



UC San Diego
SCHOOL OF MEDICINE

COUNTY OF SAN DIEGO
HHS
HEALTH AND HUMAN SERVICES AGENCY

THE NOBLEST MOTIVE IS THE PUBLIC GOOD
COUNTY OF SAN DIEGO
MDCCLII

LIVE WELL
SAN DIEGO

First
San Diego

We Can't Wait!


15th Annual Early Childhood Mental Health Conference - We Can't Wait

We Don't Wait: Nurturing and Healing in Action

ECMH

September 26-27, 2024 - A Hybrid Event
Sheraton San Diego Hotel and Marina

1



Toddlers, Tijuana Sewage and Dead Terns: San Diego Air Pollution and the Effects on Early Childhood Development and Mental Health

Vi Thuy Nguyen MD, FAAP
Eleanor Jung, UCSD Premed AMSA
September 26, 2024

2

Current San Diego Airbourn Pollution Threats to Toddler Developmental/ Mental Health

- Leaded Aviation Fuel
- Tijuana Sewage, “Sewer Gas”
- Sea World Fire Works



3

Format

- **Who We Are** , **How We Got Here** , **What are YOU GOING TO DO?**
- Rapid Fire: Air Pollution 101
- Rapid Fire: Environmental Racism 101

4

Format

- Teach through Advocacy Cases
- Leaded Aviation Fuel
- Tijuana Sewage, “Sewer Gas” – (Eleanor Jung UCSD Premed)
- Sea World Fire Works – (Vi Thuy Nguyen MD)

5

“Pediatrician, Community Leader, and Advocate for Vulnerable groups” how I’m described by USCD PRIME Heq Director and Professor Luis Castellanos describes me! Wowzer.



HARVARD
MEDICAL SCHOOL



6

"The Power of Joy and Mentorship in Climate and Health Advocacy: A Burn Out Story @drplasticpicker"



Speaker:

Vi Nguyen, M.D.

Chair, American Academy of Pediatrics California Expert Committee on Environmental Health and Climate Change

Chair, Public Health Advisory Council for Climate Actions Campaign in San Diego

Founder of San Diego Pediatricians for Clean Air

Head of Kaiser San Diego Sustainability and Green Team

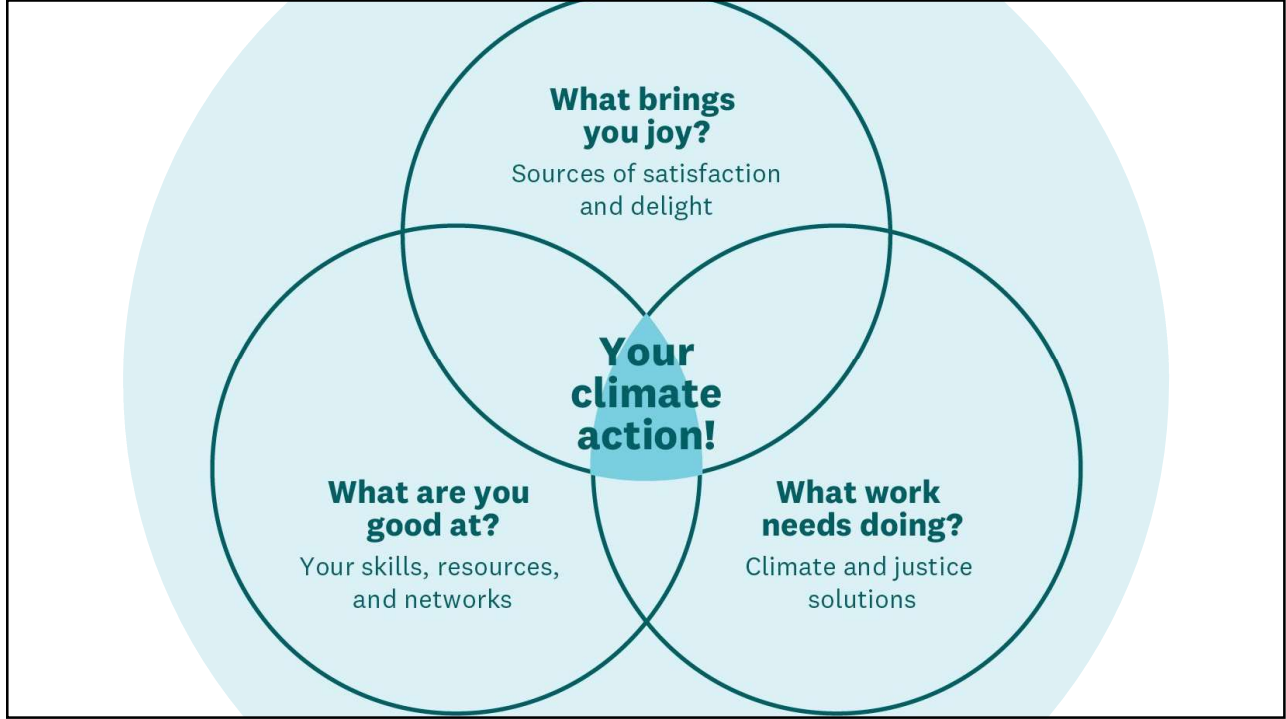
7



8



9



10

SDPCA San Diego Pediatricians for Clean Air

- Coalition of 70 pediatricians, medical students and premedical interns who advocate on clean air issues, and mostly climate change legislation.
- Most of us are American Academy of Pediatrics (AAP) San Diego and departmental leaders.
- Advocacy is part of our pediatric DNA, as we want to PREVENT.
- We are clean-air advocates and child advocates.
- SDPCA enables us to advocate together on our shared values
- www.sdpediatriciansforcleanair.com



11



12

Eleanor Jung

UCSD '27, Neurobiology - SDPCA Lead Art Intern

Research

- Effect of environment on neurodevelopment & anxiety during adolescence
- Design & construction of affordable, sustainable experiments to test the effects of various environmental factors



Advocacy

- Implement higher standards for the environment and for testing the health effects of newly developed chemicals
- SDPCA's 2024 Enviro-Art Youth Climate Exhibition
 - Theme: Tijuana Sewage Crisis

13

What is Air Pollution?

- **Air pollution** refers to the release of pollutants into the air—pollutants that are detrimental to human health and the planet as a whole.
- Per WHO, indoor and outdoor air pollution is responsible for ~7 million deaths world-wide.
- 99% of human beings breathe air that exceeds the WHO's guideline limits for pollutants, with those living in low- and middle-income countries suffering the most.
- The US Clean Air Act (1970), authorized the U.S. EPA to safeguard public health by regulating the emissions of air pollutants.

14

What causes air pollution?

- Most air pollution comes from energy use and production
- Driving a car on gasoline, heating a home with oil, running a power plant on [fracked gas](#): In each case, a fossil fuel is burned and harmful chemicals and gases are released into the air.
- Clean Air Act helped. But climate change will make it harder in the future to meet pollution standards, which are designed to protect health.

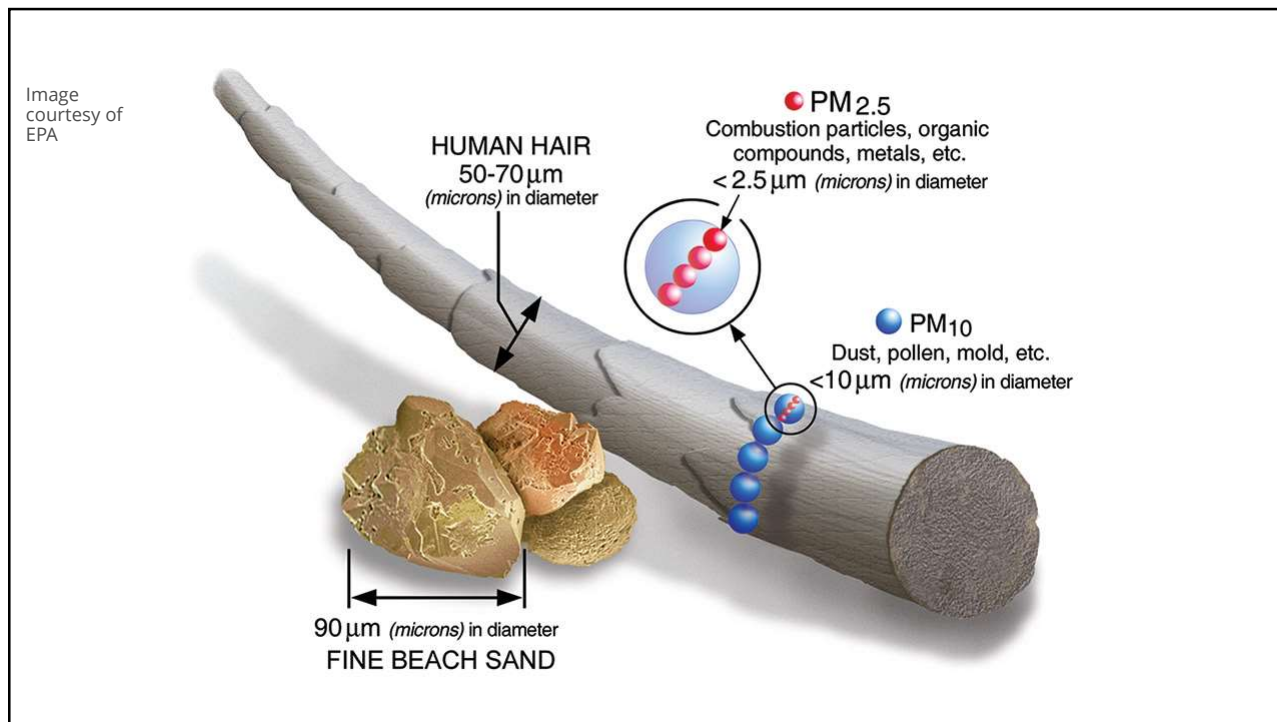
15

Criteria Air Pollutants

- Ozone
- Particle Pollution (PM_{2.5})
- Carbon Monoxide
- Lead
- Sulfur Dioxides
- Nitrous Dioxides





16



17

Sources

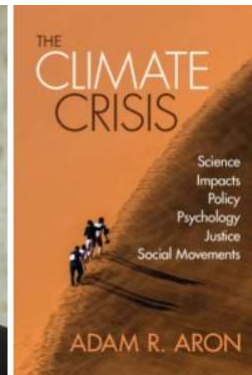
		
Point Sources <ul style="list-style-type: none">• Power or chemical plant stacks	Area Sources <ul style="list-style-type: none">• Cook stoves• Waste burning	Mobile Sources <ul style="list-style-type: none">• On-road vehicles• Off-road vehicles• Ships

18

18

BIG PICTURE: We are FOCUSED ON DECARBONIZATION BECAUSE

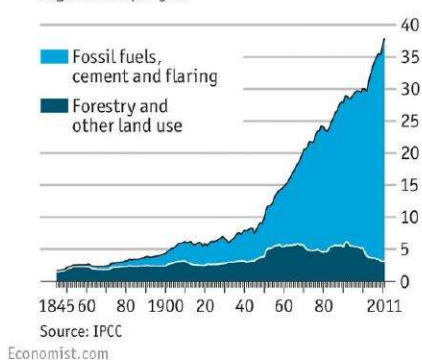
- Air Pollution drives Climate Change and Climate Change drives Air Pollution: Existential Risk of Global Heating
- Our entire way of life is going to change. It's a planetary code, and it's all hands on deck.



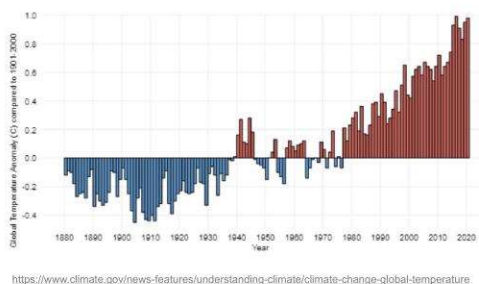
19

Borrowed from Dr. Elizabeth Freidman. Missouri Clinicians for Climate Action.

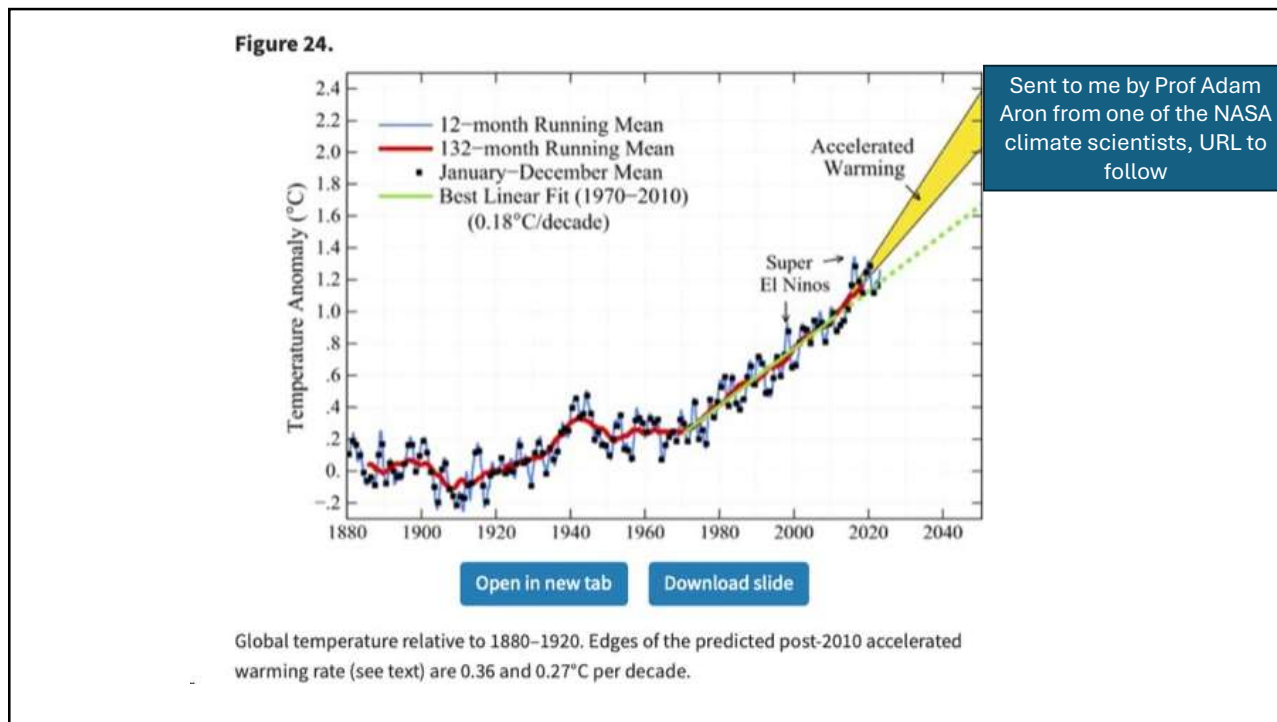
Global anthropogenic CO₂ emissions
Gigatonnes per year



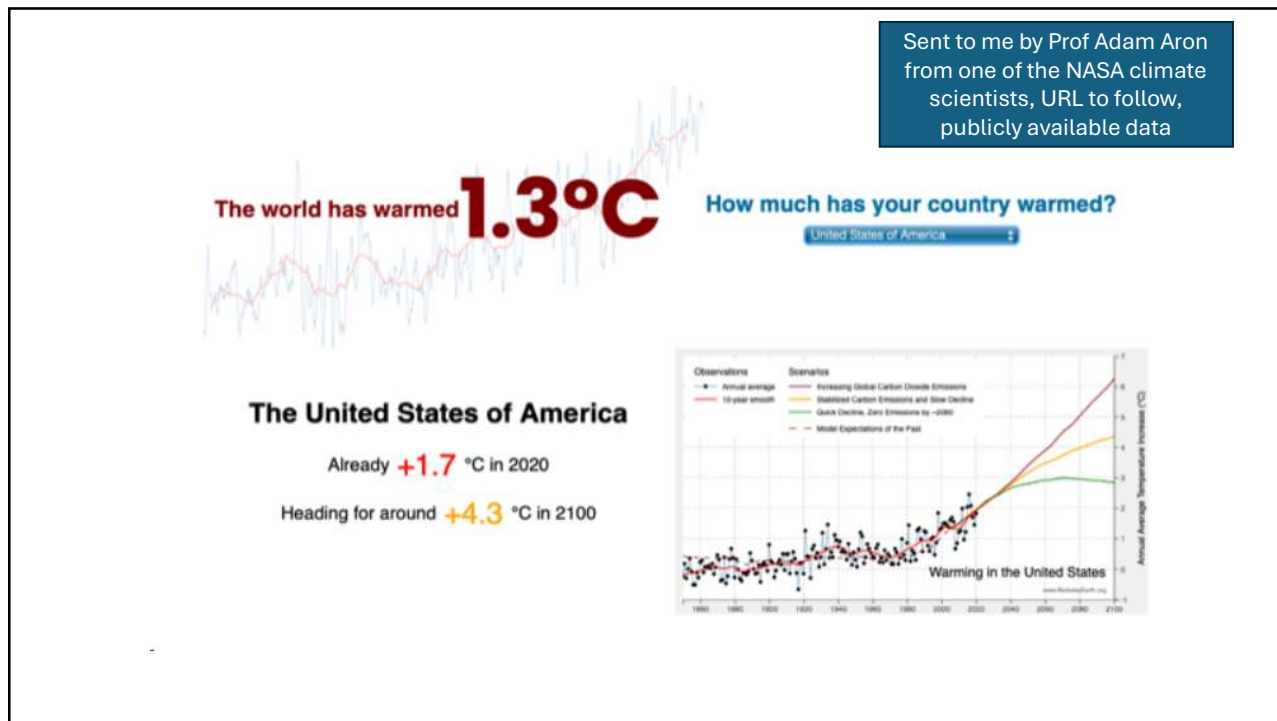
History of global surface temperature since 1880



20



21



22

Borrowed from Dr. Elizabeth Freidman. Missouri Clinicians for Climate Action.



California

- Air quality
- Increased temperature
- Droughts
- Fires
- Flooding
- Eco-system Disruption

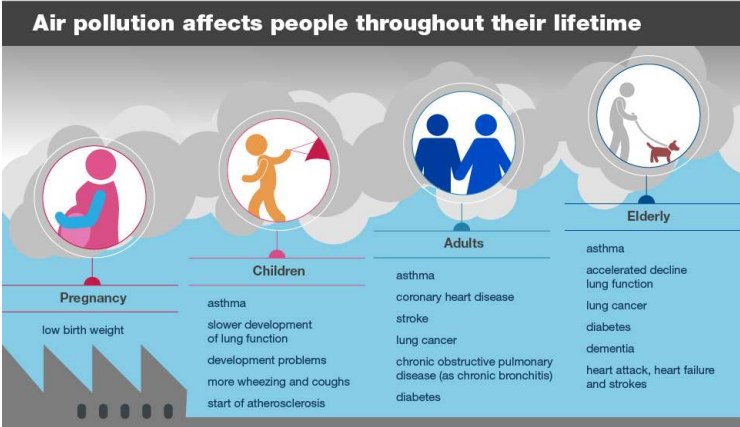
<https://statesummaries.noaa.org/briefing/> Climate change presents increased potential for very large fires in the contiguous United States



Air Pollution, Heat & Health

- Obstetric complications: Preterm delivery, low birth weight, stillbirth
- Developmental delay / cognitive decline
- Increased respiratory symptoms, (cough, dyspnea), allergic rhinitis / postnasal drip
- Exacerbation of skin conditions (eczema)
- Atherosclerosis, CAD/MI, stroke
- Aggravated asthma, COPD
- Lung cancer (? Head/neck, GI, breast CA?)
- Premature death in people with heart or lung disease

Public Health England Health Matters



Borrowed from Dr. Elizabeth Freidman. Missouri Clinicians for Climate Action.

Effects of Common Air Pollutants

RESPIRATORY EFFECTS

Symptoms:

- Cough
- Phlegm
- Chest tightness
- Wheezing
- Shortness of breath

Increased sickness and premature death from:

- Asthma
- Bronchitis (acute or chronic)
- Emphysema
- Pneumonia

Development of new disease

- Chronic bronchitis
- Premature aging of the lungs

How Pollutants Cause Symptoms

Effects on Lung Function

- Narrowing of airways (Bronchoconstriction)
- Decreased air flow

Airway Inflammation

- Influx of white blood cells
- Abnormal mucus production
- Fluid accumulation and swelling (edema)
- Death and shedding of cells that line airways

Increased Susceptibility to Respiratory Infection

Normal vs **Lung with respiratory infection**

CARDIOVASCULAR EFFECTS

Symptoms:

- Chest tightness
- Chest pain (angina)
- Palpitations
- Shortness of breath
- Unusual fatigue

Increased sickness and premature death from:

- Coronary artery disease
- Abnormal heart rhythms
- Congestive heart failure
- Stroke

How Pollutants Cause Symptoms

Effects on Cardiovascular Function

- Low oxygenation of red blood cells
- Abnormal heart rhythms
- Altered autonomic nervous system control of the heart

Vascular Inflammation

- Increased risk of blood-clot formation
- Narrowing of vessels (vasoconstriction)
- Increased risk of atherosclerotic plaque rupture

Normal vs **Rupture-prone vulnerable plaque**

25

Reduce your risk by using the Air Quality Index (AQI) to plan outdoor activities – www.airnow.gov

AQI Levels of Health Concern	AQI Values	What Action Should People Take?
Good	0-50	Enjoy Activities
Moderate	51-100	People unusually sensitive to air pollution: Plan strenuous outside activities when air quality is better
Unhealthy for Sensitive Groups	101-150	Sensitive Groups: Cut back or reschedule strenuous outside activities Ozone: People with lung disease, children and older adults and people who are active outdoors Particle Pollution: People with heart or lung disease (including diabetics), older adults and children Carbon Monoxide: People with heart disease and possibly infants and fetuses Nitrogen Dioxide: People with lung disease, children and older adults Sulfur Dioxide: Active children and adults with asthma
Unhealthy	151-200	Everyone: Cut back or reschedule strenuous outside activities Sensitive groups: Avoid strenuous outside activities
Very Unhealthy	201-300	Everyone: Significantly cut back on outside physical activities Sensitive groups: Avoid all outside physical activities

EPA-600/R-11-022

26

Environmental Justice Issues around Air Pollution

- Latest American Lung Association (ALA) Report 2023 assessed year-round and short-term particle pollution and ozone
- Findings
 - People of color are **61%** more likely than white people to live in a county with a failing grade in at least one of those categories
 - People of color are **3X** more likely to live in a county that fails in all three.
 - California cities occupy the **top 3 slots** (i.e., were highest in pollution)

27

Environmental Racism - URBAN

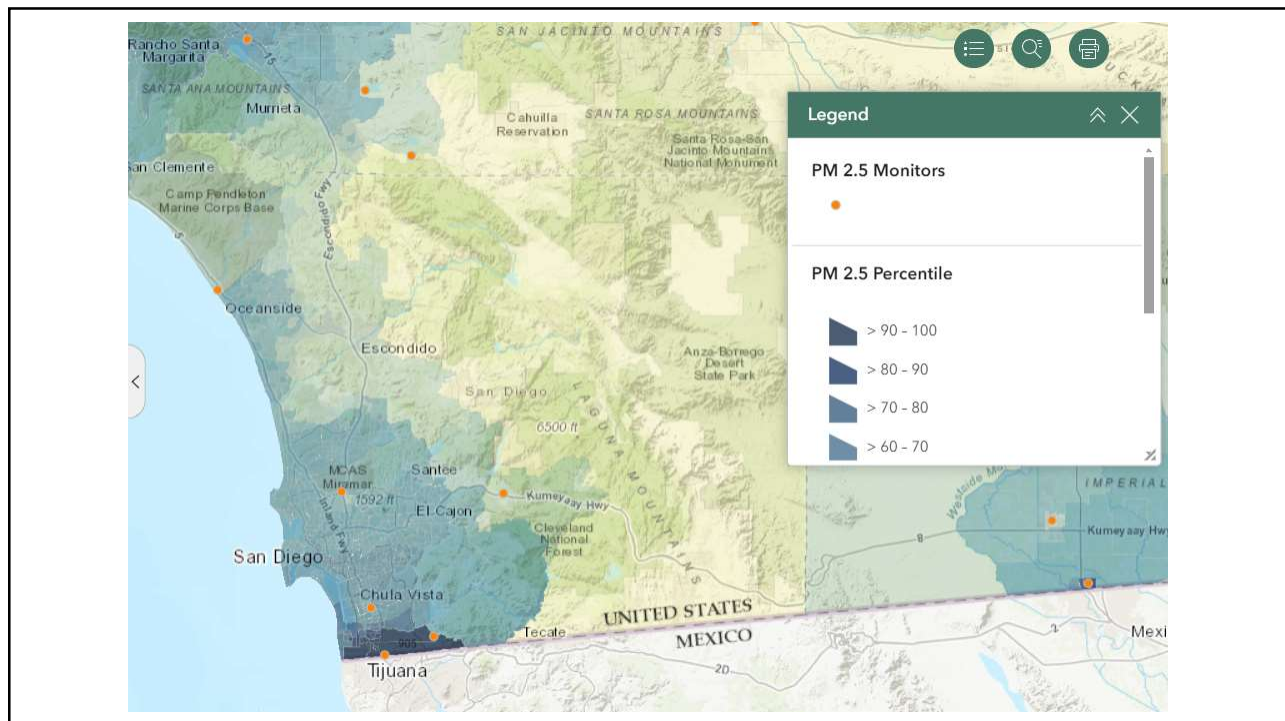
- In the US, people of color are **1.5X** more likely than whites to live in areas with poor air quality (ALA)
- Reinforced by redlining & discriminatory lending practices
- Sacrifice zones (communities of color) are left to bear the brunt of health and economic consequences

28

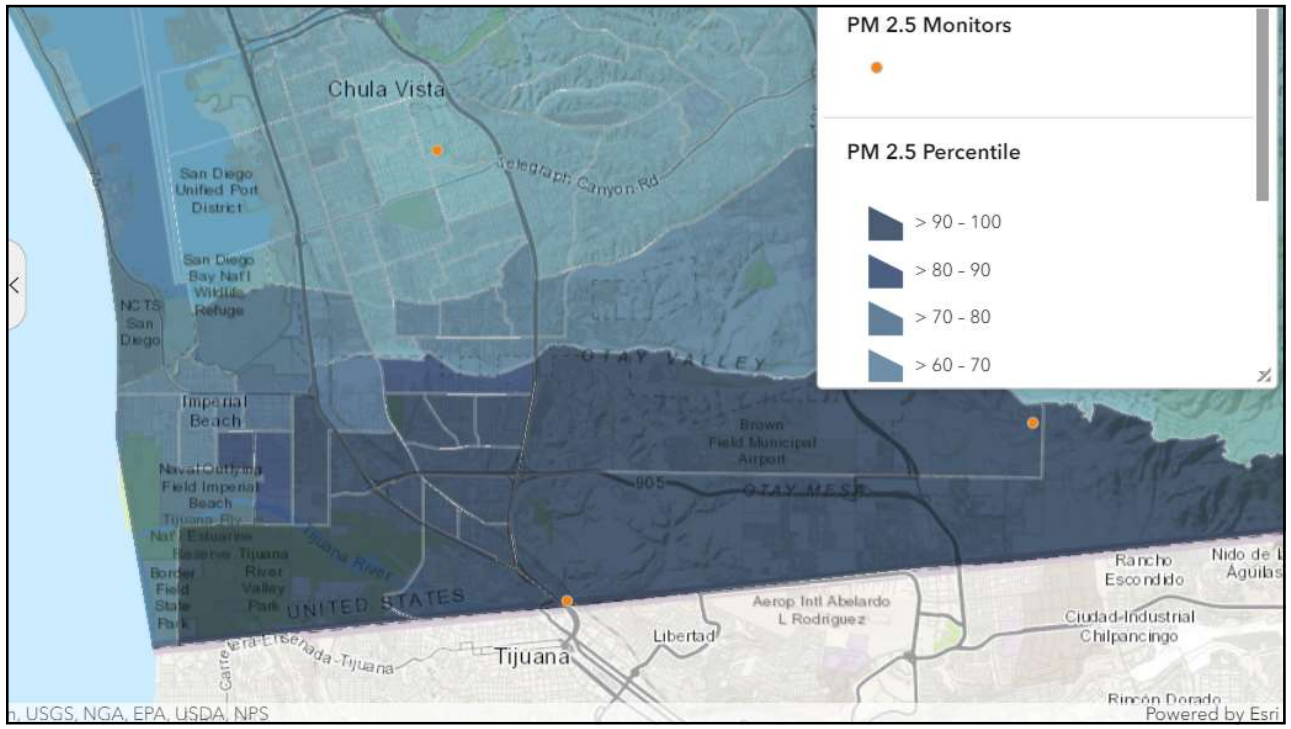
Environmental Racism - RURAL

- Outdoor laborers are exposed all day to air pollutants, yet many lack resources to defend health concerns
- [Cumulative impact mapping](#) shows how some communities are overburdened with layers of issues (e.g., poverty, unemployment, pollution)
- Other tools support the need for land use and public health reforms
 - [Environmental Justice Screening Method](#)
 - EPA's [EJScreen](#)

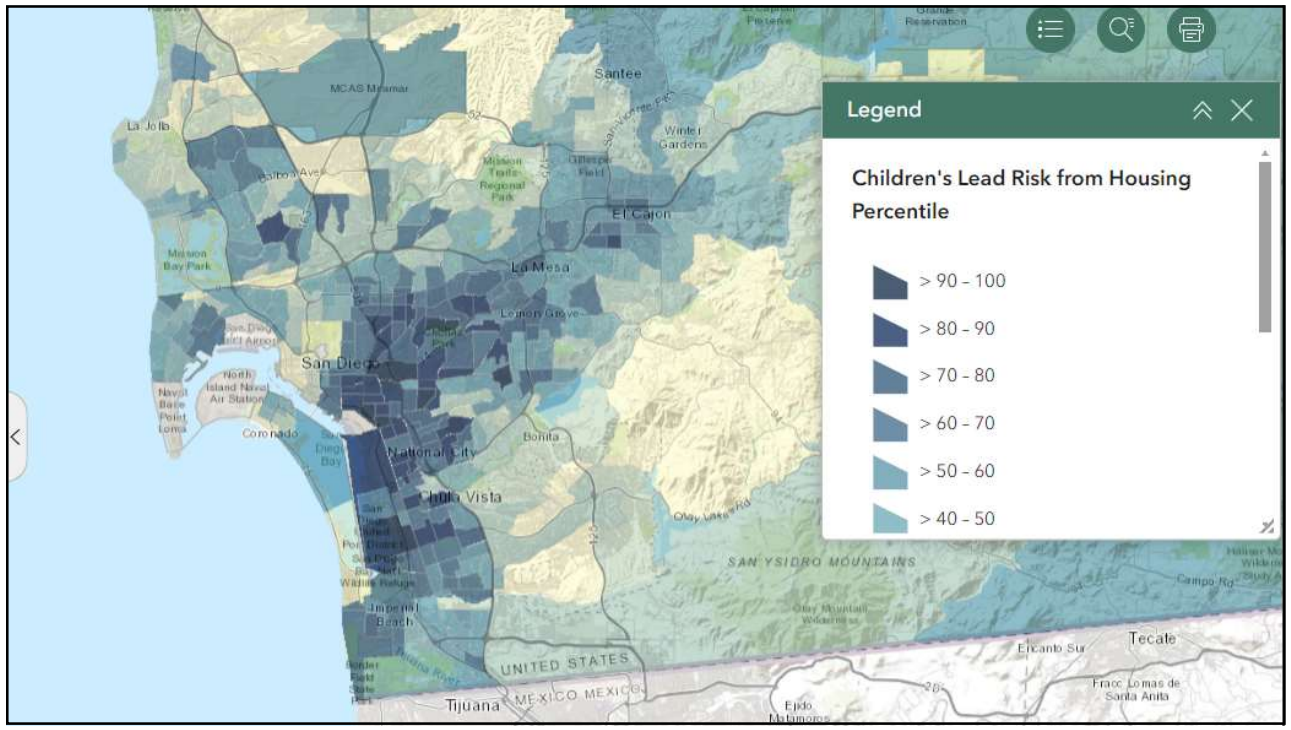
29



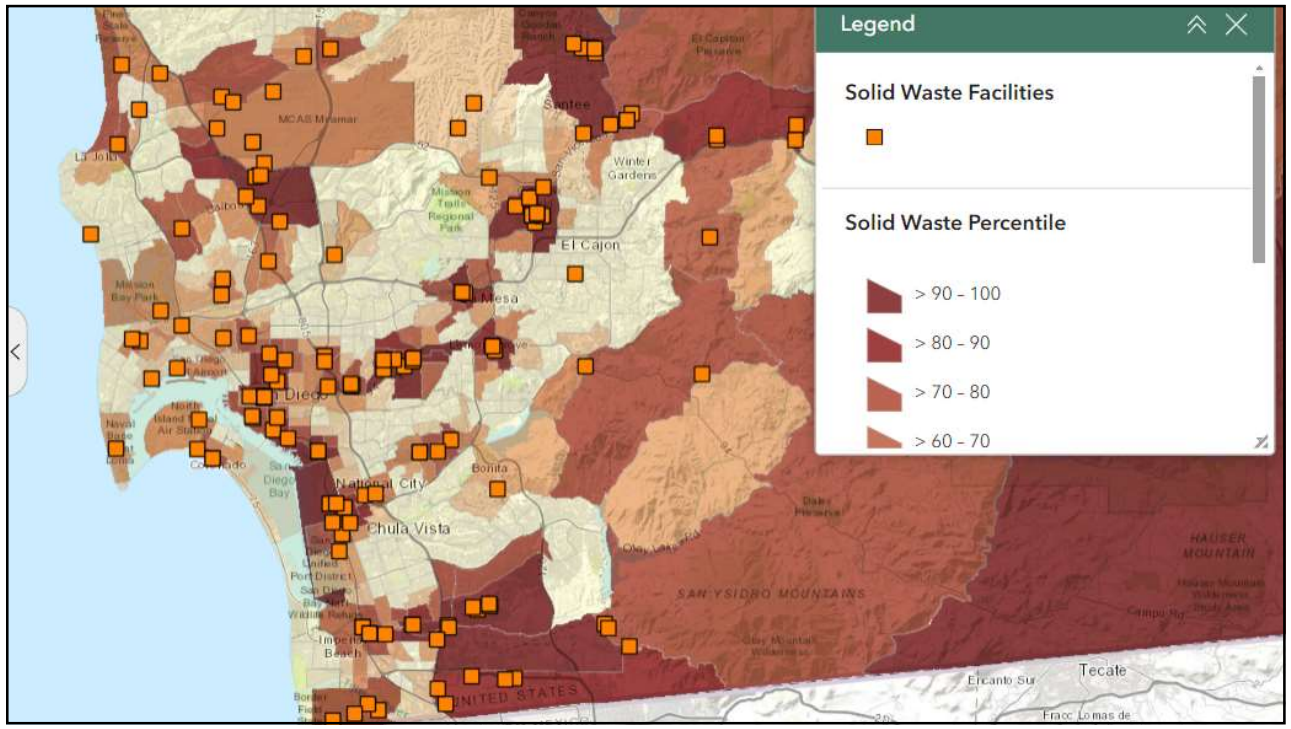
30



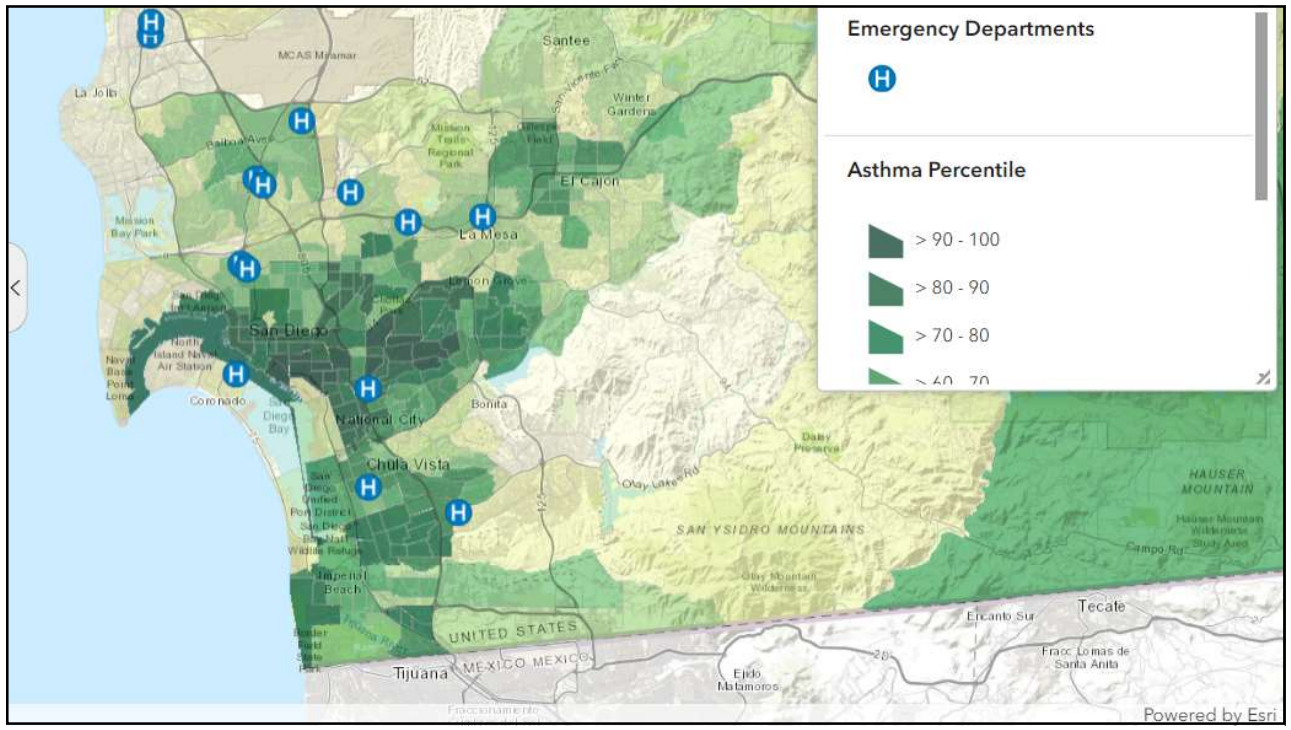
31



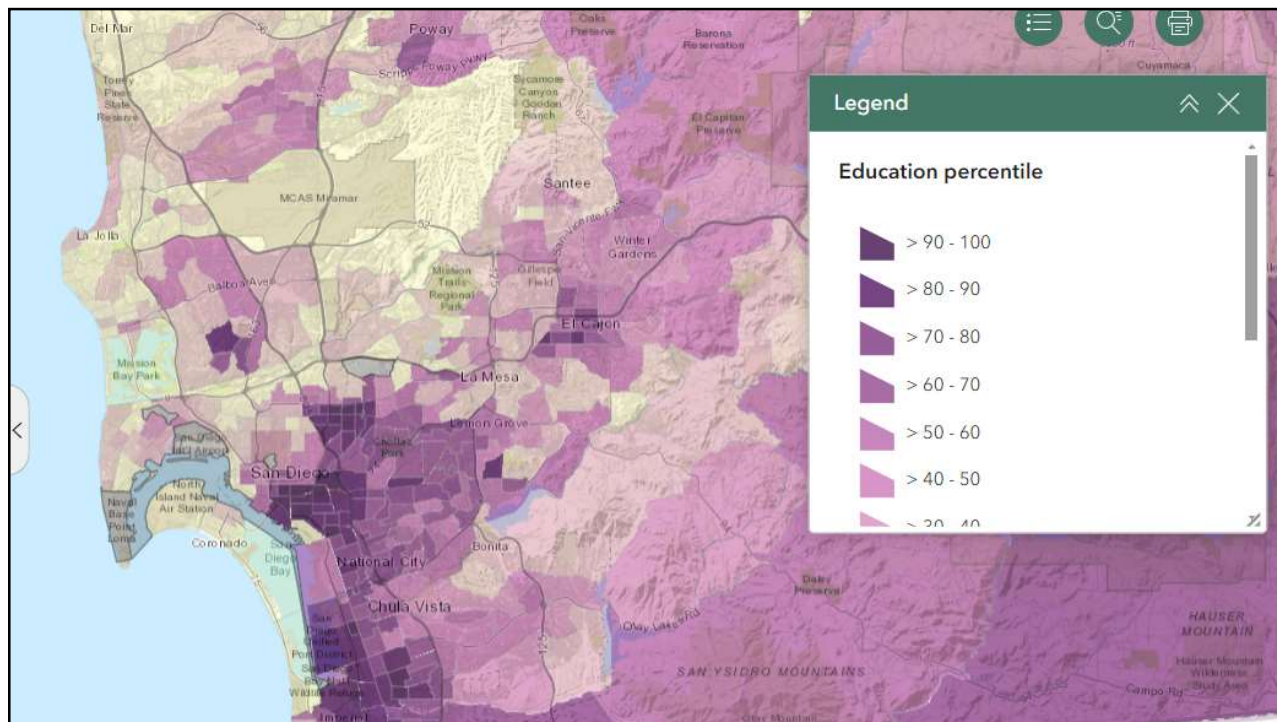
32



33



34



35

Air Pollution Effects on Pregnant Women and Fetuses

- The physical changes of pregnancy are already a stressor on an individual's body.
- Additional inflammation and stress caused by exposure to air pollution can lead to intrauterine inflammation and damage to the placenta that can disrupt the growth and development of the fetus.
- Exposure to air pollution during pregnancy is strongly associated with premature birth, low birth weight and stillbirth.

36

Air Pollution Effects on Early Childhood

- **Children** face special risks from air pollution because their airways are small and still developing
- They breathe more rapidly and inhale more air relative to their size than do adults.
- A small child's body's defenses that help adults fight off infections are still developing in children.
- Children have more respiratory infections than adults, which increases their susceptibility to air pollution.
- Kids are also more likely to spend time being active outdoors, which can increase their exposure on bad air days.
- Growing up breathing high levels of air pollution can affect how children's lungs develop, putting them at greater risk of lung disease as they age.

37

Case #2: Ken

- Ken is a 5 year old Vietnamese-American boy from Clairemont neighborhood.
- 18 months he was diagnosed with Autism Spectrum Disorder after being referred for language delay and echolalia.
- He also has mild persistent asthma, on Flovent for controller and Albuterol PRN.
- He was diagnosed with eosinophilic esophagitis after multiple formula intolerances and allergies, and very poor growth. He is now growing well on elemental formula and remains G-tube dependent due to refusal to eat enough solid foods thought to be also due to his Autism Spectrum Disorder.

38

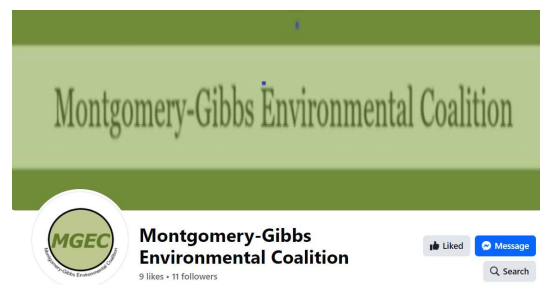
Case #2: Ken

- At his most recent visit, mother tells me her biggest concern is that he has started hitting himself. He never would do that before. Mother asks me to check his ears, to make sure he doesn't have an ear infection.
- She states between school and ABA, he has no time for anything else and it's taking a toll on the family. She wonders if it's okay to take a few months break from ABA.
- I refer to social work, psychiatry and agree that let's try a break from ABA for now.
- Mother also always wonders why Ken is the only one in their family to ever have all these medical problems.


39

Leaded Air Pollution

Through our Website, contacted by Sandra Stahl Montgomery Gibbs Health Coalition in 2019 re leaded aviation fuel pollution in Clairemont.



40




Key facts




- Lead is a cumulative toxicant that affects multiple body systems and is particularly harmful to young children.
- Lead in the body is distributed to the brain, liver, kidney and bones. It is stored in the teeth and bones, where it accumulates over time. Human exposure is usually assessed through the measurement of lead in blood.
- Lead in bone is released into blood during pregnancy and becomes a source of exposure to the developing fetus.
- There is no level of exposure to lead that is known to be without harmful effects.
- Lead exposure is preventable.



41



LEADED AVGAS TEAM

*Elizabeth Friedman MD, MPH | General Pediatrician
Director of Region 7 Pediatric Environmental Health Specialty Unit (PEHSU), Children's Mercy Kansas City*

*Ruth Etzel MD, PhD
Founding Editor of Pediatric Environmental Health, AAP "Green Book," George Washington University. Former Director of the U.S. EPA's Office of Children's Health Protection.*

Many Thanks to Our Colleagues

42



Megan Lerner, Pediatric RN
Just bought a house in Clairemont

- Lead exposure is especially dangerous to children's developing brains and can result in reduced intelligence quotient (IQ) and attention span, impaired learning ability, and increased risk of behavioral problems.

- Exposure of pregnant women to high levels of lead can cause miscarriage, stillbirth, premature birth and low birth weight, as well as minor malformations.

43

We have sufficient evidence for the following serious health effects:

Neurological Effects

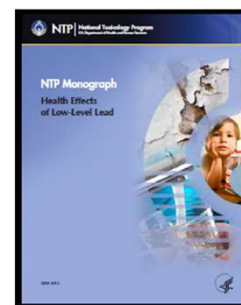
- Attention related problems
- Anti social behavior
- Criminal Behavior
- Decreased cognitive ability
- Decreased academic achievement
- Decreased Hearing

Reproductive Effects

- Reduced fetal growth
- Adverse changes in sperm parameters; increased time to pregnancy

Other Effects

- Decreased postnatal growth
- Delayed puberty

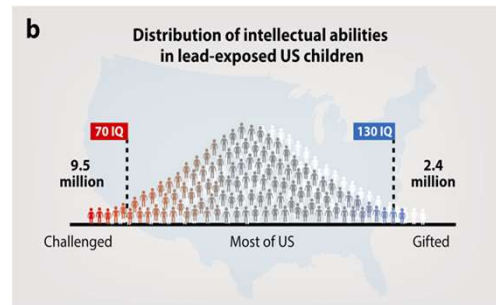
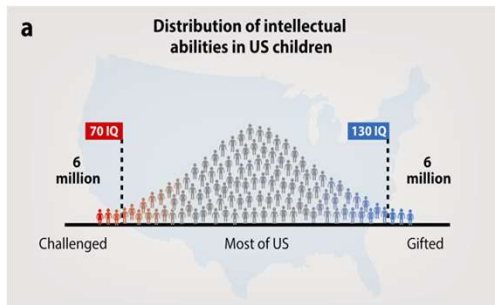


National Toxicology Program 2012



44

The Significance of a 5 Point IQ Reduction



Reference:
 Evans, A., Hyzhoriczuk, D., Lanphear, B.P. et al. The impact of low-level lead toxicity on school performance among children in the Chicago Public Schools: a population-based retrospective cohort study. *Environ Health* 14, 21 (2015). <https://doi.org/10.1186/s12940-015-0008-9>

45

- Large economic costs from the negative impacts on children’s developing brains from exposure to lead are borne by the affected children, their families and societies at large.
- IQ loss
- Special Education
- Behavior and crime
- Health care costs
 - Learning disabilities, growth stunting, seizures, coma, death costs

For every dollar spent on controlling lead hazards, \$17–\$221 would be returned in health benefits, increased IQ, higher lifetime earnings, tax revenue, reduced spending on special education, and reduced criminal activity.



46

San Diego
Pediatricians for
Clean Air helps
Montgomery
Gibbs
Environmental
Coalition

Journal of Community Health
https://doi.org/10.1007/s10900-023-01186-9

COMMENTARY



The Role of Physician Advocacy in Supporting Policy Change That Reduces Leaded Aviation Gasoline Emissions

Riley Gilbertson¹ · Elizabeth Friedman² · Vi Thuy Nguyen³ · Sandra Stahl⁴ · Rachel Ireland⁵

Accepted: 2 January 2023
© The Author(s), under exclusive licence to Springer Science+Business Media, LLC, part of Springer Nature 2023

Abstract

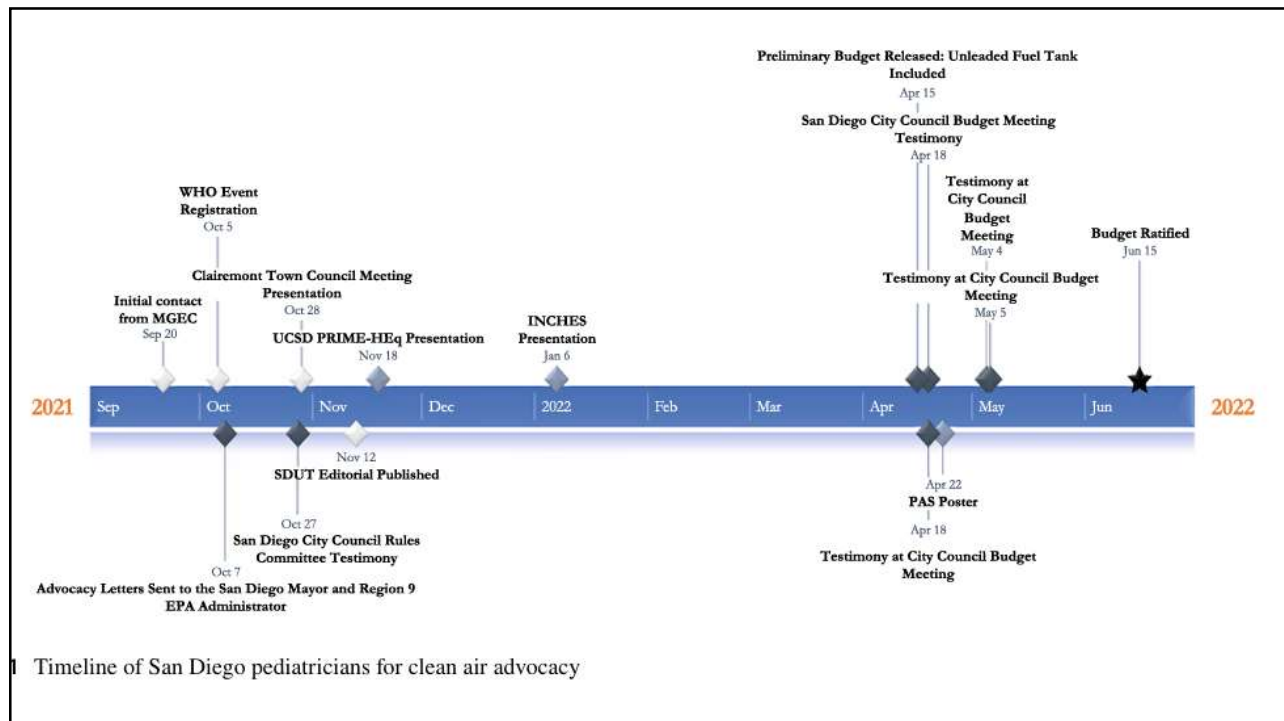
Background Leaded aviation gasoline (AvGas) accounts for 70%, or 935,082 pounds, of total lead emissions in the United States and has been repeatedly linked to elevated blood lead levels (BLLs) in those living in the vicinity of airports using AvGas. The well-established link between lead exposure and adverse health outcomes provided a platform ripe for environmental health advocates and pediatric health experts to assist a local environmental health organization in addressing lead waste from a local airport, Montgomery-Gibbs Executive Airport (MYF).

Method We detail the steps we took, as a physician clean-air advocacy group. We provide a qualitative analysis of our efforts in addressing leaded air pollution through targeted and creative environmental health advocacy through three main avenues: government, public awareness, and academia.

Objectives Our actions were taken to ensure the City of San Diego installed an unleaded fuel tank at MYF to reduce leaded aviation gasoline usage and subsequently lead air pollution in the surrounding area.

Discussion Ultimately, the identified objective of an unleaded fuel tank was added to the San Diego City budget and scheduled for construction. We hope our actions can serve as a framework to provide concrete steps for clinicians and other advocates to enact change in their communities.

47



48

Leaded AvGas Advocacy Team

AVIATION NEWS

California Legislature Passes Leaded Avgas Ban

California has passed the U.S.'s first leaded avgas ban effective in 2031.



RUSS NILES

Updated Aug 31, 2024 4:41 AM EDT



Photo by Daniel Spitzer



San Diego Pediatricians for Clean Air and AAP-CA3 Climate Change & Health

AAP-CA3 Committee Co-Chair

Vi Thuy Nguyen, MD
Julius Gonzalez, DO, MPH

SDPCA Leadership

Steven Peres, MD
Wynne Au
Siddhant Deshpande, MD

Mission Statement

AAP-CA3 Climate Change and Health Committee. Our mission is to

advocate for children's health and

well-being by addressing climate

change and its impact on children's

health. We will work to ensure that

children's health is a priority in all

climate change and public health

initiatives.

March 21, 2024

Re: Leaded avgas at Palomar Airport

To Whom It May Concern,

My name is Dr. Benjamin Strahler and I'm representing San Diego Pediatricians for Clean Air (SDPCA) and environmental advocates throughout San Diego county regarding the continued use of leaded AVGAS in our airports.

It is well established that there is NO safe level of lead. Lead (from leaded AVGAS) is the primary source of lead emissions in the United States today.

Research that use leaded AVGAS will lead into the air that is breathed in by children in nearby communities.

Due to their thin throats, children absorb lead in much higher degree than adults, and it accumulates over time in their body.

Though lower levels of lead may not cause any overt symptoms initially, over time lead can affect children's brain development, learning in school, behavior, and cognitive function. Research also shows that even very low-level educational attainment. The neurological and behavioral effects of lead are believed to be irreversible.

Lead exposure also damages other vital organs other than the brain. Lead exposure can lead to hypertension, kidney impairment, and damage the immune system.

There are no other available non-toxic leaded aviation fuel options currently. Though they may cost more, the investment is a small price to pay for the health and future wellbeing of children in our state.

We are strongly encouraging Palomar Airport to make the switch to unleaded AVGAS and protect the health and well being of our children. In health,
Benjamin Strahler MD, FAAP
Vi Thuy Nguyen MD, FAAP
Ethan Trinh, UC Riverside Pharmaceutical Student

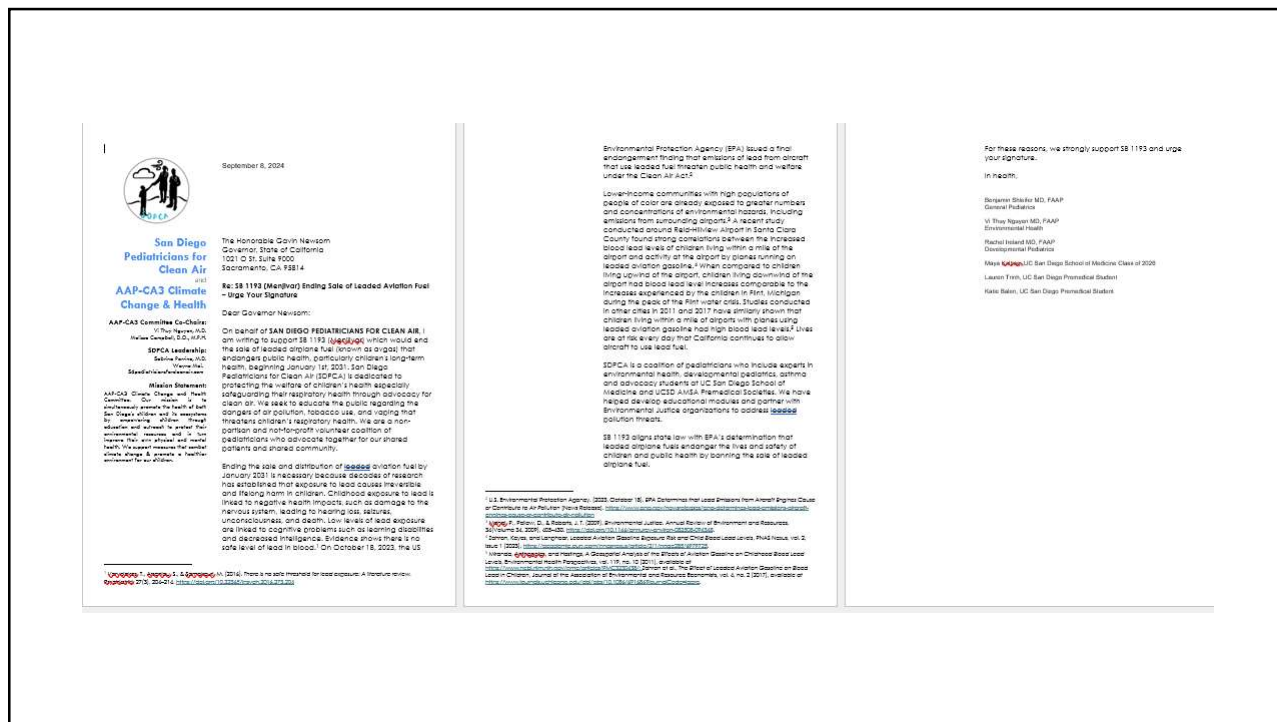


Protect your family from all sources of lead air pollution, including aircraft and shooting ranges
California Department of Public Health - 10/26/2023

WHO International Lead Poisoning Prevention Week: Cleaning Up California's School Drinking Water: The Lead Problem and the Advocacy Solutions
San Diego, California - 10/24/2023

Senate Bill 1193

Senate Bill 1193, which will phase out and ban the usage of leaded aviation gas, has passed and is now heading to Governor Gavin Newsom to sign. The bill was introduced in February by Senator Caroline Menjivar and plans to ban the sale of leaded avgas in disadvantaged communities by 2031, phasing it out over the next few years.



51



52



Case #3 E.L.

53

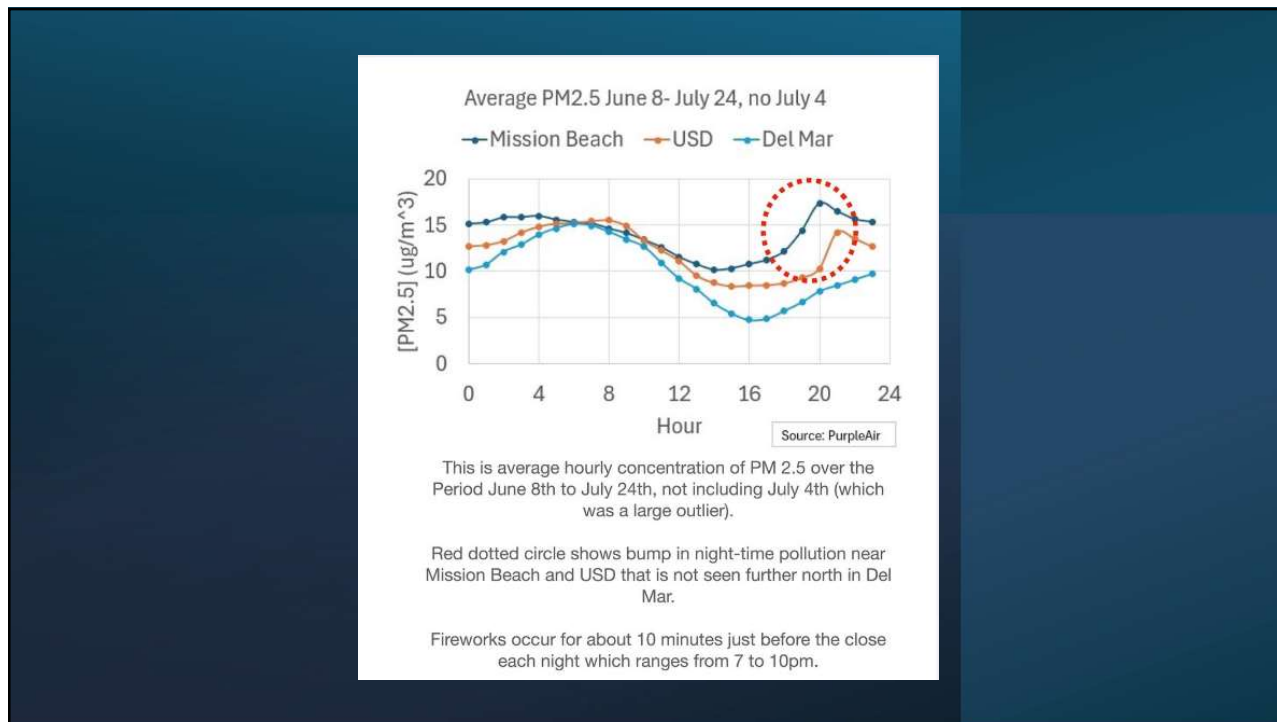
What Happened on July 4th in Mission Bay?

- Soaked carcasses of elegant terns washed ashore at Kendall-Frost Marsh Reserve (in Mission Bay)
- SeaWorld and Discover Mission Bay set off well over 500 lbs of explosives over the weekend



VOICEOFSDIEGO.ORG
Bird Nerds Take War Against Mission Bay Fireworks to Councilmembers
San Diego Councilmember Joe LaCava said the city Council Environment Committee would look into the alleged deaths of seabirds following Fourth of July fireworks in Mission Bay. "We'll talk with [...]"

54




55

Pyro-metallo-mania → Toddler Mania!!!

- Strong association between maternal exposure to particulate matter (PM) during pregnancy or early life of child and ASD risk
- **New studies show that both prenatal and postnatal exposure can harm kids**
- **Research suggests air pollution can influence childhood behavioral problems and even IQ**

56




NOW - SEPT. 2
Summer Spectacular

Celebrate SeaWorld's 60th anniversary with new shows like Shamu and Crew – Together Again and BMX Blast! Catch live music from Ginuwine, Jesse McCartney, and more at our Summer Concert Series. And be sure to end your night with our dazzling new Enchanted Wonders Fireworks spectacular!

[Learn More →](#)

Ok, Environmental Health **ADVOCATE** What do you prescribe?

Blackfish
PG-13 2013 · Thriller/Drama · 1h 30m Overview



57

PYRO-METALLO-MANIA

Sea World Fireworks Harm Birds and Toddlers




58



The San Diego Union-Tribune
Founded 1862

Fireworks by bay take a toll on birds and humans

By **Al Nguyen, Adam Aron & Andrew Meyer**

Standing on the beach near Legend Tower 23, you can hear the resonating murmur of the ocean waves, the party scene on the Pacific Beach boardwalk and, this year, the high-pitched calling of thousands of elegant terns. From across the water, elegant terns that nest on the ocean and nearby harbor islands on their 60th island in the heart of Mission Bay.

Approximately 8,000 pairs of elegant terns are nesting on the island for the first time anyone can remember, and it's a reminder that the other Mission Bay and a number of other species that nest a place to nest in the eye. It's a part on the back to all of that one Mission Bay that those terns chose the island as a nesting place because, and it's an opportunity to improve over time.

And so it is a horrible to use terns of elegant terns and eggs washed ashore on July 4, Mission Bay and a weekend full of music and parties near the beach. Instead, published research has already shown bird deaths following recreational fireworks use in other wetlands. The city has also permitted a 73-minute show on Aug. 13-14 that will restrict a protection tern nesting grounds.

However, it has been impacts on human health, especially for the families that live near Mission Bay. Publicly available data show that tiny inhalable particles of pollution – known as PM 2.5 – are released in quantities with diameters that are generally 2.5 micrometers and smaller. In our higher altitude climate, they are caught in the sea breeze from the ocean and freeway during the fireworks. According to the California Air Resources Board, these increased levels put nearby children at risk for asthma exacerbations, and adults at risk for pulmonary disease exacerbations and cardiac events. Pregnant women and toddlers are at particular risk, because the bright colors (including lead, a well-known carcinogen), have effects on childhood development. It has also been shown that PM 2.5 exposures early in life relate to a higher risk of later psychiatric experiences, anxiety and depression.

Another major problem with these fireworks is that they contribute to a visible air quality problem in San Diego. When hundreds of thousands of children are present in this highly populated area of fireworks, it's no wonder that they along their own air quality goals to implement the progressive goals on air quality in the Climate Action Plan. It is my wonder that they take no heed at the new fuel gas-powered turbines in the convention center.

requesting the most potent herbicides and pesticides that are still used for nearly all city landscaping crews, the way diesel and gasoline vehicles (they will) used by city crews – all of which contribute to San Diego being the eighth-worst city for air pollution in the U.S., according to the American Lung Association.

With the social normalization of this year's celebration by SeaWorld, can we really expect the public to construe the requests who are currently planning to spray a chemical insecticide into the atmosphere to deflect sunlight as a last-ditch strategy to counteract global warming?

Earth is being being a planet, where the health depends on the health of our oceans, including veterans, boys and species such as elegant terns. If we continue to degrade Earth, the well-being of our children in San Diego, we have the chance to improve in the future. Please let us stay away from World 4th Island while terns are nesting, investigate light show alternatives, and stop poisoning our oceans. It is the endeavor of San Diego Public Health for Children Air and the Pacific Beach Area, Ph.D., is a professor at UC San Diego and the director of ecological justice and lives in North Park. About the director of conservation at San Diego Bird Alliance (formerly known as San Diego Audubon Society) and lives in Pacific Beach.

Tijuana Sewage Crisis



SANDIEGOUNIONTRIBUNE.COM

Researchers studying sewage crisis pull out of South
County amid reported high levels of sewer gas

59

Case A.B. at Nestor

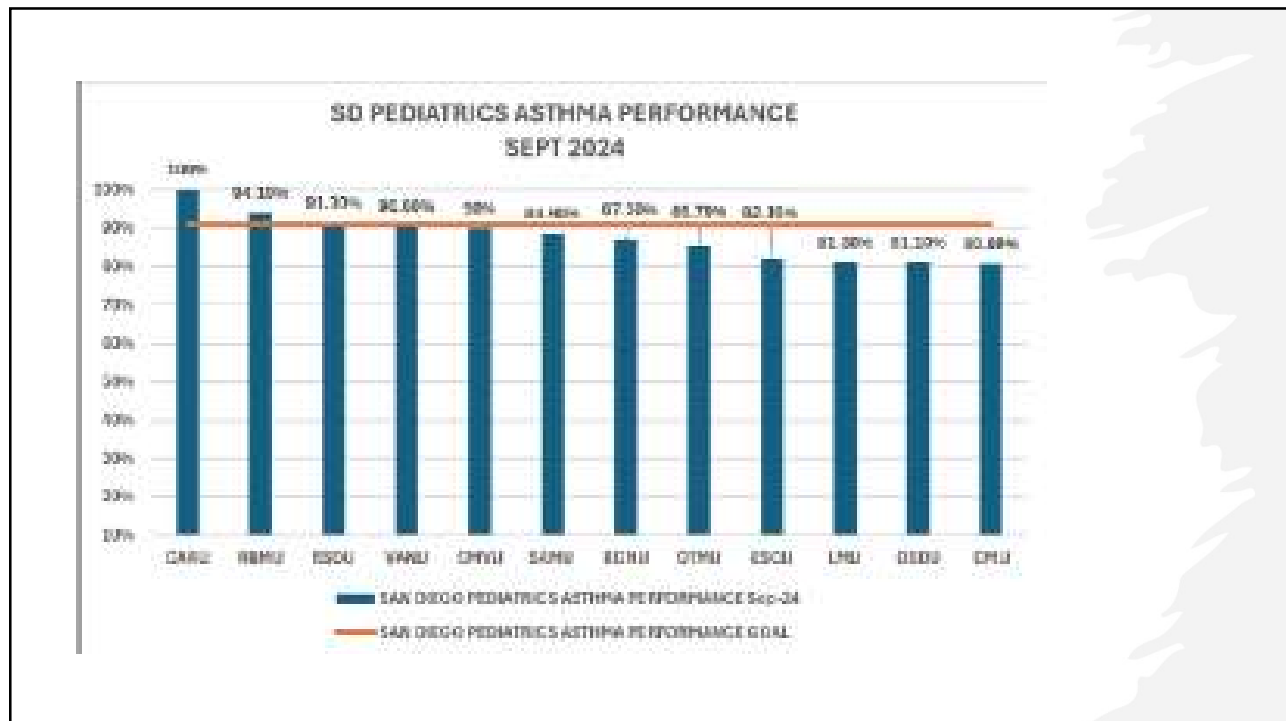
- A.B. is a 12 year old patient who attends Nestor Language Academy. Had albuterol and inhaler use when younger, but was off all inhalers for several years.
- 3 months ago noticed that she was coughing and wheezing more at night, and started using her siblings albuterol every day.
- Just finished azithromycin for pneumonia, which was the third antibiotic for that radiographic documented infection.
- They are here for their check up.
- They saw you on the news for the Tijuana Sewage Crisis.

60

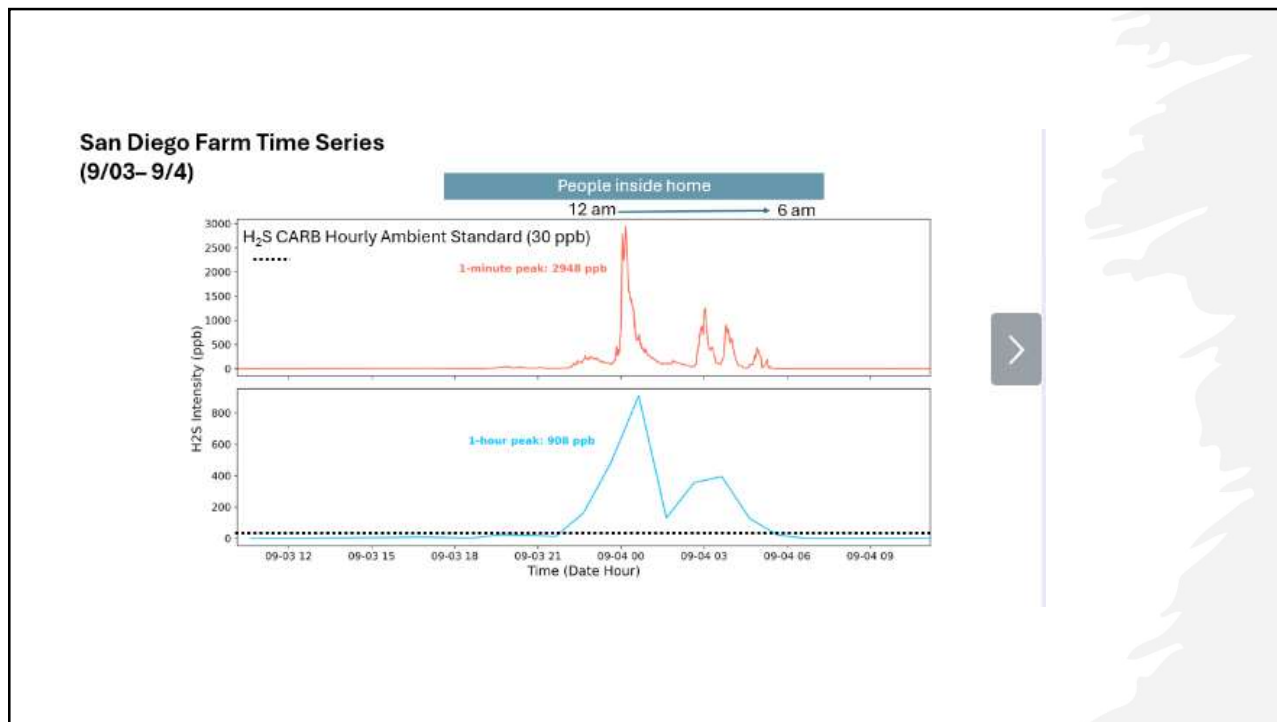
Case A.B. at Nestor

- A.B.'s grandmother also died this last June.
- She had pulmonary fibrosis, but was on the list for an air purifier but never received it.
- It was during the heat of the summer and the stench of the TJ sewage crisis.
- Mother wonders if this could be related?
- She said it happened, and grandmother had been sick for a long time.
- They are okay with you reporting this to public health.
- They saw your story about the air purifiers at SDAPCD.

61



62



63

Several pediatricians from San Diego Pediatricians for Clean Air and AAP Council for Environmental Health had been discussing with Professor Kim Prather the data her group has collected and the work that they are doing. It's sobering. The researchers are raising awareness and this article shows how sobering this is. It's so noxious and dangerous that the researchers are resorting to drones.

SANDIEGOUNIONTRIBUNE.COM
Researchers studying sewage crisis pull out of South County amid reported high levels of sewer gas

64

So grateful to [Anne Marie Birkbeck-Garcia](#) and your amazing leadership. Kiran Rhodes [Kalpana Singh Rhodes](#) for helping with public testimony and nerding out on hydrogen sulfide. And the 25 pediatricians mostly part of our Climate Change and Health Committee [American Academy of Pediatrics, CA Chapter 3 \(AAP-CA3\)](#). We were told our letter [you](#) made a difference. To everyone [Sara ValladolidSaloni](#) [Rao Damian Ng](#) [Andrei Fod](#) [René García](#) [Maricor Castillo](#) [Javier Dana](#) [Dana Goldberg](#) [Glass Heidi De...](#) See more



65

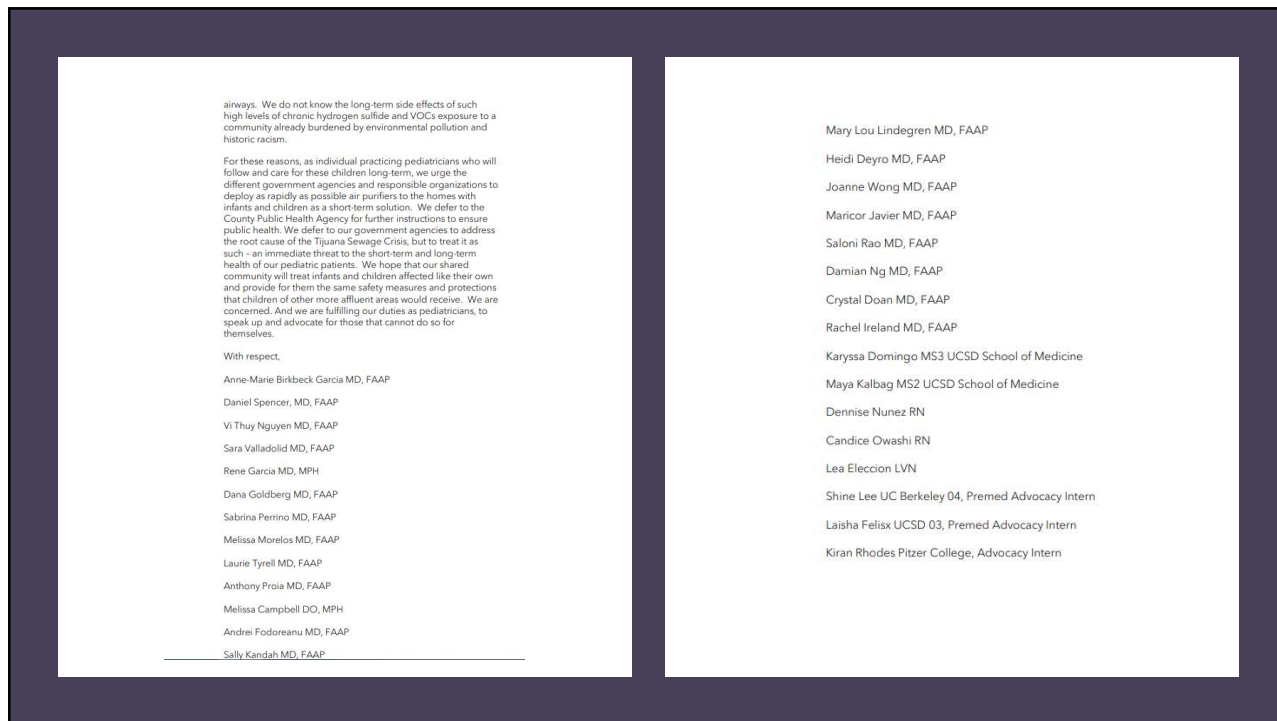
Grateful. Interview segments/snippets were used in two other ABC stories as well. More awareness and hopefully resources for our beleaguered region from the state and federal resources. Meeting officially with public health soon, they will come hear our clinic doctors. I'll go in on Sunday and review the southbay clinic asthma numbers and try to pinpoint by neighborhood and where the asthma flares are. But grateful to so many for their voices and leadership [Anne Marie Birkbec...](#) See more



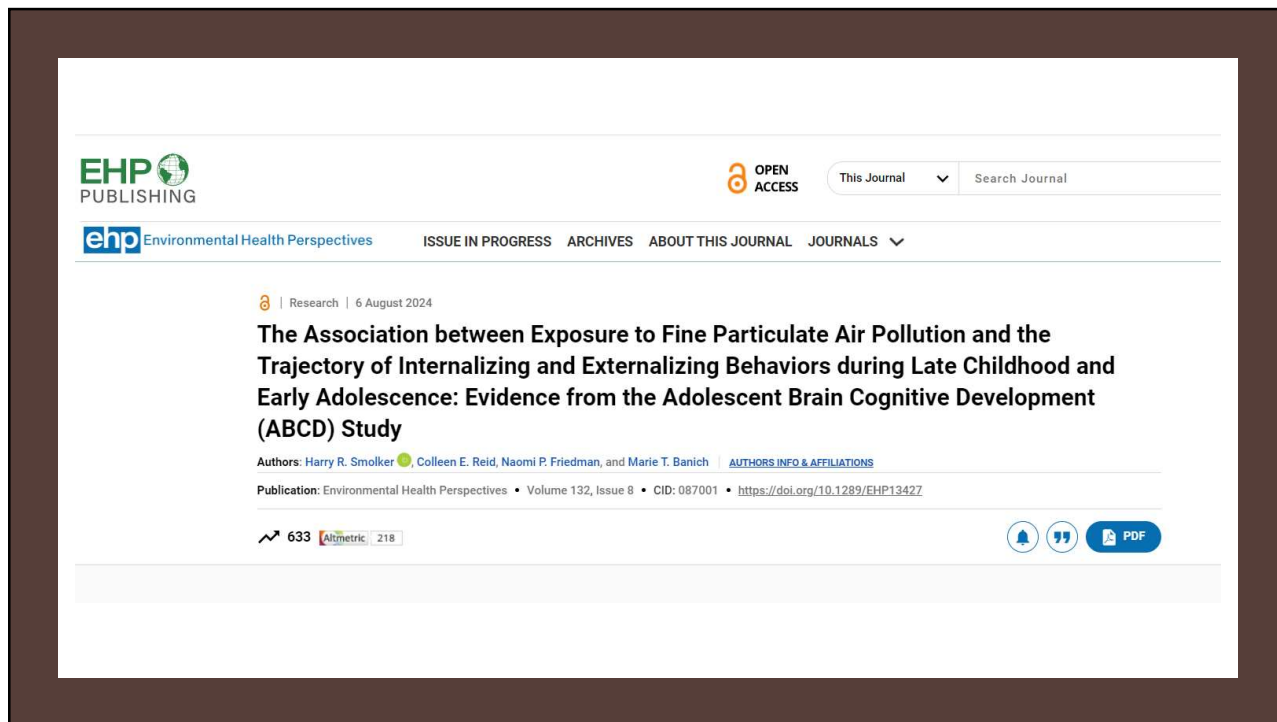
66



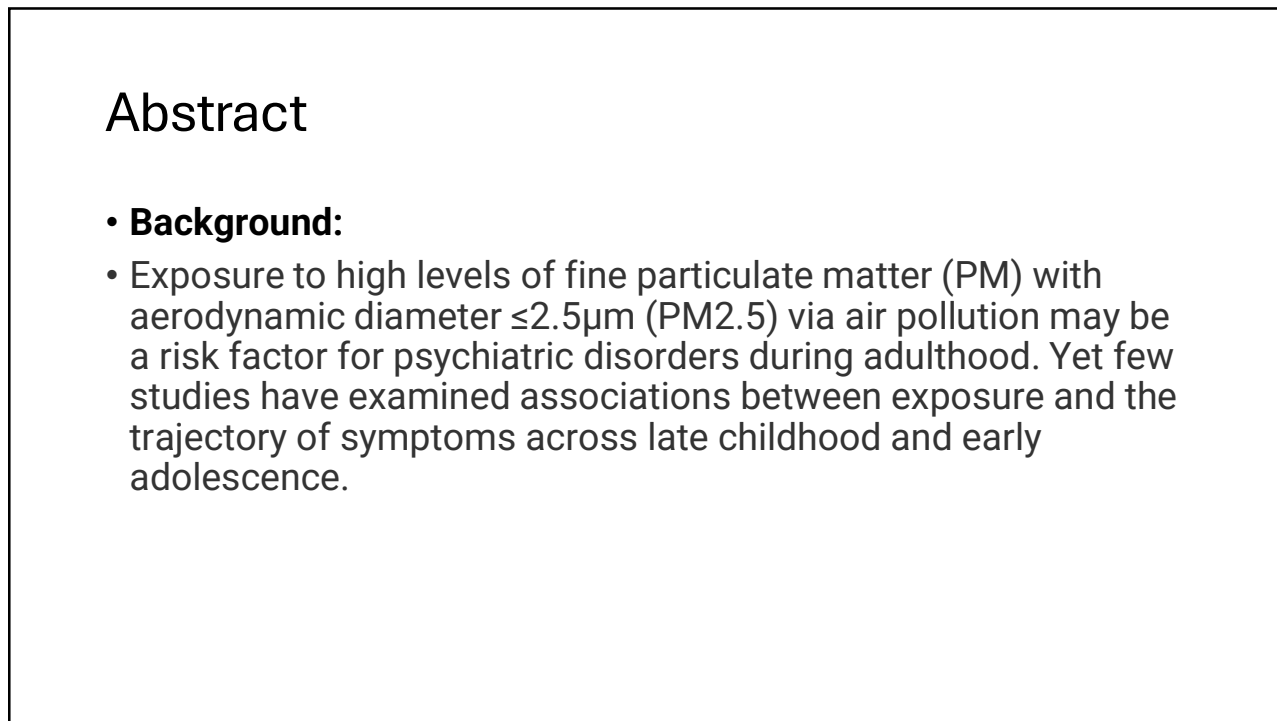
67



68



69



70

Abstract

- **Objective:**

- The current study evaluated whether PM2.5 exposure at 9–11 y of age affects both concurrent symptoms as well as the longitudinal trajectory of internalizing and externalizing behaviors across the following 3 y. This issue was examined using multiple measures of exposure and separate measures of symptoms of internalizing disorders (e.g., depression, anxiety) and externalizing disorders (e.g., conduct disorder), respectively.

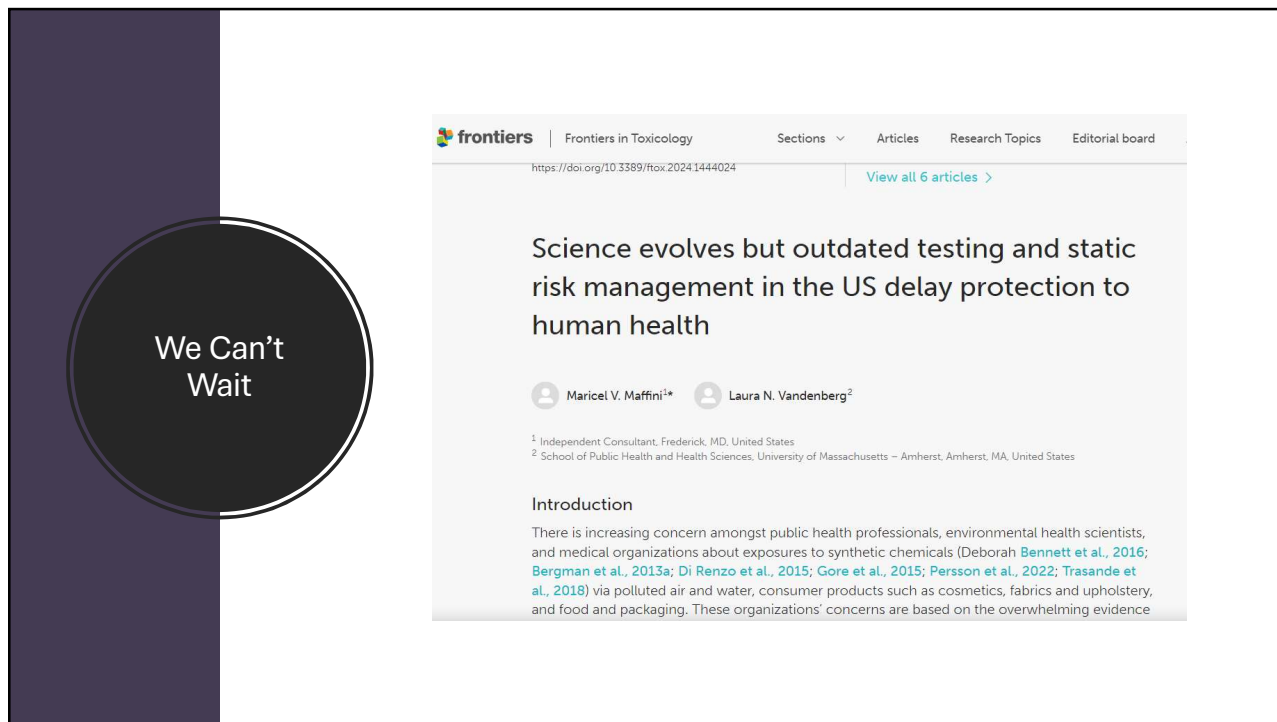
71

Abstract

- **Results:**

- At baseline, higher number of days with PM2.5 levels above US EPA standards was associated with higher parent-reported internalizing symptoms in the same year. This association remained significant up to a year following exposure and after controlling for PM2.5 annual average, maximum 24-h level, and informant psychopathology. There was also evidence of an association between PM2.5 annual average and externalizing symptom levels at baseline in females only.

72



We Can't Wait

frontiers | Frontiers in Toxicology | Sections | Articles | Research Topics | Editorial board

<https://doi.org/10.3389/ftox.2024.1444024> | [View all 6 articles >](#)

Science evolves but outdated testing and static risk management in the US delay protection to human health

Maricel V. Maffini^{1*} | Laura N. Vandenberg²

¹ Independent Consultant, Frederick, MD, United States
² School of Public Health and Health Sciences, University of Massachusetts – Amherst, Amherst, MA, United States

Introduction

There is increasing concern amongst public health professionals, environmental health scientists, and medical organizations about exposures to synthetic chemicals (Deborah Bennett et al., 2016; Bergman et al., 2013a; Di Renzo et al., 2015; Gore et al., 2015; Persson et al., 2022; Trasande et al., 2018) via polluted air and water, consumer products such as cosmetics, fabrics and upholstery, and food and packaging. These organizations' concerns are based on the overwhelming evidence

73

Take Away Points

- Chemical exposures happen through polluted air and water,
- There is overwhelming evidence showing associations between chemical exposures and adverse health outcomes in human populations.
- There are now thousands of studies showing associations between these chemicals and adverse health effects in humans including neurological disorders and learning disabilities, metabolic outcomes, infertility, thyroid dysfunction and cancers.

74

Take Away Points

- Many endpoints such as developmental neurotoxicity, immunotoxicity, endocrine disruption, and non genotoxic carcinogenicity lack appropriate assays to protect human health.
- There is inadequate risk management approaches and this leads to insufficient protections of human health
- International test guidelines focus on signs of acute toxicity rather than outcomes that are relevant to chronic diseases and conditions that are increasing in the human population.

75

Take Away Points

- Human studies finding associations between early life exposures to chemicals indicate that toxicity testing should focus on health-related outcomes rather than overt signs of toxicity.
- DDT and early breast cancer risk
- Perchlorate and diminished IQ in children.
- Bisphenol A and increased risk of asthma in children

76

Key QUOTE

- *The public is a powerful force to push regulators and the regulated community to address problematic chemicals. The role of civil society is especially critical when risk management decisions lag for years or lack sufficient teeth to protect the public health.*
- *Citizens have been willing to take action when academic studies and epidemiology findings reveal harmful effects of chemicals, even if those outcomes are not evaluated in traditional test guidelines or accounted for in an agency's risk assessment and risk management decisions.*

77

- **BREAKOUT SESSION!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!**

78

References (Incomplete, I can email you better references!!!)

- <https://www.niehs.nih.gov/health/topics/agents/air-pollution>
- <https://www.nrdc.org/stories/air-pollution-everything-you-need-know#effects>
- <https://www.aap.org/en/patient-care/environmental-health/promoting-healthy-environments-for-children/outdoor-air-pollutants/>
- <https://www.lung.org/clean-air/outdoors/who-is-at-risk>
- <https://www.airnow.gov/sites/default/files/2018-03/common-air-pollutants-2011-lo.pdf>

79

drvinguyen@yahoo.com



80