Medical Xpress

Walking quieter routes to work can avoid peaks in air pollution

September 27 2015

Commuting to work by walking on quieter side streets rather than main roads can help people avoid exposure to peaks in harmful air pollution, according to new research presented today at the European Respiratory Society's International Congress, 2015.

Black carbon is one of the components of air pollution, and comes from incomplete combustion by diesel vehicles. It is known to be associated with a range of respiratory diseases, such as asthma, as well as with cardiovascular diseases.

Mrs Lee Koh, a researcher at the Blizard Institute at Queen Mary University of London (London, UK), used a hand-held monitor to measure levels of black carbon particulate matter while walking between Whitechapel in the east of London to Moorgate, which is nearer to central London, between 16.00-19.00hr using main roads. She then used an urban walking route planner to plan a quieter route that might, potentially, have lower levels of air pollution.

"We know that short-term exposure to black carbon is associated with increased hospital admissions due to respiratory symptoms, and that long-term exposure is associated with exacerbations and increased prevalence of asthma. Since London is one of the most polluted cities for black carbon in Europe, ways that people might be able to reduce their own exposure are of interest, and we wanted to see whether walking quieter, side-street routes might help to do this," said Mrs Koh.

"We found in this small study that people could avoid peaks in black carbon if they choose to walk a quieter route."

Walking the busy route six times between February and May produced measurements of black carbon that averaged 3339-6995 ng·m-3 for every five minutes (nanograms of black carbon per cubic metre per five minutes). When walking the quieter routes six times at the same time of day, the measurements ranged from 2555 to 5854 ng·m-3 for every five minutes, which, although slightly lower than the busy route, was not a statistically significant difference.

Mrs Koh found that there was a statistically significant difference in the peaks of exposure to black carbon between the two routes.

"The peaks are when a much higher levels of pollution are present. For example, when you stop to cross a busy road and so you are subject to a higher level of pollution compared to when walking away from the traffic," she explained.

There were no peaks in black carbon exposure on the side-street route, while on the busy route there were three occasions when the levels of black carbon exceeded 10,000 ng·m-3 for every five minutes, ranging between 10,209 to 10,454 ng·m-3 for every five minutes.

To put these figures in context, the UK's Daily Air Quality Index [1] has suggested that exposure to fine particles of air pollution known as PM2.5 (particulate matter that measures approximately 2.5 micrometers or less in diameter, of which black carbon is a constituent) should not exceed 35,000 ng·m-3 over a 24-hour period.

Mrs Koh concluded: "Our study suggests that, in London, it is possible to reduce exposure to peaks of black carbon particles (mainly from diesel soot) by choosing to walk a less polluted route. Government action will

be required to further improve the general air quality around us."

More information: Abstract: Reduction in personal exposure to black carbon during commuting in London - a feasibility study

Provided by European Lung Foundation