

-Press Release-

EMBARGOED UNTIL 01/02/2017 at 06.00 aM

Traffic-Related Air Pollution Negatively Affects Children's Attention in the Short Term

Study published in Epidemiology provides new evidence on the impact of air pollution on neurological development

The long-term effects of air pollution on neural development are well understood and now a team of ISGlobal researchers has found evidence that these pollutants also have acute effects. The study, published in *Epidemiology*, shows that daily fluctuations in the levels of two traffic-related pollutants—nitrogen dioxide (NO₂) and elemental carbon (also known as black carbon)—are associated with fluctuations in attention function in children.

This study followed on from earlier research that had established an association in school children between exposure to traffic-related air pollutants and the development of attention and memory function in the long term. In order to further investigate the impact of traffic-related pollution on neurological development in children, the present study monitored some 2,700 children in about 300 classrooms in 39 schools in the city of Barcelona.

Throughout the year, the scientists visited each school four times. In the course of these visits they measured four different domains related to attention processes using computerised tests. The results of these tests were then compared to daily measurements of NO₂ and elemental carbon levels inside and outside the classrooms.

The analysis revealed an association between increased ambient levels of traffic-related pollutants and reductions in all the processes related to attention function in the classrooms. In fact, on the days the children were exposed to higher levels of pollution, the impairment in their performance was equivalent to a retardation of more than one month in the natural developmental improvement in response speed that would normally be expected as a consequence of age-related development.

“The children's response was slower and less consistent on the days when traffic-related air pollution levels were higher” explains the study's first author Jordi Sunyer, who is an ISGlobal researcher and a professor at the Pompeu Fabra University. “We don't know what impact this effect might have on their learning processes; the estimated effect was modest on the individual level, but when we extrapolate this kind of collective exposure with small effects on cognitive function to the population as a whole, the impact is significant. These findings provide us with yet another piece of evidence demonstrating the need to prevent air pollution close to schools, particularly pollution caused by diesel vehicles”.

Facebook Live with Jordi Sunyer

In the context of the publication of this paper, on February 1st 2017, ISGlobal will offer a live interview with Jordi Sunyer on the institute's Facebook page. On this Facebook Live session, the ISGlobal researcher and UPF professor will take answers from viewers.

Reference

Sunyer J, Suades-González E, García-Esteban R, Rivas I, Pujol J, Alvarez-Pedrerol M, Forns J, Querol X, Basagaña X. Traffic-related air pollution and attention in primary school children: short-term association. *Epidemiology* 2016 Nov 29

About ISGlobal

The Barcelona Institute for Global Health, ISGlobal, is the fruit of an innovative alliance between academic, government, and the "la Caixa" Foundation to contribute to the efforts undertaken by the international community to address the challenges in global health. ISGlobal is a consolidated hub of excellence in research that has grown out of work first started in the world of health care by the Hospital Clínic and the Parc de Salut MAR and in the academic sphere by the University of Barcelona and Pompeu Fabra University. The pivotal mechanism of its work model is the transfer of knowledge generated by scientific research to practice, a task undertaken by the institute's Education and Policy and Global Development departments. ISGlobal a member of the CERCA programme of the Generalitat de Catalunya.

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