Dirty city air killed more than 1.8 million people globally in 2019

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Cities worldwide are shrouded with air pollution – and it's killing people.

A new modeling study found that 86% of people living in cities throughout the world – a total of 2.5 billion people – are exposed to fine particulate matter at levels that exceed the World Health Organization's 2005 guidelines.

In 2019, this urban air pollution led to 1.8 million excess deaths, according to the study published Jan. 5 in *The Lancet Planetary Health* journal.

PM2.5, a fine particulate matter with a diameter of 2.5 micrometers or less, is the leading environmental risk factor for disease. Inhaling this increases the risk of premature death from cardiovascular disease, respiratory disease, lung cancer and lower respiratory infection, researchers say in background notes."

"The majority of the world's urban population still live in areas with unhealthy levels of PM2.5," said Veronica Southerland, of George Washington University in Washington, D.C., lead author of the study. "Avoiding the large public health burden caused by air pollution will require strategies that not only reduce emissions but also improve overall public health to reduce vulnerability."

The new study expands on PM2.5 research in megacities, including 13,000 cities globally between 2000 and 2019.

Investigators found that average population-weighted PM2.5 concentration across all urban areas globally was 35 micrograms per cubic meter in 2019, with no change from 2000 and equivalent to seven times 2021 WHO guidelines.

The team estimated that 61 in every 100,000 deaths in urban areas was attributable to PM2.5 in 2019.

About 55% of the world's population lives in cities. Looked at individually, some areas saw increases and decreases.

Southeast Asia saw a 27% increase in average population-weighted PM2.5 concentration between 2000-2019. Deaths attributed to PM2.5 increased by 33% over those years, from 63 to 84 in 100,000 people.

African cities had an 18% decrease in PM2.5 concentrations, European cities had a 21% decrease and North and South American cities had 29% decreases. This, however, did not correspond to the same level of decreases in PM2.5-attributable death rates on their own. This means that other demographic factors, such as an aging population and poor general health, are influential drivers of pollution-related death rates, the authors said.

This study did not assess other health burdens attributable to PM2.5, including low birth weight, premature birth and cognitive impairment.

More information: The U.S. Environmental Protection Agency has more on PM2.5.

"Global urban temporal trends in fine particulate matter and attributable health burdens: estimates from global datasets," *Lancet Planetary Health*, DOI: 10.1016/S2542-5196(21)00350-8 , www.thelancet.com/journals/lan … (21)00350-8/fulltext

"Long-term trends in urban NO2 concentrations and associated pediatric asthma incidence: estimates from global databases,", *Lancet Planetary Health*, DOI: 10.1016/S2542-5196(21)00255-2 , www.thelancet.com/journals/lan … (21)00255-2/fulltext