

Poster 68

Evidence on the relationship between airborne exposure to endocrine-disrupting chemicals among school-age children and asthma onset or exacerbation: a systematic review

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Abstract

Background: Evaluating airborne exposure to endocrine-disrupting chemicals (EDCs) in children is paramount, given their vulnerability, which can lead to enduring health impacts such as asthma-related outcomes [1]. **Objective:** This systematic review aims to identify existing scientific evidence assessing airborne exposure to EDCs among school-age children and asthma onset or exacerbation. **Methods:** This review adhered to the Preferred Reporting Items for Systematic Reviews and Meta-analysis (PRISMA) guidelines [2] and was registered with the International Prospective Register of Systematic Reviews (CRD42023466637). It was conducted in the PubMed, Web of Science, Scopus, and Cochrane Library databases from inception to November 1st, 2023. Studies focusing on children aged 5-18 years with at least one EDC compound examined in various matrices and investigating the relationship between EDC exposure and asthma onset or exacerbation were included. Exclusion criteria encompassed the use of animal or *in vitro* models, the absence of quantitative EDC exposure data, reviews, and studies unavailable in English. The risk of bias was assessed using the Newcastle Ottawa scale [3], and the studies' characteristics were retrieved according to Rooney et al. [4]. **Results:** Overall, 63 studies were included, with the majority published in 2022 (n=8) and conducted in Asia (n=25). Most of them focused on asthma onset rather than its exacerbation (51 vs. 20), with urine (n=35) and blood (n=11) as the favored matrices. The most commonly investigated EDCs were, in descending order, phthalates, Polycyclic Aromatic Hydrocarbons (PAHs), heavy metals, bisphenols, organophosphates esters, triclosan, nitrogen peroxide, and parabens. Four studies had a high risk of bias in the selection domain, 8 in the comparability domain, and none in the outcome/exposure domain. **Conclusions:** Research primarily examined phthalates and PAHs, with limited attention on paraben and triclosan. Comprehensive studies with robust exposure assessment and asthma characterization are vital for understanding EDCs' impact on health, particularly the effects of EDC mixtures.

Keywords: endocrine-disrupting chemicals; airborne exposure; asthma; children

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