



# RACE, COVID-19 & AIR POLLUTION

## WHAT IS THE CONNECTION?



Today we're experiencing a series of crises — systemic racism, the COVID-19 pandemic and debilitating levels of air pollution from wildfires — compounding the impact of each, especially when it comes to health. Research also shows health problems associated with these issues have one thing in common: poverty. In the United States, Indigenous, Black and Latino people are 2 to 2.5 times more likely to be poor than whites. Race has a profound impact on class, which affects opportunities from education and housing to jobs and health.



For the better part of a century, racism through redlining and lending in the housing market have pushed poor people of color into areas that lack the resources and political clout needed to prevent pollution where they live and work. These communities typically shoulder more of the burden of bad air because they're near highways, factories and dumps, exposing people to pollution for extended periods of time. Brown and black people already tend to have higher levels of chronic disease like asthma and hypertension, live in food deserts and lack adequate health care or good paying jobs, all of which amplify the impact pollution has on health.



It's this unequal burden of air pollution that has emerged as one of the main reasons the novel coronavirus has hit Black, Indigenous, People of Color (BIPOC) hardest. Research shows long-term exposure to urban air pollution increases vulnerability to COVID-19, especially for those with underlying health conditions. Many pre-existing conditions that increase the risk of death in people with COVID-19 are the same diseases affected by long-term exposure to air pollution.

## BREAKING IT ALL DOWN

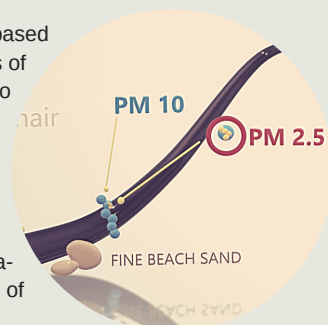
### Air pollution is harmful

1

**Fine Particulate Matter (PM 2.5):** PM 2.5 is one of six pollutants with health-based standards. It's a fine inhalable particle made of dust, dirt, soot, smoke or drops of liquids. These particles are 30 times smaller than a single strand of hair. Due to their small size, the particles can travel to the base of the lung and enter the bloodstream.

**Ozone (O3):** Ozone is a highly reactive gas. Ground-level ozone forms when sunlight and certain types of air pollutants (volatile organic compounds and nitrogen oxides) chemically react. Ozone is the basis of smog.

**Nitrogen dioxide (NO2):** NO2 is a nitrogen oxide that forms with high temperature burning of coal, oil, gas or diesel. In the United States, the highest levels of NO2 are in urban areas.



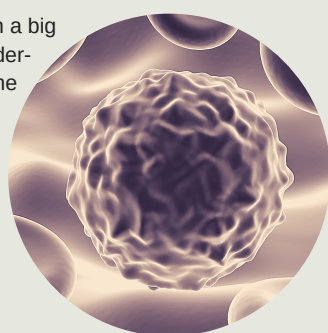
### Bad air is associated with COVID-19 deaths

2

A small increase in long-term exposure to urban air pollution is associated with a big increase in death from COVID-19. Scientists think this is most likely due to underlying health problems related to air pollution. Air pollution can damage cilia, the hair-like structures that line the respiratory tract to keep dirt and mucus out of the lungs. Air pollution can also damage cellular structures and lead to inflammation throughout the body. This damage is linked to health problems like:

- Cancer
- Heart disease
- Lung disease
- Diabetes
- Asthma

All of these conditions are potential comorbidities for COVID-19 and associated with increased risk of death from the virus.



### Racism kills

3

Air pollution disrupts the normal functioning of the immune system. When people are exposed to high levels of air pollution, it's harder for the body to kill and clear virus-infected cells. We're just beginning to understand how these relationships coalesce and how our bodies are able to fight COVID-19 and its effects on the lungs.

In one of the best studies on this topic to date, researchers from Emory University compared national exposure data on three pollutants: PM 2.5, ozone and nitrogen dioxide (NO<sub>2</sub>). While PM 2.5 and ozone weren't linked to significantly higher rates of COVID-19 mortality, NO<sub>2</sub> saw an increase of 11.3 percent and 16.2 percent respectively in case fatality and mortality rates. The scientists estimated that lowering NO<sub>2</sub> exposure by just 4.6 parts per billion from January to July 2020 would have prevented 14,672 deaths among those who tested positive for the virus.

Many factors contribute to health disparities from COVID-19. Blacks and Latinos live in areas with higher exposure to air pollution, and evidence now shows these exposures may intensify COVID-19's risks. The toll long-standing systemic health and social inequities have had on these communities is obvious to see. Had all things been equal in the first six months of the COVID-19 pandemic, roughly 19,500 Black, 8,400 Latino, 600 Indigenous, and 70 Pacific Islander Americans would still be alive today.

