Per- and polyfluoroalkyl substances: evaluation of thyroid effects using in vitro data - PFAS/2023/05

Introduction, Background and Literature Search

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This is a paper for discussion. This does not represent the views of the Committee and should not be cited.

Introduction

1. This paper is part of a series of papers supporting the COT assessment of the toxicology of per- and polyfluoroalkyl substances (PFAS). It provides the evidence on thyroid toxicity based on *in vitro* toxicity studies.

2. A paper on evidence of thyroid toxicity based on *in vivo* animal toxicity studies is also presented at this meeting (PFAS/2023/04). Future papers will include human evidence of the effects on the thyroid, and groups of papers covering other endpoints including developmental toxicity, liver toxicity and immunotoxicity.

Background

3. The COT has previously considered PFAS on a number of occasions (see summary in TOX/2022/53), and has recently published a statement on the EFSA opinion. A paper summarising health-based guidance values (HBGV) was presented in December 2022 (TOX/2022/67) and following agreement in March 2023 the PFAS subgroup was established and an interim position published outlining future work.

Literature search

4. Search terms used previously by the European Food Safety Authority (EFSA) (2018 and 2020) were replicated. These search terms, the inclusion and exclusion criteria and the search results are presented in Annex B to this paper.

5. A total of 13 published papers were identified, some of which comprised more than one assay and involved more than one PFAS. All papers and reports were evaluated using the ToxRTool (Klimisch et al., 1997) to determine data quality and reliability. Nine studies were classified as K1 or K2 and hence were further evaluated and are included in the tables below. Four studies were classified as K3 and were not further evaluated, as agreed at the first subgroup meeting.