

## **Racial and Economic Disparities in Exposure to and Health Effects Associated with Air Pollution: Recent Research Related to Environmental Justice\***

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**Abstract.** Despite nationwide reductions in ambient air pollution levels in recent decades, some criteria air pollutants (fine particulate matter (PM<sub>2.5</sub>), ozone (O<sub>3</sub>)) continue to cause morbidity and mortality, particularly among specific racial/ethnic and socioeconomic groups. Cumulative effects of racist policies and the stress of experiencing structural racism likely contribute to this disparity. Here, we summarize recent research related to air pollution and environmental justice that (1) examines disparities in exposure to air pollution based on race/ethnicity or poverty status, (2) evaluates associations between air pollution and health effects in minoritized or disadvantaged communities, or (3) characterizes disparities in associations between air pollution exposure and health effects based on race/ethnicity or income.

Recently, we observed disparities in exposure from PM<sub>2.5</sub>-emitting facilities at multiple geographic scales (e.g., national, state, county); these disparities are more pronounced based on race/ethnicity than are disparities based on poverty status. Exposure due to PM<sub>2.5</sub> emitted by coal-fired power plants specifically was greatest among those below poverty. Changes due to reduced operations of some coal-fired power plants suggest a shift in exposure from White to Nonwhite subgroups.

We are also utilizing data from existing cohort studies focused on minoritized or disadvantaged communities. Studies using data from the Jackson Heart Study provide evidence of positive associations between long-term PM<sub>2.5</sub> and O<sub>3</sub> exposure and diabetes, and O<sub>3</sub> exposure and increased blood pressure and decreased renal function among African Americans. We are also examining the association between long-term air pollution exposure and hypertension among American Indian participants in the Strong Heart Study, and between air pollution exposure and inflammatory markers among American Indian (Lumbee) women in North Carolina.

Ongoing and planned research evaluates differences in the associations between air pollution and adverse birth outcomes by a combination of individual- and neighborhood-level indicators of race and poverty, including redlining, mortgage denial, and neighborhood deprivation, as well as collaborations with EPA regional offices to evaluate whether air pollution mitigation efforts are improving health in environmental justice communities.

Together, this body of evidence will provide new insights into the impact of air pollution in environmental justice communities.

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