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Dietary Intake of Perfluorooctane Sulfonate (PFOS) and Implications for Drinking Water Limits

PFOS exposure in the general population is widespread but gradually declining due to the large-scale phase out of PFOS manufacture beginning in the early 2000s. Estimated PFOS intake from all sources is relatively low, on the order of 0.01 $\mu\text{g}/\text{kg}\text{-day}$ or less. Exposure sources for the general population include food, drinking water, and house dust, with diet as the largest source. Several agencies in the US and abroad have established daily intake guidelines. Recently, both US EPA and ATSDR proposed values of 0.03 $\mu\text{g}/\text{kg}\text{-day}$; the UK Tolerable Daily Intake is 0.3 $\mu\text{g}/\text{kg}\text{-day}$. Based on these values, agencies have also set drinking water guidelines. These guidelines use either 10 or 20% as default values for the relative source contribution (RSC) from drinking water. Applying these default RSC values, in addition to relying on very conservative toxicological endpoints, likely yields drinking water guidelines that are unnecessarily conservative. We assessed the relative intake of PFOS from water, food, and other sources to establish alternative RSCs for PFOS. We reviewed data on estimated intake of PFOS from food and other sources and reviewed the assumptions used as the basis for the drinking water guidelines for PFOS. Given the relatively small total intake of PFOS from food (*e.g.*, approximately 0.005 $\mu\text{g}/\text{kg}\text{-day}$ or less), current drinking water guidelines are likely to overestimate the relative contribution from food and other sources and thus underestimate the RSC. Using the UK drinking water guideline as an example, we demonstrate that use of more scientifically supported RSC values would yield health protective drinking water guidelines that are more than four fold higher than the current guideline.