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

## Minutes of the meeting held on Tuesday, 24th May 2016 in Aviation House, London.

Present

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| Chairman: | Professor A Boobis | | |
| Members: | Mr D Bodey | | |
| | Prof J Cade | | |
| | Dr R Crevel | | |
| | Dr M Graham | | |
| | Dr A Hansell | | |
| | Prof D Harrison | | |
| | Prof B Lake | | |
| | Prof I Morris | | |
| | Prof F Williams | | |
| Food Standards Agency (FSA) Secretariat: | Dr D Benford | Scientific Secretary | |
| | Mr B Maycock | | |
| | Ms H Gbormittah | | |
| | Ms C Mulholland | | |
| | Ms F Hill | | |
| | Ms R Acheampong | | |
| | Ms L Buckley | | |
| | Dr D Hedley | | |
| | Dr J Shavila | | |
| | Mr A Sbaiti | | |
| | Dr L Kent | | |
| | Ms K Sturgeon | | |
| Public Health England (PHE) Secretariat: | Dr O Sepai | PHE Scientific Secretary | |
| | Dr H Garavini | Toxicology Unit, Imperial College London | |
| Invited Experts and Contractors: | Dr R Boyle | Imperial College London | Item 5 |
| | Dr P Turner (by phone) | Imperial College London | Item 5 |
| | Prof I Kimber | University of Manchester | Item 5 |
| | Mr P Gregory | Deenside Ltd | Item 3 |

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| Officials: | Ms R Elsom | PHE | Items 4-7 |
| | Ms E Kendall | FSA Food Allergy Branch | Item 5 |
| | Ms M Ige | FSA Chemical Contaminants and Residues Branch | Items 4 and 6-7 |
| Assessors: | Prof T Gant | PHE | |
| | Ms Michaela Benton | Health and Safety Executive | |

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## Announcements

1. The Chair welcomed Members and Assessors to the meeting.

2. The Chair reminded those attending the meeting to declare any commercial or other interests they might have in any of the agenda items.

3. The Chair offered the Committee's congratulations to Prof David Harrison on his appointment to the Chair of the Committee on Carcinogenicity (COC). The Chair also explained that this was the last meeting of Dr Lauren Kent of the Secretariat and thanked her for her contributions to the work of the Committee.

## Item 1: Apologies for absence

4. Apologies were received from Members Dr C Harris, Dr J Coulson, Prof B Houston, Dr N Plant, Prof R Smith, Dr J Thompson and Prof R Harrison. Prof R Harrison and Dr J Coulson sent written comments. Prof Peter Aggett from the Subgroup on Maternal and Child Nutrition (SMCN) of the Scientific Advisory Committee on Nutrition (SACN) also sent his apology.

## Item 2: Draft minutes of the meeting held on 8th April 2016

5. The minutes were agreed without amendments.

## Item 3: Matters arising

*Item 3: Matters arising from previous meetings*

6. Para 6: The joint COT/COC Synthesising Epidemiological Evidence Subgroup document was currently in the process of being completed. The document was an overview of the key issues and methods.

7. Para 7: A teleconference was held at the end of April between some members of the Joint SACN/COT Potassium-based Sodium Replacers Working Group and the secretariat to discuss progress to date, particularly on the exposure assessment. A full meeting of the Working Group was planned for September.

8. Para 9: The report of the FSA's triennial review of its scientific advisory committees had been discussed by the FSA Board on 18th May. The Chair of the General Advisory Committee on Science (GACS) had attended to explain GACS' concerns. The FSA Board had provided assurance that the FSA would reinforce the

principles of science and evidence in decision-making, openness and transparency, The Board also clarified the composition of the Science Council and confirmed that it would maintain mechanisms for contact between Chairs of the scientific advisory committees.

*Item 4: Follow-up paper on the submission for a reformulation of PAVA irritant spray*

9. Discussed at the end of this item. See para 16 below.

*Item 5: Review of risks arising from the infant diet and the development of atopic and autoimmune disease: Systematic Review B*

10. A draft statement would be considered at Item 5. A draft statement on Reviews A and C was scheduled for the next meeting in July.

*Item 7: First draft statement on the potential risks from arsenic in the diet of infants and children*

11. A second draft statement would be considered at Item 6.

*Item 8: Second draft statement on the potential risks from lead in the diet of infants and children*

12. A third draft statement would be considered at Item 4.

*Item 9: First draft statement on the potential risks from aluminium in the diet of infants and children*

13. The draft statement was currently in the process of being revised following the last meeting, ahead of it being cleared by Chair's action.

*Item 10: Draft Annual report*

14. Only minor comments had been received. The COT part of the draft Annual Report was in the process of being finalised.

*Item 11: Peer review by EU-ANSA agencies – a reflection paper*

15. Three Members had emailed comments. The Committee considered whether the paper should be considered further at a future COT meeting and concluded that it was more appropriate for GACS to consider.

*Further information on the reformulated PAVA spray (Reserved Business)*

16. No interests were declared.

17. Mr Paul Gregory, an incapacitant consultant for the applicant, Deenside Ltd., attended to answer the Committee's questions.

18. This item was reserved business as it considered commercially sensitive information.

**Item 4: Third draft addendum to the 2013 COT statement on potential risks from lead in the infant diet- TOX/2016/18**

19. The Chair and the Scientific Secretary, Dr Benford, declared that they had been members of the European Food Safety Authority's (EFSA) Panel on Contaminants in the Food Chain (CONTAM) panel when the scientific opinion on lead in food had been adopted in 2010.

20. A discussion paper providing estimates of exposures to lead and margins of exposure for infants and young children in the UK aged 0 to 5 years had been considered at the December 2015 meeting; this had provided updates and additional information to the data summarised in the 2013 COT statement on lead in the infant diet. A draft addendum to the 2013 statement had subsequently been considered at the February and May 2016 meetings.

21. A further revision of the draft addendum had now been produced. This included updated exposure estimates for air and soil and dust. The revised exposure estimates for air used default respiratory rate values from the Exposure Factors Handbook of the US Environmental Protection Agency (US EPA). The revised exposure estimates for soil and dust used data from the Department for Environment, Food and Rural Affairs (Defra) and the British Geological Survey (BGS) and default ingestion values for soil and dust derived by the US EPA for soil. As requested by the committee, additional information on lead concentrations in private water supplies was provided in the draft addendum, but had not been used in the exposure estimates, as they were not considered to be representative of the UK.

22. It was explained that the focus of the assessment was on dietary exposure to lead but that non-dietary exposure was also taken into account as part of the total exposure. Any concerns regarding non-dietary exposure to lead could be flagged up for further consideration.

23. Members made a number of editorial comments on the draft statement. A Member noted that the FSA consumer advice on the consumption of lead shot game did not specify recommended maximum levels of intake (e.g. numbers of portions). The FSA advised that this reflected the fact that the concentrations of lead in game were very variable.

24. The most significant exposure to lead in infants and young children was from soil; this was a known issue and may need to be considered further by the relevant authorities. However, the levels of lead in soil were likely to be declining, due to the reduction in the use of lead and its compounds.

25. The uncertainty in measuring a one point decrease in IQ (the endpoint used by EFSA in the benchmark dose modelling) was discussed. The decrease in IQ was at the population level. The dose-response data were from a pooled analysis of children from different cohorts at different parts of the dose-response curve. A Member noted that a one point drop in IQ represented a shift in the distribution of IQ of the whole population and would have greater consequences at the ends of the distribution, the rationale for its use by EFSA. It was agreed that the uncertainties should be noted in the statement addendum.

26. It was agreed that the revised conclusions would be circulated to Members for comment. The statement addendum could then be finalised by Chair's action.

**Item 5: First draft statement on the introduction of allergenic foods to the infant diet and influence on the risk of development of atopic outcomes and autoimmune disease – TOX/2016/19 [Reserved Business]**

27. The Chair declared a non-personal, non-specific interest in this item as he was employed at the same institution as the contractors who had performed the review.

28. Professor Ian Kimber (University of Manchester) was present and Dr Paul Turner (Imperial College London) was available via teleconference for some of the discussion, to offer advice to the Committee on this topic. Dr Robert Boyle from the contractor team was also present to answer questions on the review.

29. The minutes of this item are currently reserved as they include pre-publication data. They will be published as soon as practicable.

**Item 6: Second draft statement on the potential risks from arsenic in the diet of infants aged 0 to 12 months and young children aged 1 to 5 years – TOX/2016/21**

30. The Chair and the Scientific Secretary, Dr Benford, both declared that they had both been members of the EFSA CONTAM panel when the scientific opinion on arsenic in food had been adopted in 2009. In addition, Dr Benford had been a member of the working group that had drafted the EFSA scientific opinion, and had also been a member of the working group that had prepared the Joint Food and

Agriculture Organization/World Health Organization Expert Committee on Food Additives' (JECFA) addendum on arsenic.

31. A first draft statement had been considered by the Committee at the April 2016 meeting. At this meeting, Members had requested that the estimated exposures to arsenic via soil be refined if possible, and that further detail be provided about potential exposures from private water supplies. Members had also requested that the choice of BMDL for use in the characterisation of potential risks be reconsidered, with clear justification given for whichever BMDL was used.

32. In line with these requests, a second draft statement had been produced in which the soil exposure assessments had been re-estimated using newer data and default ingestion values that had been derived by the United States Environmental Protection Agency (US EPA). Additional information regarding the concentration of arsenic in private water supplies was also incorporated into the draft statement, although the available data had not been used to estimate exposures as they were not considered to be representative of the UK. Furthermore, the margins of exposure (MOEs) presented in Annex A had been recalculated using the JECFA $BMDL_{0.5}$, and a clear rationale had been included for the use of this BMDL rather than the lowest EFSA $BMDL_{01}$.

33. The Committee suggested some minor amendments to the wording of the statement. The Committee discussed the interpretation of the MOEs, noting that this must account for the use of human data in deriving the $BMDL_{0.5}$ rather than animal data, as well as the smaller benchmark response than for a $BMDL_{10}$ which is usually calculated from animal carcinogenicity data. Members also noted that inorganic arsenic does not react directly with DNA and therefore genotoxicity would be a secondary effect following, for example, oxidative damage. For these reasons the Committee concluded that, in this instance, an MOE of 10 or above could be considered to not be a health concern. The statement would be worded accordingly to reflect this.

34. The Committee agreed that the statement could be finalised by Chair's action once revised.

**Item 7: Review of potential risks from polybrominated diphenyl ethers (PBDEs) in the diet of children aged 1 to 5 years and updated exposures for infants aged 0 to 12 months- discussion paper- TOX/2016/22**

35. The Chair and the Scientific Secretary, Dr Benford both declared that they had been members of the EFSA CONTAM panel that had adopted the scientific opinion on PBDEs in 2011.

36. The SACN has been undertaking a review of scientific evidence that will inform the Government's dietary recommendations for infants and young children. The SACN was examining the nutritional basis of the advice. The COT had been asked to review the risks of toxicity from chemicals in the diet of infants, most of which had been completed, and now on young children aged 1 to 5 years. The reviews would identify new evidence that had emerged since the Government's recommendations were formulated, and would appraise that evidence to determine whether the advice should be revised.

37. This discussion paper provided estimates of PBDE exposures for children in the UK aged 1 to 5 years, and also an updated exposure assessment for infants aged 0 to 12 months because new data had become available since the 2015 COT statement on potential risks from PBDEs in the infant diet (Statement 2015/01).

38. Members were content with the approach undertaken for the exposure assessment. It was agreed that the evaluation of PBDE exposures should be written in the form of an addendum to the Statement 2015/01 and that this should focus on the new data available.

39. Members discussed that the risk characterisations were for only the four congeners that had reference points, and that these were derived from $BMDL_{10}$s in neurobehavioural studies in mice which had been extrapolated to the long term daily intakes in humans which would result in the same body burdens. EFSA had concluded that for these PBDEs an MOE of greater than 2.5 might indicate that there was no health concern. Since the reference points were based on body burden using the upper ends of ranges of human half-lives they were considered to account for both inter and intra-species toxicokinetic variation. Furthermore EFSA had considered that since the $BMDL_{10}$s were based on effects induced in mice at a relevant period of brain development no additional adjustment was needed for toxicodynamic variation in the human population. A MOE of 2.5 allowed for interspecies variation in toxicodynamics. However, Members noted that some of the estimated MOEs for consumption of breast milk were substantially below 2.5.

40. Members noted that there were no new data on concentrations in breast milk and that the data used in the 2015 infant statement (Statement 2015/01) were from a small number of samples. The same paper reported blood levels of PBDEs which indicated a decline over time.

41. Members discussed that the PBDEs were no longer used and therefore levels would be expected to be decreasing. Members requested that comments be included regarding levels of PBDEs in European Union countries with particular reference to whether there was a trend for increasing or decreasing levels.

42. Members concluded that cumulative risk assessments of the PBDEs could not be conducted as the relative potencies were unknown. Since the low MOEs for breast milk consumption indicated a concern from dietary exposure alone it was not necessary to perform aggregate exposure assessments, as these would not affect the conclusion.

**Item 8: Paper for information: FSA Scientific Advisory Committees (SACs) update**

43. This paper was provided for information only.

**Item 9: Any Other Business**

44. The Committee congratulated the Chair on his receiving the 2016 Arnold J Leeman Award from the Society of Toxicology.

**Item 10: Date of next meeting**

45. The next meeting would be held on 5th July 2016 in Conference Rooms 4&5, Aviation House, 125 Kingsway, London, WC2B 6NH.