2.3	0.6	0.0
July	1.2	0.2	0.0
August	1.0	0.1	0.0
September	0.8	0.6	0.0
October	1.1	0.7	0.2
November	1.9	1.0	0.3
December	1.2	0.7	0.2
Highest	2.3	1.0	Annual Average 0.1

* Please see page 5 for the monitoring site map and codes.

2009 Sulfur Dioxide (SO₂)

Site B: Middletown

	Maximum 1-Hour ppm	Maximum 24-Hour ppm	Monthly Averages ppm
January	0.037	0.011	0.004
February	0.034	0.010	0.003
March	0.028	0.008	0.002
April	0.029	0.007	0.002
May	0.022	0.003	0.001
June	0.023	0.005	0.001
July	0.026	0.007	0.001
August	0.025	0.005	0.002
September	0.015	0.003	0.001
October	0.022	0.005	0.001
November	0.021	0.005	0.001
December	0.025	0.008	0.003
Highest	0.037	0.011	Annual Average 0.002

* Please see page 5 for the monitoring site map and codes.

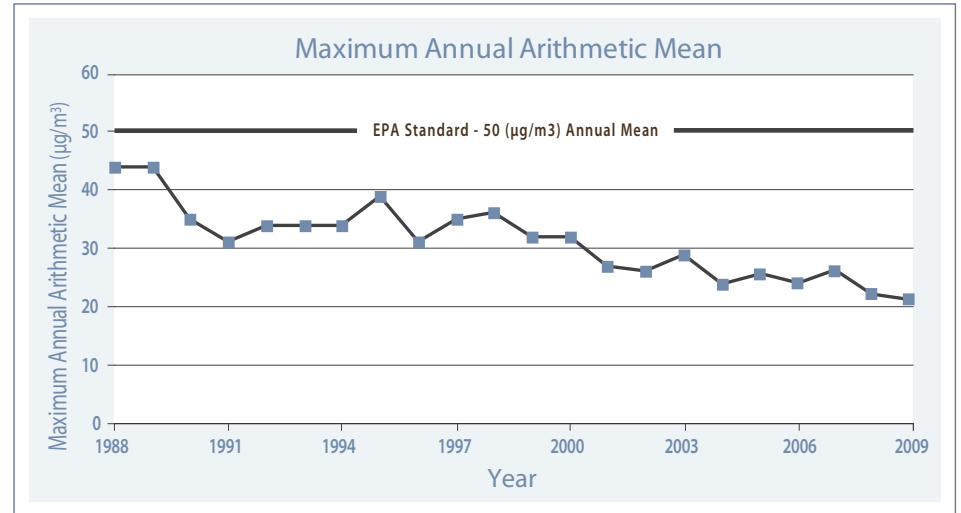
The Intermittent Monitoring Network

Sixteen air samplers at various sites in the four-county area intermittently collect airborne particles. These intermittent samplers monitor inhalable particulates (particulate matter) and heavy metals.



PM 10 Intermittent Monitor

Particulate Matter (PM₁₀)



* Annual Arithmetic Mean standard was revoked in 2006.

2009 PM₁₀ Results

[Results reported as micrograms per cubic meter of air (µg/m³)]

Site Code*	6	5	64	18	63
Site Name	Carthage	Lockland	Taff	Verity	Ohio Bell
#Samples	59	55	57	58	59
Geom. Mean	19	17	15	17	17
Arith. Mean	20	17	16	17	18
Max 24 hr.	50	66	33	39	36
Min. 24 hr.	7	7	7	6	4
Days > 150	0	0	0	0	0

* Please see page 5 for the monitoring site map and codes.

2009 PM2.5 Results

[Results reported as micrograms per cubic meter of air ($\mu\text{g}/\text{m}^3$)]

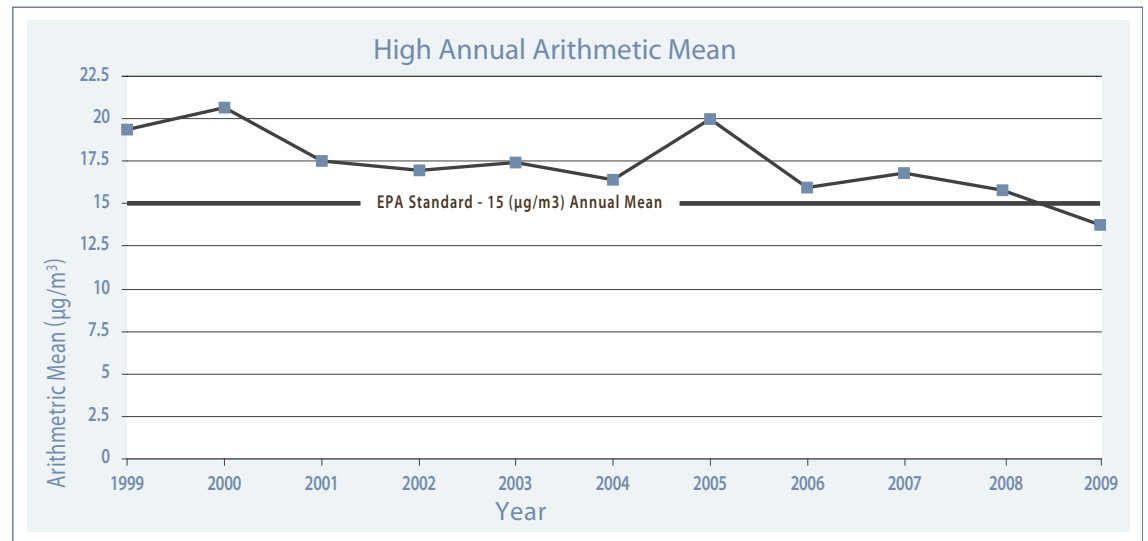
Site Code*	C	K	L	6	12	18	33	64	66
Site Name	Batavia	Sycamore	Lebanon	Carthage**	St. Bernard	Verity	Norwood	Taff	Lower Price Hill
#Samples	121	122	119	356	117	11.6	119	116	109
Annual Arith. Mean	11.0	12.1	11.7	13.4	13.4	12.6	13.0	12.7	13.7
Max 24 hr.	23.5	29.7	26.5	34.3	30.8	31.5	30.5	28.5	36.5
No. Days Above 35 ($\mu\text{g}/\text{m}^3$)	0	0	0	0	0	0x	0	0	1

* Please see page 5 for the monitoring site map and codes. ** Daily sampling; all other sites sample every third day.



PM 2.5 Intermittent Monitor

PM2.5 Every Third Day Monitoring



2009 Total Suspended Particulate Results

Total Suspended Particulate (TSP) emissions have decreased in Cincinnati since the 1960s. This reduction can be attributed to pollution control strategies and enforcement actions taken by HCDOES over the years. The closure of four municipal solid waste incinerators, elimination of hundreds of single-chambered incinerators at apartment buildings, commercial buildings, and schools, and the conversion of coal-fired boilers to natural gas have all contributed to the decline of particulate emissions in the Greater Cincinnati area. Samples from the Ohio Bell TSP monitor are analysed for the heavy metals. Results are on the graph below.

Results reported as micrograms per cubic meter of air ($\mu\text{g}/\text{m}^3$). Former annual standard: $75 \mu\text{g}/\text{m}^3$. 24-Hour Standard: $150 \mu\text{g}/\text{m}^3$. Currently, there is no standard for TSP.

2009 TSP Results

Site Code*	1	63
Site Name	Library	Ohio Bell
#Samples	39	59
Geom. Mean	30	33
Arith. Mean	21	36
Max. 24 hr.	64	77
Min. 24 hr.	14	8
No. Days Above 150 ($\mu\text{g}/\text{m}^3$)	0	0

* Please see page 5 for the monitoring site map and codes.

2009 Ohio Bell Metals Analysis

[Results reported in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$)]

Month	Beryllium	Chromium	Iron	Manganese	Nickel	Zinc	Lead	Arsenic	Cadmium
January	0.000027	0.00161	0.12000	0.01700	0.00069	0.02900	0.00330	0.00060	0.00021
February	0.000043	0.00204	0.26000	0.02800	0.00097	0.02900	0.00350	0.00100	0.00014
March	<0.000029	0.00281	0.31000	0.03000	0.00087	0.03700	0.00410	0.00069	0.00018
April	0.00008	0.00162	0.23000	0.03500	0.00071	0.02800	0.00350	0.00088	0.00011
May	0.000066	0.00112	0.14000	0.02600	0.00075	0.02600	0.00230	0.00078	0.00011
June	0.00003	0.0017	0.32000	0.02400	0.00093	0.02900	0.00520	0.00240	0.00016
July	<0.000057	0.00451	0.40000	0.04900	0.00103	0.04800	0.00570	0.001860	0.00020
August	0.000055	0.00314	0.30000	0.04200	0.00141	0.03900	0.00460	0.00130	0.00019
September	<0.000072	0.00239	0.26000	0.03400	0.00125	0.04100	0.00450	<0.00072	0.00014
October	<0.000056	0.00338	0.31000	0.04500	0.00089	0.04700	0.00670	0.00120	0.00017
November	0.00007	0.00397	0.55000	0.05400	0.00128	0.07100	0.00820	0.00250	0.00032
December	<0.000056	0.00492	0.37000	0.06800	0.00171	0.06800	0.00580	0.00010	0.00034

Air Toxics Monitoring Data

The Division collects air samples in canisters at three locations and analyzes the samples for 58 volatile organic compounds (USEPA Method TO-15). The canister sampler collects a 24-hour composite sample once every 12 days. The method detection limit for most compounds is 0.20 ppb. There were 31 possible sample events in 2009.

Refrigerants

The refrigerants trichlorofluoromethane (CFC-11), dichlorodifluoromethane (CFC-12), Freon 113 and Freon 114 have been discontinued commercially since the 1980s but are still present in the environment. Chlorodifluoromethane (CFC-22) can still be used until 2020. These compounds pose no health risks other than their potential to reduce the stratospheric ozone layer.

Mobile Source Compounds

Benzene, 1,3-butadiene, cyclohexane, ethylbenzene, toluene, xylenes and trimethylbenzenes are emitted to the atmosphere either as evaporated gasoline or as combustion products from gasoline or diesel engines. Benzene and 1,3-butadiene are known human carcinogens.

Hydrocarbons

Butane, pentane, hexane and heptane are present in the air because of the high usage of natural gas in residential and commercial buildings. These straight-chain hydrocarbons do not pose a health risk at these concentrations. Hexane is also used as an industrial solvent.

2009 Carthage Air Toxics Monitoring Data

COMPOUND	MAX ppb	MIN ppb	AVG ppb	% Detection
Acetone	10.60	1.16	4.99	100%
Dichlorodifluoromethane	0.94	0.30	0.52	100%
Toluene	9.95	0.26	1.87	100%
Benzene (A)	1.79	0.22	0.40	96%
Trichlorofluoromethane	0.35	0.21	0.26	96%
2-Butanone (MEK)	1.87	0.30	0.67	89%
Chloromethane	0.91	0.32	0.52	89%
n-Hexane	1.93	0.20	0.34	50%
Ethyl Acetate	10.80	0.36	1.15	46%
m&p-Xylene	2.40	0.45	0.79	43%
Carbon Disulfide	4.90	0.38	0.84	36%
Methylene Chloride (B)	0.45	0.22	0.30	36%
o-Xylene	0.73	0.20	0.51	36%
n-Heptane	1.54	0.22	0.35	29%
4-Methyl-2-Pentanone (MIBK)	5.40	0.21	0.46	25%
Ethylbenzene	0.82	0.36	0.45	25%
Naphthalene	3.02	0.51	0.60	21%
Vinyl Acetate	1.17	0.20	0.70	21%
4-Ethyltoluene	1.68	0.08	0.96	14%
Cyclohexane	0.74	0.20	0.54	14%
Propylene	1.20	0.38	0.71	14%
Styrene	0.53	0.21	0.38	14%
1,2,4-Trimethylbenzene	0.68	0.50	0.58	11%
Trichloroethene	0.77	0.20	0.24	11%
Tetrachloroethene	0.42	0.20	0.31	7%
1,2,4-Trichlorobenzene	0.57	0.57	0.57	4%
1,4-Dichlorobenzene	0.33	0.33	0.33	4%
Carbon Tetrachloride (B)	0.42	0.42	0.42	4%
Chloroform	0.34	0.34	0.34	4%

(A) Known Human Carcinogen

(B) Probable Human Carcinogen

2009 Lower Price Hill Air Toxics Monitoring Data

COMPOUND	MAX ppb	MIN ppb	AVG ppb	% Detection*
Acetone	17.30	0.83	4.99	100%
Toluene	6.11	0.26	1.03	100%
Dichlorodifluoromethane	0.70	0.30	0.50	96%
2-Butanone (MEK)	6.24	0.22	0.67	92%
Trichlorofluoromethane	0.44	0.19	0.28	85%
Benzene (A)	0.99	0.20	0.30	77%
Chloromethane	0.86	0.24	0.48	65%
n-Hexane	14.40	0.21	0.41	54%
Methylene Chloride (B)	24.40	0.21	0.45	50%
m&p-Xylene	1.56	0.41	0.59	31%
o-Xylene	0.52	0.23	0.32	27%
Vinyl Acetate	1.23	0.34	0.71	23%
Carbon Disulfide	1.96	0.22	0.60	19%
Ethylbenzene	0.73	0.20	0.34	19%
Cyclohexane	0.54	0.31	0.40	15%
Naphthalene	2.33	0.56	0.81	15%
1,2,4-Trimethylbenzene	5.26	0.56	1.00	12%
Ethyl Acetate	0.93	0.25	0.27	12%
Styrene	0.49	0.32	0.37	12%
4-Ethyltoluene	1.50	0.68	1.09	8%
4-Methyl-2-Pentanone (MIBK)	0.62	0.21	0.42	8%
Propylene	1.14	0.33	0.74	8%
Tetrachloroethene	0.60	0.44	0.52	8%
Trichloroethene	0.70	0.20	0.45	8%
1,2,4-Trichlorobenzene	0.40	0.40	0.40	4%
1,4-Dichlorobenzene	0.34	0.34	0.34	4%
2-Hexanone	0.26	0.26	0.26	4%
Carbon Tetrachloride (B)	0.42	0.42	0.42	4%
n-Heptane	0.31	0.31	0.31	4%

(A) Known Human Carcinogen
(B) Probable Human Carcinogen

* 26 samples collected.

2009 Winton Place Air Toxics Monitoring Data

COMPOUND	MAX ppb	MIN ppb	AVG ppb	% Detection*
Dichlorodifluoromethane	0.82	0.32	0.52	100%
Acetone	13.70	0.95	4.29	96%
Trichlorofluoromethane	0.39	0.23	0.26	96%
Chloromethane	0.91	0.32	0.52	92%
Toluene	3.71	0.21	0.50	84%
2-Butanone (MEK)	7.51	0.20	0.57	76%
Benzene (A)	0.83	0.20	0.29	72%
Methylene Chloride (B)	1.22	0.20	0.34	36%
Carbon Disulfide	2.72	0.20	0.51	32%
Vinyl Acetate	1.12	0.21	0.46	32%
m&p-Xylene	1.61	0.41	0.84	28%
n-Hexane	0.73	0.22	0.42	20%
o-Xylene	0.57	0.25	0.48	20%
1,2,4-Trimethylbenzene	1.32	0.54	0.62	16%
2-Hexanone	0.53	0.20	0.31	12%
4-Ethyltoluene	0.70	0.58	0.58	12%
Ethylbenzene	0.36	0.23	0.25	12%
4-Methyl-2-Pentanone (MIBK)	0.26	0.26	0.26	8%
Cyclohexane	0.31	0.21	0.26	8%
Propylene	1.09	0.63	0.86	8%
1,2,4-Trichlorobenzene	0.50	0.50	0.50	4%
Carbon Tetrachloride (B)	0.42	0.42	0.42	4%
Ethyl Acetate	0.63	0.63	0.63	4%
Naphthalene	0.98	0.98	0.98	4%
n-Heptane	0.34	0.34	0.34	4%
Styrene	0.49	0.49	0.49	4%

(A) Known Human Carcinogen
(B) Probable Human Carcinogen

* 25 samples collected.

This is a special project monitor specifically targeting three compounds of concern in the Addyston area: acrylonitrile, 1,3-butadiene, and styrene. There are no EPA ambient air standards for these three compounds. The canister sampler collects a 24-hour composite sample once every six (6) days at this site. The method detection limit is 0.10 ppb for most compounds. There were 61 possible sample events in 2009.

2009 Addyston Air Toxics Monitoring Data

COMPOUND	MAX ppb	MIN ppb	AVG ppb	% Detection*
Acetone	28.40	0.91	2.61	96%
Dichlorodifluoromethane	0.76	0.32	0.52	95%
Chloromethane	0.72	0.25	0.48	93%
Trichlorofluoromethane	0.37	0.21	0.26	93%
2-Butanone (MEK)	8.31	0.19	0.42	86%
Toluene	24.80	0.13	0.33	75%
Benzene (A)	0.49	0.16	0.25	52%
Methylene Chloride (B)	35.70	0.15	0.40	36%
Styrene	3.35	0.21	0.70	36%
n-Hexane	19.90	0.15	0.24	34%
Acrylonitrile (B)	10.90	0.69	1.45	29%
Carbon Disulfide	2.43	0.26	0.40	18%
Carbon Tetrachloride (B)	0.14	0.10	0.12	13%
Vinyl Acetate	0.59	0.15	0.27	13%
Cyclohexane	0.43	0.16	0.29	11%
Ethylbenzene	2.02	0.14	0.25	9%
m&p-Xylene	4.89	0.32	0.48	9%
o-Xylene	1.00	0.17	0.32	9%
Ethyl Acetate	0.44	0.19	0.30	5%
Trichloroethene	0.26	0.22	0.24	5%
1,2,4-Trimethylbenzene	3.62	0.38	2.00	4%
2-Hexanone	0.38	0.21	0.30	4%
4-Ethyltoluene	1.08	0.38	0.73	4%
Naphthalene	6.53	0.55	3.54	4%
Tetrachloroethene	0.74	0.20	0.47	4%
1,3,5-Trimethylbenzene	0.80	0.80	0.80	2%
1,3-Butadiene (A)	1.07	1.07	1.07	2%
1,4-Dichlorobenzene	0.30	0.30	0.30	2%
4-Methyl-2-Pentanone (MIBK)	0.77	0.77	0.77	2%
n-Heptane	0.19	0.19	0.19	2%
Propylene	1.14	1.14	1.14	2%
Tetrahydrofuran	0.60	0.60	0.60	2%

(A) Known Human Carcinogen
(B) Probable Human Carcinogen

* 56 samples collected.

Pollen and Mold

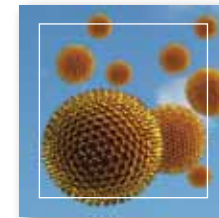
More than 35 million people suffer from allergies in the United States. An allergy is an abnormal reaction to a very small amount of a specific substance, very often mold or pollen. People react differently to allergens, but some of the common symptoms are runny nose, watery eyes and sneezing. The M&A staff measures pollen and mold levels on a daily basis and communicates these numbers to local media.

Tree and grass pollens are the most common Southwest Ohio allergens and can be almost impossible to escape. Oak, cedar, mulberry, maple, elm, poplar, box elder and grasses are the most prevalent sources of pollen in Southwest Ohio from late March through mid-July. Ragweed, the most allergenic plant of North America, blooms from August through October. Mold spores are also in full swing all summer and can even be found indoors year-round.

To learn more about pollen and mold in the Greater Cincinnati area, the AQMD produces a free “Living with Allergies” brochure. The brochure explains more about allergies, their causes and how to help ease the discomfort of them. For a free copy of the brochure, call 513-946-7747. To keep track of the daily pollen and mold counts, residents can call the Pollen and Mold Hotline at 513-946-7753 or visit www.hcdoes.org.

Pollen and Mold Chart

	Pollen Grains per cubic meter	Mold Spores per cubic meter
Low	0 - 20	0 - 500
Moderate	21 - 100	501 - 1500
High	101 - 1000	1501 - 5000
Very High	> 1000	> 5000

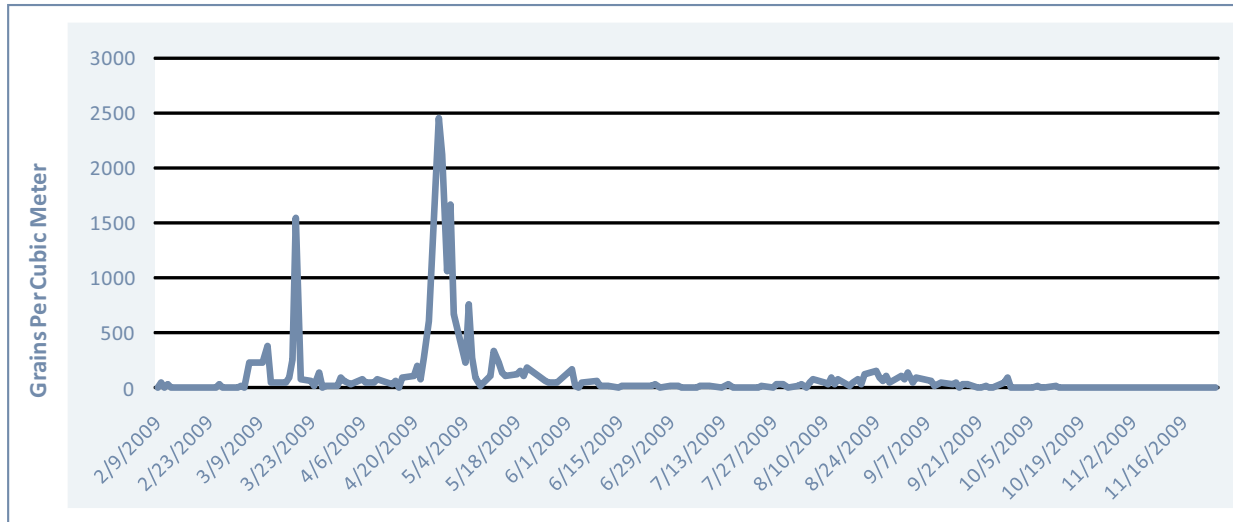


Microscopic Pollen Particles



Pollen and Mold Sampler

2009 Total Pollen Count



2009 Total Mold Count

