

UNFULFILLED PROMISES

*Failing to Protect
Mon Valley Residents
from Unhealthy Air*

May 2019



CLEAN WATER ACTION | CLEAN WATER FUND

UNFULFILLED PROMISES

Failing to Protect Mon Valley Residents from Unhealthy Air

Overview

Poor air quality has been a fact of life for Pennsylvania residents of the Monongahela River valley for many generations. Uncontrolled pollution from industry, most famously killing 20 and sickening thousands in Donora, PA in 1948 has long created daily hardships and shorter lifespans for Mon Valley residents. However, in the post-World War II era, local leadership in Pittsburgh began an effort to clean our air, which accelerated with the passage of the federal Clean Air Act in 1970. As a result, cleaner and healthier air became something that many more residents both in Pennsylvania and across the U.S. benefited from.

But not in the Mon Valley. This report details how while many areas have been able to achieve air quality that meets federal standards, the Mon Valley remains one of the few that consistently fails

to meet Clean Air Act requirements. As other places and other industries clean up, the Mon Valley is being left behind. For the Mon Valley, the promises of the Clean Air Act remain unfulfilled.

This report provides data on the history of violations of the National Ambient Air Quality Standards in the Mon Valley, focusing on two critical pollutants, sulfur dioxide and fine particles (PM 2.5). These standards represent legal health based limits on how much pollution we are allowed to breathe. Both of these pollutants have had short-term ambient air standards set for many years (the sulfur dioxide 1 hour standard was set in 2010 and the fine particulate matter daily standard was set in 2006). We examined the history of violations of these standards since they were set.



Pollution often stays trapped in the Mon River valley for hours or days while the Clairton Coke Works operates 24/7.

Cover photo: U.S. Steel Clairton Coke Works during a major pollution event.

Both photos taken with the Breathe Cam, courtesy of the Breathe Project, <https://breatheproject.org/learn/breathe-cam>

Key Findings

- Since 2006, there have been 441 exceedances in Allegheny County of the short-term standards for either fine particulate matter or sulfur dioxide. **91% of these exceedances of ambient air standards were recorded at monitors in the Mon Valley.**
- Sulfur dioxide violations are almost exclusively in the Mon Valley, with over 96% of exceedances being recorded at Mon Valley monitors.
- There has only been one short-term fine particulate exceedance recorded outside the Mon Valley in Allegheny County since 2012. There has not been a sulfur dioxide exceedance recorded outside the Mon Valley in Allegheny County since 2013.
- In 2018, 82 of the 100 worst air days in Allegheny County based on fine particulate levels were recorded in the Mon Valley. For sulfur dioxide, 99 of the 100 worst air days were in the Mon Valley.
- In 2018, only five monitors in all of Pennsylvania recorded exceedances of the short-term fine particulate or sulfur dioxide standard. Two of the five monitors were in the Mon Valley, and the Mon Valley accounted for 75% of all exceedances in the state. The Mon Valley is the only place in Pennsylvania that had exceedances last year for both fine particulates and sulfur dioxide.
- Nationally, the Mon Valley ranked 5th worst in the U.S. for sulfur dioxide and 19th worst for fine particulate levels.
- The 22 municipalities in the Mon Valley most impacted by these high pollution levels have more African-Americans, more people living in poverty, more children, and more seniors than other Allegheny County communities. One-third of the residents of these 22 municipalities are living in ‘environmental justice’ communities as defined by the state Department of Environmental Protection (DEP).
- Over 40% of Mon Valley residents fall into a group considered “vulnerable” by EPA to health effects from sulfur dioxide and fine particles. These groups include children, seniors, and people with lung and heart disease.

While pollution from vehicles, power plants, and other sources have been reduced both in southwest Pennsylvania and outside our region, it is clear that US Steel’s Clairton Coke Works, as well as the larger Mon Valley Works, are the primary reason that the Mon Valley continues to fail to meet federal Clean Air Act standards. The 2018 Christmas Eve fire at the Clairton Coke Works has added to this long list of failures by US Steel to ensure that the surrounding community is not burdened once again with the health impacts of their pollution. It is important to note that this report only covers through the end of 2018, so only 4 of the 402 exceedances in the Mon Valley listed can be directly connected to the fire at the Clairton Coke Works.



Mon Valley residents attend community event on air quality.

Comparing Mon Valley air quality to Allegheny County, Pennsylvania, and the U.S.

The charts below detail the short-term (daily or 1 hour) exceedances of federal ambient air standards recorded at monitors in Allegheny County between 2007 and 2018 for fine particles (PM2.5) and sulfur dioxide. Monitors located in the Mon Valley and those outside the Mon Valley are grouped together.

In 2018, the Mon Valley clearly ranked as the worst

location in Pennsylvania for both sulfur dioxide and fine particles, with only three other monitors across the state having exceedances. The Mon Valley is the only location in the state violating both sulfur dioxide and fine particle standards. Nationally, the Mon Valley ranked 5th worst for sulfur dioxide and 19th for fine particles.

Table 1: Exceedances of Fine Particle (PM2.5) daily standard in Allegheny County, 2007 – 2018

Year	Mon Valley Monitors			Outside Mon Valley Monitors						
	Claирton	Liberty	North Braddock	Avalon	Harrison	Lawrenceville	Moon	North Park	Parkway East	South Fayette
2007	1	46	6	0	5	12	1	1	0	2
2008	1	31	4	0	2	1	0	0	0	0
2009	0	12	0	0	1	0	0	0	0	0
2010	1	25	3	0	2	2	0	0	0	0
2011	0	10	1	1	0	0	0	0	0	0
2012	0	9	0	0	0	0	0	0	0	0
2013	0	6	0	0	0	0	0	0	0	0
2014	0	4	0	0	0	0	0	0	0	0
2015	0	7	0	0	0	0	0	0	0	0
2016	0	13	0	0	0	0	0	0	0	0
2017	0	10	1	0	0	0	0	0	1	0
2018	0	4	0	0	0	0	0	0	0	0
TOTAL	3	177	15	1	10	15	1	1	1	2
TOTAL Mon Valley			TOTAL Outside Mon Valley							
195			31							

Table 2: Exceedances of Sulfur Dioxide 1 hour standard in Allegheny County, 2010 – 2018

Year	Mon Valley Monitors		Outside Mon Valley Monitors			
	Liberty	N. Braddock	Avalon	Lawrenceville	S. Fayette	Stowe
2010	34	*	2	0	1	3
2011	45	*	0	0	0	0
2012	43	*	0	0	0	0
2013	9	*	0	2	0	0
2014	14	5	0	0	0	0
2015	17	1	0	0	0	0
2016	4	0	0	0	0	0
2017	18	3	0	0	0	0
2018	11	3	0	0	0	0
TOTAL	195	12	2	2	1	3
TOTAL Mon Valley			TOTAL Outside Mon Valley			
207			8			

*N. Braddock SO2 monitoring started in 2014.

Table 3: 2018 Exceedances in Pennsylvania of Fine Particle (PM2.5) and Sulfur Dioxide Standards

Location	Pollutant	# of Exceedances
Mon Valley	Sulfur Dioxide	14
Mon Valley	PM 2.5	4
Delaware County	PM 2.5	3
Beaver County	PM 2.5	2
Warren County	Sulfur Dioxide	1
TOTAL Exceedances in Mon Valley: 18		
TOTAL Exceedances in Rest of PA: 6		

Why are we waiting? The history of setting air quality standards in the Mon Valley

The U.S. Environmental Protection Agency (EPA) is required by the federal Clean Air Act to set the National Ambient Air Quality Standards (NAAQS) to establish health based legal limits on the exposure of residents to air pollutants. EPA is also required to periodically review the ambient standards in order to ensure that standards reflect current public health science.

Once EPA sets an ambient standard, it then determines if there are areas that are not meeting this standard. State and local agencies then must pro-

duce plans (known as State Implementation Plans or SIPs) that require pollution reductions that will ensure the area comes into compliance with the ambient air standards, “as expeditiously as possible.” For the Mon Valley, the Allegheny County Health Department (ACHD) has been responsible for monitoring ambient air and developing cleanup plans to eliminate ambient air violations. EPA has overall responsibility for ensuring Clean Air Act standards are met, and specifically for giving final approval for all cleanup plans (SIPs).



Mon Valley residents speak out about poor air quality.

Fine Particles (PM2.5)

In 2006, EPA set the current short-term ambient air standard for fine particles (PM2.5) at 35 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$). Fine particles can be inhaled deep into our lungs, aggravating a variety of serious health problems for people with lung and heart disease. Exposure to fine particles can aggravate asthma, decrease lung function, and result in premature death for people with heart disease. EPA estimated that the benefits from implementing this standard between \$9 – 75 billion annually, as a result of preventing hospital admissions and premature deaths, among other benefits. The costs to implement the standard by contrast were estimated to be \$5.4 billion.

The length of time it has taken ACHD and EPA to implement and enforce the fine particle standard has resulted in a enormous public health burden on Mon Valley residents. Even under best case scenarios, the Mon Valley is unlikely to comply with the

Fine Particle (PM2.5) 24-Hour Standard Timeline for the Mon Valley

Sept. 2006	EPA sets fine particle 24-hour standard.
Dec. 2009	Mon Valley area designated in non-attainment (not meeting the standard).
April 2013	Deadline for ACHD to submit a cleanup plan to EPA.
June 2013	ACHD submits cleanup plan for the Mon Valley to EPA.
Dec. 2015	Deadline EPA set for areas to reach compliance with the 24-hour fine particle standard.

fine particle standard until 2020, five years after the EPA deadline, and 14 years after the health based standard was established by EPA.

Sulfur Dioxide (SO₂):

In 2010, EPA set the current short-term ambient air standard for sulfur dioxide of 75 parts per billion (ppb) over a 1 hour average. This standard was set based on clear public health evidence that people with respiratory conditions such as asthma had negative health impacts after short term exposure, even 5-10 minutes, of high levels of sulfur dioxide. EPA estimates that the economic benefit of reducing these health effects from sulfur dioxide are \$13-33 billion annually, through reducing hospital admissions, ER visits, and lost work days. The benefits far outweighed EPA's estimated costs for implementing the standard of \$1.5 billion.

As can be seen from the timeline, both ACHD and EPA have not been able to comply with their own deadlines to write, approve, and implement plans to clean up sulfur dioxide from Mon Valley communities. Given that the sulfur dioxide standard requires ACHD to average monitor results over a three year period, even in a best case scenario, the Mon Valley will not comply with the sulfur dioxide standard until

Sulfur Dioxide 1-Hour Standard Timeline for the Mon Valley

June 2010	EPA sets sulfur dioxide 1 hour standard.
Oct. 2013	Mon Valley area designated in non-attainment (not meeting the standard).
March 2016	Deadline for ACHD to submit a cleanup plan to EPA.
Aug. 2017	Original deadline EPA set in 2010 for areas to reach compliance with the 1 hour sulfur dioxide standard.
Oct. 2017	ACHD sends proposed cleanup plan to meet sulfur dioxide standard to EPA for approval.
Nov. 2018	EPA puts out proposed cleanup plan and requests comments from the public. Final approval is still pending.

2022 at the earliest, a full five years after the original deadline set by EPA, and 12 years after the health based standard was set.

Impact on Mon Valley residents

The combined lack of success over a decade by US Steel, the Allegheny County Health Department, and EPA to bring air quality in the Mon Valley within federal health standards makes it critical to understand who is being put at risk for greater health burdens. After the fire at US Steel's Clairton Coke Works on December 24, 2018, ACHD issued a health warning to residents in 22 Mon Valley municipalities that are most impacted by the coke works.

The total population of these Mon Valley communities is 126,934 which is 10% of the total population of Allegheny County. Overall, these communities are more African-American, have more people living in poverty, have more children and more seniors than are found in other Allegheny County communities. EPA identifies children, seniors, and people with lung and heart disease as the most vulnerable populations. For the Mon Valley these groups comprise over 40% of the residents.

Pennsylvania Department of Environmental Protection (DEP) defines environmental justice communities as those with either over 30% non-white residents or over 20% under the poverty line, or both. Using these criteria, 32% of Mon Valley residents are living in environmental justice communities, indicating they are vulnerable to excessive health and environmental impacts of pollution in their communities.

Asthma rates are a good example of this problem. ACHD conducted an extensive survey, the Allegheny County Health Survey 2015-2016, which found overall Allegheny County has a 15% asthma rate. However, those rates were higher for African-Americans (22%), and for people with incomes under \$25,000/year (20%). While municipal level data on asthma rates are not available, it is clear given the demographics of the Mon Valley that these communities likely have rates over the 15% County average.

Mon Valley municipalities most impacted by US Steel's Clairton Coke Works

Braddock	Liberty
Clairton	Lincoln
Dravosburg	McKeesport
Duquesne	North Braddock
East McKeesport	North Versailles
East Pittsburgh	Pleasant Hills
Elizabeth Borough	Port Vue
Elizabeth Township	Versailles
Forward	Wall
Glassport	West Elizabeth
Jefferson Hills	West Mifflin

Similarly, access to health care for the health problems being caused by failure to meet air quality standards is a problem that is exacerbated in the Mon Valley. While insurance rates have improved in recent years, cost remains a barrier accessing health care for residents. ACHD reports that 9% of residents reported not seeking health care when needed due to cost over the past year. And again, these numbers are higher for African-Americans (14%) and people with income under \$25,000/year (17%). Key groups of residents most vulnerable to health problems from air pollution are the ones most likely to not be able to access the health care they need.

Interestingly, the ACHD community survey found that it is these vulnerable groups that are most concerned about the risk to themselves from air pollution. Overall in Allegheny County, 23% of residents said there was "a lot" of risk from air pollution, a level similar to their view of risks from crime and violence. These numbers increased for African-Americans (31%) and people with incomes under \$25,000/year (29%) who felt there was "a lot" of risk from air pollution in their communities.

Table 4: Mon Valley Demographics Compared to Rest of Allegheny County

	Total Population	Black	Poverty	Under 18	65+
Mon Valley	126,934	21,409	17,090	26,196	23,772
	% of residents	16.9%	13.5%	20.6%	18.7%
Rest of Allegheny County	1,096,414	140,452	119,925	216,027	181,287
	% of residents	12.8%	10.9%	19.7%	16.5%

Recommendations

Given this long standing failure of industry and government to ensure that Clean Air Act standards are met in the Mon Valley, the following steps need to be taken:

- ACHD and EPA should immediately examine whether their cleanup plans (SIPs) for sulfur dioxide and fine particles are adequate, given the failure to reach compliance with ambient air standards. If all actions in the SIPs have been implemented, clearly further efforts are needed as quickly as possible.
- ACHD and EPA should evaluate whether further enforcement action is necessary to ensure that the Mon Valley complies with ambient air standards as quickly as possible.
- ACHD should conduct outreach to Mon Valley residents and health care providers to ensure that vulnerable populations, children, seniors, and people with heart and lung disease, are getting proper evaluation for health issues and are able to access both the health care they need and proper protections from air pollution.
- US Steel should evaluate how it can invest in its Mon Valley facilities so that its plants will not continue to prevent the Mon Valley from reaching federal Clean Air Act standards. These investments should ensure that ambient air standards in the Mon Valley can be maintained over the long term.
- Until the Mon Valley is able to meet health-based ambient air standards, US Steel should work with residents to provide assistance in receiving preventative health care and treatment.

Sources

Data for this report was derived from the following sources:

- ACHD Annual Air Quality Reports, 2010 - 2017
- Monitor data is from EPA's AirData system available at <https://www.epa.gov/outdoor-air-quality-data>
- EPA fact sheets on the National Ambient Air Quality Standards available at <https://www.epa.gov/criteria-air-pollutants>
- Health data from the Allegheny County Health Survey 2015-2016, conducted by ACHD
- Census data from the ACHD 2015 Community Health Assessment

May 2019



CLEAN WATER ACTION | CLEAN WATER FUND

100 Fifth Avenue, Suite 1108, Pittsburgh, PA 15222 | 412.765.3053

@CleanH2OPA | Facebook.com/CleanWaterActionPA | www.cleanwater.org/pa