Toxic Ten

The Allegheny County Polluters That Are Fouling Our Air and Threatening Our Health

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Executive Summary

Allegheny County has some of the worst air pollution in the United States, putting the health of the county's 1.2 million people at risk. Numerous pollution sources, from major sources of smog-forming pollution and soot to heavy diesel traffic, contribute to these dangerous levels of air pollution. Among those contributors are a small number of industrial facilities that release large amounts of toxic substances into the air.

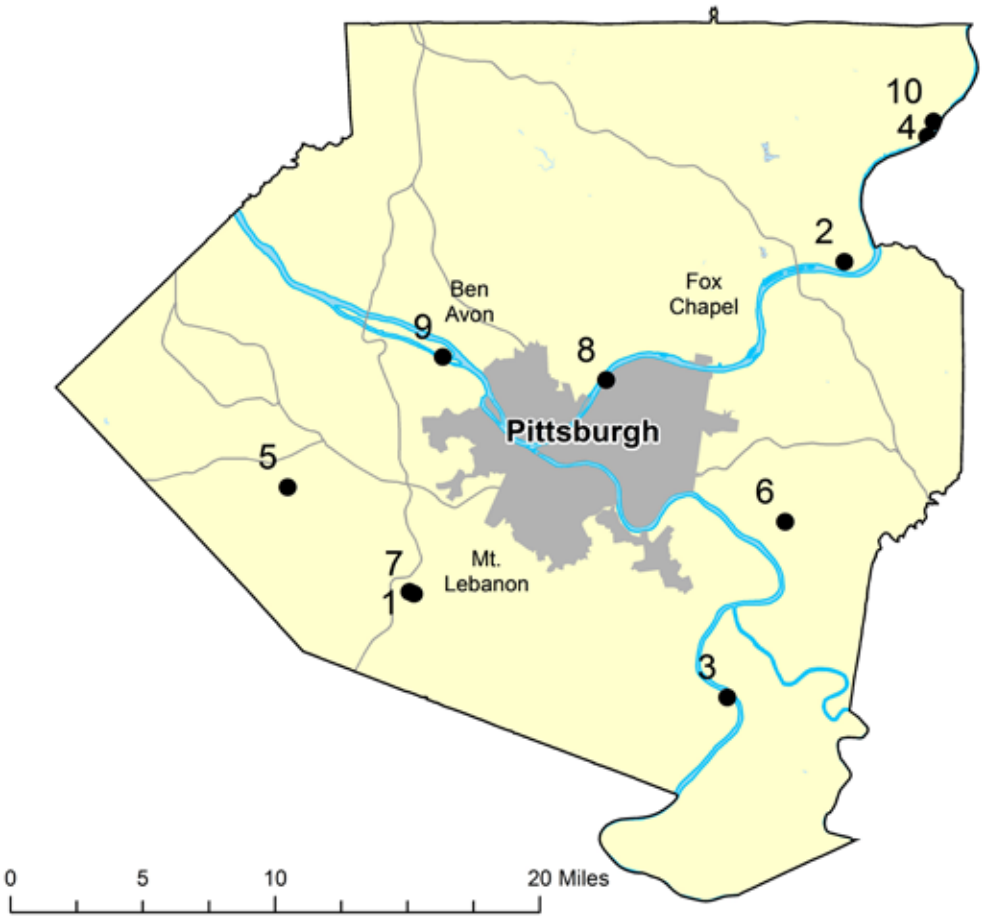
Ten industrial polluters in Allegheny County emitted a total of 1.4 million pounds of toxic pollutants into the air in 2013—including substances linked to cancer, breathing problems, heart disease and nervous system damage—according to data the facilities reported to the U.S. Environmental Protection Agency's Toxics Release Inventory (TRI), a federal database of self-reported pollution emissions from particular types of industrial facilities.

More than one in three Allegheny County residents lives within three miles of those 10 facilities. With major industrial facilities releasing dangerous air pollutants in close proximity to large numbers of Allegheny County residents, it is critical that the Allegheny County Health Department take strong action to safeguard public health.

Air pollution harms Allegheny County residents' health.

- Allegheny County residents live with more than twice the cancer risk from air toxics than do residents of nearby rural areas, according to a University of Pittsburgh study. In some areas, residents live with as much as 20 times greater risk of contracting cancer from exposure to all hazardous air pollutants, including those that come

Figure ES-1. Locations of Top 10 Toxic Industrial Air Polluters in Allegheny County, 2013*



**Ranked by U.S. EPA's Risk-Screening Environmental Indicators hazard-based result for reported releases of toxic substances to the air; see Methodology.*

Rank	Facility Name
1	Carpenter Powder Products, Bridgeville
2	Cheswick Power Plant, Springdale
3	U.S. Steel Clairton Plant, Clairton
4	Allegheny Ludlum, Brackenridge
5	ATI Powder Metals, Oakdale
6	Holtec Manufacturing, Turtle Creek
7	Universal Stainless and Alloy Products, Bridgeville
8	McConway & Torley Foundry, Pittsburgh
9	Shenango Coke Plant, Neville Island
10	Harsco Metals, Natrona Heights

from industry, diesel and other fuels used for transportation, and all other sources. (See Figure ES-2.)

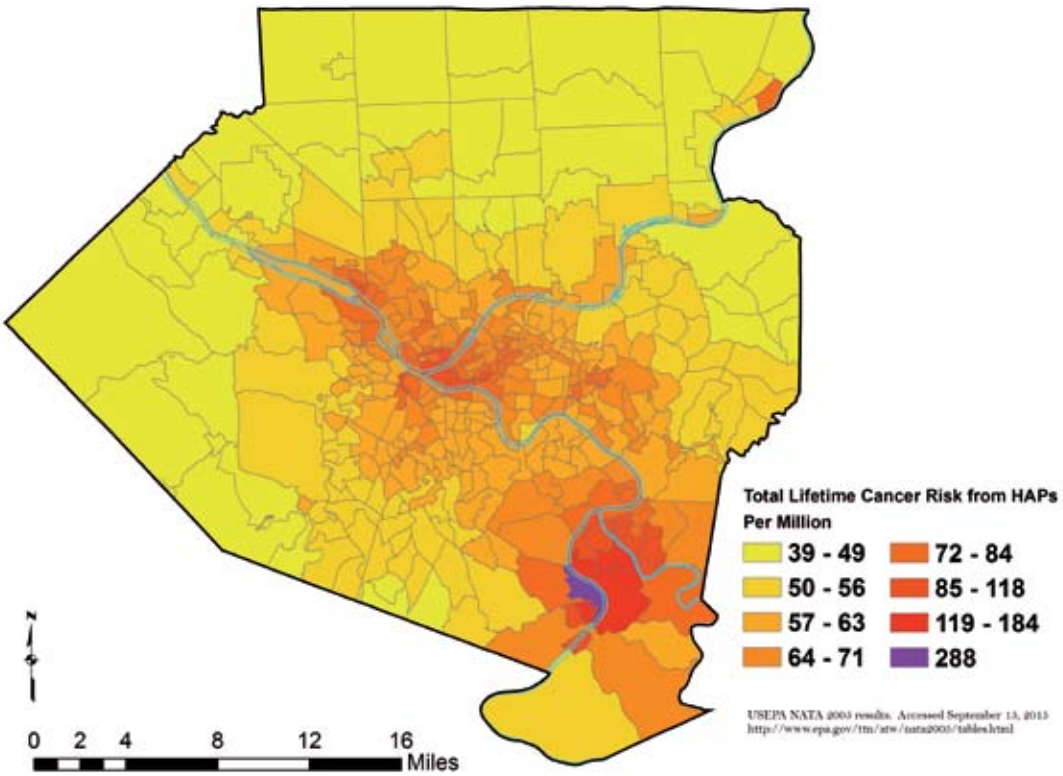
- Air pollution-related diseases resulted in the premature deaths of an estimated 14,636 people in western Pennsylvania between 2000 and 2008, according to an analysis and investigation by the *Pittsburgh Post-Gazette*.

Ten industrial facilities in Allegheny County rank as leading emitters of toxic substances into the region's air.

- **Carpenter Powder Products, Bridgeville** (57,781 people within three miles): Located less than a mile from Chartiers Valley High School, and within half a mile of a major shopping center, this facility melts down metals for purification and has reported releasing toxic metals linked to cancer, cardiovascular problems and breathing problems. This facility shares an address with Universal Stainless and Alloy Products (see below).

- **Cheswick Power Plant, Springdale** (33,615 people within three miles):

Figure ES-2. Total Lifetime Cancer Risk from All Hazardous Air Pollutants (HAPs) in Allegheny County as Predicted by National-Scale Air Toxics Assessment (2005)[1]



Courtesy of Drew Michanowicz

This coal-fired power plant has for years been identified by health officials as one of the two worst contributors to air pollution in the county. Some of its pollution-control equipment does not operate at all times the plant is running, making its nitrogen oxide emissions higher than they could be.

- **U.S. Steel, Clairton Plant, Clairton** (36,869 people within three miles): The country's largest producer of coke, a coal-derived fuel used in steel-making, has been in near constant violation of its pollution restrictions since the 2012 opening of a new oven intended to increase production.

- **Allegheny Ludlum, Brackenridge** (38,748 people within three miles): A steel fabrication plant located less than three-quarters of a mile from a school where unsafe levels of manganese and chromium have been measured in the air, this facility reports emitting toxic compounds that have been linked to cancer, cardiovascular problems, nervous system trouble and breathing difficulties. Its parent company, Allegheny Technologies Incorporated, also owns ATI Powder Metals in Oakdale (see below).

- **ATI Powder Metals, Oakdale** (18,993 people within three miles): In 2013, this alloy manufacturing plant reported releasing four times more toxic metal air pollution than it had in 2012.

- **Holtec Manufacturing, Turtle Creek** (70,839 people within three miles): A metal fabrication facility on the site of the former Westinghouse Electric East Pittsburgh plant reports emitting cancer-causing chromium and the neurotoxin manganese into the air. At least twice between 2010 and 2015 it has been allowed to increase its air pollution emissions.

- **Universal Stainless and Alloy Products, Bridgeville** (61,551 people within three miles): Universal's steel fabrication plant reports emitting toxic metals including chromium, lead and manganese.

- **McConway & Torley Foundry, Pittsburgh** (147,562 people within three miles): Located in a densely populated neighborhood of Pittsburgh, this foundry reported emitting more toxic air pollution in 2012 than it had since at least 1989. The facility, which has been the target of years of complaints from residents, may for the first time be facing meaningful pollution restrictions.

- **Shenango Coke Plant, Neville Island** (70,598 people within three miles): Repeatedly ordered to reduce its air pollution since 1980, this coke-producing plant violated emission standards more than three days out of every four between July 2012 and September 2013.

- **Harsco Metals, Natrona Heights** (33,651 people within three miles): This scrap metal and slag reprocessing facility releases chromium, manganese and nickel into the air. From 2011 to 2013, its reported releases of toxic metals increased 77 percent.

The threat posed by industrial air pollution to Allegheny County residents' health requires immediate and strong action from the Allegheny County Health Department. Specifically, the department should:

- Issue new permits or revise existing

permits to ensure that Pittsburgh-area residents are not continually exposed to dangerous levels of toxic air pollution. This includes continuing to use the best available independent science to strengthen its air quality regulations so they protect public and environmental health. That also includes applying the air toxics guidelines set in 2013 to all existing facilities, not just new ones or those seeking to increase their pollution levels.

- Increase consequences for violating clean air permits, including higher fines for repeat violations and requiring a facility to shut down if it is unable to meet clean air standards.

- Require all facilities to submit to daily monitoring of toxic pollution emissions, as is common for nitrogen and sulfur oxide emissions at power plants.

- Supplement the existing countywide air quality monitoring system with additional short-term distributed monitoring campaigns, such as is being done in the Lawrenceville neighborhood, to give a more detailed picture of air pollution problems and sources throughout the county.

Introduction

Industrial air pollution has a long history in Pittsburgh. In the late 19th and early 20th century, Pittsburgh's reputation as the "Smoky City" was well-earned—with effects that were harmful to the health of millions who lived here.

Today, Pittsburgh is earning a different reputation—one that reflects its status as a hub for 21st century industries and its unparalleled quality of life. In recent years, numerous national and international organizations and publications have lauded Pittsburgh for its livability, including *The Economist*, *Forbes*, and *The Atlantic*.[2]

Yet, in many corners of Allegheny County, the legacy of industrial pollution is not a thing of the past—it is an enduring, everyday reality that has an enormous effect on residents.

Throughout the region, industrial facilities continue to emit soot and toxic substances into the air, some even doing so in violation of existing pollution prevention laws. The results of that pollution are evident in national statistics that show people in Allegheny County continue to suffer from some of the worst air quality in the country. They are evident in pollution monitoring that shows alarming levels of toxic air pollution in residential neighborhoods and even schools. And sometimes, they are even apparent to the naked eye—in the plumes arising from industry smokestacks or the soot that builds up on the window sill of a home in the shadow of a coal-fired power plant.

This report highlights 10 industrial facilities in Allegheny County that, according to data reported to the U.S. Environmental Protection Agency by the companies operating those facilities, release toxic air pollutants that pose the greatest health hazards to local residents. The measures of toxic releases used in this report do not paint the full picture of the risks that these and other industrial air polluters pose. However, they do spotlight the dangerous pollution emitted by a number of industrial facilities that have long been known to their neighbors and, in many cases, environmental regulators, as major sources of pollution.

Allegheny County residents deserve to live and breathe without worrying about exposure to toxic releases from the industrial facilities in their communities. Public officials need to put Pittsburgh-area residents' health first by taking significant action to limit industrial air pollution.

Air Pollution Harms Our Health

Air pollution from industrial facilities threatens the health of Allegheny County residents—especially those who live and work close to polluting facilities, as well as children, the elderly, those with respiratory diseases, and other vulnerable populations.

Air Pollution Has Been Linked to Health Problems

Industrial sites in Allegheny County emit a range of pollutants with serious health effects.

Toxic metals, such as chromium, cobalt, copper, lead, manganese, mercury, nickel and zinc can be inhaled directly from the air, but can also accumulate on surfaces such as driveways and decks, and in soil and surface water, posing dangers to health even after they have fallen from the air.[3] Humans exposed to these metals can develop a variety of medical conditions, including:

- Cancer
- Cardiovascular system problems (including damage to the heart and blood vessels)
- Respiratory system problems (including difficulty breathing)
- Nervous system damage[4]

Volatile organic compounds (VOCs), which are a class of chemicals whose members cause a range of health problems, including cancer irritation to the eyes, skin, nose and throat; headaches and nausea; liver and kidney damage; and nervous system damage.[5] VOCs also contribute to the formation of ozone.[6] Ozone, a key component of smog, can cause premature death, asthma, and delayed infant growth. It can also contribute to breathing problems—including long-term lung damage—and can aggravate existing asthma and other chronic diseases.[7] Some VOCs are also toxic in their own right, including benzene, a known human carcinogen.[8]

Other air toxics, including hydrochloric and sulfuric acids, ammonia, and organic chemicals such as styrene and

pyridine, can also cause cancer and cardiovascular, nervous and respiratory system damage.[9]

Fine particulate matter, also known as soot, can cause premature death, cancer, heart attacks, strokes and long-term heart disease.[10] It can aggravate existing heart or lung disease, worsen existing breathing problems, and cause chronic bronchitis.[11] Recent research has also linked childhood autism to soot exposure among pregnant women and young children.[12] Exposure to soot has also been linked to adult diabetes.[13]

Nitrogen and sulfur oxides both contribute to the formation of airborne particulate matter (soot); nitrogen oxides also contribute to the formation of ozone (smog).[14]

The dangers posed by air pollution are especially acute for vulnerable populations: children, the elderly, and those with chronic lung and heart diseases.[15] Of Allegheny County's 1.2 million people, 236,000 are children, 24,000—10 percent—of whom have pediatric asthma.[16] There are also 211,000 Allegheny County residents age 65 and over, who are more vulnerable to air pollution because of their age.[17] Respiratory diseases are widespread in the county: 95,000 people have adult asthma and 71,000 have chronic obstructive pulmonary disease, better known as COPD.[18] (See Table 1.)

The county is also part of a 14-county area of western Pennsylvania where air pollution-related diseases resulted in the premature deaths of an estimated 14,636 people in western Pennsylvania between 2000 and 2008, according to an analysis and investigation by the *Pittsburgh Post-Gazette*.[20]

This report focuses on those facilities in the county that emit the largest amounts of toxic industrial air pollution.

Allegheny County Suffers from Unhealthy Air

While Allegheny County's air is cleaner than it was during the heyday of the steel industry, some forms of pollution have been increasing in recent years. The two long-term air quality monitoring stations providing the most detailed data in Allegheny County—one near the southeast corner of Pittsburgh's Arsenal Park and the other on the campus of South Allegheny Middle and High Schools—found higher levels of airborne aluminum and copper in 2014 than they did in 2003. For aluminum, the two sensors found increases of 6.4 and 8.1 percent; for copper the increases were of 4.8 and 5.9 percent, respectively.[21] The monitor in Pittsburgh also found chromium levels higher by 1.4 percent.[22] In 2014,

Table 1. Populations Vulnerable to Air Pollution, Allegheny County[19]

Total Population	Children (under 18)	Children with Pediatric Asthma	People Age 65 and Over	People with Adult Asthma	People with Chronic Obstructive Pulmonary Disease (COPD)
1,231,527	235,864	24,074	210,970	95,161	70,847

the levels of lead in the county's air were higher than they had been at any time in the previous 20 years.[23]

The facilities highlighted in this report are part of the reason Allegheny County has some of the worst air pollution in the country.

- In its most recent National-scale Air Toxics Assessment, the U.S. Environmental Protection Agency found that Allegheny County ranked in the top 0.3 percent of U.S. counties for cancer risk from airborne toxic pollutants released from point sources.[24] (See Figure 1.)

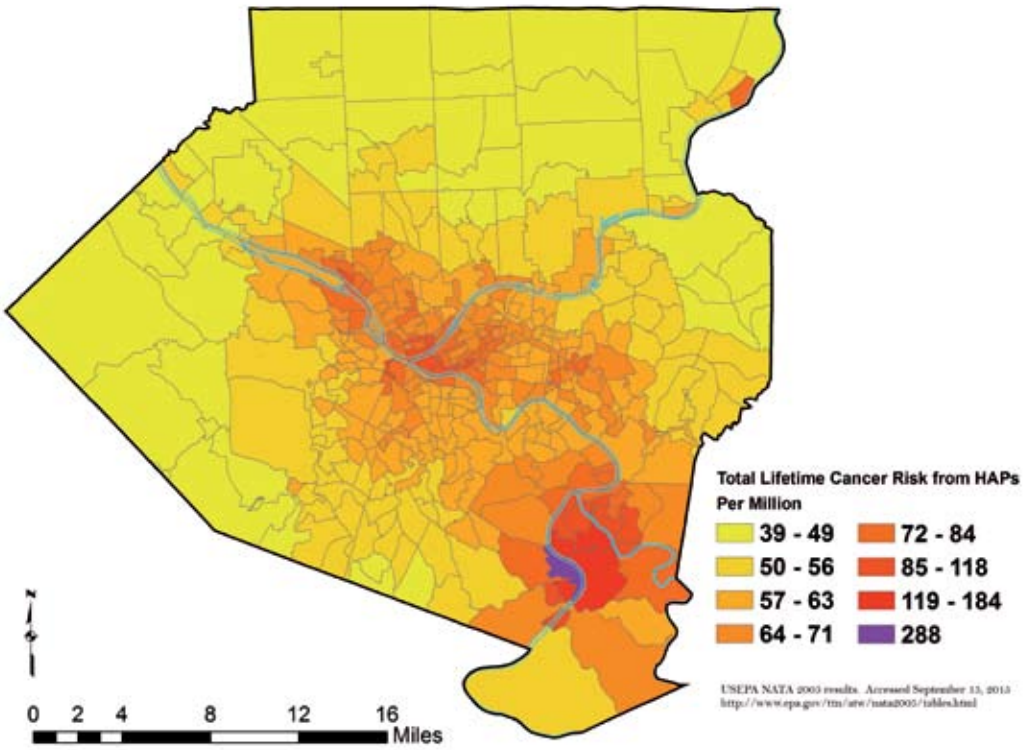
- The county ranked in the top 6 percent for risk of neurological damage, and in the top 25 percent for risk of respiratory damage, from exposure to air toxics from point sources.[25] (See Figure 2.)

- The county's air is so bad that in 2015 the whole county failed to meet the EPA's National Ambient Air Quality Standards (NAAQS) for fine particulate matter and ozone.[26]

- The southern area of the county also failed to meet NAAQS sulfur dioxide standards.[27]

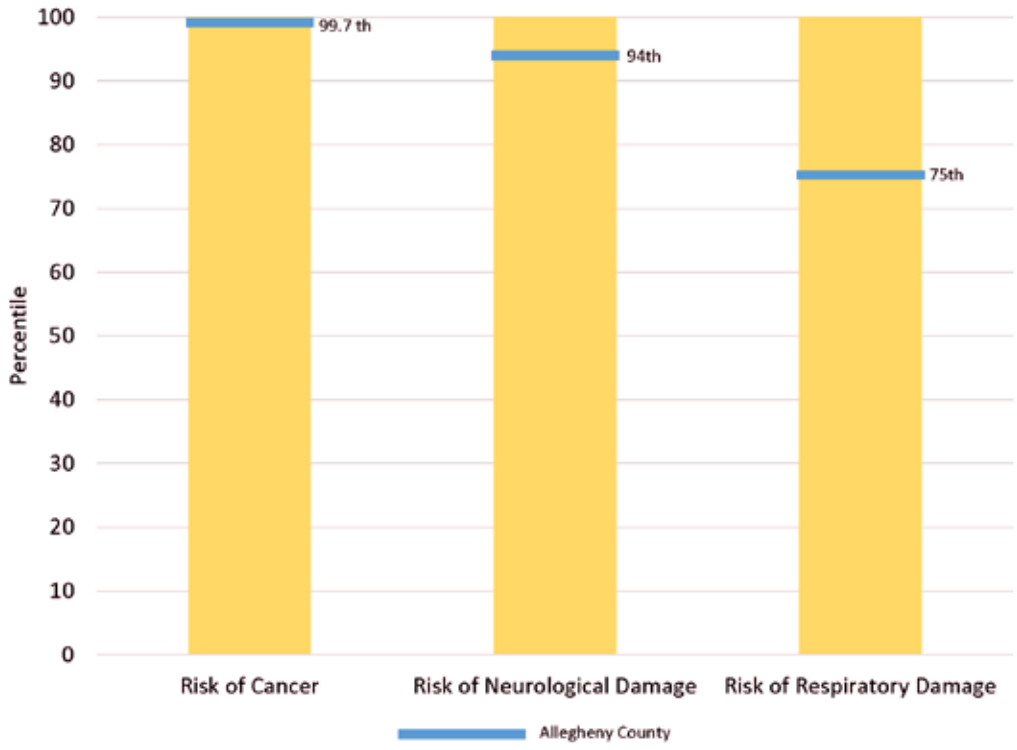
- In a study covering the years 2011 through 2013, Allegheny County ranked 11th among the nation's counties

Figure 1. Total Lifetime Cancer Risk from All Hazardous Air Pollutants (HAPs) in Allegheny County as Predicted by National-Scale Air Toxics Assessment (2005)[32]



Courtesy of Drew Michanowicz

Figure 2. Percentile of Allegheny County's Health Risks from Point Source Air Pollution, Among all U.S. Counties[33]



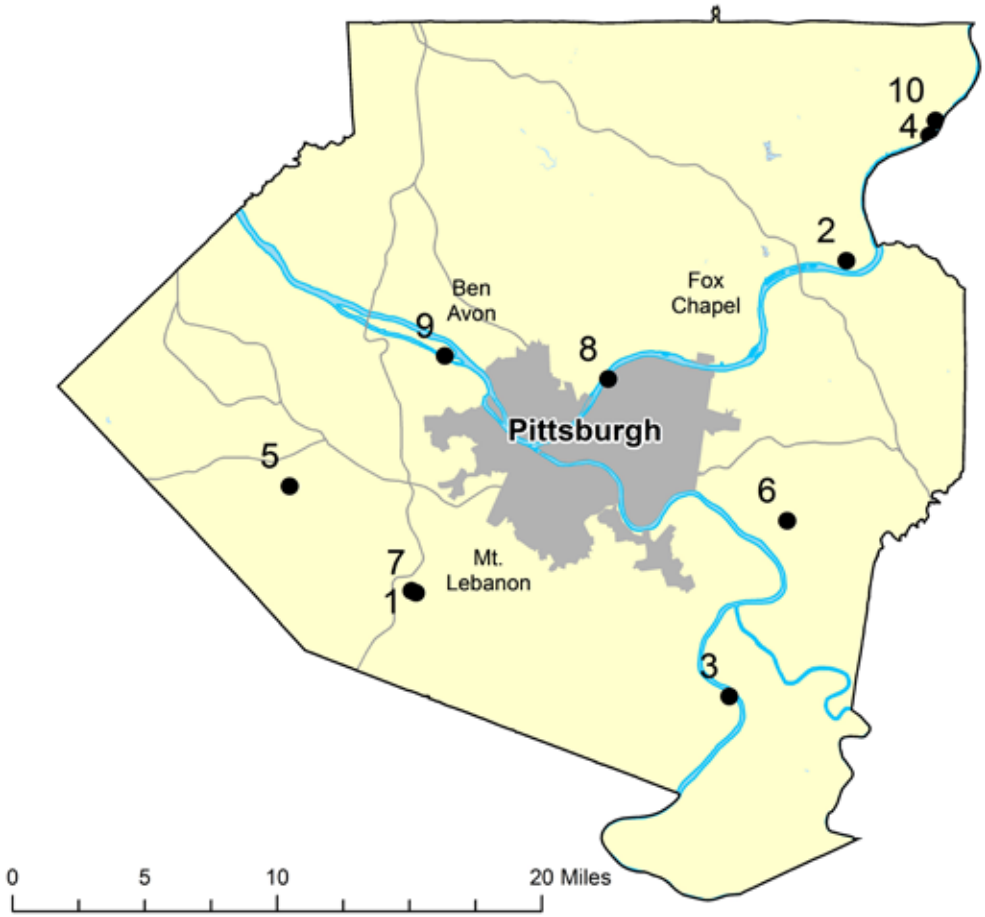
for year-round particulate matter pollution.[28] The county also had the state's worst levels of ozone pollution.[29]

- In the same study, produced by the American Lung Association, the Pittsburgh metropolitan area ranked 9th worst among the nation's major metro areas for particulate matter pollution and 25th for ozone pollution.[30]

- Air quality monitors across the county record levels of fine particulate matter that rank in the worst 10 percent in the nation.[31]

There are many sources of polluted air in Allegheny County, including cars, trucks and industrial facilities in other counties. Some of the most toxic sources, however, are right here in the county, at local industrial facilities that release toxic substances into the air, often in the midst of residential neighborhoods.

Figure 3. Locations of Top 10 Toxic Industrial Air Polluters in Allegheny County, 2013*



**Ranked by U.S. EPA's Risk-Screening Environmental Indicators hazard-based result for reported releases of toxic substances to the air; see Methodology.*

Rank	Facility Name
1	Carpenter Powder Products, Bridgeville
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5	ATI Powder Metals, Oakdale
6	Holtec Manufacturing, Turtle Creek
7	Universal Stainless and Alloy Products, Bridgeville
8	McConway & Torley Foundry, Pittsburgh
9	Shenango Coke Plant, Neville Island
10	Harsco Metals, Natrona Heights

Allegheny County's Toxic Ten

Industrial facilities have a long history of polluting Allegheny County's air, threatening the health of local residents. Today, toxic air pollution from industrial facilities persists. Just 10 of the industrial facilities in Allegheny County emitted at least 1.4 million pounds of toxic chemicals in 2013.

Taking into account the toxicity of the pollution, the 10 facilities listed in this section rank as the top industrial sources of toxic air pollution in the county, according to data from the U.S. EPA's Toxics Release Inventory. (See Methodology for details.)

More than one in three Allegheny County residents lives within three miles of these 10 facilities.[34]

Air Pollution Can Travel Very Long Distances

This report uses the population living in the vicinity of each facility as an indicator of the density and urban or rural nature of the surrounding area. Toxic air pollution from industrial facilities poses a particular risk to those living nearby. But it is important to recognize that the impacts of air pollution can extend much farther away.

A recent study in Allegheny County found facilities' pollutants traveling long distances within the county, particularly along the river valleys.[39] Research has found that air pollution from TRI facilities can travel as far as 44 miles from the point of release.[40] One study published in early 2015 found air pollution emitted in southwestern Pennsylvania traveled hundreds of miles to harm air quality in Baltimore and Washington, D.C.[41]

About the Data in this Report

This report uses data from the U.S. Environmental Protection Agency's Toxics Release Inventory (TRI), and from its Risk-Screening Environmental Indicators (RSEI) model. See the Methodology for more detailed specifics.

Toxics Release Inventory

TRI is a database compiling information from industrial facilities' self-reported data on the amount of hazardous chemicals released to the environment.

It is a nationally standardized database of information reported by polluters themselves over many years. The data are organized in a way that includes information on the relative toxicity of different substances, and that coordinates well with federal information on health effects from exposure to the chemicals. It is a searchable database stored in electronic format suitable for analysis.

TRI does not capture all releases of toxic substances to the air, even from industrial facilities. Reports to TRI are required of facilities with 10 or more full-time-equivalent employees, in certain industries, that emit more than certain threshold amounts of toxic chemicals.[35] As a result, TRI data necessarily under-represent or omit releases from four categories of facilities that produce air pollution:

- Facilities that employ fewer than 10 full-time-equivalent employees.
- Facilities in industries that are not required to report to TRI.
- Facilities in industries that are required to report to TRI but whose toxic emissions are below the threshold amount above which reporting would be required.
- Facilities that emit pollutants that are dangerous to human health but for which reporting is not required to TRI, such as fine particulate matter, sulfur oxides, nitrogen oxides and precursors to ozone. Emissions from some of these facilities may be reported in Allegheny County Health Department documents, which track these pollutants.[36]

TRI also does not include reporting of particulate matter generated from diesel fuel combustion, which is included in the National-scale Air Toxics Assessment (NATA).[37]

Risk-Screening Environmental Indicators

EPA's Risk-Screening Environmental Indicators (RSEI) system provides information on the relative toxicity of specific chemicals emitted by facilities, allowing comparisons across various types of chemicals a facility may release.

Different chemicals have different relative toxicities; the EPA calculates toxicity factors for individual chemicals using information about chronic human health effects of exposure to them. Sources for those health effects include the EPA's Integrated Risk Information System (IRIS), the EPA's Health Effects Assessment Summary Tables (HEAST), and the U.S. Agency for Toxic Substances and Disease Registry (ATSDR), part of the Centers for Disease Control and Prevention.[38]

Steve Riccardi

Carpenter Powder Products, Bridgeville

Residents within three miles: 57,781[42]

Table 2. Selected Potential Health Effects of Exposure to Toxic Chemicals Emitted at Carpenter Powder Products, 2013

Chemical	Cancer	Cardiovascular System Problems	Nervous System Problems	Respiratory System Problems
Chromium	●			●
Cobalt	●	●		●
Nickel	●	●		●

The Carpenter Powder Products plant in Bridgeville manufactures custom metal powders, melting down metals for purification and conversion into powder.[43] Using metal powders to fabricate metal parts allows the precision manufacturing of complex components more cheaply and more quickly than more conventional processes.[44] The facility's releases of toxic chemicals have increased recently. In 2013, Carpenter Powder released more chromium and cobalt than it had reported releasing since 2007, and more nickel than it had since at least 1998.[45]

The plant is located less than half a mile from the Great Southern Shopping Center, and less than a mile from Chartiers Valley High School, where more than 1,100 students are enrolled.[46]

In addition to its releases of toxic

substances reportable to TRI, Carpenter also releases particulate soot into the air. In 2011, the community surrounding the facility had worse soot pollution than 92 percent of the country.[47] That same year, the facility installed a device intended to reduce those emissions.[48] But in 2013, the Allegheny County Health Department determined the equipment would not provide as much soot reduction as had been expected, and gave the plant permission to emit more soot.[49]

Brian Cohen

Cheswick Power Plant, Springdale

Residents within three miles: 33,615[50]

The coal-fired Cheswick Power Plant in Springdale has long been identified by the Allegheny County Health Department as among the county's worst air polluters.[51] In addition to its toxic emissions (see Table 3), in 2012, the plant was a major emitter of other air pollutants in Allegheny County, emitting 39.5 percent of the nitrogen oxide and 29.5 percent of the sulfur dioxide released from major industrial facilities in the county.[52]

The owners of the Cheswick plant have repeatedly missed opportunities to protect the community from pollution exposures. The most recent Allegheny County Health Department emissions inventory, for 2012, found that Cheswick only "minimally" operated one of its two main pollution control devices that year, resulting in a 36 percent increase in nitrogen oxide emissions over the previous year.[53]

The people of the Allegheny Valley, where the plant is located, die sooner than they should of diseases related to air pollution exposure. From 2000 through 2008, 3,309 valley residents died from heart disease, respiratory disease and lung cancer, according to a *Pittsburgh Post-Gazette* analysis.[54] That is 639 more people, or 24 percent more, than national mortality rates would have projected over that time.[55]

The areas immediately surrounding the plant had higher levels of fine particulate matter in 2011 than 95 percent of the country.[56]

The plant's pollution has been a problem for many years. Just three years after its 1970 opening, the plant's owners came before county officials asking to increase its pollution emissions.[57] And by 1979, neighbors were asking the Allegheny County Health Department to reduce the

Table 3. Selected Potential Health Effects of Exposure to Toxic Chemicals Emitted at Cheswick Power Plant, 2013

Chemical	Cancer	Cardiovascular System Problems	Nervous System Problems	Respiratory System Problems
Arsenic Compounds	●		●	●
Chromium Compounds	●			●
Copper Compounds				●
Hydrochloric Acid				●
Hydrogen Fluoride				●
Lead Compounds	●	●	●	
Manganese Compounds		●	●	●
Mercury Compounds			●	
Nickel Compounds	●	●		●
Sulfuric Acid	●			●

level of pollution Cheswick was allowed to emit.[58]

A woman who grew up near the plant described the experience in an essay published by the website NextCity, recalling "what it was like to be a small child staring up at the darkened sky, terrified, when the power plant 'blows its stack' — the earsplitting roar, the black ash cloud that snows onto the modest cars and little hillside houses. We remember sledding down mounds of fly ash."[59]

While the sledding hills are gone, problems with the plant persisted for decades: In 2012, nearby residents complained that particulate soot was landing on and damaging homes and outdoor spaces near the plant.[60]

Neighbors are seeking strict limits on pollution, including a 95 percent reduction in allowable sulfur dioxide emissions and large cuts in nitrogen oxide emissions, after the facility's current air pollution permit expires at the end of 2015.[61] Without those tighter standards, the facility could increase its emissions above current levels while still remaining within the bounds of the law.

Brian Cohen

U.S. Steel Clairton Plant, Clairton

Residents within three miles: 36,869[62]

Table 4. Selected Potential Health Effects of Exposure to Toxic Chemicals Emitted at U.S. Steel's Clairton Plant, 2013

Chemical	Cancer	Cardiovascular System Problems	Nervous System Problems	Respiratory System Problems
Ammonia				●
Benzene	●		●	
Carbon Disulfide		●	●	
Cresol (mixed isomers)			●	●
Cyanide Compounds			●	
Ethylbenzene			●	
Hydrochloric Acid				●
Lead	●	●	●	
Mercury			●	
Naphthalene	●		●	●
Nitrate Compounds		●	●	
Pyridine			●	
Styrene	●		●	
Toluene		●	●	

The country's largest producer of coke, a coal-derived fuel used in steel-making, **U.S. Steel's Clairton Plant** is well known as one of the worst air polluters in Allegheny County.[63]

The plant is part of a four-facility steel-making complex, called Mon Valley Works, where ore is smelted into iron, which is then purified into steel, and then rolled and formed into steel products.[64] The Clairton Works originally opened in 1901.[65] It has survived several boom-bust cycles, reducing operations significantly in the early 1980s and again in the late 2000s.[66]

According to an EPA study, in 2002, air pollution in Clairton and neighboring Glassport—including emissions from industry, transportation and other sources—exposed residents to 20 times the cancer risk from air toxics that average Americans experience.[67] The neighborhood adjacent to the plant suffered from worse levels of fine particulate matter in 2011 than 94 percent of the country.[68]

In November 2012, U.S. Steel completed a $500 million project installing equipment intended to bring the century-old plant into full compliance with air pollution regulations.[69] Those investments were sorely needed, but have thus far proven to be inadequate to protect the health of nearby residents.

In 2012, the most recent year for which Allegheny County Health Department air pollution data are available, the Clairton Works was the largest emitter of hazardous air pollution in the county.[70] That year, the plant was responsible for more than a quarter of all nitrogen oxides emitted by industrial facilities in Allegheny County and more than 40 percent of the county's benzene emissions.[71]

In 2014, the Allegheny County Health Department announced that the plant's newly installed coke oven had been in daily violation of pollution limits since it started operations in 2012.[72] The department imposed a $300,000 fine, but gave the plant permission to take more than a year to install new pollution control equipment; the plant was given six months after that—until April 2016—to come into compliance with its pollution restrictions.[73] In addition, the county agreed to let U.S. Steel apply to loosen or eliminate a variety of permit limitations to retroactively resolve "alleged violations" of the original permit.[74]

Steve Riccardi

Allegheny Ludlum, Brackenridge

Residents within three miles: 38,748[75]

Table 5. Selected Potential Health Effects of Exposure to Toxic Chemicals Emitted at Allegheny Ludlum, Brackenridge, 2013

Chemical	Cancer	Cardiovascular System Problems	Nervous System Problems	Respiratory System Problems
Chromium Compounds	●			●
Cobalt Compounds	●	●		●
Copper Compounds				●
Hydrogen Fluoride				●
Lead Compounds	●	●	●	
Manganese Compounds		●	●	●
Nickel Compounds	●	●		●

Allegheny Ludlum's Brackenridge plant is a specialty steel fabrication facility owned by Allegheny Technologies Incorporated (ATI), a company that also owns ATI Powder Metals in Oakdale. The plant has had air pollution problems for years.

In early 2005, the plant was cited for emitting more than its allowed amounts of nitrogen oxide and sulfur oxides.[76] As a result of those violations and others at another ATI plant in nearby Natrona, ATI was ordered to pay $289,725 in fines and to upgrade equipment at both plants to reduce pollution.[77]

The facility is located less than three-quarters of a mile away from Highlands High School, an 800-student school that was the subject of a 2010 Allegheny County Health Department study that found unsafe levels of manganese and lead in the air outside the school.[78] On five of the nine monitoring sessions conducted in that study, chromium levels were high enough to elevate cancer risk.[79] Investigators found that those metals were emitted from an ATI plant about half a mile away in Natrona, which has since closed. The study did not explore links between the pollution found at the school and emissions from the Brackenridge plant.[80]

Allegheny Ludlum's Brackenridge pollution has changed over the years. Between 2010 and 2012, its emissions of sulfur oxides and particulate matter dropped nearly 50 percent, while nitrogen oxide emissions increased 2 percent.[81] From 2010 to 2013, the plant's emissions of toxic metals more than tripled.[82]

Some of those changes may have been due to varying production activity.[83] From 2009 through 2014, the plant converted existing production space to house a new metal-rolling mill.[84] That refurbished facility opened in May 2015 and is expected to reduce metallic pollution, but increase emissions of smog-forming nitrogen oxides.[85]

Steve Riccardi

ATI Powder Metals, Oakdale

Residents within three miles: 18,993[86]

Table 6. Selected Potential Health Effects of Exposure to Toxic Chemicals Emitted at ATI Powder Metals, 2013

Chemical	Cancer	Cardiovascular System Problems	Nervous System Problems	Respiratory System Problems
Chromium	●			●
Cobalt	●	●		●
Nickel	●	●		●

ATI Powder Metals in Oakdale manufactures metal alloys and industrial parts made from those alloys.[87]

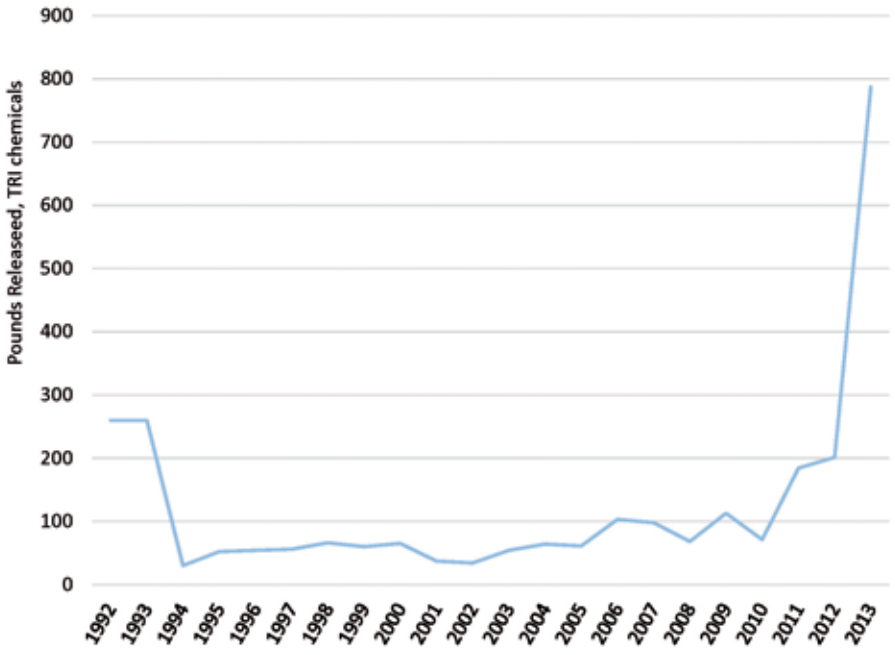
The facility is owned by Allegheny Technologies Incorporated (ATI), which also owns another toxic industrial polluter in Allegheny County, Allegheny Ludlum in Brackenridge.

Its recent pollution levels are higher than in the past. In 2013, ATI Powder Metals' releases of toxic metals were nearly four times higher than in 2012,

and three times higher than at any time in the preceding quarter-century, according to the facility's reports to TRI.[88] (See Figure 4.)

The owners of the plant say they are taking steps to reduce the plant's pollution: In early 2015, ATI Powder Metals planned to install pollution-control equipment expected to reduce both particulate and metallic emissions.[90]

Figure 4. Toxic Releases from ATI Powder Metals, 1992-2013[89]



Steve Riccardi

Holtec Manufacturing, Turtle Creek

Residents within three miles: 70,839[91]

Table 7. Selected Potential Health Effects of Exposure to Toxic Chemicals Released at Holtec Manufacturing, 2013

Chemical	Cancer	Cardiovascular System Problems	Nervous System Problems	Respiratory System Problems
Chromium	●			●
Manganese		●	●	●
Nickel	●	●		●

Holtec Manufacturing, a metal fabrication plant that makes equipment for nuclear power plants and for storing nuclear waste, is located on the site of the former Westinghouse Electric East Pittsburgh plant, which opened in 1880 and closed at the end of 1988.[92]

In 2011 the area surrounding the plant had more fine particulate matter pollution than 95 percent of the country.[93]

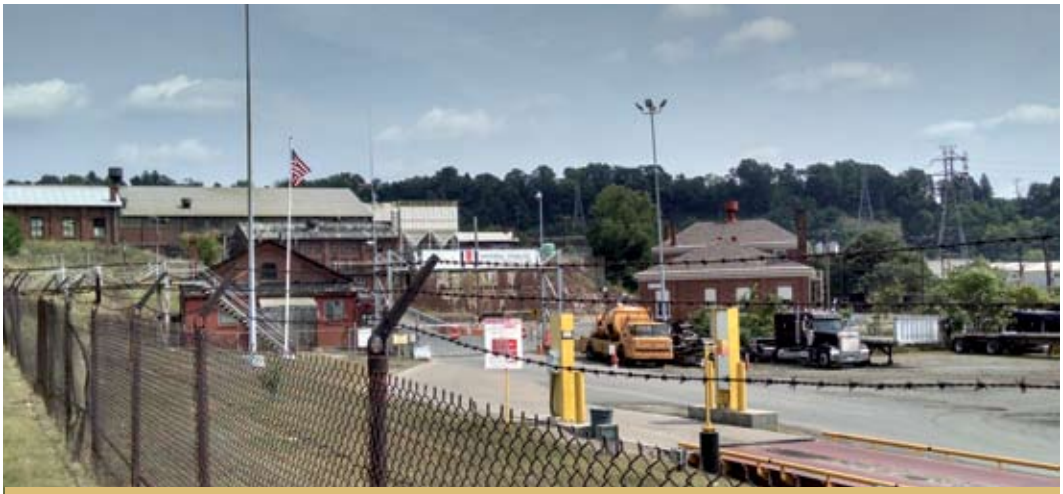
Between 2010 and 2015, the Allegheny County Health Department allowed Holtec to increase its emissions of:

- volatile organic compounds (VOCs) by 32,900 pounds per year;
- xylene by 16,100 pounds per year;
- particulate matter by 200 pounds per year; and
- other hazardous air pollutants by 22,920 pounds per year.[94]

Industrial facilities are required to report releases of xylene if they use or

produce more than 10,000 pounds of the substance.[95] Holtec did not report releases of xylene to the TRI in 2013.[96]

Chronic exposure to xylene can cause nervous system problems.[97] Xylene is itself a VOC, a class of chemicals that can contribute to the formation of smog and cause breathing problems.[98]



Steve Riccardi

Universal Stainless and Alloy Products, Bridgeville

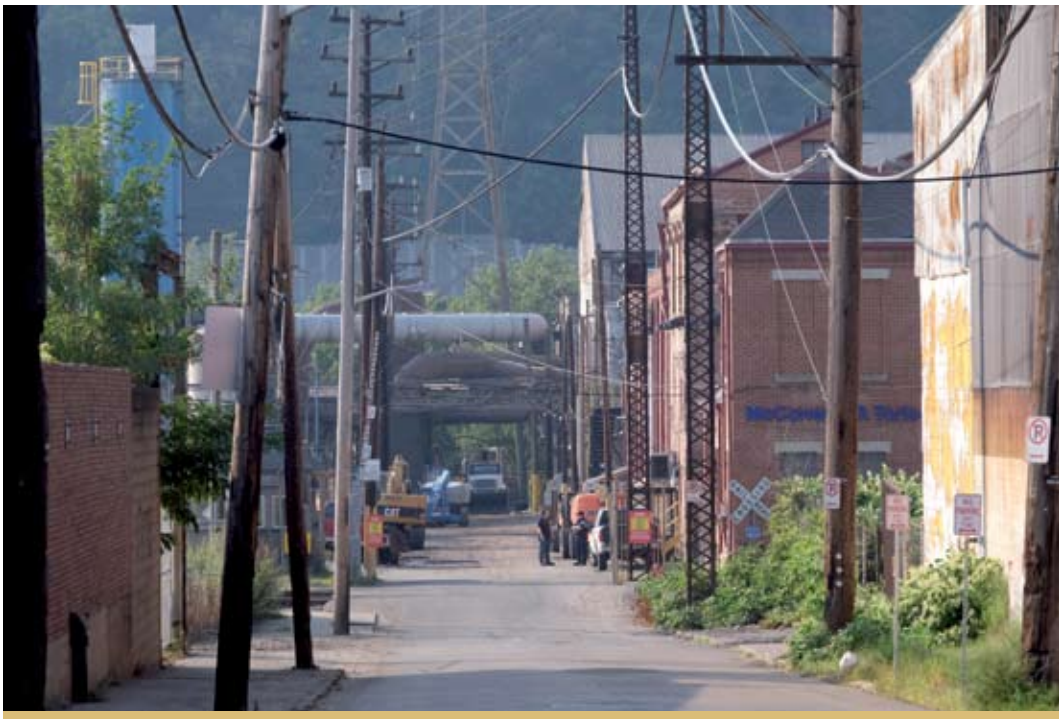
Residents within three miles: 61,551[99]

Table 8. Selected Potential Health Effects of Exposure to Toxic Chemicals Emitted at Universal Stainless and Alloy Products, 2013

Chemical	Cancer	Cardiovascular System Problems	Nervous System Problems	Respiratory System Problems
Chromium	●			●
Copper				●
Lead	●	●	●	
Manganese		●	●	●
Nickel	●	●		●

The Universal Stainless and Alloy Products steel fabrication plant in Bridgeville has been releasing toxic pollution into the air since at least 1987, the year reporting to TRI began.[100] Over its lifetime, its reported releases have consisted of toxic metals and metal-containing compounds.[101]

The plant also emits soot, even as its neighboring area had higher levels of fine particulate matter than 92 percent of the country in 2011.[102]



Brian Cohen

McConway & Torley Foundry, Pittsburgh

Residents within three miles: 147,562[103]

Table 9. Selected Potential Health Effects of Exposure to Toxic Chemicals Emitted at McConway & Torley, 2013

Chemical	Cancer	Cardiovascular System Problems	Nervous System Problems	Respiratory System Problems
Aluminum (fume or dust)			●	●
Chromium Compounds	●			●
Copper Compounds				●
Lead Compounds	●	●	●	
Manganese Compounds		●	●	●
Nickel Compounds	●	●		●

The 150-year-old **McConway & Torley steel foundry** is located in one of the most densely populated areas of Pittsburgh, the residential neighborhood of Lawrenceville. Located less than a mile from Arsenal Middle School, it has been the subject of community complaints and official enforcement efforts for many years.[104]

In 2012, the foundry reported releasing more toxic air pollution than it had in any of the 23 years it has reported under TRI.[105] It also emitted more fine particulate matter, nitrogen oxides, and sulfur dioxide than it had in recent years.[106] The surrounding community was already suffering: In 2011 the local area had higher levels of soot pollution than 93 percent of the country.[107]

The Allegheny County Health Department started monitoring air quality at the edge of the McConway & Torley property in 2011.[108] The department then proposed to limit how much steel McConway & Torley could melt each year, in an attempt to control the potential for pollution.[109]

The monitoring shows continuing problems, including those related to a major source of the community conflict: the plant's emissions of manganese, which can cause neurological and breathing problems.

At least six times between April 2011 and June 2015, the fenceline monitor showed manganese levels exceeding the U.S. EPA's safe amounts for long-term community exposure.[110] On at least two of those six occasions, the manganese levels exceeded those EPA amounts by 65 percent.[111]

The health department's current Air Toxics Guidelines require using "worst case" limits that "assume[] a person is exposed to a particular concentration for 70 years."[112] But those only apply to new facilities or existing ones that are asking to increase their pollution.[113] Existing facilities that do not intend to change their pollution levels are not subject to the new standards.[114]

For the McConway & Torley manganese emissions, the health department uses a far less protective threshold based on short-term, repeated exposures to high levels of chemicals.[115] This standard is for exposure typical of employees doing shift work around toxic materials and then going home.[116] Basing its decision on that method, the health department says the facility is emitting far less manganese than would be of concern.[117]

In late 2014, a local advocacy organization, the Group Against Smog and Pollution (GASP), laid the groundwork for legal action in that dispute. The organization filed a formal complaint with the health department, saying McConway & Torley's pollution was not consistent with current federal regulations and threatened to sue to further limit pollution at the plant.[118] The health department responded with a proposal to impose stricter limits on emissions of toxic pollutants, including manganese.[119]

coalandcoke.blogspot.com

Shenango Coke Plant, Neville Island

Residents within three miles: 70,598[120]

Table 10. Selected Potential Health Effects of Exposure to Toxic Chemicals Emitted at Shenango Coke Plant, 2013

Chemical	Cancer	Cardiovascular System Problems	Nervous System Problems	Respiratory System Problems
Ammonia				●
Benzene	●		●	
Cyanide Compounds			●	
Lead Compounds	●	●	●	
Mercury Compounds			●	
Naphthalene	●		●	●
Styrene	●		●	
Toluene		●	●	

The Shenango Coke Plant on Neville Island has violated air pollution requirements for decades, and has been repeatedly ordered to reduce its air pollution since 1980. At least five consent agreements have been imposed over the years, requiring payment of penalties, investment in cleaner equipment, and reduced emissions.[121]

In 2008 DTE Energy Services bought Shenango, but has not rid the plant of its pollution problems. In fact, in 2013 the plant's total toxic releases, as reported to TRI, were higher than in any year since 2008, and the third-highest since 1997.[122]

Air pollution around Shenango has been a problem for years, triggering several studies of the surrounding area. In 2009, the U.S. Environmental Protection Agency selected the Sto-Rox Elementary School, a mile southwest of the plant, for detailed air quality monitoring. According to the EPA's report of the results, the school was selected because the 2002 National-Scale Air Toxics Assessment (NATA) indicated "the potential for elevated ambient concentrations of hexavalent chromium and pollutants associated with coke oven operations, including benzene, arsenic, and benzo(a)pyrene, in air outside the school."[123]

The study, which highlighted Sto-Rox's proximity to Neville Island, found that despite prevailing winds tending to blow emissions away from the school and toward the opposite bank of the Ohio River, wind patterns in the area did frequently bring emissions from Shenango toward the school.[124]

The EPA monitoring found a host of toxic chemicals, including several that are normally produced at coke plants, in the air both inside and outside the school.[125] However, the EPA determined that they were not present at levels that they believed warranted further study.[126]

Faced with continuing community complaints, the Allegheny County Health Department in 2015 began sampling air quality to the northeast of Neville Island, across the Ohio River and downwind from Shenango. The department is testing for concentrations of seven chemicals: benzene, ethylbenzene, toluene, o-xylenes, styrene, n-hexane and naphthalene.[127] Five of those—all but ethylbenzene and n-hexane—are emitted by Shenango.[128]

Through the years, Shenango has only rarely obeyed emissions regulations. According to a consent agreement approved in April 2014, between July 2012 and September 2013, the plant violated emission standards more than three days out of every four.[129] An editorial in the *Pittsburgh Post-Gazette* termed that "a dreadful streak of noncompliance."[130]

The 2014 consent decree is supposed to provide for daily monitoring of emissions, and allows the Allegheny County Health Department to impose strict limits on plant operations to ensure pollution restrictions are met.[131] Yet, as of July 2015, the county health department's website said the plant was still not in compliance with air quality regulations.[132]

In August 2015, the department said the plant had violated pollution regulations four times during the summer, when the plant flared off excess coke gas, causing "billowing emissions of black smoke," according to a *Post-Gazette* article.[133] The plant's response was that the flares and resulting smoke were not violations of its pollution permit.[134]

Steve Riccardi

Harsco Metals, Natrona Heights

Residents within three miles: 33,651[135]

Table 11. Selected Potential Health Effects of Exposure to Toxic Chemicals Emitted at Harsco Metals, 2013

Chemical	Cancer	Cardiovascular System Problems	Nervous System Problems	Respiratory System Problems
Chromium Compounds	●			●
Lead Compounds	●	●	●	
Manganese Compounds		●	●	●
Nickel Compounds	●	●		●

The Harsco Metals scrap metal and slag reprocessing facility in Natrona Heights releases compounds of chromium, lead, manganese and nickel, all of which can cause serious health problems. (See Table 11.)

From 2007 to 2011, Harsco's self-reported releases of toxic metals to the air increased by 770 percent.[136] In fact, its toxic emissions in 2011 were the third-highest in the plant's history of reporting to TRI, and the highest since 1995.[137] The plant's toxic emissions dropped significantly in 2012, but climbed again in 2013.[138]

The facility is less than half a mile from Highlands High School, which has 800 students and was the subject of a 2010 study by the Allegheny County Health Department that found that manganese levels in outdoor air were unsafe, according to federal guidelines.[139] On five of the nine monitoring sessions conducted in that study, chromium levels were high enough to elevate cancer risk.[140] Just one facility—not Harsco Metals—had its contributions to the school's air pollution problem investigated in that study.[141]

In 2011, the local area surrounding the plant already had more soot in the air than 83 percent of the country.[142] Despite continued air quality problems in the area, the Allegheny County Health Department approved Harsco's request in 2011 to increase its releases of particulate matter.[143]

Policy Recommendations

The residents of Allegheny County deserve clean, healthy air. The Allegheny County Health Department itself has noted that its authority to issue permits is dependent on showing that "emissions from the proposed source will not endanger the public health, safety or welfare."[144]

The 10 facilities discussed in this report produce toxic pollution that can harm people's health. There are, however, many other sources in the county that also emit hazardous air pollution.

These threats to Allegheny County residents' health require immediate and strong action from the Allegheny County Health Department. Specifically, the department should:

- Issue new permits or revise existing permits to ensure Pittsburgh area residents are not continually exposed to dangerous levels of toxic air pollution. This includes applying the 2013 Air Toxics Guidelines levels to all facilities in the county, both new and existing. The guidelines were created to ensure that pollution does not endanger public health or the environment.[145] The department committed to using standards protective of human health by using a "worst case" value that "assumes a person is exposed to a particular concentration for 70 years."[146] However, the new guidelines only apply to requests for installation of new pollution-causing equipment or modifications to existing facilities.[147] They do not apply to existing facilities making no changes to their operations. And they only apply if facilities are seeking to increase their pollution levels.[148]

- Increase consequences for violating clean air permits, including higher fines for repeat violations at a facility and requiring a facility to shut down if it is unable to meet clean air standards.

- Require all facilities to submit to daily monitoring of toxic pollution emissions, as is common for nitrogen oxide and sulfur oxide emissions at power plants.

- Supplement the existing countywide air quality monitoring system with additional short-term distributed monitoring campaigns, such as is being done in the Lawrenceville neighborhood, to give a more detailed picture of air pollution problems and sources throughout the county.

- Further revise its Air Toxics Guidelines to increase protection of public and environmental health using the best available independent scientific research.[149]

Methodology

To determine the industrial facilities that were the largest emitters of toxic air pollution in Allegheny County, we used data from the U.S. Environmental Protection Agency's Toxics Release Inventory, a database of self-reported releases of specific pollutants to air, water, land and waste treatment facilities.

Toxics Release Inventory Data

The U.S. Environmental Protection Agency's TRI.NET data-access application was downloaded on June 26, 2015, from www2.epa.gov/toxics-release-inventory-tri-program/download-trinet.

Included in that download was the Toxics Release Inventory (TRI) National Analysis data set for 2013, as updated in November 2014, according to U.S. Environmental Protection Agency, *Recent TRI.NET Updates*, archived at web.archive.org/web/20150626151731/http://www2.epa.gov/toxics-release-inventory-tri-program/recent-trinet-updates.

This data set is the most recent fixed data set available. While the National Analysis data set does not include updates and adjustments made by reporting facilities since November 2014, it does allow for replication of the analysis by researchers. The most recent version of TRI reporting data can be found at www2.epa.gov/toxics-release-inventory-tri-program.

Facility Location and Industry Information

The TRI National Analysis data were the source for information on the facilities' names, locations (including municipality, county, metropolitan area and state), parent companies, and the industries those facilities were involved in during 2013.

Identifying Chemicals Released

The TRI National Analysis data were the source for the identities and amounts of the chemicals released to air.

Identifying Health Effects of Chemicals

Health effects for chemicals were identified from individual chemicals' pages at the Agency for Toxic Substances and Disease Registry, Centers for Disease Control and Prevention, "ToxFAQs," *Toxic Substances Portal*, accessed at www.atsdr.cdc.gov/toxfaqs/index.asp, 3 August 2015.

Calculating RSEI Hazard-Based Results

The TRI National Analysis data includes a column indicating the relative toxicity of each reported release, which EPA calculates by multiplying the amount of each chemical released by that chemical's toxicity factor, giving what is called a "hazard-based result" in EPA's Risk Screening Environmental Indicators (RSEI) system.

To calculate RSEI information based on the most up-to-date information available, we replicated the RSEI calculation based on 2013 TRI releases. We used the RSEI inhalation toxicity factors for chemicals that were published in September 2015, contained in the *EasyRSEI* database, downloaded from U.S. Environmental Protection Agency, *How To Get the Risk-Screening Environmental Indicators (RSEI) Model*, accessed at www2.epa.gov/rsei/how-get-risk-screening-environmental-indicators-rsei-model, 9 September 2015. This contains data from RSEI version 2.3.3. The results column containing the toxicity weights used is labeled "ITW," a common EPA abbreviation for "inhalation toxicity weight."

RSEI toxicity factors are compiled for individual chemicals by EPA using information about chronic human health effects of exposure to that chemical. Sources for those health effects include the EPA's Integrated Risk Information System (IRIS), the EPA's Health Effects Assessment Summary Tables (HEAST), and the U.S. Agency for Toxic Substances and Disease Registry, part of the Centers for Disease Control and Prevention.[150]

The EPA's detailed methodology for calculating these factors can be found in Office of Pollution Prevention and Toxics, U.S. Environmental Protection Agency, *EPA's Risk-Screening Environmental Indicators (RSEI) Methodology*, *RSEI Version 2.3.3*, July 2015, archived at web.archive.org/web/20150910152456/http://www2.epa.gov/sites/production/files/2015-08/documents/rsei_methodology_v2_3_3_0.pdf.

For most chemicals, calculating the RSEI hazard-based result is straightforward: Multiply the pounds released by its toxicity weight.

For chromium, the process is slightly different, because facilities that emit chromium typically emit a combination of two types, or valences, of the element: chromium (III), also called trivalent chromium, and chromium (VI), also called hexavalent chromium. Trivalent chromium has "a very low toxicity," according to the EPA's RSEI model methodology documentation, and therefore is assumed to have no toxicity in the RSEI model.[151] Hexavalent chromium is the only valence included in the model; EPA bases each facility's ratio of trivalent to hexavalent chromium emitted on estimates from the 2002 National Emissions Inventory.[152]

The chromium speciation data used in our calculation came from the EasyRSEI database, downloaded from U.S. Environmental Protection Agency, *How To Get the Risk-Screening Environmental Indicators (RSEI) Model*, accessed at www2.epa.gov/rsei/how-get-risk-screening-environmental-indicators-rsei-model, 9 September 2015. This contains data from RSEI version 2.3.3. For chromium, the pounds released was multiplied by the speciation ratio and then by the toxicity weight.

Regarding metals released to air, which are major contributors to toxic releases by many facilities mentioned in this report,

RSEI assigns toxicity to both metals and metal compounds based on the physical and chemical properties of the metal itself, rather than any specific compound of it. Many metals released to air oxidize and react with other airborne chemicals; RSEI treats all of the resulting compounds as if they are the metal alone, per U.S. Environmental Protection Agency, "Technical Appendix B: Physicochemical Properties for TRI Chemicals and Chemical Categories, " *EPA's Risk-Screening Environmental Indicators (RSEI) Methodology, RSEI Version 2.3.3* , August 2015, archived at web.archive.org/web/20150910152346/http://www2.epa.gov/sites/production/files/2015-08/documents/technical_appendix_b_pchem_v2_3_3.pdf.

For metals that have compounds that are more toxic than the metals themselves, RSEI would under-estimate the hazard. For metals that have compounds less toxic than the metals alone, RSEI would overestimate the hazard.

Ranking the Facilities

For this analysis, we selected the 10 facilities in Allegheny County that, for 2013 chemical releases reported to TRI, generated the highest RSEI Hazard-Based Result. (See Table M-1; see Appendix for the detailed per-chemical breakdown of facilities' emissions and their hazard-based results.)

TRI by its nature is not a comprehensive database of polluters. Reports to TRI are required of facilities with 10 or more full-time-equivalent employees, in certain industries, that emit more than certain threshold amounts of toxic chemicals.[153] As a result, this method of ranking facilities necessarily under-represents or omits releases from four categories of facilities that produce air pollution:

- Facilities that employ fewer than 10 full-time-equivalent employees.
- Facilities in industries that are not required to report to TRI.

Table M-1. Allegheny County Industrial Facilities Reporting Releases to the EPA's Toxics Release Inventory

Rank	Facility Name	RSEI Hazard-Based Results (RSEI Toxicity Weight x Pounds Released, 2013), in billion toxicity-weighted pounds
1	Carpenter Powder Products, Bridgeville	12.8
2	Cheswick Power Plant, Springdale	10.1
3	U.S. Steel Clairton Plant, Clairton	4.6
4	Allegheny Ludlum, Brackenridge	3.9
5	ATI Powder Metals, Oakdale	3.0
6	Holtec Manufacturing, Turtle Creek	2.0
7	Universal Stainless and Alloy Products, Bridgeville	1.5
8	McConway & Torley Foundry, Pittsburgh	1.1
9	Shenango Coke Plant, Neville Island	1.1
10	Harsco Metals, Natrona Heights	1.0

- Facilities in industries that are required to report to TRI but whose toxic emissions are below the threshold amount above which reporting would be required.

- Facilities that emit pollutants that are dangerous to human health but for which reporting is not required to TRI, such as fine particulate matter, sulfur oxides, nitrogen oxides and precursors to ozone. Some of these facilities may be found in Allegheny County Health Department documents, which track these pollutants.

TRI also does not include reporting of particulate matter generated from diesel fuel combustion, which is included in the National-scale Air Toxics Assessment (NATA).[154]

Identifying and Quantifying Nearby Populations

The facilities' locations were taken from the latitude and longitude they reported to TRI, as recorded in the 2013 National Analysis data set. Census data used were from the 2010 decennial Census, because it is the most recent Census data containing details down to the block level, which provides the greatest level of detail of populations and their locations. Data were gathered for Allegheny County and the counties immediately bordering it: Beaver, Butler, Armstrong, Westmoreland and Washington. The neighboring counties were included because some of the facilities are near Allegheny County's boundaries.

U.S. Census block population data from the 2010 decennial Census for Allegheny and its surrounding counties were downloaded from factfinder.census.gov/faces/nav/jsf/pages/index.xhtml on September 24, 2015. U.S. Census block shapefiles covering Allegheny and its surrounding counties, reflecting the boundaries in use for the 2010 decennial Census, were downloaded from www.census.gov/geo/maps-data/data/tiger-line.html on September 24, 2015.

Using ArcGIS software, the areas of all Census blocks in those counties were calculated, and then the areas of those sections of Census blocks that were within three miles of each facility's location were calculated. The proportion of those areas to each other was applied to each block's population count and then summarized by facility, to arrive at an estimated number of people who live within three miles of each facility.

To determine the total number of Allegheny County residents living within three miles of any one of these 10 facilities, without double-counting people who live near more than one of them, the same method of calculation was used, applied to a map that combined all the areas of the three-mile-radius circles together.

This calculation assumes uniform distribution of population throughout each census block. This method is the most widely used technique for estimating population in proximity to fixed points.[155]

The decision to use a distance of three miles was based on the fact that three miles is a commonly used radius in scientific research.[156]

Air pollution can travel long distances from industrial facilities where the pollution is emitted. A study published in early 2015 found air pollution emitted in southwestern Pennsylvania traveling hundreds of miles to harm air quality in Baltimore and Washington, D.C.[157] Other research has found that air pollution from TRI facilities can travel as far as 44 miles from the point of emission.[158]

Appendix:
Toxic Chemicals Reported to TRI in 2013, by facility and RSEI hazard-based result

Rank	Facility Name Chemicals Emitted*	Pounds Released, 2013	RSEI Hazard-Based Results (RSEI Toxicity Weight x Pounds Released, 2013), in toxicity-weighted pounds
1	**Carpenter Powder Products, Bridgeville**	**874**	**12,843,039,725**
	Chromium	268	7,490,599,725
	Cobalt	298	5,066,000,000
	Nickel	308	286,440,000
2	**Cheswick Power Plant, Springdale**	**185,019**	**10,089,507,214**
	Arsenic Compounds	498	7,470,000,000
	Chromium Compounds	220	1,702,800,068
	Sulfuric Acid	167,610	586,635,000
	Nickel Compounds	340	316,200,000
	Manganese Compounds	597	7,164,000
	Hydrochloric Acid	9,000	1,620,000
	Hydrogen Fluoride	5,986	1,496,500
	Lead Compounds	45	1,028,100
	Mercury Compounds	76	907,200
	Barium Compounds	115	805,000
	Dioxin and Dioxin-Like Compounds	0.0005**	678,406
	Copper Compounds	83	124,500
	Zinc Compounds	364	36,400
	Vanadium Compounds	86	12,040

3	**U.S. Steel Clairton Plant, Clairton**	**1,171,527**	**4,618,934,345**
	Polycyclic Aromatic Compounds	3,050	2,165,507,100
	Benzene	54,000	1,512,000,000
	Hydrogen Sulfide	260,026	468,046,800
	Naphthalene	18,100	217,200,000
	Hydrogen Cyanide	26,700	117,480,000
	Cyanide Compounds	11,047	48,606,800
	Hydrochloric Acid	219,000	39,420,000
	Carbonyl Sulfide	110,047	31,913,630
	Ammonia	286,800	10,038,000
	Certain Glycol Ethers	32,000	5,760,000
	Lead	57	1,320,430
	Phenol	41,034	738,612
	Biphenyl	541	432,800
	Carbon Disulfide	34,900	174,500
	Ethylbenzene	121	107,690
	Mercury	3	37,920
	Acetonitrile	423	24,534
	Xylene (Mixed Isomers)	600	21,000
	2,4-Dimethylphenol	400	20,000
	Cresol (Mixed Isomers)	3,300	19,140
	Dicyclopentadiene	1	18,000
	Ethylene	29,000	16,240
	Pyridine	11	11,000
	Toluene	10,500	7,350
	Propylene	4,530	5,436
	Methanol	15,000	2,700
	1,2,4-Trimethylbenzene	3	1,740
	Anthracene	385	1,271
	Styrene	294	1,029
	Nitrate Compounds	990	624

4	**Allegheny Ludlum, Brackenridge**	**7,383**	**3,868,728,537**
	Chromium Compounds	1,132	1,460,279,967
	Cobalt Compounds	77	1,309,000,000
	Nickel Compounds	1,162	1,080,660,000
	Manganese Compounds	1,171	14,052,000
	Lead Compounds	168	3,864,000
	Hydrogen Fluoride	1,346	336,500
	Nitric Acid	961	259,470
	Copper Compounds	100	150,000
	Zinc Compounds	1,266	126,600

5	**ATI Powder Metals, Oakdale**	**787**	**2,988,939,996**
	Cobalt	137	2,329,000,000
	Nickel	496	461,280,000
	Chromium	154	198,659,996

6	**Holtec Manufacturing, Turtle Creek**	**119**	**2,019,909,927**
	Chromium	71	1,984,449,927
	Nickel	38	35,340,000
	Manganese	10	120,000

7	**Universal Stainless and Alloy Products, Bridgeville**	**1,790**	**1,547,453,970**
	Chromium	1,030	1,328,699,970
	Nickel	229	212,970,000
	Manganese	389	4,668,000
	Lead	42	966,000
	Copper	100	150,000

8	**McConway & Torley Foundry, Pittsburgh**	**3,018**	**1,123,509,386**
	Chromium Compounds	500	644,999,986
	Nickel Compounds	500	465,000,000
	Manganese Compounds	1,000	12,000,000
	Copper Compounds	500	750,000
	Lead Compounds	18	409,400
	Aluminum (Fume or Dust)	500	350,000

9	**Shenango Coke Plant, Neville Island**	**63,222**	**1,084,292,721**
	Benzene	29,661	830,508,000
	Polycyclic Aromatic Compounds	262	186,020,000
	Naphthalene	3,440	41,280,000
	Cyanide Compounds	5,402	23,768,800
	Lead Compounds	73	1,669,800
	Hydrogen Sulfide	310	558,000
	Ammonia	6,536	228,760
	Mercury Compounds	16	188,400
	Phenol	2,077	37,386
	Xylene (Mixed Isomers)	680	23,800
	Ethylene	9,021	5,052
	Toluene	4,404	3,083
	Styrene	228	798
	Anthracene	120	396
	2,4-Dimethylphenol	5	250
	Propylene	164	197

10	**Harsco Metals, Natrona Heights**	**235**	**993,572,310**
	Chromium Compounds	66	964,920,010
	Nickel Compounds	29	26,970,000
	Manganese Compounds	140	1,680,000
	Lead Compounds	0.1	2,300

*Some facilities reported releasing other chemicals to TRI, but those chemicals did not have RSEI values and therefore were omitted from facilities' total RSEI values and from this table.

**The mass of dioxin and dioxin-like compounds released is in grams, as it is reported to TRI.

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