

# Coarse particulate matter may increase asthma risk

December 15 2017

---



Coarse particulate matter increases asthma risk in children. Credit: ATS

Children exposed to coarse particulate matter may be more likely to develop asthma and to be treated in an ER or be hospitalized for the condition, according to new research published online in the American Thoracic Society's *American Journal of Respiratory and Critical Care Medicine*.

In "Long-term Coarse PM Exposure Is Associated with Asthma Among Children in Medicaid", researchers report that coarse particulate matter, the kind of air pollution created by physical processes such as tire and break wear, agricultural tilling, salt spray and dust created in

manufacturing, appears to put children at greater risk for [asthma](#), independent of exposure to fine particulate pollution.

Coarse particulate matter (PM10-2.5) measures from 2.5 to 10 micrometers; fine particulate pollution (PM2.5) measure 2.5 micrometers or smaller. By comparison, a human hair is between 50-70 micrometers thick.

The authors noted that there is substantial evidence that PM2.5 impacts respiratory and cardiovascular health, and this is why the Environmental Protection Agency monitors and regulates fine particulate pollution.

"We did this study to understand whether, in addition to PM2.5, coarse particulate matter contributes to asthma development and morbidity," said Corinne A. Kent, MD, PhD, lead study author and associate professor of pediatric allergy and immunology at Johns Hopkins University School of Medicine. "The most recent assessment by the EPA concluded that there wasn't enough data to say one way or another whether PM10-2.5 causes [negative health effects](#)."

The researchers analyzed the records of 7,810,025 children (age 5 to 20) living across the country who were enrolled in Medicaid over a two-year period, 2009-2010. The researchers adjusted their findings for race and ethnicity, sex, age, poverty, education and how urban the neighborhood the children lived in was. The researchers also accounted for PM2.5.

The study found for each microgram/m<sup>3</sup> increase in PM10-2.5:

- asthma diagnosis increased by 0.6 percent,
- ER visits for asthma increased by 1.7 percent, and
- hospitalizations for asthma increased by 2.3 percent.

These findings were even stronger for children 11 and younger. The

authors speculate that the stronger association is a result of asthma typically developing at younger ages and that young children are more likely to spend time outdoors and be harmed by [air pollution](#).

The authors said that study limitations include the fact that there are few locations that monitor PM10-2.5. Most monitors measure only PM2.5, which the current study found was even more likely to be associated with an asthma diagnosis, ER visits and hospitalizations. The researchers used statistical methods to predict concentrations of PM10-2.5 across the U.S. This allowed them to study such a large number of children, including those who do not live near a monitor.

"The first-ever analysis of the long-term effects of coarse particulate matter on asthma," the authors wrote, "provides evidence supporting the harmful effects of coarse particulate matter on respiratory health."

Dr. Keet noted that the EPA is currently conducting a comprehensive review of the science related to the health effects of particulate matter as mandated by the Clean Air Act. "Reductions in PM2.5 have led to improvements in childhood respiratory health, but there is still a great burden of asthma in [children](#)," she said. "Our findings, along with others, suggest that PM10-2.5 likely contributes to asthma, too, and that regulation and monitoring of coarse particulate [matter](#) should be considered."

Provided by American Thoracic Society

Citation: Coarse particulate matter may increase asthma risk (2017, December 15) retrieved 12 July 2023 from <https://medicalxpress.com/news/2017-12-coarse-particulate-asthma.html>

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.