

Black carbon—a major climate pollutant—also linked to cardiovascular health

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Credit: Wikipedia

Black carbon pollutants from wood smoke are known to trap heat near the earth's surface and warm the climate. A new study led by McGill Professor Jill Baumgartner suggests that black carbon may also increase women's risk of cardiovascular disease.

To investigate the effects of black carbon pollutants on the health of women cooking with traditional wood stoves, Baumgartner, a researcher at McGill's Institute for the Health and Social

Policy, measured the daily exposure to different types of air pollutants, including black carbon, in 280 women in China's rural Yunnan province.

Baumgartner and her team focused on the [health effects](#) of [air pollutants](#) that are emitted from sources that are common in developing countries. "China's unprecedented economic growth is fuelling massive increases in industrial and motor vehicle pollution, and 700 million Chinese homes still cook with wood and coal fuels. The Chinese government is setting new targets to improve its air quality. We wanted to identify the pollution sources that most impact human health to help inform these pollution control efforts," says Baumgartner.

The researchers outfitted women with wearable air samplers that collected fine [particulate matter](#), a size linked with adverse health effects. The particulate samples were then analyzed for different pollutant types, including black carbon. The women's [blood pressure](#), salt intake, physical activity, body mass index, and their proximity to highways were also measured.

"We found that exposure to black carbon pollutants had the largest impact on women's blood pressure, which directly impacts cardiovascular risk. In fact, black carbon's effect was twice that of particulate matter, the pollutant measured most often in health studies or evaluating cleaner cookstoves," says Baumgartner. "Black carbon from wood burning is considered very important for climate warming. Our research shows that it may also be an important pollutant for health."

In addition, the researchers found that women living closer to highways and exposed to both [wood smoke](#) and traffic emissions had three times higher blood pressure than women who lived away from highways.

Adds Baumgartner, "We found that [black carbon](#) from wood smoke negatively affects cardiovascular

health, and that the health effects of wood smoke are exacerbated by co-exposure to motor vehicle emissions. Policies that decrease combustion pollution by replacing inefficient wood stoves and reducing traffic pollution will likely benefit both climate and public health".

More information: "Highway proximity and black carbon from cookstoves as a risk factor for higher blood pressure in rural China," by Jill Baumgartner et al. *PNAS*,
www.pnas.org/cgi/doi/10.1073/pnas.1317176111

Provided by McGill University

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