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Dioxins Associated With Learning and Attention Disorders

Association of serum concentrations of persistent organic pollutants with the prevalence of learning disability and attention deficit disorder.

[Lee DH](#), [Jacobs DR](#), [Porta M](#).

Department of Preventive Medicine, School of Medicine, Kyungpook University, 101 Dongin-dong, Jung-gu, Daegu 700-422, Korea. lee_dh@knu.ac.kr

OBJECTIVE: Even though persistent organic pollutants (POPs) are well-known neurotoxicants, there is no previous study, even cross-sectional, on the association between background exposure to POPs and clinically significant developmental disorders, such as learning disability (LD) or attention deficit disorder (ADD), among children from a general population. **DESIGN:** Cross-sectional study. **SETTING:** Study subjects were 278 children aged 12-15 years included in the National Health and Nutrition Examination Survey 1999-2000. The seven most commonly detected POPs (each detectable in $\geq 20\%$ of children: 3,3',4,4',5-pentachlorobiphenyl; 1,2,3,4,6,7,8-heptachlorodibenzo-p-dioxin (HPCDD); 1,2,3,4,6,7,8,9-octachlorodibenzo-p-dioxin (OCDD); 1,2,3,4,6,7,8-heptachlorodibenzofuran (HPCDF); beta-hexachlorocyclohexane; p,p'-dichlorodiphenyltrichloroethane; and trans-nonachlor) were selected. **MAIN RESULTS:** Compared with children with non-detectable levels of POPs, adjusted prevalence ORs (95% CIs) of LD among those with detectable levels of HPCDD, OCDD or HPCDF were 2.08 (1.17 to 3.68), 2.72 (1.24 to 5.99) and 2.18 (1.15 to 4.15), respectively. For ADD, the corresponding figures were 3.41 (1.08 to 10.8), 3.33 (0.94 to 11.8) and 2.31 (0.62 to 8.63), respectively. **CONCLUSIONS:** Associations were observed between serum concentrations of POPs belonging to the categories of polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans and the prevalence of two clinically significant development problems, LD and ADD. The nature of these associations needs to be clarified by prospective studies.

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