

**TOX/2024/06**

## **Committee on Toxicity of Chemicals in Food, Consumer Products and the Environment**

### **Potential future discussion items – horizon scanning**

#### **Background**

1. The Committee Terms of Reference specify “To advise at the request of” (.....government departments). Therefore, the work of the Committee is primarily reactive and the agendas are set by the Secretariat based upon the need for advice from Government Departments and Agencies particularly, but not exclusively, the Food Standards Agency (FSA) and the UK Health Security Agency (HSA).

2. The Code of Practice for Scientific Advisory Committees (Office of Science and Technology, December 2021), specifies that “committees should ensure that they have mechanisms in place that allow them to consider on a regular basis whether new issues in their particular areas of responsibility are likely to emerge for which scientific advice or research might be needed”.

3. Members have agreed that it would be useful to have an annual agenda item to discuss potential future topics. A list of upcoming topics is also displayed on the Committee’s website: [Forthcoming COT meetings | Committee on Toxicity \(food.gov.uk\)](https://www.food.gov.uk/committees/cot).

4. As Members are aware, now that the UK has left the European Union the authorisation of regulated products that would have been done by EFSA is being done in the UK. Two Joint Expert Groups (JEGs) have been established to cover the authorisation of regulated products and these will be over seen by the COT who will provide challenge, comment and assurance of their work. The FCMJEG covers food contact materials and AEJEG covers food additives, enzymes and other regulated

products. An additional AEJEG group is working solely on the reauthorisation of smoke flavourings.

5. The Advisory Committee on Animal Feedingstuffs (ACAF) has been reconstituted to cover authorisations of animal feed and feed additives who may, on occasion, seek specialist advice from the Committee.

6. Details of completed JEG assessments are available on the FSA website: [Research projects | Food Standards Agency](#).

7. Requests for COT advice are also being received from the Nutrition, Labelling Composition and Standards Group which is a risk management group for the 4 countries of the UK and covers legislative areas such as infant formula and follow on foods, food supplements, and nutrient sources where the policy lead is the responsibility of the Department of Health and Social Care in England, FSA Northern Ireland, the Scottish Government and the Welsh Assembly; topics raised by NLCS include green tea catechins fortificants in bread and flour and folic acid hypersensitivity.

8. This has started to affect the agendas of the Committee, although it is unclear as yet how much Committee time this will represent in the long term as the first authorisations are just starting to be seen by the Committee.

## **Agenda items for 2024**

### **Ongoing items**

9. There are a number of ongoing items, either on the current agenda or scheduled for further discussion at a future meeting:

- COT input into the Scientific Advisory Committee on Nutrition (SACN) review of the maternal diet.
- Biologically based food contact materials.
- Titanium dioxide.

- Bisphenol A.
- Emerging marine biotoxins.
- the mycotoxins T2 and HT2.
- Ocean bound plastics.

### **Upcoming items**

10. Upcoming items may include alternatives to BPA, mycotoxins in cat food and acrylamide.

### **Proposed Workshops**

11. The two most recent COT workshops have been held on “Opportunities and outlook for United Kingdom Food and Chemicals regulation post European Union Exit” and “Evolving Our Assessment & Future Guiding Principles Workshop” which took place in May 2023.

12. A topic has not yet been identified for the 2024 workshop, which would be likely to take place in July or September

### **Potential discussion topics**

#### **UK HSA**

13. As agreed in 2023, a literature search has been conducted on phosphate based flame- retardants, but there was insufficient new information to present to the Committee.

### **COC and COM horizon scanning**

14. COC and COM have been considering the approach used to horizon scanning for these Committees, which included a joint discussion session in October 2023, and this will be investigated further in 2024. In the meantime there is no further

update to activities for COC or COM than was presented in the 2023 COT horizon scanning paper.

## Other Updates

### FSA-funded Computational Toxicology Fellowship and LIDo PhD student in AI

15. The FSA and COT have been reviewing New Approach Methodologies (NAMs) to scope the best scientific methodologies available to be used in risk assessment of chemicals in foods and the environment and understand how these can be incorporated in a regulatory context with validation approaches.

16. The FSA have recruited a computational toxicology fellow at the University of Birmingham and a PhD Student (London Interdisciplinary Doctoral Program-LIDo-TOX AI) at King's College London. The aims of the projects are to develop *in silico* tools (*i.e.* artificial intelligence machine learning) for toxicological prediction of chemicals through case studies and proof of concept studies. The fellow and student will also work alongside other government departments to understand how NAMs will improve indicative levels of safety in chemical risk assessment.

17. In addition, these new partnerships will help with networking, research collaboration, training opportunities and further our knowledge in this area. The fellowship and studentship also compliment the work set out in our UK Roadmap towards using new approach methodologies in chemical risk assessment.

18. The programme of work in the fellowship consists of (i) scoping the FSA's problem space in chemical risk assessment and mapping this to our computational NAMs solution space, thereby aiding the FSA to develop a strategy for the utilisation of NAMs; (ii) ensuring that the FSA is trained in the use of computational NAMs by delivering training courses, including an introduction to existing and emerging NAM technologies, and topics selected from the FSA's NAM strategy; (iii) developing and evaluating confidence in a new hazard assessment workflow that integrates *in vitro* omics toxicity data, benchmark dose modelling and PBPK modelling to serve as the basis for quantitative risk assessment for human health, *i.e.*, towards generating

human health-based safety thresholds for FSA and other regulators; and (iv) developing and delivering a second case study that fortifies the community-wide acceptance of 21st century methods in risk assessments, to accelerate the successful application of NAMs within the FSA.

19. The programme of work in the PhD up to the present is composed of three parts: (1) Exploration of dimensionality reduction algorithms, for powering QSAR models of mutagenicity, constructed of simple feed-forward Deep Neural Networks (DNNs) (Kalian et al., 2023, Kalian et al., 2023); (2) Development of Graph Convolutional Networks (GCNs) to improve mutagenicity predictions, via graph classification of molecules, while also allowing for mining of structural alerts (SAs); (3) Development of GNNs for node classification of molecules, in order to predict toxicological properties of BFRs, starting with acute toxicity and comparing to predictions from the Toxicity Estimation Software Tool (TEST) of the US EPA.

### **FSA Research Programme**

20. The FSA research strategy has seen the consolidation of all research in the portfolio into a series of programmes by area of research interest. The three programmes most likely to involve matters that COT will be consulted on are “food hypersensitivity”, “chemical hazards in food and feed” and “cutting edge regulator”.

21. FSA are carrying out a literature review on New Approach Methodologies (NAMs) to Support Regulatory Decisions for Chemical Safety. This information will help to improve our understanding of how these new technologies can enhance our current approach to chemical risk assessment and help inform the FSA's own mission to provide the highest safety possible to UK consumers in a rapid changing scientific landscape.

### **Balance of expertise on the Committee**

22. It has previously been agreed that the following types of specialist expertise are required by the Committee for some or all of its evaluations:

Analytical techniques	Biochemistry
Bioinformatics	Cell biology
Clinical practice	Dietary exposure assessment
Endocrinology	Environmental exposure assessment
Epidemiology	Human toxicology
Immunology	Mathematical Modelling
Mechanistic toxicology	Molecular biology
Neurotoxicology	Nutrition
Paediatrics	Pharmacokinetics
Pharmacology	Probabilistic modelling
Reproductive toxicology	Respiratory toxicology
Risk assessment	Statistical aspects of experimental design
Statistics	Systems biology
Toxicogenomics	Toxicological pathology
Xenobiotic metabolism	

23. It would not be necessary to have an individual member for each listed expertise as some people would have a combination of the required skills. Additional key experts are also invited to attend meetings for specific topics to supplement missing knowledge.

24. As Members are aware recruitment to the FSA Scientific Advisory Committees is now carried out annually by a central team, starting in the Autumn. However, the balance of expertise set out below is used to guide the process.

25. Members are invited to comment on whether this list is still appropriate and if there are important gaps amongst the current membership or in light of possible future developments.

**Questions on which the views of the Committee are sought:**

26. Members are invited to comment on each of the above areas and also to consider the following questions:

a. Do Members have additional suggestions for future topics for:

- Specific issues to be included as routine agenda items.
- Focussed topics for one-day open meetings.
- Generic issues requiring establishment of a Working Group.

27. Do Members have any proposals for research that FSA should fund in order to improve future COT risk assessments?

28. Do Members have any comments on the balance of skills on the Committee?

29. Members are reminded that they may draw particular issues to the attention of the Secretariat at any time.

**Secretariat**

**January 2024**

## References

CoPSAC (2021) [Code of Practice for Scientific Advisory Committees and Councils:](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/94424/Code_of_Practice_for_Scientific_Advisory_Committees_and_Councils.pdf)  
[CoPSAC 2021 - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/94424/Code_of_Practice_for_Scientific_Advisory_Committees_and_Councils.pdf).