TOX/MIN/2013/05

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

Minutes of the meeting held on Tuesday, 17th September 2013 in Aviation House, London.

Present

Chairman:	Professor D Coggon		
Members:	Mr D Bodey		
	Dr R Brimblecombe		Items 1-3, 5 and 6
	Prof J Cade		
	Dr R Crevel		
	Dr M Graham		
	Dr C Harris		
	Prof D Harrison		
	Prof B Lake		
	Prof I Morris		
	Dr N Plant		
	Dr J Thompson		
Food Standards Agency (FSA) Secretariat:	Dr D Benford	Scientific Secretary	
	Ms H Gbormittah	Administrative Secretary	
	Ms R Acheampong		
	Dr E Cemeli		
	Dr G Gott		
	Dr M Kurzawa-Zegota		
	Mr B Maycock		
	Ms C Mulholland		
	Dr D Parker		
	Ms C Potter		
	Mr A Sbaiti		
	Dr J Shavila		
Public Health England (PHE) Secretariat:	Dr L Hetherington	Scientific Secretary	
	Dr Halina Garavini	PHE Toxicology Unit, Imperial College London	
Co-Opted Members	Prof P Aggett	Vice Chairman, SACN	
Invited experts and Contractors	Dr N Dowdall	Civil Aviation Authority (CAA)	Item 4
	Mr S Parker	CAA	Item 4
	Dr J Cherrie	Institute of Occupational Medicine (IOM)	Item 4

	Ms J Lamb	IOM	Item 4
	Dr D Crump	Cranfield University	Item 4
	Dr C Walton	Cranfield University	Item 4
Officials	Mr D Glinos	Department for Transport (DfT)	Item 4
	Ms K Jennings	DfT	Item 4
	Mr G Smith	Centre for Applied Science and Technology (CAST), Home Office	Item 5
Assessors	Dr M Benton	Health and Safety Executive (HSE)	
	Dr T Gant	PHE	
External Observers	Prof J Ramsden	University of Cambridge	Item 4
	Ms K Arnold	British Airways (BA)	Item 4
	Ms S Wheatman	BA	Item 4

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Announcements

1. The Chairman, Professor Coggon, welcomed Members and assessors to the meeting. He also welcomed:

- Ms Kate Jennings – Head of Division (Aviation Policy Implementation), Department for Transport; Mr David Glinos – Head of Aviation Passenger Rights, Department for Transport; Dr Nigel Dowdall - Head of Aviation Health Unit, Civil Aviation Authority; Mr Sean Parker – Head of Safety Data, Civil Aviation Authority; Ms Judith Lamb – Research Scientist, Institute of Occupational Medicine; Dr John Cherrie – Research Director, Institute of Occupational Medicine; Dr Christopher Walton – Lecturer in Analytical Technology, Cranfield University; and Dr Derrick Crump – Director of Institute of Environment and Health, Cranfield University; all present for Item 4.
- Graham Smith – Centre for Applied Science and Technology (CAST), Home Office Science; present for Item 5
- Professor Peter Aggett, a member of Scientific Advisory Committee on Nutrition (SACN) and its subgroup on Maternal and Child Nutrition; present as a co-opted Member for Item 7 and other items related to infant feeding.

2. Members were informed that, the Agency was being restructured, so that instead of a single part-time Chief Scientist, it would have a full-time Director of Science and Evidence reporting to the Director of Policy, and a part-time external Chief Scientific Advisor reporting to the Chief Executive. Dr Andrew Wadge (the Agency's Chief Scientist) would be leaving the Agency later in the year. At its meeting in October, the Agency's General Advisory Committee on Science (GACS) would be discussing the implications of the reorganisation for science in the FSA. The Chairman noted that Dr Wadge had been strongly supportive of COT and the Committee wished him the best for the future.

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

Item 1: Apologies for absence

4. Apologies were received from four members: Professor Roy Harrison, Professor Brian Houston, Dr Anna Hansell, Professor Rob Smith and Professor Faith Williams; and from two assessors: Sam Fletcher (Veterinary Medicines Directorate) and Colin Powesland (Environment Agency). Written comments had been submitted by four members.

Item 2: Draft minutes of the meeting held on Tuesday, 2nd July 2013 – TOX/MIN/2013/03

5. The minutes of the 2nd July 2013 meeting were agreed subject to minor editorial amendments and some clarifications to paragraphs 73, 80, 81 and 82 (requested by Dr Rebecca Suckling). The reserved minutes would be circulated for discussion at the next meeting.

Item 3: Matters arising

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6. Para 5: Two further papers on vitamin D were item 6 on the current agenda.

7. Para 6: The second draft statement on phytoestrogens and soya products in the infant diet was item 7 on the current agenda.

8. Para 9: The statement and lay summary on aluminium in the infant diet had been published on the COT website.

Item 4: Verbal update on FSA funded project T01054. Determination of the symptoms of aspartame in subjects who have reported symptoms in the past compared to controls: a pilot double blind placebo crossover study. (RESERVED BUSINESS)

9. The draft final report on the research project had been received on 3rd September and forwarded to the Chair and four members for preliminary comment. The Chair would collate feedback to be forwarded to the contractors.

Item 5: Draft report on FSA funded project T01057. A possible blind placebo controlled parallel trial of soy phytoestrogens in patients with compensated hypogonadism

10. The full results had not yet been received.

Item 6: Waste and Resources Action Programme (WRAP)

11. The finalised COT minutes would be forwarded to WRAP. No further requests for advice had been received.

Item 7: Second draft statement on endosulfan isomers, pentachlorobenzene and chlordecone in relation to infant diet

12. The statement was being finalised. A draft lay summary would be forwarded to Members shortly.

Item 8: Third draft statement on the potential risks from lead in the infant diet

13. The statement and lay summary on lead in the infant diet had been published on the COT website.

Item 9: Fourth draft statement on the potential risks from high levels of vitamin A in the infant diet

14. The statement was being finalised and, together with a draft lay summary, would be forwarded to Members shortly.

Item 10: Potassium salt replacers in vulnerable groups

15. Discussions were taking place between DH and FSA on refinement of the exposure assessment. Also, Dr Suckling was pursuing additional data on vulnerable groups. Further information would be presented to COT in due course.

Item 4: Discussion Paper on Exposure Monitoring of the Aircraft Cabin Environment – TOX/2013/32

16. No interests were declared

17. The Committee had been asked by the Department for Transport (DfT) to provide independent scientific review of the findings from DfT-funded research on the cabin environment of aircraft. This research had been commissioned in response to recommendations made by the COT in 2007. The DfT had commissioned four studies concerning the assessment of air-monitoring equipment, monitoring of air and surface residues in aircraft, and a statistical analysis of the relationship between fume events and operational data routinely recorded during flights. The Public Health England (PHE) COT Secretariat, and through them the PHE Toxicology Unit at Imperial College London, had been commissioned by the DfT to review the reports of these studies and prepare a discussion paper for the COT.

18. Members were provided with TOX/2013/32 and its accompanying annexes, which included the previous COT statement on this topic from 2007 ("Statement on the review of the cabin air environment, ill-health in aircraft crews and the possible relationship to smoke/fume events in aircraft") (Annex 1); reports of the four studies commissioned by the DfT (Annexes 2-5); the specifications and methods of a literature search (Annex 6); a summary of the relevant literature that had been identified from this search (Annex 7); and two publications of particular interest (Annex 8).

19. Three of the four commissioned studies had been carried out by Cranfield University, while the fourth, on monitoring of surface residues, had been conducted by the Institute of Occupational Medicine (IOM).

20. The purpose of the first study (Report 1) had been to determine which air-monitoring equipment would be suitable for use in the subsequent cabin air-sampling study (Report 3). It emerged that diffusive solid phase microextract (SPME) fibres were unsatisfactory for this purpose as the fibres were fragile and broke during testing, and there was too much analytical noise.

21. Use of pumped thermal desorption (TD) tubes was more promising, although through human error, the sample tubes had been placed in the equipment back to front in several tests. Moreover, in a check on validity, in which two laboratories had analysed parallel samples independently, agreement had been poor. This had highlighted a need for better standardisation of methods. There was also a concern that checks had not been made to ensure that analytes were fully retained when they entered sampling tubes, and were fully extracted when analysis was carried out.

22. A photoionisation detector proved relatively insensitive.

23. Members asked how the researchers had decided on their final protocol for the subsequent air-monitoring study, and whether they were confident that the methods of sampling and measurement would be not only repeatable but valid. In response, Members were advised that the protocol was based on the method which gave optimal results for the situation. The researchers had used ISO methods where available and employed reference samples, and when they had exchanged spiked tubes between laboratories, agreement had been acceptable.

24. Members asked what had been the rationale for selecting the compounds to be measured, and why only eight compounds had been chosen. They were advised that the chemicals had been chosen to include several that were commonly present in engine oil, and that it would have added significantly to costs to monitor larger numbers of compounds. The researchers stated that because they had used gas chromatography-mass spectrometry as the method of detection, no major contaminants of cabin air would have been missed, although it was possible that compounds present at very low concentrations had gone unnoticed.

25. The Committee were informed that the outputs from the mass spectrometry had been kept, and that they could be analysed further at a later date if required.

26. The representatives from the IOM were invited to comment on this first study. They said that their work had benefitted from the exploratory investigation undertaken by Cranfield University, and noted the need for scrupulous care in the chemical analysis because many compounds were present at only at low levels.

27. In the course of pilot air-monitoring on a test flight, a transient fume event had occurred. It was noted that the ultrafine particle counter was the only instrument that had registered the occurrence of this short-lived episode. The researchers advised that in view of the transient nature of fume events, sampling periods had been made short. They referred to evidence that the TD tubes used would also collect particles associated with vaporised oils, and when used with a short sampling time would be appropriate for the investigation of fume events. They stated that the particle counter was used as a trigger to collection of samples, and that the sampling strategy was a compromise between the need to collect adequate material and the need for a short sampling period. Members noted that the sampling strategy would only pick up the transient presence of a chemical if it were at high concentration, and that low concentrations would require a long sampling period.

28. It had been decided in the subsequent air-monitoring study to use two sets of pumped TD tubes. One set was for collection of routine samples during different phases of a flight. The second was to be used if and when a fume event was identified. As it was the only instrument to have detected a fume event, the ultrafine particle monitor would be used to indicate if a fume event occurred, and to signal that a second pumped TD sample should be collected to capture the event.

29. In the study on “Oil Smells in Aircraft Cockpits: Findings of Statistical Analysis into Associated Parameters” (Report 2), statistically significant differences in in-flight parameters had been observed between 60 flights in which fume events had been reported by crew and some 15,400 flights in which there was no fume event.

Members were advised that there was no standard system for reporting the timing of fume incidents during flights. They agreed that this was a limitation, since it was unclear whether the abnormalities of flight parameters preceded fume incidents or reflected the responses of pilots when incidents were perceived. If the statistical differences in flight parameters indicated only responses to fume events, the information was of little value. However, if some of the significant differences occurred in advance of fume events, that information could be very useful. It might be worth asking pilots what actions they would take in response to fume events, and then checking whether there were distinctive features of affected flights that were unlikely to be explained by such actions.

30. Members commented that in some cases, a chi-squared test had been used in the report when a test for ordinal or continuous data would have been more appropriate.

31. Members agreed that other variables also needed to be examined: whether the flight was long-haul or short-haul; when during the flight the fume event occurred; the age and service history of the plane; the type of plane; and the time of day. Members commented that it was difficult to form conclusions without knowing the temporal sequence of events, and that had a standardised reporting protocol been used, various additional analyses would have been possible. Members agreed that the study had demonstrated the feasibility of detecting associations by this sort of analysis, but that to make the exercise worthwhile, additional data needed to be included.

32. The Civil Aviation Authority advised that data from flights were recorded continuously but that they would be downloaded only if a significant event occurred. The airlines investigated incidents according to a defined protocol. There were differences in rates of reported incidents between aircraft, but it was unclear whether this was because the aircraft concerned had more problems, or because crew were more inclined to report problems in certain aircraft. Usually, no cause for the incident was found in retrospective investigation.

33. Members felt that it would be useful if fuller information could be downloaded from flights in which a fume event had occurred, and also from a suitable sample of control flights (it would not be necessary to analyse detailed information on all flights in which there was no fume event).

34. The main focus of the Aircraft Cabin Air Sampling study (Report 3) had been pollution arising from internal sources such as aircraft components and systems (including engine oil), cleaning materials, cooking, and disinfection procedures. External contamination, such as that arising from ground level air pollution, was not considered.

35. Members were advised that the testing for this study was carried out in five types of aircraft and in a total of 100 flights. The flights sampled had been agreed with the airline. The types of aircraft selected included some for which there had been relatively high numbers of reported fume events, and others for which fume events had been reported less often.

36. Members commented that it would be useful to look at the temporal relationship between measurements for different analytes and whether they tended to rise and fall simultaneously. The Report authors advised that this had not been analysed formally, but that visual inspection of the graphs in Annex 4b revealed no such tendency. Members commented that only a small number of chemicals had been analysed, and that other important analytes might have occurred at higher levels. The researchers from Cranfield University responded that while there was no evidence of any serious fume event during the flights that they had monitored, there did not seem to be a correlation between the reporting of smells and higher levels of any of the specific analytes that they had measured.

37. Members were informed that although the samples were no longer available for re-analysis, the traces from the mass spectrometry had been retained and these could be re-analysed, for other compounds.

38. The Committee questioned the setting of non-detects to zero instead of the limit of detection (LOD). Members were advised that zero had been used to show the results more conservatively, since blanks had measurements below the LOD. The performance of the blanks had given confidence in the data, although there were likely to be some outliers. Members commented that if the non-detect values were set at the LOD, one could have more confidence that toxicity would not occur when estimated exposures were below guideline values. Regarding the analysis of blanks, the researchers from Cranfield University stated that 185 blanks had been analysed. Very few of these had detectable contamination. Because there were low values for many of the analytes examined, they had decided not to subtract the blank values from the measured values, in order to avoid the possibility of missing a small peak.

39. An overview of the cabin air – surface residue study (Report 4) was given by the IOM. The surface residue samples had been taken opportunistically when the airlines permitted and the airport sites had been chosen to reduce sample transportation times. The rationale for this study had been the episodic nature of fume events, which made them difficult to capture by air-sampling. The preliminary assessment of sampling methods (Report 1) had indicated that fine aerosols were present which could deposit onto surfaces. The IOM had looked for four organophosphates and collected samples from specific areas of the cockpit and cabin area. Then, after a pre-designated period, the same surfaces had been re-sampled. The levels of compounds in the samples had been very low, and because the compounds of interest were fairly ubiquitous in the aircraft environment, there was a potential for contamination from other sources. In the period between the collection of the first and second samples no fume events had been recorded. In addition to the aircraft, vehicles on the airfield and offices were sampled for comparison. Levels of pollutants were higher in the aircraft and vehicles than in the offices. There were detectable levels for all the compounds of interest. Within aircraft, there were consistent differences between the cockpit and the cabin, with higher levels recorded in the cockpit (except in a BAe 146 plane which carried scientific equipment at the back of the cabin).

40. It was known that the compounds analysed would degrade over time, but if the surface had a porous structure it would have a higher retention time than a smooth surface.

41. Members were advised the surfaces sampled were 10 cm x 10 cm in size, and located in areas inaccessible to crew and passengers, thus reducing the possibility of tampering. Members commented that the aryl phosphates had a low recovery of 25-45%, and therefore there was a possibility that their concentrations were underestimated. The researchers responded that they had tried to choose the best possible approach to their measurement. It was noted also that volatile organic compounds (VOCs) could be expected to evaporate over time, before surface samples were collected. Members asked whether it would be feasible to have an optimally designed porous surface, such as a glass fibre filter, installed in aircraft for future collection of samples. The IOM commented that the surface would have to be located unobtrusively in the aircraft. However, use of such a surface would allow the whole sample to be removed and analysed (each surface would only be used once), and additional surfaces could be used for collecting further samples.

42. Members asked how confident IOM had been in the analysis of aryl phosphates when the recovery had been so low. IOM replied that there was general consistency among studies in the literature that in the absence of a fume incident, levels in aircraft cabins were low.

43. The review of recently published literature on chemical pollutants in aircraft cabin air was consistent with the results of the studies commissioned by DfT in showing only low levels of pollutants in the absence of any major fume event. Of particular note was a biomonitoring study by Schindler et al (Arch Toxicol 87:645-648, 2013) in which urine samples had been collected from pilots and cabin crew who reported fume/odour during their last flight. None of the samples contained *o*-TCP above the limit of detection (0.5 µg/l), and while the fume incidents may only have been minor, the study demonstrated the feasibility of collecting meaningful data in this way.

44. Members commented that some of the symptoms reported in relation to fume incidents were not specific, such as headaches. They felt that it might be useful to look for more specific symptoms and signs in affected pilots. The Committee was informed that fume events tended to be brief, and could cause one pilot to feel ill while his/her colleague was unaffected.

45. Summarising, the Chair stated that air contamination incidents clearly did occur in aircraft, and that there had been a number of reported cases of acutely incapacitating illness in relation to such incidents. The illness was not specific – for example he had not seen reports of documented delayed peripheral neuropathy. It might be a toxic effect of one or more chemicals, but it was also possible that it occurred through psychological mechanisms, as a nocebo response to a perceived harmful exposure.

46. Representatives from the air industry presented charts of statistics collected from UK airports indicating that the number of fume events occurring had reduced slightly over the past 5-6 years. Some of this reduction may have been attributable to changes in practice: for instance, overfilling of engine oil used to take place but this now no longer happened. To put the rate of incidents into perspective, it was noted

that one carrier alone undertakes 300,000 flights per year. There had been a peak in reported illnesses in 2009, for which there was no known explanation.

47. Incidents were reported by the pilots, traffic controllers or the airline to the Civil Aviation Authority within 72 hours.

48. The chair continued that it was unlikely that neurotoxicity would occur from the levels of chemicals that had been measured to date. Moreover, the symptoms that had been reported in relation to fume events did not conform to the pattern of toxicity that would be expected from tri-ortho cresyl phosphate (TOCP). There were no other obvious neurotoxicants among the compounds that had been analysed. However, it was possible that compounds which had not been measured reached high levels during fume events.

49. Moving forward, the challenge was to determine whether the acute illness associated with fume events occurred through toxicity or through nocebo effects. To exclude toxicity, one would need to be sufficiently confident that no chemicals occurred during fume events at levels which could cause acute poisoning. Possible ways forward included further work based on measurement of surface residues or biomonitoring of urine following fume incidents, and comparison with data from control flights in which there had been no incident. With the methods employed by Cranfield University, it seemed impractical to undertake prospective air-monitoring studies on sufficient flights to be confident of capturing more severe fume incidents, but it would be helpful to have views on this from a Member with expertise in environmental monitoring, who unfortunately had not been able to attend the meeting. However, it would be worth considering a better statistical analysis of flight parameters associated with fume events.

50. The Chair offered the observers the opportunity to make brief comments. Professor Ramsden informed the Committee that he had organised a workshop at Cranfield University in 2011 on the interrelation of analytes in cabin air (and other aspects of aircraft cabin air contamination), and that he had recently published a paper in which he had reanalysed data from the aircraft cabin air-monitoring study. He considered that there was a discrepancy between the oil going into the engine of a plane (which had been analysed by De Nola *et al.* (2008) and confirmed the manufacturer's analysis), and what had been measured in a re-analysis of the data from Report 3. The re-analysis had shown that the concentration of tri-cresyl phosphates was higher after oil had been through the engine. He offered to provide a copy of his paper to Members.

51. Members agreed that future assessment needed to be based on what is actually present in cabin air and not in oil.

52. The DfT thanked the COT for its detailed consideration of the studies and the Chair thanked the researchers from Cranfield University and the IOM for taking part in the discussion along with the representatives from the Civil Aviation Authority. The Chair and the Secretariat agreed to draft a note for the DfT, summarising the Committee's views, and emphasised that if further advice was needed then the COT would be pleased to help.

Item 5: Discussion Paper on the combined use of CS (2-chloro-benzylidene malonitrile) and PAVA (nonivamide) (captor 2) Irritant Sprays (RESERVED BUSINESS) – TOX/2013/35

53. No interests were declared.

54. This item was reserved business pending publication of the policy.

Item 6a: SACN Review of vitamin D. Adverse effects of high levels: vitamin D and all-cause mortality – TOX/2013/33

65. No interests were declared.

66. The Scientific Advisory Committee on Nutrition (SACN) was in the process of reviewing its recommendations on vitamin D. The COT had been asked to provide advice on high levels of vitamin D intake and several papers covering different aspects of this had now been considered by the Committee. The COT had agreed that the detailed 2011 review of vitamin D by the US Institute of Medicine (IOM) could be used as the bibliographic basis for their review. In that report, five cohort studies had been identified which examined the association between serum 25 hydroxyvitamin D (25(OH)D) levels and subsequent all-cause mortality. Several of these studies had reported a U- or reverse J-shape dose-response curve, and taking this into account, the US IOM had recommended that serum 25(OH)D levels should not exceed 125-150 nmol/L.

67. When members had considered this topic initially (TOX/2012/23), they had concluded that the curve was reverse J-shaped rather than U-shaped, and that there might be a number of explanations for the finding, including unrecognised confounding. Paper TOX/2013/33 provided an update, and included reports of several new studies (both primary research and meta-analyses).

68. It was agreed that this was a useful update, and particularly the meta-analyses that were now available. There was clear evidence of elevated mortality at low serum 25(OH)D levels. However, the evidence for an increase in all-cause mortality at the very top end of the concentration range was less robust because few individuals with serum concentrations at this level had been studied. There may have been unrecognised confounding, and it was also possible that findings were a statistical artefact due to the cut-off points selected in the statistical models that had been employed. Overall, the Committee did not consider that the evidence provided an adequate basis on which to recommend restriction of vitamin D intakes, but agreed that the topic should remain under review.

Item 6b: SACN Review of vitamin D. Adverse effects of high levels: vitamin D and pancreatic cancer – TOX/2013/34

69. No interests were declared.

70. A U- or reverse J-shaped dose-response curve had also been reported for the relationship between serum 25(OH)D and pancreatic cancer. Paper TOX/2013/34 provided an update on this topic, with summaries of several new studies and meta-analyses.

71. As with all-cause mortality, the explanation for the apparent reverse J-shaped relationship between pancreatic cancer and serum 25(OH)D concentrations was unclear. Again, it may have been a product of unrecognised confounding. It was noted that all of the positive findings at high serum concentrations had been reported by the same research group, although they had analysed results from different cohorts. In one of the studies, the serum 25(OH)D levels had been modelled rather than measured, and although the model had been validated, the potential for misclassification of exposures was another source of uncertainty.

72. The World Cancer Research Fund had not drawn any conclusions with regard to high vitamin D and pancreatic cancer.

73. Members agreed that it was unnecessary to refer the topic to the Committee on Carcinogenicity, noting that it lacked biological plausibility, given that vitamin D was generally anti-proliferative in effect.

74. It was agreed that the findings on pancreatic cancer were an insufficient basis for advice to restrict vitamin D, but that the topic should remain under review.

Item 7: Second draft statement on the potential risks from high levels of soya phytoestrogens and soya products in the infant diet – TOX/2013/36

75. No interests were declared.

76. At its meeting in February 2012, the Committee had identified a need for more detailed consideration of possible health risks from soya phytoestrogens in the infant diet. Subsequently, a discussion paper (TOX/2012/39) had been presented to members in December 2012. Further information about animal and epidemiological studies, and about inter-species and developmental differences in metabolism, had then been included in the first draft of a statement, which the Committee had discussed in March 2013 (TOX/2013/11).

77. A second draft statement (TOX/2013/36) was now presented to the Committee. As requested, this incorporated a table comparing the receptor-binding potency of isoflavones in different species, and further details on tabulated studies, as well as the results of a further search for relevant human studies. In addition, various editorial changes had been made.

78. Members were content with the overall structure of the second draft statement, but suggested inclusion of some tables as appendices rather than in the main text. Additional detail and clarification was requested regarding metabolic pathways, bacterial metabolism, sources of isoflavones other than soya, and the methods used in relevant animal and epidemiological studies.

79. Members agreed that phytoestrogens were not an essential ingredient of the infant diet. It was noted that soya-based infant formula and soya-based weaning foods were the main sources of isoflavone exposure in infants, and that it was plausible that resultant exposures were at levels that could produce biological effects. Although no major adverse effects had been clearly demonstrated, the possibility of a hazard could not be excluded. Adverse health effects following consumption of breast milk (even from mothers with a high soya diet), cows' milk formula and non-soya-containing weaning products were considered to be unlikely. There was agreement that it was not possible to propose a health based guidance value for infants.

80. It was noted that where the document referred to the conclusions of an earlier 2003 COT report on phytoestrogens, these should be clearly distinguished from the conclusions of the current evaluation. A third draft of the statement would be brought to the next meeting.

Item 8: First draft statement of potential risks of α-, β- and γ-hexachlorocyclohexanes in infant diet – TOX/2013/37

81. Dr Caroline Harris declared that she had worked with Syngenta but not on hexachlorocyclohexanes (HCH). This personal non-specific interest was agreed not to be a conflict and Dr Harris participated in the discussions.

82. During discussions at the COT meeting in February 2012, on toxicological issues related to infant diet, members had agreed there was a need for further evaluation of persistent organic pollutants that had been included in the Stockholm convention since 2009. An initial paper on α-, β- and γ-hexachlorocyclohexane (TOX/2013/04) had been discussed at the COT meeting held in February 2013. A first draft statement (TOX/2013/37) was now presented to Members with some additional scientific evidence.

83. Members agreed that because of the limited toxicological data that were available for α- and β-HCH, estimating margins of exposure was a better approach than use of health-based guidance values. Further consideration was required before a tolerable daily intake could be set for γ-HCH, and this would require more detailed description of the key studies. There was also a need to consider the plausibility of a causal association between γ-HCH and non-Hodgkin lymphoma.

84. Members suggested exploration of alternative approaches to exposure assessment. The use of maximum residue levels (MRLs) where data on occurrence were lacking led to a very conservative approach.

85. A second draft statement would be provided to members for discussion at the next meeting.

Item 9: Any other business

86. No other business was raised

Item 10: Date of next meeting

87. The next meeting was scheduled to take place on Tuesday 29th October 2013 in Conference Rooms 4 & 5, Aviation House, 125 Kingsway, London WC2 6NH.