

# Beijing Olympics study links pollution to lower birth weight

April 28 2015

---



Credit: Anna Langova/public domain

Exposure to high levels of pollution can have a significant impact on fetal growth and development, that is the conclusion of research appearing today in the journal *Environmental Health Perspectives*. The study found women who were pregnant during the 2008 Beijing Olympics, when pollution levels were reduced by the Chinese government, gave birth to children with higher birth weights compared

to those who were pregnant before and after the games.

"The results of this study demonstrate a clear association between changes in air pollutant concentrations and birth weight," said David Q. Rich, Sc.D., M.P.H., an epidemiologist with the University of Rochester Medical Center (URMC) Departments of Public Health Sciences and Environmental Medicine and lead author of the study. "These findings not only illustrate one of the many significant health consequences of [pollution](#), but also demonstrate that this phenomenon can be reversed."

In the months leading up to and during the 2008 Beijing Olympics (August 8-24) and Paralympics (September 6-16), the Chinese government launched a series of aggressive measures to improve the city's chronic and notoriously poor air quality. These measures included an aggressive program to curtail pollutions by implementing strict restrictions on automobile and truck use, closing factories, halting construction projects, and seeding clouds to induce rainfall.

These controls - which were subsequently relaxed upon completion of the games - produced a significant decrease in the concentrations of particulate and gaseous [air pollution](#) for a 6-7 week period during the Olympic games, including a 60 percent reduction in sulfur dioxide, a 48 percent reduction in carbon monoxide, a 43 percent reduction in nitrogen dioxide, and a reduction in particles smaller than 2.5 microns in diameter.

These measures created a unique "natural experiment" for scientists to study the impact of pollution on human health. A prior study by this group, which was also conducted in concurrence with the Beijing Olympics, demonstrated that pollutions levels were linked to physiological changes that increase risk for cardiovascular disease, and that these same air pollution reductions resulted in improvements in several risk factors

The researchers compiled information from 83,672 term births (37 to 42 weeks gestational age at birth) to mothers in four urban districts in Beijing. They compared birth weights for mothers whose eighth month of pregnancy occurred during the 2008 Olympics/Paralympics with those whose eighth month of pregnancy occurred at the same time of year in the years before (2007) and after (2009) the games when [pollution levels](#) were at their normally higher levels. They found that the babies born in 2008 were on average 23 grams larger than those in 2007 and 2009.

Late pregnancy is a particularly important period of fetal growth, as during this time the fetus experiences the greatest amount of physical growth, and the development of the central nervous, cardiovascular, and musculoskeletal systems accelerates. The study suggests that pollution may be interfering with this period of development.

While the biological mechanism by which exposure to pollution causes lower birth weights are not fully understood, the scientists speculate that several factors could play a role, including maternal inflammation, altered placental function, and reduced nutrient delivery to the fetus, which may impede [fetal growth](#).

"While Beijing's pollution is particularly noteworthy, many of the world's other cities face similar air quality problems," said Junfeng Zhang, Ph.D., with Duke Global Health Institute and Duke Kunshan University and a co-author of the study. "This study shows that pollution controls - even short-term ones - can have positive public health benefits."

Provided by University of Rochester Medical Center

Citation: Beijing Olympics study links pollution to lower birth weight (2015, April 28) retrieved

26 April 2024 from

<https://medicalxpress.com/news/2015-04-beijing-olympics-links-pollution-birth.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.