

"Breath to the People"

Sacred Air and Toxic Pollution

A report prepared for the United Church of Christ on
100 super polluters in populated areas across the U.S.



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Introduction

You will neither waver nor be crushed until justice is established on earth for the coastlands await your teaching. Thus says God, the Lord, who created the heavens and stretched them out, who spread out the earth and what comes from it, who gives breath to the people upon it and spirit to those who walk in it: I am the Lord, I have called you in righteousness, I have taken you by the hand and kept you.

—Isaiah 42:4-6

There is a moral urgency to the present crisis of toxic air pollution. It is an urgency familiar to parents, grandparents, and anyone in the position of protecting and caring for children in their lives. For it is children—with their small, vulnerable, developing bodies—who most suffer from breathing in toxic air pollutants. This report addresses this urgency by detailing the sheer number of children under age five who live near 100 super polluting facilities in our country. These super polluters are responsible for 39 percent of the toxic air emissions reported in 2018. Yet, this report also makes clear that there is a real and viable path of hope. The data shows how certain policies could effectively combat current threats to the health and future of our nation’s children.

To understand the origins of this report, one must first travel back in time. In 1987, the Commission for Racial Justice of the United Church of Christ undertook an unusual step for an activist organization that came out of the civil rights movement. It issued an environmental report. That report became the first report to comprehensively demonstrate environmental racism in the United States in relationship to the dumping of toxic waste. In 2020, the United Church of Christ is again compelled to release a report, but of a somewhat different nature. Since the establishment of the Environmental Protection Agency fifty years ago, our nation has not witnessed an assault of this scale on environmental protections by a presidential administration.

The present administration has sought to roll back 95 protections. To make matters worse, the protections in place are losing their teeth as enforcement drops to levels not seen in decades. The overall picture is one of institutional dismantlement and destruction.

As this report makes clear, this could not be happening at a worse time. Super polluters operate with limited oversight as we witness the rapid expansion of the chemical industry. Nearly a quarter of the emissions from these super polluters come from leaks and fugitive emissions which are often preventable and avoidable. At precisely the moment when all the signs tell us that we should be increasing our vigilance, we are decreasing it and putting our children at even greater risk.

With this report, we can pinpoint where the children in the most danger live. They are the children who live near clusters of toxic polluting facilities. Children who often live lives defined by multiple jeopardies and injustices. Children who live along the fence line in places like Houston and Louisiana’s “cancer alley”—that stretch of industrial toxic territory

from Baton Rouge to New Orleans. Yet, it is not only the children in these well-known areas of toxic danger who command attention in this report. Some of the facilities in the report's Toxic 100 list have a seemingly inconspicuous existence. They hide in plain sight and threaten children in communities across the country.

When over 112,500 children under age five in our nation live within three miles of the 100 super polluting facilities identified in this report and when over 11,500 live within a mile, it is indeed a moral crisis that our nation faces. As people of faith, we are not easily satisfied when the fate of our children and the planet is at stake. Ultimately, what we desire is for our toxic economy to become a toxic-free economy. This happens by putting children first in striving for measures to ensure their health and wellbeing. It happens by reforming and implementing existing protections, and it happens by bold policy prescriptions like the Green New Deal. If such ambitions should seem grandiose or utopian, then put yourself in the shoes of the countless parents and caregivers who would do anything to protect the lives of their children. Love is a powerful force that will stop at nothing.



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The origins of this report began in May of 2018 at a convening of environmental justice leaders in New Orleans. We had gathered to discuss how to best respond to the dismantling of the Environmental Protection Agency under the current administration. The conversation was rich and insightful. We are deeply indebted to those who gathered which included Mustafa Ali, Shantha Ready Alonso, Dorien Blythers, Dr. Robert Bullard, Peggy Shepard, Kerene Tayloe, and Dr. Beverly Wright. Without their initial guidance, this report would not have materialized.

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This report was written and researched by Courtney Bernhardt, Keene Kelderman, and Ben Kunstman of the Environmental Integrity Project and prepared for the United Church of Christ.

The Environmental Integrity Project

The Environmental Integrity Project (<http://www.environmentalintegrity.org>) is a nonpartisan, nonprofit organization established in March of 2002 by former EPA enforcement attorneys to advocate for effective enforcement of environmental laws. EIP has three goals: 1) to provide objective analyses of how the failure to enforce or implement environmental laws increases pollution and affects public health; 2) to hold federal and state agencies, as well as individual corporations, accountable for failing to enforce or comply with environmental laws; and 3) to help local communities obtain the protection of environmental laws.

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PHOTO CREDITS:

Cover photo: Taken in Houston, Texas by Madison Mayhew

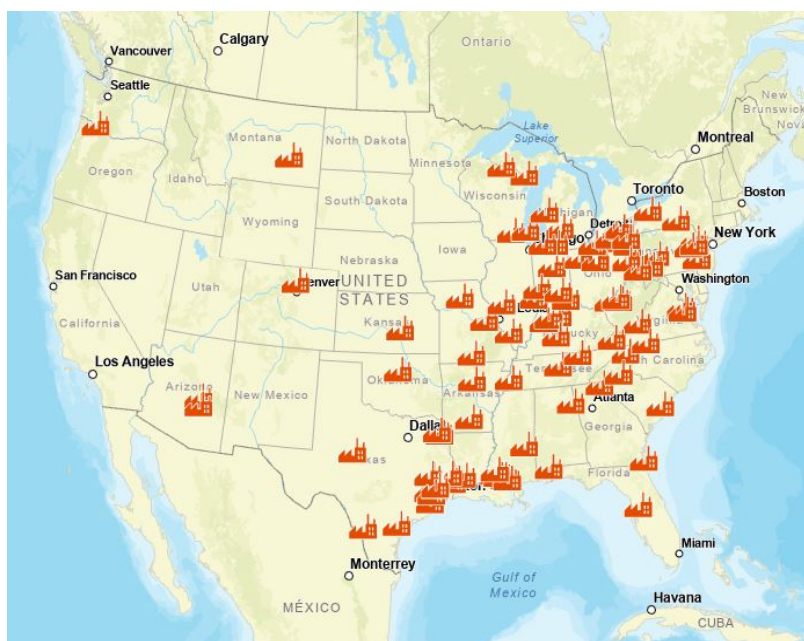
Breath to the People: Sacred Air and Toxic Air Pollution

Executive Summary

Across the country, thousands of industrial facilities release toxic pollutants into nearby communities, burdening them with negative health and environmental consequences. These polluters are far from evenly distributed—in fact, they are concentrated in several pollution hubs, and those living nearby are especially at risk from their noxious fumes. The Environmental Integrity Project analyzed the most recent available toxic air emission data reported to the U.S. Environmental Protection Agency’s Toxics Release Inventory (TRI), which tracks air releases from over 15,500 facilities, to determine which are releasing the most toxic air pollution into heavily populated areas. Toxic air pollution can or may cause cancer, birth defects, or other serious health effects like brain damage.

Some chemicals contain more potent toxins than others, so in order to assess where the most toxic releases occurred we applied an EPA’s methodology that assigns greater weight to pollutants that are more toxic when inhaled. For example, applying EPA’s weighting factors to compare the relative toxicity of two different pollutants, a ton of benzene is roughly equivalent to 393 tons of ethylene oxide. The 300,724 tons of air emissions that the 15,500 facilities reported to the TRI in 2018 translates to over 4.7 billion toxicity-weighted tons of air pollution, consisting of hundreds of different carcinogens, persistent bio-accumulative toxins, metals, and other toxic chemicals. Three of the most toxic chemicals released include ethylene oxide, hexavalent chromium, and nickel, all potent human carcinogens.

Our analysis shows that over a third (39 percent) of all toxic emissions nationwide came from just 100 facilities that have at



The map above shows locations of the “Toxic 100” facilities identified in this report. Clusters of plants are near Houston Texas, between Baton Rouge and New Orleans in Louisiana, and along the Southeast Coast of Lake Erie in Ohio.

least 250 people living within a mile. We’re calling this list “The Toxic 100.” Table A lists the top 10 plants.

Table A. 10 Toxic 100 plants that released the most toxicity-weighted air pollution, 2018

Rank	Facility (Location)	Population within One Mile	Top 3 Chemicals Released	Tons of Air Pollution Reported	Million Toxicity-Weighted Tons of Air Pollution
1	Huntsman Petrochemical LLC Port Neches Facility (Jefferson County, TX)	1,820	Ethylene Oxide, Benzene, Propylene Oxide	143.8	235.8
2	Sasol Chemicals (USA) LLC – Lake Charles Chemical Complex (Calcasieu Parish, LA)	775	Ethylene Oxide, Benzene, Chlorine	193.4	92.9
3	BASF Corp (Ascension Parish, LA)	327	Ethylene Oxide, Diaminotoluene (Mixed Isomers), 4,4'-Methylenedianiline	189.4	90.1
4	Midwest Sterilization Corp (Webb County, TX)	1,147	Ethylene Glycol, Ethylene Oxide	7.6	83.1
5	Medtronic Xomed (Duval County, FL)	4,265	Ethylene Oxide	7.0	77.4
6	Shell Chemical, LP (Ascension Parish, LA)	279	Ethylene Oxide, Acetaldehyde, Cobalt Compounds	116.5	57.4
7	Denka Performance Elastomer LLC (St. John the Baptist Parish, LA)	1,834	Chloroprene, 1,4-Dichloro-2-butene, 1,3-Butadiene	54.3	50.8
8	St. Charles Operations (Taft/Star) Union Carbide Corp. (St. Charles Parish, LA)	418	Ethylene Oxide, Formaldehyde, 1,3-Butadiene	216.4	44.2
9	Eastman Chemical Co. Texas Operations (Harrison County, TX)	368	Ethylene Oxide, Chloroform, 1,3-Butadiene	1,076.2	43.98
10	Midwest Sterilization Corp. (Cape Girardeau County, MO)	607	Ethylene Oxide, Ethylene Glycol	3.7	40.62

Source: Toxics Release Inventory, 2018; 2019 EJSCREEN

Of the top 10 plants listed in Table A, nine reported releasing ethylene oxide. Two of the top 10 plants are owned by Midwest Sterilization, which uses ethylene oxide to sterilize medical equipment.

More than a third (34 percent) of all toxicity-weighted air emissions came from just ten counties across the country, and 19 percent (884 million toxicity-weighted tons) of all toxic emissions reported to the TRI in 2018 came from 352 facilities in just 4 counties in Texas, including Calhoun, Jefferson, Harris, and Webb counties. The remainder of the top ten counties include: Ascension and Calcasieu parishes in Louisiana; Humboldt County, Nevada; and Des Moines County, Iowa; and Montgomery County, Virginia.

In all but three of the top ten counties, a single facility reported over two-thirds of the county's toxic emissions. For example, the Huntsman Petrochemical LLC Port Neches Facility, located in Jefferson County, Texas, was responsible for 87 percent of the toxicity-weighted emissions reported in the county. According to the Toxics Release Inventory, the facility reported releasing 144 tons of 28 chemicals. According to EPA's assessments of the relative toxicity of different pollutants, the plant's toxic air releases are equivalent to 236 million tons of toxic air pollution.¹ Nearly all of the plant's toxicity-weighted emissions consisted of ethylene oxide, a human carcinogen.

Nearly a quarter (24 percent, or 450 of 1,850 million toxicity-weighted tons) of toxic emissions came from leaks (called "fugitive emissions" by EPA), according to company reports. These leaks persist during routine operations but can spike as a result of poor maintenance, accidents, extreme weather events, and plant malfunctions, and are often difficult to detect and measure. According to a review of the EPA's Enforcement and Compliance History Online database, 26 of the Toxic 100 facilities were in violation of the Clean Air Act in 2018.

The data show that large emissions from a small subset of "super-emitters" can have a disproportionate impact on people living downwind, who often have to cope with more than one source and type of air pollution, which compounds the risk. Harris County has five "Toxic 100" facilities: Lyondell Chemical Co., Dixie Chemical Co., Albemarle Corp's Bayport Plant, and ExxonMobil's Baytown Refinery, and ExxonMobil's Baytown Olefins Plant. Other counties that have more than one Toxic 100 facility include Louisiana's Ascension, East Baton Rouge, St. Charles, and St. John the Baptist parishes; as well as Arizona's Gila County; Kanahwa County in West Virginia, and Brazoria and Montgomery Counties in Texas (both of which are in the Houston Metropolitan area along with Harris County). Having several toxic air emission sources within a small area is a serious concern for people living nearby.

Across the U.S., an estimated 169,654 people live within a mile of a facility on the Toxic 100 list and 1.6 million people, about the population of the city of Phoenix, AZ, live within three miles of one. We analyzed the percentage of these populations that are vulnerable or disadvantaged – namely, people who are Hispanic, Latino or of color; low-income (defined as more than two times below the federal poverty level); under the age of five; or over the

age of 64. We then compared them to state averages calculated by the EPA. In total, percentages within a mile of 98 of the 100 facilities exceed state averages for one or more vulnerable population indicator.

At the national level, the percentage of people of color or Hispanics or Latinos, low-income residents, and children under five living within one mile of the Toxic 100 were all higher than national averages. Forty-four percent of the population is low income, which is significantly higher than the national average of just under 33 percent. Forty percent are people of color or Hispanic or Latino, while the national average is 38 percent. The percentage of children living within a mile of the Toxic 100, seven percent, is close to the national average of six percent. An estimated 11,581 children live within a mile of the Toxic 100, while 112,681 live within three miles.

Our analysis adds to the wealth of literature documenting the uphill battle that frontline communities face in working towards long-overdue environmental justice goals, such as clean air, clean water, and fair treatment under the law.

Recommendations:

- Targeted environmental enforcement by federal and state authorities should be a priority to reduce emissions from facilities that release the most toxic pollution. A disproportionate amount of toxic air pollution comes from a small subset of plants, and 26 of the Toxic 100 facilities were in violation of the Clean Air Act in 2018.
- Companies should significantly reduce leaks and fugitive emissions. For example, companies that use or process ethylene oxide or benzene (both carcinogens) should be required to install fence line monitoring systems to detect leaks and provide monitoring data to the public, first responders and regulators so that proper measures can be taken to reduce health risks. Oil refineries are already required to install fence line monitoring systems for benzene.
- The chemical industry is rapidly expanding thanks to low prices of natural gas and an abundance of natural gas liquids feedstock. The well-being and fair treatment of residents of surrounding communities need to be top priorities when considering approvals for expansions or new construction, especially in areas where communities are surrounded by several toxic pollution sources.
- The TRI is a valuable but limited dataset. It relies on companies to report accurate information, and EPA should do all it can to ensure that the data are accurate and reliable. Many industries and types of facilities are not required to report, making it difficult to assess where communities might be exposed to some of the most dangerous toxins. Municipal waste incinerators and gas processing plants, for instance, should be required to report to the TRI, as evidence from other sources like state emission inventories suggest that they would meet reporting requirements.

The Toxic 100

The Environmental Integrity Project (EIP) analyzed air emissions reported to the EPA's Toxics Release Inventory (TRI) for the 2018 calendar year.² These emissions can originate from both designated emission points (stacks) and leaks (fugitive emissions) that occur during normal operations or from unexpected accidents or malfunctions. Facilities report the amount of each chemical they release in pounds. However, not all chemicals pose the same threat to human health at the same concentrations. A pound of ethylene oxide can do a lot more harm than a pound of styrene. Weighting chemical emissions by the harm they can cause if inhaled provides a more accurate indication of where emissions might pose the largest threat to human health.

In order to identify the “super-emitters” that have the potential to impact the most people, EIP identified the 100 facilities that reported releasing the most toxic emissions in areas that have at least 250 people living within a mile.³ These facilities, which we refer to as the “Toxic 100,” emitted 39 percent (1,850 of 4,759 million tons) of the toxicity-weighted air pollution reported in 2018, yet they represent less than one percent of the over 15,500 facilities that reported toxic air emissions to the TRI. An estimated 169,654 people live within a mile of a Toxic 100 plant, and over 1.6 million live within 3 miles.

Table A in the Executive Summary lists the 10 facilities that emitted the most toxicity-weighted air pollution in 2018. All 100 facilities are listed in Appendix A. The map in the Executive Summary shows locations of the Toxic 100. The counties surrounding Houston, Texas, as well as “Cancer Alley” in Louisiana are obvious hot spots. Several facilities are also clustered along Lake Erie in Ohio. These hot spot areas are discussed in further detail later in the report. Some examples are listed below:

- Huntsman Petrochemical's Port Neches Facility in Jefferson County, Texas released the highest amount of toxicity-weighted air pollution. The plant released 28 different pollutants to the air, including ethylene oxide, dioxins, benzene, and propylene oxide through a combination of stack emissions and leaks. The plant's toxicity-weighted emissions add up to 236 million tons, largely consisting of ethylene oxide.
- Sasol Lake Charles Chemical Complex in Calcasieu Parish, Louisiana released the second highest amount of toxicity-weighted air pollution. The plant reported releasing 32 different toxic pollutants to the air, including ethylene oxide, benzene, and chlorine largely from stacks and flares. The plant's toxicity-weighted emissions add up to 92.9 million tons.
- BASF Corp.'s Ascension Parish, Louisiana plant reported the third highest amount of toxicity-weighted air pollution. The plant reported releasing 20 different chemicals to the air, including ethylene oxide, diaminotoluene, and 4,4'-methylenedianiline. The plant's toxicity weighted emissions add up to 90.1 million tons, a large portion of which consisted of ethylene oxide.

Over one third (36 percent) of the facilities in the Toxic 100 engage in chemical manufacturing, and over one quarter (26 percent) of the facilities manufacture primary or fabricated metals (Table B). The chemical industry has undergone a rapid expansion over the past decade, with many expansions to existing facilities and construction of new ones in areas that are already petrochemical hubs along the Gulf Coast in Texas and Louisiana.⁴

Table B. Industries with facilities in the Toxic 100

Industry (Industry Code)	Number of Facilities	Tons of Air Pollution Reported	Million Toxicity-Weighted Tons of Air Pollution
Chemicals (325)	36	8,477.4	970.1
Miscellaneous Manufacturing (339)	7	24.1	265.2
Primary Metals (331)	15	794.9	191.8
Fabricated Metals (332)	11	56.2	125.2
Transportation Equipment (336)	9	19.9	87.6
Machinery (333)	4	22.8	67.2
Electrical Equipment (335)	3	34.7	28.2
Plastics and Rubber (326)	1	3.5	27.0
Petroleum (324)	5	2,254.9	26.2
Nonmetallic Mineral Products (327)	3	1.5	22.1
Electric Utilities (2211)	4	1,220.3	21.4
Hazardous Waste (562)	1	9.9	13.1
Paper (322)	1	45.2	5.4
TOTAL	100	12,965.4	1,850.4

Source: Toxics Release Inventory, 2018

Nearly a quarter (24 percent, or 450 of 1,850 million toxicity-weighted tons) of the emissions from the Toxic 100 facilities came from leaks, which are reported to the TRI as “fugitive” emissions, rather than from stacks or other designated emission points. Leaks can occur because of human error, poor maintenance, malfunctions, or as a result of extreme weather events like hurricanes and floods, making leaked emissions more difficult to quantify accurately using traditional methods. Leaks can go undetected for long periods with little to no pollution controls in place. Leaking emissions are also often released closer to the ground than those from a stack or flare, making them more likely to be inhaled at high concentrations by people living immediately downwind or just beyond a facility’s property line.

Chemicals Released

The US EPA maintains a list of inhalation toxicity weights that it uses to estimate hazards from toxic releases of 440 chemicals in its Risk Screening Environmental Indicators model. The higher the toxicity, the higher the weight. The most toxic chemicals are dioxin and dioxin-like compounds, which are highly potent toxins that have an inhalation toxicity weight of 1.4 billion. Twenty facilities in the Toxic 100 reported releasing just 0.04 pounds of dioxin, yet the toxicity-weighted emissions are equivalent to 30,677 tons. Dioxins are likely under-reported to the TRI, largely because of reporting requirement exemptions.

Dioxins typically form when burning plastic. Yet municipal waste incinerators, except for the few that are regulated under the Resource Conservation and Recovery Act, that burn plastic are not required to report to the TRI. Of the facilities on the Toxic 100 list, Colstrip Steam Electric Station, a coal-fired power plant in Rosebud County, Montana, reported releasing the most dioxins and dioxin-like substances, with 0.014 pounds (equivalent to 9,659 tons after accounting for inhalation toxicity).

The Toxic 100 reported releasing a total of 166 different chemicals or chemical compounds to the air in 2018. Table C lists the 10 chemicals that facilities reported releasing in the highest quantities, once weighted for inhalation toxicity. The most toxic chemical in the table below is propyleneimine, a flammable carcinogen that is used in making paint, pharmaceuticals, and other chemicals.⁵ It is the sixth most toxic chemical cataloged by EPA for its inhalation toxicity. Only one facility reported releasing this chemical, Dixie Chemical Co. Inc. in Pasadena, Texas, which released 160.6 pounds of the chemical through a combination of leaks and stacks, with a toxic equivalent of 12 million tons.

Table C. Top 10 chemicals released, according to total toxicity-weighted emissions

Chemical (CAS No.)	Number of Facilities	Inhalation Toxicity Weight (millions)	Tons Reported	Toxicity-Weighted Tons
Ethylene Oxide (75218)	27	11	92.51	1,017,559,840
Chromium and Chromium Compounds (7440473 & N090)	58	43	40.9	419,164,471*
Cobalt (7440484 & N096)	32	17	7.6	129,713,502
Nickel (7440020 & N495)	54	0.93	62.6	58,200,416
Chloroprene (126998)	2	1.1	40.9	44,914,050
Arsenic And Arsenic Compounds (N020)	7	15	2.4	36,645,000
Nitroglycerin (55630)	1	2.1	12.6	26,377,050
1,3-Butadiene (106990)	17	0.11	201.8	22,195,415
Polycyclic Aromatic Compounds (N590)	19	0.39	45.3	17,682,677
Propyleneimine (75558)	1	150	0.08	12,040,250

Source: Toxics Release Inventory, 2018; EPA's 2017 RSEI model

*Toxicity weight only applied to the hexavalent chromium portion according to EPA methodology.

Chromium and chromium compounds are also some of the most toxic chemicals reported by facilities on the Toxic 100 list. One form of chromium, hexavalent chromium, is highly toxic if inhaled at high levels over short periods of time (acute exposure) and at low levels over longer periods of time (chronic exposure). Acute exposure can cause shortness of breath, coughing, and wheezing, while chronic exposure can cause damage to the septum, bronchitis, decreased heart function, pneumonia, and other respiratory damage.⁶

Hexavalent chromium is the ninth most toxic chemical cataloged by the EPA.

It is important to recognize that companies report total chromium releases to EPA, and not all of those emissions are toxic. EPA's Risk Screening Environmental Indicators model assumes that a portion of the total chromium emissions are toxic based on data reported to the National Emission Inventory, and the toxicity weight for chromium is only applied to the toxic (hexavalent) portion.⁷ We used the same assumptions and methods in this report. Fifty-eight facilities reported emitting 40.8 tons of chromium, 9.7 tons of which we assumed

to be hexavalent. This amount of hexavalent chromium is equivalent to over 419 million tons of toxicity-weighted tons of air pollution after adjusting for inhalation toxicity.

Ethylene oxide is another potent toxin that facilities in the Toxic 100 reported releasing to the air. It is a flammable gas used to make other chemicals and products like antifreeze, textiles, plastics, detergents, and adhesives. It's also used to sterilize medical equipment.⁸ Acute exposure can cause headaches, dizziness, nausea, fatigue, respiratory problems, vomiting, and other digestive system problems. Chronic exposure to ethylene oxide can cause eye, nose, throat, and lung irritation, as well as damage the brain and nervous system. Long-term exposure can also cause breast cancer and cancers that impact white blood cells like non-Hodgkin lymphoma, myeloma, and lymphocytic leukemia.⁹ EPA in 2016 classified ethylene oxide as a human carcinogen and updated its health values for the chemical to more adequately account for its toxicity. According to EPA, people who live near facilities and are exposed to ethylene oxide for very long periods of time (such as over a lifetime) have the highest risk of health impacts. The cancer risk is greater for children than for adults after just one year of exposure.¹⁰

Demographics

High volumes of toxic emissions are a serious concern no matter where they occur, and no matter who they impact. But because certain populations are more susceptible and vulnerable to the negative impacts of pollution, we examined the demographics within one and three miles of the Toxic 100 to evaluate whether vulnerable populations live within close proximity. We used a geospatial aerial apportionment method based on point locations available from the TRI and demographic indicators available from EPA's 2019 EJSCREEN dataset to derive our estimates.¹¹

We selected distances of one and three miles of each plant because leaks and "fugitive" releases of toxic chemicals to the air can impact people closer to a facility than those emitted through stacks or emission points designed to disburse emissions higher into the air so they are diluted if and/or when they reach people downwind. The three-mile estimate also allowed us to reduce some of the uncertainty associated with using facility point locations instead of their actual boundaries to estimate distances, as facility footprints vary in size. However, different chemicals behave differently in the air, and meteorological conditions that impact dispersion of air pollution also vary from place to place and over time. We did not include these factors in our analysis.

The 2019 EJSCREEN dataset contains census block level demographics from the U.S. Census Bureau's 2013-2017 American Community Survey. We considered the following four demographic indicators to evaluate which of the Toxic 100 were located in areas near populations that are most likely to be vulnerable to environmental pollution:

- The number and percentage of people considered low-income (defined as individuals having a household income less than or equal to twice the federal poverty level),

- The number and percentage of people of minority racial or ethnic backgrounds (defined as people of color and Hispanics or Latinos),
- The number and percent of people under age five, and
- The number and percent of people over age 64.

Young children are often the most susceptible to air pollution because they breathe at higher rates and because their developing brains and bodies are more sensitive to certain types of pollution. Older adults may have preexisting conditions that make the impacts of pollution more dangerous or likely to result in more serious outcomes, like death. According to EPA, low-income individuals and people of color or Hispanics and Latinos are less likely to have health insurance, which makes it more difficult for them to cope with the health impacts caused by pollution. Some groups, like those who do not speak English or engage in certain cultural practices (i.e. eating more self-caught fish and shellfish) may be less able to avoid situations that put them in contact with pollution. Low income and minority impacts are most commonly used in environmental justice analyses. While the four indicators we chose are not the only indicators of potential susceptibility or vulnerability to environmental pollution, they are some of the most widely used.¹²

We compared the percentage of people in each demographic category to national averages calculated by the EPA (Table D). Higher percentages relative to national and state averages generally indicate that closer attention to vulnerable populations living near highly polluting facilities. At the national level, 169,654 people live within one mile of a Toxic 100 facility, and 1.6 million live within three miles of one. Forty-four percent of people living within a mile of the Toxic 100 facilities are low income, though the national average is just under 33 percent. These residents live with more poverty than almost three quarters of the country.¹³ Forty percent of people living within a mile are people of color or Hispanic or Latino, which is higher than the national average of just over 38 percent.

Table D. Demographic characteristics of people living within a mile and three miles of 100 facilities

Demographic Indicator	People of color or Hispanic or Latino	Low Income	Children under 5 years old	Adults over 64 years old
National Average	38.5%	32.7%	6.2%	14.9%
1 Mile				
Population	68,403	73,961	11,581	23,849
Percentage of total population (169,654)	40.3%	43.6%	6.8%	14.1%
3 Miles				
Population	753,462	689,006	112,681	222,744
Percentage of total population (1,645,552)	45.8%	41.9%	6.8%	13.5%

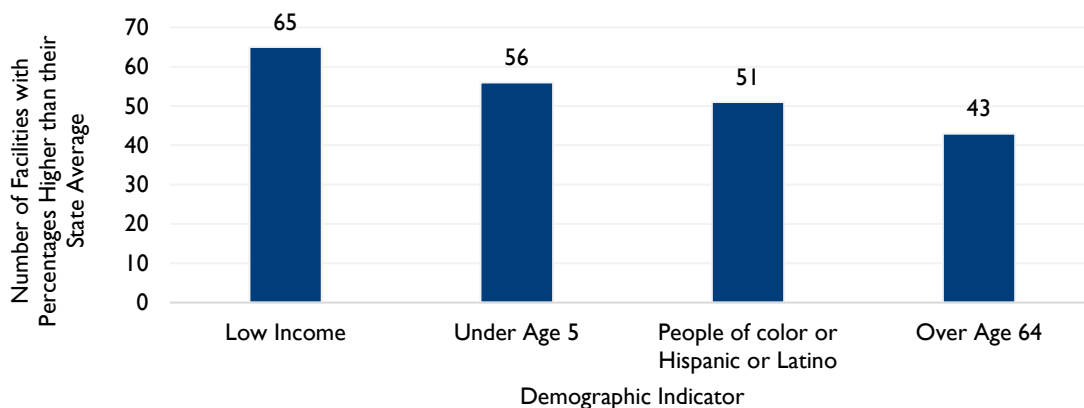
Source: EIP analysis of 2019 EJSCREEN geospatial database

The results above are based on aggregate demographic totals compared to national averages, yet demographics vary by facility and the state in which they are located. State averages can

vary greatly. For example, the average percentage of low-income people in Virginia is 26 percent, but it is 44 percent in Mississippi (the national average is just under 33 percent).

We counted the number of facilities in the Toxic 100 that had demographic indicators greater than their state averages (Figure 1). A total of 98 of the 100 facilities had demographic percentages greater than state averages for one or more vulnerable population indicator. About two-thirds (65) of the Toxic 100 had a higher percentage of people living with low incomes within a mile than their state average. Fifty-six facilities had a higher percentage of children under age five, 51 had a higher percentage of people of color or Hispanic or Latino, and 43 had a higher percentage of people over age 64. This suggests that these facilities are located near potentially vulnerable populations.

Figure 1. Number of facilities in the Toxic 100 with demographic indicators within one mile that are higher than their state average



Compliance & Enforcement

EIP reviewed Clean Air Act compliance information available through the US EPA’s Enforcement and Compliance History Online (ECHO) website to determine if any of the facilities on the Toxic 100 list violated the Clean Air Act in 2018. Seven facilities had violations and 19 more were considered “high priority violators.” Fifty-seven were in compliance. Seventeen had no Clean Air Act records available in ECHO. Based on ECHO data alone, it is difficult to determine whether the violations were related to toxic emissions. However, violations indicate that over a quarter of the facilities are not complying with their air emission permits, and since these are some of the largest emitters of toxins that report to the TRI, targeted enforcement could play a strong role in reducing emissions.

Five of the 26 facilities that were in violation or considered high-priority violators of the Clean Air Act in 2018, according to ECHO, include BASF Corp. in Ascension Parish, Louisiana, St. Charles Operations (TAFT/STAR) Union Carbide Corp. in St. Charles Parish, Louisiana, Huntsman Petrochemical in Montgomery County, Texas,, Haynes International in Howard County, Indiana, and SFI of Tennessee in Shelby County, Tennessee. Each facility’s 2018 Clean Air Act compliance status is included in Appendix A.

Four facilities that we could have included on the Toxic 100 list were suspected to have reported erroneous data to the EPA, according to an analysis by ProPublica. These facilities include Smith International, Inc. in Harris County, Texas, which reported releasing 67.7 tons of chromium, nickel, and manganese to the air; SPX Flow Technology in Marion County, Florida, which reported emitting 52.6 tons of xylene, chromium, and nickel; Modern Industries, Inc. in Erie County, Pennsylvania, which reported releasing 120.2 tons of chromium, zinc, nickel, copper, ammonia, and manganese; and Fecon LLC in Warren County, Ohio, which reported releasing 30.3 tons of copper, nickel, manganese, and chromium. If we had included them on this list of 100 plants, they would have ranked numbers 1, 3, 12, and 17, respectively, after weighting emissions by inhalation toxicity.

It is imperative that facilities report accurate information to the Toxics Release Inventory, otherwise it undermines the purpose of the TRI program and robs communities and decision-makers of accurate and reliable information. Facilities can submit revised TRI report forms to EPA, but EPA does not immediately post the data to its website or update its public database. Additionally, EPA's public TRI database does not identify facilities that are suspected of having submitted erroneous data, and there is no easy way to report suspected errors to the TRI Program.

Toxic Air Emission Hot Spots

The Toxic 100 represent less than one percent of facilities that reported to the TRI in 2018, yet they released 39 percent of the toxicity-weighted emissions. In order to better understand what drives hot spots for toxic air pollution, we calculated toxicity-weighted emissions by county (Figure 2). Facilities in just 10 counties reported 34 percent of all toxic emissions (1,632 million of 4,759 million toxicity-weighted tons) (Table E). Four of the counties with the highest reported toxic releases are located in Texas, and two are in Louisiana. Others are located in Florida, Nevada, Iowa, and Virginia. Of the 2,260 counties where facilities reported toxic air releases in 2018, 77 percent (1,729) counties were home to more than one facility. Harris County, Texas had the most facilities reporting (296) with Cook County, Illinois had the second highest (256).

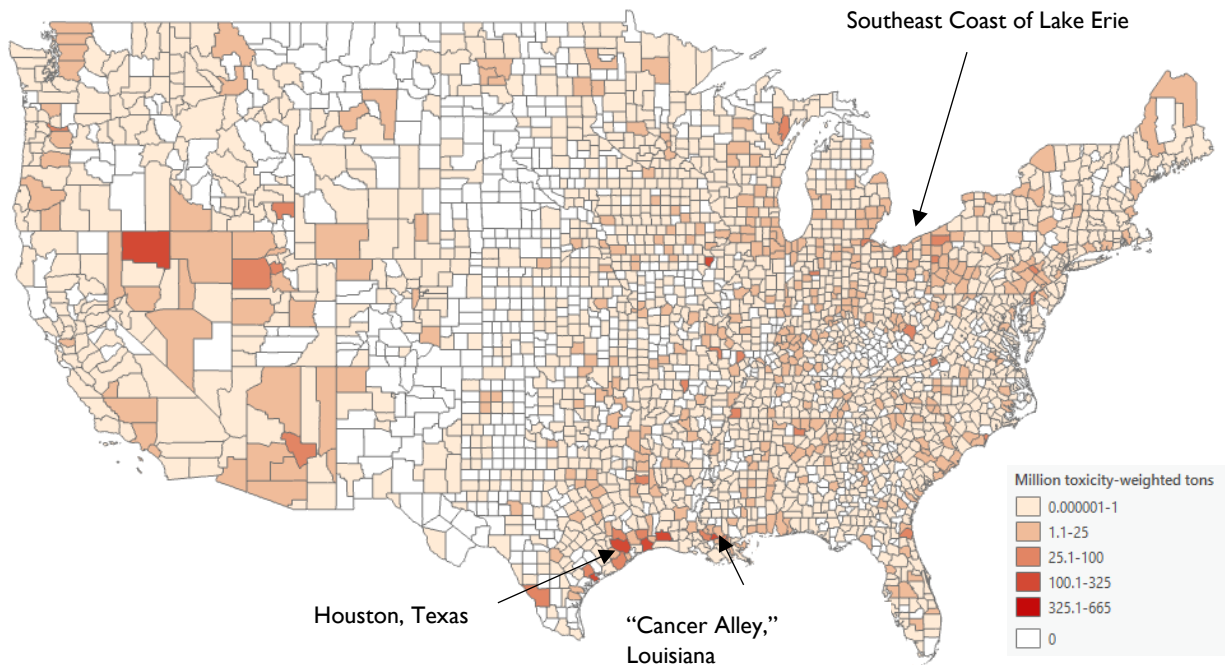
In all but two of the top 10 counties, over two thirds of toxic emissions came from a single facility. Seven of the 10 counties had one or more Toxic 100 facility, and the three that did not had populations not dense enough to be included on the Toxic 100 list but were still home to large emitters. Facilities that released a lot of pollution in Calhoun County, Texas, Humboldt County, Nevada, and Des Moines County, Iowa, which are not home to any of the Toxic 100 plants, include Union Carbide Corp's Seaport Plant, Sierra Pacific Power's North Valmy Power Station, and a US Army Ammunition Plant, respectively. This underscores the finding that large "super-emitters" have an oversized impact on toxic emissions.

Table E. 10 Counties where facilities released the most toxicity-weighted air pollution

County/Parrish, State	Toxic 100 Facilities/Total TRI Facilities that Reported Air Releases	Population (2013-2017 average)	Tons of Toxic Air Pollution Reported	Total Reported Toxic Air Releases (Million toxicity-weighted tons)	Percent of Total County Toxic Air Releases that Came from a Single Super-Emitter
Calhoun, TX	0/6	21,807	1,166.7	323.0	97.3%
Jefferson, TX	1/47	255,210	2,967.2	269.6	87.5%
Harris, TX	5/296	4,602,523	5,420.0	208.8	13.4%
Humboldt, NV	0/7	6,727	118.3	178.8	97.4%
Ascension, LA	3/18	121,176	6,924.9	166.4	54.1%
Des Moines, IA	0/10	39,600	140.6	136.4	99.5%
Calcasieu, LA	1/30	200,182	2,628.5	106.1	87.6%
Webb, TX	1/3	272,053	7.6	83.1	99.9%
Montgomery, VA	1/5	97,997	71.8	81.0	67.4%
Duval, FL	1/40	924,229	464.8	79.1	97.8%

Source: EPA 2018 Toxics Release Inventory, U.S. Census 2013-2017 American Community Survey

Figure 2. County-level toxic air emissions reported to the TRI, 2018, weighted for inhalation toxicity



Houston Metropolitan Area, Texas

The Houston metropolitan area experienced some of the highest amount of toxic air releases in 2018, according to the Toxics Release Inventory. The metropolitan area includes Austin, Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, and Waller counties, and is home to one of the United States' largest petrochemical manufacturing hubs. A total of 410 facilities around Houston released 288 million tons of toxicity-weighted air pollution in 2018, accounting for 24 percent of the 1.2 billion tons of toxic emissions reported across all of Texas and 6 percent of the 4.8 billion tons of toxic emissions reported nationally.

Ten of the Toxic 100 facilities are located in the Houston metropolitan area, in Brazoria, Harris, Fort Bend, and Montgomery counties. They emitted 109 million tons of toxicity-weighted air pollution in 2018. Eight of the ten facilities manufactured chemicals, one refines oil, and one manufactures fabricated metals. Figure 3 shows the locations of Toxic 100 facilities in the Houston area. Table F lists the Toxic 100 facilities located in and near Houston and the demographics surrounding each one. Demographic indicators in bold font are those that exceed state averages.

Dow Chemical Co. Freeport Facility (number 45 on the Toxic 100 list) is a 7,000-acre petrochemical complex located in Freeport, Texas, in Brazoria County. According to Dow's corporate website, the Freeport facility is the largest chemical manufacturing facility in the Western Hemisphere. The complex is also home to the company's new 1.5 million metric



The Dow Chemical Freeport Facility in 2018 released 11.7 million toxic tons of air pollutants into a neighborhood that has some of the highest percentages of low income people and children under five in the state.

ton ethylene cracker and polyethylene plastic manufacturing facility, which started up in 2017.¹⁴ The ethylene cracker is currently undergoing another expansion that the company expects to complete in 2020.¹⁵ The plant makes a variety of performance materials and coatings, industrial chemical intermediates, and plastics.¹⁶ It released 83 different chemicals to the air, the most toxic of which included

carcinogens like dioxins, ethylene oxide, and diaminotoluene, with toxicity-weighted emissions of 11.7 million tons.

An estimated 1,827 people live within a mile of the plant. Eighty-six percent are people of color or Hispanic or Latino, 75 percent are low income individuals, 10 percent are children under 5, and 2.7 percent are over age 64. These percentages are all higher than the state average, except for the percent of people over age 64. The percentages of low income and children are some of the highest in the state. Impacts to vulnerable populations should be investigated and that the regulators approving expansions of the plant should seriously consider the impacts to children and the impoverished.

Nalco Champion (number 84 on the Toxic 100 list), an Ecolab subsidiary, is an organic chemical manufacturing plant that makes chemicals used in the oil, gas, and petrochemical industries. It is located in Fresno in Fort Bend County, Texas, south of Houston. It released 5.4 million tons of toxicity-weighted air pollution in 2018, consisting of ethylene oxide, xylene, and propylene oxide, and other chemicals. Ethylene oxide is a carcinogen, and propylene oxide is a probable human carcinogen. Xylene is not a carcinogen, but short-term exposure can irritate the eyes, nose, and throat, disrupt the digestive system, and cause neurological damage. Long-term exposure can damage the kidneys and the central nervous, respiratory, and cardiovascular, systems.¹⁷

An estimated 3,234 people live within a mile of the Nalco Fresno plant, 87 percent are people of color or Hispanic or Latino, 25 percent are low income, 9.7 percent are children under age 5, and 7.4 percent are over age 64. Percentages are higher than state averages for people of color or Hispanic or Latino and for children under age five.

Figure 3. Locations of the 10 Toxic 100 Facilities in the Houston Metropolitan Area, Texas

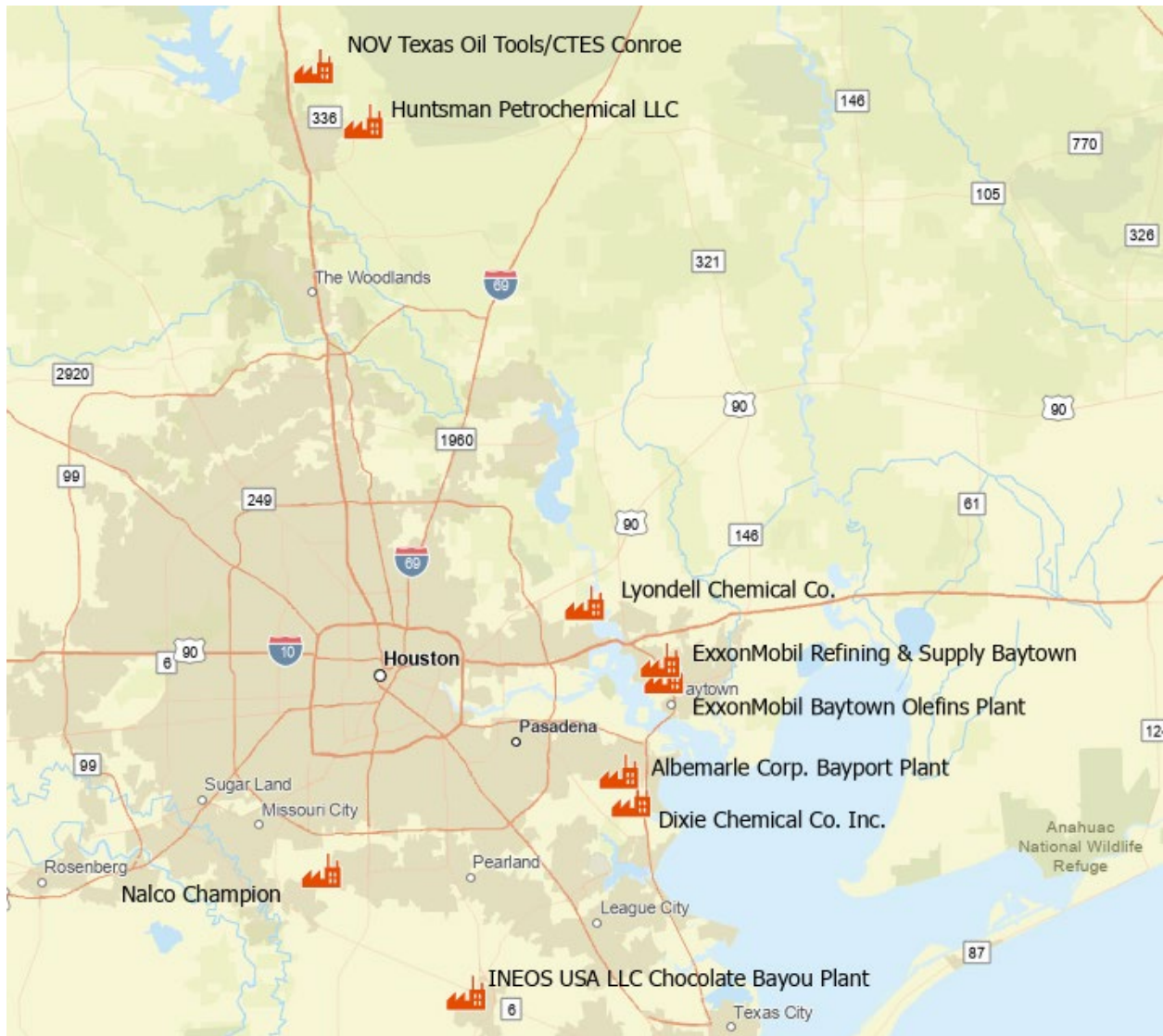


Table F. Toxic 100 Facilities in the Houston Metropolitan Area

Rank	Facility (County)	Top 3 Chemicals Released	Tons Air Pollution Reported / Million Toxicity-Weighted tons	No. people living within a mile	% People of color or Hispanic or Latino	% Low income	% Under age 5	% Over age 64
14	Lyondell Chemical Co. (Harris)	Ethylene Oxide, 1,3-Butadiene, Benzene	510 / 28.1	446	76%	51%	3%	8%
23	Huntsman Petrochemical LLC (Montgomery)	Ethylene Oxide, Acrylonitrile, Propylene Oxide	21.7 / 25.5	598	53%	61%	10%	10%
38	Dixie Chemical Co. Inc. (Harris)	Propyleneimine, 1,3-Butadiene, Maleic Anhydride	8.7 / 12.3	329	40%	13%	4%	19%
41	Dow Chemical Co. Freeport Facility (Brazoria)	Ethylene Oxide, 1,3-Butadiene, Formaldehyde	443.4 / 11.7	1,827	86%	75%	10%	3%
60	Albemarle Corp. Bayport Plant (Harris)	Cobalt and Cobalt Compounds, Nickel and Nickel Compounds, Molybdenum Trioxide	24.2 / 7.3	542	49%	12%	5%	13%
80	Nalco Champion (Fort Bend)	Ethylene Oxide, Propylene Oxide, Formaldehyde	1.4 / 5.4	3,234	87%	26%	10%	7%
84	NOV Texas Oil Tools/CTES Conroe (Montgomery)	Chromium, Nickel, Copper	1.5 / 5.2	1,115	46%	28%	6%	13%
85	INEOS USA LLC Chocolate Bayou Plant (Brazoria)	1,3-Butadiene, Benzene, Naphthalene	255.7 / 5.1	5,203	37%	41%	9%	15%
93	ExxonMobil Refining & Supply Baytown Refinery (Part) (Harris)	Nickel and Nickel Compounds, 1,3-Butadiene, Benzene	755.6 / 4.6	911	82%	51%	6%	17%
99	ExxonMobil Chemical Co. Baytown Olefins Plant (Part) (Harris)	1,3-Butadiene, Nickel and Nickel Compounds, Formaldehyde	426.9 / 4.19	1,203	57%	47%	5%	16%

Note: Bold demographic indicators exceed state averages calculated by EPA.

Source: EPA 2018 Toxics Release Inventory, 2017 RSEI chemical toxicity weights, and 2019 EJSCREEN

Louisiana's "Cancer Alley"

Eleven Toxic 100 facilities are located along Mississippi River in Louisiana between Baton Rouge through New Orleans, an area that has earned the moniker "Cancer Alley" because of high levels of toxic releases and associated cancer clusters. The region includes the parishes of St. Charles, St. James, St. John the Baptist, Ascension, East Baton Rouge, Iberville, West Baton Rouge, East Baton Rouge, Jefferson, Plaquemines, Assumption, New Orleans, and St. Bernard. One hundred and forty-two facilities in these parishes released 343.3 million tons of toxicity-weighted air pollution in 2018, with 87 percent (299.2 million toxicity-weighted tons) from facilities on the Toxic 100 list, and 4 of which rank in the top 10. Nine of the 11 facilities manufacture chemicals, one refines oil, and one does both. Table G lists the 11 Toxic 100 facilities located in this heavily and historically polluted region of Louisiana. Figure 4 shows their locations.



ExxonMobil's Baton Rouge Chemical Plant and Refinery reported releasing 11.4 million toxic tons of air pollution in 2018.

The ExxonMobil Baton Rouge Refinery and Chemical Plants (numbers 71 and 94 on the Toxic 100 list) are located on the northwestern side of the city of Baton Rouge. One manufactures petrochemicals and plastics, and the other refines oil. Together, they released 11.4 million tons of toxic air pollution in 2018 consisting of chemicals like benzene, chromium, polycyclic aromatic compounds, and a brew of other hazardous air pollutants, carcinogens, and metals. The plants are located adjacent to each other and

across the street from residential neighborhoods and just south of Southern University and A&M College. An estimated 4,664 people live within a mile of either plant, 95 percent are people of color or Hispanic or Latino, 59 percent are low income, eight percent are children under age five, and seven percent are over age 64. All of these percentages are higher than Louisiana state averages except for the percent of people over age 64, and are some of the highest in the state for people of color or Hispanics or Latinos and the impoverished.

ExxonMobil Baton Rouge is subject to fence-line monitoring requirements for large refineries, which include regular monitoring along the perimeter of the facility for benzene. The primary goal of the fence-line monitoring network is to ensure refineries are properly

monitoring and managing fugitive hazardous air pollutant emissions. Benzene, a cancer-causing pollutant, is used as a surrogate pollutant for fugitive leaks of hazardous air pollutants due to its presence in nearly all refinery process streams. Facilities determine the net concentration due to the refinery as an annual average, and assess against an EPA action level of nine micrograms per meter cubed over background levels, which EPA set as the maximum modeled concentration at any refinery across the nation. When the action level is exceeded, the facility must conduct a root cause analysis and take actions to correct any issues that led to the exceedance.

EIP reviewed publicly accessible fence-line monitoring data, and found that ExxonMobil Baton Rouge’s net benzene concentration at the fence-line has generally risen over the course of 2019. ExxonMobil Baton Rouge’s net concentration increased from 6.5 micrograms per meter cubed in January 2019 to 8.4 micrograms per meter cubed in the most recent monitoring period ending at the end of September 2019. Although the fence-line benzene concentration is just below the EPA action level, the concentration is over twice the lowest reference exposure level for inhalation of benzene (three micrograms per meter cubed, as determined by the California Office of Environmental Health Hazard Assessment). The actual exposure to benzene in nearby communities can vary from the concentrations measured at a refinery’s border, depending on factors like emissions from non-refinery sources, weather conditions, and wind direction.

Figure 4. Locations of 11 Toxic 100 plants in Louisiana’s “Cancer Alley”

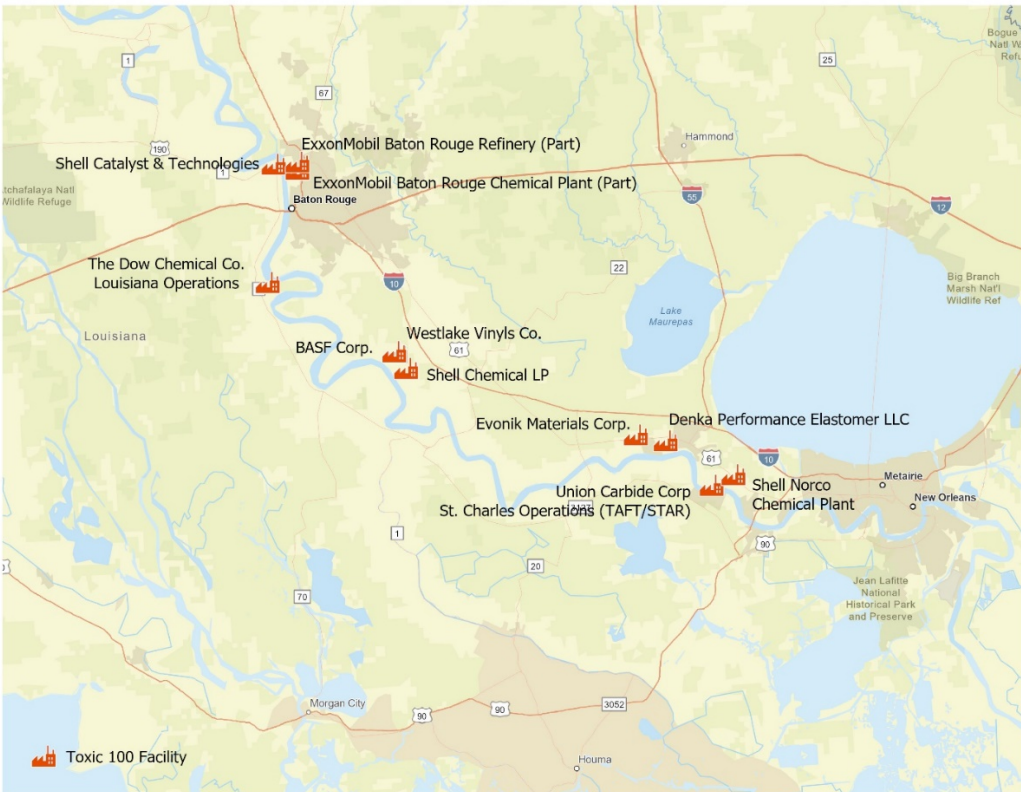


Table G. Toxic 100 facilities located in Louisiana’s “Cancer Alley”

Rank	Facility (Location)	Top 3 Chemicals Released	Tons Air Pollution Reported / Million Toxicity-Weighted Tons	No. people living within a mile	% People of color or Hispanic or Latino	% Low income	% Under age 5	% Over age 64
3	BASF Corp. (Ascension Parish)	Ethylene Oxide, Diaminotoluene (Mixed Isomers), 4,4'-Methylenedianiline	189.4 / 90.1	327	45%	12%	7%	10%
6	Shell Chemical LP (Ascension Parish)	Ethylene, Acetaldehyde, Cobalt Compounds	116.5 / 57.4	279	49%	16%	8%	11%
7	Denka Performance Elastomer LLC (St. John the Baptist Parish)	Chloroprene, 1,4-Dichloro-2-Butene, 1,3-Butadiene	54.3 / 50.8	1,834	80%	46%	6%	20%
8	St. Charles Operations (TAFT/STAR) Union Carbide Corp. (St. Charles Parish)	Ethylene Oxide, Formaldehyde, 1,3-Butadiene,	216.4 / 44.2	418	50%	27%	3%	9%
29	The Dow Chemical Co Louisiana Operations (Iberville Parish)	Ethylene Oxide, 1,3-Butadiene, Benzene	916.5 / 17.5	440	57%	47%	9%	16%
45	Evonik Materials Corp. (St. John the Baptist Parish)	Ethylene Oxide, Propylene Oxide, Methyl Isobutyl Ketone	5.2 / 10.0	526	60%	48%	8%	16%
64	Westlake Vinyls Co (Ascension Parish)	Chloroprene, 1,2-Dichloroethane, Chloroform	63.7 / 7.0	332	45%	13%	7%	10%
67	ExxonMobil Baton Rouge Chemical Plant (East Baton Rouge Parish)	Chromium, Nickel and Nickel Compounds, Benzene	767.5 / 6.6	2,991	94%	58%	8%	7%

Rank	Facility (Location)	Top 3 Chemicals Released	Tons Air Pollution Reported / Million Toxicity-Weighted Tons	No. people living within a mile	% People of color or Hispanic or Latino	% Low income	% Under age 5	% Over age 64
78	Shell Catalyst & Technologies (West Baton Rouge Parish)	Cobalt and Cobalt Compounds, Nickel Compounds, Molybdenum Trioxide	11.9 / 5.5	250	51%	26%	4%	8%
81	Shell Norco Chemical Plant and Refinery (St. Charles Parish)	1,3-Butadiene, Benzene, Cobalt and Cobalt Compounds	599.2 / 5.3	2,131	8%	31%	6%	13%
90	ExxonMobil Baton Rouge Refinery (Part) (East Baton Rouge Parish)	Chromium, 1,2-Dibromoethane, Cobalt and Cobalt Compounds	575.4 / 4.8	3,007	96%	56%	5%	7%

Note: Bold demographic indicators exceed state averages calculated by EPA.

Source: EPA 2018 Toxics Release Inventory, 2017 RSEI chemical toxicity weights, and 2019 EJSCREEN

Southeast Coast of Lake Erie in Ohio

The industrialized southeast coast of Lake Erie in Ohio (Ashtabula, Lake, Cuyahoga, and Lorain Counties) is home to 185 facilities that released 61.8 million tons of toxicity-weighted air pollution in 2018. Four of the 185 facilities are among the Toxic 100 and released 53.6 million toxicity-weighted tons of air pollution. Two of the four facilities manufacture chemicals, one manufactures fabricated metals, and one manufactures transportation equipment. Table H lists the four Toxic 100 facilities located along the southeast coast of Lake Erie, and Figure 5 shows their locations.

MPC Plating (number 72 on the Toxic 100 list) is a fabricated metals manufacturing facility located in the Hough neighborhood of Cleveland, Ohio. The plant reported releasing 6.4 million tons of toxicity-weighted air pollution in 2018, the majority of which (six million tons) was hexavalent chromium. The plant also reported releasing nickel, trichloroethylene, copper, and nitric acid. Chromium, nitric acid, and copper were released through both leaks and stacks, while emissions of nickel and trichloroethylene, a carcinogenic solvent, were released through leaks. Over 7,000 people live within a mile of the plant. Ninety-one percent are people of color or Hispanic or Latino, 71 percent are low income, eight percent are children under five, and 14 percent are over age 64. These percentages are all higher than state averages, except for the percentage of people over age 64. The percentages of people of color and low-income individuals are some of the highest in the state.

Figure 5. Locations of four Toxic 100 facilities on the southeast coast of Lake Erie in Ohio

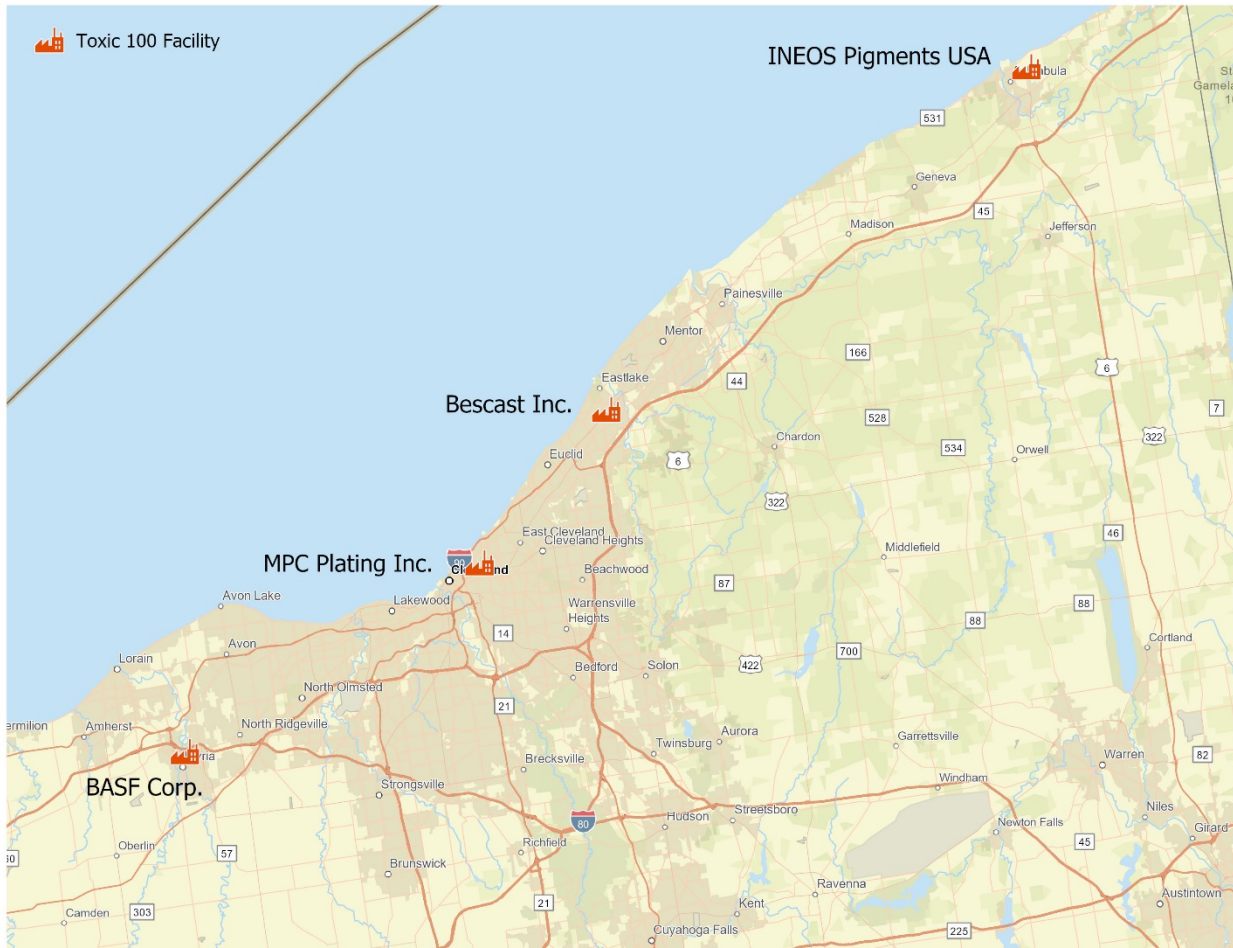


Table H. Toxic 100 facilities located on the Southeast coast of Lake Erie in Ohio

Rank	Facility (Location)	Top 3 Chemicals Released	Tons Air Pollution Reported / Million Toxicity-Weighted Tons	No. people living within a mile	% People of color or Hispanic or Latino	% Low income	% Under age 5	% Over age 64
11	BASF Corp. (Lorain County)	Chromium and Chromium Compounds, Nickel Compounds, Copper Compounds	7 / 31.8	7,367	23%	48%	8%	13%
49	Bescast Inc. (Lake County)	Chromium, Cobalt, Nickel	1.5 / 9.5	3,446	10%	27%	4%	28%
68	MPC Plating Inc. (Cuyahoga County)	Chromium and Chromium Compounds, Nickel, Trichloroethylene	7 / 6.4	7,195	91%	71%	8%	14%
71	INEOS Pigments USA Inc. (Ashtabula County)	Carbonyl Sulfide, Titanium Tetrachloride, Hydrogen Sulfide	1,713 / 6.0	531	11%	43%	7%	18%

Note: Bold demographic indicators exceed state averages calculated by EPA.

Source: EPA 2018 Toxics Release Inventory, 2017 RSEI chemical toxicity weights, and 2019 EJSCREEN

Conclusion & Recommendations

One hundred large “super-emitters” released over a third (39 percent) of the toxic air pollution reported in 2018, after adjusting emissions for inhalation toxicity. These facilities, which we’ve included on the “Toxic 100” list, are located in areas that have at least 250 people living within a mile. Ninety-eight of them have higher percentages of potentially vulnerable people living within a mile compared to state averages. It is without question that their toxic emissions have a high likelihood of impacting public health.

Nearly a quarter (24 percent) of toxic emissions came from leaks, according to what companies reported to the Toxics Release Inventory. These leaks occur as a result of poor maintenance, accidents, extreme weather events, and plant malfunctions, and are often difficult to detect and measure, and yet many causes, such as poor maintenance, are avoidable. Stronger leak detection and repair provisions could significantly reduce emissions, if they were required and enforced. At a minimum, facilities that use or process carcinogenic chemicals like benzene, 1,3-butadiene, and ethylene oxide should be required

to install fence-line monitoring systems that provide information to the public, neighbors, first responders, and health care providers so that they can mitigate exposure to toxins. Fence-line monitoring for all toxics for which the technology exists to do so would be ideal. The fence-line monitoring programs should apply to all potential emission sources within the facility, including tanks, and companies should be required to undertake immediate corrective action to repair and fix any leaks of toxic chemicals and notify nearby residents.

Given that such a large portion of reported toxic emissions come from relatively few facilities, targeted environmental enforcement should be a priority for reducing emissions from “super-emitters.” According to a review of the EPA’s Enforcement and Compliance History Online database, 26 of the Toxic 100 facilities were in violation of the Clean Air Act in 2018, 19 of which were considered high priority violators by EPA.

The chemical industry, which accounted for over a third (36) of the facilities among the Toxic 100, is undergoing a rapid expansion because of cheap fuel and feedstock driven by record-breaking oil and gas production. Several of the Toxic 100 facilities have recently expanded or are undergoing expansions. Previously reported toxic emissions, existing demographics and health, and cumulative impacts to surrounding communities must be evaluated by state, local, and federal officials in their siting decisions, environmental approvals, and tax credit awards. Similarly, all notices of projects that have the potential to increase emissions should be provided in non-English languages where needed, and professional interpretation services should be provided at public proceedings.

While our analysis identifying America’s super-emitters is a useful tool for holding some of the nation’s most dangerous polluters accountable, the data used to create the list are limited and rely on companies to report accurate information. Many industries and types of facilities are not required to report to the Toxics Release Inventory, and those that are do not have to report all toxic releases. Municipal waste incinerators and gas processing plants, for instance, should be required to report emissions, as evidence from other sources like state emission inventories and scientific literature suggest that they would meet all other reporting requirements.

Air pollution is a major driver of public health problems, and the people impacted often have little recourse to improve their situation. Those tasked with management and oversight of heavily polluting facilities, such as the Toxic 100, must work harder to provide a safe environment and clean bill of health to those living in close proximity to these plants. As this report shows, addressing excess pollution at the biggest emitters could go a long way towards improving the well-being of hundreds of thousands of people across the country.

NOTES

¹ A list of toxicity weights from EPA's Risk Screening Environmental Indicators model is available at https://www.epa.gov/sites/production/files/2018-12/toxicity_data_rsei_v237.xlsx. For more information, see EPA's RSEI Documentation and Help, available at <https://www.epa.gov/rsei/rsei-documentation-and-help>.

² The Toxics Release Inventory is a useful yet limited dataset. Data are self-reported by companies that are required to report. For more information about considerations for using the TRI, see US Environmental Protection Agency (2019) TRI for Researchers. Available at: <https://www.epa.gov/toxics-release-inventory-tri-program/tri-researchers> (Accessed 1/30/2020).

³ It would be inaccurate to characterize the facilities identified in this report as the largest emitters or the most toxic in the country because of limitations to the TRI and because we focused on facilities that had at least 250 people living within a mile. The TRI is limited to certain chemicals, industry sectors, and facilities that meet specific reporting requirements. Therefore, it does not consider all toxic air emissions that occurred in the US. For instance, the TRI does not include major sources of emissions like municipal waste incinerators, which emit considerable amounts of dioxins, or sources that employ fewer than 10 full time equivalent employees, even if they are considered as part of an industry sector that is required to report to the TRI. It also doesn't require covered industries to report chemical releases below certain thresholds. More information about considerations when using TRI data can be found on EPA's website.³ It is accurate to say that the 100 facilities we identify reported the most toxic air emissions to the TRI in 2018, after accounting for inhalation toxicity. Similarly, the counties highlighted in this report are not to be interpreted as the most toxic in the country, but they should be characterized as those where TRI facilities reported the most toxic emissions.

⁴ The Environmental Integrity Project has been tracking new and expanding petrochemical plants since 2012. See <https://www.environmentalintegrity.org/oil-gas-infrastructure-emissions/> for a map of new and expanded facilities, downloadable permit documents, and potential emission increases of criteria air pollutants and greenhouse gases.

⁵ New Jersey Department of Health and Senior Services (2005) Hazardous Substance Fact Sheet, available at <https://nj.gov/health/eoh/rtkweb/documents/fs/1614.pdf> (Accessed 1/30/2020).

⁶ US Environmental Protection Agency (2000) Chromium Compounds, available at <https://www.epa.gov/sites/production/files/2016-09/documents/chromium-compounds.pdf>, (accessed 1/30/2020).

⁷ If no information is available, EPA assumes 34 percent of total chromium emissions is toxic. See: US Environmental Protection Agency (2018) EPA's Risk-Screening Environmental Indicators (RSEI) Methodology, RSEI Version 2.3.7, available at https://www.epa.gov/sites/production/files/2018-12/documents/rsei_methodology_v2.3.7.pdf, p. 12. (Accessed 1/30/2020)

⁸ US Environmental Protection Agency (2020) Hazardous Air Pollutants: Ethylene Oxide. Available at <https://www.epa.gov/hazardous-air-pollutants-ethylene-oxide>, (Accessed 1/30/2020).

⁹ US Environmental Protection Agency (2020) Background Information on Ethylene Oxide. Available at: <https://www.epa.gov/hazardous-air-pollutants-ethylene-oxide/background-information-ethylene-oxide#what> (Accessed 1/30/2020).

¹⁰ US Environmental Protection Agency (2020) Frequent Questions: Health Information about Ethylene Oxide. Available at: <https://www.epa.gov/hazardous-air-pollutants-ethylene-oxide/frequent-questions-health-information-about-ethylene-oxide#acute> (Accessed 1/30/2020).

¹¹ While this method is widely used to estimate demographics within certain distances of a facility, including by EPA, it would yield more precise estimates if a) the facility boundaries were used to generate buffers rather than single point locations, and b) population estimates were available in smaller resolution units. Results would likely differ if racial categories available through EJSCREEN were broken down into subgroups, such as African American, Hispanic or Latino, Asian, Native American, and so forth. The aerial apportionment analysis was performed in ArcGIS Pro.

¹² U.S. Environmental Protection Agency (2019) EJSCREEN Environmental Justice Mapping and Screening Tool Technical Documentation, available at: https://www.epa.gov/sites/production/files/2017-09/documents/2017_ejscreen_technical_document.pdf, pp. 17-18. (Accessed 1/30/2020).

¹³ There is no official policy for determining where an environmental justice or children's health concern does or does not exist based on demographic indicators alone. *Ibid.* p. 26.

¹⁴ Dow (2019) Driving Dow's Growth in Texas: The Making of Dow's Largest Site, available at: <https://corporate.dow.com/en-us/about/company/history/texas-facility.html> (Accessed 1/30/2020).

¹⁵ DowDupont (2019) Annual Report, available at: https://s23.q4cdn.com/981382065/files/doc_downloads/featured_information/2019/04/Dow-Final-Information-Statement.pdf, p. 31.(Accessed 1/30/2020)

¹⁶ *Ibid.* p. 85

¹⁷ US Environmental Protection Agency (2000) Xylenes (Mixed Isomers), available at: <https://www.epa.gov/sites/production/files/2016-09/documents/xylenes.pdf>. (Accessed 1/30/2020)

Matters of Morality and Faith: A Postscript

The real-life consequences of EPA rollbacks and the toxic circumstances faced by fence line communities, especially children, motivated this report. In many ways, the situation faced today evokes the plight of the miner's canary. For those unfamiliar with this parable for societal ills and disparities, miners once carried canaries with them into the mine to serve as a warning signal. When dangerous levels of gas filled the air, the canary's respiratory system would become distressed and cause the canary to collapse as an alert to the miners. Children in the fence line communities of Louisiana and Texas have almost literally been forced to serve as our society's canary.

Yet, other states are by no means paragons of virtue. The Toxic 100 list serves as a moral spotlight highlighting facilities in communities across the country that might otherwise fall under the radar of awareness. For instance, while it is no surprise that Cleveland, Ohio suffers from air pollution, we were surprised to learn that a facility on the Toxic 100 list has a seemingly inconspicuous presence not terribly far from our offices. There are no giant smokestacks belching clouds into the air, no tall columns sending burning flares into the air for all to see. Instead, the building has the outward appearance of a warehouse that one could easily drive by without hardly noticing it.

But this facility spews chromium, copper, formaldehyde, nickel, nitric acid, trichloroethylene, and lead into the air. This is in a community that has also suffered from one of the worst lead crises in the country. Disturbingly, 565 children under age five live within one mile of the plant, while 4,408 live within three miles.

This is decidedly a moral matter, and it is also a faith matter. As the title of this report makes clear, our faith tradition teaches us that the air is sacred. It is the very breath of God given to us. We could not live for a moment without it. Yet, too often we take this sacred, life-giving, and life-sustaining part of our existence for granted. We now have no other choice. We can no longer continue in this way. The dangers and consequences are too real and too painful. Something must change.

It is not an accident that we are releasing this report on Ash Wednesday, a holy day associated with repentance. The meaning of the word "repent," however, has often been lost in translation. In its Greek origins, it is about turning around and changing course to go in a new and better direction. Our nation today is faced with a moral reckoning, but it is also faced with an opportunity to head in a new and better direction, a direction that seeks to protect without fail the health and wellbeing of children. On this sacred occasion, let us commit to doing just that.

Rev. Brooks Berndt, PhD
Minister for Environmental Justice, United Church of Christ
February 26, 2020

Rank	Facility Name	County / Parish	State	Toxic Air Emissions		Population	Demographics Within 1 Mile (bold percentages exceed state averages)				Facility Information		
				Total reported (tons)	Inhalation toxicity-weighted (million tons)		People of Color/ Hispanic/ Latino	Low Income Individuals	Children under Age 5	Adults over Age 64	Industry	2018 Clean Air Act Compliance Status	More Info (chemicals released, etc.)
1	Huntsman Petrochemical LLC Port Neches Facility	Jefferson	TX	143.78	235.75	1,820	436 (23.9%)	622 (34.2%)	65 (3.6%)	173 (9.5%)	Chemicals	In Compliance	TRI Facility Report
2	Sasol Chemicals (USA) LLC-Lake Charles Chemical Complex	Calcasieu	LA	193.44	92.90	775	185 (23.8%)	275 (35.5%)	43 (5.5%)	114 (14.7%)	Chemicals	In Compliance	TRI Facility Report
3	BASF Corp	Ascension	LA	189.39	90.12	327	148 (45.3%)	41 (12.4%)	24 (7.2%)	32 (9.9%)	Chemicals	High Priority Violator	TRI Facility Report
4	Midwest Sterilization Corp	Webb	TX	7.56	83.12	1,147	1031 (89.9%)	551 (48.1%)	146 (12.7%)	47 (4.1%)	Miscellaneous Manufacturing	No data available	TRI Facility Report
5	Medtronic Xomed	Duval	FL	7.04	77.44	4,265	1576 (37%)	1323 (31%)	268 (6.3%)	602 (14.1%)	Miscellaneous Manufacturing	In Compliance	TRI Facility Report
6	Shell Chemical Lp	Ascension	LA	116.46	57.40	279	137 (49.2%)	43 (15.5%)	22 (8%)	30 (10.9%)	Chemicals	In Compliance	TRI Facility Report
7	Denka Performance Elastomer LLC	St John The Baptist	LA	54.29	50.82	1,834	1476 (80.4%)	839 (45.7%)	111 (6%)	363 (19.8%)	Chemicals	In Compliance	TRI Facility Report
8	St Charles Operations	St Charles	LA	216.39	44.20	418	210 (50.1%)	111 (26.6%)	13 (3%)	39 (9.4%)	Chemicals	High Priority Violator	TRI Facility Report
9	Eastman Chemical Co Texas Operations	Harrison	TX	1,076.23	43.98	368	141 (38.2%)	144 (39.2%)	33 (9%)	44 (11.9%)	Chemicals	In Compliance	TRI Facility Report
10	Midwest Sterilization Corp	Cape Girardeau	MO	3.70	40.62	607	39 (6.4%)	213 (35%)	46 (7.5%)	58 (9.5%)	Miscellaneous Manufacturing	In Compliance	TRI Facility Report
11	BASF Corp	Lorain	OH	6.97	31.81	7,367	1659 (22.5%)	3551 (48.2%)	558 (7.6%)	968 (13.1%)	Chemicals	In Compliance	TRI Facility Report
12	Le Jones Co LLC	Menominee	MI	5.28	28.80	1,304	29 (2.2%)	433 (33.2%)	57 (4.4%)	285 (21.9%)	Primary Metals	In Compliance	TRI Facility Report

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13	Dragon Products North Silsbee Facility	Hardin	TX	2.57	28.72	913	270 (29.6%)	286 (31.4%)	68 (7.4%)	185 (20.3%)	Machinery	In Compliance	TRI Facility Report
14	Lyondell Chemical Co	Harris	TX	510.01	28.09	446	338 (75.7%)	228 (51.1%)	13 (2.9%)	35 (7.9%)	Chemicals	Violation	TRI Facility Report
15	Baxter Healthcare Corp	Baxter	AR	3.49	27.02	1,617	75 (4.6%)	429 (26.6%)	106 (6.6%)	506 (31.3%)	Plastics and Rubber	In Compliance	TRI Facility Report
16	Kennametal Isa	Lawrence	PA	14.88	27.00	967	90 (9.3%)	301 (31.1%)	60 (6.2%)	220 (22.8%)	Primary Metals	No data available	TRI Facility Report
17	Croda Inc	New Castle	DE	3.24	26.88	1,643	977 (59.4%)	811 (49.4%)	102 (6.2%)	199 (12.1%)	Chemicals	In Compliance	TRI Facility Report
18	Haynes International Inc	Howard	IN	7.99	26.53	3,093	491 (15.9%)	915 (29.6%)	149 (4.8%)	641 (20.7%)	Primary Metals	High Priority Violator	TRI Facility Report
19	Alliant Techsystems Operations LLC (New River Energetics)	Montgomery	VA	12.75	26.38	2,098	212 (10.1%)	1003 (47.8%)	100 (4.8%)	367 (17.5%)	Chemicals	No data available	TRI Facility Report
20	Freeport-Mcmoran Miami Inc	Gila	AZ	136.53	26.22	283	137 (48.5%)	133 (47.1%)	19 (6.8%)	74 (26%)	Primary Metals	In Compliance	TRI Facility Report
21	SFI Of Tennessee	Shelby	TN	4.88	25.92	968	894 (92.3%)	563 (58.2%)	138 (14.2%)	61 (6.3%)	Fabricated Metals	Violation	TRI Facility Report
22	B Braun Medical Inc Manufacturing Div	Lehigh	PA	2.33	25.65	2,303	778 (33.8%)	684 (29.7%)	89 (3.9%)	406 (17.6%)	Miscellaneous Manufacturing	In Compliance	TRI Facility Report
23	Huntsman Petrochemical LLC	Montgomery	TX	21.70	25.51	598	318 (53.3%)	366 (61.3%)	58 (9.7%)	59 (9.8%)	Chemicals	High Priority Violator	TRI Facility Report
24	Boeing Co Of Portland	Multnomah	OR	13.58	25.17	3,201	1434 (44.8%)	1650 (51.5%)	184 (5.8%)	382 (11.9%)	Transportation Equipment	In Compliance	TRI Facility Report

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25	Union Carbide Corp Institute Facility	Kanawha	WV	63.11	23.67	1,227	468 (38.1%)	600 (48.9%)	111 (9%)	184 (15%)	Chemicals	Violation	TRI Facility Report
26	Sterilization Services Of Virginia	Richmond (City)	VA	1.75	19.23	1,145	677 (59.1%)	232 (20.3%)	101 (8.9%)	145 (12.7%)	Miscellaneous Manufacturing	In Compliance	TRI Facility Report
27	Hausner Hard-Chrome Of Kentucky	Daviess	KY	1.13	18.91	1,962	313 (16%)	817 (41.7%)	159 (8.1%)	192 (9.8%)	Fabricated Metals	In Compliance	TRI Facility Report
28	SFI of Arkansas	Faulkner	AR	3.44	17.56	948	348 (36.7%)	381 (40.2%)	46 (4.8%)	96 (10.2%)	Fabricated Metals	In Compliance	TRI Facility Report
29	The Dow Chemical Co - Louisiana Operations	Iberville	LA	916.51	17.53	440	250 (56.8%)	208 (47.3%)	39 (8.8%)	69 (15.6%)	Chemicals	High Priority Violator	TRI Facility Report
30	Kubota Manufacturing Of America Corp	Hall	GA	4.79	17.31	899	151 (16.7%)	390 (43.3%)	40 (4.4%)	169 (18.8%)	Machinery	In Compliance	TRI Facility Report
31	Thistle Processing LLC	Cabell	WV	17.72	15.47	3,986	534 (13.4%)	2150 (53.9%)	329 (8.3%)	699 (17.5%)	Primary Metals	In Compliance	TRI Facility Report
32	Rohr Inc (A Collins Aerospace Company)	Baldwin	AL	1.70	15.35	979	275 (28.1%)	195 (19.9%)	35 (3.6%)	188 (19.2%)	Transportation Equipment	In Compliance	TRI Facility Report
33	BASF Toda America Inc	Calhoun	MI	0.92	14.39	516	236 (45.7%)	272 (52.7%)	52 (10.1%)	58 (11.2%)	Chemicals	No data available	TRI Facility Report
34	Steel & O'Brien Manufacturing Inc	Wyoming	NY	2.19	14.06	311	9 (2.9%)	110 (35.2%)	15 (4.8%)	50 (16.1%)	Fabricated Metals	No data available	TRI Facility Report
35	Terumo Bct Sterilization Services Inc	Jefferson	CO	1.23	13.57	6,331	1560 (24.6%)	2068 (32.7%)	421 (6.6%)	948 (15%)	Miscellaneous Manufacturing	In Compliance	TRI Facility Report
36	Alpha Omega Recycling Inc	Gregg	TX	9.93	13.11	1,591	198 (12.5%)	731 (46%)	161 (10.1%)	193 (12.1%)	Hazardous Waste	No data available	TRI Facility Report

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37	Slater Fabric Filter-Bha Group Inc	Saline	MO	13.20	12.30	719	125 (17.4%)	379 (52.7%)	58 (8.1%)	130 (18.1%)	Machinery	No data available	TRI Facility Report
38	Dixie Chemical Co Inc	Harris	TX	8.71	12.28	329	131 (39.9%)	41 (12.5%)	12 (3.6%)	64 (19.4%)	Chemicals	No data available	TRI Facility Report
39	Ineos Nitriles Usa LLC	Allen	OH	45.29	12.05	744	109 (14.7%)	190 (25.6%)	23 (3.1%)	165 (22.2%)	Chemicals	Violation	TRI Facility Report
40	Asarco LLC Ray Complex/ Hayden Smelter & Concentrator	Gila	AZ	292.38	11.68	266	217 (81.4%)	96 (36.2%)	7 (2.6%)	50 (18.7%)	Primary Metals	High Priority Violator	TRI Facility Report
41	Dow Chemical Co Freeport Facility	Brazoria	TX	443.40	11.66	1,827	1562 (85.5%)	1376 (75.3%)	183 (10%)	50 (2.7%)	Chemicals	High Priority Violator	TRI Facility Report
42	Howard Industries Inc	Jones	MS	12.34	11.41	484	233 (48.1%)	341 (70.4%)	28 (5.8%)	69 (14.3%)	Electrical Equipment	In Compliance	TRI Facility Report
43	Monument Chemical Kentucky LLC	Meade	KY	11.68	10.81	451	41 (9.1%)	203 (44.9%)	24 (5.2%)	75 (16.7%)	Chemicals	In Compliance	TRI Facility Report
44	3P Processing Inc	Sedgwick	KS	15.63	10.49	3,053	1181 (38.7%)	1725 (56.5%)	301 (9.9%)	290 (9.5%)	Fabricated Metals	In Compliance	TRI Facility Report
45	Evonik Materials Corp	St John The Baptist Paris	LA	5.23	10.01	526	318 (60.4%)	252 (47.9%)	41 (7.8%)	86 (16.3%)	Chemicals	In Compliance	TRI Facility Report
46	Harbisonwalker International Inc Sproul Pa Plant	Blair	PA	0.68	9.94	461	12 (2.7%)	181 (39.3%)	38 (8.3%)	64 (13.8%)	Nonmetallic Mineral Product	No data available	TRI Facility Report
47	Century Aluminum Of Kentucky	Hancock	KY	219.64	9.84	424	17 (3.9%)	170 (40%)	38 (8.9%)	58 (13.8%)	Primary Metals	In Compliance	TRI Facility Report
48	Eastman Chemical Co Tennessee Operations	Sullivan	TN	1,021.83	9.59	1,727	249 (14.4%)	966 (55.9%)	86 (5%)	408 (23.6%)	Chemicals	High Priority Violator, Violation	TRI Facility Report

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49	Bescast Inc	Lake	OH	1.50	9.46	3,446	351 (10.2%)	938 (27.2%)	126 (3.7%)	966 (28%)	Transportation Equipment	In Compliance	TRI Facility Report
50	Lanxess Corp	Charleston	SC	21.38	9.26	2,155	1861 (86.3%)	1328 (61.6%)	143 (6.6%)	353 (16.4%)	Chemicals	Violation	TRI Facility Report
51	Kennametal Stellite Lp	Elkhart	IN	1.02	8.95	2,885	529 (18.3%)	999 (34.6%)	66 (2.3%)	1189 (41.2%)	Primary Metals	In Compliance	TRI Facility Report
52	Baker Hughes Oilfield Operations LLC	Oklahoma	OK	2.22	8.85	1,944	1056 (54.3%)	570 (29.3%)	227 (11.7%)	152 (7.8%)	Machinery	No data available	TRI Facility Report
53	Cardington Yutaka Technologies Inc	Morrow	OH	0.64	8.84	285	6 (2%)	125 (43.8%)	16 (5.7%)	37 (13.1%)	Transportation Equipment	In Compliance	TRI Facility Report
54	Union Carbide Corp South Charleston Facility	Kanawha	WV	13.96	8.77	3,015	644 (21.4%)	1259 (41.7%)	248 (8.2%)	431 (14.3%)	Chemicals	In Compliance	TRI Facility Report
55	Whirlpool Corp - Clyde Operations	Sandusky	OH	1.49	8.63	1,773	149 (8.4%)	571 (32.2%)	135 (7.6%)	267 (15.1%)	Electrical Equipment	In Compliance	TRI Facility Report
56	Carpenter Technology Corp	Berks	PA	17.73	8.49	8,553	6559 (76.7%)	5147 (60.2%)	715 (8.4%)	860 (10.1%)	Primary Metals	In Compliance	TRI Facility Report
57	Sgl Carbon LLC	Burke	NC	20.90	8.14	654	74 (11.4%)	260 (39.7%)	14 (2.1%)	158 (24.1%)	Electrical Equipment	In Compliance	TRI Facility Report
58	American Chrome & Chemicals Inc	Nueces	TX	0.89	8.07	979	898 (91.7%)	464 (47.3%)	59 (6%)	99 (10.2%)	Chemicals	In Compliance	TRI Facility Report
59	Trace Die Cast Inc	Warren	KY	16.29	7.75	1,152	388 (33.7%)	559 (48.5%)	102 (8.9%)	69 (6%)	Fabricated Metals	In Compliance	TRI Facility Report
60	Albemarle Corp Bayport Plant	Harris	TX	24.16	7.34	542	264 (48.7%)	68 (12.5%)	29 (5.4%)	72 (13.3%)	Chemicals	High Priority Violator	TRI Facility Report

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61	American Electric Power Amos Plant	Putnam	WV	276.06	7.30	685	13 (1.9%)	193 (28.2%)	66 (9.6%)	112 (16.3%)	Electric Utilities	In Compliance	TRI Facility Report
62	Custom Processing Services LLC	Montgomery	PA	0.49	7.23	2,951	228 (7.7%)	582 (19.7%)	210 (7.1%)	272 (9.2%)	Nonmetallic Mineral Product	No data available	TRI Facility Report
63	Arvin Sango Inc	Jefferson	IN	0.61	7.21	1,036	169 (16.3%)	537 (51.9%)	92 (8.9%)	168 (16.2%)	Transportation Equipment	Violation	TRI Facility Report
64	Westlake Vinyls Co	Ascension	LA	63.70	7.00	332	150 (45.1%)	42 (12.5%)	24 (7.2%)	33 (9.8%)	Chemicals	In Compliance	TRI Facility Report
65	Zenith Cutter Inc	Winnebago	IL	0.58	6.91	2,823	306 (10.9%)	747 (26.5%)	124 (4.4%)	414 (14.7%)	Fabricated Metals	In Compliance	TRI Facility Report
66	Calsonickansei Na - Shelbyville	Bedford	TN	0.46	6.69	1,032	346 (33.5%)	432 (41.9%)	58 (5.6%)	194 (18.8%)	Transportation Equipment	In Compliance	TRI Facility Report
67	Exxonmobil Baton Rouge Chemical Plant (Part)	East Baton Rouge	LA	767.46	6.65	2,991	2811 (94%)	1739 (58.2%)	244 (8.2%)	207 (6.9%)	Chemicals	High Priority Violator	TRI Facility Report
68	MPC Plating Inc	Cuyahoga	OH	7.01	6.38	7,195	6516 (90.6%)	5093 (70.8%)	565 (7.8%)	1012 (14.1%)	Fabricated Metals	In Compliance	TRI Facility Report
69	Ozark Mountain Technologies LLC DbA Lmi Aerospace	Crawford	MO	1.01	6.33	342	35 (10.3%)	221 (64.7%)	28 (8.2%)	37 (10.8%)	Fabricated Metals	In Compliance	TRI Facility Report
70	Wood River Refinery	Madison	IL	258.44	6.26	1,346	74 (5.5%)	623 (46.3%)	119 (8.9%)	190 (14.1%)	Petroleum	High Priority Violator	TRI Facility Report
71	Ineos Pigments Usa Inc	Ashtabula	OH	1,713.04	5.96	531	57 (10.7%)	227 (42.8%)	35 (6.6%)	97 (18.2%)	Chemicals	In Compliance	TRI Facility Report
72	Ashland Specialty Ingredients Gp	Hopewell (City)	VA	193.43	5.89	2,466	1703 (69.1%)	1416 (57.4%)	264 (10.7%)	285 (11.6%)	Chemicals	In Compliance	TRI Facility Report

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73	Vantage Specialties	Lake	IL	0.87	5.84	2,461	1449 (58.9%)	702 (28.5%)	144 (5.8%)	220 (9%)	Chemicals	In Compliance	TRI Facility Report
74	Structural Steel Of Carolina	Forsyth	NC	2.60	5.70	5,655	4373 (77.3%)	3250 (57.5%)	368 (6.5%)	456 (8.1%)	Fabricated Metals	In Compliance	TRI Facility Report
75	Cannon-Muskegon	Muskegon	MI	1.05	5.60	2,880	433 (15%)	755 (26.2%)	100 (3.5%)	497 (17.3%)	Primary Metals	No data available	TRI Facility Report
76	Ethicon Inc	Tom Green	TX	0.51	5.56	530	325 (61.2%)	283 (53.3%)	63 (11.9%)	68 (12.8%)	Miscellaneous Manufacturing	In Compliance	TRI Facility Report
77	4 Guys Inc	Somerset	PA	0.38	5.48	329	4 (1.2%)	108 (33%)	12 (3.7%)	76 (23.1%)	Transportation Equipment	No data available	TRI Facility Report
78	Shell Catalyst & Technologies	West Baton Rouge	LA	11.91	5.46	250	129 (51.5%)	66 (26.4%)	10 (3.8%)	19 (7.6%)	Chemicals	In Compliance	TRI Facility Report
79	Ahlstrom-Munksjo Na Specialty Solutions LLC	Oneida	WI	45.18	5.42	1,742	162 (9.3%)	670 (38.4%)	43 (2.5%)	246 (14.1%)	Paper	In Compliance	TRI Facility Report
80	Nalco Champion	Fort Bend	TX	1.38	5.36	3,234	2819 (87.2%)	831 (25.7%)	312 (9.7%)	240 (7.4%)	Chemicals	High Priority Violator	TRI Facility Report
81	Shell Norco Chemical Plant	St Charles	LA	599.20	5.26	2,131	162 (7.6%)	667 (31.3%)	134 (6.3%)	279 (13.1%)	Petroleum	High Priority Violator	TRI Facility Report
82	Howmet Castings & Services Inc	Laporte	IN	0.58	5.24	2,514	549 (21.8%)	1146 (45.6%)	229 (9.1%)	358 (14.2%)	Primary Metals	High Priority Violator	TRI Facility Report
83	Rain Cii Carbon LLC	Crawford	IL	46.24	5.24	742	52 (6.9%)	330 (44.4%)	30 (4%)	96 (12.9%)	Petroleum	In Compliance	TRI Facility Report
84	Nov Texas Oil Tools/Ctes Conroe	Montgomery	TX	1.49	5.20	1,115	511 (45.8%)	315 (28.3%)	67 (6%)	147 (13.2%)	Fabricated Metals	No data available	TRI Facility Report

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85	Ineos Usa LLC - Chocolate Bayou Plant	Brazoria	TX	255.70	5.14	5,203	1944 (37.4%)	2114 (40.6%)	450 (8.7%)	763 (14.7%)	Chemicals	High Priority Violator	TRI Facility Report
86	Unison Engine Components Terre Haute	Vigo	IN	0.71	5.10	5,756	1425 (24.8%)	2512 (43.6%)	137 (2.4%)	509 (8.8%)	Transportation Equipment	No data available	TRI Facility Report
87	Colstrip Steam Electric Station	Rosebud	MT	155.42	5.08	415	81 (19.5%)	37 (9%)	15 (3.5%)	45 (10.8%)	Electric Utilities	In Compliance	TRI Facility Report
88	Crossville Inc	Cumberland	TN	0.34	4.92	568	61 (10.8%)	301 (53.1%)	40 (7%)	81 (14.3%)	Nonmetallic Mineral Product	In Compliance	TRI Facility Report
89	Greenville Metals Inc	Mercer	PA	1.84	4.80	462	18 (4%)	90 (19.6%)	42 (9.2%)	77 (16.7%)	Primary Metals	Violation	TRI Facility Report
90	Exxonmobil Baton Rouge Refinery (Part)	East Baton Rouge	LA	575.45	4.78	3,007	2875 (95.6%)	1693 (56.3%)	159 (5.3%)	222 (7.4%)	Petroleum	High Priority Violator	TRI Facility Report
91	Cardinal Plant	Jefferson	OH	227.51	4.74	458	11 (2.3%)	205 (44.7%)	21 (4.7%)	90 (19.7%)	Electric Utilities	In Compliance	TRI Facility Report
92	Great Lakes Chemical - Central	Union	AR	65.75	4.71	259	74 (28.7%)	86 (33.3%)	23 (9%)	38 (14.8%)	Chemicals	High Priority Violator	TRI Facility Report
93	Exxonmobil Refining & Supply Baytown Refinery (Part)	Harris	TX	775.59	4.65	911	744 (81.7%)	465 (51.1%)	57 (6.3%)	153 (16.7%)	Petroleum	High Priority Violator	TRI Facility Report
94	Cytec Carbon Fibers LLC	Greenville	SC	35.57	4.60	604	367 (60.8%)	369 (61.1%)	55 (9.1%)	49 (8.2%)	Chemicals	In Compliance	TRI Facility Report
95	Southern Tool Inc	Calhoun	AL	0.51	4.53	1,971	740 (37.5%)	1011 (51.3%)	55 (2.8%)	376 (19.1%)	Primary Metals	No data available	TRI Facility Report
96	Global Tungsten & Powders Corp	Bradford	PA	76.86	4.53	807	6 (0.8%)	213 (26.4%)	68 (8.4%)	149 (18.5%)	Primary Metals	In Compliance	TRI Facility Report

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97	Faurecia Emission Control Technologies	Bartholomew	IN	0.30	4.30	2,046	558 (27.3%)	961 (47.0%)	148 (7.2%)	263 (12.9%)	Transportation Equipment	No data available	TRI Facility Report
98	Fort Martin Power Station	Monongalia	WV	561.32	4.30	317	26 (8.1%)	118 (37.2%)	11 (3.4%)	41 (13.1%)	Electric Utilities	In compliance	TRI Facility Report
99	ExxonMobil Chemical Co. Baytown Olefins Plant (Part)	Harris, TX		246.89	4.19	1,203	686 (57.0%)	561 (46.6%)	63 (5.2%)	192 (16.0%)	Chemicals	High Priority Violator	TRI Facility Report
100	Chromalloy Castings	Hillsborough	FL	0.87	4.08	2,761	1806 (65.4%)	1,140 (41.3%)	270 (9.8%)	201 (7.3%)	Primary Metals	In compliance	TRI Facility Report

Sources: Environmental Protection Agency's 2018 Toxics Release Inventory as of November 2019; 2019 EJSCREEN; RSEI Inhalation Toxicity Weights; Enforcement and Compliance History Online