

Facemasks help prevent adverse cardiovascular effects caused by pollution

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Diesel exhaust causes arteries to lose their flexibility. Researchers writing in BioMed Central's open access journal *Particle and Fibre Toxicology* found that exposure to engine pollution resulted in arterial stiffness in a group of healthy volunteers.

Nicholas Mills from the University of Edinburgh worked with a team of researchers to investigate the [cardiovascular damage](#) that can be caused by inhaling diesel smoke. He said, "Acute [exposure](#) to [diesel exhaust](#) is associated with an immediate and transient increase in [arterial stiffness](#). This may, in part, explain the increased risk for cardiovascular disease associated with [air pollution](#) exposure".

The authors invited a group of 12 non-smoking young men to cycle on exercise bikes while breathing air that had either been filtered or been contaminated with smoke from a diesel engine. They found that when the subjects were exposed to the polluted air, the blood vessels in their wrists temporarily lost the ability to expand and contract. According to Mills, this can have serious consequences, "Stiff arteries can result in raised blood pressure and reduced blood flow in the heart. Arterial stiffness plays an important role in hypertension and is an independent predictor of mortality."

There is, however, something that cyclists and pedestrians in smog shrouded cities can do to limit the vascular effects caused by diesel exhaust. In a separate article also published in [Particle and Fibre Toxicology](#), researchers report how wearing a facemask reduces

exposure to airborne pollution particles and leads to a reduction blood pressure and improved heart rate control during exercise in a city centre environment. Jeremy Langrish from the University of Edinburgh said, "We tested a range of facemasks that differed widely in their efficiency as particle filters. In general, those masks designed to reduce occupational exposure to dusts in the workplace were more efficient than those marketed to cyclists and pedestrians."

The authors say, "This simple intervention has the potential to protect susceptible individuals and reduce cardiovascular events in cities with high concentrations of ambient air pollution."

More information: Beneficial Cardiovascular Effects of Reducing Exposure to Particulate Air Pollution with a Simple Facemask, Jeremy P Langrish, Nicholas L Mills, Julian KK Chan, Daan LAC Leseman, Robert J Aitken, Paul HB Fokkens, Flemming R Cassee, Jing Li, Ken Donaldson, David E Newby and Lixin Jiang, *Particle and Fibre Toxicology* (in press), www.particleandfibretoxicology.com/

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