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Exposure to PCB and neurodevelopment of children

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The aim of this study was to assess the subtle neurodevelopmental effects in children's behaviour and spatial perception after environmental exposure to polychlorinated biphenyls (PCBs). Children were examined two times - at ages 8.6 ± 0.7 (n=430) and 12.5 ± 0.7 (n=345) years. Cognitive functions and behavioural testing (spatial skills/ability) were examined. The symptoms of behavioural disturbances were evaluated using questionnaire and from the check list of behaviour. At the examinations, median and 25th and 75th percentile of PCB serum concentrations in ng/g serum lipids were 320 (175; 615) and 216 (126;419), respectively. At the first examination, PCB serum concentrations were higher in boys, but this relationship disappeared later. In boys, serum PCB levels correlated negatively with TSH levels and positively with maternal age at delivery. In girls, spatial performance negatively correlated with FT4 levels in blood.

Children of the upper tertile of the PCB serum concentrations reported more health problems in the questionnaire ($p=0.027$) compared to children with PCB levels in the first tertile. In boys a negative correlation between serum PCB and performance in spatial perception was observed when PCB data from first examination were used in the analysis. In the model adjusted for past and actual PCB serum concentrations, behaviour, health problems, age of mother at delivery and spatial performances, significant associations were found between past PCB exposure, maternal age at delivery, spatial perception and reported health problems. A continuous link between PCB exposure and neurodevelopment was observed, but with increasing age this effect diminished.