

Publication

Ambient air pollution and primary liver cancer incidence in four European cohorts within the ESCAPE project

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Tobacco smoke exposure increases the risk of cancer in the liver, but little is known about the possible risk associated with exposure to ambient air pollution.; We evaluated the association between residential exposure to air pollution and primary liver cancer incidence.; We obtained data from four cohorts with enrolment during 1985-2005 in Denmark, Austria and Italy. Exposure to nitrogen oxides (NO₂ and NO_x), particulate matter (PM) with diameter of less than 10µm (PM₁₀), less than 2.5µm (PM_{2.5}), between 2.5 and 10µm (PM_{2.5-10}) and PM_{2.5} absorbance (soot) at baseline home addresses were estimated using land-use regression models from the ESCAPE project. We also investigated traffic density on the nearest road. We used Cox proportional-hazards models with adjustment for potential confounders for cohort-specific analyses and random-effects meta-analyses to estimate summary hazard ratios (HRs) and 95% confidence intervals (CIs).; Out of 174,770 included participants, 279 liver cancer cases were diagnosed during a mean follow-up of 17 years. In each cohort, HRs above one were observed for all exposures with exception of PM_{2.5} absorbance and traffic density. In the meta-analysis, all exposures were associated with elevated HRs, but none of the associations reached statistical significance. The summary HR associated with a 10-µg/m³ increase in NO₂ was 1.10 (95% confidence interval (CI): 0.93, 1.30) and 1.34 (95% CI: 0.76, 2.35) for a 5-µg/m³ increase in PM_{2.5}.; The results provide suggestive evidence that ambient air pollution may increase the risk of liver cancer. Confidence intervals for associations with NO₂ and NO_x were narrower than for the other exposures.

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