


An Ambient Air Quality Introduction and Review

June 6,2017

Environmental Justice Advisory Board

Agenda

- If I say something you don't understand or you want clarified. Please Ask Questions!
- If I don't know the answer to your question I will get an answer for you.
- Acronyms….I promise to try not to use them, but if I do please stop me and ask what that means.

Agenda

- Air Quality 101
- Bureau of Air Quality Mission and Organization
- Air Quality Partners
- National Ambient Air Quality Standards
- Pennsylvania's Monitoring Networks
- Air Monitoring Data
  - DEP's Website
  - EPA's AirNow website
- Air Quality Forecasting
- Attainment/ Non-Attainment Status

Air Quality 101

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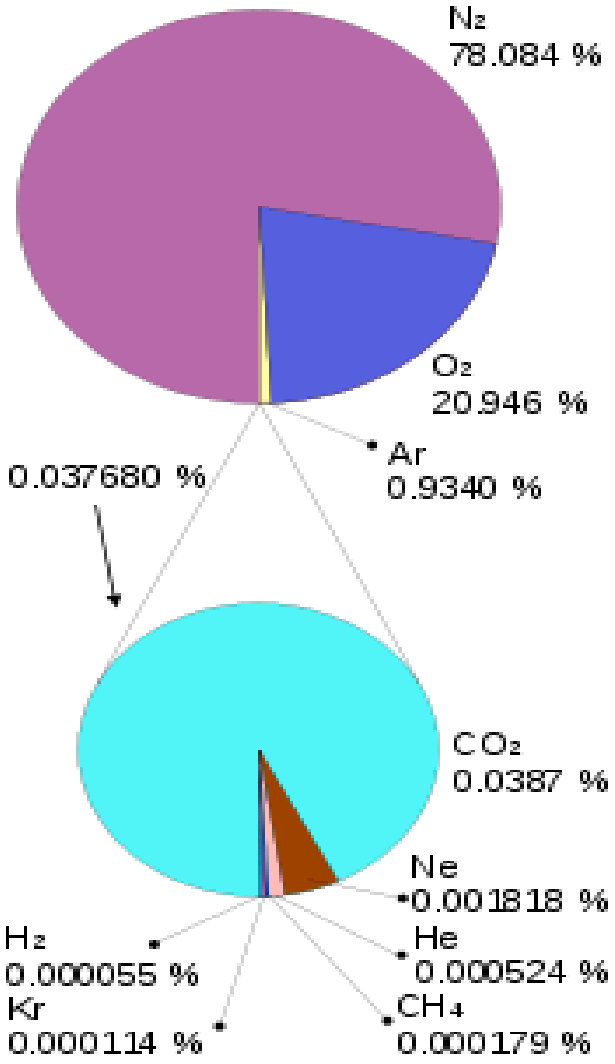
Air Quality 101



Clean Air Composition

N_2 – Nitrogen
O_2 – Oxygen
Ar – Argon
CO_2 – Carbon dioxide
Ne – Neon
He – Helium
CH_4 – Methane
Kr – Krypton
H_2 - Hydrogen

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Sources of Air Pollution

Natural

- Volcanoes
- Forest Fires
- Biological
- Wind-Blown Dust

Man-Made

- Burning of Fossil Fuels
- Manufacturing
- Chemical Use
- Mobile Sources
- And many more…

Air Quality 101

Clean Air

Polluted Air

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Air Quality 101

How does the Department manage Pennsylvania's Air Quality? The Department:

- Develops regulations to reduce air pollution
- Permits facilities
- Ensures these facilities are in compliance
- Conducts inventories of emissions from facilities
- Conducts air monitoring to gauge ambient air quality
- Prepares State Implementation Plans to bring non-compliant areas of the state into compliance

Air Quality 101

Criteria Pollutants: (also known as NAAQS pollutants)

1. Carbon Monoxide
2. Nitrogen Dioxide
3. Sulfur Dioxide
4. Ozone
5. Particulate Matter PM-10
6. Particulate Matter PM 2.5
7. Lead

Hazardous Air Pollutants: Benzene, Toluene, Xylene, Acetone, Formaldehyde, Arsenic, Chromium, etc.

Air Quality 101

- One part per hundred is generally represented by the percent (%) symbol and denotes one part per 100 parts. This is equivalent to one drop of water diluted into 5 milliliters (one spoonful).
- One part per million (ppm) denotes one part per 1,000,000 parts. This is equivalent to one drop of water diluted into 50 liters (roughly the fuel tank capacity of a compact car). (13 Gallons)
- One part per billion (ppb) denotes one part per 1,000,000,000 parts. This is equivalent to one drop of water diluted into 250 chemical drums (14000 gallons) or a small swimming pool.

Bureau of Air Quality Mission and Organization

Bureau Mission

The Bureau of Air Quality:

- Protects the air resources of this Commonwealth by implementing the provisions of the Clean Air Act (Federal Law), the Air Pollution Control Act (State Law) and regulations promulgated under the acts.
- Develops and implements programs and technical guidance for the abatement, control and prevention of air pollution.
- Implements planning, permitting, monitoring, and compliance programs.
- Establishes emission reduction strategies to reduce the emission of air pollutants including ozone, fine particulates and air toxics.
- Coordinates with federal, state, local and regional agencies to develop and implement cost-effective air control programs.

Bureau of Air Quality Organization

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Air Quality Partners

Air Quality Partners

- The Bureau of Air Quality is either currently partnering with or has partnered with these schools:
  - Pennsylvania State University(PSU)- Millersville University - Slippery Rock University - Swarthmore University - Gannon University - Bucknell University
- And these agencies:
  - PA Dept. of Health- Environmental Protection Agency- Agency for Toxics Substance Disease Registry(ATSDR)- Dept. of Conservation and Natural Resources(DCNR)- Philadelphia Air Management Services- Allegheny County Health Department…and many others.

National Ambient Air Quality Standards

NAAQS not Gnats

National Ambient Air Quality Standards

- A series of standards promulgated by EPA under the Clean Air Act for pollutants considered harmful to public health and the environment.
- Primary standards provide public health protection.
- Secondary standards provide public welfare protection, i.e. damage to animals, vegetation, buildings and visibility.
- Covers seven pollutants (CO, Pb, NO_2, O_3, PM_{10}, $PM_{2.5}$ and SO_2)

Pollutant [final rule cite]		Primary/ Secondary	Averaging Time	Level	Form
Carbon Monoxide [76 FR 54294, Aug 31, 2011]		primary	8 hours	9 ppm	Not to be exceeded more than once per year
			1 hour	35 ppm	
Lead [73 FR 66964, Nov 12, 2008]		primary and secondary	Rolling 3 month period	0.15 µg/m^3 (1)	Not to be exceeded
Nitrogen Dioxide [75 FR 6474, Feb 9, 2010] [61 FR 52852, Oct 8, 1996]		primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		primary and secondary	1 year	53 ppb (2)	Annual Mean
Ozone [80 FR 65292, Oct 26, 2015]		primary and secondary	8 hours	0.070 ppm (3)	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years
Particle Pollution Dec 14, 2012 [78 FR 3086, Jan 15, 2013]	$PM_{2.5}$	primary	1 year	12.0 µg/m^3	annual mean, averaged over 3 years
		secondary	1 year	15.0 µg/m^3	annual mean, averaged over 3 years
		primary and secondary	24 hours	35 µg/m^3	98th percentile, averaged over 3 years
	PM_{10}	primary and secondary	24 hours	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide [75 FR 35520, Jun 22, 2010] [38 FR 25678, Sep 14, 1973]		primary	1 hour	75 ppb (4)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year

(1) In areas designated nonattainment for the Pb standards prior to the promulgation of the current (2008) standards, and for which implementation plans to attain or maintain the current (2008) standards have not been submitted and approved, the previous standards (1.5 µg/m^3 as a calendar quarter average) also remain in effect.

(2) The level of the annual NO_2 standard is 0.053 ppm. It is shown here in terms of ppb for the purposes of clearer comparison to the 1-hour standard level.

(3) Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O_3 standards additionally remain in effect in some areas. Revocation of the previous (2008) O_3 standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.

(4) The previous SO_2 standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which implementation plans providing for attainment of the current (2010) standard have not been submitted and approved and which is designated nonattainment under the previous SO_2 standards or is not meeting the requirements of a SIP call under the previous SO_2 standards (40 CFR 50.4(3)). A SIP call is an EPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the require NAAQS.

Pennsylvania's Air Monitoring Networks

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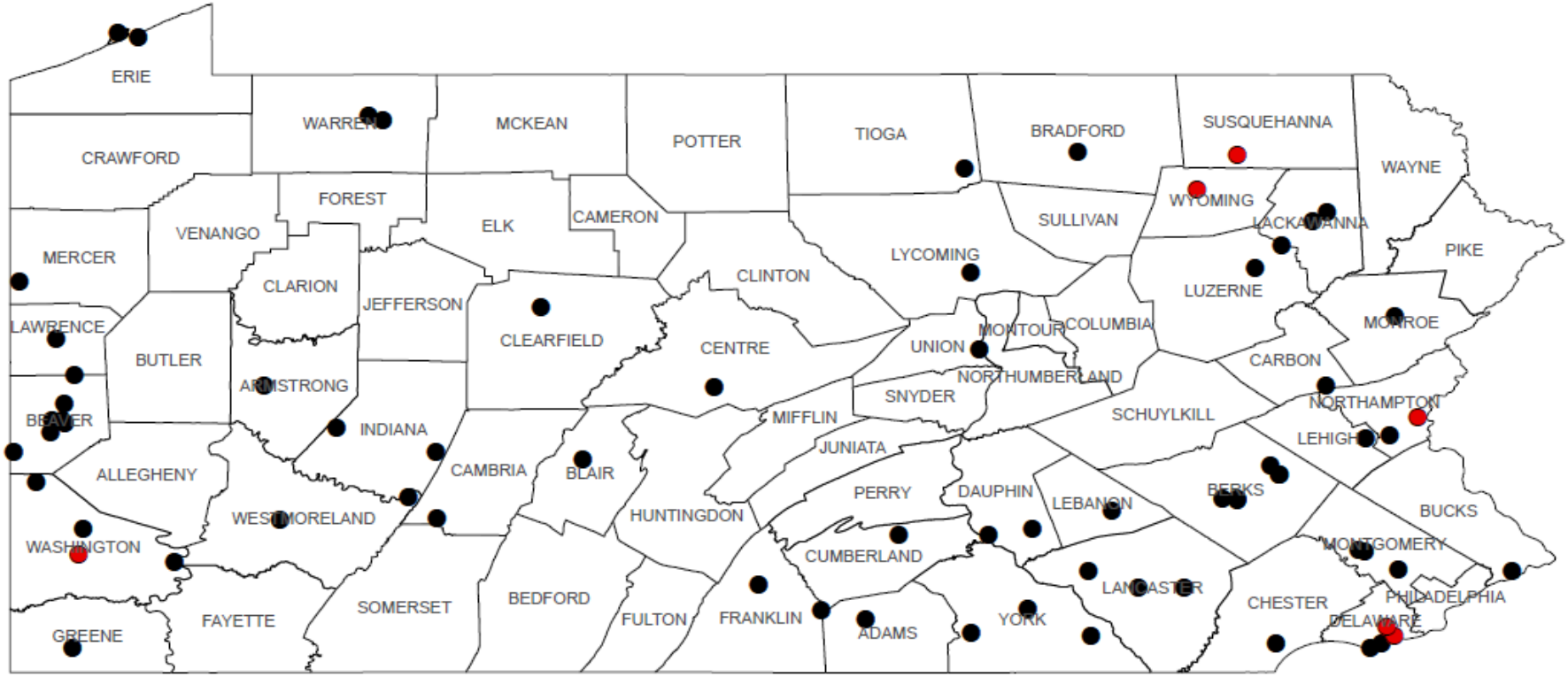
Pennsylvania's Air Monitoring Network



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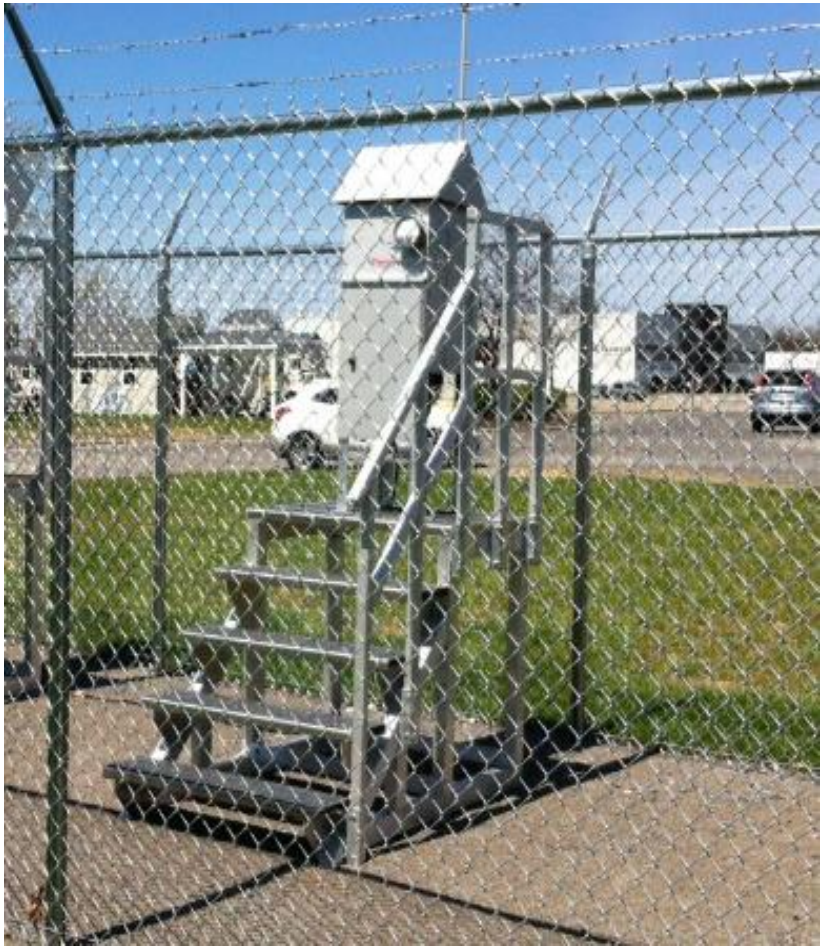
Pennsylvania's Air Monitoring Network



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Pennsylvania's Air Monitoring Network

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Pennsylvania's Air Monitoring Network

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Pennsylvania's Air Monitoring Network

Pennsylvania's comprehensive ambient air monitoring network currently consists of:

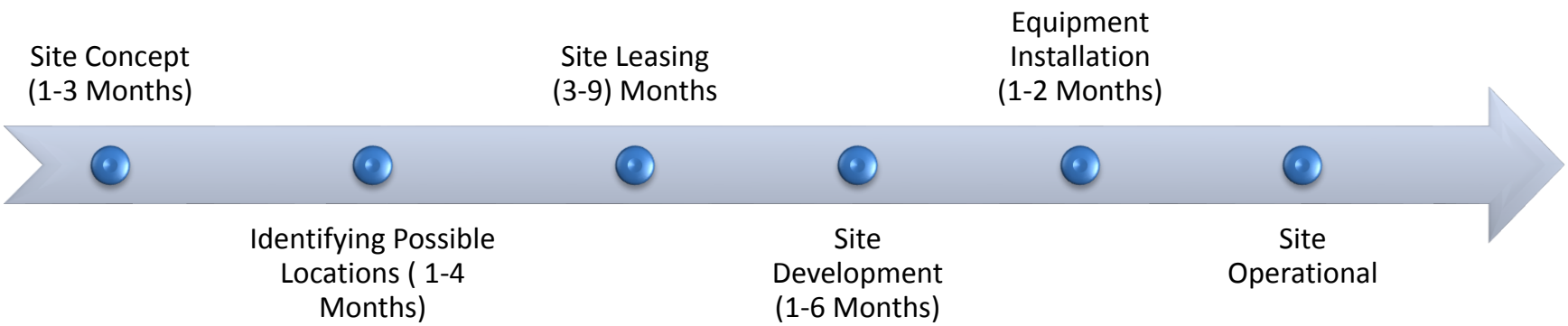
- 70 monitoring sites in 39 counties.
- 202 individual pieces of sampling equipment for all NAAQS and Air Toxics related pollutants.
- The Allegheny and Philadelphia County Health Departments operate air monitoring networks in their jurisdictions consisting of 20 and 10 monitoring sites, respectively.

Pennsylvania's Air Monitoring Network

- PA Monitoring Network Sampling Parameters:
  - Carbonyls: 4 Sites
  - Carbon Monoxide: 5 Sites
  - Hydrogen Sulfide: 2 Sites
  - Mercury: One Site
  - Nitrogen Dioxide: 13 Sites
  - Ozone: 42 Sites
  - Lead: 16 Sites
  - Particulate Matter (PM_{10}): 9 Sites
  - Particulate Matter ($PM_{2.5}$): 30 Sites
  - Sulfur Dioxide: 18 Sites
  - $PM_{2.5}$ Speciation: 9 Sites
  - TSP/Metals: 8 Sites
  - Volatile Organic Compounds: 18 Sites
  - Acid Rain Samplers, 17 sites maintained by contract with PSU
  - Mercury Deposition Samplers, 13 sites maintained by PSU Contract

Monitoring Site Installation Timeline

- Average monitoring site installation takes between 6 and 18 months from concept to data collection.
- New sites are proposed in DEP's Annual Network Plan (ANP) submitted to EPA.
  - The ANP is an 18-month proposal of modifications to the existing ambient air monitoring network.
  - The 2017 ANP will be published to the PA Bulletin soon and comments will be accepted here: http://www.ahs.dep.pa.gov/eComment/



Air Monitoring Data

Air Monitoring Data Availability

- The ambient air monitoring data is available to the general public via two websites:
  - DEP's website
    - http://www.ahs.dep.pa.gov/aq_apps/aadata/
  - EPA's AIRNOW system
    - https://www.airnow.gov/

Air Monitoring Data on DEP's Website

Be sure to update your Favorites, Bookmarks, or shortcuts.
This application is now at http://www.ahs.dep.pa.gov/aq_apps/aadata/.

Ambient Air Monitoring Data Reports

Latest Hourly Data	-	Updated 15 minutes after the hour
Daily Site Detail	-	View all 1 hour average data for a site by day
Monthly Parameter Detail	-	View a parameter for a site by month
Parameter Comparison	-	Compare 1-hour data for a parameter from all sites by day
Ranked Averages	-	Listing of maximum 1-hour, 8-hour, 24-hour data averages

Quarterly air quality concentration data for Lead, PM2.5, and PM10 obtained from monitors with discrete (manual-based) sample collection can be found on this page.

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Air Monitoring Data on DEP's Website

Ambient Air Monitoring Data Reports

Latest Pollution and Weather Data

Pennsylvania Department of Environmental Protection
Bureau of Air Quality

Latest Hourly Data Collected on 4/13/2016 9:00:00 AM

Site Name	1-Hr CO (ppm)	1-Hr SO2 (ppb)	1-Hr Ozone (ppb)	1-Hr PM-2.5 (ug/m3)	1-Hr PM-10 (ug/m3)	1-Hr NO (ppb)	1-Hr NO2 (ppb)	1-Hr NOX (ppb)	1-Hr H2S (ppb)
Allentown			28	10.5	6				
Altoona		0	39		5				
Arendtsville	0.0	0	37	2.5		0	0	1	
Beaver Falls			38	9.0	6	0	11	11	
Brighton Township		0	37						
Bristol		0	38						
Carlisle				3.6					
Charleroi		2	33	2.1		1	5	7	
Chester		2	35	9.1		4	4	10	
Easton 2		5	33						1
Erie	0.2	0	38		4	0	2	2	
Farrell			39	2.2					
Florence		1	36	8.2					
Freemansburg			35	8.9		1	4	6	
Greensburg			39	6.0					
Harrisburg			32	2.4					
Hershey									
Holbrook		0	34	12.7					
Hookstown		0	39						
Houston						1	3	5	
Johnstown	0.0	0	37	8.8	9				
Kittanning			36	3.4					
Kutztown			36						
Lancaster Downwind			35	4.0					
Lebanon			36	6.1					
Marcus Hook				0.8					
Methodist Hill			32						
Montoursville			37		4				
Moshannon			42						
New Castle		0	33						
New Garden - Airport			35	2.6					
Norristown		0	34						
Peckville			39						
Reading Airport		0	37	5.0					
Scranton	0.2		35	4.6		1	3	5	
State College		1	37	8.1		2	2	4	
Strongstown		3	40						
Swiftwater			39	3.0					
Tioga County			38	7.5		0	2	1	
Towanda			35	6.1		0	1	0	
Warren - Overlook		0							
Washington			36	0.5					
Wilkes-Barre		1	36		7				
York	0.1	0	33	0.0		1	2	3	
York Downwind			32						

Air Monitoring Data on DEP's Website

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Ambient Air Monitoring Data Reports

COPAMS Data Retrieval - Daily Site Detail

Data for site: Chester (CHESTER)

Date / Time	SO2 PPB	NO PPB	NO2 PPB	NOX PPB	OZONE PPB	SWS MPH	VWS MPH	VWD DEG	SR W/M2	AT DEGF	PM25 UG/M3
4/12/2016	2	0	0	1	41	8.4	8.3	193	0	58	3.5
4/12/2016 1:00:00 AM	2	0	0	1	40	10.4	10.3	194	0	57	5.8
4/12/2016 2:00:00 AM	2	1	0	2	39	10.8	10.7	197	0	58	2.9
4/12/2016 3:00:00 AM	2	1	1	4	40	11.9	11.8	201	0	58	1.3
4/12/2016 4:00:00 AM	2	3	3	7	36	9.9	9.9	199	0	57	6.6
4/12/2016 5:00:00 AM	3	1	3	5	34	7.9	7.7	220	1	58	7.1
4/12/2016 6:00:00 AM	2	3	11	15	27	8.4	8.3	219	13	57	10
4/12/2016 7:00:00 AM	2	1	3	5	32	5.8	5.7	205	40	56	7.5
4/12/2016 8:00:00 AM	3	3	12	16	24	5.2	3.7	262	43	56	5.6
4/12/2016 9:00:00 AM	2	1	6	8	32	5.9	5.5	327	64	55	8
4/12/2016 10:00:00 AM	2	4	6	12	27	9.1	8.7	355	72	49	3.8
4/12/2016 11:00:00 AM	2	7	6	15	27	7.9	7.7	349	426	51	-1.8
4/12/2016 12:00:00 PM	2	3	2	6	32	6.6	6.2	349	529	54	2.2
4/12/2016 1:00:00 PM	2	1	1	4	36	4.5	4	332	873	60	7

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Parameter Descriptions

Abbreviation	Description	Units
AT	Ambient Avg Temperature	Degrees Farenheit
NO	Nitric Oxide	Parts Per Billion
NO2	Nitrogen Dioxide	Parts Per Billion
NOX	Oxides Of Nitrogen	Parts Per Billion
OZONE	Ozone	Parts Per Billion
PM25	Pm2.5 - Local Conditions	micrograms per cubic meter
VWD	Resultant Direction	Degrees
VWS	Resultant Speed	miles per hour
SR	Solar Radiation	watts per square meter
SO2	Sulfur Dioxide	Parts Per Billion
SWS	Wind Speed	miles per hour

Air Monitoring Data on DEP's Website

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This application is now at http://www.ahs.dep.pa.gov/aq_apps/aadata/.

Ambient Air Monitoring Data Reports

COPAMS Data Retrieval - Monthly Parameter Detail

Site: Lancaster (LANCASTER)

Date: 4/2016

Parameter: Pm2.5 - Local Conditions

Units: UG/M3

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Avg	Min	Max	Hrs
1	6.6	5.7	5.3	6.5	9	3.6	5.6	7.5	12.6	3.5	6.6	4.5	4.9	3.5	4.4	5.4	3.6	6.9	6.9	8.7	6.5	4.5	7.9	4.7	6	3.5	12.6	24
2	5.4	4.9	3.4	1.8	3.1	0.6	1.7	9.6	5.2	4.7	7.1	7.5	7	8.2	7.1	3	3.6	4.4	3.1	3.7	1.9	5.8	4	1.4	4.5	0.6	9.6	24
3	3.1	2	1.6	2	0.2	0.4	0.6	0.5	5.4	5.4	1.9	1.2	0.9	5.5	2.8	2.5	8.2	7.3	1.1	2.6	2.2	2.5	7.6	11.7	3.3	0.2	11.7	24
4	13.2	10.9	15.5	7.7	7.5	0	9.4	13.2	32.4	47.1	10.8	14.1	9.6	10.4	21.6	0	4.2	22.3	2.5	10.3	7.3	3.3	3.5	2.2	11.6	0	47.1	24
5	2.1	4.2	2.8	4.1	4.6	2.6	3.7	3.3	2	1.1	1.6	1.8	0.2	5.7	0.5	0.4	0.3	0	0.5	3.8	2.8	4.2	6.6	10.4	2.9	0	10.4	24
6	12.6	13.8	16.8	17.6	16	15	14.2	19.2	11.7	6.3	5.4	6.2	8.5	4.5	8.2	6.5	4.6	4.7	3.6	6.6	5	9.4	8.8	12.8	9.9	3.6	19.2	24
7	23.9	16.3	18.9	11.3	1.9	3.8	4.9	7.7	5.8	2.9	0.3	2.1	4.2	7.4	4.1	4.3	2.4	3.8	3.2	3.6	1.1	0.5	5.3	0.1	5.8	0.1	23.9	24
8	0.3	1.7	2.7	2.9	2.2	1.7	2.6	2.4	4.3	1.2	4.5	5.9	6.4	3.8	5.1	10.1	1.8	0.5	7.7	13	9.2	8.7	9.7	11.7	5	0.3	13	24
9	12.9	14.4	17	18.8	19.2	10.4	8.5	8.8	10.2	13.6	12.2	8.6	7	6.8	8.2	3.5	0	2.9	11.2	3.2	3.7	4	2.5	0.5	8.7	0	19.2	24
10	0.9	3.7	3.3	2.8	5.2	4.1	4.1	5.1	4.3	1.8	6.1	8.9	8	6.8	3.2	5.1	4.7	7.4	7.7	7.1	6.3	5.5	5.4	4.3	5.1	0.9	8.9	24
11	1.7	0	2.8	6.6	6	6	8	6	3.3	7.7	5.1	5	3.3	3.6	2.8	15.6	18.7	8.2	5.8	7.7	6.7	6.5	3.8	6.8	6.2	0	18.7	24
12	4.2	8.3	9.1	8.6	7.4	5.4	9.1	10	10.8	4.2	1.1	6.1	10.3	7.2	9.5	6.5	3.2	4.2	2.4	4.4	6.4	6.8	4.3	3.1	6.4	1.1	10.8	24
13	5.3	0.7	1.3	3.6	2.5	2.8	5.1	9.5	4																3.9	0.7	9.5	9
Min	0.3	0	1.3	1.8	0.2	0	0.6	0.5	2	1.1	0.3	1.2	0.2	3.5	0.5	0	0	0	0.5	2.6	1.1	0.5	2.5	0.1		0		
Max	23.9	16.3	18.9	18.8	19.2	15	14.2	19.2	32.4	47.1	12.2	14.1	10.3	10.4	21.6	15.6	18.7	22.3	11.2	13	9.2	9.4	9.7	12.8			47.1	
Avg	7.1	6.7	7.7	7.3	6.5	4.3	6	7.9	8.6	8.3	5.2	6	5.9	6.1	6.5	5.2	4.6	6.1	4.6	6.2	4.9	5.1	5.8	5.8	6.2			
Days	13	13	13	13	13	13	13	13	13	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12				297

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Ambient Air Monitoring Data Reports

COPAMS Data Retrieval - Parameter Comparison

Date: 4/13/2016

Parameter: Ozone

Units: PPB

Site	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Max
Allentown	27	26	25	20	15	4	17	27	40	28	41														41
Altoona	23	24	22	20	16	5	2	22	36	39	40	42	45	46											46
Arendtsville	34	35	35	33	34	32	35	34	37	37	38	39	41	42											42
Beaver Falls	6	8	5	3	0	3	3	10	31	38	41	43	46	48											48
Brighton Township	35	35	32	33	31	23	23	28	33	37	39	42	44	46											46
Bristol	27	13	0	1	18	5	19	31	35	38	37	37	37	39											39
Charleroi	32	22	26	21	13	15	10	23	28	33	36	40	44	46											46
Chester	27	21	24	22	16	9	18	28	34	35	36	39	41	44											44
Easton 2	14	21	12	6	0	0	11	28	31	33	34	36	38	39											39
Erie	3	1	4	0	6	8	4	26	37	38	37	38	39	41											41
Farrell	31	22	13	17	22	25	21	26	35	39	41	43	43	45											45
Florence	32	23	23	18	18	15	14	25		36	42	40	39	39											42
Freemansburg	29	26	28	27	16	5	1	3	25	35	37	39	40	41											41
Greensburg	31	23	23	15	14	14	23	26	36	39	40	42	45	46											46
Harrisburg	27	28	30	29	21	12	15	25	30	32	34	35		41											41
Hershey	20	26	22	12	13	11	12	27	31			39	41	43											43
Holbrook	30	30				30	29	30	32	34	38	43	44	47											47
Hookstown	36	36	36	32	33	33	32	34	37	39	41	44	47	48											48
Johnstown	8	9	16	5	1	1	5	13	31	37	40	42	44	47											47
Kittanning	29	18	17	11	6	1	5	23	34	36	39	42	45	46											46
Kutztown	30	30	33	30	14	16	24	31	35	36	37	37	39	42											42
Lancaster	31	31	24	15	4	1	3	22	31	34	36	40	43	45											45
Lancaster Downwind	30	19	11	7	6	1	3	21	32	35	37	39	41	44											44
Lebanon	34	32	31	27	23	21	24	29	34	36	38	41	42	44											44
Methodist Hill	30	31	31	31	32	32	31	31	31	32	32	33	34	37											37
Montoursville	16	5	2	3	2	1	3	22	35	37	39	40	41	42											42
Moshannon	29	38	36	37	36	36	37	38	40	42	43	43	44	45											45
New Castle	17	16	11	11	2	0	2	11	28	33	35	39	41	43											43
New Garden - Airport	34	33	31	31	30	28	26	29	34	35	37	38	41	43											43
Norristown	30	25	22	20	15	4	12	30	35	34	36	40	42	42											42
Peckville	5	11	21	36	36	26	28	35	37	39	40	42	43	44											44
Reading Airport	31	29	24	13	1	1	6	29	35	37	39	40	42	43											43
Scranton	4	0	20	33	28	21	27	32	34	35	39	40	41	43											43
State College	13	28	26	24	24	5	10	27	32	37	40	42	42	45											45
Strongstown	36	35	32	37	36	37	35	35	40	40	42	45	48	49											49
Swiftwater	27	25	18	16	14	21	33	37	38	39	40	41	42	44											44
Tioga County	35	33	31	29	31	30	33	36	37	38	39	41	41	42											42
Towanda	15	15	12	12	17	16	16	31	33	35	37	39	40	42											42
Washington	23	12	5	3	1	1	5	23	29	36	37	38	40	41											41
Wilkes-Barre	1	0	0	25	33	27	25	33	35	36	39	41	42	44											44
York	28	24	14	2	0	0	4	28	32	33	36														36
York Downwind	30	31	29	28	25	24	26	30	30	32	34	37	39	41											41

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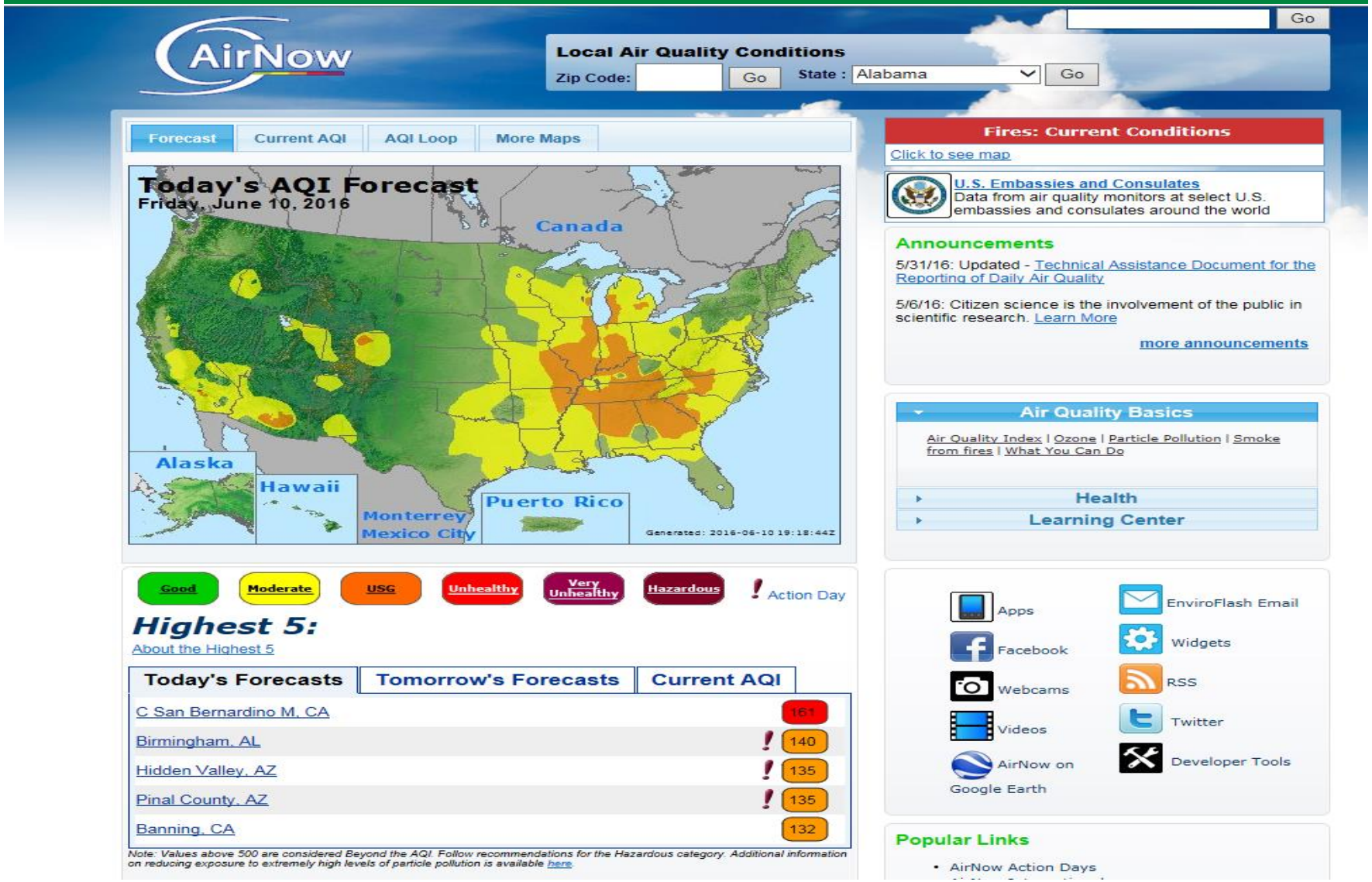
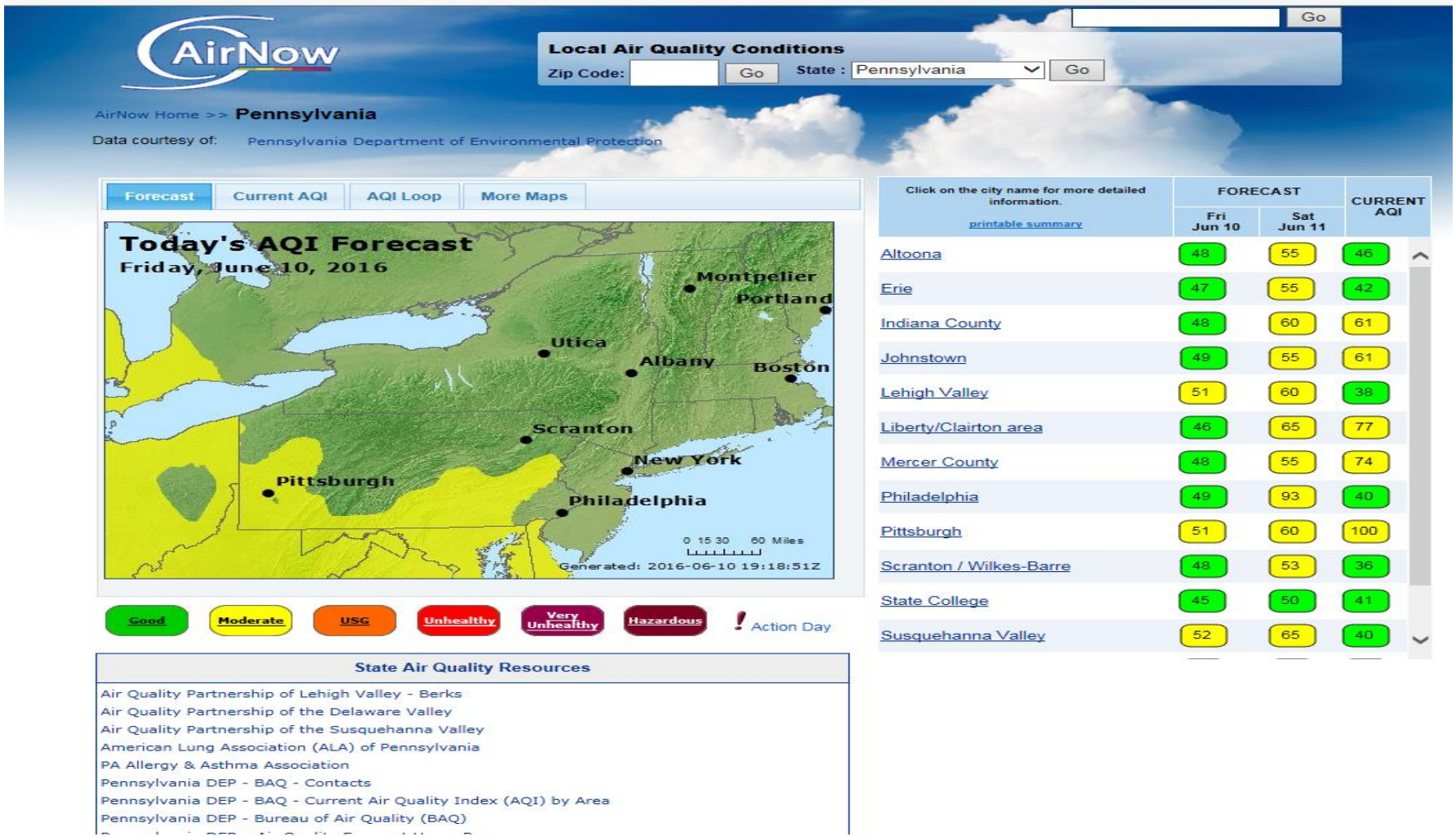


EPA's AirNow Website



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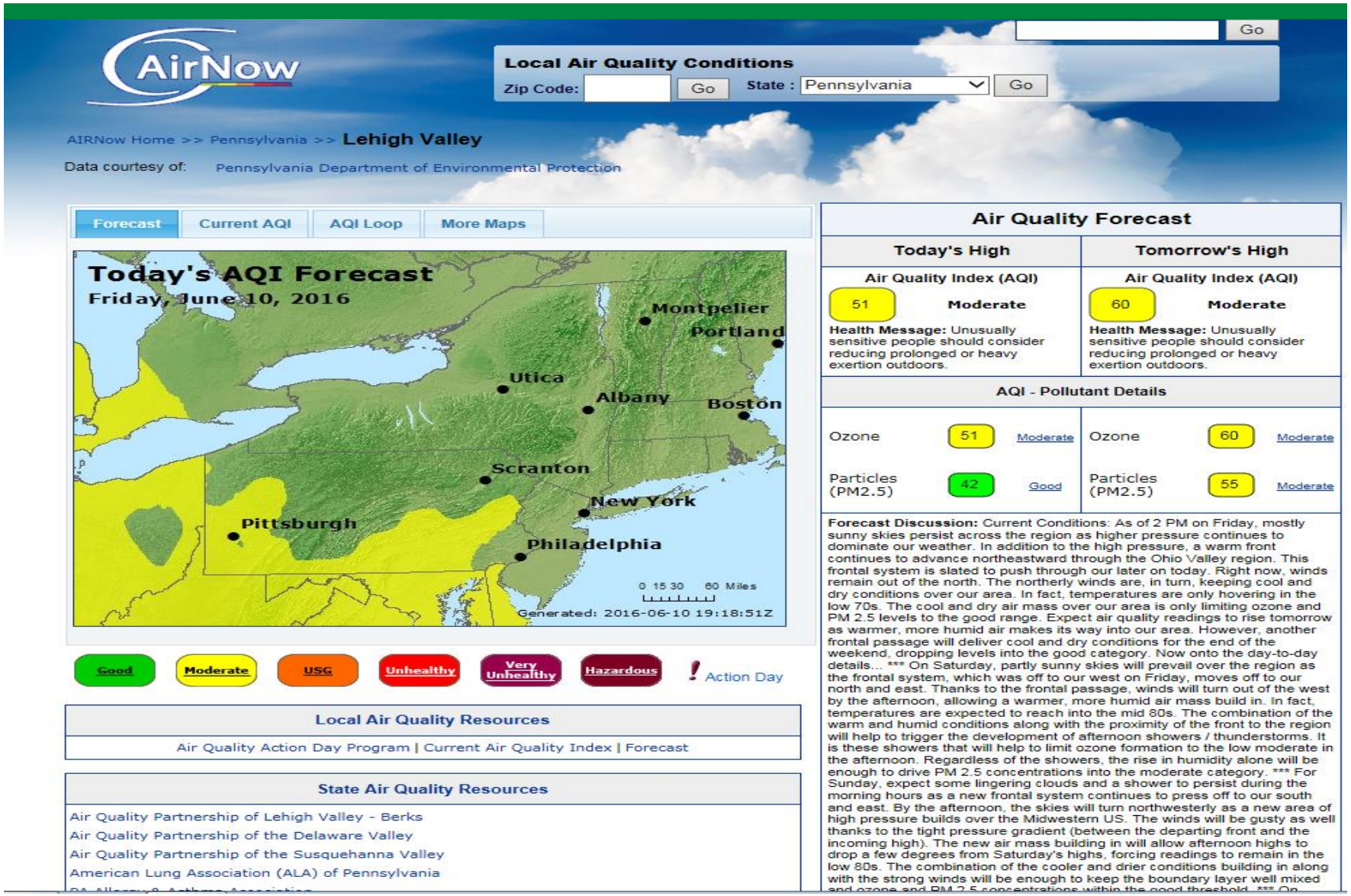

The Air Quality Index Scale

- U.S. Environmental Protection Agency's Air Quality Index (AQI) provides daily air quality reports on five criteria pollutants:
    - Carbon monoxide, nitrogen dioxide, particulate matter, ozone, sulfur dioxide
- The AQI scale normalizes the concentrations of five criteria pollutants into one, easy-to-use scale.
- The AQI is based on a color-coded system, outlining the severity of the health effects.
    - The higher the AQI value, the greater the air pollution levels and health concerns

AQI Reporting

AQI Range	EPA Color Scale	EPA Descriptor	Health Advisory
0 to 50	Green	**Good**	The air quality is good and you can engage in outdoor physical activity without health concerns.
51 to 100	Yellow	**Moderate**	At this level the air is probably safe for most people. However, some people are unusually sensitive and react to ozone in this range, especially at the higher levels (in the 80s and 90s). People with heart and lung diseases such as asthma, and children, are especially susceptible. People in these categories, or people who develop symptoms when they exercise at "yellow" ozone levels, should consider avoiding prolonged outdoor exertion during the late afternoon or early evening when the ozone is at its highest.
101 to 150	Orange	**Unhealthy for Sensitive Groups**	In this range the outdoor air is more likely to be unhealthy for more people. Children, people who are sensitive to ozone, and people with heart or lung disease should limit prolonged outdoor exertion during the afternoon or early evening when ozone levels are highest.
151 to 200	Red	**Unhealthy**	In this range even more people will be affected by ozone. Most people should restrict their outdoor exertion to morning or late evening hours when the ozone is low, to avoid high ozone exposures.
201 to 300	Purple	**Very Unhealthy**	Increasingly more people will be affected by ozone. Most people should restrict their outdoor exertion to morning or late evening hours when the ozone is low, to avoid high ozone exposures.
Over 300	Black	**Hazardous**	Everyone should avoid all outdoor exertion.

AQI Reporting

AQI Range	1hr Ozone (ppm)	8hr Ozone (ppm)	24hr PM-2.5 (µg/m³)	8hr Carbon Monoxide (ppm)	1hr Sulfur Dioxide (ppm)	24hr Sulfur Dioxide (ppm)	1hr Nitrogen Dioxide (ppm)	24hr PM-10 (µg/m³)
0 - 50	Not Defined	0 - 0.054	0 - 12.0	0 - 4.4	0 - 0.035	Not Defined	0 - 0.053	0 - 54
51 - 100	Not Defined	0.055 - 0.070	12.1 - 35.4	4.5 - 9.4	0.036 - 0.075	Not Defined	0.054 - 0.1	55 - 154
101 - 150	0.125 - 0.164	0.071 - 0.085	35.5 - 55.4	9.5 - 12.4	0.076 - 0.185	Not Defined	0.101 - 0.36	155 - 254
151 - 200	0.165 - 0.204	0.086 - 0.105	55.5 - 150.4	12.5 - 15.4	0.186 - 0.304	Not Defined	0.361 - 0.64	255 - 354
201 - 300	0.205 - 0.404	0.106 - 0.200	150.5 - 250.4	15.5 - 30.4	Not Defined	0.305 - 0.604	0.65 - 1.24	355 - 424
301 - 400	0.405 - 0.504	201 – Significant Harm Level	250.5 - 350.4	30.5 - 40.4	Not Defined	0.605 - 0.804	1.25 - 1.64	425 - 504
401 - 500	0.505 - 0.604		350.5 - 500.4	40.5 - 50.4	Not Defined	0.805 - 1.004	1.65 - 2.04	505 - 604
500+	Not Defined		500.5 - 999.9	Not Defined	Not Defined	Not Defined	Not Defined	605 - 4999

AQI Reporting

AQI Range	1hr Ozone (ppm)	8hr Ozone (ppm)	24hr PM-2.5 (µg/m³)	8hr Carbon Monoxide (ppm)	1hr Sulfur Dioxide (ppm)	24hr Sulfur Dioxide (ppm)	1hr Nitrogen Dioxide (ppm)	24hr PM-10 (µg/m³)
0 - 50	Not Defined	0 - 0.054	0 - 12.0	0 - 4.4	0 - 0.035	Not Defined	0 - 0.053	0 - 54
51 - 100	Not Defined	0.055 - 0.070	12.1 - 35.4	4.5 - 9.4	0.036 - 0.075	Not Defined	0.054 - 0.1	55 - 154
101 - 150	0.125 - 0.164	0.071 - 0.085	35.5 - 55.4	9.5 - 12.4	0.076 - 0.185	Not Defined	0.101 - 0.36	155 - 254
151 - 200	0.165 - 0.204	0.086 - 0.105	55.5 - 150.4	12.5 - 15.4	0.186 - 0.304	Not Defined	0.361 - 0.64	255 - 354
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500+	Not Defined		500.5 - 999.9	Not Defined	Not Defined	Not Defined	Not Defined	605 - 4999

Currently Forecast for Ozone and PM2.5

AQI Reporting

AQI Range	1hr Ozone (ppm)	8hr Ozone (ppm)	24hr PM-2.5 (µg/m³)	8hr Carbon Monoxide (ppm)	1hr Sulfur Dioxide (ppm)	24hr Sulfur Dioxide (ppm)	1hr Nitrogen Dioxide (ppm)	24hr PM-10 (µg/m³)
0 - 50	Not Defined	0 - 0.054	0 - 12.0	0 - 4.4	0 - 0.035	Not Defined	0 - 0.053	0 - 54
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500+	Not Defined		500.5 - 999.9	Not Defined	Not Defined	Not Defined	Not Defined	605 - 4999

Forecast <u>Action Days</u> when we beleive conditions will reach Code ORANGE or higher

Air Quality Forecasting in PA

- DEP provides daily air quality forecasts for 28 areas across the commonwealth:
  - Year-round forecasting is provided for the following areas:
    - Lehigh Valley / Berks Area – Berks, Lehigh and Northampton counties
    - Philadelphia Area – Bucks, Chester, Delaware and Montgomery counties
    - Pittsburgh Area – Allegheny, Armstrong, Beaver, Butler, Fayette, Washington, and Westmoreland counties
    - Susquehanna Valley area – Cumberland, Dauphin, Lancaster, Lebanon, and York counties
- Forecasts for the Greater Philadelphia Area are completed by Pennsylvania State University.

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Air Quality Forecasting in PA

- DEP provides summer-only air quality forecasts for eight additional areas:
  - Altoona - Blair County
  - Erie – Erie County
  - Indiana County
  - Johnstown – Cambria County
  - Mercer County
  - Scranton / Wilkes-Barre – Lackawanna and Luzerne Counties
  - State College – Centre County
  - Williamsport – Lycoming County
- The forecasts are usually issued by 3 PM daily, giving insight about what weather factors cause the forecasted air quality conditions.
- Sign up for the forecast at:
  - http://www.enviroflash.info

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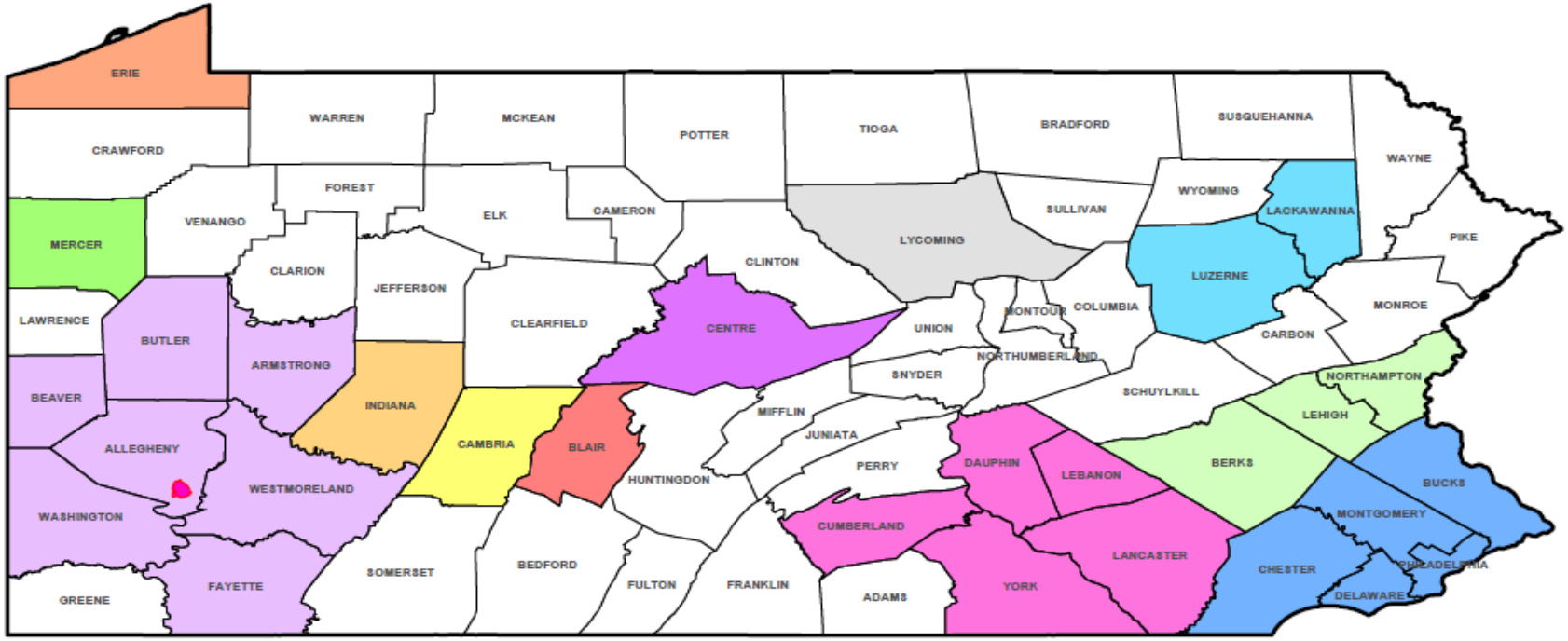
Air Quality Forecast Areas in PA



Air Quality Forecast Areas

Altoona	Johnstown	Scranton / Wilkes-Barre	State College	Liberty-Clairton
Erie	Lehigh Valley	Southeast (Philadelphia Area)	Susquehanna Valley	Williamsport
Indiana County	Mercer County	Southwest (Pittsburgh Area)		

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EnviroFlash Forecast

A(n) Air Quality Action Day has been declared for Susquehanna Valley, PA, on Saturday, Feb 8

Tomorrow's Forecast

Saturday, Feb 8:	110 AQI	Unhealthy for Sensitive Groups	Orange	Particle Pollution (2.5 microns)

Extended Forecast

Sunday, Feb 9:	100 AQI	Moderate	Yellow	Particle Pollution (2.5 microns)
Monday, Feb 10:	65 AQI	Moderate	Yellow	Particle Pollution (2.5 microns)
Tuesday, Feb 11:	75 AQI	Moderate	Yellow	Particle Pollution (2.5 microns)

Current Conditions as of 1 PM on Friday: Ample sunshine under blue skies is always a welcome sight, but temperatures once again remain several degrees below normal this afternoon. High pressure will continue to build and move overhead tonight and into the day on Saturday. A few weak disturbances will swing through the region over the course of the weekend, with little to no precipitation associated with them. *** Saturday's Forecast: Mostly clear skies into the overnight and early morning hours will allow temperatures to fall into at least the teens once again tonight. With high pressure continuing to build and shift to more overhead on Saturday, winds will become light to calm for a good portion of the day. There have been a few occasions in the past that I can remember where an icy surface on snow cover under high pressure with calm winds near the surface has allowed PM 2.5 levels to reach Code Orange levels. Conditions appear favorable for this to occur once again on Saturday. A weak disturbance passing through the region may create a brief period of snow showers. This system will not have much moisture to work with, so the less snow that develops the better the chance that PM 2.5 levels do not fall enough to avoid Code Orange for the day. Highs on Saturday will approach the 30 degree mark. *** Sunday's Forecast: Another weak disturbance will swing through the region during the overnight hours with little to no precipitation expected once again. Winds will remain light to calm through at least the early afternoon before becoming a southwesterly breeze as we move to the backside of the area of high pressure. PM 2.5 levels will remain elevated, but we will need to see if any of the weak disturbances do impact concentrations on Saturday before making a final call. Also, the southwesterly flow running over the icy snow cover may generate misty/foggy conditions as temperatures climb into the mid 30s. As a result of this uncertainty, this forecast will be updated Saturday afternoon with at least high moderate concentrations expected. *** Extended Forecast: As one area of high pressure moves out, another will develop from the west. Winds will shift from southwesterly Sunday afternoon to more northwesterly during the early hours of Monday. This northwesterly wind should become breezy enough to help increase vertical mixing around the region. PM 2.5 concentrations should fall back into the moderate range.

Concentrations may begin to approach the high end of the moderate range to Code Orange on Tuesday and especially Wednesday next week. Winds will become light to calm once again as this next area of high pressure moves in overhead. Some warming aloft on Wednesday would produce favorable conditions for rising concentrations. The next potential storm system to impact the region may occur on Wednesday/Thursday, but there is much uncertainty at this time as to where it will track. --- Roble

Here are some Air Quality Action Day tips you can follow to help reduce pollution:

Days when ozone levels are expected to be high:

* Conserve electricity and set your air conditioner at a higher temperature.
* Choose a cleaner commute—share a ride to work or use public transportation. Bicycle or walk to errands when possible.
* Refuel cars and trucks after dusk.
* Combine errands and reduce trips.
* Limit engine idling.
* Use household, workshop, and garden chemicals in ways that keep evaporation to a minimum, or try to delay using them when poor air quality is forecast.

Days when particle pollution levels are expected to be high:

* Reduce or eliminate fireplace and wood stove use.
* Avoid using gas-powered lawn and garden equipment.
* Avoid burning leaves, trash and other materials.

This forecast is brought to you by the Pennsylvania Department of Environmental Protection (PA DEP) and the Air Quality Partnership of the Susquehanna Valley.

* For more information on the health effects of PM 2.5 and ozone, visit the EPA Airnow website.
* To see the current forecast and monitoring information for the Southwest PA Region, visit us online at the PA DEP Forecast and Monitoring Site.
* To find out more information about the Air Quality Partnership of the Susquehanna Valley, visit the AQP of SV Website.

Do not reply directly to this email. If you want more information on the air quality forecast, or other aspects of the local air quality program, please contact your local air quality agency using the information above. For more information on the U.S. EPA's AIRNow Program, visit http://www.airnow.gov.

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Pennsylvania's Attainment/ Non-Attainment Status

Particulate Matter (PM2.5)

2012 PM Standard

Annual Standard: 12 µg/m ^{3}

- Nonattainment: Allegheny, Delaware, and Lebanon.

2006 PM Standard

Annual Standard: 15 µg/m ^{3}

- Nonattainment: Allegheny Partial County (Liberty-Clairton)

Nitrogen Dioxide (NO2)

2010 NO_2 Standard

1-hour NO_2 Standard: 0.10ppm (100 ppb)

Annual Primary and Secondary standard: 0.053 ppm

- All areas in Pennsylvania designated as attainment for these standards. (77 FR 9532 on February 12, 2012).

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Sulfur Dioxide (SO2)

2010 SO_2 Standard

SO_2 1-hour standard: 0.075 ppm (75 ppb)

Nonattainment: Allegheny, Beaver, Indiana and Warren Counties.

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Lead(Pb)

2008 Lead Standard

3 Month Rolling Average: 0.15 µg/m ^{3}

Original Designations

- Nonattainment: Lower Beaver Valley, Lyons and North Reading.

Current attainment status

- Maintenance – Lower Beaver Valley (April 25, 2016)
- Maintenance – North Reading (April 8, 2016)
- Maintenance – Lyons (Dec. 29, 2014)

Ozone (O3)

2015 8-hour Ozone Standard: 0.070 ppm

- The Philadelphia 5-county area has been recommended to EPA as non-attainment by PA DEP.
- EPA must notify the states concerning any intended modifications to PA DEP's recommendations (120-day letter) by June 2, 2017. EPA will publish public notice of the states' recommendations and EPA's intended modifications, if any, around June 9, 2017, for a 30-day public comment period.
- States may submit additional information, if any, to respond to EPA's modification of a recommended designation by August 7, 2017.
- EPA will promulgate final ozone area designations by October 1, 2017.

2008 8-hour Ozone Standard: 0.075 ppm

- Marginal Nonattainment: Allegheny, Armstrong, Beaver, Berks, Bucks, Butler, Carbon, Chester, Delaware, Fayette, Lancaster, Lehigh, Montgomery, Northampton, Philadelphia, Washington and Westmoreland.


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