

Jordi Julvez
Centre for Research in Environmental
Institut Municipal d'Investigació Mèdica Doctor Aiguader 88
08003 Barcelona
Spain
Email: jjulvez@imim.es

Maternal smoking habits and cognitive development of children at age four years in a population based birth cohort

Núria Ribas-Fitó, Jordi Júlvez*, and Jordi Sunyer (Center for Research in Environmental Epidemiology, Institut Municipal d'Investigació Mèdica, Barcelona, Spain), Maties Torrent (Àrea de Salut de Menorca, IB-SALUT, Menorca, Spain), Daniel Carrizo and Joan O. Grimalt (Department of Environmental Chemistry; IIQAB-CSIC, Barcelona, Spain)

Background: Hexachlorobenzene (HCB) is an organochlorine chemical that has been used in agriculture and industrial processes. Behavioural impairment after HCB exposure has been described in animal models, but little information is available in humans.

Objectives: Our goal was to study the association of prenatal exposure to HCB with the social behaviour of preschool children.

Methods: Two birth cohorts in Ribera d'Ebre and Menorca (Spain) were set up between 1997 and 1999 ($n = 475$). The California Preschool Social Competence Scale and the Attention-Deficit Hyperactivity Disorder (ADHD) were scored by each 4-year-old child's teacher. Organochlorine compounds were measured in cord serum. Children's diet and parental sociodemographic information were obtained through questionnaire.

Results: Children with concentrations of HCB > 1.5 ng/mL at birth had a statistically significant increased risk of having poor Social Competence [relative risk (RR) = 4.04; 95% confidence interval (CI), 1.76–9.58] and ADHD (RR = 2.71; 95% CI, 1.05–6.96) scores. No association was found between HCB and the cognitive and psychomotor performance of these children.

Conclusions: Prenatal exposure to current concentrations of HCB in Spain is associated with a decrease in the behavioural competence at preschool ages. These results should be considered when evaluating the potential neurotoxic effects of HCB.