

AIR POLLUTION FROM TRAFFIC AND CANCER INCIDENCE IN A DANISH COHORT

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Background and aims: Vehicle engine exhaust includes ultrafine particles with a large surface area and containing absorbed polycyclic aromatic hydrocarbons, transition metals and other substances. Ultrafine particles and soluble chemicals can be transported from the airways to other organs, such as the liver, kidneys, and brain. We have previously reported on air pollution and lung cancer and the aim of the present study was to investigate whether air pollution from traffic is associated with risk for other cancers than lung cancer.

Methods: We followed up 54 304 participants in the Danish Diet Cancer and Health cohort for 20 selected cancers in the Danish Cancer Registry, from enrolment in 1993–1997 until 2006, and traced their residential addresses from 1971 onwards in the Central Population Registry. We used modeled concentration of nitrogen oxides (NO_x) and amount of traffic at the residence as indicators of traffic-related air pollution. NO_x correlates strongly with particle number concentrations in Danish streets. We used Cox models to estimate incidence rate ratios (IRRs) after adjustment for potential confounders.

Results: NO_x at the residence was significantly associated with risks for cervical cancer (IRR, 2.45; 95% confidence interval [CI], 1.01;5.93, per 100 µg/m³ NO_x) and brain cancer (IRR, 2.28; 95% CI, 1.25;4.19, per 100 µg/m³ NO_x).

Conclusion: This hypothesis-generating study indicates that traffic-related air pollution might increase the risks for cervical and brain cancer, which should be tested in future studies.