

Air pollution caused 1 out of 5 deaths in 2018—that's more than 8 million, study says

February 11 2021, by Katie Camero



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Microscopic, and sometimes larger, particles of soot, smoke and dust that spew out of gas-guzzling factories, ships, cars and aircraft are responsible for 18% of total global deaths in 2018—that equals more

than 8 million people, a new study found.

That number far surpasses previous estimates of the amount of people killed globally by all types of air pollution, including dust and smoke from wildfires and agricultural burns. The most widely accepted estimate stands at 4.2 million, according to a Harvard University news release.

But the researchers from Harvard and several other institutions in England wanted to learn how many global deaths could be tied to pollution from the burning of fossil fuels alone.

So, they collected pollution emissions and meteorology data from 2012—a year not influenced by a climate phenomenon called El Niño that can naturally worsen air pollution in some regions—and dropped that into a global 3-D model.

A study on the findings was published Tuesday in the journal *Environmental Research*.

"Often, when we discuss the dangers of fossil fuel combustion, it's in the context of CO₂ and [climate change](#) and overlook the potential health impact of the pollutants co-emitted with [greenhouse gases](#)," study co-author Joel Schwartz, a professor of environmental epidemiology at the Harvard T.H. Chan School of Public Health, said in a news release.

"We hope that by quantifying the health consequences of fossil fuel combustion, we can send a clear message to policymakers and stakeholders of the benefits of a transition to alternative energy sources."

Past research on global deaths due to air pollution has relied on satellite and surface observations that cannot differentiate where particles came from, such as from fossil fuels or wildfires. "With [satellite data](#), you're

seeing only pieces of the puzzle," said study co-author Loretta Mickley, a senior research fellow in the Harvard John A. Paulson School of Engineering and Applied Sciences.

The researchers attempted to overcome this issue by integrating data on atmospheric chemistry driven by everyday weather and climate patterns with estimates of emissions from multiple sources such as power plants, ships, aircraft and ground transportation.

This model, called GEOS-Chem, also allowed the scientists to divide the world into grid-like boxes to accurately map pollution levels in individual regions, "so we could know more exactly what people are breathing," study first author Karn Vohra, a graduate student at the University of Birmingham in England, said in the release.

The team then developed a separate "risk assessment" model to understand how these pollution levels affect people's health across the globe.

They found that more than 8 million people died in 2018 from fossil fuel pollution, or a little less than one out of five people. Regions with the most greenhouse gas emissions were Eastern North America, Europe and South-East Asia, the release said.

Particulate matter from fossil fuel [pollution](#) can lead to significant health problems such as nonfatal heart attacks, irregular heart beat, asthma and premature death in people with heart or lung disease, according to the Environmental Protection Agency.

And the smaller the particles, the more danger they pose "because they can get deep into your lungs, and some may even get into your bloodstream," the EPA said.

More information: Karn Vohra et al. Global mortality from outdoor fine particle pollution generated by fossil fuel combustion: Results from GEOS-Chem, *Environmental Research* (2021). DOI: 10.1016/j.envres.2021.110754 , www.sciencedirect.com/science/.../S0013935121000487

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Citation: Air pollution caused 1 out of 5 deaths in 2018—that's more than 8 million, study says (2021, February 11) retrieved 2 May 2024 from <https://phys.org/news/2021-02-air-pollution-deaths-2018that-million.html>

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