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Dental defects in Faroese children exposed to PCBs

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Environmental pollutants polychlorinated biphenyls (PCBs) have been shown to cause developmental enamel defects of permanent teeth. There is a lack of data on their adverse effects on deciduous teeth that develop before and a few months after birth. The aim of this study was to evaluate the effects of PCB exposure on developmental enamel defects of deciduous teeth in children in the Faroe Islands, where the population is exposed to PCBs from their traditional diet. 114 children, lifelong residents, aged 8-9 years were examined. Developmental defects of enamel were assessed using the Developmental Defects of Enamel Index on buccal surfaces of deciduous teeth. PCB analyses of children umbilical cord serum samples taken at birth were made by high resolution gas chromatography using electron capture detection. Children mean umbilical cord serum PCB concentration was 1090 (range 100-6500) ng/g lipids. Positive correlations were found between the mean of the sum of 54 individual PCB congeners and number of deciduous teeth affected with developmental enamel defects (Spearman $r = 0.314$, $p = 0.009$), number of children with at least four deciduous teeth affected (Spearman $r = 0.363$, $p = 0.002$), and number of children with greater extents of the enamel defects (Spearman $r = 0.254$, $p = 0.036$). Our results showed a dose-response relationship between PCB exposure and developmental enamel defects of deciduous teeth, indicating that deciduous tooth development is one of the sensitive endpoints of PCB toxicity in man.