

Systematic review of the literature on dioxins and dioxin-like polychlorinated biphenyls (PCBs)

This is a paper for discussion.

This does not represent the views of the Committee and should not be cited.

Introduction

1. In 2018 the European Food Safety Agency (EFSA) published a tolerable weekly intake (TWI) for dioxins and dioxin-like polychlorinated biphenyls (PCBs) of 2 pg TEQ/kg bw/week. This TWI is 7-fold lower than EFSA's previous tolerable intake (EFSA, 2018).
2. This 7-fold reduction of the tolerable intake would entail that, from a situation in which dietary exposure for most of the UK population is below a level of concern, exposure would instead be at a potentially harmful level. This suggests that current risk management measures for dioxins and dioxin-like PCBs in food, which include regulatory limits and precautionary advice to consumers and are based on the previous tolerable intake, may not be sufficiently protective.
3. Following the EFSA 2018 publication and reduction of the TDI, the COT published an Interim Position Statement in 2021. Due to uncertainties and inconsistencies in the description and evaluation of the key studies in EFSA's assessment, the COT could not agree with the proposed TWI and further considered the 7-fold reduction in the TWI inconsistent with the current database. The Committee noted that the European Commission (EC) has not yet adopted EFSA's new TWI due to ongoing work on the international level to review the basis and values of the WHO toxic equivalent factors (TEFs). Hence, the Committee felt unable to comment on the dietary exposures and whether they should be compared to the EFSA proposed TWI.

4. The Committee recommended undertaking a review of the evidence base on dioxin to derive a health-based guidance value (HBGV), focusing on the relevant toxicological endpoints.
5. Annex A provides the report of the commissioned systematic review of the literature on dioxins and dioxin-like polychlorinated biphenyls (PCBs). The review and subsequent report thereby focused on male reproductive toxicity and immunotoxicity. Literature on and assessment of the mechanism of action of dioxins via the aryl hydrocarbon receptor (AhR) have also been included to investigate species differences related to male reproductive toxicity and immunotoxicity, where possible.
6. The literature review further included a non-systematic look at data on potential carcinogenicity of dioxins and dioxin-like PCBs and whether it involves a genotoxic mechanism.
7. The report provided to the FSA also includes evidence integration and visualisation of the conclusions following the SETE guidelines.

Questions to the Committee

- i. Do the Committee have any comments or questions on the systematic literature review of dioxins.
- ii. Do the Committee require further information on any of the studies.
- iii. Do the Committee have any comments on the evidence integration applying SETE.
- iv. Following the systematic review, do the Committee have sufficient evidence to identify the key study/studies and derive a UK HBGV?
- v. Do the Committee have any other comments?

Secretariat

July 2023