

Improved air quality in Los Angeles region leads to fewer new asthma cases in kids

May 21 2019



Children with asthma use inhalers to relieve some of their symptoms, which include coughing, wheezing, chest tightness and shortness of breath. Credit: Tradimus / Wikimedia commons / [CC BY-SA 3.0](#)

Improved air quality in the Los Angeles region is linked to roughly 20 percent fewer new asthma cases in children, according to a USC study that tracked Southern California children over a 20-year period.

The findings appear in the May 21 *Journal of the American Medical*

Association.

The research expands on the landmark USC Children's Health Study, which a few years ago found that children's lungs had grown stronger in the previous two decades and rates of bronchitic symptoms decreased as [pollution](#) declined throughout the Los Angeles region.

"While the findings show a clear benefit of lower air pollution levels, there must be continued efforts to reduce pollution in our region," said first author Erika Garcia, a postdoctoral scholar in the Department of Preventive Medicine at the Keck School of Medicine of USC. "We're not in a place where we can stop and say, 'Hey, we've arrived'."

Los Angeles remains the nation's most-polluted region, but [air quality](#) improvements between 1993 and 2006 cut nitrogen dioxide pollution by 22 percent and fine [particulate matter](#) by 36 percent.

Nitrogen dioxide can cause airway inflammation and airway hyper-responsiveness. Particulate matter (tiny particles of soot, smoke dust, etc.) can penetrate deep into lungs and cause serious health problems.

To assess new-onset cases of [asthma](#), USC scientists used data from 4,140 children in nine California communities: Alpine, Lake Elsinore, Lake Gregory, Long Beach, Mira Loma, Riverside, San Dimas, Santa Maria and Upland. Parents or guardians completed questionnaires regarding the children's health. New-onset asthma was defined as a newly reported physician-diagnosed case of asthma on an annual questionnaire during follow-up.

Researchers looked at rates of new-onset asthma alongside air pollution data collected from monitoring stations in each of those communities during three different periods, 1993-2001, 1996-2004 and 2006-2014. Using [statistical methods](#), they separately examined four air pollutants

and found that two were associated with reductions in new-onset asthma. They estimated that the nitrogen dioxide reductions achieved between 1993 and 2006 led to a 20 percent lower rate of asthma, while [fine particulate matter](#) reductions led to a 19 percent lower rate.

The findings add to the increasing scientific evidence supporting the role of air pollution in the development of new cases of asthma. Asthma is the most common chronic disease in children, affecting about 14 percent of children around the world, and a major contributing factor to missed time from school and work.

"This is encouraging news as it shows the number of new cases of asthma in [children](#) can be reduced through improvements in air quality," said Kiros Berhane, a professor of preventive medicine at the Keck School of Medicine of USC and one of the study's authors. "This is very likely a direct result of the science-based environmental policies that have been put in place."

Provided by University of Southern California

Citation: Improved air quality in Los Angeles region leads to fewer new asthma cases in kids (2019, May 21) retrieved 2 May 2024 from <https://medicalxpress.com/news/2019-05-air-quality-los-angeles-region.html>

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