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DIETARY EXPOSURE ASSESSMENT TO PERFLUOROALKYL SUBSTANCES

Per- and polyfluorinated alkyl substances (PFASs) comprise a large group of anthropogenic chemicals which are ubiquitous environmental contaminants. In 2020 European Food Safety Authority (EFSA) established a tolerable weekly intake (TWI) of 4.4 ng/kg bw per week for the sum of four PFASs: perfluorooctanoic acid (PFOA), perfluorononanoic acid (PFNA), perfluorohexanesulfonic acid (PFHxS) and perfluorooctanesulfonic acid (PFOS).

Many researchers have attempted to estimate the dietary intake of PFASs in different European countries. These dietary intake assessments were based on the average body weight of 70 kg and the consumption rates from national diet surveys. The tolerable daily intake TDI) limit of 0.63 ng kg-1 b.w.-1 established for the Σ4PFASs by EFSA was exceeded according to most studies (Fig. 1). Many studies estimated the TDI using a very limited basket of food types, resulting in underestimation as the figures given did not reflect the objective dietary intake of PFAS. Difficulties in comparison of the exposure estimates from different studies appear since there is no consensus whether the observed data should be evaluated on the upperbound (UB) or lowerbound (LB) basis. The exposure is likely underestimated via the the LB approach, whereas it is certainly overestimated via the UB approach. Therefore, to reduce the uncertainties in occurrence data, more sensitive analytical methods or improved analytical protocols should be applied to ensure the analysis of PFASs at occurrence levels that comply with the newly established EFSA TWI of 4.4 ng kg-1 b.w.-1.

Primary authors: ZACS, Dzintars; PASECNAJA, Elina