
Children's Environmental Health Research Findings
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Topic: Exposure to perfluorochemicals

Title: Perfluorochemicals in meat, eggs and indoor dust in China: assessment of sources and pathways of human exposure to perfluorochemicals

Conclusion: Diet is an important source of perfluorochemicals in China.

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Context: Nankai University, China

Abstract: In this study, 10 perfluorochemicals (PFCs) were measured in meat, meat products, and eggs, and in indoor dust, collected in China. Perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) were the most frequently detected PFCs in these samples. Mean concentrations of PFOS and PFOA in foodstuffs were in the range of 0.05-1.99 ng/g fresh wt and 0.06-12.5 ng/g fresh wt, respectively. The mean concentrations of PFOA, perfluoroheptanoic acid (PFHpA), and PFOS in indoor dust were 205, 14.0, and 4.86 ng/g, dry wt, respectively. The estimated daily intake of PFOS and PFOA from meat, meat products and eggs (EDI(meat & eggs)) ranged from 6.00 to 9.64 ng/d and from 254 to 576 ng/d, respectively, when the values below the limit of quantitation (LOQ) were assigned as 0, and from 8.80 to 15.0 ng/d and from 255 to 577 ng/d, respectively, when the values below the LOQ were set at 1/2 LOQ. The EDI (meat & eggs) of PFOS and PFOA increased with increasing family income. The estimated daily intake of PFOS and PFOA through inhalation of dust (EDI(dust)) ranged from 0.23 to 0.31 ng/d and from 9.68 to 13.4 ng/d, respectively. The daily intakes of PFOS and PFOA from the consumption of meat, meat products, and eggs, and from dust ingestion, as calculated from our samples in this study, were compared with estimated daily intake of PFCs reported from the concentrations in drinking water, fish and seafood from China. Our calculations indicate that dietary sources (EDI(dietary)) account for the overwhelming proportion of (99% for PFOS and 98% for PFOA) total daily intake (TDI) in adults. The analyzed foodstuffs (meat, meat products, and

eggs) were not the major contributors to dietary exposure to PFOS, whereas, meat was the primary contributor to dietary exposure to PFOA.

Policy Implications: Policies to reduce use of perfluorochemicals could reduce perfluorochemicals in the diet.

Keywords: perfluorooctane sulfonate, perfluorooctanoic acid