



Research finds link between road proximity and childhood leukaemia

Living near busy roads is associated with an increased risk of childhood leukaemia, according to French researchers. The study found that children living within 500 metres of major roads were more likely to develop leukaemia than those who lived far from such roads. It is possible that high levels of traffic pollution from the roads are responsible for the higher rates of the illness.

According to the World Health Organisation, leukaemia is the most common childhood cancer, with 46.7 cases per million children (under the age of 15) per year in Europe³, yet its cause is often unknown. Other studies have linked leukaemia in adults to exposure to benzene, which is also found in small quantities in petrol and diesel engine exhaust fumes.

To investigate whether there was any link between leukaemia and the proximity of a child's home to major roads, the researchers carried out a study of French children. They compared 762 children, who had been diagnosed with leukaemia, with 1681 other children identified at random from the French population. The study contributes to the European Commission's European Environment and Health Strategy, known as SCALE¹. The first cycle of the Strategy specifically targets childhood cancer².

For each child, the researchers mapped the roads close to their home and estimated nitrogen dioxide levels as an indicator of pollution from vehicle exhausts. They then calculated "odds ratios" (designed to find statistical associations between parameters), which allowed the researchers to explore the relationship between exposure to major roads and childhood leukaemia.

They found that childhood leukaemia was significantly associated with living within 500 metres of high density traffic (particularly with heavy duty vehicles), and this association was stronger when the roads were 300m and 100m from homes. The association was found to be stronger for children who had lived at their current homes for two years or more, and strongest for those who had never moved home.

Estimated exposure to nitrogen dioxide was also used as an indicator of transport pollution in this study. It was found that such exposure was also significantly associated with childhood leukaemia. Children exposed to high estimated levels of nitrogen dioxide (above 16.2 $\mu\text{g}/\text{m}^3$) were more likely to develop leukaemia.

The results did not change when the researchers controlled for a number of factors, including the degree of urbanisation around the children's homes, the type of housing, early common infections in childhood, the mother's use of pesticides when she was pregnant, and whether the father smoked before conception.

1. SCALE (also known as the Science, Children, Awareness, Legal instrument, Evaluation, initiative). See: http://europa.eu/legislation_summaries/environment/general_provisions/l28133_en.htm

2. See: http://europa.eu/legislation_summaries/public_health/health_determinants_environment/l28133_en.htm

3. See: http://www.euro.who.int/_data/assets/pdf_file/0005/97016/4.1.-Incidence-of-childhood-leukaemia-EDITED_layouted.pdf

Source: Amigou, A., Sermage-Faure, C., Orsi, L., *et al.* (2011) Road Traffic and Childhood Leukaemia: The ESCALE Study (SFCE). *Environmental Health Perspectives*. 119 (4), pp 566-572.

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