

Leukemia Incidence is Higher Among Children Living Close to High-Traffic Roads

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Note: FL PK DR homes are 18 m (60 ft) away from 8,200 cars / per day

Note: Holland Park Basket Ball Court is 24 m (80 ft) away from 8,200 cars / per day



Children living near busy roads demonstrated a much higher incidence of myeloblastic leukemia.

Children who lived within 150 m (approximately 500 feet) of heavily used roads had a 30% higher incidence of myeloblastic leukemia (480 cases), according to a study of the risk of acute [leukemia](#) that considered all 2,760 cases of leukemia diagnoses in children younger than 15 years in metropolitan France between 2002 and 2007. The association was not observed for the more common lymphoblastic type of leukemia (2,275 cases). The results were published in the *American Journal of Epidemiology* (2015; doi:10.1093/aje/kwv111).

One of the hypotheses of the research community is that there is an increased risk of [leukemia](#) for children living close to high-traffic roads, and this study examined that incidence. The increased risk of myeloblastic leukemia for adults with a history of occupational exposure to benzene has long been known.

The research team had a particular emphasis on the Île-de-France region of Paris, and they had the help of data modelled by Airparif, which is responsible for the monitoring of air quality in Ile-de-France. Inserm researchers from CRESS (Epidemiology and Biostatistics Sorbonne Paris Cité Research Centre, Inserm - Paris Descartes University - University of Paris 13 - Paris Diderot University - INRA) conducted the study.

This case-control study included all 2,760 cases of childhood leukemia diagnosed in metropolitan France between 2002 and 2007. The cases were compared with a contemporary sample of 30,000 control children representative of the metropolitan population, and constituted in collaboration with the French National Institute of Statistics and Economic Studies (INSEE).

The case-control type used in the study allowed the assessment of exposure level to one or more risk factors.

"The frequency of myeloblastic type leukemias was 30% higher in children living within a 150 m radius of heavily used roads, and where the combined length of road sections within this radius exceeded 260 m," explained study director Jacqueline Clavel, MD, PhD, Inserm Research Director at CRESS, of the Epidemiology of Childhood and Adolescent Cancers (EPICEA) team.

In contrast, there was no association between acute lymphoblastic leukemias, which are the most common, and the atmospheric concentration of nitrogen dioxide, distance, or combined length of heavily used roads in the vicinity of dwellings.

The researchers particularly studied the case of the Île-de-France region of Paris, the most urbanized region, for which the mean annual concentration of benzene, mainly from road traffic, was estimated in the vicinity of each residence in the study in a particularly precise manner with the help of data modelled by Airparif.

They observed that the risk of childhood acute myeloblastic leukemia was double among children in Île-de-France whose residences were the most exposed to traffic, ie when the combined length of road sections within a 150 m radius of the residence exceeded 300 m, and the estimated mean annual concentration of benzene in the vicinity of the residence was above the median value observed in Île-de-France ($1.3 \mu\text{g}/\text{m}^3$).

In keeping with the hypotheses on which the study is based, exposure to benzene related to car traffic might be one of the explanations for this association.

<http://www.oncologynurseadvisor.com/web-exclusives/leukemia-incidence-higher-children-roads/article/442096/>