

Improved air quality during Beijing Olympics could inform pollution-curbing policies

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The air in Beijing during the 2008 Olympics was cleaner than the previous year's, due to aggressive efforts by the Chinese government to curtail traffic, increase emissions standards and halt construction in preparation for the games, according to a Cornell study.

Led by Max Zhang, assistant professor of mechanical and aerospace engineering, the study indicates that such measures as regulating traffic density and encouraging public transportation can have a significant impact on local air quality.

"We hope our study can help or advise local regulators and policymakers to adopt long-term sustainable emission controls to improve air quality," Zhang said. "That's our mission."

Published online July 11 in the journal [Atmospheric Environment](#), the study was based on air quality readings before, during and after the Olympics. Leading up to the Olympics, the Chinese government barred more than 300,000 heavy-emission vehicles - mostly trucks - from the roads. The city also implemented rules in which only some people were allowed to drive on certain days based on their license plate numbers. As a result, close to 2 million vehicles were pulled from the roads. Other mandates involved halting construction and decreasing the use of coal in favor of natural gas for electricity.

In 2007 and 2008, the researchers collected air quality data from equipment installed at two elevations on a building in the heart of Beijing.

They also tracked emissions from vehicles in different areas of the city by following randomly selected cars and trucks in a minivan equipped with sensitive instruments for detecting carbon particles, including carbon monoxide, carbon dioxide and black carbon, or soot.

Among the researchers' conclusions: Black carbon pollution is significantly greater at ground level than at higher elevations, and diesel trucks are a major source of black carbon emission during the summer in Beijing. These particles are not only harmful to the lungs, but are also known to be a global warming compound, Zhang said.

The researchers found that car emissions of [black carbon](#) were down 33 percent in 2008 compared with their 2007 readings. Carbon dioxide decreased 47 percent, and ultrafine carbon-based particles - those that measure less than 100 nanometers - decreased 78 percent.

The sharp drops were most likely due to a new emission standard implemented in Beijing in 2008, in which all new registered vehicles as well as gasoline and diesel fuel engines were required to achieve emissions standards equivalent to European Union regulations. A similar standard was mandated starting in June 2008 for 20,000 buses and 66,000 taxis. The improved fuel quality probably enhanced the performance of engines and catalytic converters, the researchers reported.

"We are showing what the city can do if they are determined to improve [air quality](#)," Zhang said.

Source: Cornell University ([news](#) : [web](#))

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