

# RELATIONSHIPS BETWEEN CHILD AND MOTHER PFC SERUM CONCENTRATIONS IN A POPULATION WITH PFOA EXPOSURE FROM DRINKING WATER

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**Background and Aims:** There are few and small population studies on the level of exposure of newborns and children to perfluorocarbons (PFCs), in particular perfluorooctanoate (PFOA) and perfluorooctane sulfonate (PFOS). Unlike adult exposure which is from food and water, important routes of exposure to infants and children are transplacental and breast-feeding. Transfer of PFCs from mothers to newborns has been demonstrated by their detection in maternal, cord, infant blood and breast milk. The aim of the present study was to describe the relationship between PFCs in serum in child-mother pairs in a population with high PFOA exposure from drinking water.

**Methods:** In the C8 Science Panel Community Health Study population, children aged < 20 years at the survey were matched to their mothers using identifiers such as name, date of birth and address. For the successfully matched pairs the relationship was investigated between child and mother PFC serum concentrations and possible modifiers - age of child, whether or not they still lived in a contaminated area after birth, level of mother's exposure and mother's breast-feeding practice-.

**Results:** The mothers and children in this study population could be matched up with a high degree of confidence for 5,589 children under 20, i.e.63% of the total sample, rising to 73% for those up to 5 years of age. The PFOA (mean 31.20 ng/mL) and PFOS (mean 19.15 ng/mL) serum concentrations in children were highly correlated (especially PFOA) and higher than the mother's serum concentrations (mean PFOA and PFOS: 26.97 and 13.34 ng/mL;  $\rho=0.81$  and  $0.27$ , respectively). The child/mother PFOA ratio was higher from in utero and lactation exposure compared to infant exposure.

**Conclusion:** The relationship between mother's and children's PFC levels can provide insight into the relative importance of pre- and post-natal exposure for infants via the mother and the child's environment.