

Traffic exhaust can cause asthma, allergies and impaired respiratory function in children

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Children exposed to high levels of air pollution during their first year of life run a greater risk of developing asthma, pollen allergies, and impaired respiratory function. However, genetic factors are also at play. These are the results of a new study conducted under the BAMSE project.

The BAMSE project has monitored 4,000 children in Stockholm county from birth in order to assess whether exposure to traffic pollution during their first year of life affects the risk of developing asthma and allergies. Levels of traffic exhaust were measured at the site of the home.

The results show that the children who were exposed to high concentrations of pollutants ran a 60 per cent higher risk of suffering of persistent asthma symptoms. Respiratory function was also adversely affected, and the children were much more likely to be allergic to airborne allergens, particularly pollen.

Studies were also made of how the risk of developing air pollution-related allergies is influenced by genetic factors. It was found that children carrying a variant of GSTP1 (glutathione S-transferase P1) gene, which is crucial to the body's ability to take care of air pollutants (the antioxidative system), run a greater risk of developing an allergy linked to traffic-related air pollution. According to new analyses, variants of another 'asthma gene', TNF (tumour necrosis factor), also affect sensitivity to air pollution. Children with a particular combination of GSTP1 and TNF variants run a considerably higher risk of developing

allergies.

The children studied in the BAMSE project are now 12 years old, and an on-line follow-up survey of the children and their parents has now been launched. The answers to the survey will provide information about health, lifestyle and environmental conditions, including air pollution, during the children's lives.

Conclusions

1. Children who grow up in Stockholm are at greater risk of developing asthma, respiratory problems and pollen allergies if they live in areas where there are high concentrations of traffic pollution.
2. Not all children who live in areas with high levels of air pollution develop allergies. Whether they do or not is partly determined by genetic factors.
3. For the first time, data are now obtained for the BAMSE project using web-based techniques, which give more reliable answers.

Source: Karolinska Institutet

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