

# CHILDHOOD LEUKEMIA AND MATERNAL OCCUPATIONAL EXPOSURES TO ORGANIC SOLVENTS IN COSTA RICA

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## **Background and aims**

Parental occupational exposures to organic solvents are being suggested as risk factors for childhood leukemias, although evidence is inconsistent. We report results from a case-control study of parental occupational exposures to organic solvents and its association with childhood leukemia.

## **Methods**

Incident cases during 1995-2000 were identified from the National Tumor Registry (N= 300), with 579 population controls.

Evaluation of retrospective occupational exposures of parents to 12 organic solvents was performed combining data from (1) exposure matrix (JEM), and (2) interview individual data. JEM estimates three intensity levels of exposure to 12 agents, 25 occupations, 40 uses and 21 years. The questionnaire includes information on type of substance; use; period; frequency and duration of exposure; occupation; and PPE.

## **Results**

Risks for benzene, toluene, xylene and turpentine were analyzed individually and also combined. Models were performed using data on exposed versus (vs) unexposed; high vs low exposures and high vs unexposed. Risks were higher for **high vs unexposed** for benzene before and during pregnancy (OR=2.61 95%CI 1.20-5.65, number of cases [NC] 16; and OR=2.56 95%CI 1.13-5.75, NC 14 respectively); toluene (OR=2.27 95%CI 1.1-5.0, NC 27); xylene (OR=2.6 95%CI 1.20-5.6; NC16); and turpentine (OR=2.3 95%CI 1.1-5.0; NC 14). **High vs low** exposures before pregnancy, were significantly elevated for benzene (OR=4.54; 95%CI 1.10-18.78), NC 16/8); xylene (OR=4.95; 95%CI 1.10-22.26, NC 16/7). For the four substances combined (OR=4.82 95%CI 1.13-20.7, NC 16/8), and

exposed vs unexposed (OR=1.32 95%CI 1.1-1.71, NC 46), and high vs low exposures (OR=2.77 95%CI 1.0-7.7, NC 29).

All models were adjusted for maternal exposure to pesticides and urban/rural residency. ORs and/or NCs were low for other solvents.

### **Conclusions**

Maternal exposures to aromatic substances seem to be associated with the outcome. There is correlation between the exposures to aromatic solvents. Dose-response analysis is suggested for benzene, xylene before pregnancy and exposures to aromatics combined before and during pregnancy.

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