

# Exposure to air pollution linked to increased risk of stroke within 5 days

September 27 2023

---



Credit: Unsplash/CC0 Public Domain

Short-term exposure to air pollution may be linked to an increased risk of stroke, according to a meta-analysis published in the September 27, 2023, online issue of *Neurology*. Short-term exposure was defined as occurring within five days of the stroke.

"Previous research has established a connection between long-term

exposure to air pollution and an increased risk of stroke," said study author Ahmad Toubasi, MD, of the University of Jordan in Amman. "However, the correlation between [short-term exposure](#) to air pollution and stroke had been less clear. For our study, instead of looking at weeks or months of exposure, we looked at just five days and found a link between short-term exposure to air pollution and an increased risk of stroke."

The [meta-analysis](#) involved a review of 110 studies that included more than 18 million cases of stroke. Researchers looked at pollutants such as nitrogen dioxide, ozone, [carbon monoxide](#) and sulfur dioxide.

They also looked at different sizes of particulate matter, including PM1, which is air pollution that is less than 1 micron ( $\mu\text{m}$ ) in diameter, as well as PM2.5 and PM10. PM2.5 or smaller includes inhalable particles from motor vehicle exhaust, the burning of fuels by [power plants](#) and other industries as well as forest and grass fires. PM10 includes dust from roads and construction sites.

People who had exposure to a higher concentration of various types of air pollution had an increased risk of stroke. Higher concentrations of nitrogen dioxide were linked to a 28% increased risk of stroke; higher ozone levels were linked to a 5% increase; carbon monoxide had a 26% increase; and sulfur dioxide had a 15% increase. A higher concentration of PM1 was linked to a 9% increased risk of stroke, with PM2.5 at 15% and PM10 at 14%.

Higher levels of air pollution were also linked to higher risk of death from stroke. Higher concentrations of [nitrogen dioxide](#) were linked to a 33% increased risk of death from stroke, [sulfur dioxide](#), a 60% increase, PM2.5, a 9% increase and PM10, a 2% increase.

"There is a strong and significant association between air pollution and

the occurrence of stroke as well as death from stroke within five days of exposure," Toubasi said. "This highlights the importance of global efforts to create policies that reduce [air pollution](#). Doing so may reduce the number of strokes and their consequences."

A limitation of the meta-analysis was most of the studies were conducted in high-income countries, while limited data was available from low- and middle-income countries.

**More information:** Ahmad Toubasi et al, Short-term Exposure to Air Pollution and Ischemic Stroke: A Systematic Review and Meta-analysis, *Neurology* (2023). [DOI: 10.1212/WNL.0000000000207856](https://doi.org/10.1212/WNL.0000000000207856).  
[n.neurology.org/content/early/.../WNL.0000000000207856](https://www.neurology.org/content/early/.../WNL.0000000000207856)

Provided by American Academy of Neurology

Citation: Exposure to air pollution linked to increased risk of stroke within 5 days (2023, September 27) retrieved 28 April 2024 from <https://medicalxpress.com/news/2023-09-exposure-air-pollution-linked-days.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--