

# Allegheny County Health Department

Air Quality Program

## Point Source Emission Inventory Report 2015, 2016, and 2017

Summary of Air Emission Estimates from Point Sources  
Allegheny County, PA  
Criteria Air Pollutants for 1996-2015, 2016 and 2017  
Hazardous Air Pollutants (HAPs) for 1999-2015, 2016, and 2017



CHESWICK POWER PLANT STACK

Prepared  
By  
Marie Kelly

**Allegheny County Health Department**  
**Air Quality Program**  
**Emission Inventory Section**

**Summary of Air Emission Estimations from Point Sources**  
**In Allegheny County**  
**Years 1996 (BASE)-2015, 2016 and 2017 for Criteria Air Pollutants**  
**And 1999 (BASE)-2015, 2016 and 2017 for Hazardous Air Pollutants**

Executive Summary

Point source air emissions in Allegheny County have declined significantly since 1996. This report compares the emissions of criteria pollutants reported by 10 selected major sources in 1996 to those reported by the same major sources in 2015, 2016 and 2017. This is illustrated by Graph 1 on page 5. Total criteria pollutant emissions from this group of plants represented 85.2% of all criteria emissions reported in the 2015 Allegheny County Inventory, 90.8% in the 2016 Inventory and 89.9% in the 2017 Inventory. §2108.01.e.2 of Article XXI, Emissions Inventory Statements, was amended to allow the Department to more effectively spend its time reviewing emissions inventories for the sources with a greater potential impact to the health of the community by allowing the Allegheny County Health Department (ACHD or Department) to issue exemptions. The 2015 inventory included 75 sources, the 2016 inventory 68 sources and the 2017 inventory 71 sources.

Between 1996 and 2017 carbon monoxide (CO) emissions fell 22.8%. Nitrogen oxide (NO<sub>x</sub>) emissions in the same period declined 70.9% while emissions of PM<sub>10</sub> fell 63.3%. The most dramatic decline was in sulfur dioxide (SO<sub>2</sub>) emissions; they fell by 88.6%. Volatile organic compound (VOC) emissions declined 75%. These ten selected plants, for the years 2015 through 2017, only had minor variations in criteria emissions which likely correlated to production. Year over year declines were only reported for nitrogen oxide emissions.

The USS Clairton Coke Works rather than NRG Midwest LP/Cheswick is currently the largest source of criteria pollutants emitted by point sources in Allegheny County. Clairton emitted 7374 tons of criteria pollutants in 2017 while Cheswick emitted 3301 tons. However, Cheswick did emit 2091 tons of sulfur dioxide compared to Clairton's 1130 tons. SO<sub>2</sub> emissions can vary with the demand for electrical power and/or the sulfur content of the coal burned at the Cheswick Power Plant. In 2017 the facility emitted 53% less sulfur dioxide than in 2015. The reported sulfur content of the coal burned in 2017 was 3.02% versus 3.14% in 2015. For the last three years the average percentage sulfur in coal burned at Cheswick is 3.09% compared to 3.84% in 2014, a reduction of 20%. Operation of the flue gas desulfurization system has been relatively stable over the last three years and has contributed to the consistently lower amounts of sulfur dioxide emitted by the plant. The use of CEMS at this plant has improved the accuracy of emission estimates.

Criteria pollutant emissions from the Clairton Coke Works totaled 40.4% of all criteria pollutants emitted by the 10 facilities analyzed for this report. Cheswick's criteria pollutant emissions totaled 18.1%.

Between 1999 and 2017 emissions from the US EPA list of 187 Hazardous Air Pollutants (HAPs) decreased 78.6%. The table below lists the percentage reduction from the 1999 base year for each of the last three years in the total amount of HAPs reported in the Allegheny County Emissions Inventory. Hydrogen sulfide (H<sub>2</sub>S) has been added to the table and the report in response to the ongoing issues with this pollutant in the Monongahela River Valley.

Trends HAP Emissions Allegheny County 1999, 2015, 2016, and 2017						
Year	Total HAP Emissions (tons)	Percent Change Total	Percent Change HCl	Percent Change HF	Percent Change H <sub>2</sub> S	Percent Change Other
1999	2091					
2015	505	75.8-	88.7-	95.7-	18.5-	58.8-
2016	418	80.0-	90.6-	95.7-	35.8-	65.5-
2017	448	78.6-	89.2-	98.3-	25.3-	66.6-

Emissions of total HAPs as well as the individual HAPs, hydrofluoric acid (HF) and hydrochloric acid (HCl), have correlated with emissions from the Cheswick Power Plant in the past which, depending on demand, has emitted around 1000 tons or more a year of HAPs as recently as 2007. Ninety percent of hydrogen sulfide emissions are from the Clairton Coke Works. Over the past three years, effective operation of the flue gas desulfurization system has reduced emissions of hydrochloric and hydrofluoric acids significantly below the 1999 base year levels at Cheswick. Most of hydrogen sulfide emissions at Clairton are fugitive.

Emissions of the five criteria pollutants from point sources in the county have trended down since 1996. Emissions from the Cheswick Station no longer mask the overall degree of reduction attributable to the other point sources included in the annual inventory to the same degree as previously.

Examination of emission trends of both HAPs and criteria pollutants after excluding Cheswick's and Clairton's contributions show overall declines in both categories. Emissions of HAPs have declined 66.6% since 1999 when hydrogen sulfide, hydrochloric acid and hydrofluoric acid are excluded from county totals. Hydrogen sulfide is not a Section 112 b Hazardous Air Pollutant in the Clean Air Act although it is reported and included with HAPs in response to concerns regarding its emissions. Overall the declines observed since 1996 for criteria pollutants and 1999 for HAPs are attributable to closure or reduction in operations of industrial facilities in the County as well as process improvements and the installation of new and improved control equipment at remaining facilities.

Emissions of both HAPs and criteria pollutants from the Cheswick Power Station and the Clairton Coke Works are proportional to fuel use and production. This makes the total amount of industrial air pollution in the County highly dependent on the output from these two facilities. Cheswick has reduced the amount of pollution generated by its operation by installing a flue gas desulfurization system and emissions of sulfur dioxide from Clairton should fall after installation of a vacuum carbonate control system. In 2003 nitrogen oxide emissions were reduced by the installation of a Selective Catalytic Reduction (SCR) device at Cheswick Power Station. The facility is currently being operated as a peaking plant rather than as a base load plant.

Much of the reduction between 2015 and 2017 occurred because the SCR was operated while 3% of the coal burned that year was combusted while in 2015 it was only operated for 75% of the time coal was being burned. The facility is currently being operated as a peaking plant rather than as a base load plant. Partially this too accounts for Cheswick's reduction in nitrogen oxide emissions by 70.3% since 2015.

#### Introduction

The annual Air Quality Program's Point Source Emission Inventory Report for 2015-2017 details and analyzes emission estimates from facilities with potential emissions in the categories listed below:

- 25 TPY or more of any criteria pollutant
- 10 TPY or more of any single Hazardous Air Pollutant (HAP)
- 25 TPY or more of any mixture of HAPs

In 1997, reporting of annual emission inventories was converted from a paper system to an electronic system. In 2009, 90.9% of submittals were made to the ACHD Website. The remainder was made by e-mail as the procedure for submitting to the Health Department website was incompatible with many sources' networks. For 2010, the ACHD Air Quality Program adopted the PA DEP AES Online System. This system allows for web-based submittals by all sources and complies with the EPA Cross Media Electronic Reporting Rule.

In 1998, the availability of emission factors for HAPs increased making possible better estimates of emissions for these compounds.

This report provides graphs and tables comparing criteria air emissions from the 1996 base year to those reported in 2015, 2016 and 2017 and emissions of Hazardous Air Pollutants from the 1999 base year also to 2015, 2016 and 2017 for 10 selected plants. It contains five sections with four attachments.

- Section I – Point source Criteria Emission Trends
- Section II – Point Source Criteria emissions by Industry Sector
- Section III – Point source HAP Emissions
- Section IV – Point Source HAP Emission Trends
- Section V – Impact of the NRG Midwest LP/Cheswick Power Station and Clairton Coke Works on Total County Point Source Emissions

Trends in emissions of criteria pollutants in the county are discussed by industry sector in Section II. Section V addresses contributions from the Cheswick Power Station and the Clairton Coke Works to total county point source emissions. These two sources emissions merit a separate section because their total emissions are far greater than those of any other facilities in the county.

- Attachment A – Criteria Pollutant Emissions Sources
- Attachment B – List of HAP Emissions by Compound
- Attachment C – HAP Emissions of Individual Facilities
- Attachment D – Total Point Source Emissions for Ammonia

The charts below display emissions starting with the base year 1996 for criteria pollutants and the HAP base year 1999 and comparing the decreases from these base levels to the emissions reported in 2015, 2016 and 2107.

The emissions in these charts reflect emissions from the ten highest emitting plants in the Allegheny County Emission Inventory for the years 1996, 2015, 2016 and 2017 for criteria pollutants except PM<sub>2.5</sub> and PM<sub>COND</sub>. The base year for these two pollutants as well as Hazardous Air Pollutants is 1999.

In 2015 total emissions from the ten selected plants represented eighty-five percent of total emissions reported in that year's inventory, in 2016 ninety-one percent and in 2017 ninety percent.

The plants selected are listed below:

- NRG Cheswick
- USS Clairton

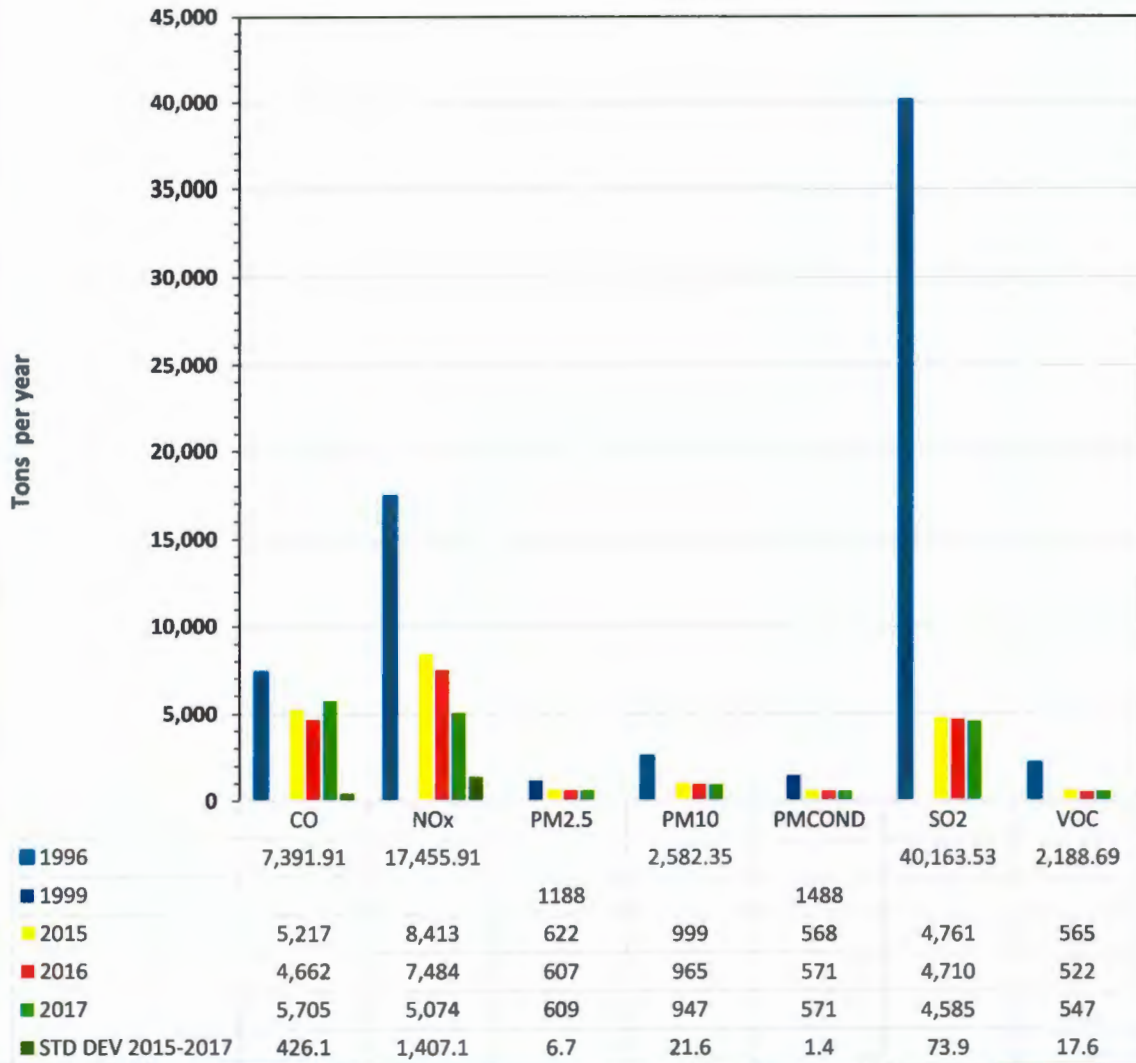
- USS Edgar Thomson
- USS Irvin
- ATI Flat Rolled Products
- Allegheny Energy Springdale
- Eastman Chemical
- Universal Stainless
- Pittsburgh Allegheny County Thermal
- Neville Chemical

The tables and graphs in this report have been adjusted to include only emissions from the plants listed above for both criteria and hazardous air pollutants.

Section I Criteria Pollutant Emissions

Graph 1 summarizes total emissions of criteria air pollutants as defined by the Clean Air Act from point sources in Allegheny County. Please note the PA DEP AES system does not contain fields where sources can report total particulate. DEP added a field for PM condensable in 2012 but a total was not reported because many sources neglected to report emissions of this form of particulate in 2012. Total particulate is no longer defined as a criteria pollutant by the EPA.

**Graph 1 - Allegheny County, Pa-Point Source Criteria Pollutant Emissions**



The pollutants shown include:

- CO – carbon monoxide
- NO<sub>x</sub> – emissions of oxides of nitrogen reported as nitrogen dioxide
- PM<sub>2.5</sub> – filterable particulate with an aerodynamic diameter of less than 2.5 microns
- PM<sub>10</sub> – filterable particulate with aerodynamic diameter less than 10 microns

- PMCOND – condensable particulate matter defined as material in the vapor state at temperatures above 68° F and a solid at lower temperatures.
- SO<sub>2</sub> – sulfur dioxide
- VOCs – Volatile Organic Compounds.

More detailed definitions are provided in the notes located at the end of the report

**Table 1 - Estimated Point Source Criteria Air Emission Change in Allegheny County, PA  
Tons per Year Emitted as Percentage of 1996 Baseline Year For 10 Highest Emitting Plants.**

1996 Base Year (Tons/Year)	Pollutant						
	CO	NO <sub>x</sub>	PM <sub>2.5</sub>	PM <sub>10</sub>	PM <sub>COND</sub>	SO <sub>2</sub>	VOC
	7,392	17,456		2,582		40,164	2,189
1999 Base Year PM <sub>2.5</sub> and PM <sub>Cond</sub> (Tons/Year)			1,188		1,488		
2015	-29.4%	-51.8%	-47.6%	-61.3%	-61.9%	-88.1%	-74.2%
2016	-36.9%	-57.1%	-48.9%	-62.6%	-61.6%	-88.3%	-76.2%
2017	-22.8%	-70.9%	-48.7%	-63.3%	-65.9%	-88.6%	-75.0%

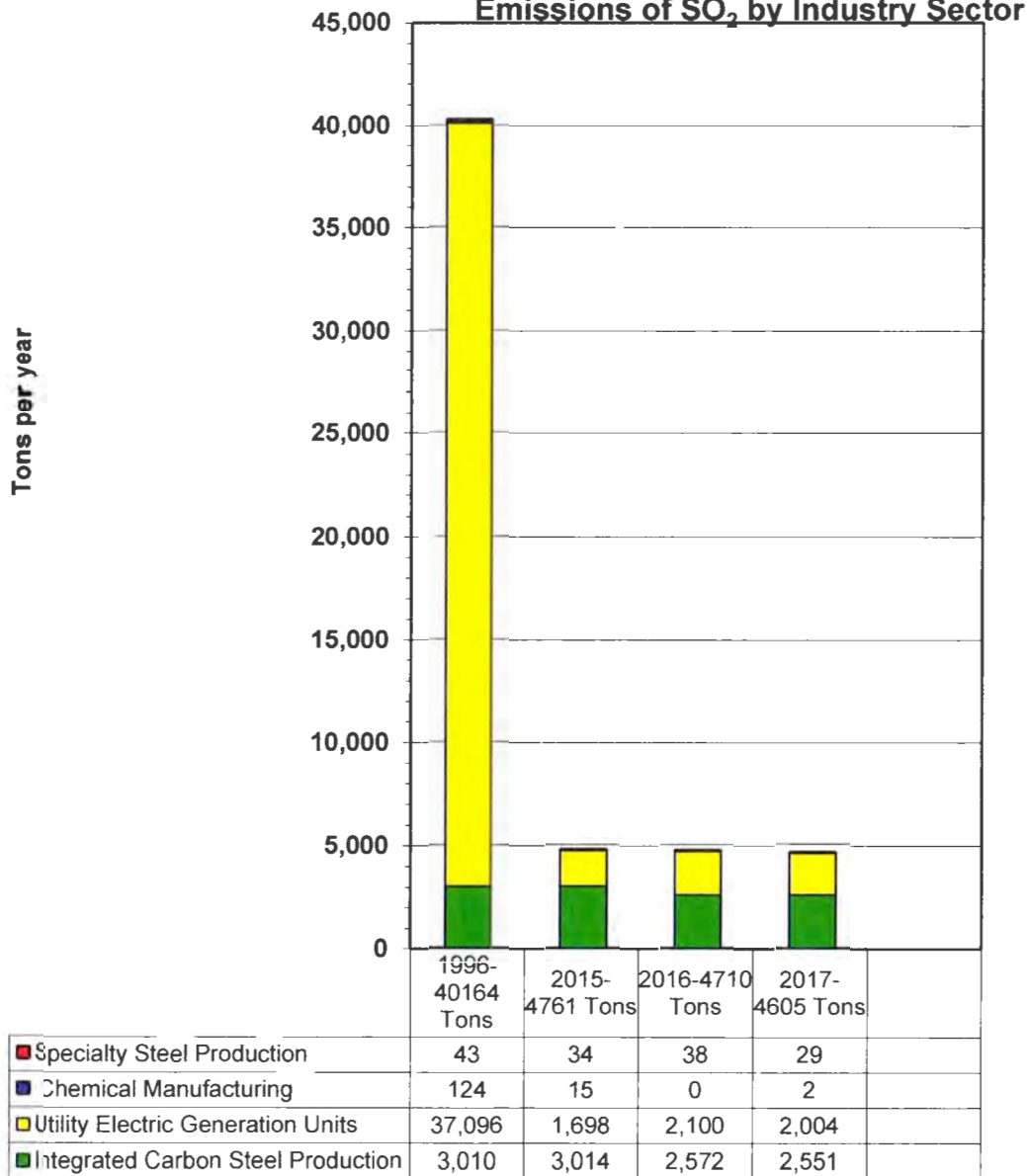
Trends in emissions of criteria pollutants in the county are discussed by industry sector in Section II. Section V addresses contributions from the Cheswick Power Station and Clairton Coke Works to total County point source emissions.

#### Section II Criteria Point Source Air Emissions by Industrial Sector

Graphs 2a-2g details emissions of each criteria pollutant from individual point source industrial sectors in the county. The four industrial sectors identified account for approximately 90% of all criteria point source air emissions. Facilities are sorted into sectors based on the size of their contribution to total air emissions. With the exception of sulfur dioxide, which fluctuates from year to year depending on the demand for electricity from the Cheswick Power Station, and coke from USS Clairton Works, the overall direction of emissions of criteria pollutants fell in 2015, 2016 and 2017. Contributions from individual sectors show declines from the 1996 base year despite some increases attributable to variable business conditions.

a) Sulfur Dioxide

**Graph 2a - Cumulative Estimated Point Source Criteria Air Emissions in Allegheny County, Pa**  
**Emissions of SO<sub>2</sub> by Industry Sector**



Compared to the base year 1996, total emissions of sulfur dioxide have relatively constantly declined by 3.2% between 2015 and 2017. In the three-year period covered by this report sulfur dioxide emissions declined by 1.5% in the Specialty Steel Sector and 87% in the Chemical Manufacturing Sector. Emissions of sulfur dioxide fell in the Integrated Carbon Steel Sector by 15.4%, but it rose 18% in the Utility Sector. This increase reflects variations in demand for electricity from NRG Cheswick and in the operation of the flue gas desulfurization system. Nonetheless, sulfur dioxide emissions from this plant are 18 times lower than they were in 1996 before the installation of the flue gas desulfurization system.

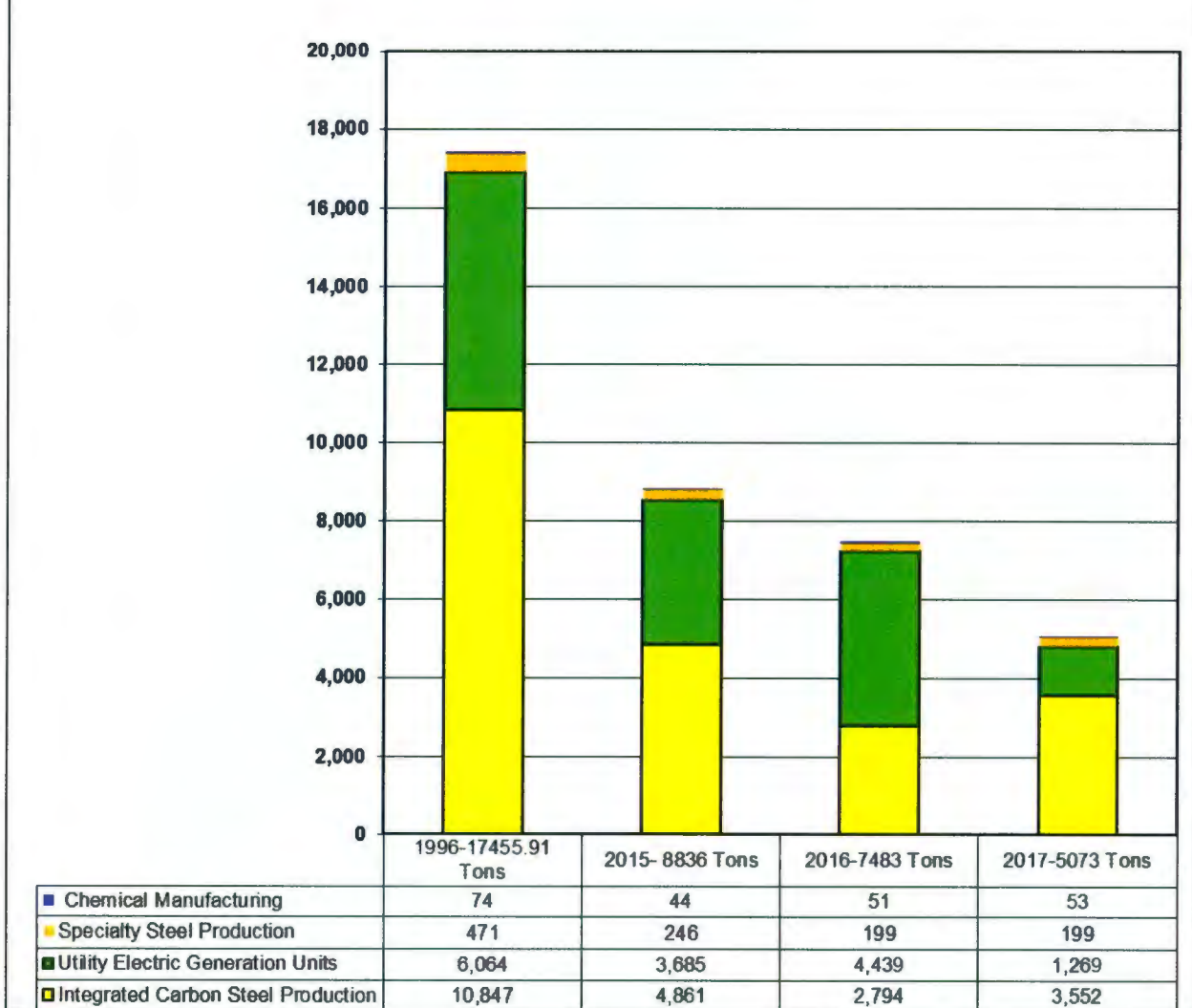


In 2017 Cheswick accounted for 43.3% of sulfur dioxide emissions among the ten plants selected for this report and the Clairton Coke Plant was responsible for 25.5%. Emissions of this compound from these two sources are addressed separately in Section VI. Emissions from these two sources combined overwhelm SO<sub>2</sub> emissions from other point sources in the County and determine the overall direction of SO<sub>2</sub> emissions.

Fifty percent of the decrease in sulfur dioxide emissions from integrated carbon steel production since 1998 is attributable to the closing of the Hazelwood LTV Coke Works.

b) Nitrogen Dioxide

**Graph 2b - Cumulative Estimated Point Source Criteria Air Emissions  
In Allegheny County, Pa  
Emissions of NO<sub>x</sub> by Industry Sector**



Between 2015 and 2017 all the industrial sectors selected for this report exhibited fluctuations in NO<sub>x</sub> emissions rather than year over year declines. For the three-year period NO<sub>x</sub> emissions in the Chemical Manufacturing Sector increased 9 tons or 20% from the 2015 level of 44 tons. The Specialty Steel Sector's emissions were constant in 2016 and 2017 emissions have fallen by 18.9% from the 2015 level while they increased in the Integrated Carbon Steel Sector by 27% between 2016 and 2017 after falling by 42.5% between 2015 and 2016. But overall for the three-year period emissions from this sector fell by 26.9%. In the Utility Sector, the largest generator of this pollutant, emissions fell by 42.5% between 2015 and 2016 but rose again in 2017 by 27.1%. To some degree these fluctuations reflect variation in demand for products and/or the operational effectiveness of control equipment. NO<sub>x</sub> emissions are currently approximately 70.9% lower than amounts emitted in 1996.

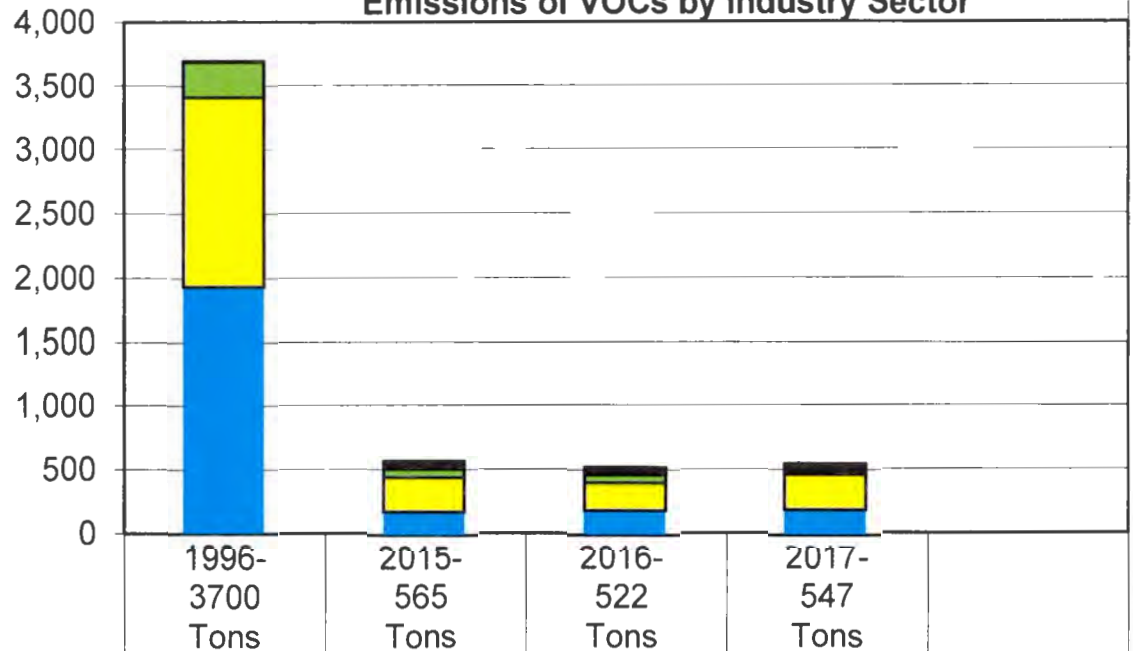
In 2015 Cheswick operated its SCR for 1500 hours while in 2016 they operated it minimally. This partially explains the increase in NO<sub>x</sub> emissions in 2016. NO<sub>x</sub> emissions decreased again in 2017 because the facility operated the SCR while combusting 83% of the coal consumed by the boiler.

Cheswick has determined from testing they can comply with their NO<sub>x</sub> emission limit without operating the SCR. SCR operation, while decreasing NO<sub>x</sub> emissions from the coal fired boiler, increases emissions of particulate. Graph 2d illustrates particulate emissions from the utility sector decreased 9.4% between 2015 and 2017. The decrease in NO<sub>x</sub> emissions reflects the plant's current operating configuration.

Large decreases in emissions of nitrogen oxides since 1996 are largely attributable to the shutdown of the LTV Coke Works in 1998, the Kosmos Cement kiln in 2001, Guardian Industries in 2015, Shenango in 2016 and the installation of selective catalytic reduction control equipment at the Cheswick Power Station in 2003.

c) Volatile Organic Compounds (VOCs)

**Graph 2c - Cumulative Estimated Point Source Criteria Air Emissions in Allegheny County, Pa  
Emissions of VOCs by Industry Sector**



■ Utility Electric Generation Units	5	60	58	60
■ Specialty Steel Production	282	66	65	23
■ Integrated Carbon Steel Production	1,476	258	211	268
■ Chemical Manufacturing	1,937	180	188	196

VOC emissions in 2015 through 2017 were relatively constant decreasing by 3.2% overall between 2015 and 2017. Emissions from the chemical manufacturing sector increased 8.9%. Emissions from integrated carbon steel operations increased 3.9%, while those from specialty steel production decreased 65.2%. Electric Utility VOC Emissions were constant. VOC emissions have declined by 85.3% at Neville Chemical and 84.9% at Eastman Chemical since 1996. These are the two largest chemical firms in the county. Declines in emissions in the chemical manufacturing sector have decreased as process control improvements have been implemented at these two plants.

The relatively constant VOC emissions in three sectors in 2015, 2016 and 2017 can be attributed to minimum changes to the processes generating this pollutant in sectors examined for this report. The large overall decreases in the chemical sector in the past decade are in part attributable to the installation of thermal oxidizers at both major chemical plants and the shutting down of some of the

process lines. As Graph 2c illustrates emissions of this pollutant have decreased overall by 85.2% since 1996.

### Particulate Emissions and Their Sources

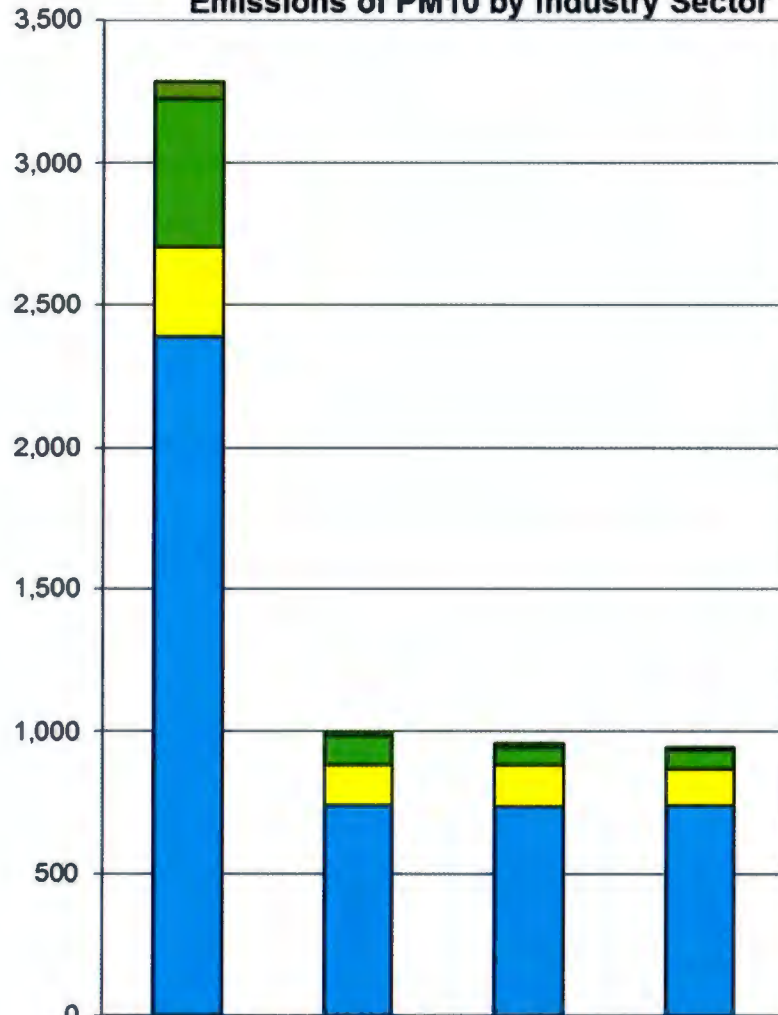
In the Allegheny County Emission Inventory, four forms of particulate matter were reported until 2010. These were total particulate (PT), condensable particulate (PM<sub>COND</sub>), PM<sub>10</sub> and PM<sub>2.5</sub>. The last two are fractions of total particulate. Below are the definitions of each of these forms:

- PT – total filterable particulate is the material captured from flue gas on a filter heated to 248°F. PT is no longer defined as a criteria pollutant by the EPA.
- PM<sub>10</sub> – fraction of filterable particulate with aerodynamic diameter less than 10 microns
- PM<sub>2.5</sub> – fraction of filterable particulate with aerodynamic diameter less than 2.5 microns.
- PMCOND – material collected from the filtered flue gas after it has passed through the 248°F filter as a gas and been condensed from the sample stream and dried.

PM<sub>2.5</sub>, PM<sub>10</sub> and PT are not independent of each other. PM<sub>2.5</sub> is a fraction of both PM<sub>10</sub> and PT. PM<sub>10</sub> is a fraction of PT. Condensable particulate is not part of filterable particulate or its fractions in flue gas. It is a gas that condenses in ambient air to fine particulates.

d) PM<sub>10</sub>

**Graph 2d - Cumulative Estimated Point Source Criteria Air Emissions in Allegheny County, PA**  
**Emissions of PM<sub>10</sub> by Industry Sector**

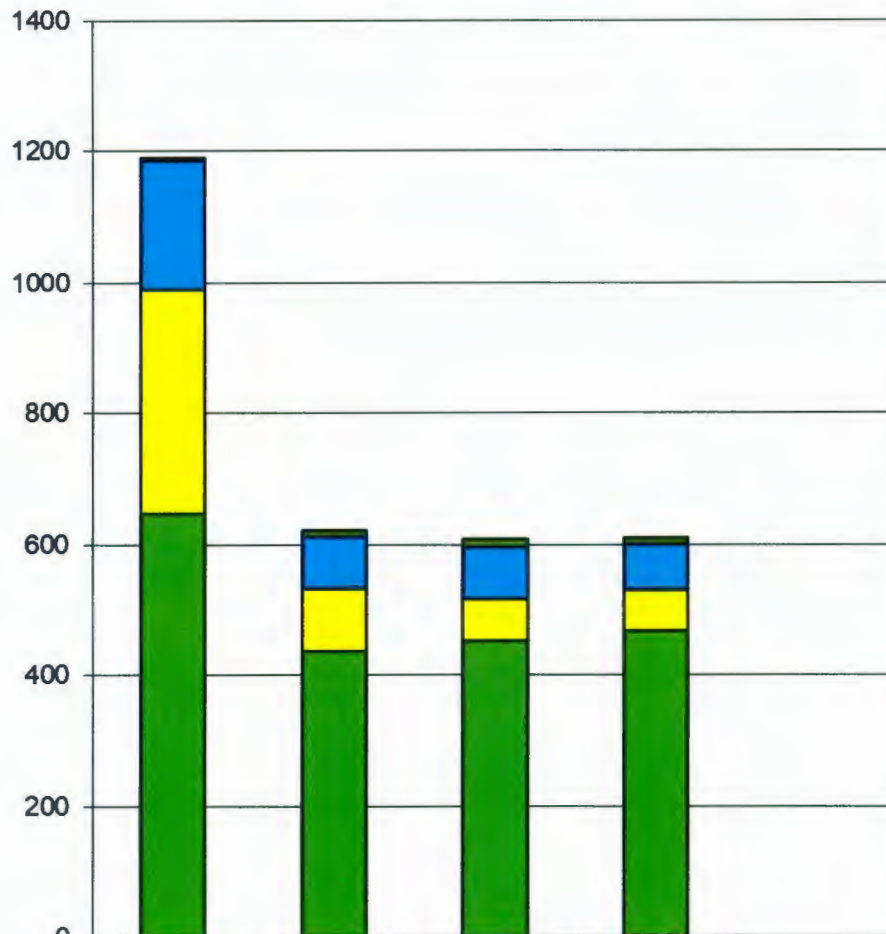


	1996-2583 Tons	2015 - 999 Tons	2016 - 959 Tons	2017 - 947 Tons
■ chemical Manufacturing	63	12	11	11
■ Speciality Steel Products	525	105	64	66
■ Utility Electric Generation Units	310	139	145	126
■ Integrated Carbon Steel	2,388	742	739	744

Between 2015, 2016 and 2017 PM<sub>10</sub> emissions only decreased 5.2%. PM<sub>10</sub> emissions decreased in three industrial sectors and increased in one. Emissions of this pollutant in the integrated carbon steel sector increased 0.3%. In the specialty steel category PM<sub>10</sub> emissions decreased 37.1%. In the utility sector PM<sub>10</sub> emissions decreased 9.4% while in the chemical sector they decreased one ton between 2015 and 2016 and there was no change between 2016 and 2017. Since 1996, PM<sub>10</sub> have fallen by 63.3%

e) PM<sub>2.5</sub>

**Graph 2e - Cumulative Estimated Point Source Criteria Air Emissions in Allegheny County, PA  
Emissions of PM 2.5 by Industry Sector**



	1999 - 1189 Tons	2015 - 536 Tons	2016 - 608 Tons	2017 - 610 Tons
■ Chemical Manufacturing	3.74	10.52	10.39	10.04
■ Utility Electrical Generation Units	197.35	79.43	81.33	70.22
■ Speciality Steel	341.08	95.12	63.95	62
■ Integrated Carbon Steel Production	646.96	437.2	451.8	467.202

Emissions of PM<sub>2.5</sub> are comparable to those of PM<sub>10</sub> in the Chemical Manufacturing Sector and in the Specialty Steel Sector for the ten plants addressed in this report for 2015, 2016 and 2017. In the Utility

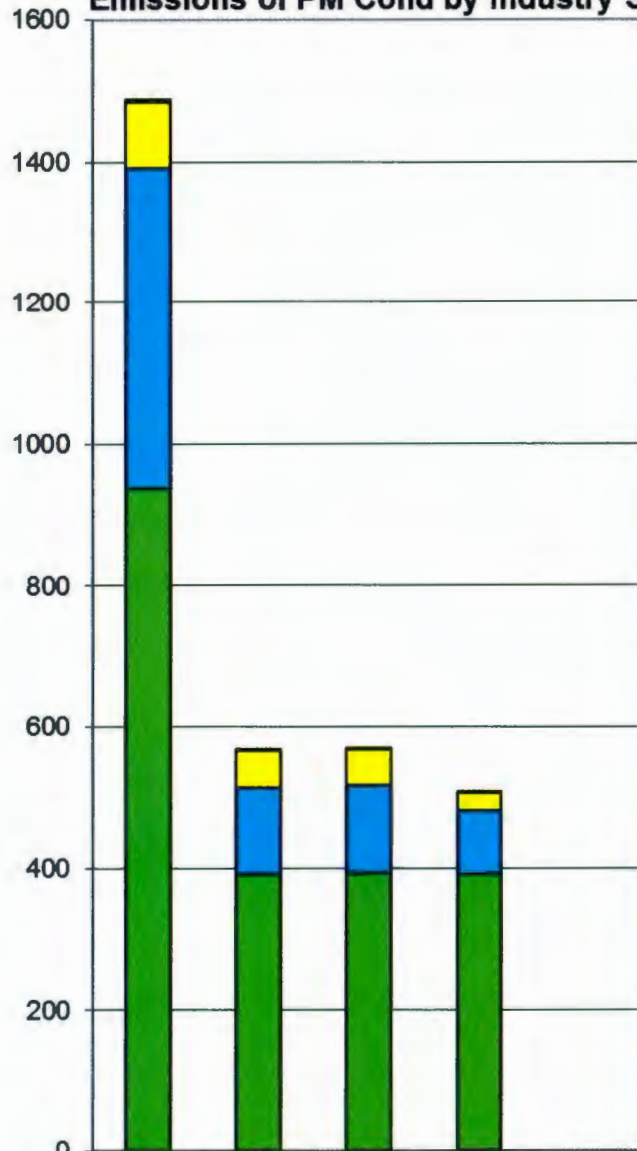
Sector emissions of this pollutant decreased 11.6% in the period examined. In the Integrated Carbon Steel Sector emissions of PM<sub>2.5</sub> have varied by 14 -15 tons for the period reviewed increasing 6.8%. The variation in the Utility Sector tracks with the variation in PM<sub>10</sub>. Overall emissions of PM<sub>2.5</sub> have declined 48.7% since 1999.



f) PM<sub>COND</sub>

**Graph 2f - Cumulative Estimated Point Source Criteria Air Emissions in Allegheny County, PA**

**Emissions of PM Cond by Industry Sector**



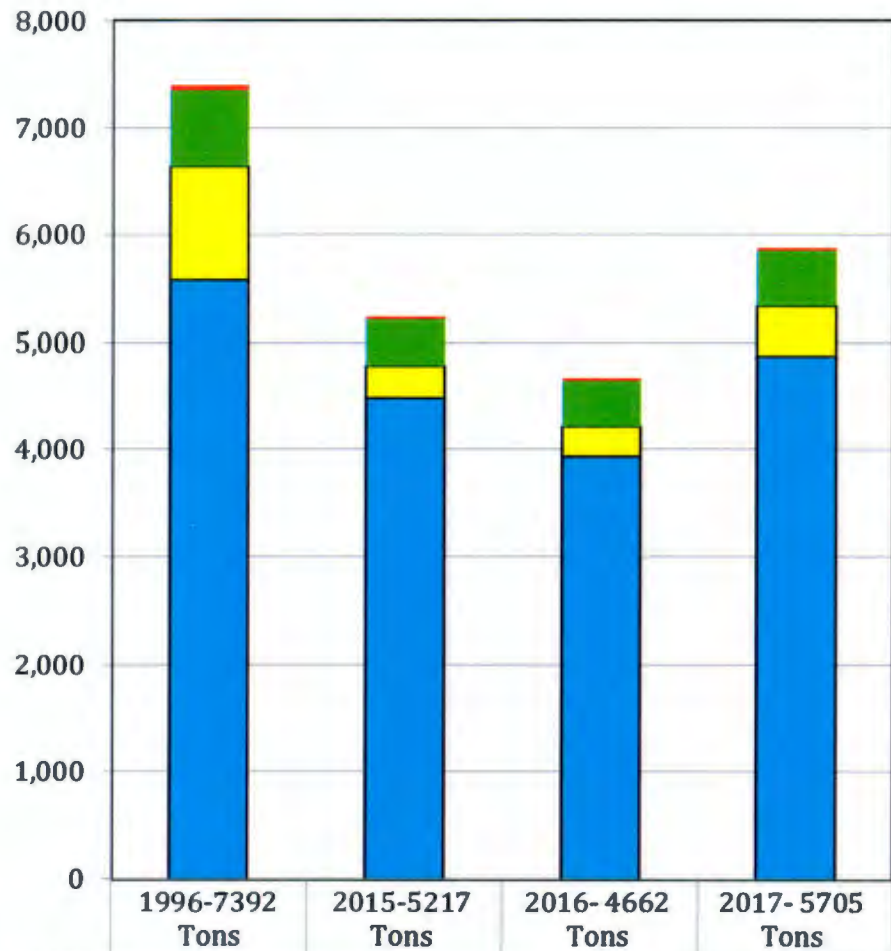
	1999- 2002 Tons	2015 - 568 Tons	2016 - 571 Tons	2017 - 508 Tons
■ Chemical Manufacturing	3.66	1.43	1.37	1.5
■ Speciality Steel	92.14	52	51	25.04
■ Utility Electrical Generation Units	453.39	124	125	89.28
■ Integrated Carbon Steel Production	937.87	391	393.43	392

PM<sub>COND</sub> emissions exhibit a pattern similar to that of PM<sub>10</sub> and PM<sub>2.5</sub> between 2015 and 2016 in the four sectors reviewed for this report. In the Chemical Manufacturing sector little variation from year to year is observed. PM<sub>COND</sub> in the Specialty Steel Sector as with PM<sub>10</sub> and PM<sub>2.5</sub> declined significantly between 2015 and 2017. PM<sub>10</sub> in this sector fell by 37.1%. PM<sub>2.5</sub> fell by 34.8% while PM<sub>COND</sub> fell by 51.9%. This larger decrease may be the result of factors used to calculate emissions of this pollutant or updated testing factors for this pollutant. The same applies to the Utility Sector where PM<sub>COND</sub> decreased by 28% while PM<sub>2.5</sub> declined by 11.5% and PM<sub>10</sub> declined 9.4%. In the Integrated Carbon Steel Sector emissions of all three forms of particulate increased slightly from 2015 till 2017. PM<sub>10</sub> increased 0.3%. PM<sub>2.5</sub> increased 6.8% and PM<sub>COND</sub> increased 0.3%. Overall PM<sub>COND</sub> emissions have declined by 68.3% since reporting of this pollutant began in 1999.

In the Allegheny County Emission Inventory facilities report filterable PM<sub>10</sub> and PM<sub>2.5</sub>. The majority of reported PM<sub>10</sub> is considered PM<sub>2.5</sub>. PM<sub>COND</sub> is the liquid droplet portion of emitted particulate matter.

g) Carbon Monoxide

**Graph 2e - Cumulative Estimated Point Source Criteria Air Emissions in Allegheny County, Pa Emissions of CO by Industry Sector**



Emissions of carbon monoxide increased 9.4% between 2015 and 2017. They increased in all four industrial sectors. The increase in the Chemical Sector was three tons in both 2016 and 2017 or 13%. In Specialty Steel the increase was 97 tons or 23%. In both the Utility Sector and the Integrated Carbon Steel Sector emissions of this pollutant declined between 2015 and 2016 before increasing in 2017. The increase in the Utility Sector for the three-year period was 53.9% and in the Integrated Carbon Steel Sector 8.9% between 2015 and 2017. Overall emissions of this pollutant have fallen 22.8% since 1996.

In 2017 carbon monoxide emissions from all three US Steel Plants accounted for 78.6% of total emissions of this pollutant for the ten plants examined by this report.

### Section III Hazardous Air Pollutants (HAPs)

Facilities are required to report emissions of any of the 187 HAPs listed in ACHD Article XXI, Section 2101.20.a. Article XXI is consistent with EPA Section 112(b) of the Clean Air Act.

Hydrogen sulfide is reported in this category. Hydrogen sulfide is a contaminant listed in Article XXI. Ammonia must be reported because it is a particulate precursor in air. It is reported in Attachment D. Some HAPs are speciated when reported. Speciation is applied to exceptionally toxic HAPs such as hexavalent chromium.

HAP reporting requirements became more stringent with the 1999 Emission Inventory. Speciation for some compounds was introduced in 1999. HAP emission estimates prior to 1999 are not comparable to those from 1999 forward.

Attachment B lists point source HAP emissions in Allegheny County by total amount of individual compound.

For the purposes of this report trends in emissions of Hydrogen Sulfide are provided with emissions of the eight HAPs with the highest level of emissions reported in 2017 plus hydrofluoric acid. Hydrofluoric acid is included because not only is it highly corrosive it is a contact poison. Hydrogen Sulfide is included in response to ongoing issues regarding its emission from the US Steel plants. It was on the original list of HAPs but was delisted in 1991. Below is the list of HAPs included in this report.

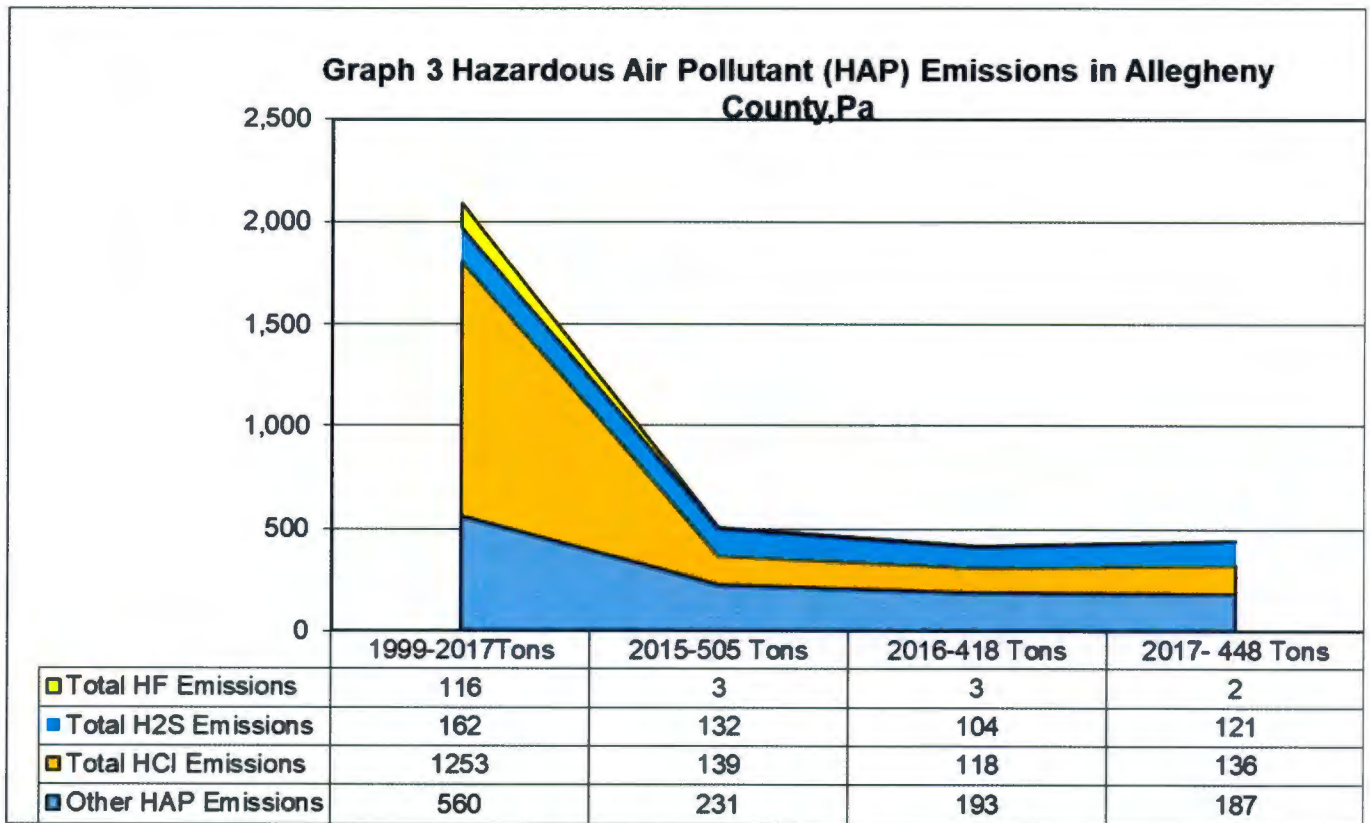
- Benzene
- Cyanide CPDS
- (Hydrogen Sulfide)
- Hydrochloric Acid
- Hydrofluoric Acid
- Methanol
- Phenol
- Styrene
- Toluene
- Xylenes

The impact of exposure to individual HAP compounds varies greatly with both the concentration and the chemical properties of the compound. Exposure concentrations required to observe negative health impacts can differ by several orders of magnitude among different compounds. Synergistic effects of exposure to combinations of HAPs at differing concentrations have not been thoroughly studied.

Section IV HAP Emission Trends

Graph 3 Illustrates HAP emissions trends in Allegheny County.

Based on the sample of ten plants selected for this report hydrogen fluoride (HF) and hydrochloric acid (HCl) made up 65.5% of total HAPs in 1999. In 2008 emissions of these two compounds from the Cheswick Power Station accounted for 67.3% of total HAP emissions. In 2015 emissions of HCl from the sample plants totaled 139 tons or 27.5% of total HAPs and emissions of HF totaled 3 tons or 0.6% of total HAPs. In 1999 hydrogen sulfide emissions were 7.8% of total HAP emissions. In 2015 because of the decline in emissions of other HAPs this compound represented 26.1% of HAP emissions though actual emissions only fell 30 tons from the 1999 level. Hydrogen sulfide emissions have changed little since 2015. Between 2015 and 2017 emissions only fell by 9.1%. Total HAP emissions have not declined relatively significantly since 2015. They are only 11.3% lower in 2017 than in 2015. The table below lists HCl and HF emissions from Cheswick for the last three years. They are lower in 2017 than in the previous two years because of a reduction in the amount of coal burned at Cheswick in 2017. HAP emissions from Cheswick are low because the utility operated the flue gas desulfurization system whenever the boiler was online.



Cheswick	HCl TPY	HF TPY
2015	4.2	2.1
2016	4.88	2.05
2017	2.31	1.42

Only the Gottlieb plant on Neville Island emits HF in addition to Cheswick. Gottlieb's emissions of this pollutant in 2015 totaled 1.72 tons, in 2016 were 1.74 tons and in 2017 were 1.91 tons.

The three largest sources of HCl emissions currently are the USS Clairton Works, the USS Irvin Plant, and USS Edgar Thomson Plant. The table below presents HCl emissions from these three plants for the past three years.

HCl	2015	2016	2017
USS Clairton	101.27	77.45	92.09
USS Edgar Thomson	10.18	12.7	13.63
USS Irvin	20.96	17.68	24.19

In 2014 the largest emitter of HF was Cheswick accounting for 51% of the six-ton County total and Gottlieb generated 29.2% of the total. In 2017 Gottlieb accounted for 57.4% of the HF reported in the inventory while Cheswick accounted for 42.6%

In 2017 USS Clairton Works accounted for 67.7% of total HCl emissions. Emissions of HCl will fluctuate with operations at the Clairton Coke Works going forward. Since 2002 HCl emissions from this plant have ranged between 77 and 110 tons per year.

HAP emissions of compounds other than HCl, HF and H<sub>2</sub>S have decreased 66.6% since 1999. Between 2015 and 2017 emissions of other HAPs declined 19%. Emissions of other HAPs between 2015 and 2017 fell 44 tons in absolute terms at the facilities included in this report.

Benzene, toluene, phenol, and xylenes are all aromatic hydrocarbons. Between 2015 and 2017 emissions of these four aromatic compounds fell 36.4%. Since 1999 emission of these four compounds have declined 78%. This can be attributed to the combination of process changes at facilities using these compounds and the shutdown of facilities previously emitting them like Shenango.

#### Section V Comparison - Emissions of the Cheswick Power Station and USS Clairton Coke Works to total point source emissions of ten plants included in report.

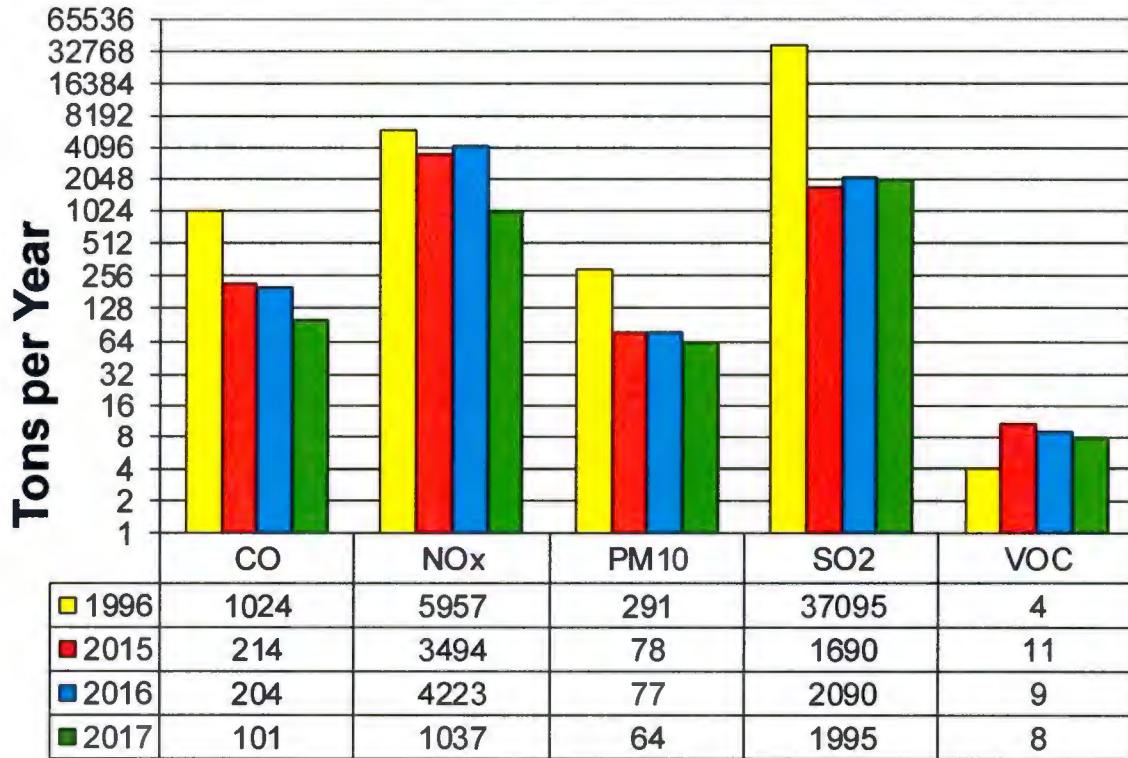
The Cheswick Power Station is no longer the single largest point source emitter of criteria pollutants in Allegheny County. Graph 5 shows its contributions to total CO, PM<sub>10</sub>, and VOCs is relatively small. Still between 2017 it accounted for 20.4% of nitrogen oxide point source emissions and 45.6% of sulfur dioxide emissions among the ten major sources used as a basis for this report. Cheswick's continues to effectively operate their flue gas desulfurization system. Since 1996 emissions of sulfur dioxide from Cheswick have fallen by 94.4%.

The Clairton Coke Works in 2017 was the largest emitter of criteria pollutants. Criteria emission from Clairton totaled 7374 tons while those from Cheswick only totaled 3301 tons, which is 55.2% lower than Clairton's.

Clairton generated 50.5% of the carbon monoxide emissions from among the ten plants analyzed for this report in 2017 and 51.2% of the NO<sub>x</sub> emissions. This facility emitted 61.3% of the PM<sub>10</sub>, 24.6% of the sulfur dioxide and 33.6% of the VOCs. Since 1996 emission of criteria pollutants from Clairton have fallen 55.4%

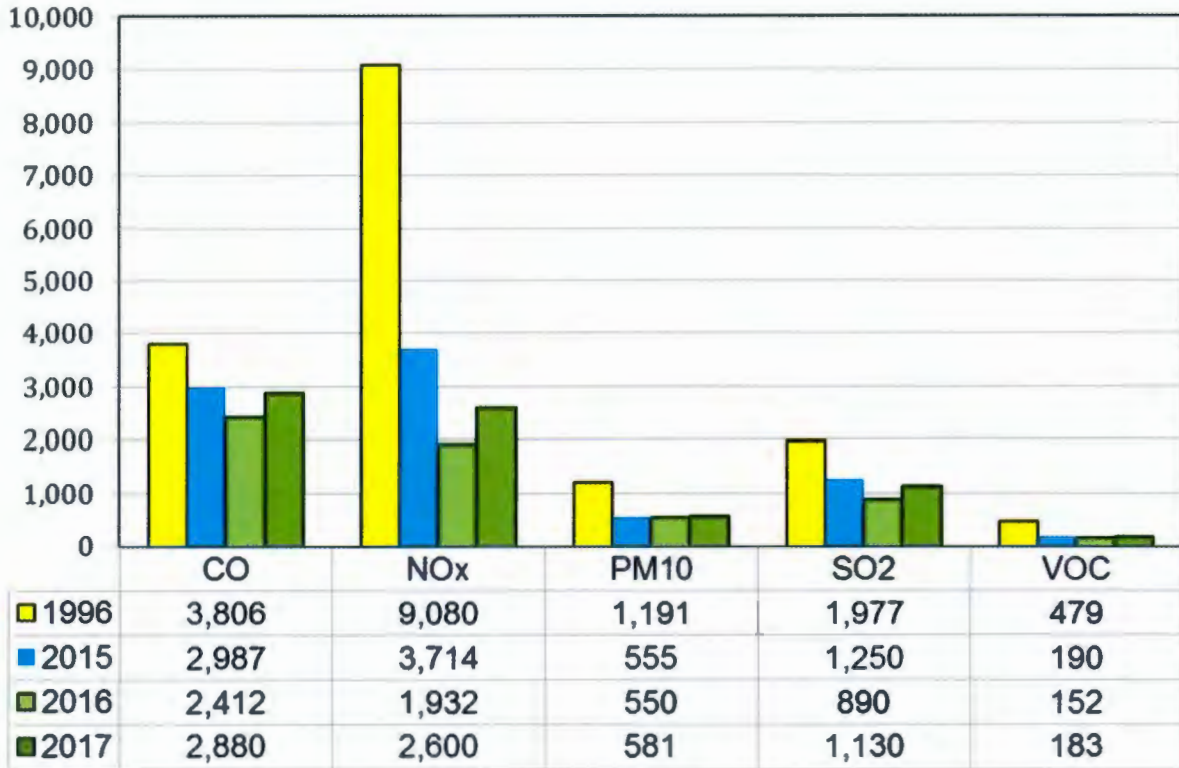
Graph 5 (note the y-axis values) illustrates the trends of criteria emissions at the Cheswick Power Station for 1996, 2015, 2016 and 2017.

**Graph 5 - Criteria Emissions from Cheswick Power Station**



Graph 5a illustrates the trends of criteria emissions from the USS Clairton Coke Works for 1996, 2015, 2016 and 2017.

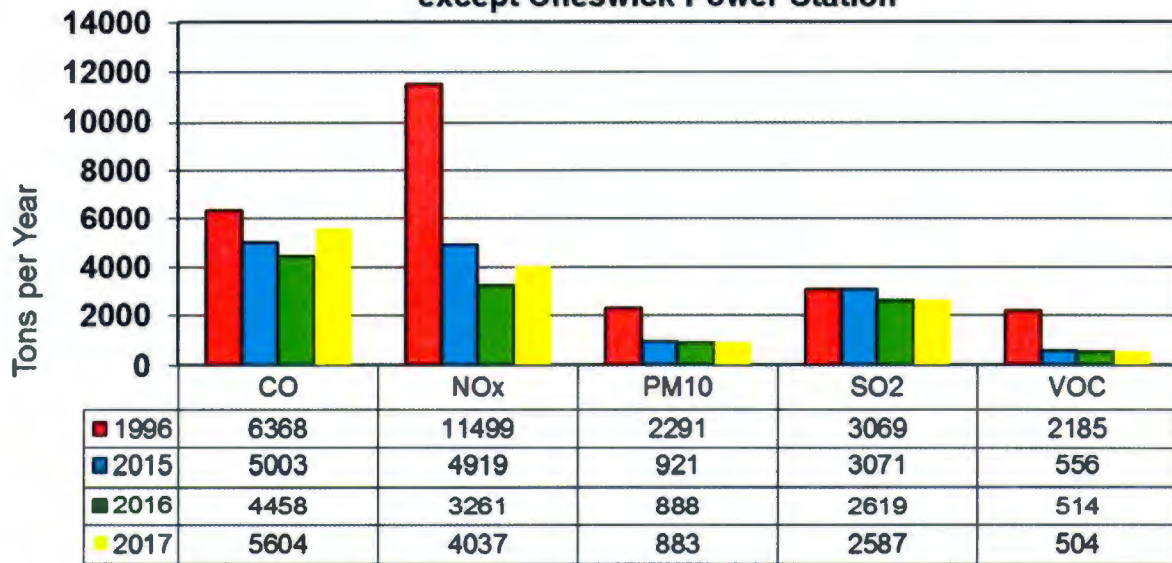
**Graph 5a - Criteria Emissions USS Clairton Coke Works  
TONS PER YEAR**



By comparison, Graph 6 shows criteria emissions from all the other sources in the County for the same period except Cheswick.

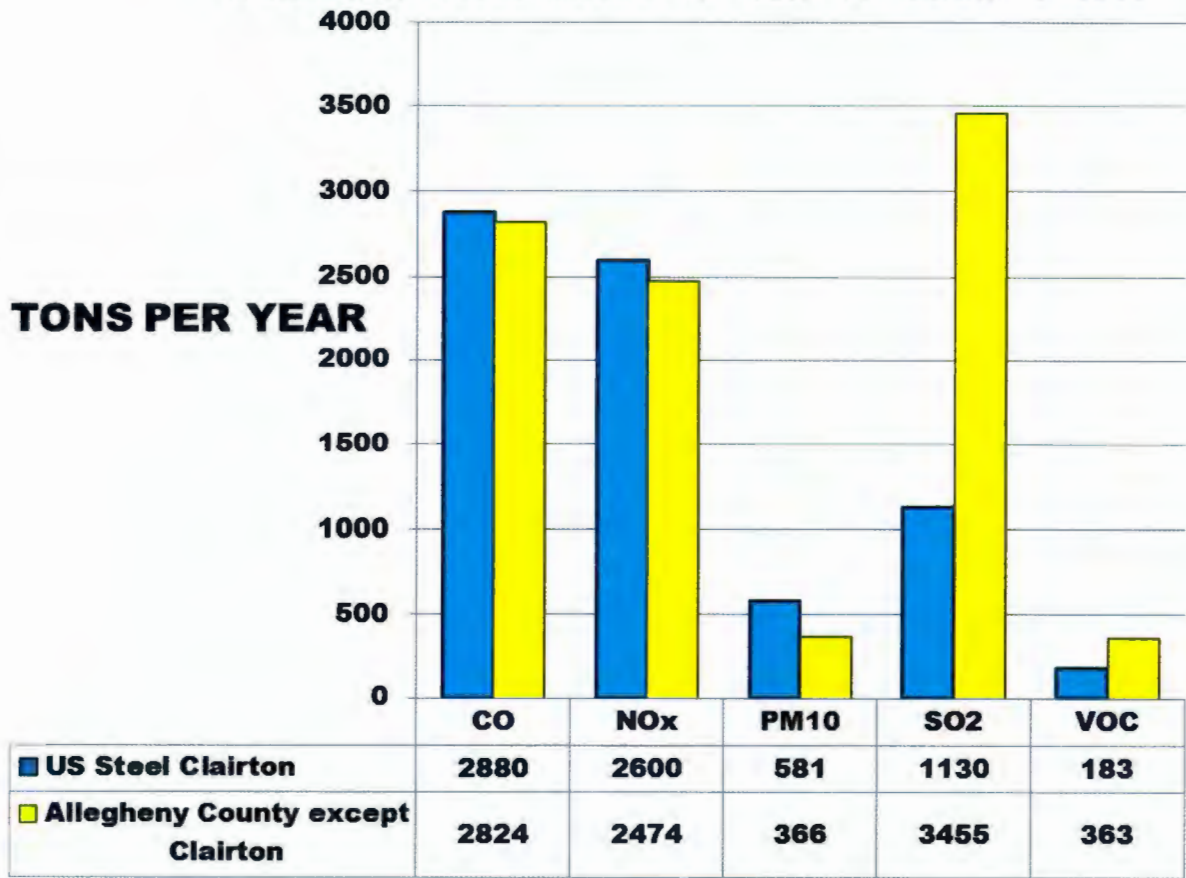


**Graph 6- Criteria Emissions from Point Sources in Allegheny County Pa, except Cheswick Power Station**



Since the USS Clairton Coke Works is currently the largest source of criteria pollutants in Allegheny County, Graph 6a details emissions from this source to the total from the other nine sources analyzed for this report for 2015, 2016 and 2017.

**CHART 6a - COMPARISON CRITERIA EMISSIONS  
CLAIRTON COKE WORKS TO REST OF COUNTY 2017**

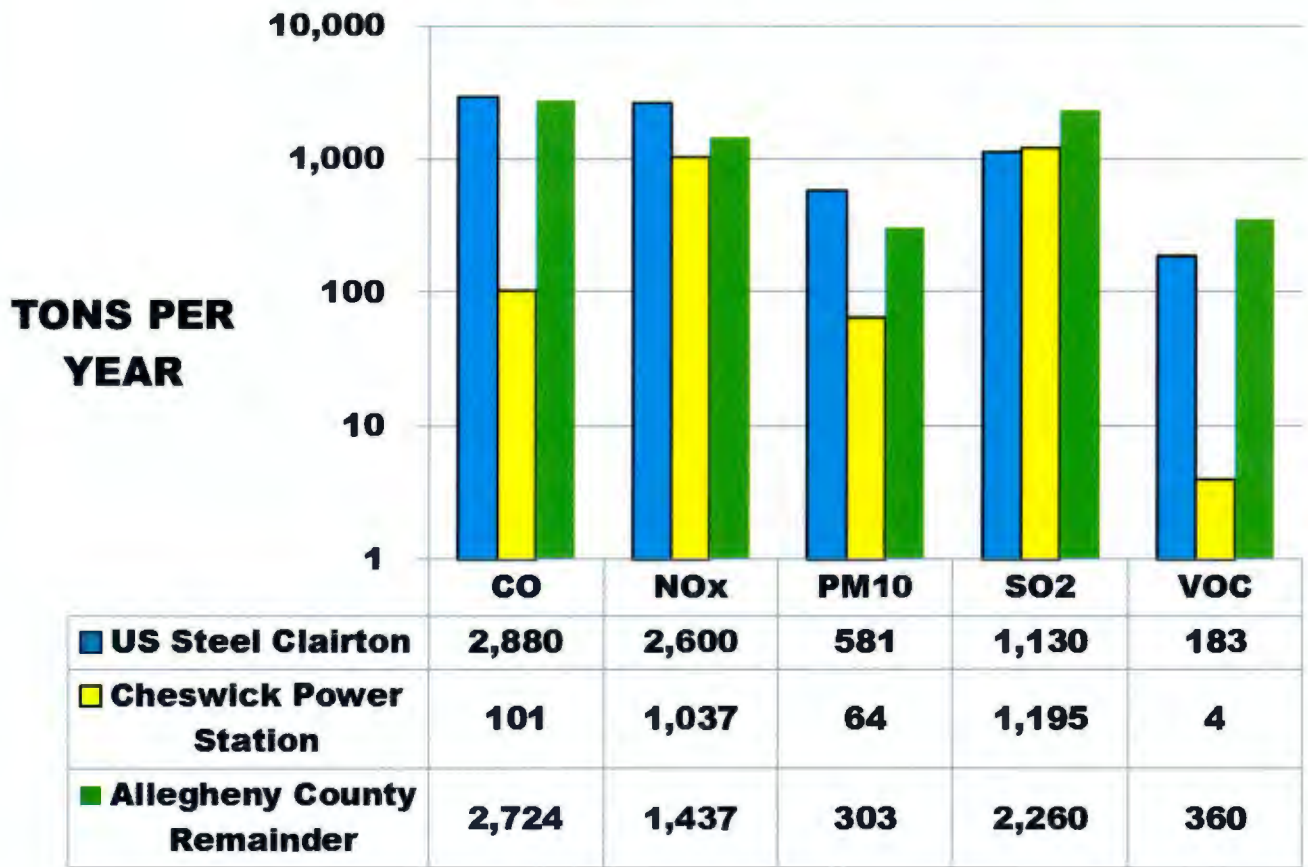


Clairton's 2017 emissions accounted for the following percentages of the totals reported from the ACHD Air Quality Emission Inventory.

- CO – 50.5%
- NO<sub>x</sub> – 51.2%
- PM<sub>10</sub> – 61.3%
- SO<sub>2</sub> – 24.7%
- VOC – 33.6%

Graph 6b compares criteria emissions in 2017 from the Clairton Coke Works to those from the Cheswick Power Station and the County Remainder.

### GRAPH6b - COMPARISON 2017 CRITERIA EMISSIONS CLAIRTON COKE WORKS AND CHESWICK POWER STATION WITH COUNTY REMAINDER



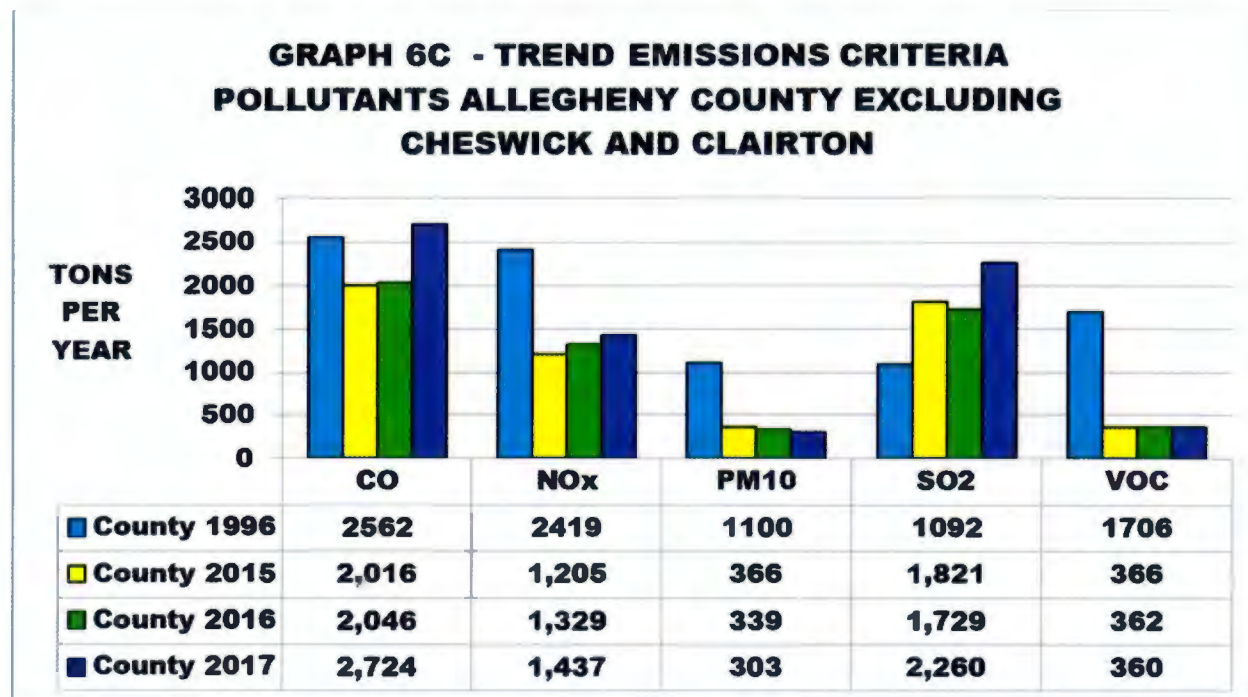
Graph 6b shows Clairton’s emissions of NO<sub>x</sub> exceeded Cheswick’s by 60.1% and Cheswick’s emission of SO<sub>2</sub> exceeded those of Clairton by 5.4%. Compared to the other eight plants used for this report Clairton’s NO<sub>x</sub> emissions were 5.7% higher and the sulfur dioxide emissions were 48.7% lower.

Percentage emissions of all criteria pollutants from all plants covered in this report after the exclusion of Cheswick and Clairton are listed in 2017 are below:

- CO – 47.8%
- NO<sub>x</sub> – 28.3%
- PM<sub>10</sub> – 32.0%
- \* SO<sub>2</sub> – 49.3%
- \* VOC – 65.8%

Operations at Cheswick fluctuate with the demand for electricity, which is dependent on many economic factors. Demand for power from the plant no longer disproportionately determines the total level of pollution in the County. In 2015, 2016 and 2017, both the Cheswick Power Plant and the USS Clairton Coke Works dominated emission levels in the County. Both plants generated 52.3% of the carbon monoxide emitted, 71.7% of the NO<sub>x</sub>, 60.8% of the PM<sub>10</sub>, 50.7% of the SO<sub>2</sub> and 34.1% of the VOCs. Emissions from both plants dominate emissions of all criteria pollutants from the remainder of the sources included in this report for Allegheny County.

Graph 6c illustrates and compares the trend in emissions of criteria pollutants from the remainder of the sources in Allegheny County in 1996, 2015, 2016 and 2017 for the ten facilities analyzed for this report.



Criteria emissions from the other eight sources analyzed for this report do not exhibit consistent patterns of decrease since the base year 1996. Carbon monoxide emissions have increased by 5.1%, NO<sub>x</sub> emissions have fallen by 40.6%, PM<sub>10</sub> emissions have fallen by 72.6%, sulfur dioxide emissions increased 206% and VOC emissions have decreased by 78.9%.

### Notes to the report:

1. Estimation of PM<sub>2.5</sub> and condensable particulate (PM<sub>COND</sub>) emissions started with the 1999 inventory year. PM and condensable particulate were not reported for 2011 or 2012. Reporting of these pollutants resumed in 2013.
2. Hydrogen sulfide is considered a pollutant in Allegheny County. Ammonia is a particulate precursor. Hydrogen sulfide is listed in the HAPs Table while ammonia is in a separate table. They are not among the 187 compounds designated HAPs by USEPA. Speciated compounds of very toxic HAPs such as hexavalent chromium and dioxin isomers are not specifically listed in ACHD Article XXI as HAPs but are reported at de-minimus emission levels in the inventory.
3. Lead emissions are included in the HAPs tables.
4. Definitions of Emissions
  - 4.1. Filterable Particulate – Material emitted as liquid or solid at 248°F
  - 4.2. Condensable Particulate (PM<sub>COND</sub>) – Material that is not filterable at 248°F and condenses when passed through water in an ice bath.
  - 4.3. Total Particulate (PT) – Filterable Particulate
  - 4.4. PM<sub>10</sub> - Filterable particulate with aerodynamic diameter less than 10 microns.
  - 4.5. PM<sub>2.5</sub> - Filterable particulate with aerodynamic diameter less than 2.5 microns
  - 4.6. Volatile Organic Compounds (VOCs) – Organic material that is photo reactive and a gas at 250°F. It contributes to the formation of ozone.
5. The Attachment B lists yearly emissions of HAPs for each source from 1999 - 2012. HAP emissions were estimated prior to this, but results are believed to be less accurate.
6. The Bay Valley facility, formerly Heinz, is in the category Industrial Coal Fired Boiler.
7. Emission estimates for each facility are calculated each year. Estimates of previous years are not normally updated if emission factors or estimation techniques change for processes.

**Attachment A**  
**Individual Facility Criteria Pollutant**  
**Emissions**

# ANNUAL EMISSIONS INVENTORY REPORT

## ATTACHMENT A: Point Source Criteria Air Emissions Report 1996 2015 2016 2017

COMPANY NAME	ZIP	YEAR	CO	NOx	PM10 <sub>FL</sub>	PM2.5 <sub>FL</sub>	PMCOND	PT <sub>FL</sub>	SO2	NH3	VOC	SIC CODE	SIC DESCRIPTION
ALLEGHENY ENERGY SUPPLY - SPRINGDALE CGT Butler Street ext Springdale, PA 15144	15144	1996	12.78	12.38	0.33				0.59		0.37	4911	ELECTRIC SERVICES
		2014	114.88	138.00	28.29	14.95	292.35	8.16	100.05	23.23			
		2015	56.04	128.10	60.87	27.72	32.56	8.03	144.26	49.93			
		2016	56.13	153.30	68.13	31.03	37.06	9.16	163.41	49.23			
		2017	104.58	173.24	61.00	28.05	33.64	8.27	138.38	54.48			
ATI 100 River Rd. Brackenridge, PA 15014	15014	1996	653.98	442.58	472.32				41.84		255.82	3312	BLAST FURNACES & STEEL MILLS
		2014	421.71	284.33	148.78	103.34	86.46	33.88	5.52	63.58			
		2015	347.30	215.10	92.80	65.30	49.50	26.50	3.97	49.80			
		2016	340.10	166.70	56.30	53.10	48.20	31.40	2.68	45.90			
		2017	753.80	157.10	55.90	52.30	22.40	22.10	2.85	14.30			
EASTMAN CHEMICAL RESINS, INC. State Highway 837 & Madison Ave West Elizabeth, PA 15088	15088	1996	22.50	41.19	19.58				4.44		859.18	2821	PLASTICS, MATERIALS & RESINS
		2014	14.83	40.87	10.12	9.04	1.51	0.16	3.48	106.27			
		2015	12.14	320.82	10.22	9.04	1.39	14.81	1.52	117.53			
		2016	13.11	34.84	9.82	9.03	1.32	0.14	0.98	123.14			
		2017	13.61	38.40	10.13	8.75	1.45	1.45	1.25	129.43			
NRG ENERGY INC. - CHESWICK STATION (FORMERLY GEN ON ENERGY) 100 PITTSBURGH STREET SPRINGDALE, PA 15144	15024	1996	1024.34	5957.35	2+91.02				37094.67		4.37	4911	ELECTRIC SERVICES
		2014	310.01	6101.38	309.56	211.45	42.89	4445.41	1.44	11.06			
		2015	213.55	3494.29	78.40	51.68	90.93	1690.16	1.64	8.52			
		2016	203.61	4223.06	76.74	50.27	87.79	2090.74	0.00	7.49			
		2017	101.41	1037.00	64.45	42.14	55.54	1995.13	0.28	3.95			
NEVILLE CHEMICAL COMPANY 2800 Neville Road Pittsburgh, PA 15225	15225	1996	17.87	33.03	25.36				9.24	453.75		2821	PLASTICS, MATERIALS & RESINS
		2014	11.07	12.74	1.64	1.51	0.04	0.06	1.06	81.40			
		2015	10.37	11.70	1.58	1.47	0.04	0.07	1.21	62.66			
		2016	12.88	16.09	1.44	1.35	0.05	0.09	64.48				
		2017	11.94	14.65	1.35	1.29	0.05	0.08	66.54				
PITTSBURGH ALLEGHENY COUNTY THERMAL, LTD 120 Cecil Way Pittsburgh, PA 15222	15222	1996	19.40	94.29	1.46	0.63	2.48	0.85	0.74		0.68	4961	STEAM SUPPLY
		2014	28.80	69.63	0.07	0.04	0.11	0.21	0.17	1.89			
		2015	25.55	62.17	0.06	0.03	0.10	0.18	1.68	2.33			
		2016	25.37	62.72	0.06	0.03	0.10	0.02	1.67	2.50			
		2017	24.86	59.19	0.06	0.03	0.10	0.18	1.63	2.59			
UNIVERSAL STAINLESS & ALLOY PRODUCTS 800 Mayer Street Bridgeville, PA 15017	15017	1996	65.69	28.44	22.24				1.54		8.25	3312	BLAST FURNACES & STEEL MILLS
		2014	92.05	33.31	15.19	10.67	2.98	5.27	1.04	22.67			
		2015	71.86	31.14	12.42	9.82	2.59	6.23	1.01	16.42			
		2016	81.31	33.22	13.91	10.85	2.80	6.43	1.05	19.15			
		2017	210.17	42.03	10.48	9.70	2.64	5.15	1.15	8.92			
USS - CLAIRTON WORKS 400 State Street Clairton, PA 15025	15025	1996	3805.65	9079.78	1191.16				1978.96		478.75	3312	BLAST FURNACES & STEEL MILLS
		2014	2758.20	3794.78	559.81	344.51	331.77	1511.73	141.75	291.15			
		2015	2987.43	3714.38	554.55	342.98	313.83	1250.12	132.15	189.76			
		2016	2412.37	1932.09	550.35	354.88	293.12	689.75	109.51	152.23			
		2017	2880.30	2599.70	561.10	378.96	295.48	1129.64	116.84	163.95			
USS CORPORATION - EDGAR THOMSON WORKS 13th & Braddock Avenue Braddock, PA 15104	15104	1996	1821.65	572.09	426.07	257.34	674.37	426.43	886.33		89.42	3312	BLAST FURNACES & STEEL MILLS
		2014	1342.72	358.05	118.04	50.35	62.64	1329.02	21.74	22.16			
		2015	1233.07	1233.07	169.95	70.69	56.99	1357.13	17.90	20.72			
		2016	1328.05	1328.05	159.43	72.30	80.73	1480.39	18.99	24.45			
		2017	1318.60	1318.60	132.42	62.67	78.04	1260.41	19.72	32.71			
USS CORPORATION - IRVIN PLANT CAMP HOLLOW RD, BOX 878 DRAVOSBURG, PA 15034	15034	1996	148.25	1194.82	132.81				43.66	147.16	38.10	3312	BLAST FURNACES & STEEL MILLS
		2014	776.57	766.54	47.64	41.67	19.42	715.94	2.59	146.85			
		2015	259.87	421.77	27.95	23.34	17.63	406.45	3.38				
		2016	169.31	432.04	29.01	24.60	19.58	201.50	4.72				
		2017	285.34	451.71	30.58	25.37	18.33	160.77	2.93				

**Attachment B**  
**Individual HAP Emissions from all**  
**Facilities**



## Allegheny County Health Department

## Air Quality Program

## 1996 2015,2016, 2017 ANNUAL EMISSIONS INVENTORY REPORT

Total Point Source Emissions of  
Hazardous Air Pollutants & Hydrogen Sulfide

CAS #	Hazardous Air Pollutant	1999	2014	2015	2016	2017		
71432	BENZENE	55.21	37.10	32.61	18.44	15.21		
CNC	CYANIDE COMPOUNDS	30.25	20.69	19.68	14.10	15.62		
7647010	HYDROCHLORIC ACID	1253.00	163.12	138.75	118.26	135.99		
7664393	HYDROGEN FLUORIDE	116.00	6.21	2.81	2.66	2.05		
67561	METHANOL	97.28	65.50	56.80	48.12	61.58		
108952	PHENOL	15.90	22.44	23.10	17.62	19.02		
100425	STYRENE	53.65	24.58	25.71	25.28	26.61		
108883	TOLUENE	157.98	37.10	57.54	49.29	35.56		
1330207	XYLENES (MIXED ISOMERS)	149.31	17.58	17.52	20.40	13.36		
7783064	HYDROGEN SULFIDE	162.27	127.78	131.50	103.75	120.63		
<b>TOTAL HAZARDOUS AIR POLLUTANTS (TPY)</b>		<b>2090.85</b>	<b>522.10</b>	<b>506.02</b>	<b>417.92</b>	<b>446.63</b>		
<i>Including Hydrogen Sulfide</i>								

### Adjustments to "Attachment B - Total Point Source HAP Emissions"

Previous emission inventory assessments are not normally recalculated when estimation methods are improved, or emission factors updated. Therefore, apparent changes in the amounts of emissions reported may not be actual. An exception has been made for the acid gases HCl and HF, and adjustments have been made to previous years' inventories.

Examples are the estimates of emissions of the two acid gasses from the Cheswick Power Station. Changes in the emission factors used for HCl and HF during 2002 produced estimates different enough to significantly affect the reported HAP emissions from this plant, total emissions of these pollutants and the total HAP emission inventory.

During 2000, source testing was performed for HCl emissions from coke oven stacks at the USS Clairton Coke Plant. This testing found HCl emissions not previously detected. These emissions were included in the 2000 and later inventories.

Adjustments were made to previously reported Total Point Source HAP Emissions to account for these changes. Adjusted values are used for this comparison only. Agency emission inventory records have not been adjusted.

Emissions of hydrochloric acid (HCl) are about 24.6% of the total emissions in Attachment B.

**Attachment C**  
**Hazardous Air Pollutant Emissions**  
**Individual Facilities**

### 1996 2015,2016, 2017 ANNUAL EMISSIONS INVENTORY REPORT

Total Point Source Emissions of  
Hazardous Air Pollutants & Hydrogen Sulfide

COMPANY NAME	ZIP	HAZARDOUS AIR POLLUTANT	CAS#	1999	2015	2016	2017
ALLEGHENY ENERGY SUPPLY - SPRINGDALE	15144	BENZENE	71432		0.16	0.18	0.11
		ACETALDEHYDE	75070	0.00	0.54	0.81	0.58
		ETHYL BENZENE	100414		0.51	0.49	0.44
		FORMALDEHYDE	50000	0.30		0.69	0.93
		TOLUENE	108883	0.00	1.78	2.03	1.85
		XYLENES (ISOMERS AND MIXTURE)	1330207	0.00	0.82	1.00	0.89

COMPANY NAME	ZIP	HAZARDOUS AIR POLLUTANT	CAS#	1995	2015	2016	2017
ALLEGHENY LUDLUM CORP - BRACKENRIDGE	15014	BENZENE	71432				
		CADMIUM	7440439				
		CHROMIUM	7440473	0.00	0.80	0.88	0.73
		CHROMIUM COMPOUNDS	CRC	2.38			
		FORMALDEHYDE	50000				
		HEXANE	110543	3.07	1.01	0.56	0.52
		HYDROGEN FLUORIDE	7664393	1.81	0.81	0.59	0.63
		LEAD	PB	0.00	0.10	0.09	0.10
		LEAD COMPOUNDS	PBC	1.83			
		MANGANESE	7439965	0.00	0.64	0.54	0.79
		MANGANESE COMPOUNDS	MNC	4.33			
		NICKEL	7440020	0.00	0.65	0.38	0.48
		NICKEL COMPOUNDS	NIC	1.28			
		TOLUENE	108883				

COMPANY NAME	ZIP	HAZARDOUS AIR POLLUTANT	CASE	1999	2015	2016	2017
EASTMAN CHEMICAL RESINS, INC.	15088	1,2,4-TRIMETHYLBENZENE	95636	0.00	0.00	0.00	0.34
		1,3-CYCLOPENTADIENE	542927	0.00			
		ARSENIC	7440382	0.00			
		BENZENE	71432	1.96	0.06	0.02	0.01
		CHLORINE	7782505	0.17	0.00	0.00	0.00
		ISOPROPYLBENZENE	98828	3.59	0.49	0.63	1.08
		CYCLOHEXANE	110827	0.00			
		CYCLOPENTENE	142290	0.00			
		ETHYL BENZENE	100414	5.20	0.29	0.24	0.33
		FORMALDEHYDE	50000		0.01	0.02	0.62
		HEXANE	110543	0.02	0.18	0.42	0.46
		HYDROCHLORIC ACID	7647010	1.89	0.00	0.00	0.46
		HYDROGEN FLUORIDE	7664393	0.27			
		LEAD	PB	0.00			
		METHYLSTYRENE	25013154	0.00			
		NAPHTHALENE	91203	1.11	0.00	0.00	0.06
		PROPYL BENZENE	103651	0.01			
		STYRENE	100425	19.72	2.40	3.66	7.60
		TOLUENE	108883	36.88	15.14	21.08	18.78
		TRIMETHYL BENZENE	2551137	0.01	2.10		
TRIMETHYLBENZENE	25551137	0.00	0.82	0.78	0.66		
XYLENES (ISOMERS AND MIXTURE)	1330207	10.82					

COMPANY NAME	ZIP	HAZARDOUS AIR POLLUTANT	CAS#	1999	2015	2016	2017
NRG ENERGY INC. - CHESWICK STATION	15144	2-CHLOROACETOPHENONE	532274	0.00			
		2,4-DINITROTOLUENE					
		ACETALDEHYDE	75070	0.34	0.35	0.24	0.16
		ACETOPHENONE	98862	0.01	0.01	0.01	0.00
		ACROLEIN	107028	0.17	0.18	0.12	0.08
		ANTHRACENE	120127	0.00			
		ANTIMONY	7440360	0.01			
		ARSENIC	7440382	0.41			
		BENZENE	71432	0.06	0.80	0.54	0.04
		BENZO(G,H,I)PERYLENE	191242	0.00			
		BENZYL CHLORIDE	100447	0.42			
		BERYLLIUM	7440417	0.05	0.01	0.01	0.00
		BIPHENYL	92524	0.00	0.00	0.00	0.00
		BIS(2-ETHYLHEXYL)PHTHALATE	117817	0.04			
		BROMOFORM	75252	0.02		0.02	0.01
		CADMIUM	7440439	0.01	0.03	0.02	0.00
		CARBON DISULFIDE	75150	0.08	0.08	0.05	0.04
		CHLOROBENZENE	108907	0.01	0.01	0.70	0.01
		CHLOROFORM	67663	0.04	0.04	0.03	0.02
		CHROMIUM	7440473	0.25			
		Cr+++	16065831	0.00	0.11	0.08	0.03
		HEXAVALENT CHROMIUM	18540299	0.00	0.11	0.08	0.03
		Co	7440484	0.05			
		C=N	57125	0.00	1.54	1.04	0.69
		CYANIDE COMPOUNDS	CNC	1.49			
		DIMETHYL SULFATE	77781	0.03	0.03	0.03	0.01
		ETHYL BENZENE	100414	0.06	0.06	0.04	0.03
		ETHYL CHLORIDE (CHLOROETHANE)	75003	0.02	0.03	0.02	0.01
		ETHYLENE DICHLORIDE	107062	0.02	0.04	0.02	0.01
		FORMALDEHYDE	50000	0.05	0.15	0.12	0.02
		HEXANE	110543	0.17	0.16	0.46	0.13
		HYDROCHLORIC ACID	7647010	1021.93	4.59	4.22	2.31
		HYDROGEN FLUORIDE	7664393	96.85	3.06	2.71	1.42
		ISOPHORONE	78591	0.34	0.36	0.24	0.16
		LEAD	PB	0.23	0.02	0.21	0.01
		MANGANESE	7439965	0.34	0.30	0.20	0.03
		MERCURY	7439976	0.10	0.04	0.01	
		METHYL BROMIDE (BROMOMETHANE)	74839	0.10	0.10	0.07	0.04
		METHYL CHLORIDE CHLOROMETHANE	74873	0.31	0.33	0.22	0.15
		METHYL CHLOROFORM	71556	0.01	0.01	0.01	0.01
		METHYL METHACRYLATE	80626	0.01	0.01	0.01	0.01
		METHYL TERT-BUTYL ETHER	1634044	0.02	0.02	0.02	0.01
		METHYLENE CHLORIDE	75092	0.17	0.01	0.12	0.08
		METHYL HYDRAZINE	60344	0.10	0.11	0.07	
		M-XYLENE	108383	0.00	0.01	0.00	0.00
		NAPHTHALENE	91203	0.01	0.01	0.01	0.00
		NICKEL	7440020	0.21	0.17	0.12	0.04
		OCTACHLORODIBENZOFURANS, TOTAL	39001020	0.00			
		PHENOL	108952	0.01	0.01	0.01	0.00
		POLYCYCLIC ORGANIC MATTER					
PROPIONALDEHYDE	123386	0.23	0.23	0.20	0.11		
SELENIUM	7782492	2.60	0.80	0.54	0.07		
STYRENE	100425	0.01	0.02	0.01	0.01		
TETRACHLOROETHYLENE	127184	0.03					
TOLUENE	108883	0.02	0.15	0.10	0.07		
VINYL ACETATE	108054	0.00	0.01	0.00	0.00		
XYLENES (ISOMERS AND MIXTURE)	1330207	0.02	0.02	0.02	0.01		

COMPANY NAME	ZIP	HAZARDOUS AIR POLLUTANT	CAS#	1999	2015	2016	2017
NEVILLE CHEMICAL COMPANY	15225	1,2,4-TRIMETHYLBENZENE	95636	3.45	0.27	0.31	0.00
		1,2-DICHLOROETHYLENE	540590	0.00			
		1,3,5-TRICHLOROBENZENE	108703	0.00			
		1,3-BUTADIENE	106990	0.00	0.00	0.01	
		ACETALDEHYDE	73070		0.00	0.01	
		ACROLEIN	107028		0.00	0.00	
		ANTHRACENE	120127	0.00			
		BENZENE	71432	4.14	0.27	0.27	0.00
		BENZOFURAN	271896	0.00			
		BIPHENYL	92524				
		BUTYLBENZENE	104518	0.00			
		CADMIUM	7440439				
		CARBON DISULFIDE	75150		0.00	0.00	
		CHLOROBENZENE	108907	0.01	0.00	0.00	
		CHROMIUM	7440473				
		CHROMIUM COMPOUNDS	CRC	0.01			
		CRESOLS (MIXED ISOMERS)	1319773	0.00			
		ISOPROPYLBENZENE	98828	0.17	0.10	0.09	
		DICYCLOPENTADIENE	77736	0.00	2.78	2.43	0.00
		ETHYL BENZENE	100414	1.89	0.52		0.00
		FORMALDEHYDE	50000	0.00	0.02		
		HEXANE	110543	0.16	0.22		
		HYDROCHLORIC ACID	7647010	0.00			
		INDENE	95136	0.00			
		MALEIC ANHYDRIDE	108316	0.00			
		METHANE	74828	0.00			
		METHANOL	67561	0.00	0.00	0.00	
		NAPHTHALENE	91203	1.00	0.31	0.32	
		NICKEL	7440020		0.00	0.00	
		PHENOL	108952	0.00	0.00	0.00	
		PROPYL BENZENE	103651	0.00			
		STYRENE	100425	1.90	0.72	0.84	0.00
		TOLUENE	108883	6.92	0.68	0.77	0.00
TRIMETHYL BENZENE	2551137	0.00					
XYLENES (ISOMERS AND MIXTURE)	1330207	4.81	1.67	1.64	0.00		



COMPANY NAME	ZIP	HAZARDOUS AIR POLLUTANT	CAS#	1999	2015	2016	2017
PITTSBURGH ALLEGHENY COUNTY THERMAL, LTD	15222	HEXANE	110543	0.00	0.62	0.54	0.53
		LEAD	PB	0.00	0.00	0.00	0.00
UNIVERSAL STAINLESS & ALLOY PRODUCTS	15017	CHROMIUM	7440473				
		CHROMIUM COMPOUNDS	CRC	0.35	0.18	0.15	0.13
		HEXANE	110543		0.58	0.58	0.64
		LEAD	PB	0.00	0.02	0.01	0.00
		MANGANESE	7439965		0.32	0.27	0.16
		NICKEL	7440020		0.12	0.10	0.07
US STEEL CORPORATION - IRVIN PLANT	15034	NICKEL COMPOUNDS	NIC	0.15			
		BENZENE	71432	0.00	0.09	0.08	0.11
		CADMIUM	7440439				
		CARBON DISULFIDE	75150	0.18	0.15	0.13	0.17
		CHLORINE	7782505	0.36	0.30	0.25	0.34
		CHROMIUM	7440473				
		ETHYL BENZENE	100414		0.02	0.02	0.01
		ETHYLENE GLYCOL	107211	0.47	0.09	0.06	0.05
		FORMALDEHYDE	50000				
		GLYCOL ETHERS	GLYET	0.00	0.15	0.10	0.09
		HEXANE	110543	1.63	1.50	2.30	1.19
		HYDROCHLORIC ACID	7647010	29.67	20.97	17.68	24.19
		LEAD	PB	0.02			
		METHANOL	67561	1.55		0.00	0.00
		NICKEL	7440020				
		TOLUENE	108863	0.35	0.09	0.03	0.03
		XYLENES (ISOMERS AND MIXTURE)	1330207		1.02	0.02	0.02

COMPANY NAME	ZIP	HAZARDOUS AIR POLLUTANT	CAS#	1999	2015	2016	2017
USS - CLAIRTON WORKS	15025	1,1,2,2-TETRACHLOROETHANE	79345	0.26	0.16	0.13	0.14
		1,4-DIOXANE	123911	0.53	0.32		0.28
		ACENAPHTHYLENE	208968	0.46	0.40	0.35	0.38
		ACETONITRILE	75058	0.29	0.19	0.15	0.17
		ACROLEIN	107028	0.34	0.21	0.17	0.18
		ANTHRACENE	120127	0.23	0.18	0.14	0.16
		ANTIMONY	7440360	0.37	0.20	0.16	0.03
		ARSENIC	7440382				
		BENZ(A)ANTHRACENE	58553	0.16	0.16	0.14	0.15
		BENZO(B)FLUORANTHENE	205992	0.10		0.08	0.08
		BENZENE	71432	26.85	16.57	12.17	13.34
		BENZO(A)PYRENE	50328	0.12	0.11	0.09	0.10
		BENZO(G,H,I)PERYLENE	191242		0.26	0.21	0.24
		BENZO(K)FLUORANTHENE	207089	0.08	0.08	0.07	0.07
		BIPHENYL	92524	0.04	0.15	0.12	0.13
		C15-H10	C15-H10		0.20	0.18	0.19
		C15-H12	C15-H12		0.13	0.11	0.12
		CADMIUM	7440439				
		CARBON DISULFIDE	75150	18.31	16.65	12.82	15.04
		CARBON OXY SULFIDE	463581				
		CHLORINE	7782505	1.44	1.38	1.03	1.25
		CHROMIUM	7440473	4.46			
		CHRYSENE	218019	0.19	0.22	0.19	0.21
		Co	7440484	0.21			
		COKE OVEN EMISSIONS	CE		87.02	80.01	81.58
		CRESOLS/CRESYLIC ACID	1319773	1.85	1.52	1.19	1.38
		CYANIDE COMPOUNDS	CNC	37.13	17.17	14.01	15.63
		DIBENZO(A,H)ANTHRACENE	53703	0.01	0.01		0.01
		DIBENZOFURANS	132649	0.37	0.00	0.00	0.00
		ETHYL BENZENE	100414	0.03	0.02	0.01	0.03
		ETHYLENE GLYCOL	107211	0.15	0.03	0.01	0.06
		FLUORANTHENE	206440	0.56	0.60	0.51	0.56
		FLUORENE	86737	0.23	0.21	0.19	0.20
		FORMALDEHYDE	50000	0.00			
		GLYCOL ETHERS	GLYET	0.00	0.19	0.57	0.72
		HEXANE	110543	0.57	1.02	2.76	0.76
		HYDROCHLORIC ACID	7647010	105.70	101.27	77.45	92.09
		HYDROGEN SULFIDE	7783064	145.47	120.32	92.55	109.16
		INDENO-1,2,3-CD-PYRENE	193395	0.05	0.05	0.04	0.05
		ISOPHORONE	78591				
		LEAD	PB	0.06	0.03	0.02	
		MANGANESE	7439965				
		MERCURY	7439976		0.00	0.00	0.00
		METHANOL	67561	62.10	32.39	30.61	32.76
		METHYL CHLORIDE					
		CHLOROMETHANE	74873	2.62	3.71	2.28	2.58
		METHYL METHACRYLATE	80626	0.60	0.37	0.29	0.32
		METHYLPHENANTHRENES	31711532	0.14			
		NAPHTHALENE	91203	4.28	4.49	3.75	4.19
		NICKEL	7440020	0.47	0.25	0.20	0.04
		PAH	PAH	0.00	0.71	0.61	0.67
		PHENANTHRENE	85018	1.23		1.31	1.43
		PHENANTHRENE, CYCLOPENTA-, (C15-H10)	203645	0.24	1.55		
		PHENOL	108952	22.18	18.85	15.24	17.27
		POLYCYCLIC ORGANIC MATTER	POM	0.00	0.26	0.21	
		PYRENE	129000	0.58	0.56	0.48	0.53
		QUINOLINE	91225	0.12	0.04	0.03	0.04
		STYRENE	100425	0.32	0.13	0.11	0.12
		TOLUENE	108883	5.37	4.47	2.89	3.21
		VINYL ACETATE	108054	0.53	0.32	0.26	0.28
		XYLENES (ISOMERS AND MIXTURE)	1330207	0.77	0.19	0.15	0.18
HYDROGEN SULFIDE	7783064	137.22	120.32	92.55	109.16		

COMPANY NAME	ZIP	HAZARDOUS AIR POLLUTANT	CASE	1999	2015	2016	2017
USS - EDGAR THOMSON WORKS	15104	BENZENE	71432	0.00	0.05	0.06	0.07
		CARBON DISULFIDE	75150	0.12	0.07	0.09	0.10
		CHLORINE	7782505	0.23	0.15	0.19	0.19
		CHROMIUM	7440473	0.00	0.05	0.05	0.04
		CHROMIUM COMPOUNDS	CRC	0.01			
		ETHYL BENZENE			0.03	0.01	0.01
		ETHYLENE GLYCOL	107211	0.16	0.10	0.02	0.06
		FORMALDEHYDE	50000	0.00			
		GLYCOL ETHERS			0.18	0.04	0.10
		HEXANE	110543	1.14	0.87	1.44	0.86
		HYDROCHLORIC ACID	7647010	16.08	10.18	12.70	13.64
		LEAD	PB	0.19	0.15	0.17	0.20
		MANGANESE	7439965	0.00	1.41	1.37	1.29
		MANGANESE COMPOUNDS	MNC	0.88			
		METHANOL	67561	0.54	1.47	4.62	13.48
		NAPHTHALENE					
		NICKEL	7440020	0.00	0.00	0.00	0.01
		PHENOL	108952	0.00	1.83	1.46	1.75
		PHOSPHORUS	7723140	0.60			
		TOLUENE	108883	0.12	0.04	0.05	0.02
		XYLENES (ISOMERS AND MIXTURE)	1330207	0.36	0.63	0.01	0.02
<b>GRAND TOTAL OF HAZARDOUS AIR POLLUTANTS (Including Hydrogen Sulfide):</b>				<b>1889.73</b>	<b>648.48</b>	<b>547.57</b>	<b>589.13</b>

**Attachment D**  
**Total Point Source Emissions of**  
**Ammonia**

Allegheny County Health Department

Air Quality Program

**2015,2016, 2017 ANNUAL EMISSIONS INVENTORY REPORT**

**ATTACHMENT D:**

Total Point Source Emissions of  
AMMONIA

CAS #	1999	2014	2015	2016	2017				
7664417 (AMMONIA)	397.75	278.83	307.19	302.62	286.64				