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Title: Organochlorine chemicals increase the risk of non-atopic wheeze in adolescents

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Body: Ecologic studies have demonstrated a significant increase in hospitalization for asthma in those living near a waste site containing persistent organic pollutants (POPs), mostly polychlorinated biphenyl compounds (PCBs). POPs are lipophilic, accumulate in fat and are poorly metabolized with a half-life in the body of about 10 years. PCBs are classified by the number and position of chlorines around the biphenyl ring, with different congeners having different activities. We measured serum levels of 101 PCB congeners and 3 chlorinated pesticides [hexachlorabenzene (HCB), DDE, the major metabolite of DDT, and Mirex] in 240 children participating in the respiratory assessment of a longitudinal birth cohort at 14 years or age. Current wheeze was reported by 63 (26.3%) and 96 (40.0%) were atopic. Levels of PCBs and pesticides were similar to those reported in American adolescents. Overall, those with higher levels of total PCBs were more likely to report current wheeze [OR 1.61 (95%CI 1.05-2.6), p=0.029]. Stratifying the analyses by atopic status revealed that the positive associations were seen in non-atopic children. In the non-atopic group associations were seen between current wheeze and total PCBs [2.59 (1.36-4.94) p=0.004], estrogenic [1.97 (1.28-3.01), p=0.002], di-ortho [2.58 (1.41-4.72) p=0.002], and tri-plus ortho [1.97 (1.20-3.23) p=0.007] congeners but not dioxin-like PCBs [1.06 (0.90-1.24) p=0.52]. Associations were also seen with HCB [2.82 (1.22-6.55) p=0.016] but not with the other pesticides. These data demonstrate that the health effects of exposure to organochlorine chemicals are dependent on the chemical structure. The lack of effect in atopic children requires clarification.