

Topic: pesticides and respiratory symptoms

Title: Early-life Exposure to Organophosphate Pesticides and Pediatric Respiratory Symptoms in the CHAMACOS Cohort.

Conclusion: Early-life exposure to OP pesticides was associated with respiratory symptoms consistent with possible asthma in childhood.

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Citation: Environ Health Perspect. 2014 Nov 4

Abstract: Background: Although pesticide use is widespread, the possible effect of early-life exposure to organophosphate pesticides (OP) on pediatric respiratory health is not well described. Objectives: We investigated the relationship between early-life exposure to OPs and respiratory outcomes. Methods: Participants included 359 mothers and children from the CHAMACOS birth cohort. Dialkyl phosphate (DAP) metabolites of OP pesticides, specifically diethyl (DE) and dimethyl (DM) phosphate metabolites, were measured in urine from mothers twice during pregnancy (mean=13 and 26 weeks gestation) and from children five times during childhood (0.5-5 years). Childhood DAP concentrations were estimated by the area under the curve (AUC). Mothers reported their child's respiratory symptoms at ages 5 and 7. We used generalized estimating equations (GEE) to examine associations of prenatal and childhood DAP concentrations with repeated measures of respiratory symptoms and exercise-induced coughing at age 5 and 7 years, adjusting for child's sex and age, maternal smoking during pregnancy, secondhand tobacco smoke, season of birth, PM_{2.5}, breastfeeding, mold and cockroaches in home, and distance from highway. Results: Higher prenatal DAP concentrations, in particular DE, were non-significantly associated with respiratory symptoms in the previous 12 months at 5 or 7 years of age (aOR per 10-fold increase = 1.44; 95% CI: 0.98, 2.12). This association was strongest with total DAP and DE from the second half of pregnancy (aOR per 10-fold increase = 1.77; 95% CI: 1.06, 2.95; 1.61; 95% CI: 1.08, 2.39, respectively). Childhood DAP, DE, and DM concentrations were associated with respiratory symptoms and exercise-induced coughing in the previous 12 months at age 5 or 7 years (total DAPs: aOR per 10-fold increase = 2.53; 95% CI: 1.32, 4.86; aOR = 5.40; 95% CI: 2.10, 13.91, respectively). Conclusions: Early-life exposure to OP pesticides was associated with respiratory symptoms consistent with possible asthma in childhood.

Keywords: pesticides, child