

# PRENATAL PHTHALATE EXPOSURE AND CHILDHOOD WHEEZING IN A MULTIETHNIC COHORT

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**Background and Aims:** Experimental studies suggest that phthalates may affect respiratory function by altering immune or inflammatory responses. Associations between asthma and childhood exposure to phthalates detected in building materials or house dust have been reported, but prenatal exposures have not yet been studied. Our objective was to assess the relationship between prenatal phthalate exposure and asthma or wheezing in childhood.

**Methods:** The Mount Sinai Children's Environmental Health Study enrolled a multiethnic prenatal population in New York City between 1998 and 2002 ( $n = 404$ ). Third-trimester maternal urines were analyzed for phthalate metabolites and a wheezing questionnaire was administered at the age of 6 or 7 years ( $n = 165$ ). Adjusted odds ratios (aOR) and 95% confidence intervals (CI) for the association between questionnaire responses and micromolar sums of di(2-ethylhexyl) phthalate ( $\Sigma$ DEHP), low molecular weight ( $\Sigma$ LMW), and high molecular weight ( $\Sigma$ HMW) phthalate metabolites were estimated via logistic regression. Models were adjusted for creatinine, baseline maternal characteristics, race/ethnicity, prenatal smoke exposure, sex, breastfeeding duration, and child's relationship to primary caretaker. Adjustment for childhood overweight status did not alter conclusions.

**Results:** Prenatal phthalate exposure was positively associated with wheezing or whistling in the chest in the past 12 months; aORs (95% CI) for a unit increase in natural log  $\Sigma$ LMW,  $\Sigma$ HMW, and  $\Sigma$ DEHP metabolites concentrations were 1.19 (0.88, 1.60), 1.29 (0.88, 1.88), and 1.37 (0.94, 1.99), respectively. The aOR for wheezing in the past 12 months comparing the highest to the lowest tertile of  $\Sigma$ DEHP metabolite concentrations was 3.05 (95% CI 1.08, 8.63). Ever wheezing or whistling in the chest and physician-diagnosed asthma were also elevated in the highest  $\Sigma$ DEHP metabolites concentrations tertile, though estimates were imprecise.

**Conclusions:** These findings support a link between the plasticizer DEHP and development of wheezing in childhood, but confirmatory studies in larger populations are needed..