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Peer-Reviewed Study Documents High Asthma Prevalence and Poor Control Among Children Residing Near Outdoor Air Pollution Sites in Allegheny County

A peer-reviewed study conducted by Community Partners in Asthma Care Medical Director Dr. Deborah A. Gentile shows children in Allegheny County living near major pollution sources had nearly triple the prevalence of asthma as compared with the national average rate of asthma in children. The study, published in *Journal of Asthma*, documented some serious public health concerns about children residing near sources of pollution, especially African American children and children living in poverty in Allegheny County.

The article presents the findings of the 2014-2017 study, Surveillance and Tracking of Asthma in our Region's Schoolchildren (STARS), conducted while Dr. Gentile was at Allegheny Health Network. STARS screened more than 1,200 children at fifteen elementary schools, including schools in Clairton and Braddock, Pa. The findings showed that the overall presence of asthma was 22.5%, nearly triple the national rate of 8.5% reported by the Center for Disease Control (CDC). The study also noted the highest rate of asthma was among African American children in these communities at 26.8%. Clearly, children living near smokestack pollution bear a disproportionate burden of exposure and negative health impacts.

Children in these communities experienced much higher rates of pollution exposure than the national averages and above thresholds recommended by the U.S. Environmental Protection Agency (EPA) and the World Health Organization (WHO).

- Of the 1,200 children in the study, 70% were exposed to PM 2.5 fine particle pollution at an annual mean level greater than 10 ug/m³, which is the World Health Organization's recommended upper limit of annual average exposure. This compares with 3.1% rate of exposure nationally at this same level. This rate of exposure is alarmingly high.
- Children exposed to pollution levels above this 10ug/m³ threshold increased their odds of having asthma by 58% as compared with children exposed to pollution below this WHO recommended limit.
- Of this same sample, 38.9% of the participating children were exposed to PM 2.5 fine particle pollution at an annual mean level greater than 12 ug/m³, which is the U.S. EPA's

compliance limit (averaged over three years) prescribed in the Clean Air Act and enforced locally by the Allegheny County Health Department (ACHD).

Children in the study lived in Clairton, Woodland Hills, Allegheny Valley, Northgate and Gateway school districts. Many of the children lived in environmental justice communities with a high percentage of low income and African American families. The study foregrounds the health inequalities that exist between African American and other children. Overall prevalence of asthma in the study was highest among African Americans (26.8%) and those 10-12 years of age (26.7%) on public health insurance.

“The persistence of inequities across our region show up in the most vulnerable populations, our children,” said Jamil Bey, director of the UrbanKind Institute and convener of the Black Environmental Collective. “The children of families in closest proximity to the polluters, with fewer resources to relocate, make regular doctor’s visits, and pro-actively manage asthma – these children bear the burden of the region’s lax pollution control and enforcement laws.”

The study also documented that 59.3% of children with asthma had uncontrolled disease, meaning they experienced asthma symptoms throughout the day and night and could not perform daily activities, including exercise, without shortness of breath, coughing or wheezing. Female children whose pollution exposure exceeded the 10ug/m³ standard were nearly five times more likely to have uncontrolled asthma than females whose exposure was less than the standard.

“It’s not just the children, but the effects of pollution generationally,” said Cheryl Hurt, a lifelong resident of Clairton who runs a daycare center in the community. “We need to reduce the hazardous particles that are making it harder for us to breathe and are killing us. It starts at the top, the federal, state and local governments are not doing enough about this age-old problem.”

The authors attempted to find a control group of children that matched the demographic profile of the group of children included in the study but were not exposed to large point source outdoor air pollution (OAP) sources; however, no such communities existed in Allegheny County. All residential locations within Allegheny County whose demographic profile was similar to that of the study population resided in close proximity to OAP sites. This finding further documents that African Americans in Allegheny County are much more likely to reside near OAP sites.

“Pittsburgh remains a challenging region in which to live with asthma due to both the high disease prevalence and exposure to high levels of outdoor air pollution,” said Dr. Gentile, also medical director of Allergy and Asthma Wellness Centers. The Asthma and Allergy Foundation of America (AAFA) ranked Pittsburgh 54th out of 100 overall worst cities to live with asthma and 6th worst among 100 cities for high levels of OAP.

At the time of the study, pollution affecting the communities came from the U.S. Steel Edgar Thompson Works in Braddock, U.S. Steel Clairton Coke Works in Clairton, the now dismantled

DTE Energy Shenango Coke Works on Neville Island, NRG Cheswick Generating Station and the Monroeville Pennsylvania Turnpike Junction.

“The results of this study emphasize the importance of primary prevention – interventions before health effects occur – specifically, reductions in exposure to air pollution, to decrease the disparities in asthma prevalence in our region,” said Gentile. “Disparate children in our region, particularly African American children, are exposed to harmful levels of air pollution that are associated with increased asthma prevalence. We must stop these harmful levels of pollution.”

“This data should shock everyone in our community out of any sense of complacency about the damage caused by industrial pollution,” said Grant Oliphant, President of The Heinz Endowments, which provided funding for the study. “There is no excuse for continuing to expose our children to this level of harm when it could be so easily reduced through more stringent regulation, stronger enforcement and better compliance. We need to demand better.”

The accepted manuscript of the article can be accessed: <https://bit.ly/34U3LQa>

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