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Objectives Brain tumors are a serious, often highly disease with few established risk factors. Although ionizing radiation has been clearly linked with brain tumors, there are a number of other environmental and occupational agents suspected. There may also be interactions between occupational agents for brain tumors however the epidemiological literature is sparse. Only one previous epidemiological study examined potential interactive effects between occupational exposure to extremely low frequency magnetic fields (ELF-MF) and chemical agents with various interactive effects observed. The objective of this paper was to examine the possible joint effects of occupational agents for brain tumors (specifically glioma and meningioma) including occupational ELF-MF and chemicals in the large-scale INTEROCC study.
Methods The INTEROCC study is formed by seven participating countries (Australia, Canada, France, Germany, Israel, New Zealand, United Kingdom) from the parent INTERPHONE study. Cases of primary brain glioma and meningioma aged at least 20 years were recruited between 2000 and 2004. Detailed occupational history data was collected for jobs held at least six months. Job titles were coded into standard international occupational classifications and estimates of ELF-MF and chemical exposure were assigned based on job exposure matrices. Odds ratios (and 95% confidence intervals) for single and joint occupational exposures were calculated according to a common reference category. Interactions on both the additive and multiplicative scale were assessed.
Results Data on a total of 3,978 brain tumor cases, including 2,054 gliomas and 1,924 meningiomas, were analysed with 5,601 control subjects. A number of interactions were observed, varying according to exposure time window, exposure metric, and included subjects. Results also varied according to tumour type.
Conclusion Interactions between occupational agents for brain tumors were observed however further research examining possible joint effects of occupational agents for brain tumours with refined assessments of occupational exposure in other large-scale studies is warranted.

104 ASSOCIATION BETWEEN OCCUPATIONAL EXPOSURE TO ENGINE EMISSIONS AND LUNG CANCER

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Objective To analyse the associations between life-time occupational exposures to diesel, leaded and unleaded gasoline engine emissions and lung cancer.
Methods Our case-control study enrolled 1503 lung cancer cases and 1198 population controls between 1996 and 2001 in Montreal. Occupational exposure to diesel, leaded and unleaded gasoline engine emissions was assessed using a combination of subject-reported job and tasks history and expert assessment. Exposure status "Ever or never exposed", duration, frequency and concentration of exposure based on qualitative assessment were assigned to each participant. Lifetime average exposure and cumulative exposure were derived as semi-quantitative indices. Using multivariate logistic and generalised additive logistic regression analyses, we evaluated the association of lung cancer with the mentioned exposures. Odds ratios (OR) were calculated for an index increase between exposure to environmental levels and exposure levels at the 90th percentile of the entire population.
Results In models including only one type of engine emissions at a time, only diesel showed an association with lung cancer (OR for average exposure: 1.19, 95% CI: 1.03, 1.37). When restricting the analysis to participants exposed to one of the three types of engine emissions exclusively, cumulative exposure to leaded gasoline, unleaded gasoline, and diesel engine emissions were associated with odds ratios of lung cancer of 2.11 (95% CI: 1.25, 3.56), 0.66 (95% CI: 0.25, 1.72) and 1.09 (95% CI: 0.95, 1.24), respectively. The inclusion of the three types of engine emissions in one model, using either multivariate logistic or generalised additive logistic regression, yielded similar estimates to those obtained for segments of the population with increased exposure to only one type of engine emissions.
Conclusion Exposure to diesel and unleaded gasoline engine emissions confounded the association of leaded gasoline engine emissions and lung cancer. Increases in cumulative exposure to leaded gasoline were associated with an increased risk of lung cancer.

105 POOLED ANALYSIS OF TWO CASE-CONTROL STUDIES OF POLYCYCLIC AROMATIC HYDROCARBONS AND RISK OF LUNG CANCER

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PAHs are ubiquitous compounds formed during incomplete combustion of organic material. IARC recently classified benzo (a)pyrene and several occupational circumstances involving PAH exposure as carcinogenic, though human evidence remains limited.
Objectives To examine the effects of occupational exposure to PAHs arising from different combustion products on risk of lung cancer.
Methods Data was provided from two case-control studies conducted in Montreal. Study 1 (1979–1986) included 857 men with lung cancer, 533 controls from electoral lists, and 1346 controls with other cancers. Study 2 (1996–2001) included 738 men with lung cancer and 899 controls selected from the electoral list. Occupational histories were obtained and lifetime chemical exposure was derived by hygienists for benzo (a)pyrene and profiles of PAHs, according to source (wood, petroleum, coal, or other, which included rubber, plastic, and food). Data were pooled across studies.
Results Prevalence of any PAH was 68% in the Study 1 population and 55% in Study 2. Adjusting for confounding due to smoking and common demographics, exposure to any PAH