

Community Led Air Monitoring Informs Land Use Policies in Kansas City



Beto Lugo Martinez, CoExecutive Director
CleanAirNow EJ



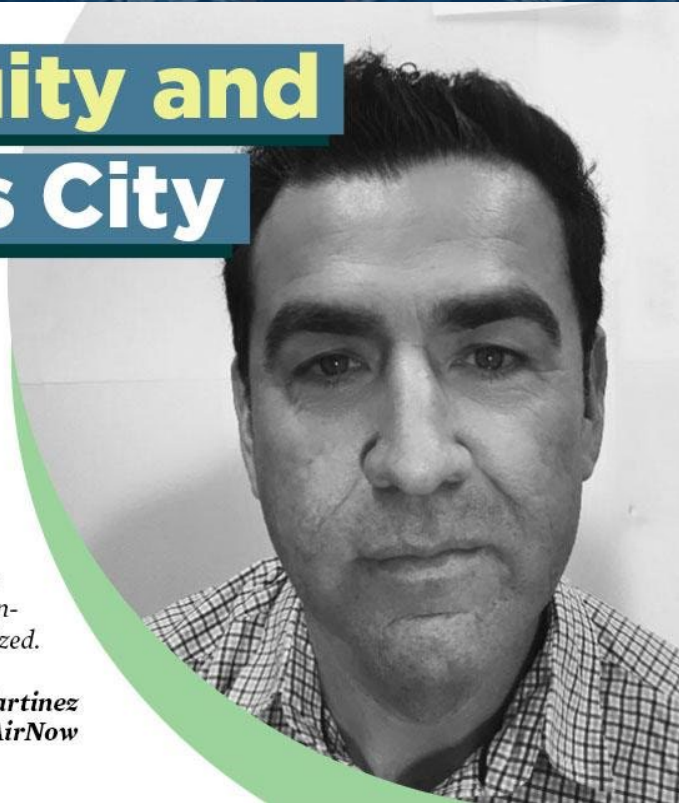
“Community Led Solutions, informing policies from the ground up”

Fighting for **Equity and Health** in Kansas City

Climate and environmental justice activists have been advocating for policies that protect fenceline communities from having to bear the brunt of climate change and air pollution burdens.

For too long, our calls for transformative, community-led policies have fallen on deaf ears. Now, as governments and local decisionmakers are adopting clean energy solutions, they should not be greenwashed by industry. We need real climate action to confront systemic racism, reduce pollution and ensure environmental justice communities are prioritized.

—Beto Lugo Martinez
Executive Director, CleanAirNow



CleanAirNow is a climate and environmental justice organization dedicated to improving environmental health of those impacted by environmental racism, toxic air pollution and climate change.

Building community power through environmental health education, equitable community based research projects, and community driven solutions in public policy



Community Led Research for Policy Action



Armourdale
Kansas

Armourdale

Armourdale
Community Center

El Centro, Inc.'s
Academy for Children

Community Mapping Activity



CleanAirNow - Air Pollution Monitoring Success

- KC-TRAQ
- Land Use General Plan
- Academic Partnerships
- Rulemaking Efforts
- Enforcement
- Community Science
- Community Website
- Air Pollution Reporting
- Environmental Health
- Community Advocates
- Environmental Racism in the Heartland
- Equity in Utilities
- Truck Routes
- Enforcement Inspections

News Headlines

Diesel fumes near Kansas City, Kan., rail yard pose health threat, report says



Rail yard pollution in Kansas City, Kan., requires a closer look by the EPA and BNSF



Kansas City STAR, June 2015



KCTV Story: Emissions from KC rail yard affecting neighborhood health

on June 24, 2015 in Argentine-Turner-Kansas, Goods Movement

KANSAS CITY, KS

[Watch the news story at KCTV](#)

Community members in the Argentine neighborhood are concerned about their health because of a nearby rail yard.



Global Community Monitor

gcm Global Community Monitor
empowering communities

Home Victories Issues Bucket Brigade Resources

You are here: Home > Empowering Communities > Partners > United States > Kansas > Argentine and Turner

Argentine and Turner



KANSAS CITY Hispanic News

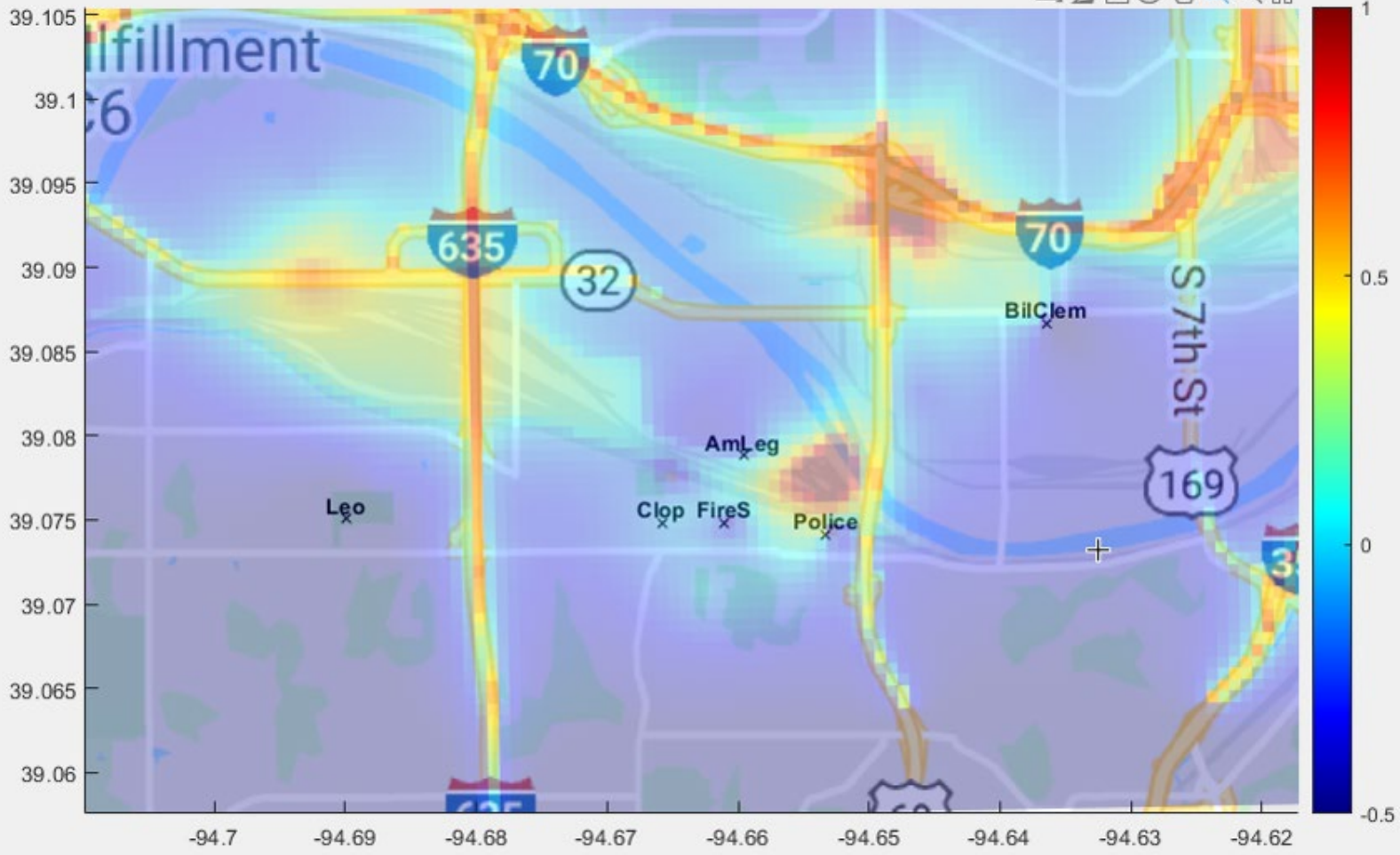
6 de Agosto, 2015

BNSF— "There is no truth to air quality report"

BNSF - "No hay nada de cierto en el reporte de calidad del aire"

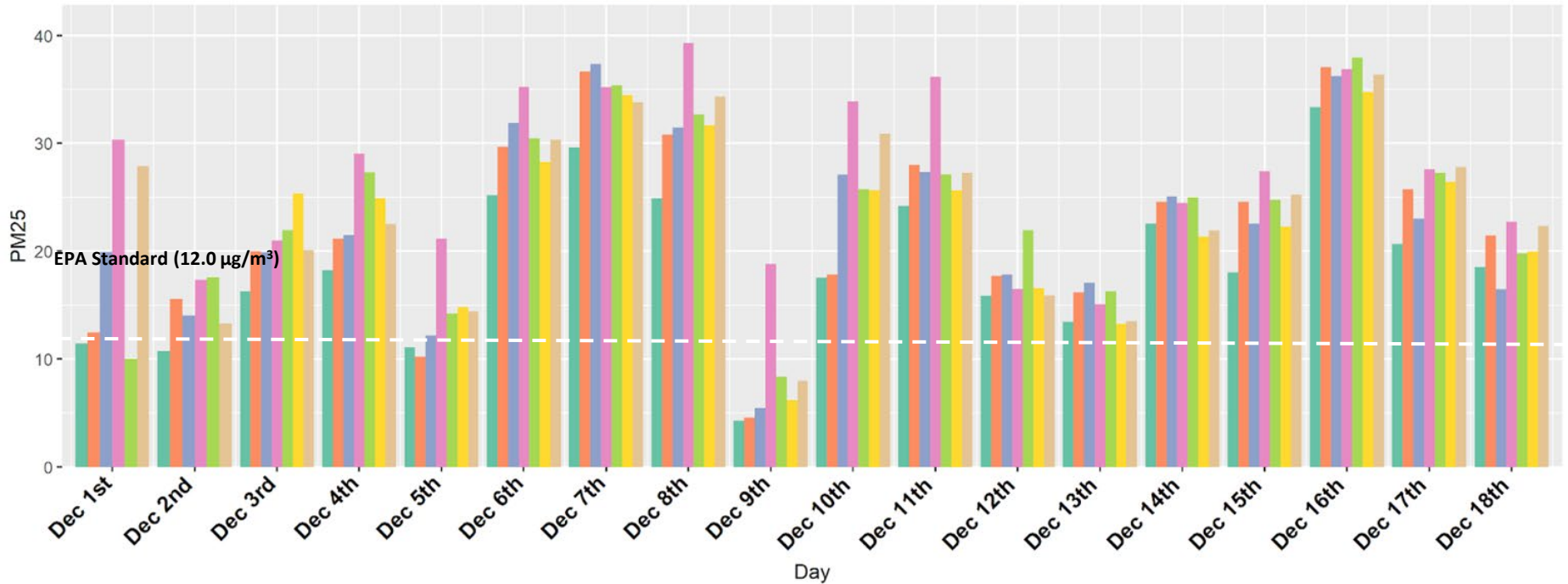


7



Community Led Research

Average PM2.5 per day by Monitor



CleanAirNow CleanAirNow_EICentro CleanAirNow_Haanz CleanAirNow_WalkerAve
CleanAirNow_Brown CleanAirNow_Genesis CleanAirNow_StrawberryHill

Examples: EJ Recommendations on Local Land Use Policies

CleanAirNow Environmental Justice Recommendations:



Comments on the
Armourdale General Plan

May 2021

Opportunities for Every Kansas to Address Energy Equity within its Integrated Resource Plan and Other Planning Processes

Final report

Prepared for the Union of Concerned Scientists and
CleanAirNow

September 21, 2021

AUTHORS

Jennifer Kallay
Alice Napoleon
Kenji Takahashi
Elijah Sinclair
Tim Woolf



485 Massachusetts Avenue, Suite 3
Cambridge, Massachusetts 02139

CleanAirNow KC Environmental Justice Recommendations



**FRONTLINE
COMMUNITIES FIRST.**



**KCMO Climate Protection
& Resiliency Plan**

April 2022

“Integrating Community Led Research into Academic Practice”



Cornell University

the Sin

arXiv.org > cs > arXiv:2107.11633

Search...

Help | Adva

Computer Science > Human-Computer Interaction

[Submitted on 24 Jul 2021 (v1), last revised 26 Aug 2021 (this version, v2)]

CleanAirNowKC: Building Community Power by Improving Data Accessibility

Rifat Ara Prama, Matthew Sumpter, Humberto Lugo, Elizabeth Friedman, Khandaker Tasnim Huq, Paul Rosen

As cities continue to grow globally, air pollution is increasing at an alarming rate, causing a significant negative impact on public health. One way to affect the negative impact is to regulate the producers of such pollution through policy implementation and enforcement. CleanAirNowKC (CAN-KC) is an environmental justice organization based in Kansas City (KC), Kansas. As part of their organizational objectives, they have to date deployed nine PurpleAir air quality sensors in different locations about which the community has expressed concern. In this paper, we have implemented an interactive map that can help the community members to monitor air quality efficiently. The system also allows for reporting and tracking industrial emissions or toxic releases, which will further help identify major contributors to pollution. These resources can serve an important role as evidence that will assist in advocating for community-driven just policies to improve the air quality regulation in Kansas City.

Subjects: **Human-Computer Interaction (cs.HC)**

Cite as: [arXiv:2107.11633](https://arxiv.org/abs/2107.11633) [cs.HC]

(or [arXiv:2107.11633v2](https://arxiv.org/abs/2107.11633v2) [cs.HC] for this version)

Submission history

From: Paul Rosen [[view email](#)]

[v1] Sat, 24 Jul 2021 15:31:24 UTC (1,835 KB)

[v2] Thu, 26 Aug 2021 18:27:03 UTC (1,835 KB)

Community Expertise CBPR, Community Led and Guided Research

Bibliographic Tools

Code & Data

Related Papers

About arXiv Labs

Armourdale's Correlation Between Industry Pollution and Health Inequity

Alejandra Frías Fraire

Department of Earth and Environmental Sciences

University of Missouri – Kansas City

Background

Fencible communities are neighborhoods near major sources of pollution, in which many black, indigenous, people of color, and low-income citizens reside in. There are many neighborhoods like this all over the country and Armourdale is one of them located at the center of industrial land use within Wyandotte County, Kansas. After a devastating flood in the early 1900s, not many people saw it worthwhile to invest in the area, so it eventually became a place that was redlined. Some redlining long-term effects on communities include long-term segregation, income disparities, worse health outcomes, worse environmental outcomes, and an increase in crime and police violence. These factors are all relevant since they all lead towards environmental injustice and health inequity in this certain area. Being surrounded by industry leads to many residents having health issues, some of which they might not even be aware of. Industrial pollution is one of the most common sources of pollution around the word and Armourdale residents live dangerously close to it everyday.

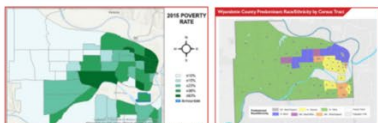


FIGURE 1: Less than or equal to 38% of Armourdale residents live in poverty. This area supports around 800 jobs and only around 300 of those are occupied by residents. This is less than 1%. According to the 2018 U.S. Census Bureau, 48% of the population is Hispanic/Latino. Source: Health Equity Action Transformation Report



FIGURE 2: Armourdale's predominant race/ethnicity of residents, none of which are the majority groups. According to the 2018 U.S. Census Bureau, 48% of the population is Hispanic/Latino. Source: Health Equity Action Transformation Report

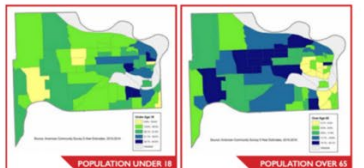


FIGURE 3: About 28% of Armourdale's residents are under 18 years of age and about 65% are over 65. This tends to suggest that although there is a significant number of kids in the area, they move out as they get older.

Purpose

Climate change is a vast topic, so the best way to reduce our anthropogenic emissions and impacts around the world, is to focus on our local communities. To be aware of what local communities hold and need the most to lead to the success of residents within them. Creating change and improving as a society begins with taking everyone into consideration. Knowing some correlations between industrial pollution and the health inequity existent in Armourdale means creating a movement that will improve all the faults of environmental injustice. Everyone from around the world should know what their local communities have to offer and what they must reform on. The hypothesis this research leads to is as follows: If a certain area has more industrial land use, then it is bound to have more health implications. Fencible communities are the most vulnerable areas around the world, and they should be acted as so since enough

Methodology/Data Analysis

Geographical Information System Data and Data Models from Existing Sources

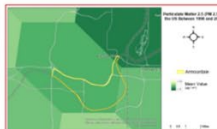


FIGURE 4: The wind roses for air quality in Armourdale was 1998. The average PM 2.5 for the 18 years looked at was 30.86 micrograms/m³. These winds will improve over time, but there was still high levels of PM 2.5 for 90% of the time studied. PM 2.5 rose from 10 micrograms each great risk.



FIGURE 5: This is a view of Armourdale's land use taken from a Drone Master Plan Report. Residents within this community are surrounded by industrial and polluting facilities and infrastructure. Source: Armourdale Area Master Plan



FIGURE 6: This map represents the redlining of several communities from both Kansas and Missouri. The green boxes is where Armourdale is located, and it is in the fourth grade (D). The grading represents it as follows:
A - "Best" areas, colored green.
B - "Desirable" areas, colored blue.
C - "Declining" areas, colored yellow.
D - "Hazardous" areas, colored red.

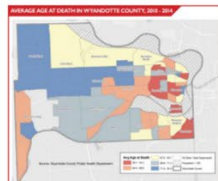


FIGURE 7: The average age at death in Armourdale ranks one of the lowest in the county. On average, residents there live a 22 year shorter lifespan than others in the county. Source: Health Equity Action Transformation Report



FIGURE 8: Studies suggest that local environments in Armourdale have been linked to cardiovascular disease, respiratory disease, and prostate cancer. This map shows that it is 80-90% likely for a person to live in Armourdale to have asthma. Although it is not as severe as other areas shown, it is still significant. Source: EPA EIS/Screen



FIGURE 9: Air pollution can cause many serious conditions including cancer, neurological and reproductive disorders. Shown above is a map showing Air Toxicity Cancer Risk. Armourdale lies within the 80-100 national percentile. Source: EPA EIS/Screen

How do different chemicals affect the body at different ages?

- Children have more vulnerability to air pollution because of their developing young bodies. This is the reason they have more respiratory infections than adults. Studies show that kids who grow up in more polluted areas tend to run the risk of having a reduced lung growth. This can demonstrate how people living in more polluted areas can be more susceptible to Covid-19 respiratory effects.
- The effects PM2.5 have on child lung function works in a similar manner. An increase of PM2.5 exposure decreases the Forced Vital Capacity (FVC), which is the total amount of air exhaled during a Forced Expiratory Volume (FEV) test.
- Whenever combustion systems create hot gases containing metal vapor, there is a risk of mixing with oxygen-bearing gases. Whenever these mixed gases are cooled, metal aerosols are formed. Aerosols can have dangerous effects on plants, animals, and humans.

At what distances should industries be in order to exert their work in a safer manner?

- Some research shows that metal concentrations decrease by 60% within 100 meters from the starting point, then decreases an additional 20% between 100-200 meters. In general, concentrations can be close to background levels that are at ~600 meters from the fence-line.

Results and Implications

Correlation does not mean causation, but there is a clear correlation between industrial pollution and health risks in Armourdale that can not be ignored. The research and results provide clear evidence that the industries have been affecting its residents and will continue to do so until drastic measures are taken. Taking into consideration that this concern has been around for a long time, many key points must be considered to create change. They are as follows:

- More community engagement
- Policies that trigger pollution mitigation
- Education to its community and industries
- Economic stability that can help with things such as better health care and better tax budgeting to improve the neighborhood.

References

• A. Adushkin, "A Short Note on Industrial Pollution," *Journal of Pollution Effects and Control*, Longdom Publishing L1, 29 Mar 2021, <https://www.longdom.org/open-access/a-short-note-on-industrial-pollution-88320.html>.
 • "Children and Air Pollution," *American Lung Association*, <https://www.lung.org/air-pollution/children-and-air-pollution>.
 • EPA, Environmental Protection Agency, <https://www.epa.gov/happ/happ/>.
 • EPA, Environmental Protection Agency, <https://www.epa.gov/air-quality/air-quality-impacts-of-air-pollution>.
 • EPA Report, "Kansas Health Matters," https://www.kansashealthmatters.com/content/sites/kansashealthmatters/04_HealthReport_1228.pdf.
 • EPA, "EPA's 401 Tackling of Metal Aerosols in Four Communities Adjacent to Metal Refractories in Houston, Texas, USA," *Journal of the Air & Waste Management Association*, vol. 51, no. 1, 2010, pp. 568-579, <https://doi.org/10.1080/10962747.2010.1755485>.
 • "The Linking Impacts of Segregation and Redlining," <https://www.sci.org/2021/04/26/linking-impacts-of-segregation/>.
 • "TM2.5 - Tiny Particulates and Their Effect on Children's Health - Summary," <https://www.sarniweb.org/air-quality/air-quality/summary-tm2-5-tiny-particulates-and-their-effect-on-childrens-health/>.
 • "Where research link," "Armourdale Area Master Plan (2016)," https://www.wyandotte.org/transportation-public-planning/transportation-master-plan/armourdale-draft-master-plan-report_sarniweb-released.pdf.

Environmental Racism in the Heartland

Fighting for Equity and Health in Kansas City

HIGHLIGHTS

As a result of a legacy of systemic racism, communities of color and low-income communities in Kansas City face a greater risk of exposure to environmental hazards. These hazards are associated with myriad negative health outcomes including cancer, respiratory illness, and shorter life expectancy.

The Kansas City community is experiencing cumulative exposures to hazardous pollutants from heavy freight and diesel-powered transportation and industrial emissions, and current policies are failing to keep people safe from harm. The local environmental justice movement, however, has been working to address these inequities through the establishment of an air monitoring network that provides real-time, local data that people can use to advocate for science-based protections. Local, state, and federal decisionmakers must take note of industry's environmental impacts throughout the city, engage the community in decision-making, and address systemic environmental justice concerns in Kansas City and across the country.

Introduction

Kansas City—which straddles Kansas and Missouri—faces multiple environmental health and safety threats from nearby polluters that together constitute dangerous "cumulative impacts" on the community's health (Sheats 2017). Industrial facilities are contaminating the land, water, and air; diesel exhaust from truck traffic is raising harmful pollution levels; toxic emissions from one of the nation's most important rail hubs continue to affect nearby neighborhoods—all in addition to extreme temperatures and flooding due to climate change. The U.S. Environmental Protection Agency (EPA) defines environmental justice as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies" (EPA 2020a). Fair treatment means that no group of people should bear a disproportionate share of the negative environmental consequences of industrial, governmental, and commercial operations or policies. Yet many communities of color and Indigenous, immigrant, and low-income communities across the country do bear disproportionate exposure to multiple stressors at once.



Residents of Kansas City, especially communities of color and immigrant communities, are facing the cumulative impacts of many sources of pollution, often situated in their area as a result of structural racism. Policymakers and industry should work hand-in-hand with the residents to reduce pollution and address



Thank you!

Beto Lugo Martinez
Co-Executive Director

betomtzelugo@cleanairnowkc.org



Instagram: [@kc.cleanairnow_ej](https://www.instagram.com/kc.cleanairnow_ej)

Facebook: [@cleanairnowkc](https://www.facebook.com/cleanairnowkc)

Twitter: [@MoKanCAN](https://twitter.com/MoKanCAN)

