

# PRENATAL EXPOSURE TO DDE AND LOWER RESPIRATORY TRACT INFECTIONS (LRTIS) IN INFANTS: THE INMA PROJECT

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**Background and Aims:** Growing evidence suggests that prenatal exposure to organochlorine compounds (OCs), mainly polychlorinated biphenyls (PCBs) and dichlorodiphenyl dichloroethylene (DDE), may increase the risk of respiratory infections in children through suspected immunotoxic mechanisms. Our aim is to examine, in the largest study so far, whether prenatal exposure to DDE increases the risk of LRTI in infants, and to isolate these effects from those of other OCs.

**Methods:** The study is based on a cohort of 2150 mother-child pairs in Spain. Maternal serum concentrations of DDE and other OCs were measured during pregnancy. Parental reports of physician-confirmed diagnosis of LRTIs were obtained when children were 12-14 months old. Analyses were carried out separately for children from Spanish (N=1342) and Latin-American (N=79) mothers because of their different exposure profiles.

**Results:** 35.4% of the children born to Spanish mothers developed at least one LRTI episode during their first 12-14 months of life. DDE exposure (median=116.3 ng/gr lipid) was associated with a higher risk of LRTIs (relative risk (95%CI) for 3<sup>rd</sup> quartile DDE exposure= 1.32 (1.08, 1.62)), which persisted after adjustment for other OCs (RR (95%CI) for 3<sup>rd</sup> quartile DDE = 1.38 (1.12, 1.71)). No association was found for other OCs. Stratified analyses showed that findings were homogeneous by study region, maternal smoking, maternal history of asthma and atopy, duration of predominant breastfeeding and maternal diet. Children born to Latin-American mothers, with much higher exposure to DDE (385.0 ng/gr lipid), showed a similar, but not statistically significant, increase in risk of LRTI with DDE exposure.

**Conclusions:** Prenatal exposure to DDE is associated with higher risk of LRTIs in infants. Since LRTIs cause substantial morbidity in infancy and are a possible risk factor for subsequent childhood asthma, especial attention should be paid in countries where dichlorodiphenyltrichloroethane (DDT) is nowadays used for malaria control.

**References:** Sunyer J (2010) DDE in mother's blood during pregnancy and lower respiratory tract infections in their infants. *Epidemiology* 21: 729-735.

Dallaire F (2006) Effect of prenatal exposure to polychlorinated biphenyls on incidence of acute respiratory infections in preschool Inuit children. *Environ Health Perspect* 114:1301-1305.