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SENSING AIR JUSTICE

Technical Report
August 2025

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This recommendation report is collaboratively co-authored by researchers, residents, students, and activists through the Air Justice Project. Our work is rooted in and informed by the storied advocacy of Rubbertown Emergency Action (REACT).

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About Air Justice

Air Justice is a project of the **Environmental Health Literacy Coalition**, a collective of researchers and grassroots activists committed to making it easier to understand and engage with the issue of air pollution in Louisville. We are students, teachers, activists, residents, lawyers, researchers, and change makers. To reduce toxic air emissions and improve environmental health for all, we are committed to working together for the long haul.[1]

Air Pollution in Louisville

On November 12, 2024, residents of East Louisville experienced what residents of West Louisville know all too well: how industrial facilities pose a public safety threat. A plant explosion at industrial manufacturer Givaudan resulted in 2 deaths, 11 hospitalizations, severe damage to homes and businesses, an hour-long shelter-in-place order, and large amounts of ammonia emissions in the surrounding area.[2] Air pollution and emergency disasters from industrial facilities in our city have been a reported and repeated concern of residents since at least the 1950s.[3] Like many of the dozens of industrial facilities that handle dangerous substances in Louisville, this facility was located directly across the street from residential areas with no buffer for chronic exposure to air pollution or from acute dangers, such as the 2024 explosion.

This report outlines the science and health effects of some of the most pressing air quality concerns in Louisville. We also present air quality data gathered by residents who worked with scientists and academic researchers to produce **strategies for building trust, increasing transparency, and working together to reduce air pollution** and improve environmental health in Louisville.

One of the root causes of health disparities in West and Southwest Louisville, an area bordering "Rubbertown," is air pollution. Aptly named after a large synthetic rubber factory built in the 1940s, Rubbertown now houses dozens of heavy industrial manufacturing plants and has a history of toxic leaks, spills, and occasional explosions.

According to Louisville's Air Pollution Control District, 12 Title V facilities–defined as "heavy polluting facilities"–operate in Rubbertown. Another 3 Title V facilities operate along the Ohio River in Southwest Louisville. A total of **31 Title V facilities operate across Louisville Metro,** and the Environmental Protection Agency's Toxic Release Inventory identifies **57 hazardous waste treatment, storage, and disposal facilities** in the metro area.[4]

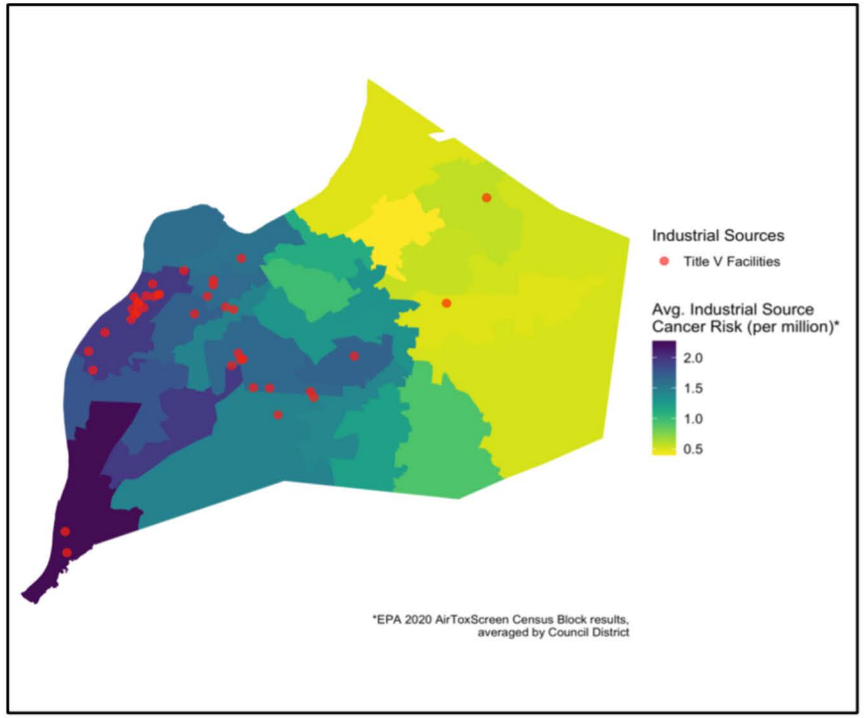

Figure 1. Title V facilities in the Louisville Metro area over AirToxScreen data. Source: KRC.

Each location marker in the map in **Figure 1** signals a facility the Toxic Release Inventory (TRI) named as a major air polluter in 2022. Because the TRI only tracks pollution from heavy polluting facilities (Title V facilities), other sources of pollution may not be shown on this map. These markers sit atop data from the Environmental Protection Agency (EPA)'s AirToxScreen, which shows the most recent modeling by the EPA of the **cancer risks from air toxics emitted by these Title V facilities**. This map reveals that the areas that border Rubbertown experience the greatest environmental pollution.[5]

What air pollution costs us cannot be understated: the Natural Resources Defense Council reports that poor air quality results in approximately 107,000 premature deaths nationally each year. Economically, poor air quality costs each American resident an average of $2,500 per year in extra medical bills, which brings the **national price tag to over $820 billion per year**.[6] The Environmental Protection Agency (EPA) further estimates that for every dollar invested in clean air, $30-90 are returned in health and economic improvements.[7] Put simply, investing in clean air improves health outcomes and accelerates economic growth for all. Reduced particulate emissions in Louisville between 2014-2018 resulted in **as many as 165 avoided deaths per year**—although concentrations in and around Rubbertown saw among the lowest reductions in death rates compared to other areas city-wide.[8]

> *The areas around Rubbertown are the most vulnerable in terms of disability and displacement. So, that's where we should base all solutions.*
>
> - Life-long resident of Chickasaw

How does air pollution affect residents?

When Air Justice surveyed nearly 2,000 residents in West and Southwest Louisville and asked what residents know, wish to know, and wish to change about air pollution, here is what we heard: **92% agreed or strongly agreed that air pollution in their area was a matter of high importance** to them (Figure 2).[9]

Of residents who completed the survey, **50% experienced asthma or lung problems and 16% experienced cancer** (Figure 3). These local reports match with what the World Health Organization reports on the health effects of air pollution. Because toxins from the air enter residents' bodies through the nose and lungs, outdoor and indoor air pollution results in **6.7 million premature deaths** globally each year.[10]

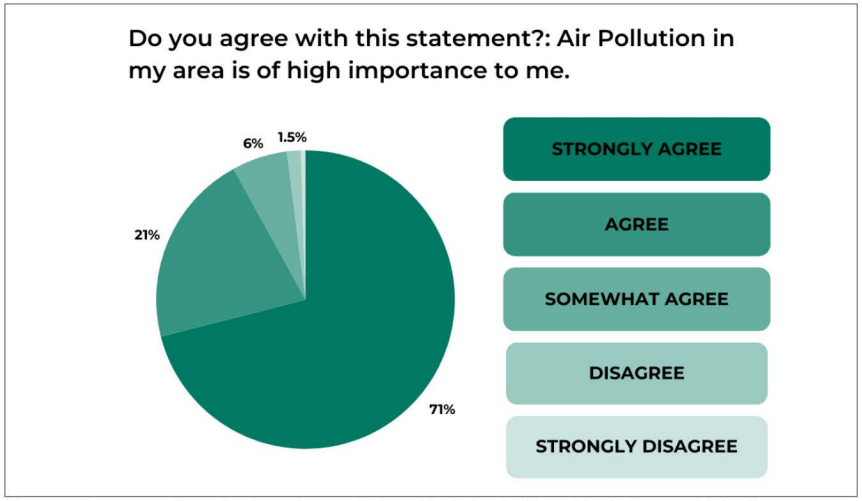

Figure 2. Survey results on the importance of air quality to Louisville residents. Source: Air Justice.

Reports on the health outcomes for residents who live around Rubbertown further support this survey data: the human health risks associated with the chemicals released in West Louisville are over **10,000 times higher** than the industry average in some areas.[11] Toxic air is so concentrated in the West and Southwest Louisville corridor that residents are **three to four times more likely to contract cancer** than residents in East Louisville as well as experience asthma, heart disease, and other negative health outcomes.[12]

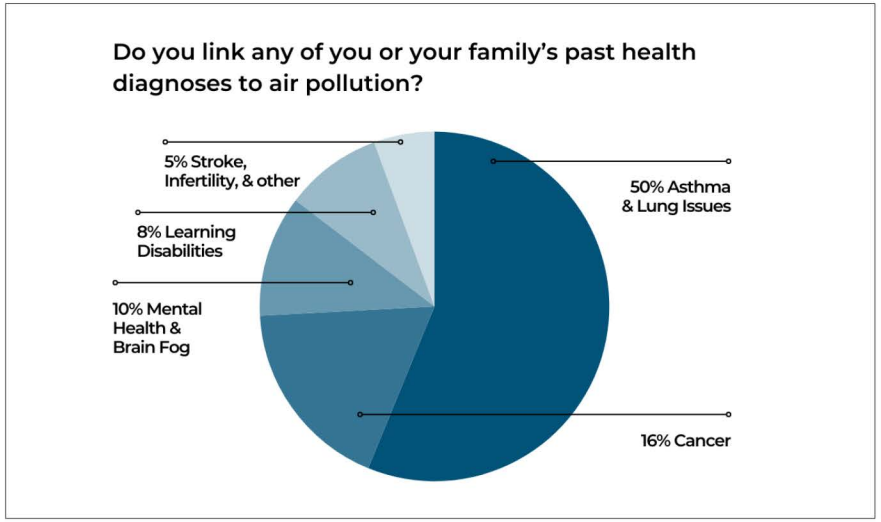

Figure 3. Survey results on the health outcomes Louisville residents associate with air pollution. Source: Air Justice

Of young patients who visit the hospital for asthma in Louisville, **62% are Black children**.[13] Asthma conditions are more prevalent and severe in the zip codes that border Rubbertown, as shown in Figure 4.[14]

Residents in environmental justice communities around Rubbertown not only live with increased risk of cancer, lung problems, and heart disease, but these health risks are worsened by poverty, food deserts, poorly-funded schools, and so forth. Put simply, it is no coincidence that city-wide health inequities are centered around Rubbertown.[15]

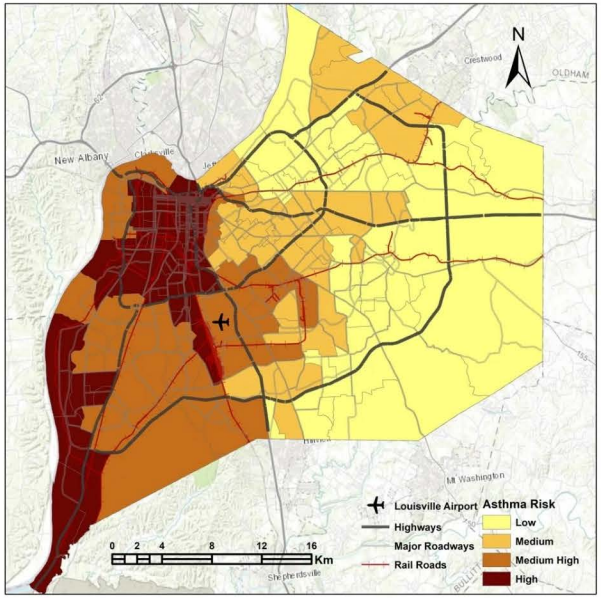

Figure 4. Asthma map of Louisville. Source: AIR Louisville.

Even more pronounced is the disparity of these health outcomes: 77.2% of residents in West and Southwest Louisville identify as Black (over 81.7% identify as "minority"), at least 55% of residents experience poverty, and the **average life expectancy for residents is seven years less** than for residents living in East Louisville, where the population is predominantly White and middle class.[16] The residents most affected by Rubbertown's toxic air, then, experience "environmental racism," a term environmental sociologist Dorceta Taylor defines as "processes

that resul[t] in minority and low-income communities facing disproportionate environmental harms and limited environmental benefits."[17]

Yet while air pollution disproportionately affects residents in West and Southwest Louisville, poor air quality ranks as the top concern for residents across Louisville Metro and the broader Kentuckiana region. When residents across Kentuckiana were surveyed about what sustainability concerns decision makers should address, **clean air was identified as the "top priority for our region to address"** (Figure 5).[18]

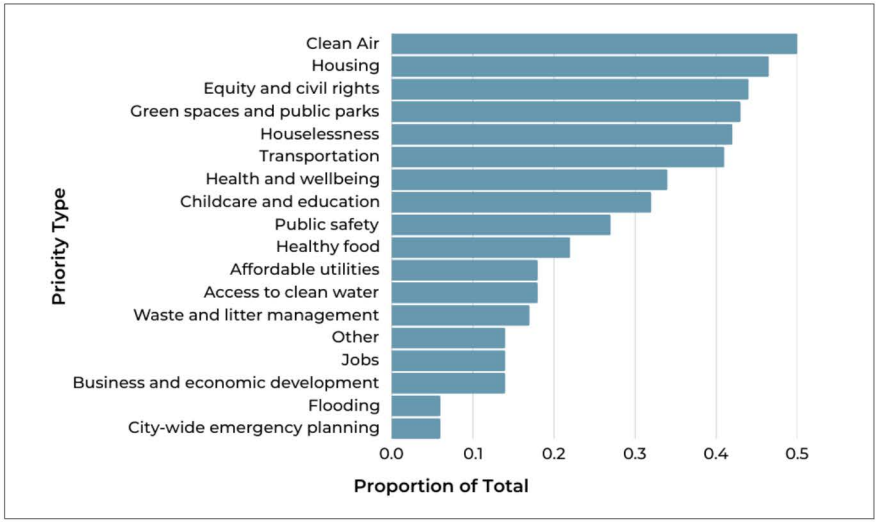

Figure 5. Survey results on top sustainability priorities in the Louisville, KY-Indiana Metro area. Source: UofL GIS.

The reason clean air ranks higher than other concerns for both urban and rural residents is how foundational air quality is to other basic needs. As one rural farmer put it: "**Air justice is soil justice is environmental justice is food justice is racial justice.** You can't grow healthy, quality food if you don't have access to clean air, water, and soil."[19] The Clean Air Act itself includes as "foundational welfare" several issues that span far beyond direct impacts on human health, such as effects on "soils, water, crops, vegetation, man-made materials, animals, wildlife, weather, visibility, and climate."[20]

What air pollutants concern residents?

Odor—the smell of metal, rotten eggs, or sewage—is the primary marker residents use to determine that something is present in the air that could be harmful to health. The smell of sewage and/or rotten eggs is also the predominant smell residents experience in West and Southwest Louisville, with 82% of residents surveyed reporting that the strength and persistent frequency of these odors made them concerned for their health (Figure 6).

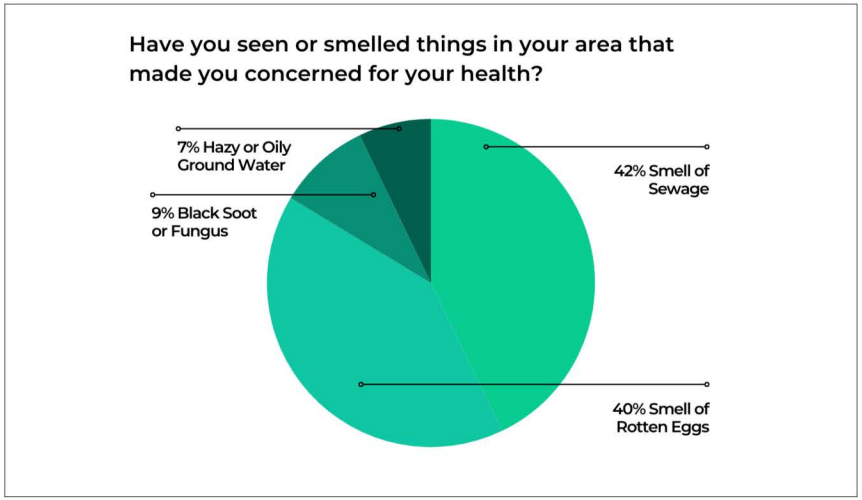

Figure 6. Survey results on odors and smells in West and Southwest Louisville. Source: Air Justice

Odor, though, is often not the best indicator of the presence of toxic chemicals in the air, and the most frequent air pollutant emitted in Louisville does not carry a strong odor.

Some of the **top three air toxics** emitted in Louisville, Kentucky, are as follows:

1. Chlorodifluoromethane (HCFC-22)

Chlorodifluoromethane, most frequently used as a refrigerant and for air conditioning, is primarily emitted by Chemours locally. When inhaled, HCFC-22 irritates airways and eyes.

Elevated levels of HCFC-22 in emissions decreases the amount of oxygen in the air, contributing to headaches, dizziness, and faintness. Even higher exposure can produce cardiovascular consequences, such as irregular heartbeats.[21]

Environmentally, HCFC-22 is **one of the most potent greenhouse gasses** and one of the greatest contributors to ozone depletion. A man-made substance that does not occur naturally, HCFC-22 stays in the atmosphere for an average of 12 years.[22]

2. Toluene

Toluene, most frequently used as an additive to gasoline, chemical manufacturing, and to produce rubber and plastics, is primarily emitted by American Synthetic Rubber Company locally. Toluene produces both acute—from single, immediate, and/or direct exposure—and chronic health outcomes. Acute health outcomes include irritation of airways and eyes, sore throat, dizziness, difficulty sleeping, and central nervous system dysfunction, including headaches, tremors, nausea, excessive fatigue, and impaired hearing, speech, and vision.[23]

A known mutagen, **toluene can alter human DNA**.[24] Residents who live and work near emission sources, then, most frequently experience the chronic health outcomes associated with toluene. Chronic health outcomes include slowdown to the central nervous system, such as drowsiness, tremors, cognitive impairment, reduced motor skills, slower reaction times, and in severe cases, brain shrinkage and nystagmus, or repetitive involuntary eye movements. Other chronic effects include upper respiratory tract irritation, bronchitis, high-frequency hearing loss, blurred vision, insomnia, skin irritation, liver damage, kidney toxicity, and increased susceptibility to infections like pneumonia.[25]

As a volatile substance, toluene breaks down in the air and dissipates after an average of 13 hours. But because this substance is heavier than air, toluene can accumulate in low-lying areas.[26]

3. Ammonia

Ammonia, most frequently used in fertilizers, the manufacturing of plastics, and as a refrigerant gas, is primarily emitted by Clariant Corporation and Bakelite Synthetics locally. Ammonia is a natural substance, but when inhaled reacts with water in the body to produce ammonium hydroxide, which causes damage to cells. Health effects from ammonia exposure include coughing, burning of the eyes, and nose and throat irritation and infection. Chronic exposure may result in respiratory problems like asthma and chronic obstructive pulmonary disease (COPD).[27]

When released into the air, ammonia can form fine particulate matter that worsens air pollution and increases the risk of heart and lung disease. Nitrates from ammonia can also **contaminate drinking water and damage soil,** harming plant growth, disrupting healthy ecosystems, and reducing agricultural productivity. This gas stays in the air for nearly a week before dissipating. In humid conditions, ammonia can settle in low-lying areas and take longer to dissipate.[28]

Other toxics released in Louisville include, but are not limited to:

- 1,3-Butadiene
- Vinyl chloride
- Vinyl fluoride
- Formaldehyde
- Dioxin
- Benzene
- Hydrochloric acid
- Hydrogen fluoride
- Nitric acid
- Chromium
- Nickel
- Arsenic

Worth noting is that even though some of these air pollutants have lower emissions in the Louisville Metro area, substances like **benzene and arsenic expose residents to higher risks** than HCFC-22, toluene, and ammonia given their greater ability to cause cancer.

Vulnerable groups—children, pregnant women, elderly residents, and individuals with preexisting medical conditions—are especially at risk from exposure.[29] The topography of Louisville is also an important factor in exposure: in our low-lying valley, air is more easily trapped, which prevents harmful chemicals from being more quickly dispersed into the upper atmosphere. This reality increases residents' exposure risk.[30]

Louisville is also **at risk for non-attainment** with the EPA's regulations for particulate matter, as of 2023.[31] Particulate matter (PM) is a mixture of solid particles and liquid droplets—often visible as dust or smoke—found in the air and derived from sources like vehicle exhaust, fires, construction sites, and factories and industrial processes. PM is "directly linked to their potential for causing health problems," according to the EPA. Exposure to PM has been linked to a range of health issues, including aggravated asthma, decreased lung function, and premature death in individuals with pre-existing health conditions.[32]

Residents in West and Southwest Louisville live these realities of toxic air pollution every day. But when residents attempt to understand the air quality in their backyard in order to reduce their exposures, they face multiple barriers. **Most toxic air pollution is self-reported by polluting industries,** reports of toxic air from APCD monitoring data are released months after the fact, and industries frequently and repeatedly release chemicals in excess of their permit. In 2023, for example, 5 companies were fined for violating their air quality permits and emitting excess pollution. In some cases, excess emissions were 19 times greater than permitted.[33] In response, Rubbertown Emergency Action (REACT) worked with a team of University of Louisville student volunteers and academic researchers to gather their own air quality data.

> *Asthma runs in our family.*
> *It can go from a simple breathing treatment to a seven-day hospital stay just like that.*
>
> - Life-long resident of Shively

Sensing Air Pollution

To give residents control over air quality data in their backyard, our team acquired low-cost air quality sensors–Purple Air sensors–that measure particulate matter (PM) in the air.[34] Such data gathered by citizen science is instrumental in understanding the lived health effects of air pollution locally. This section presents that minute-by-minute data from October 2023 to April 2024 to highlight important findings not highlighted in air quality reports: **definitive spikes in particulate matter in the early morning hours** that do not correlate with busy traffic patterns or when you expect PM pollution to worsen. Further, this data presents the inequities of PM pollution across our city.

The general placement of our sensors is shown in Figure 7—so as to protect resident's information, this map represents streets on which sensors were located. 8 of our 11 sensors were placed in the Parkland and Park Duvalle areas. From survey results, we knew residents in these areas to be increasingly concerned about air quality and odors that may signal harmful exposures. Further, residents reported a low smokestack at Anderson Wood Products that frequently emits large clouds of black smoke, has a history of fires in the smokestack, and sits next door to Maupin Elementary.[35]

Figure 7. Map of community gathering places near polluting facility. Source: IU GIS.

Our other 3 sensors were situated in the Shively area as a "control site," to determine whether readings in Parkland and Park Duvalle were more elevated than areas of West and Southwest Louisville, or whether that entire corridor experiences similar exposures (Figure 8). Prior to installing sensors at these locations, we co-located our sensors—placed them side-by-side—with the official Environmental Protection Agency (EPA) sensors at Bowman Field to ensure the accuracy of our readings. The data from these sensors was interpreted by a data advisory panel that consisted of three residents, two undergraduate students, and two experts—Dr. Juan Declet-Barreto from the Union of Concerned Scientists in Washington D.C. and Dr. Monica Unseld from Until Justice Data Partners.

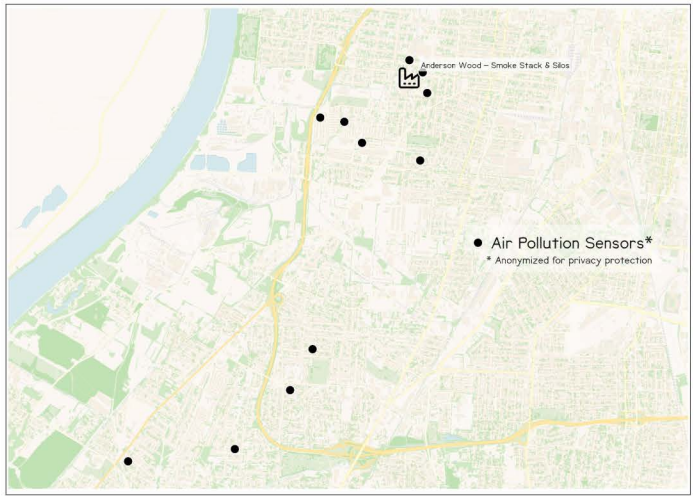

Figure 8. Map of Purple Air sensor locations across West and Southwest Louisville. Source: IU GIS.

> *If we're going to continue to invest in companies and agencies that want to be here, then they need to invest in us.*
>
> - Life-long resident of Shively and Pleasure Ridge Park

What do community air sensors show?

Air quality data about particulate matter (PM) was measured over a 24-hour period from stationary Purple Air sensors located throughout West Louisville. Particulate matter is measured in three different sizes, as shown in Figure 9, all of which are smaller than grains of sand or human hair: PM 10, PM 2.5, and PM 1. Our bodies can filter out larger particles (PM 10) by coughing or sneezing, but smaller particles (PM 2.5 and ultrafine PM) can enter our lungs and bloodstream. Our sensors tracked PM 2.5 measurements to assess that PM pollution harmful to residents' health.

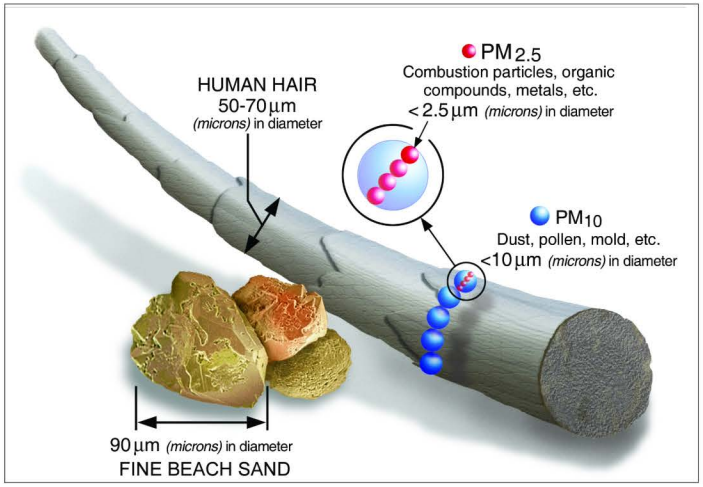

Figure 9. Size of Particulate Matter (PM). EPA.gov.

Our sensor data in West Louisville was then compared with open-access data from other Purple Air sensors in East Louisville. The line chart in Figure 10 illustrates average fine particle pollution (PM2.5) levels recorded by each sensor. Sensors labeled "E" and colored shades of green signal those situated in East Louisville, while sensors labeled "W" and colored shades of blue signal those located in West Louisville. The vertical, y-axis represents daily average PM2.5 concentrations, with the green and yellow shades in the chart indicating "good" and "moderate" levels on the Air Quality Index (AQI). The horizontal, x-axis displays a week-by-week timeline.

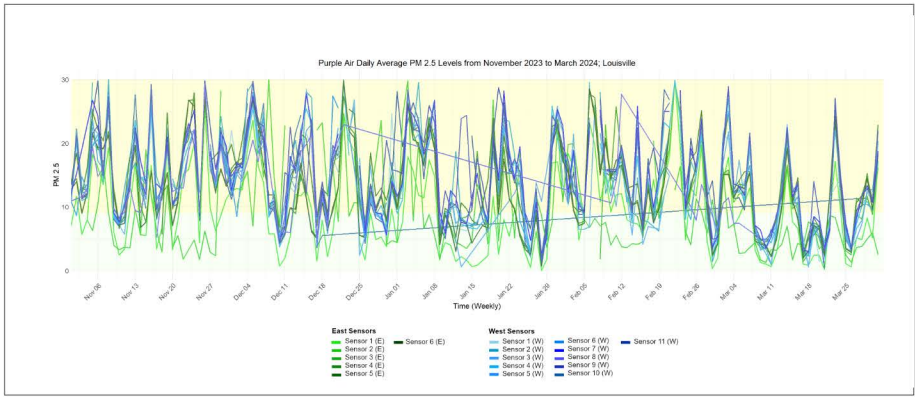

Figure 10. Line chart of Purple Air sensor readings. Source: Air Justice.

The graph illustrates consistently greater spikes in West and Southwest Louisville when compared to East Louisville.[36] In West and Southwest Louisville, 11 sensors recorded higher average PM2.5 levels that **reach or exceed the healthy range on the Air Quality Index,** as shown in the "heat map" in Figure 11. Heat maps aggregate our PM2.5 data into each of the 24 hours of the day, highlighting the number of unhealthy spikes (moments when measurements exceed the moderate zone on the Air Quality Index) detected by each sensor. This approach effectively reveals patterns and spikes in air quality that may not be immediately apparent in the weekly trend visuals.

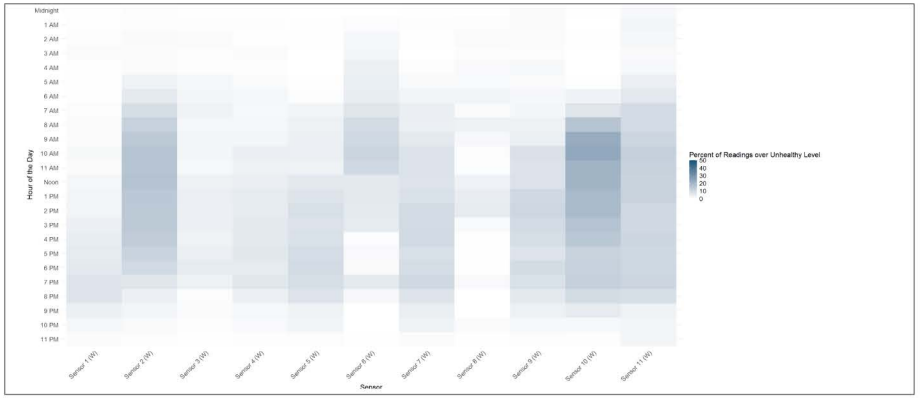

Figure 11. Heat map of particulate matter spikes in West Louisville. Source: Air Justice.

These averages in West Louisville stand in contrast to East Louisville, as shown in Figure 12. The daily Air Quality Index (AQI) averages in West Louisville were unhealthy for all groups twice as often as in East Louisville. Further, 8 out of the 11 sensors in West Louisville consistently reported PM2.5 levels above 50 µg/m^3, further surpassing East Louisville's peak values.

To put these average levels into perspective, the Environmental Protection Agency (EPA) places the national air quality standards for fine particle pollution (PM2.5) at 9 µg/m^3, retaining the 24- hour fine particle standard of 35 µg/m^3.[37]

This much is clear: high levels of particulate matter are a historical, persistent reality for residents in West and Southwest Louisville.

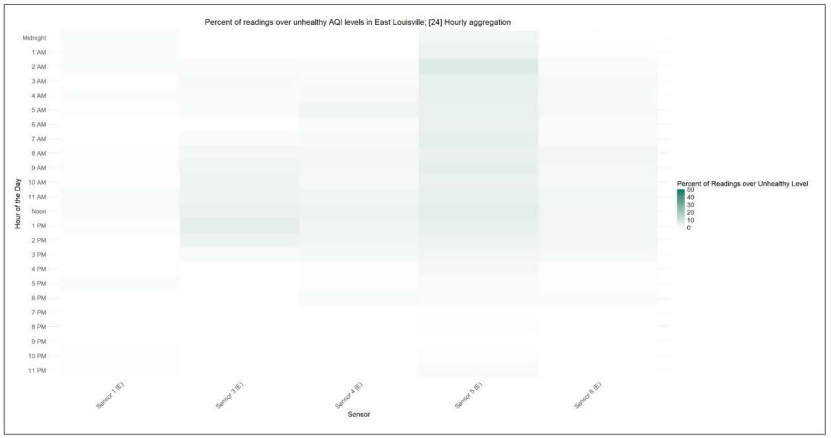

Figure 12. Heat map of particulate matter spikes in East Louisville. Source: Air Justice.

The disparity between sensor readings between West and East Louisville was no surprise to residents–what was surprising were **higher than expected PM2.5 numbers during the early morning hours,** which do not seem to correlate with traffic patterns or other causes for high particulate matter readings. Sensors 2, 6, and 11—all located in West and Southwest Louisville—exhibit this pattern most notably. Some sensors in East Louisville do echo the same pattern, but with less pronounced severity.

To see a more comprehensive, interactive map of pollution disparities in the Louisville Metro area, visit: **https://bit.ly/AirQualityLou**

For residents, this data highlights the pressing need for **better, more targeted, continuous air quality monitoring and management**—especially in West and Southwest Louisville. Residents with sensors and who have participated in air quality activism express two main questions in response to this data:

1. What occurs in the early morning hours to account for these unhealthy spikes in particulate matter (PM 2.5)?
2. How can better, more timely air quality reports allow residents to make health and lifestyle decisions that reduce their exposure?

We understand that the University of Louisville is partnering currently with the Air Pollution Control District and the West Jefferson County Community Task Force to repeat the 2005 Air Toxics study. We applaud those efforts and ask for the continuance of such efforts. Until then, we provide other strategies for building trust, increasing transparency, and working together to reduce air pollution and improve public health.

> *We need to ask [residents]: What makes you unhappy, personally? Is it the odor that you smell, and you can't do anything about? Is it being named the 19th smelliest city in the nation? Is it you think you haven't been heard ever? Because you certainly have said it. You certainly have attended enough meetings.*
>
> - Life-long resident of Shively

Strategies to Build Trust and Transparency

Too often decision makers ignore what the community really wants. As we work together, decision makers must understand that a wealth of expertise exists in local communities. Because communities know best what solutions are needed and sustainable for their neighborhoods, residents and activists must be consulted—if not involved—in solutions at every turn.

Decision makers must also understand that even though residents are concerned about air pollution and environmental health, certain barriers keep the threat of air quality at the bottom of some residents' lists. These barriers include, but are not limited to:

- Lack of full disclosure about what chemicals and pollutants residents are exposed to and in what concentrations.
- Public meetings related to pollution that are inaccessible by time, location, and/or technology.
- Inability to receive timely access, information, and assistance during times of emergency spills and leaks.
- Residents, especially those on the fence line of Rubbertown, are inundated with other impacts that require action (i.e., food insecurity, housing insecurity, transportation, employment, health, caregiving, racism in all its forms, etc.).

The tremendous burden being placed on communities to prove they are being inundated with harmful chemicals and other air pollutants is **unfair, unjust, and unnecessary.** The strategies presented here are based on our research and **identify opportunities to reduce burdens on impacted communities.**

Strategy #1: Make public participation processes more accessible.

Residents should not have to wade through complicated language to advocate for their health. Translating science for public audiences and promoting health literacy is a prerequisite for environmental justice.[38] And yet Louisville Metro's Center for Health Equity 2017 report listed "literacy" only twice in its 168 pages. Further, procedural barriers—such as jargon, opaque legal provisions, time and location of public meetings, how public audiences are notified of open public comment periods, and access to expert testimony during public comment periods–prevent public participation processes from being as equitable and inclusive as possible.[39]

Making information available is not the same thing as making information accessible. For environmental health information to be accessible, material must be: written in everyday, plain language; written in the language you speak; designed for individuals with disabilities; distributed in mediums–like social media, videos, and community gatherings–public audiences regularly engage.

Currently, public notices about air pollution are distributed by the Air Pollution Control District (APCD) and are related to air quality alerts, air pollution permits, and air pollution permit violations from local industries. Importantly, APCD has revised their public notice in response to our team's research, adding the option for public audiences to use Google Translate to read their emails and adding a question-and-answer format to their one-page notices to detail whether a permit will increase air pollution.

Public participation requires more than a one-page notice, however, and the other documents distributed to the public (the permit application and statement of basis) are still at the Flesch-Kincaid grade level of 15, or at a college or graduate studies reading level. By contrast, environmental health information must be written at **a fifth- to eighth-grade reading level** for it to be accessible to most U.S. residents.[40] Atop problematic jargon are the opaque legal provisions and processes surrounding public notices that may be unknown or misunderstood.

Health information is also inaccessible if it is distributed in mediums—such as email and newspaper, in the case of APCD notices—that public audiences do not regularly engage. Standards of communicating public health information, if not standards of communicating public information generally, fail residents, at best, and, at worst, purposefully conceal information needed to push for environmental justice.

The following actions would **improve readability of air pollution permit materials and accessibility of public participation** processes more generally:

- Create a checklist of standards for creating inclusive, accessible translations of all permit documents.
- Use reading scanner software to ensure that all permit material is written at a middle-school reading level.[41]
- Extend comment periods to 45 days, or 30 working days, to ensure residents have time to research and consult with their community groups.
- Change public participation opportunities to instances where public comment can impact the permitting process.
- Change distribution methods for public notices and public participation opportunities to reach a wider audience.

Currently, public notices and public participation opportunities are distributed only to those who follow the Air Pollution Control District via social media, have signed up for their newsletter, or read the notice in the local newspaper. Distributing these notices through Louisville Metro Council District newsletters more broadly as well as through news channels would increase awareness and public input.

Strategy #2: Create a community air monitoring network.

As residents wait for decision makers to strengthen laws, certain strategies for making residents' exposures to air pollution more visible can aid in individual and family decision making. For example, if a family with respiratory issues has a personal air quality monitor, then they can make lifestyle decisions by consulting their air monitor. On high air pollution days, the family may opt to drive to school rather than walk or may limit the child's time outdoors.

Actions for employing a community air monitoring network include:

- Providing families with low-cost outdoor sensors for backyards.
- Install low-cost indoor sensors in all JCPS classrooms.

The Air Pollution Control District importantly offers a sensor collocation shelter at its Cannon Lane Air Monitoring Station. However, residents first need resources to obtain those sensors.

> *"There is no accountability for companies. Sometimes there are fines, but that's no deterrent: companies budget for fines just like grocery stores budget for theft."*
>
> - Life-long resident of West Louisville

Strategy #3: Strengthen monitoring and regulatory processes.

The regulations of our city through the local Air Pollution Control District (APCD) are often stronger than the regulations of the state, especially for major Title V polluting facilities that fall under the Strategic Toxic Air Reduction (STAR) program. Residents are also invited to report air quality concerns and odors. However, residents who do report concerns too often never learn of the results of their query and APCD experiences staffing shortages that make acting on community concerns difficult.

Funding to support the following actions would strengthen air monitoring and regulations:

- Conduct extensive odor investigations that occur at the time of incident, often outside of 9-5 hours.
- Continue current air toxics study permanently to provide monitoring that is not self-reported by industry.

Perhaps most important is the following action: better, more effective enforcement of local air pollution regulations. **Currently, fines are not stringent enough to hold industry accountable.** Fines, too, warrant investigation, as statistically, mean fines for violating environmental laws "[a]re lowest in Black census tracts," with "penalty amounts decreases as the percentage of Black [individuals] in the census tracts increases." [42]

Strategy #4: Create emergency preparedness plans with communities.

As long as industrial facilities are operating, danger is posed to residents who live on or near those fencelines. **Working with those communities to craft emergency preparedness plans** that meet the needs of residents is essential to public safety.

Actions that promote emergency preparedness include:

- Effective, timely communication during emergency situations.
- Routine, semi-annual preparedness drills.
- Established evacuation methods for those without transportation.

Equally important as preparing residents for emergencies is ensuring that industrial facilities are prepared for increasingly extreme weather threats posed by climate change. The importance of working with facilities to **update risk management plans,** such as plans for flooding, tornado damage, or other emergencies, cannot be understated.

> *I can't stop a tornado. I can't stop a flood. I can only handle the impacts when they come. Should something happen, people need to know where to go, how to survive, what to do.*
>
> - Life-long resident of West Louisville

Conclusion

Air pollution is not specific to Louisville. In 2024, the American Lung Association reported that over **39% of Americans—over 131 million individuals—live in areas with poor air quality.** [43] Because their report considers only six outdoor pollutants (particulate matter, ozone, nitrogen oxides, sulfur dioxide, carbon monoxide, and lead) including other carcinogenic pollutants would bring these numbers even higher. That these numbers continue to shock residents, as they did our team at the onset of this work, highlights the reason Air Justice exists: when public and environmental health literacy and plain language translations are left as an afterthought, air pollution remains invisible.

Improving air quality in Louisville will take time—not investing in regulations, community monitoring, and the accessibility of public participation processes as soon as possible risks more premature deaths, chronic health conditions, and overall concern. Activist groups in Louisville are renowned as national leaders in environmental advocacy. Louisville's decision makers may now follow suit: leading the nation in working with communities to a build safer, healthier future.

Sources

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34. These sensors were acquired through the RISE (Research Innovations using Sensor technology in Environmental justice communities) program. For more information on these sensors, visit https://ejsensors.com.

35. Initial testing in the area to determine sensor placement resulted in PM 2.5 readings in the 75-130 microgram per meter range just outside of Maupin Elementary. Reynolds, a Title V, or major polluting company, is situated just 2 blocks north of Anderson Wood, compounding the amount of toxic air to which residents are exposed.

36. To ensure accuracy of these sensors, our team collocated the sensors for a two-week period at APCD's Collocation Shelter near Bowman Field. The purpose of collocation is to compare sensor data with regulatory instruments and, if needed, determine a correction equation to improve sensor data accuracy. Any missing data occurred during power outages, which momentarily disconnected sensors from their power source.

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