Occupational exposure to styrene, formaldehyde and wood dust, and sinonasal cancer. A population-based case-control study in four Nordic countries.

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Background: Sinonasal cancer is a rare type of cancer. Epidemiological studies suggest that some workplace exposures are associated with the risk of sinonasal cancer. However, the studies are limited, and findings are rather inconsistent, especially for styrene. This study estimates the association between exposures to hazardous workplace chemicals associated with the risk of sinonasal cancer.

Methods: This is a population-based case-control study in Finland, Norway, Sweden and Iceland based on the Nordic Occupational Cancer Study (NOCCA). The study comprises the working-age population who participated in one or more population censuses since 1960. They were followed up for up to 45 years. Cancer cases were obtained from the Nordic cancer registries. For each case, six male controls were matched by year of birth and country. Cumulative exposures to solvents and other agents for the cases and controls were estimated using a Job Exposure Matrix created for the Nordic population. Hazard ratios (HRs) for each agent were estimated using conditional logistic regression in multivariate models. The multivariate model included styrene, chromium, formaldehyde, and wood dust.

Results: There are altogether 4,597 cases and 22,985 controls in this study. About 63% of the cases were diagnosed before the age of 50 years. A dose-response association was observed between wood dust exposure and the risk of nasal adenocarcinoma; the HR for the highest wood dust exposure category was 12.6 (95% confidence interval 5.08- 31.5). A slight statistically insignificant increase at the highest exposure level was observed for styrene (HR 1.08, 95% CI 0.74-1.57), chromium (1.06, 0.81-1.38), and nickel (1.21, 0.93-1.58).

Conclusion: This study provides strong evidence of an association between occupational exposure to wood dust and the risk of sinonasal cancer but an insignificant increased risk of association with styrene and other work-related exposures.