



AIR QUALITY DATA REPORT

2010

HAMILTON COUNTY
ENVIRONMENTAL
SERVICES

Hamilton County Department of Environmental Services

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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

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 Find us on Facebook at <http://www.facebook.com/pages/Hamilton-County-Department-of-Environmental-Services-HCDOES/129972691602>

Forward

The 2010 Edition of the Annual Data Report is produced by the Hamilton County Department of Environmental Services (HCDOES). This 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: to report the Air Quality Index, to compare levels of pollutants to emissions from sources, for health research, to validate air quality models, and to determine attainment of the National Ambient Air Quality Standards (NAAQS).

It is the responsibility of the Monitoring and Analysis Section to ensure the data collected from the ambient air monitors is quality assured and defensible. The hourly data generated from the continuous particulate matter and ozone analyzers is used to generate maps of the current index levels and is available for public review on our website: www.hcdoes.org. These maps display hourly concentrations associated with the appropriate air quality index color from the monitoring locations. This same

information is forwarded to U.S. E.P.A.'s website, www.arinow.gov, mapping the air quality on a national level. Daily air quality forecasts are available at both locations.

In 2010, new NAAQS were finalized by US EPA for Nitrogen and Sulfur Dioxides. Hourly standards were added in addition to the previous 24 hour and annual standards. The standards were lowered to be more protective of public health. Please refer to page 7 for a complete listing of the National Ambient Air Quality Standards.

Annually, ambient monitoring organizations are required by US EPA to prepare a monitoring plan listing the sites and the pollutant monitored at each site. A link to the HCDOES plan as well as the monitoring plan of all of Ohio is found in the lower left hand side of our website www.hcdoes.org.

As 2010 ended, the monitoring staff was preparing to implement new monitoring requirements for 2011. It is through their dedication and commitment, the monitoring

network operates smoothly and the data collected are quality, defensible data. In reviewing the report, if 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,



Anna Kelly, Monitoring and 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. Fifteen continuous monitors are located in Southwest Ohio.
- Intermittent monitors: Collect airborne particles at 24-hour intervals from twelve locations in the area. Air toxic monitoring data is also collected from intermittent monitors at four locations.

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}
yes*	24-hour average 35 µg/m ³ annual average 15 µg/m ³
yes	Ozone, O ₃ 8-hour 0.08 parts per million
no	8-hour 0.075 parts per million

*Monitoring Data shows attainment.

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.

Monitoring Site Map Key

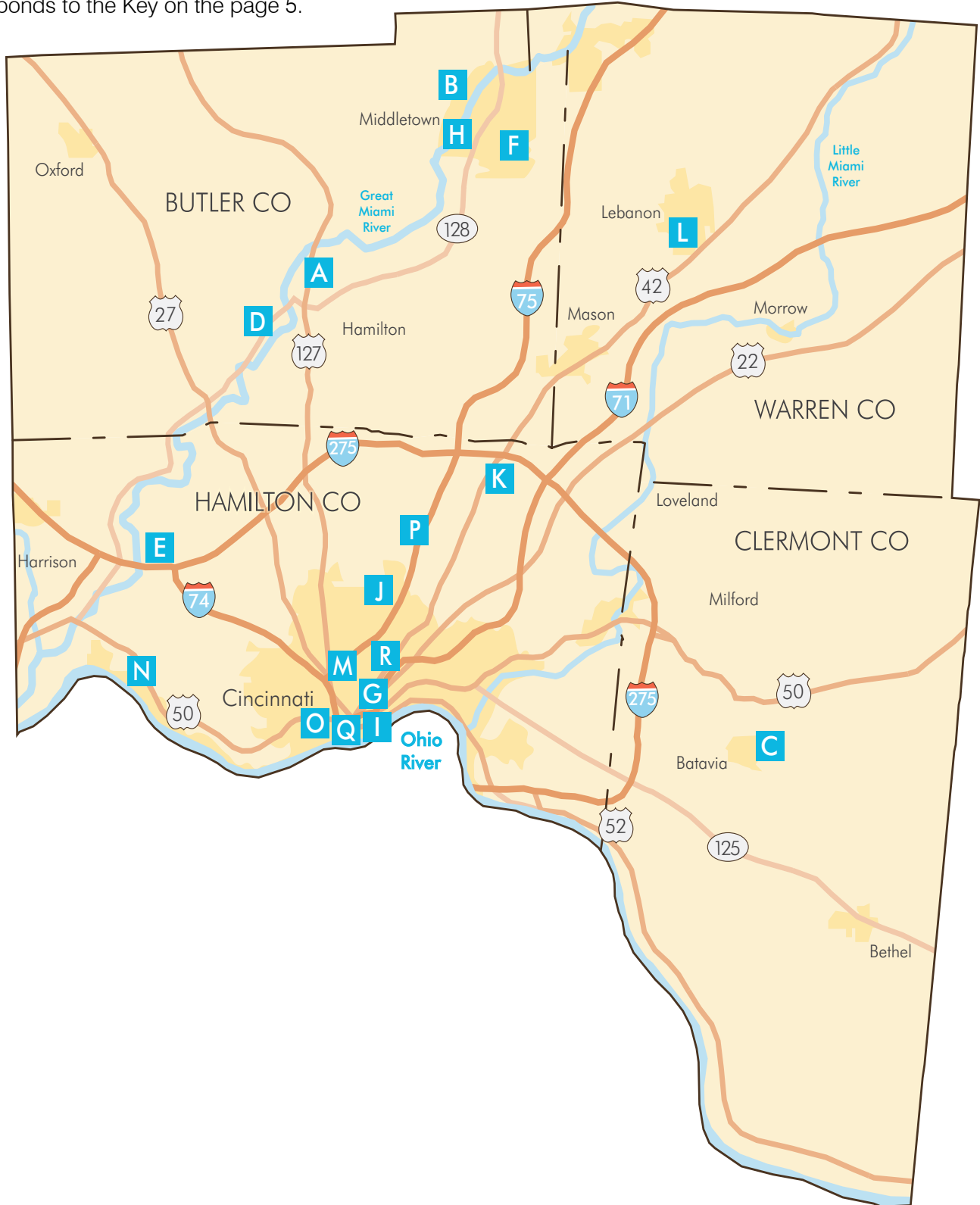
Corresponds to the Monitoring Site Map on the page 6.

Code	Location	O ₃	SO ₂	NO ₂	CO	PM10	PM2.5	Air Toxics	TSP	PM2.5 Speciation	Ammonia	Metals
A	Hamilton	X										
B	Middletown	X										
C	Batavia	X					X					
D	Sacred Heart School						X					
E	Colerain	X	X									
F	Verity School					X	X	X*				
G	Taft (HCDOES)	X		X		X	X			X	X	
H	Ohio Bell					X			X			X
I	Post Office				X							
J	Carthage					X	X	X				
K	Sycamore	X					X					
L	Lebanon	X					X					
M	Winton (Waldorf School)							X				
N	Addyston							X				
O	LPH						X	X				
P	Lockland					X						
Q	Library								X			
R	Norwood						X					

* HCDOES operates an air toxics monitor for Ohio EPA. To see data, click here: http://www.hcdoes.org/AQMD/pdf/07_AirToxicsReport_lr.pdf.

Monitoring Site Map

Corresponds to the Key on the page 5.



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 designated 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 0.075 parts per million, compared to the old standard of 0.08 parts per million. The US EPA is currently reconsidering the 8 hour ozone standard of 0.075 parts per million.

National Ambient Air Quality 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:	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:	0.100 parts per million hourly
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:	0.08 parts per million (max. 8-hour average based on highest three-year average of the fourth highest 8-hour concentration)
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:	75 parts per billion hourly
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

2008-2010 Fourth Highest 8-Hour Ozone Concentration Per Year**

Site Code*	C	E	G	A	L	B	K
Site Name	Batavia	Colerain	Taft	Hamilton	Lebanon	Middletown	Sycamore
2008	0.071	0.077	0.080	0.071	0.082	0.079	0.086
2009	0.069	0.065	0.074	0.073	0.077	0.076	0.072
2010	0.087	0.094	0.093	0.083	0.085	0.086	0.092
Average	0.075	0.076	0.080	0.078	0.082	0.082	0.082
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 and 6 for the monitoring site map and codes.

** An exceedance is any value over 0.075 ppm using a three-year average of the fourth highest 8-hour daily concentration.

2008-2010 PM 2.5 24-Hour Standard and PM 2.5 Annual Average

County	Butler	Clermont	Hamilton	Warren
PM 2.5 24-Hour Standard	30.0	24.0	31.0	25.0
PM 2.5 Annual Average	13.5	11.6	14.4	11.8

* An exceedance is any value over 75 ppb using a three-year average of the 98th percentile.

** An exceedance is any value over 15.0 ug/3 using a three-year average.

2010 Nitrogen Dioxide (NO₂)

Site Code*	Site Name	Standard	Annual Average	Meets Standard
G	Taft	0.053 ppm	0.015 ppm	Yes

2010 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	1.4 ppm	Yes

2010 Sulfur Dioxide (SO₂)

Site Code*	Site Name	Annual Average Standard	Annual Average	Meets Standard	24 hr. Standard	24 hr. High	Meets Standard
E	Middletown	0.03 ppm	0.003 ppm	Yes	0.14 ppm	0.012 ppm	Yes

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

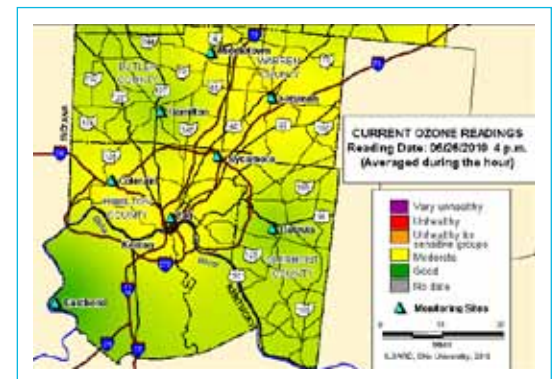
matter. The AQI is then reported in newspapers, local television and radio weather reports. AQI Hotline is 513-946-7753; and our website is www.hcdoes.org.

2010 Air Quality Index Data

Month	Low	High	Average
January	45	135	77
February	55	129	82
March	29	98	58
April	34	106	61
May	35	100	58
June	42	111	75
July	42	145	78
August	47	147	84
September	28	114	62
October	26	100	50
November	30	117	63
December	37	93	63

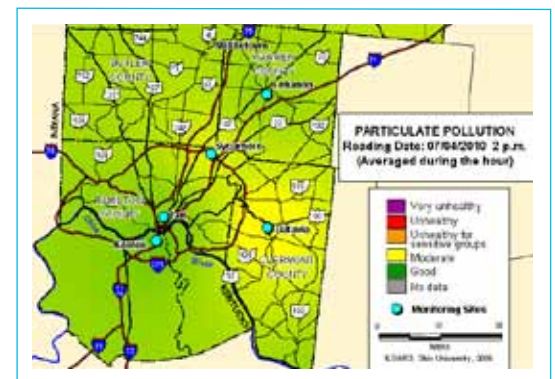


Ozone Readings Map



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

Particulate Pollution Map



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

Air Quality Index and Health Guide for Particulate Matter, Ozone and Nitrogen Dioxide

Air Quality	Particulate Matter	Ozone	Nitrogen Dioxide
Good 0-50	None	None	None
Moderate 51-100	Unusually sensitive people should consider limiting prolonged outdoor exertion.	Unusually sensitive people should consider limiting prolonged outdoor exertion.	None
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.	People with asthma should consider reducing exertion outdoors.
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.	Children, asthmatics and people with heart or lung disease should reduce exertion outdoors.
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.	Children, asthmatics and people with heart or lung disease should avoid outdoor exertion. Everyone else should reduce exertion outdoors.

2010 AQI Summary

AQI Level	Description	Number of Days
0-50	"Good"	89
51-100	"Moderate"	237
101-150	"Unhealthy for Sensitive Groups"	32
151-200	"Unhealthy"	0
201-300	"Very Unhealthy"	0

2010 Ozone

Ozone is measured between April 1 and October 31, 2010

2001-2010 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	
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
2010	0	0	0	0	0	0	0	0
Total	27	36	12	41	66	54	57	323

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 and 6 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	0.078	0.073	0.073	0.069	0.074	0.076	0.077
May	0.071	0.072	0.070	0.075	0.075	0.079	0.079
June	0.074	0.068	0.077	0.068	0.074	0.076	0.076
July	0.078	0.083	0.093	0.083	0.078	0.081	0.092
August	0.087	0.094	0.078	0.083	0.085	0.086	0.089
September	0.073	0.072	0.071	0.081	0.067	0.078	0.076
October	0.075	0.068	0.067	0.066	0.065	0.070	0.071
Highest	0.087	0.094	0.093	0.083	0.085	0.086	0.092

* Please see page 5 and 6 for the monitoring site map and codes.

2010 Ozone Monthly Averages ppm

Site Code*	C	E	G	A	L	B	K
Site Name	Batavia	Colerain	Taft	Hamilton	Lebanon	Middletown	Sycamore
April	0.042	0.031	0.036	0.032	0.038	0.038	0.038
May	0.037	0.029	0.032	0.031	0.034	0.035	0.035
June	0.038	0.028	0.034	0.032	0.036	0.033	0.037
July	0.038	0.027	0.034	0.033	0.033	0.034	0.036
August	0.040	0.029	0.039	0.034	0.032	0.036	0.039
September	0.035	0.028	0.031	0.030	0.030	0.032	0.033
October	0.031	0.022	0.026	0.023	0.023	0.026	0.026
Highest	0.037	0.028	0.033	0.031	0.032	0.033	0.035

* Please see page 5 and 6 for the monitoring site map and codes.

EnviroFlash

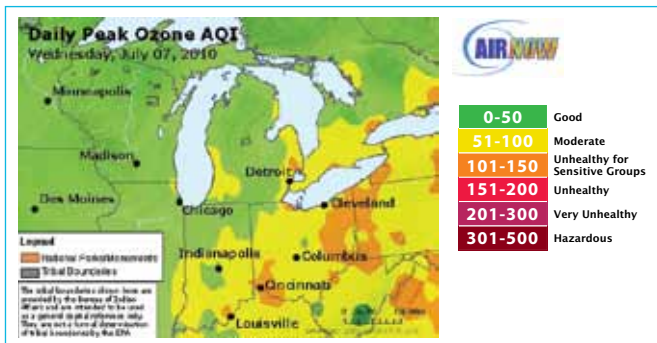


EnviroFlash is sponsored by the EPA with support from State and local air quality agencies.

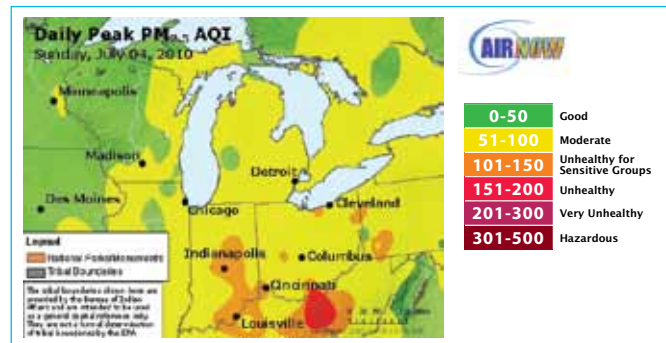
EnviroFlash provides air quality information such as forecasts and action day notifications via email for your area of interest. EnviroFlash gives you instant information that you can customize for your own needs, allowing you to protect the health of yourself and your family. Air quality information allows you to adjust your lifestyle when necessary on unhealthy air quality days. Up-to-date air quality information is especially helpful for those with sensitivities, such as the young, people with asthma, and the elderly. To sign up for EnviroFlash, go to www.cincinnati.enviroflash.info/signup.cfm.

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 – Daily Peak AQI



Ozone – Daily Peak Particulates PM2.5



The Continuous Monitoring Network

Fifteen air samplers continuously monitor ozone, nitrogen dioxide, carbon monoxide, sulfur 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

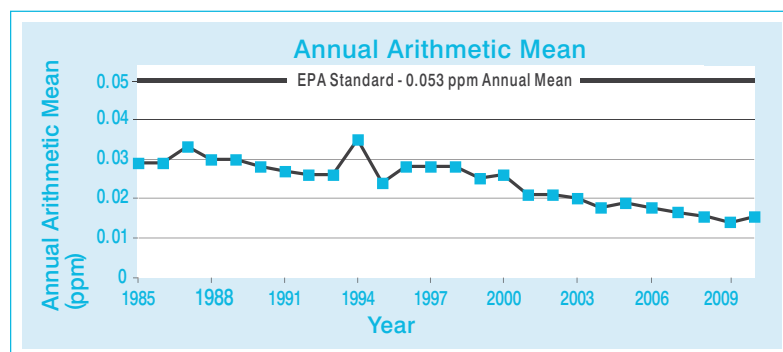
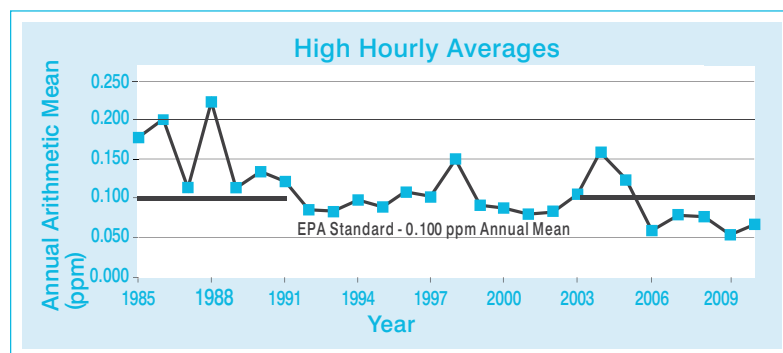
2010 Nitric Oxide (NO)

Site G: Taft

	Maximum 1-Hour ppm	Maximum 24-Hour ppm	Monthly Averages ppm
January	0.204	0.046	0.009
February	0.245	0.073	0.009
March	0.177	0.034	0.008
April	0.088	0.020	0.006
May	0.052	0.009	0.003
June	0.072	0.013	0.003
July	0.051	0.015	0.003
August	0.051	0.006	0.002
September	0.080	0.013	0.003
October	0.187	0.040	0.009
November	0.159	0.038	0.012
December	0.197	0.042	0.006
Highest	0.245	0.073	Annual Average 0.006

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

Nitrogen Dioxide (NO₂)



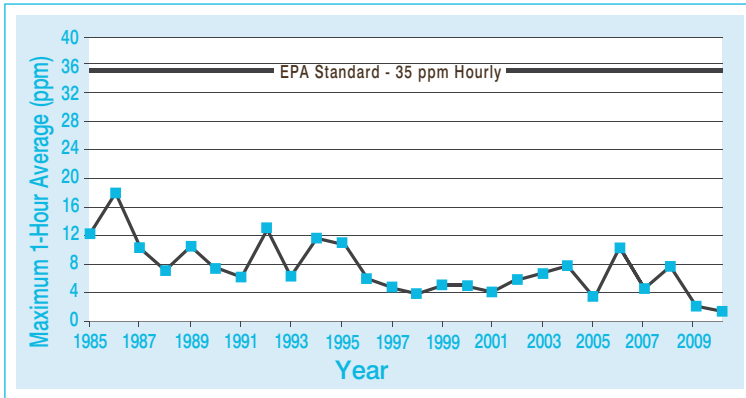
2010 Nitrogen Dioxide (NO₂)

Site G: Taft

	Maximum 1-Hour ppm	Maximum 24-Hour ppm	Monthly Averages ppm
January	0.042	0.029	0.016
February	0.067	0.034	0.019
March	0.050	0.030	0.018
April	0.051	0.027	0.015
May	0.044	0.018	0.012
June	0.052	0.018	0.012
July	0.060	0.027	0.013
August	0.039	0.021	0.012
September	0.045	0.022	0.013
October	0.054	0.028	0.015
November	0.069	0.038	0.018
December	0.048	0.027	0.015
Highest	0.069	0.038	Annual Average 0.015

* Please see page 5 and 6 for the monitoring site map and codes.

Carbon Monoxide (CO)



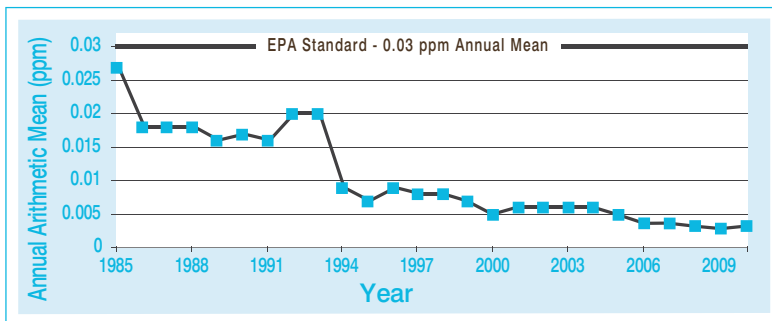
2010 Carbon Monoxide (CO)

Site I: Post Office

	Maximum 1-Hour ppm	Maximum 8-Hour ppm	Monthly Averages ppm
January	1.2	1.0	0.4
February	1.2	0.8	0.3
March	1.2	0.8	0.3
April	0.7	0.5	0.2
May	1.1	0.6	0.2
June	0.8	0.4	0.2
July	0.6	0.4	0.2
August	1.2	0.9	0.3
September	1.4	0.7	0.1
October	1.0	0.6	0.3
November	1.1	0.8	0.3
December	1.1	0.8	0.4
Highest	1.4	1.0	Annual Average 0.3

* Please see page 5 and 6 for the monitoring site map and codes.

Sulfur Dioxide (SO₂)



2010 Sulfur Dioxide (SO₂)

Site B: Middletown Site E: Colerain

	Maximum 1-Hour ppm	Maximum 24-Hour ppm	Monthly Averages ppm
January	0.031	0.012	0.004
February	0.025	0.015	0.009
March	0.019	0.033	0.005
April	0.030	0.008	0.002
May	0.040	0.008	0.002
June	0.066	0.011	0.002
July	0.087	0.012	0.002
August	0.074	0.014	0.002
September	0.065	0.007	0.002
October	0.058	0.013	0.002
November	0.111	0.016	0.002
December	0.049	0.014	0.002
Highest	0.031	0.111	0.012
	0.16	0.003	0.001

* Please see page 5 and 6 for the monitoring site map and codes.

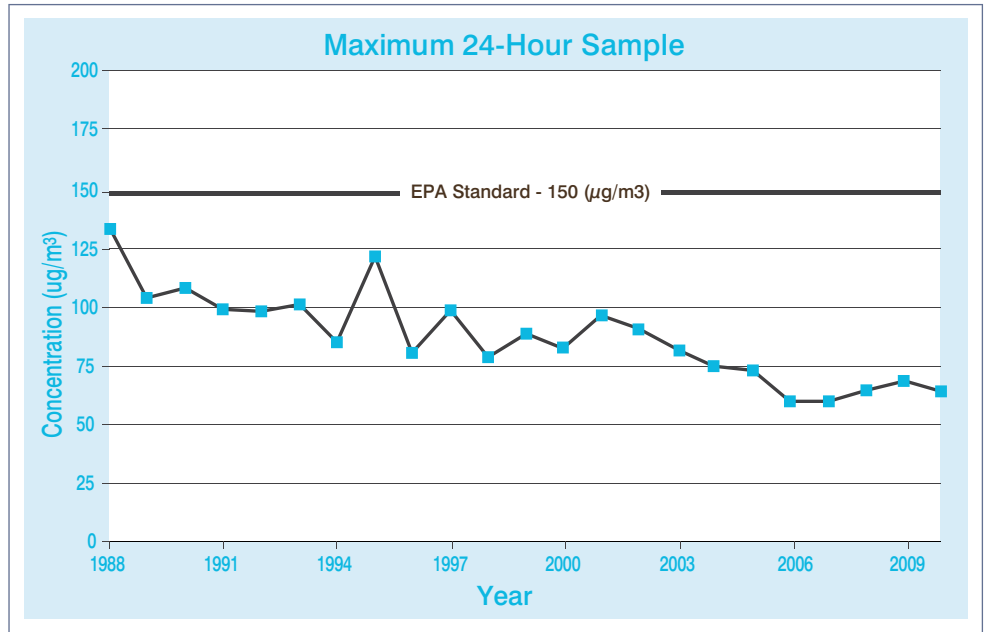
The Intermittent Monitoring Network

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)



2010 PM₁₀ Results

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

Site Code*	J	P	G	F	H
Site Name	Carthage	Lockland	Taft	Verity	Ohio Bell
#Samples	55	57	61	61	60
Arith. Mean	22	20	20	19	21
Max 24 hr.	61	47	45	43	48
Min. 24 hr.	6	7	8	6	7
Days > 150	0	0	0	0	0

* Please see page 5 and 6 for the monitoring site map and codes.

2010 PM2.5 Results

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

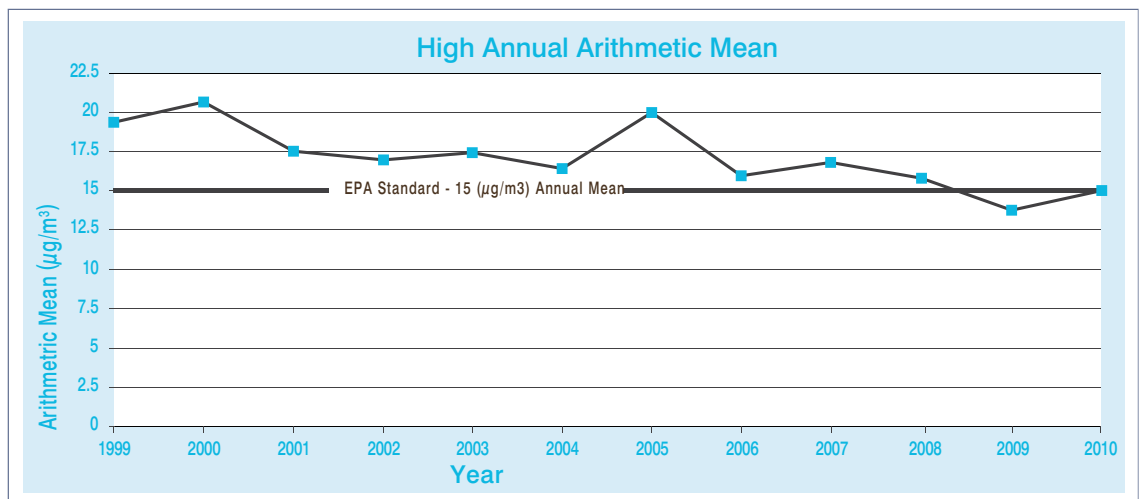
Site Code*	C	K	L	J	D	F	R	G	O
Site Name	Batavia	Sycamore	Lebanon	Carthage	Sacred Heart School	Verity	Norwood	Taft	Lower Price Hill
#Samples	114	109	118	348	114	121	117	110	121
Annual Arith. Mean	12.0	12.8	11.9	14.8	13.4	13.5	14.1	13.4	14.5
Max 24 hr.	28.1	35.3	35.8	42.5	34.8	36.7	32.8	32.2	45.4
No. Days Above 35 ($\mu\text{g}/\text{m}^3$)	0	0	1	3	0	0	0	0	2

* Please see page 5 and 6 for the monitoring site map and codes.



PM 2.5 Intermittent Monitor

PM2.5 Every Third Day Monitoring



2010 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 reported 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.

2010 TSP Results

Site Code*	Q	L
Site Name	Library	Ohio Bell
#Samples	54	58
Geom. Mean	34	34
Arith. Mean	33	37
Max. 24 hr.	88	96
Min. 24 hr.	10	8
No. Days Above 150 ($\mu\text{g}/\text{m}^3$)	0	0

* Please see page 5 and 6 for the monitoring site map and codes.

2010 Ohio Bell Metals Analysis

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

Month	Arsenic	Beryllium	Cadmium	Chromium	Lead	Nickel	Iron	Manganese	Zinc
January	0.00090	<0.000054	0.00021	0.00182	0.00665	0.00081	-	0.02600	0.07700
February	0.00075	<0.000054	0.00022	0.00444	0.00546	0.00134	-	0.04400	0.04800
March	0.00099	0.00007	0.00018	0.00198	0.00498	0.00077	-	0.03100	0.03600
April	0.00117	0.00007	0.00021	0.00370	0.00559	0.00084	-	0.05000	0.03600
May	0.00105	0.00006	0.00017	0.00369	0.00441	0.00148	-	0.03900	0.04800
June	0.00109	<0.000058	0.00019	0.00269	0.00372	0.00080	-	0.03400	0.03200
July	0.00152	0.00008	0.00024	0.00354	0.00599	0.00100	-	0.05700	0.05100
August	0.00101	<0.00003	0.00023	0.00379	0.00574	0.00100	-	0.04800	0.06200
September	0.00206	0.00007	0.00023	0.00539	0.00565	0.00094	-	0.05900	0.05000
October	0.00234	0.000012	0.00027	0.00458	0.00772	0.00109	-	0.09000	0.09000
November	0.00175	<0.00003	0.00022	0.00181	0.00410	0.00090	-	0.03300	0.03300
December	0.00106	0.00006	0.00025	0.00420	0.00474	0.00105	-	0.05200	0.04300

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 2010.

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.

2010 Carthage Air Toxics Monitoring Data - J

COMPOUND	MAX ppb	MIN ppb	AVG ppb	% Detection*
Acetone	12.30	1.74	5.30	100%
Dichlorodifluoromethane	0.88	0.24	0.40	100%
Toluene	16.90	0.29	1.31	96%
Benzene (A)	0.99	0.22	0.34	84%
Chloromethane	0.76	0.21	0.47	80%
Trichlorofluoromethane	0.33	0.19	0.24	80%
2-Butanone (MEK)	1.13	0.21	0.43	76%
n-Hexane	2.90	0.22	0.49	56%
m&p-Xylene	1.84	0.45	0.59	44%
Propylene	1.89	0.29	0.69	40%
Styrene	0.46	0.25	0.37	36%
o-Xylene	0.59	0.25	0.40	32%
Ethyl Acetate	2.27	0.27	0.49	28%
Ethylbenzene	0.57	0.21	0.34	28%
Cyclohexane	0.49	0.20	0.39	24%
1,2,4-Trimethylbenzene	0.82	0.40	0.66	20%
Methylene Chloride (B)	9.74	0.27	0.60	20%
n-Heptane	3.31	0.26	0.37	16%
1,2,4-Trichlorobenzene	1.22	0.35	0.78	8%
Tetrachloroethene	1.86	0.29	1.08	8%
Vinyl Acetate	0.53	0.26	0.39	8%
Carbon Disulfide	0.23	0.23	0.23	4%
Carbon Tetrachloride (B)	0.20	0.20	0.20	4%
Chloroform	0.24	0.24	0.24	4%

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

* 25 samples collected.

2010 Lower Price Hill Air Toxics Monitoring Data - O

COMPOUND	MAX ppb	MIN ppb	AVG ppb	% Detection*
Acetone	12.40	1.45	4.50	96%
Dichlorodifluoromethane	0.58	0.24	0.42	93%
Toluene	3.79	0.23	0.76	89%
Chloromethane	0.76	0.32	0.44	81%
Trichlorofluoromethane	7.44	0.19	0.25	81%
2-Butanone (MEK)	1.93	0.21	0.47	74%
Benzene (A)	0.49	0.20	0.34	63%
Propylene	1.26	0.29	0.86	48%
Methylene Chloride (B)	12.70	0.24	1.05	41%
m&p-Xylene	0.77	0.41	0.52	37%
n-Hexane	2.09	0.22	0.38	37%
1,2,4-Trimethylbenzene	1.48	0.24	0.28	19%
Ethylbenzene	0.32	0.20	0.25	19%
Styrene	0.42	0.28	0.35	19%
Carbon Disulfide	2.24	0.26	0.51	15%
o-Xylene	0.32	0.20	0.27	15%
Ethyl Acetate	0.52	0.24	0.33	11%
Trichloroethene	0.62	0.35	0.46	11%
Vinyl Acetate	0.39	0.20	0.34	11%
Cyclohexane	0.86	0.25	0.55	7%
Tetrahydrofuran	1.43	0.60	1.02	7%
1,3,5-Trimethylbenzene	0.68	0.68	0.68	4%
2-Hexanone	0.43	0.43	0.43	4%
4-Ethyltoluene	0.56	0.56	0.56	4%
Carbon Tetrachloride (B)	0.20	0.20	0.20	4%
Chloroform	0.24	0.24	0.24	4%
Tetrachloroethene	0.29	0.29	0.29	4%

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

* 25 samples collected.

2010 Winton Place Air Toxics Monitoring Data - M

COMPOUND	MAX ppb	MIN ppb	AVG ppb	% Detection*
Acetone	7.16	1.78	4.23	100%
Dichlorodifluoromethane	0.72	0.26	0.40	100%
Chloromethane	0.76	0.22	0.43	91%
Toluene	1.83	0.29	0.64	82%
Trichlorofluoromethane	0.28	0.19	0.23	82%
2-Butanone (MEK)	0.83	0.22	0.43	73%
Benzene (A)	0.43	0.21	0.35	64%
Propylene	1.14	0.22	0.69	50%
n-Hexane	1.90	0.21	0.31	45%
Methylene Chloride (B)	14.80	0.23	0.61	27%
m&p-Xylene	0.73	0.41	0.52	23%
Carbon Disulfide	1.55	0.20	0.30	18%
1,2,4-Trimethylbenzene	0.36	0.30	0.36	14%
1,3-Dichlorobenzene	0.67	0.20	0.34	14%
1,4-Dichlorobenzene	0.59	0.28	0.28	14%
4-Methyl-2-pentanone (MIBK)	0.50	0.21	0.36	9%
Ethylbenzene	0.32	0.22	0.27	9%
o-Xylene	0.32	0.22	0.27	9%
Vinyl Acetate	0.36	0.21	0.29	9%
1,1,1-Trichloroethane	0.60	0.60	0.60	5%
1,1-Dichloroethene	0.25	0.25	0.25	5%
1,2,4-Trichlorobenzene	0.42	0.42	0.42	5%
Carbon Tetrachloride (B)	0.27	0.27	0.27	5%
n-Heptane	0.21	0.21	0.21	5%
Styrene	0.23	0.23	0.23	5%
Trichloroethene	0.40	0.40	0.40	5%

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

* 22 samples collected.

2010 Addyston Air Toxics Monitoring Data - N

COMPOUND	MAX ppb	MIN ppb	AVG ppb	% Detection*
Acetone	28.70	0.20	3.73	86%
Dichlorodifluoromethane	0.64	0.24	0.48	84%
Toluene	1.51	0.16	0.37	84%
Chloromethane	0.72	0.15	0.41	80%
Trichlorofluoromethane	0.33	0.11	0.23	68%
2-Butanone (MEK)	4.94	0.11	0.65	64%
Benzene (A)	1.17	0.10	0.19	61%
Styrene	1.96	0.12	0.37	57%
Propylene	0.74	0.23	0.48	34%
Methylene Chloride (B)	15.70	0.11	0.74	30%
Carbon Tetrachloride (B)	0.36	0.11	0.19	30%
n-Hexane	5.47	0.13	0.68	27%
m&p-Xylene	1.31	0.23	0.34	23%
o-Xylene	0.61	0.14	0.18	20%
1,2,4-Trimethylbenzene	0.46	0.14	0.25	18%
Acrylonitrile (B)	3.94	0.26	0.66	18%
Ethylbenzene	0.34	0.12	0.22	16%
Tetrachloroethene	4.21	0.15	0.25	11%
Trichloroethene	0.73	0.14	0.20	11%
Carbon Disulfide	0.51	0.11	0.13	9%
1,3-Butadiene (A)	2.58	0.27	0.33	7%
Cyclohexane	0.89	0.10	0.54	7%
1,1-Dichloroethane	0.37	0.24	0.30	5%
Naphthalene	0.38	0.28	0.33	5%
Vinyl Acetate	0.39	0.27	0.33	5%
1,1,2,2-Tetrachloroethane	0.12	0.12	0.12	2%
1,1-Dichloroethene	0.11	0.11	0.11	2%
1,4-Dichlorobenzene	0.21	0.21	0.21	2%
Chloroform	0.13	0.13	0.13	2%
Ethyl Acetate	0.63	0.63	0.63	2%
Methyl-tert-butyl ether	0.12	0.12	0.12	2%

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 2010.

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

* 44 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

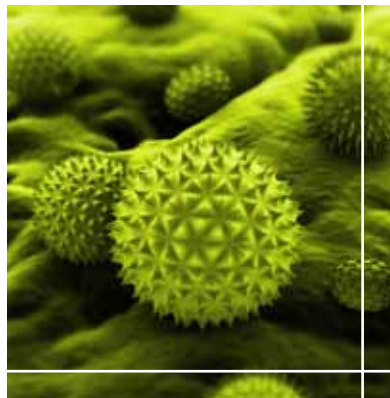
impossible to escape. Oak, cedar, mulberry, maple, elm, poplar, box elder and grasses are the most prevalent sources of pollen in Southwest Ohio from late March through mid-July. Ragweed, the most allergenic plant of North America, blooms from August through October. Mold spores are also in full swing 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 attributed to them. 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

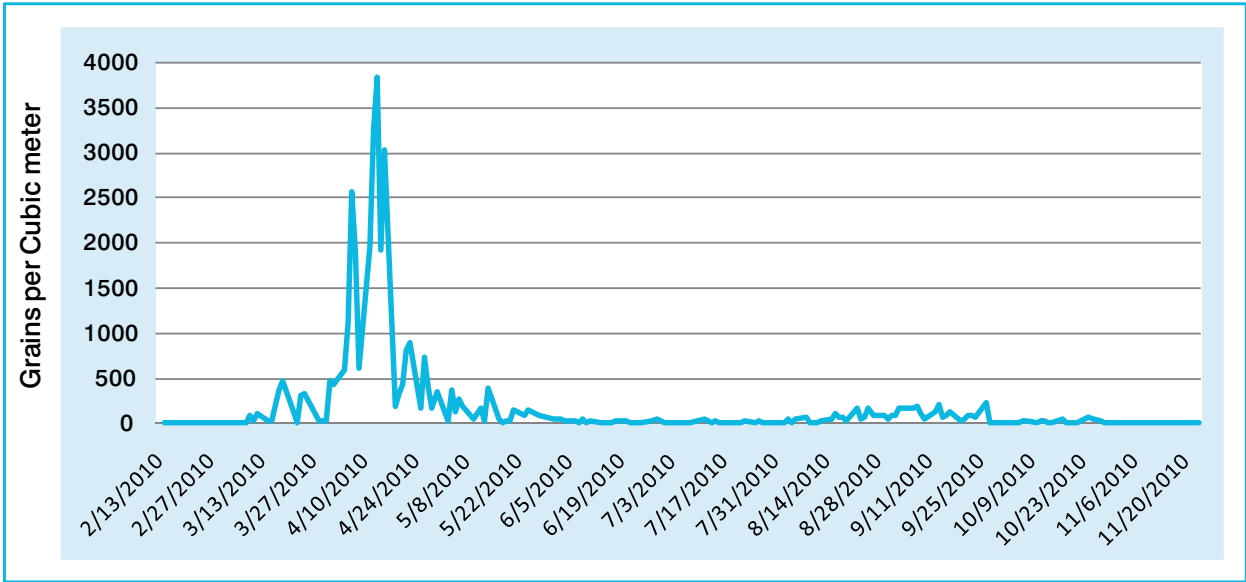


Microscopic Pollen Particles



Pollen and Mold Sampler

2010 Total Pollen Count



2010 Total Mold Count

