

Air pollution causes increased emergency department visits for heart and lung disease

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The study found that primary pollutants, such as those emitted from car exhaust, were associated with emergency department visits for cardiovascular and respiratory diseases. Credit: Photo by Alexander Popov on Unsplash

Outdoor air pollution is a major health threat worldwide. New research

by George Mason University found that exposure to certain air pollutants is linked to increased emergency department (ED) visits for respiratory and cardiovascular diseases.

Mason Assistant Professor of Global and Community Health Dr. Jenna Krall led the research with colleagues from Emory University, Georgia Institute of Technology, and the University of Pittsburgh. They found that exposure to pollutants such as ground-level ozone and nitrogen oxides, which are created from [burning fossil fuels](#), led to increased ED visits. The study was published online in August and will appear in the November issue of *Environment International*.

"We found that primary pollutants—those that are emitted directly from a source, such as car exhaust—were associated with ED visits for cardiovascular and respiratory diseases," explains Krall. "Additionally, secondary pollutants—those that are formed through chemical reactions in the air—were linked to ED visits for [respiratory diseases](#)."

While most past studies were conducted on a single-city level, this study looked at pollution across five cities—Atlanta, Birmingham, Dallas, Pittsburgh, and St. Louis. The researchers analyzed the associations between cardiorespiratory ED visits and twelve major air pollutants to examine short-term changes in [health](#) as pollution varies on a daily basis. "By looking at the five cities, we hope to get a better sense of how these associations hold in general, instead of for individual cities," Krall noted.

This is also one of first multicity studies to look at multiple [air pollutants](#), including gases and particles, and multiple causes of ED visits, such as asthma and stroke. It is a larger and more comprehensive study than previous work that has commonly looked at one pollutant and multiple health outcomes, or multiple pollutants and one health outcome.

"Down the line, this research has implications for how we think about

future pollution regulations because the way we regulate pollutants might differ between primary and secondary [pollution](#)," explains Krall.

More information: Jenna R. Krall et al, A multicity study of air pollution and cardiorespiratory emergency department visits: Comparing approaches for combining estimates across cities, *Environment International* (2018). [DOI: 10.1016/j.envint.2018.07.033](https://doi.org/10.1016/j.envint.2018.07.033)

Provided by George Mason University

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