Position papers

Interim Position Paper on Per- and Polyfluoroalkyl Substances

Background

1. The COT has considered per- and poly-fluoroalkyl substances (PFAS) on a number of previous occasions, and recently published a statement on the European Food Safety Authority (EFSA) opinion in which the scientific basis of the new EFSA tolerable weekly intake (TWI) for the sum of four PFAS was reviewed. The Committee has subsequently been asked to consider what further guidance can be provided to support human health risk assessments undertaken by UK Government Departments and Agencies.

2. An initial paper on further COT work on PFAS was discussed at the October 2022 COT meeting (TOX/2022/53), which was followed by a paper outlining all health-based guidance values (HBGVs), presented in December 2022 (TOX/2022/67).

Uncertainties in the evidence base

3. The Committee considers there are a number of uncertainties with regards to the critical endpoint of decreased vaccine response in children, used as a basis for the EFSA TWI and draft US EPA RfDs for PFOA and PFOS, with respect to the biological significance of the response and reservations concerning the critical studies (Abraham et al. (2020) and Grandjean et al. (2012)). In the statement on the EFSA TWI the COT has also provided a number of reservations with respect to some of the modelling undertaken to determine the TWI.

4. In considering the wider evidence base, the Committee notes that a number of different approaches have been adopted by other authoritative bodies in deriving their HBGVs due to differences in critical study and endpoint selected, resulting in a range of available HBGVs for a number of different PFAS. More information is available in the paper presented at the December 2022 meeting (TOX/2022/67).

5. The Committee notes other challenges regarding the risk assessment of PFAS including the lack of data for most PFAS and consequently HBGVs only being derived for a small number and the uncertainty over how best to assess all detected PFAS, such as by summing all PFAS present or grouping similar substances. More information is available in the paper presented at the October 2022 meeting (TOX/2022/53).

6. Due to the uncertainties noted and the need for more guidance to support UK Government Departments and Agencies undertaking risk assessments for PFAS, the COT will undertake its own consideration of the evidence base and risk assessment.

Future COT work

7. Future COT work will be undertaken by a subgroup of Members and will include:

- An independent review of toxicological and epidemiological data, focusing on a number of critical endpoints, and considering the biological relevance of the endpoints assessed.
- Consideration of the toxicokinetics of PFAS.
- Whether and how different PFAS can be grouped for assessment.
- Deriving a HBGV or a number of HBGVs as the data allow.

Interim COT recommendation

8. The Committee acknowledges that a further review of PFAS will be an extensive and lengthy undertaking. In the meantime, where risk assessments are undertaken for the potential risks associated with exposure to PFAS, consideration should be made of the available HBGVs for the specific compounds identified, recognising the uncertainties with respect to the critical effects and modelling approaches adopted.

References

Abraham K, Mielke H, Fromme H, Volkel W, Menzel J, Peiser M, Zepp F, Willich SN and Weikert C, 2020. Internal exposure to perfluoroalkyl substances (PFASs) and biological marker in 101 healthy 1-year-old children: associations between levels

of perfluorooctanoic acid (PFOA) and vaccine response. Archives of Toxicology, 94, 2131–2147.

Grandjean P, Andersen EW, Budtz-Jorgensen E, Nielsen F, Molbak K, Weihe P and Heilmann C, 2012. Serum vaccine antibody concentrations in children exposed to perfluorinated compounds. JAMA, 307, 391–397. https://doi.org/10.1001/jama.2011.2034

Abbreviations

BMD	Benchmark dose
EFSA	European Food Safety Authority
HBGV	Health-based guidance values
PFAS	Per- and poly-fluoroalkyl substances
TWI	Tolerable weekly intake