Air Pollution & Infant Mortality

The M-LEEaD Center's Community Engagement Core (CEC) increases awareness and understanding of environmental impacts on human health.

Stakeholder Advocacy Board members include:

- Community Health and Social Services
- Detroit Health Department
- Detroit Hispanic Development Corporation
- Detroiters Working for Environmental Justice
- Eastside Community Network
- Ecology Center
- Henry Ford Health System
- Michigan Environmental Justice Coalition
- We the People of Detroit

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An Awareness Call for Better Air Quality Policies to Improve Birth Outcomes in Michigan

Evidence suggests that air quality can play a role in adverse birth outcomes, including infant mortality, preterm birth, and low birth weight.[24] [25] [26] Women of color and low-income women and mothers experience higher exposures to air pollution, and this may increase their risk of poor birth outcomes.[1] [2] [3]

Babies born in Detroit are more likely to die in their first year of life compared with babies born in the nation as a whole.[4] Non-Hispanic Black babies have some of the lowest rates of survival.[5] Detroit has some of the highest levels of air pollution in the state of Michigan [6], and non-Hispanic Black and Hispanic or Latinx communities experience some of the highest levels.[22] Important sources of these pollutants are the large number of industrial facilities located in the area, and emissions from trucks traveling through the city daily to and from Canada.[23]

Strong environmental policies are needed to protect the public from air pollution and its associated health risks, including poor birth outcomes. These policies should focus on reducing primary sources of emissions, such as heavily trafficked roadways, diesel bus depots, waste incinerators, and industrial facilities.[7] They should also target the many types of air pollutants that have been linked with poor birth outcomes, including carbon monoxide, nitrogen dioxide, ozone, sulfur dioxide, polycyclic aromatic hydrocarbons, and particulate matter (PM_{10}, and $PM_{2.5}$).[8]

Given the wide spread nature of air pollution, even small improvements can reduce poor birth outcomes.[9] Moreover, efforts to improve air quality are not only important in order to improve health in early life, but also to reduce other diseases during childhood[10] [11] and adulthood.[12]

Implications and Recommendations

The patterns are clear. Air pollution is linked to poor birth outcomes, and low- income women and women of color are affected more. Policies that protect women and their children from the health effects of air pollution are an important part of efforts to improve birth outcomes in Michigan. Public health principles call for universal protections from toxins that threaten the basic right to clean air, regardless of race, ethnicity or socioeconomic status.[14]
There are many specific policies that can reduce air pollution and its harmful impacts on birth outcomes in Michigan, as described below.

Create a greener infrastructure

- Build new sources of pollution, such as bridges and highways, at a distance from homes and schools, especially those that are already located near pollution sources. This preventive action could help to reduce exposures, especially among those already experiencing high levels of exposure.[15]
- Improve cycling and pedestrian infrastructure (e.g., sidewalks, bike lanes). Research in the upper Midwestern U.S. indicates that if 50% of short trips were made by bicycle or on foot, the region could reduce particulate matter and ozone, and improve health outcomes.[16]
- Plant more local greenery, which removes pollution from the air.[17] Vegetative buffers are areas with trees, shrubs, and other plants, and can act as barriers between the source of air pollution and local communities.[18]

Advocate for technology that reduces pollution

- Reduce traffic congestion and idling. Traffic is a significant risk to fetal health. Women exposed to high traffic pollution face a higher risk of preterm birth and low birth weight.[19] Reductions in traffic congestion and idling, for example, installation of E-Z passes on toll roads, have been shown to have positive effects on birth outcomes.[20]
- Promote cleaner sources of energy, such as solar or wind energy to replace coal burning power plants.
- Require technologies that reduce emissions from trucks and buses, such as diesel engine retrofits and electric energy for rail and industry.

Advocate for stricter air pollution standards and enforcement of existing standards

- Advocate for review of air pollution standards to determine whether they adequately protect developing fetuses, infants and children. For example, the California Environmental Protection Agency determined that the current PM10 standards are inadequate to protect against low birth weight and premature birth.[21]
- Advocate for adequate enforcement of new and existing standards.

Increase Environmental Education

- Increase awareness of links between environmental factors and reproductive health among program staff implementing infant mortality reduction incentives, and among local residents.

For information on adverse birth outcomes and health problems associated with exposure of the developing fetus to air pollution, visit http://www.sph.umich.edu/niehs/files/factsheets/eng/AirPollutionandEarlyDevelopment.pdf

Key Points

- Infant mortality rates are disproportionately high among non-Hispanic Black infants.
- Research finds air pollution is linked to infant mortality, as well as low birth weight and preterm birth -both of which contribute to infant mortality risk.
- Strengthening and enforcing policies to prevent air pollution may represent a new strategy for moving the needle on infant mortality.
- This issue is very important in Detroit and southeast Michigan, where many communities– particularly communities of color -experience poor birth outcomes and poor air quality.
- Policies to protect populations from air pollution include creating a greener infrastructure, advocating for technology that reduces pollution, creating stricter air quality standards and enforcing existing standards, and increasing environmental education.

Please see http://mleead.umich.edu/Coec_Fact_Sheets.php for the citations included in this factsheet.

The University of Michigan Lifestage Environmental Exposures and Disease Center (M-LEEaD) Community Engagement Core (CEC) promotes collaboration among UM environmental health researchers and communities to advance knowledge of environmental health issues that affect community members in Detroit and Southeast Michigan.

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