

Polluted air means more asthma attacks for urban kids, says new study

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Air pollution may trigger more asthma attacks in urban children and

teens, a new study reports. Even moderate levels of ozone and fine airborne particulates—two ingredients of smog—appear to increase kids' risk of asthma attacks, according to findings published online in [The Lancet Planetary Health](#) journal.

"The strong association this study demonstrates between specific air pollutants among children in impoverished urban communities and non-viral [asthma attacks](#) further augments the evidence that reducing [air pollution](#) would improve human health," said Dr. Hugh Auchincloss, acting director of the U.S. National Institute of Allergy and Infectious Diseases (NIAID).

The study also tied the two pollutants to distinct changes in children's airways that could trigger an [asthma attack](#), according to study leader Dr. Matthew Altman, an associate professor in the department of medicine at the University of Washington School of Medicine, in Seattle, and colleagues. It's one of the first times elevated levels of distinctive air pollutants in specific urban locations have been tied to the risk of asthma attacks.

During an asthma attack, inflammation causes the lining of airways to swell as muscles around the airways contract and mucus floods the passages—all substantially narrowing the space through which air passes in and out of the lungs.

Children in low-income urban areas of the United States are at particularly high risk for asthma attacks, the researchers said in an NIH news release.

The study included 208 children aged six to 17 with attack-prone asthma living in low-income neighborhoods in one of nine different U.S. cities. The researchers later validated their findings in a second group of 189 people aged six to 20 living in [low-income](#) areas of four U.S. cities.

The team tracked daily air quality and compared it to reports of asthma attacks in the [urban children](#). They also checked to make sure that the children weren't suffering from respiratory viruses that can promote asthma.

The researchers found that asthma attacks were caused by pollution rather than viruses in nearly 30% of the children, two to three times the proportion seen in children who don't live in urban areas.

The attacks were specifically associated with locally elevated levels of fine particulates and ozone in outdoor air, the study authors said.

By analyzing nasal cell samples obtained from the children, the investigators further found that elevated levels of those pollutants affected the expression of genes that play a role in airway inflammation.

These results could lead to treatments that would counteract the harmful effects of air pollution on human airways, the researchers reported.

The findings also indicate that people with asthma might benefit from toting around personal air quality monitors, which could warn them of conditions that contribute to [asthma](#) attacks.

More information: Matthew C Altman et al, Associations between outdoor air pollutants and non-viral asthma exacerbations and airway inflammatory responses in children and adolescents living in urban areas in the U.S.: a retrospective secondary analysis, *The Lancet Planetary Health* (2023). [DOI: 10.1016/S2542-5196\(22\)00302-3](https://doi.org/10.1016/S2542-5196(22)00302-3)

The U.S. National Institute of Environmental Health Sciences has more about [air pollution and health](#).

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