

COMMITTEE ON TOXICITY OF CHEMICALS IN FOOD, CONSUMER PRODUCTS AND THE ENVIRONMENT

Review of potential risks from polybrominated biphenyls (PBBs) in the diet of infants and 1 to 5 year old children

Background

1. The Scientific Advisory Committee on Nutrition (SACN) is undertaking a review of scientific evidence that will influence the Government's dietary recommendations for infants and young children. SACN is examining the nutritional basis of the advice. The Committee on Toxicity in Food, Consumer Products and the Environment (COT) was asked to review the risks of toxicity from chemicals in the diet of infants, most of which has been completed, and young children. The reviews will identify new evidence that has emerged since the Government's recommendations were formulated, and will appraise that evidence to determine whether the advice should be revised. The recommendations cover diet from birth to age five years, but are being considered in two stages, focussing first on infants aged 0 to 12 months, and now on advice for young children aged 1 to 5 years.
2. There are currently no Government dietary recommendations for infants and young children which relate to polybrominated biphenyls (PBBs).
3. The 2015 COT statement on potential risks from PBBs in the infant diet is included in Annex A¹. At that time, the COT concluded that reliable estimation of infants' exposure to PBBs was not possible, and no meaningful risk assessment could be performed. However, in discussing the scope of work for 1-5 year old children (TOX/2015/22) at the October 2015 meeting, the COT decided that exposure assessments should be performed, and that a literature review should be undertaken to capture any new UK data for PBBs.
4. This discussion paper provides potential PBB exposures for infants and children in the UK aged 1 to 5 years.
5. The risks associated with exposures to PBBs are assessed in this discussion paper using the approaches recommended by COT when discussing infant exposures, albeit not used during the assessment due to the lack of data. COT recommended that planar and non-planar PBBs be assessed separately. Toxic equivalency factors (TEFs) assigned to dioxin-like

¹ <http://cot.food.gov.uk/sites/default/files/pbbstatementfinal.pdf>

polychlorinated biphenyls (PCBs) could be applied to the corresponding PBB congeners to determine toxic equivalences (TEQs) and combined with the TEQs for other relevant compounds to give a measure of total intake of chemicals with dioxin-like properties, for comparison with the tolerable daily intake (TDI) of 2 pg WHO-TEQ²/kg bw. For the non-planar compounds, data from the National Toxicology Programme (NTP) carcinogenicity study (NTP, 1993) could be used to establish a reference point for the purposes of risk characterisation.

6. There are no new reviews on PBBs from international bodies to consider updating or revising the toxicology section from the infant statement.

PBB exposures in infants and young children aged 4 months to 5 years

Sources of PBB exposure

Dietary

Breast milk

7. A literature search did not identify any new UK data for PBB levels in breast milk since those in the 2015 COT statement.

Food

8. No new data have been identified since the COT statement on PBBs in the infant diet. Table 3 of Annex A shows data on the planar PBBs -77, -126 and -169 in white and oily fish. Annex B contains data on the concentrations of selected planar- and non-planar-PBBs in composite samples of the 19 food groups of the 2012 Total Diet Study (TDS). The PBBs measured were the non-planar congeners PBB-15, -49, -52, -80, -101, -153 and -209, and three congeners that can adopt the planar structure, PBB-77, -126, -169. This is broadly in line with the emphasis of EFSA (2010), subject to the availability of reference standards in the testing laboratory. EFSA had concluded that PBB-153 was the most important congener to be measured, based on the analytical feasibility to measure it routinely in accredited laboratories, the production volume, the occurrence in food and feed, its persistence in the environment and its toxicity.

Environmental

9. A literature search identified no new relevant data for levels of PBBs in soil, water, air and dust since those in the 2015 COT statement on the potential risks of PBBs in the infant diet. Levels of PBBs measured in

² WHO Toxicity Equivalences (WHO-TEQ), derived from application of relevant Toxicity Equivalence Factors (TEFs) as described in Van den Berg *et al.*, 2006.

domestic dust samples from Pretoria, South Africa, were previously described (paragraph 23 of Annex A).

Exposure

10. Body weight data are as used previously by COT for infants and from the UK Dietary and Nutrition Survey of Infants and Young Children (DNSIYC) (DH, 2013) and the National Diet and Nutrition Survey (NDNS) (Bates *et al.*, 2014), as summarised in Table 1.

Table 1: Body weights used in exposure assessments.

Age bands (months)	Weighted bodyweight
0 - <4	5.9 kg
≥4 - <6	7.8 kg
≥6 - <9	8.7 kg
≥9 - <12	9.6 kg
≥12 - <15	10.6 kg
≥15 - <18	11.2 kg
≥18 - <24	12.0 kg
≥24 - <60	16.1 kg

Dietary

11. Consumption data from the Diet and Nutrition Survey in Infants and Young Children (DNSIYC) (DH, 2013) are used for the 4 to 18 month age group and data from the National Diet and Nutrition Survey Rolling Programme years 1-4 (NDNS) (Bates *et al.*, 2014) for the 18 months to 5 years age group have been used for the estimation of dietary exposure.

Breast milk

12. The estimated exposures of exclusively breastfed infants, aged 0 to 6 months are shown in Table 2. Data on breast milk consumption from DNSIYC have been used in estimating exposure from breastmilk in the 4 – 18 months age groups (not exclusively breastfed), based on the median sum of PBB-15, -49, -52, -80, -101, -153, and -209 of 0.08-0.22 ng/g fat (LB-UB median, equivalent to 2.09 – 5.74 ng/L) and a maximum of 0.86 ng/g fat (equivalent to 21.59 ng/L). However only PBB-153 was quantified in all samples, and PBB-101 in a single sample. There were too few records of breast milk consumption for children older than 18 months in NDNS (Bates *et al.*, 2014) to allow a reliable exposure assessment, and breast milk is expected to contribute minimally in this age group.

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

Table 2: PBB exposure (pg/kg bw/day) from exclusive breastfeeding by infants estimated for average and high level consumption.

Congener	ng PBB/L of breast milk	Exposure (pg/kg bw/day)			
		Average consumer 800 mL/day		High consumer 1200 mL/day	
		0 - 4 months	>4 - 6 months	0 - 4 months	>4 - 6 months
PBB-153 (median)	2.09	283	214	425	321
PBB-153 (max)	19.83	2689	2034	4033	3050
ΣPBB ^a (Median LB – UB)	2.09 – 5.74	283 - 778	214 - 589	425 - 1167	321 - 883
ΣPBB (max)	21.59	2927	2214	4391	3321

^a ΣPBB is the sum of PBB-15, -49, -52, -80, -101, -153, and -209.
LB-UB = lower bound to upper bound

13. Table 3 shows the estimated exposure from breastmilk in infants and young children aged ≥4 to <18 months. Levels of PBB-153 are given separately as it was the predominant congener and was measured in all samples.

Table 3: Estimated PBB exposure (pg/kg bw/day) from breast feeding in infants and young children aged between ≥4 to <18 months.

	Age (months)				
	≥4 - <6	≥6 - <9	≥9 - <12	≥12 - <15	≥15 - <18
Mean (pg/kg bw/day)					
PBB-153 median	190	140	80	60	50
PBB-153 max	1820	1320	750	580	500
ΣPBB (median LB-UB)	190 - 530	140 - 380	80 - 220	60 - 170	50 - 150
ΣPBB max	1990	1440	820	630	550
P97.5 (pg/kg bw/day)					
PBB-153 median	320	330	240	160	110
PBB-153 max	3070	3160	2300	1490	1030
ΣPBB (median LB-UB)	320 - 890	330 - 910	240 - 0.66	160- 430	110 - 300
ΣPBB max	3340	3440	2500	1620	1120

Food

14. Possible exposures were calculated from TDS data separately for the planar and non-planar PBB congeners. There was a very high proportion of analytical data below the limit of detection and all results are presented as upper bound (i.e. the limit of detection is used).

15. Table 4 shows the estimated exposure to the sum of the planar PBBs, -77, -126, and -169 expressed as WHO-TEQ. Data for the individual congeners and food groups are in Annex C. Total mean and 97.5th percentile exposures range from 0.051 to 0.074 and 0.093 to 0.21 pg WHO-TEQ/kg bw/day respectively.

Table 4: Estimated upper bound exposures to the sum of PBB -77, -126 and -169) (pg WHO-TEQ/kg bw/day).

Food Group	Age (months)						
	≥4 - <6	≥6 - <9	≥9 - <12	≥12 - <15	≥15 - <18	≥18 - <24	≥24 - <60
Mean	0.056	0.051	0.053	0.064	0.068	0.074	0.060
P97.5	0.21	0.21	0.13	0.13	0.12	0.12	0.093

Table 5 shows upper bound dietary exposures to the sum of seven non-planar PBBs (PBB-15, -49, -52, -80, -101, -153, and -209) Data for the individual congeners and food groups are in Annex D. Total mean and 97.5th percentile exposures to the sum of the non-planar PBBs ranged from 456 to 843 and 1109 to 1620 pg/kg bw/day, respectively. The fish group was the main contributor to total mean exposure to PBB-49, PBB-52 and PBB-101 in all age groups. Dairy products made the main contribution to total mean exposures to PBB-153 for all age groups; fish, carcass meats and poultry groups made smaller contribution to total mean exposures for this congener in all age groups..

Table 5: Estimated exposure to the sum of PBB-15, -49, -52, -80, -101, -153, and -209 (pg/kg bw/day)

Food Group	Age (months)						
	≥4 - <6	≥6 - <9	≥9 - <12	≥12 - <15	≥15 - <18	≥18 - <24	≥24 - <60
Mean	458	456	513	752	788	843	673
P97.5	1620	1616	1230	1322	1318	1544	1109

Environmental

Dust

16. Potential exposures of UK infants aged >9 to 12 months and young children aged 1 to 5 years to PBBs in dust were calculated assuming ingestion of 100 mg/day (US EPA, 2008; WHO, 2007) and median and 95th percentile concentrations of 1.3 and 15.3 ng/g dust for the sum of PBB-4, -10 and -209 (Kefeni *et al.*, 2014) (Table 6). Children of these age groups are likely to consume more soil and dust than younger infants who are less able to move around and come into contact with soil and dust. However it is unclear if such levels reported in South African homes are representative of UK homes, and consequently exposures to PBBs.

Table 6: Potential upper bound exposure of infants aged ≥9 months to <5 years to the sum of PBB-4, -10, and -209 via ingestion of dust estimated from samples of dust in South African homes.

Age group	Estimated PPB exposure from ingestion of dust pg/kg bw/day	
	Median ^a	P95 ^b
≥9 - <12 months	14	159
≥12 - <15 months	12	144
≥15 - <18 months	12	137
≥18 - <24 months	11	128
≥2 - <5 years	8	95

Based on data from Kefeni *et al.*, (2014).

^aMedian derived estimates are based on LOD.

^b95% percentile derived estimates are based on measured levels with the exception of PBB-10 which was taken as the LOD.

Risk characterisation

17. Potential risks from exposure of infants and young children to planar PBBs were characterised by comparison to the TDI of 2 pg WHO-TEQ/kg bw. Based on upper bound 97.5th percentile estimates the maximum contribution to the TDI is 10.5% (Table 7). This is a conservative estimate due to the upper bound approach to the high number of levels that were below the limit of detection. Therefore it is likely the contribution of planar PBBs to the diets of infants and young children do not have an impact on whether the TDI for dioxin-like compounds is exceeded.

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Table 7: Percent contribution of upper bound exposure to the sum of the planar PBBs (PBB-77, -126 and -169), to the TDI of 2 pg WHO-TEQ/kg bw.

	Age (months)						
	≥4 - <6	≥6 - <9	≥9 - <12	≥ 12 - < 15	≥15 - <18	≥18 - <24	≥24 - <60
Mean	3	2.5	2.5	3	3.5	3.5	3
P97.5	10.5	10.5	6.5	6.5	6	6	4.5

18. Margins of Exposure (MOEs) for the non-planar PBBs have been calculated by dividing the NOAEL of 0.15 mg/kg bw/day from the NTP carcinogenicity study by the estimated exposures. MOEs based on exclusive high-level consumption of breast milk range between 45,200 and 50,300, and for breast milk based on consumption data and upper bound estimates range between 43,600 and 134,000 (Tables 8 and 9). MOEs based on high level consumers using upper bound exposure estimates from food or breast milk range between 92,000 to 135,000 (Table 10).

Table 8: MOEs for non-planar PBBs calculated from upper bound mean and 97.5th percentile exposure via the diet (Table 4).

	Age (months)						
	≥4 - <6	≥6 - <9	≥9 - <12	≥ 12 - < 15	≥15 - <18	≥18 - <24	≥24 - <60
Mean	328000	329000	292000	199000	190000	178000	223000
P97.5	92600	92800	122000	113000	114000	97200	135000

Table 9: MOEs calculated from average and high level exclusive breast milk consumption estimates using the sum of the maximum PBB levels reported in breast milk,

	Average consumer 800 mL/day		High consumer 1200 mL/day	
	0 - 4 months	>4 - 6 months	0 - 4 months	>4 - 6 months
	ΣPBB (max)	67900	75800	45200

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Table 10: MOEs calculated from 97.5th percentile exposure estimates based on the sum of the maximum PBB levels reported in breast milk.

	Age (months)				
	≥4 - <6	≥6 - <9	≥9 - <12	≥ 12 - <15	≥15 - <18
ΣPBB max	44900	43600	60000	93000	134000

19. The MOEs measured in dust were non-planar and thus MOEs have been calculated. MOEs for dust exposure range between 943,000 and 18,800,000 (Table 11).

Table 11: MOEs calculated from median and 95th percentile estimates of exposure from dust.

	Age (months)				
	≥9 - <12	≥12 - <15	≥15 - <18	≥18 - <24	≥24 - <60
Median	10,700,000	12,500,000	12,500,000	13,600,000	18,800,000
P95	943,000	1,040,000	1,090,000	1,170,000	1,580,000

20. There is a high degree of uncertainty in this risk assessment. The use of the upper bound approach to the large number of data below the limit of detection will overestimate exposures to the measured congeners. Only a limited number of congeners have been measured, based on expected occurrence and toxicity, and therefore they probably do not seriously underestimate total exposure. The use of the upper bound approach to the large number of data below the limit of detection will overestimate exposures to the measured congeners. The profile of congeners present in food and the environment is not representative of the technical mixture used in the carcinogenicity study from which the reference point for the MOE approach is derived. Furthermore, the mechanism of carcinogenicity of this technical mixture has questionable relevance to humans.

21. Taking these uncertainties into account, the large margins of exposure in this risk assessment do not indicate a cause for concern.

Questions on which the views of the Committee are sought

22. Members are invited to consider the following questions and to raise any other matters that arise from the newly submitted data.

i). Do Members consider the available information sufficient to perform a risk assessment for PBBs?

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- ii). Would Members wish to include additional exposure estimates, for example using data on the planar PBBs -77, -126 and -169 in white and oily fish highlighted in Table 3 of Annex A?
- iii). Do Members consider that the levels in dust should be included?
- iv). Do Members agree with the draft conclusion in paragraph 21?
- v). Are Members able to provide other advice on the approach to be taken?

Secretariat
November 2015

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TOX/2015/34 ANNEX A

**COMMITTEE ON TOXICITY OF CHEMICALS IN FOOD,
CONSUMER PRODUCTS AND THE ENVIRONMENT**

**Review of potential risks from polybrominated biphenyls (PBBs) in the
diet of infants and 1 to 5 year old children**

Statement on polybrominated biphenyls (PBBs) in the infant diet

Available at: <http://cot.food.gov.uk/sites/default/files/pbbstatementfinal.pdf>

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TOX/2015/34 ANNEX B

**COMMITTEE ON TOXICITY OF CHEMICALS IN FOOD,
CONSUMER PRODUCTS AND THE ENVIRONMENT**

**Review of potential risks from polybrominated biphenyls (PBBs) in the
diet of infants and 1 to 5 year old children**

Concentrations of PBBs in the food groups of the 2012 Total Diet Study

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Table B1 Levels of planar PBB congeners in 19 composite food groups, expressed on a whole food basis.

Food group	pg/kg food			ng/kg food	
	PBB-77	PBB-126	PBB-169	PBB-15	PBB-80
Bread	8.28	< 5.80	< 5.80	< 0.37	< 0.04
Cereals	< 10.16	< 7.39	< 7.39	< 1.66	< 0.09
Carcase meat	< 8.65	< 4.32	< 5.76	< 1.44	< 0.14
Offal	5.95	25.79	< 3.97	< 0.60	< 0.10
Meat products	< 5.94	4.46	< 4.46	< 0.15	< 0.15
Poultry	< 3.66	< 2.93	< 2.93	< 0.15	< 0.07
Fish	7.45	< 2.79	< 2.79	< 1.02	< 0.09
Fats & oils	< 44.28	< 22.14	< 29.52	< 7.38	< 0.74
Eggs	8.60	< 3.82	< 3.82	< 0.96	< 0.10
Sugar and Preserves	9.08	< 5.45	< 4.84	< 0.30	< 0.06
Green vegetables	1.94	< 1.04	< 1.65	< 0.30	< 0.01
Potatoes	< 4.67	< 2.60	< 3.63	< 0.83	< 0.05
Other vegetables	4.91	< 2.18	< 2.73	< 0.71	< 0.05
Canned Vegetables	< 1.96	< 1.38	< 1.17	< 0.52	< 0.01
Fresh Fruit	< 2.65	< 1.51	< 1.85	< 0.44	< 0.02
Fruit Products	< 4.20	< 2.98	< 2.44	< 0.30	< 0.03
Milk	< 1.77	< 0.99	< 1.18	< 0.28	< 0.02
Dairy Products	< 6.99	< 4.66	< 4.66	< 0.23	< 0.23
Nuts	< 20.92	< 12.55	< 12.55	< 3.35	< 0.42

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Table B2: Levels of non-planar PBB congeners in 19 composite food groups, expressed on a whole food basis.

Food group	ng/kg food				
	PBB-49	PBB-52	PBB-101	PBB-153	PBB-209
Bread	< 0.04	< 0.04	< 0.04	< 0.17	< 9.94
Cereals	< 0.09	< 0.09	< 0.09	< 0.28	< 10.16
Carcase meat	< 0.14	< 0.14	< 0.14	0.29	< 10.09
Offal	< 0.10	< 0.10	< 0.10	< 0.79	< 9.92
Meat products	< 0.15	< 0.15	< 0.15	< 0.30	< 10.40
Poultry	< 0.07	< 0.07	< 0.07	0.29	< 10.25
Fish	0.65	1.96	0.56	1.12	< 10.24
Fats & oils	< 0.74	< 0.74	< 0.74	< 1.48	< 7.38
Eggs	< 0.10	< 0.10	< 0.10	< 0.19	< 9.55
Sugar and Preserves	< 0.06	< 0.06	< 0.18	< 0.12	39.93
Green vegetables	< 0.01	< 0.02	< 0.02	< 0.05	< 10.03
Potatoes	< 0.05	< 0.05	< 0.05	< 0.10	< 9.86
Other vegetables	< 0.05	< 0.05	< 0.05	< 0.11	< 9.83
Canned Vegetables	< 0.01	< 0.01	< 0.01	< 0.04	< 10.07
Fresh Fruit	< 0.02	< 0.03	< 0.03	< 0.07	< 10.12
Fruit Products	< 0.03	< 0.01	< 0.10	< 0.08	< 10.08
Milk	< 0.02	< 0.02	< 0.06	< 0.04	< 10.05
Dairy Products	< 0.23	< 0.23	< 0.23	0.47	< 9.32
Nuts	< 0.42	< 0.42	< 0.42	< 0.42	< 8.37

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Table B3: Sum of upper bound levels for planar and non-planar PBB congeners, and total upper bound PBB levels, in 19 composite food groups, expressed on a whole food basis.

Food group	ng/kg food		
	Σ Planar	Σ Non-Planar	Σ Total PBBs
Bread	0.43	10.23	10.66
Cereals	1.78	10.72	12.50
Carcase meat	1.60	10.81	12.41
Offal	0.73	11.01	11.74
Meat products	0.31	11.15	11.46
Poultry	0.23	10.76	10.99
Fish	1.13	14.52	15.65
Fats & oils	8.21	11.07	19.28
Eggs	1.07	10.03	11.09
Sugar and Preserves	0.38	40.35	40.74
Green vegetables	0.31	10.14	10.45
Potatoes	0.89	10.12	11.01
Other vegetables	0.77	10.10	10.88
Canned Vegetables	0.53	10.13	10.67
Fresh Fruit	0.46	10.27	10.73
Fruit Products	0.33	10.29	10.63
Milk	0.30	10.18	10.48
Dairy Products	0.48	10.49	10.97
Nuts	3.81	10.04	13.85

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TOX/2015/34 ANNEX C

**COMMITTEE ON TOXICITY OF CHEMICALS IN FOOD,
CONSUMER PRODUCTS AND THE ENVIRONMENT**

**Review of potential risks from polybrominated biphenyls (PBBs) in the
diet of infants and 1 to 5 year old children**

**Estimated exposures to PBBs -77, -126 and -169, and the sum of these
congeners, based on TDS data, and for infants and children aged ≥ 4
months - <5 years**

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Table C1: Upper bound PBB exposures in pg WHO-TEQ/kg bw/day for age ≥4 - <6 months.

Food Group	PBB-77		PBB-126		PBB-169		PBB Sum	
	Mean	P97.5	Mean	P97.5	Mean	P97.5	Mean	P97.5
Bread	0.0000001	0.0000006	0.0000038	0.0000437	0.0001130	0.0013104	0.0001168	0.0013547
Canned veg	0.0000000	0.0000004	0.0000015	0.0000249	0.0000373	0.0006329	0.0000388	0.0006582
Carcase meat	0.0000001	0.0000009	0.0000032	0.0000445	0.0001299	0.0017795	0.0001332	0.0018249
Dairy products	0.0000232	0.0001025	0.0015442	0.0068341	0.0463271	0.2050240	0.0478945	0.2119610
Eggs	0.0000000	0.0000001	0.0000007	0.0000063	0.0000200	0.0001904	0.0000206	0.0001969
Fats and oils	0.0000001	0.0000008	0.0000030	0.0000424	0.0001208	0.0016953	0.0001238	0.0017385
Fish	0.0000000	0.0000007	0.0000016	0.0000277	0.0000485	0.0008297	0.0000502	0.0008581
Fresh fruit	0.0000003	0.0000022	0.0000189	0.0001260	0.0006947	0.0046206	0.0007140	0.0047488
Fruit products	0.0000008	0.0000043	0.0000580	0.0003050	0.0014212	0.0074757	0.0014800	0.0077850
Green veg	0.0000001	0.0000007	0.0000053	0.0000363	0.0002525	0.0017241	0.0002579	0.0017611
Meat products	0.0000000	0.0000000	0.0000004	0.0000000	0.0000132	0.0000000	0.0000136	0.0000000
Milk	0.0000001	0.0000009	0.0000045	0.0000496	0.0001603	0.0017844	0.0001648	0.0018348
Misc cereals	0.0000006	0.0000041	0.0000466	0.0002956	0.0013967	0.0088672	0.0014439	0.0091668
Non alc beverages	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nuts	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Offals	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Other veg	0.0000012	0.0000079	0.0000547	0.0003522	0.0020509	0.0132073	0.0021069	0.0135674
Potatoes	0.0000004	0.0000026	0.0000208	0.0001425	0.0008747	0.0059842	0.0008959	0.0061293
Poultry	0.0000001	0.0000009	0.0000046	0.0000755	0.0001367	0.0022654	0.0001413	0.0023418
Sugars	0.0000000	0.0000003	0.0000010	0.0000164	0.0000279	0.0004372	0.0000290	0.0004539
Total	0.0000271	0.0001028	0.0017728	0.0068534	0.0538253	0.2055530	0.0556252	0.2125090

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

Table C2: Upper bound PBB exposures in pg WHO-TEQ/kg bw/day for age ≥6 - <9 months.

Food Group	PBB-77		PBB-126		PBB-169		PBB Sum	
	Mean	P97.5	Mean	P97.5	Mean	P97.5	Mean	P97.5
Bread	0.0000005	0.0000031	0.0000374	0.0002183	0.0011224	0.0065497	0.0011603	0.0067712
Canned veg	0.0000001	0.0000010	0.0000075	0.0000702	0.0001910	0.0017811	0.0001986	0.0018523
Carcase meat	0.0000005	0.0000034	0.0000230	0.0001695	0.0009186	0.0067803	0.0009420	0.0069532
Dairy products	0.0000145	0.0000879	0.0009634	0.0058612	0.0289021	0.1758350	0.0298800	0.1817840
Eggs	0.0000002	0.0000017	0.0000074	0.0000758	0.0002234	0.0022751	0.0002310	0.0023527
Fats and oils	0.0000004	0.0000024	0.0000204	0.0001216	0.0008151	0.0048635	0.0008359	0.0049875
Fish	0.0000003	0.0000020	0.0000107	0.0000743	0.0003213	0.0022296	0.0003323	0.0023059
Fresh fruit	0.0000007	0.0000035	0.0000405	0.0001977	0.0014845	0.0072475	0.0015257	0.0074486
Fruit products	0.0000009	0.0000046	0.0000629	0.0003297	0.0015412	0.0080793	0.0016050	0.0084136
Green veg	0.0000002	0.0000008	0.0000099	0.0000442	0.0004692	0.0020985	0.0004793	0.0021435
Meat products	0.0000001	0.0000011	0.0000082	0.0000853	0.0002454	0.0025604	0.0002536	0.0026468
Milk	0.0000004	0.0000024	0.0000245	0.0001357	0.0008818	0.0048837	0.0009068	0.0050218
Misc cereals	0.0000028	0.0000113	0.0002003	0.0008187	0.0060099	0.0245597	0.0062130	0.0253897
Non alc beverages	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nuts	0.0000000	0.0000001	0.0000012	0.0000063	0.0000373	0.0001879	0.0000386	0.0001943
Offals	0.0000000	0.0000000	0.0000022	0.0000000	0.0000103	0.0000000	0.0000126	0.0000000
Other veg	0.0000021	0.0000088	0.0000943	0.0003930	0.0035369	0.0147383	0.0036333	0.0151402
Potatoes	0.0000009	0.0000044	0.0000498	0.0002446	0.0020908	0.0102716	0.0021414	0.0105206
Poultry	0.0000002	0.0000010	0.0000133	0.0000816	0.0003982	0.0024484	0.0004117	0.0025310
Sugars	0.0000001	0.0000008	0.0000060	0.0000492	0.0001604	0.0013131	0.0001665	0.0013632
Total	0.0000248	0.0000997	0.0015830	0.0066124	0.0493596	0.1995340	0.0509674	0.2062640

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

Table C3: Upper bound PBB exposures in pg WHO-TEQ/kg bw/day for age ≥9 - <12 months.

Food Group	PBB-77		PBB-126		PBB-169		PBB Sum	
	Mean	P97.5	Mean	P97.5	Mean	P97.5	Mean	P97.5
Bread	0.0000014	0.0000051	0.0000979	0.0003551	0.0029359	0.0106520	0.0030351	0.0110121
Canned veg	0.0000002	0.0000015	0.0000158	0.0001026	0.0004001	0.0026036	0.0004161	0.0027076
Carcase meat	0.0000007	0.0000043	0.0000370	0.0002157	0.0014784	0.0086264	0.0015161	0.0088463
Dairy products	0.0000097	0.0000499	0.0006462	0.0033291	0.0193870	0.0998720	0.0200430	0.1032510
Eggs	0.0000004	0.0000026	0.0000163	0.0001170	0.0004885	0.0035092	0.0005051	0.0036288
Fats and oils	0.0000008	0.0000045	0.0000418	0.0002254	0.0016730	0.0090168	0.0017156	0.0092468
Fish	0.0000005	0.0000028	0.0000184	0.0001056	0.0005529	0.0031678	0.0005719	0.0032763
Fresh fruit	0.0000011	0.0000045	0.0000635	0.0002563	0.0023297	0.0093988	0.0023943	0.0096597
Fruit products	0.0000008	0.0000045	0.0000565	0.0003219	0.0013843	0.0078883	0.0014416	0.0082147
Green veg	0.0000002	0.0000013	0.0000117	0.0000700	0.0005561	0.0033229	0.0005680	0.0033942
Meat products	0.0000003	0.0000018	0.0000215	0.0001334	0.0006440	0.0040019	0.0006658	0.0041370
Milk	0.0000011	0.0000092	0.0000631	0.0005122	0.0022700	0.0184374	0.0023342	0.0189588
Misc cereals	0.0000044	0.0000146	0.0003197	0.0010651	0.0095900	0.0319528	0.0099141	0.0330326
Non alc beverages	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nuts	0.0000000	0.0000004	0.0000023	0.0000232	0.0000700	0.0006964	0.0000724	0.0007200
Offals	0.0000000	0.0000000	0.0000031	0.0000000	0.0000142	0.0000000	0.0000173	0.0000000
Other veg	0.0000022	0.0000083	0.0000987	0.0003672	0.0037017	0.0137683	0.0038026	0.0141437
Potatoes	0.0000013	0.0000052	0.0000728	0.0002884	0.0030595	0.0121136	0.0031337	0.0124073
Poultry	0.0000003	0.0000016	0.0000252	0.0001287	0.0007555	0.0038612	0.0007810	0.0039915
Sugars	0.0000002	0.0000012	0.0000110	0.0000703	0.0002937	0.0018745	0.0003049	0.0019460
Total	0.0000258	0.0000636	0.0016224	0.0041524	0.0515845	0.1279670	0.0532327	0.1322070

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

Table C4: Upper bound PBB exposures in pg WHO-TEQ/kg bw/day for age ≥12 - <15 months.

Food Group	PBB-77		PBB-126		PBB-169		PBB Sum	
	Mean	P97.5	Mean	P97.5	Mean	P97.5	Mean	P97.5
Bread	0.0000021	0.0000057	0.0001468	0.0004005	0.0044050	0.0120142	0.0045539	0.0124204
Canned veg	0.0000003	0.0000017	0.0000229	0.0001198	0.0005823	0.0030421	0.0006056	0.0031636
Carcase meat	0.0000008	0.0000043	0.0000415	0.0002134	0.0016600	0.0085373	0.0017023	0.0087550
Dairy products	0.0000070	0.0000371	0.0004690	0.0024761	0.0140709	0.0742822	0.0145470	0.0767954
Eggs	0.0000006	0.0000031	0.0000259	0.0001357	0.0007756	0.0040712	0.0008020	0.0042099
Fats and oils	0.0000012	0.0000047	0.0000587	0.0002362	0.0023482	0.0094497	0.0024080	0.0096907
Fish	0.0000007	0.0000032	0.0000259	0.0001202	0.0007770	0.0036059	0.0008036	0.0037293
Fresh fruit	0.0000015	0.0000051	0.0000856	0.0002940	0.0031393	0.0107799	0.0032264	0.0110790
Fruit products	0.0000008	0.0000056	0.0000552	0.0003963	0.0013525	0.0097121	0.0014084	0.0101140
Green veg	0.0000002	0.0000009	0.0000106	0.0000472	0.0005056	0.0022418	0.0005164	0.0022899
Meat products	0.0000006	0.0000030	0.0000426	0.0002250	0.0012784	0.0067491	0.0013215	0.0069770
Milk	0.0000046	0.0000133	0.0002582	0.0007370	0.0092955	0.0265319	0.0095583	0.0272822
Misc cereals	0.0000061	0.0000196	0.0004420	0.0014226	0.0132612	0.0426789	0.0137093	0.0441211
Non alc beverages	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nuts	0.0000002	0.0000007	0.0000097	0.0000411	0.0002896	0.0012340	0.0002994	0.0012758
Offals	0.0000000	0.0000000	0.0000009	0.0000000	0.0000039	0.0000000	0.0000048	0.0000000
Other veg	0.0000018	0.0000064	0.0000810	0.0002849	0.0030385	0.0106846	0.0031214	0.0109759
Potatoes	0.0000016	0.0000060	0.0000915	0.0003345	0.0038439	0.0140471	0.0039371	0.0143876
Poultry	0.0000004	0.0000017	0.0000304	0.0001328	0.0009105	0.0039835	0.0009412	0.0041180
Sugars	0.0000003	0.0000021	0.0000207	0.0001259	0.0005507	0.0033586	0.0005717	0.0034867
Total	0.0000309	0.0000630	0.0019191	0.0041439	0.0620884	0.1276830	0.0640384	0.1318090

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

Table C5: Upper bound PBB exposures in pg WHO-TEQ/kg bw/day for age ≥15 - <18 months.

Food Group	PBB-77		PBB-126		PBB-169		PBB Sum	
	Mean	97.5	Mean	97.5	Mean	97.5	Mean	97.5
Bread	0.0000024	0.0000063	0.0001650	0.0004427	0.0049498	0.0132812	0.0051172	0.0137302
Canned veg	0.0000003	0.0000015	0.0000226	0.0001067	0.0005728	0.0027098	0.0005957	0.0028180
Carcase meat	0.0000010	0.0000051	0.0000518	0.0002574	0.0020702	0.0102968	0.0021230	0.0105594
Dairy products	0.0000061	0.0000263	0.0004037	0.0017510	0.0121120	0.0525310	0.0125218	0.0543083
Eggs	0.0000006	0.0000031	0.0000265	0.0001399	0.0007965	0.0041958	0.0008236	0.0043388
Fats and oils	0.0000014	0.0000052	0.0000698	0.0002578	0.0027914	0.0103138	0.0028626	0.0105768
Fish	0.0000006	0.0000033	0.0000243	0.0001231	0.0007286	0.0036933	0.0007535	0.0038197
Fresh fruit	0.0000018	0.0000053	0.0001054	0.0003025	0.0038644	0.0110902	0.0039716	0.0113980
Fruit products	0.0000009	0.0000059	0.0000631	0.0004180	0.0015472	0.0102432	0.0016112	0.0106670
Green veg	0.0000002	0.0000008	0.0000116	0.0000438	0.0005528	0.0020804	0.0005647	0.0021251
Meat products	0.0000007	0.0000032	0.0000524	0.0002414	0.0015729	0.0072425	0.0016260	0.0074871
Milk	0.0000047	0.0000113	0.0002590	0.0006275	0.0093253	0.0225897	0.0095890	0.0232285
Misc cereals	0.0000073	0.0000207	0.0005336	0.0015069	0.0160077	0.0452065	0.0165486	0.0467342
Non alc beverages	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nuts	0.0000001	0.0000007	0.0000044	0.0000402	0.0001317	0.0012071	0.0001362	0.0012480
Offals	0.0000000	0.0000000	0.0000063	0.0000000	0.0000290	0.0000000	0.0000354	0.0000000
Other veg	0.0000019	0.0000063	0.0000838	0.0002801	0.0031438	0.0105039	0.0032295	0.0107903
Potatoes	0.0000015	0.0000050	0.0000858	0.0002760	0.0036021	0.0115924	0.0036894	0.0118734
Poultry	0.0000004	0.0000018	0.0000340	0.0001462	0.0010208	0.0043854	0.0010553	0.0045334
Sugars	0.0000005	0.0000026	0.0000313	0.0001554	0.0008335	0.0041434	0.0008653	0.0043014
Total	0.0000325	0.0000582	0.0020345	0.0037816	0.0656525	0.1171390	0.0677196	0.1209840

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

Table C6: Upper bound PBB exposures in pg WHO-TEQ/kg bw/day for age ≥18 - <24 months.

Food Group	PBB-77		PBB-126		PBB-169		PBB Sum	
	Mean	P97.5	Mean	P97.5	Mean	P97.5	Mean	P97.5
Bread	0.0000025	0.0000056	0.0001740	0.0003912	0.0052210	0.0117369	0.0053975	0.0121337
Canned veg	0.0000006	0.0000022	0.0000391	0.0001509	0.0009937	0.0038299	0.0010334	0.0039830
Carcase meat	0.0000011	0.0000059	0.0000571	0.0002935	0.0022846	0.0117412	0.0023429	0.0120406
Dairy products	0.0000066	0.0000309	0.0004432	0.0020583	0.0132954	0.0617485	0.0137452	0.0638377
Eggs	0.0000004	0.0000025	0.0000200	0.0001121	0.0006002	0.0033621	0.0006206	0.0034767
Fats and oils	0.0000019	0.0000060	0.0000942	0.0003008	0.0037685	0.0120314	0.0038645	0.0123382
Fish	0.0000009	0.0000034	0.0000321	0.0001283	0.0009635	0.0038481	0.0009965	0.0039798
Fresh fruit	0.0000022	0.0000059	0.0001285	0.0003368	0.0047111	0.0123510	0.0048419	0.0126937
Fruit products	0.0000020	0.0000077	0.0001413	0.0005458	0.0034630	0.0133763	0.0036063	0.0139298
Green veg	0.0000002	0.0000011	0.0000100	0.0000597	0.0004731	0.0028371	0.0004833	0.0028980
Meat products	0.0000008	0.0000039	0.0000631	0.0002890	0.0018927	0.0086709	0.0019566	0.0089638
Milk	0.0000044	0.0000137	0.0002422	0.0007620	0.0087181	0.0274314	0.0089646	0.0282071
Misc cereals	0.0000079	0.0000155	0.0005761	0.0011246	0.0172819	0.0337379	0.0178659	0.0348780
Non alc beverages	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nuts	0.0000000	0.0000001	0.0000023	0.0000033	0.0000702	0.0000999	0.0000725	0.0001032
Offals	0.0000000	0.0000000	0.0000015	0.0000000	0.0000067	0.0000000	0.0000082	0.0000000
Other veg	0.0000012	0.0000034	0.0000518	0.0001519	0.0019418	0.0056946	0.0019947	0.0058499
Potatoes	0.0000016	0.0000033	0.0000889	0.0001824	0.0037348	0.0076590	0.0038254	0.0078447
Poultry	0.0000005	0.0000015	0.0000398	0.0001221	0.0011950	0.0036615	0.0012354	0.0037851
Sugars	0.0000006	0.0000029	0.0000367	0.0001737	0.0009789	0.0046333	0.0010163	0.0048099
Total	0.0000355	0.0000558	0.0022419	0.0035702	0.0715943	0.1121450	0.0738718	0.1156010

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

Table C7: Upper bound PBB exposures in pg WHO-TEQ/kg bw/day for age ≥ 24 - <60 months.

Food Group	PBB-77		PBB-126		PBB-169		PBB Sum	
	Mean	P97.5	Mean	P97.5	Mean	P97.5	Mean	P97.5
Bread	0.0000028	0.0000066	0.0001982	0.0004607	0.0059453	0.0138210	0.0061464	0.0142883
Canned veg	0.0000003	0.0000013	0.0000237	0.0000921	0.0006016	0.0023386	0.0006256	0.0024320
Carcase meat	0.0000007	0.0000037	0.0000345	0.0001848	0.0013816	0.0073916	0.0014168	0.0075800
Dairy products	0.0000039	0.0000142	0.0002630	0.0009474	0.0078900	0.0284211	0.0081570	0.0293827
Eggs	0.0000005	0.0000026	0.0000206	0.0001164	0.0006167	0.0034912	0.0006377	0.0036102
Fats and oils	0.0000017	0.0000056	0.0000843	0.0002795	0.0033730	0.0111803	0.0034591	0.0114654
Fish	0.0000007	0.0000025	0.0000246	0.0000944	0.0007381	0.0028328	0.0007633	0.0029297
Fresh fruit	0.0000016	0.0000043	0.0000928	0.0002446	0.0034030	0.0089698	0.0034974	0.0092187
Fruit products	0.0000018	0.0000087	0.0001287	0.0006203	0.0031548	0.0152011	0.0032853	0.0158301
Green veg	0.0000002	0.0000008	0.0000103	0.0000417	0.0004876	0.0019813	0.0004981	0.0020238
Meat products	0.0000010	0.0000034	0.0000761	0.0002531	0.0022838	0.0075923	0.0023609	0.0078487
Milk	0.0000031	0.0000089	0.0001711	0.0004938	0.0061597	0.0177758	0.0063339	0.0182785
Misc cereals	0.0000064	0.0000153	0.0004647	0.0011096	0.0139404	0.0332871	0.0144115	0.0344120
Non alc beverages	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Nuts	0.0000001	0.0000017	0.0000071	0.0000998	0.0002137	0.0029943	0.0002209	0.0030958
Offals	0.0000000	0.0000000	0.0000021	0.0000000	0.0000097	0.0000000	0.0000117	0.0000000
Other veg	0.0000013	0.0000043	0.0000582	0.0001892	0.0021809	0.0070951	0.0022404	0.0072885
Potatoes	0.0000015	0.0000042	0.0000838	0.0002328	0.0035186	0.0097759	0.0036039	0.0100129
Poultry	0.0000004	0.0000018	0.0000335	0.0001436	0.0010062	0.0043067	0.0010402	0.0044521
Sugars	0.0000009	0.0000037	0.0000529	0.0002223	0.0014107	0.0059273	0.0014645	0.0061533
Total	0.0000290	0.0000454	0.0018302	0.0028853	0.0583154	0.0904325	0.0601746	0.0933623

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

TOX/2015/34 ANNEX D

**COMMITTEE ON TOXICITY OF CHEMICALS IN FOOD,
CONSUMER PRODUCTS AND THE ENVIRONMENT**

**Review of potential risks from polybrominated biphenyls (PBBs) in the
diet of infants and 1 to 5 year old children**

**Estimated exposures to non-planar PBBs based on TDS data, for infant
and children aged ≥ 4 months - < 5 years**

**Secretariat
November 2015**

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

Mean and 97.5th percentile, upper bound, estimated exposure (pg/kg bw/day) data for non-planar PBB congeners for each of the 19 food groups in the TDS. Original lipid weight values quoted in the 2012 TDS were converted to a whole food basis using the repeat mean fat content for each individual food group.

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

Table D1: Lower to upper bound PBB exposures in pg/kg bw/day for age ≥4 - <6 months.

Food Group	PBB-15		PBB-49		PBB-52	
	Mean	P97.5	Mean	P97.5	Mean	P97.5
Bread	0.000-0.024	0.000-0.281	0.000-0.003	0.000-0.031	0.000-0.003	0.000-0.031
Canned veg	0.000-0.055	0.000-0.940	0.000-0.001	0.000-0.019	0.000-0.001	0.000-0.010
Carcase meat	0.000-0.108	0.000-1.483	0.000-0.011	0.000-0.148	0.000-0.011	0.000-0.148
Dairy products	0.000-7.721	0.000-34.171	0.000-7.721	0.000-34.171	0.000-7.721	0.000-34.171
Eggs	0.000-0.017	0.000-0.159	0.000-0.002	0.000-0.016	0.000-0.002	0.000-0.016
Fats and oils	0.000-0.101	0.000-1.413	0.000-0.010	0.000-0.141	0.000-0.010	0.000-0.141
Fish	0.000-0.059	0.000-1.014	0.038-0.038	0.645-0.645	0.113-0.113	1.936-1.936
Fresh fruit	0.000-0.547	0.000-3.640	0.000-0.021	0.000-0.140	0.000-0.042	0.000-0.280
Fruit products	0.000-0.580	0.000-3.050	0.000-0.049	0.000-0.258	0.000-0.025	0.000-0.129
Green veg	0.000-0.152	0.000-1.039	0.000-0.006	0.000-0.040	0.000-0.012	0.000-0.081
Meat products	0.000-0.001	0.000-0.000	0.000-0.001	0.000-0.000	0.000-0.001	0.000-0.000
Milk	0.000-0.125	0.000-1.388	0.000-0.009	0.000-0.099	0.000-0.009	0.000-0.099
Misc cereals	0.000-1.048	0.000-6.650	0.000-0.058	0.000-0.369	0.000-0.058	0.000-0.369
Non alc beverages	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000
Nuts	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000
Offals	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000
Other veg	0.000-1.777	0.000-11.446	0.000-0.137	0.000-0.880	0.000-0.137	0.000-0.880
Potatoes	0.000-0.666	0.000-4.559	0.000-0.042	0.000-0.285	0.000-0.042	0.000-0.285
Poultry	0.000-0.023	0.000-0.378	0.000-0.011	0.000-0.189	0.000-0.011	0.000-0.189
Sugars	0.000-0.006	0.000-0.091	0.000-0.001	0.000-0.018	0.000-0.001	0.000-0.018
Total	0.000-13.011	0.000-42.169	0.038-8.121	0.645-34.194	0.113-8.198	1.936-34.188

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

Table D1: Lower to upper bound PBB exposures in pg/kg bw/day for age ≥4 - <6 months *cont.*

Food Group	PBB-80		PBB-101		PBB-153		PBB-209	
	Mean	P97.5	Mean	P97.5	Mean	P97.5	Mean	P97.5
Bread	0.000-0.003	0.000-0.031	0.000-0.003	0.000-0.031	0.000-0.011	0.000-0.125	0.000-0.646	0.000-7.491
Canned veg	0.000-0.001	0.000-0.019	0.000-0.001	0.000-0.019	0.000-0.004	0.000-0.067	0.000-1.074	0.000-18.219
Carcase meat	0.000-0.011	0.000-0.148	0.000-0.011	0.000-0.148	0.022-0.022	0.297-0.297	0.000-0.758	0.000-10.384
Dairy products	0.000-7.721	0.000-34.171	0.000-7.721	0.000-34.171	15.442-15.442	68.341-68.341	0.000-308.715	0.000-1366.240
Eggs	0.000-0.002	0.000-0.016	0.000-0.002	0.000-0.016	0.000-0.003	0.000-0.032	0.000-0.166	0.000-1.586
Fats and oils	0.000-0.010	0.000-0.141	0.000-0.010	0.000-0.141	0.000-0.020	0.000-0.283	0.000-0.101	0.000-1.413
Fish	0.000-0.005	0.000-0.092	0.032-0.032	0.553-0.553	0.065-0.065	1.106-1.106	0.000-0.593	0.000-10.140
Fresh fruit	0.000-0.021	0.000-0.140	0.000-0.042	0.000-0.280	0.000-0.084	0.000-0.560	0.000-12.681	0.000-84.344
Fruit products	0.000-0.049	0.000-0.258	0.000-0.188	0.000-0.988	0.000-0.155	0.000-0.816	0.000-19.602	0.000-103.113
Green veg	0.000-0.006	0.000-0.040	0.000-0.012	0.000-0.081	0.000-0.024	0.000-0.161	0.000-5.106	0.000-34.872
Meat products	0.000-0.001	0.000-0.000	0.000-0.001	0.000-0.000	0.000-0.003	0.000-0.000	0.000-0.103	0.000-0.000
Milk	0.000-0.009	0.000-0.099	0.000-0.027	0.000-0.297	0.000-0.018	0.000-0.198	0.000-4.543	0.000-50.572
Misc cereals	0.000-0.058	0.000-0.369	0.000-0.058	0.000-0.369	0.000-0.175	0.000-1.108	0.000-6.399	0.000-40.625
Non alc beverages	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000
Nuts	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000
Offals	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000
Other veg	0.000-0.137	0.000-0.880	0.000-0.137	0.000-0.880	0.000-0.273	0.000-1.761	0.000-24.616	0.000-158.520
Potatoes	0.000-0.042	0.000-0.285	0.000-0.042	0.000-0.285	0.000-0.083	0.000-0.570	0.000-7.913	0.000-54.138
Poultry	0.000-0.011	0.000-0.189	0.000-0.011	0.000-0.189	0.046-0.046	0.755-0.755	0.000-1.595	0.000-26.435
Sugars	0.000-0.001	0.000-0.018	0.000-0.003	0.000-0.055	0.000-0.002	0.000-0.036	0.768-0.768	12.024-12.024
Total	0.000-8.088	0.000-34.194	0.032-8.301	0.553-34.230	15.574-16.430	68.341-68.403	0.768-395.379	12.024-1379.710

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

Table D2: Lower to upper bound PBB exposures in pg/kg bw/day for age ≥6 - <9 months.

Food Group	PBB-15		PBB-49		PBB-52	
	Mean	P97.5	Mean	P97.5	Mean	P97.5
Bread	0.000-0.241	0.000-1.404	0.000-0.027	0.000-0.156	0.000-0.027	0.000-0.156
Canned veg	0.000-0.284	0.000-2.645	0.000-0.006	0.000-0.054	0.000-0.003	0.000-0.027
Carcase meat	0.000-0.765	0.000-5.650	0.000-0.077	0.000-0.565	0.000-0.077	0.000-0.565
Dairy products	0.000-4.817	0.000-29.306	0.000-4.817	0.000-29.306	0.000-4.817	0.000-29.306
Eggs	0.000-0.186	0.000-1.896	0.000-0.019	0.000-0.190	0.000-0.019	0.000-0.190
Fats and oils	0.000-0.679	0.000-4.053	0.000-0.068	0.000-0.405	0.000-0.068	0.000-0.405
Fish	0.000-0.393	0.000-2.725	0.250-0.250	1.734-1.734	0.750-0.750	5.202-5.202
Fresh fruit	0.000-1.170	0.000-5.710	0.000-0.045	0.000-0.220	0.000-0.090	0.000-0.439
Fruit products	0.000-0.629	0.000-3.297	0.000-0.053	0.000-0.279	0.000-0.027	0.000-0.139
Green veg	0.000-0.283	0.000-1.264	0.000-0.011	0.000-0.049	0.000-0.022	0.000-0.098
Meat products	0.000-0.027	0.000-0.284	0.000-0.027	0.000-0.284	0.000-0.027	0.000-0.284
Milk	0.000-0.686	0.000-3.798	0.000-0.049	0.000-0.271	0.000-0.049	0.000-0.271
Misc cereals	0.000-4.507	0.000-18.420	0.000-0.250	0.000-1.023	0.000-0.250	0.000-1.023
Non alc beverages	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000
Nuts	0.000-0.033	0.000-0.167	0.000-0.004	0.000-0.021	0.000-0.004	0.000-0.021
Offals	0.000-0.005	0.000-0.000	0.000-0.001	0.000-0.000	0.000-0.001	0.000-0.000
Other veg	0.000-3.065	0.000-12.773	0.000-0.236	0.000-0.983	0.000-0.236	0.000-0.983
Potatoes	0.000-1.593	0.000-7.826	0.000-0.100	0.000-0.489	0.000-0.100	0.000-0.489
Poultry	0.000-0.066	0.000-0.408	0.000-0.033	0.000-0.204	0.000-0.033	0.000-0.204
Sugars	0.000-0.033	0.000-0.274	0.000-0.007	0.000-0.055	0.000-0.007	0.000-0.055
Total	0.000-19.463	0.000-49.428	0.250-6.078	1.734-30.019	0.750-6.605	5.202-30.792

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

Table D2: Lower to upper bound PBB exposures in pg/kg bw/day for age ≥6 - <9 months *cont.*

Food Group	PBB-80		PBB-101		PBB-153		PBB-209	
	Mean	P97.5	Mean	P97.5	Mean	P97.5	Mean	P97.5
Bread	0.000-0.027	0.000-0.156	0.000-0.027	0.000-0.156	0.000-0.107	0.000-0.624	0.000-6.416	0.000-37.442
Canned veg	0.000-0.006	0.000-0.054	0.000-0.006	0.000-0.054	0.000-0.020	0.000-0.189	0.000-5.497	0.000-51.274
Carcase meat	0.000-0.077	0.000-0.565	0.000-0.077	0.000-0.565	0.153-0.153	1.130-1.130	0.000-5.360	0.000-39.564
Dairy products	0.000-4.817	0.000-29.306	0.000-4.817	0.000-29.306	9.634-9.634	58.612-58.612	0.000-192.598	0.000-1171.730
Eggs	0.000-0.019	0.000-0.190	0.000-0.019	0.000-0.190	0.000-0.037	0.000-0.379	0.000-1.861	0.000-18.960
Fats and oils	0.000-0.068	0.000-0.405	0.000-0.068	0.000-0.405	0.000-0.136	0.000-0.811	0.000-0.679	0.000-4.053
Fish	0.000-0.036	0.000-0.248	0.214-0.214	1.486-1.486	0.428-0.428	2.973-2.973	0.000-3.926	0.000-27.248
Fresh fruit	0.000-0.045	0.000-0.220	0.000-0.090	0.000-0.439	0.000-0.180	0.000-0.878	0.000-27.099	0.000-132.296
Fruit products	0.000-0.053	0.000-0.279	0.000-0.204	0.000-1.068	0.000-0.168	0.000-0.882	0.000-21.258	0.000-111.439
Green veg	0.000-0.011	0.000-0.049	0.000-0.022	0.000-0.098	0.000-0.044	0.000-0.196	0.000-9.490	0.000-42.445
Meat products	0.000-0.027	0.000-0.284	0.000-0.027	0.000-0.284	0.000-0.055	0.000-0.569	0.000-1.908	0.000-19.910
Milk	0.000-0.049	0.000-0.271	0.000-0.147	0.000-0.814	0.000-0.098	0.000-0.543	0.000-24.993	0.000-138.413
Misc cereals	0.000-0.250	0.000-1.023	0.000-0.250	0.000-1.023	0.000-0.751	0.000-3.070	0.000-27.534	0.000-112.521
Non alc beverages	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000
Nuts	0.000-0.004	0.000-0.021	0.000-0.004	0.000-0.021	0.000-0.004	0.000-0.021	0.000-0.083	0.000-0.418
Offals	0.000-0.001	0.000-0.000	0.000-0.001	0.000-0.000	0.000-0.007	0.000-0.000	0.000-0.086	0.000-0.000
Other veg	0.000-0.236	0.000-0.983	0.000-0.236	0.000-0.983	0.000-0.472	0.000-1.965	0.000-42.452	0.000-176.896
Potatoes	0.000-0.100	0.000-0.489	0.000-0.100	0.000-0.489	0.000-0.199	0.000-0.978	0.000-18.914	0.000-92.924
Poultry	0.000-0.033	0.000-0.204	0.000-0.033	0.000-0.204	0.133-0.133	0.816-0.816	0.000-4.647	0.000-28.570
Sugars	0.000-0.007	0.000-0.055	0.000-0.020	0.000-0.164	0.000-0.013	0.000-0.109	4.411-4.411	36.110-36.110
Total	0.000-5.864	0.000-30.013	0.214-6.361	1.486-30.111	10.348-12.639	59.703-60.140	4.411-399.213	36.110-1375.920

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

Table D3: Lower to upper bound PBB exposures in pg/kg bw/day for age ≥9 - <12 months.

Food Group	PBB-15		PBB-49		PBB-52	
	Mean	P97.5	Mean	P97.5	Mean	P97.5
Bread	0.000-0.629	0.000-2.283	0.000-0.070	0.000-0.254	0.000-0.070	0.000-0.254
Canned veg	0.000-0.594	0.000-3.866	0.000-0.012	0.000-0.079	0.000-0.006	0.000-0.039
Carcase meat	0.000-1.232	0.000-7.189	0.000-0.123	0.000-0.719	0.000-0.123	0.000-0.719
Dairy products	0.000-3.231	0.000-16.645	0.000-3.231	0.000-16.645	0.000-3.231	0.000-16.645
Eggs	0.000-0.407	0.000-2.924	0.000-0.041	0.000-0.292	0.000-0.041	0.000-0.292
Fats and oils	0.000-1.394	0.000-7.514	0.000-0.139	0.000-0.751	0.000-0.139	0.000-0.751
Fish	0.000-0.676	0.000-3.872	0.430-0.430	2.464-2.464	1.290-1.290	7.392-7.392
Fresh fruit	0.000-1.836	0.000-7.405	0.000-0.071	0.000-0.285	0.000-0.141	0.000-0.570
Fruit products	0.000-0.565	0.000-3.219	0.000-0.048	0.000-0.272	0.000-0.024	0.000-0.136
Green veg	0.000-0.335	0.000-2.002	0.000-0.013	0.000-0.078	0.000-0.026	0.000-0.155
Meat products	0.000-0.072	0.000-0.445	0.000-0.072	0.000-0.445	0.000-0.072	0.000-0.445
Milk	0.000-1.766	0.000-14.340	0.000-0.126	0.000-1.024	0.000-0.126	0.000-1.024
Misc cereals	0.000-7.193	0.000-23.965	0.000-0.400	0.000-1.331	0.000-0.400	0.000-1.331
Non alc beverages	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000
Nuts	0.000-0.062	0.000-0.619	0.000-0.008	0.000-0.077	0.000-0.008	0.000-0.077
Offals	0.000-0.007	0.000-0.000	0.000-0.001	0.000-0.000	0.000-0.001	0.000-0.000
Other veg	0.000-3.208	0.000-11.933	0.000-0.247	0.000-0.918	0.000-0.247	0.000-0.918
Potatoes	0.000-2.331	0.000-9.229	0.000-0.146	0.000-0.577	0.000-0.146	0.000-0.577
Poultry	0.000-0.126	0.000-0.644	0.000-0.063	0.000-0.322	0.000-0.063	0.000-0.322
Sugars	0.000-0.061	0.000-0.391	0.000-0.012	0.000-0.078	0.000-0.012	0.000-0.078
Total	0.000-25.724	0.000-55.748	0.430-5.252	2.464-17.888	1.290-6.166	7.392-19.144

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

Table D3: Lower to upper bound PBB exposures in pg/kg bw/day for age ≥9 - <12 months *cont.*

Food Group	PBB-80		PBB-101		PBB-153		PBB-209	
	Mean	P97.5	Mean	P97.5	Mean	P97.5	Mean	P97.5
Bread	0.000-0.070	0.000-0.254	0.000-0.070	0.000-0.254	0.000-0.280	0.000-1.014	0.000-16.783	0.000-60.893
Canned veg	0.000-0.012	0.000-0.079	0.000-0.012	0.000-0.079	0.000-0.042	0.000-0.276	0.000-11.518	0.000-74.952
Carcase meat	0.000-0.123	0.000-0.719	0.000-0.123	0.000-0.719	0.246-0.246	1.438-1.438	0.000-8.627	0.000-50.335
Dairy products	0.000-3.231	0.000-16.645	0.000-3.231	0.000-16.645	6.462-6.462	33.291-33.291	0.000-129.191	0.000-665.528
Eggs	0.000-0.041	0.000-0.292	0.000-0.041	0.000-0.292	0.000-0.081	0.000-0.585	0.000-4.070	0.000-29.243
Fats and oils	0.000-0.139	0.000-0.751	0.000-0.139	0.000-0.751	0.000-0.279	0.000-1.503	0.000-1.394	0.000-7.514
Fish	0.000-0.061	0.000-0.352	0.369-0.369	2.112-2.112	0.737-0.737	4.224-4.224	0.000-6.758	0.000-38.714
Fresh fruit	0.000-0.071	0.000-0.285	0.000-0.141	0.000-0.570	0.000-0.282	0.000-1.139	0.000-42.526	0.000-171.566
Fruit products	0.000-0.048	0.000-0.272	0.000-0.183	0.000-1.043	0.000-0.151	0.000-0.861	0.000-19.094	0.000-108.804
Green veg	0.000-0.013	0.000-0.078	0.000-0.026	0.000-0.155	0.000-0.052	0.000-0.311	0.000-11.247	0.000-67.209
Meat products	0.000-0.072	0.000-0.445	0.000-0.072	0.000-0.445	0.000-0.143	0.000-0.889	0.000-5.008	0.000-31.120
Milk	0.000-0.126	0.000-1.024	0.000-0.378	0.000-3.073	0.000-0.252	0.000-2.049	0.000-64.335	0.000-522.549
Misc cereals	0.000-0.400	0.000-1.331	0.000-0.400	0.000-1.331	0.000-1.199	0.000-3.994	0.000-43.937	0.000-146.393
Non alc beverages	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000
Nuts	0.000-0.008	0.000-0.077	0.000-0.008	0.000-0.077	0.000-0.008	0.000-0.077	0.000-0.156	0.000-1.548
Offals	0.000-0.001	0.000-0.000	0.000-0.001	0.000-0.000	0.000-0.009	0.000-0.000	0.000-0.118	0.000-0.000
Other veg	0.000-0.247	0.000-0.918	0.000-0.247	0.000-0.918	0.000-0.494	0.000-1.836	0.000-44.429	0.000-165.253
Potatoes	0.000-0.146	0.000-0.577	0.000-0.146	0.000-0.577	0.000-0.291	0.000-1.154	0.000-27.678	0.000-109.588
Poultry	0.000-0.063	0.000-0.322	0.000-0.063	0.000-0.322	0.252-0.252	1.287-1.287	0.000-8.816	0.000-45.056
Sugars	0.000-0.012	0.000-0.078	0.000-0.037	0.000-0.234	0.000-0.024	0.000-0.156	8.076-8.076	51.550-51.550
Total	0.000-4.883	0.000-17.655	0.369-5.686	2.112-18.194	7.698-11.286	34.061-37.147	8.076-453.762	51.550-1116.710

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

Table D4: Lower to upper bound PBB exposures in pg/kg bw/day for age ≥12 - <15 months.

Food Group	PBB-15		PBB-49		PBB-52	
	Mean	P97.5	Mean	P97.5	Mean	P97.5
Bread	0.000-0.944	0.000-2.574	0.000-0.105	0.000-0.286	0.000-0.105	0.000-0.286
Canned veg	0.000-0.865	0.000-4.517	0.000-0.018	0.000-0.092	0.000-0.009	0.000-0.046
Carcase meat	0.000-1.383	0.000-7.114	0.000-0.138	0.000-0.711	0.000-0.138	0.000-0.711
Dairy products	0.000-2.345	0.000-12.380	0.000-2.345	0.000-12.380	0.000-2.345	0.000-12.380
Eggs	0.000-0.646	0.000-3.393	0.000-0.065	0.000-0.339	0.000-0.065	0.000-0.339
Fats and oils	0.000-1.957	0.000-7.875	0.000-0.196	0.000-0.787	0.000-0.196	0.000-0.787
Fish	0.000-0.950	0.000-4.407	0.604-0.604	2.805-2.805	1.813-1.813	8.414-8.414
Fresh fruit	0.000-2.473	0.000-8.493	0.000-0.095	0.000-0.327	0.000-0.190	0.000-0.653
Fruit products	0.000-0.552	0.000-3.963	0.000-0.047	0.000-0.335	0.000-0.023	0.000-0.167
Green veg	0.000-0.305	0.000-1.350	0.000-0.012	0.000-0.052	0.000-0.024	0.000-0.105
Meat products	0.000-0.142	0.000-0.750	0.000-0.142	0.000-0.750	0.000-0.142	0.000-0.750
Milk	0.000-7.230	0.000-20.636	0.000-0.516	0.000-1.474	0.000-0.516	0.000-1.474
Misc cereals	0.000-9.946	0.000-32.009	0.000-0.553	0.000-1.778	0.000-0.553	0.000-1.778
Non alc beverages	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000
Nuts	0.000-0.257	0.000-1.097	0.000-0.032	0.000-0.137	0.000-0.032	0.000-0.137
Offals	0.000-0.002	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000
Other veg	0.000-2.633	0.000-9.260	0.000-0.203	0.000-0.712	0.000-0.203	0.000-0.712
Potatoes	0.000-2.929	0.000-10.703	0.000-0.183	0.000-0.669	0.000-0.183	0.000-0.669
Poultry	0.000-0.152	0.000-0.664	0.000-0.076	0.000-0.332	0.000-0.076	0.000-0.332
Sugars	0.000-0.115	0.000-0.700	0.000-0.023	0.000-0.140	0.000-0.023	0.000-0.140
Total	0.000-35.825	0.000-67.187	0.604-5.352	2.805-14.868	1.813-6.636	8.414-17.504

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

Table D4: Lower to upper bound PBB exposures in pg/kg bw/day for age ≥12 - <15 months *cont.*

Food Group	PBB-80		PBB-101		PBB-153		PBB-209	
	Mean	P97.5	Mean	P97.5	Mean	P97.5	Mean	P97.5
Bread	0.000-0.105	0.000-0.286	0.000-0.105	0.000-0.286	0.000-0.420	0.000-1.144	0.000-25.182	0.000-68.680
Canned veg	0.000-0.018	0.000-0.092	0.000-0.018	0.000-0.092	0.000-0.062	0.000-0.323	0.000-16.763	0.000-87.576
Carcase meat	0.000-0.138	0.000-0.711	0.000-0.138	0.000-0.711	0.277-0.277	1.423-1.423	0.000-9.686	0.000-49.816
Dairy products	0.000-2.345	0.000-12.380	0.000-2.345	0.000-12.380	4.690-4.690	24.761-24.761	0.000-93.766	0.000-495.002
Eggs	0.000-0.065	0.000-0.339	0.000-0.065	0.000-0.339	0.000-0.129	0.000-0.679	0.000-6.463	0.000-33.926
Fats and oils	0.000-0.196	0.000-0.787	0.000-0.196	0.000-0.787	0.000-0.391	0.000-1.575	0.000-1.957	0.000-7.875
Fish	0.000-0.086	0.000-0.401	0.518-0.518	2.404-2.404	1.036-1.036	4.808-4.808	0.000-9.496	0.000-44.068
Fresh fruit	0.000-0.095	0.000-0.327	0.000-0.190	0.000-0.653	0.000-0.381	0.000-1.307	0.000-57.305	0.000-196.775
Fruit products	0.000-0.047	0.000-0.335	0.000-0.179	0.000-1.284	0.000-0.148	0.000-1.061	0.000-18.655	0.000-133.960
Green veg	0.000-0.012	0.000-0.052	0.000-0.024	0.000-0.105	0.000-0.047	0.000-0.210	0.000-10.225	0.000-45.342
Meat products	0.000-0.142	0.000-0.750	0.000-0.142	0.000-0.750	0.000-0.284	0.000-1.500	0.000-9.941	0.000-52.483
Milk	0.000-0.516	0.000-1.474	0.000-1.549	0.000-4.422	0.000-1.033	0.000-2.948	0.000-263.450	0.000-751.962
Misc cereals	0.000-0.553	0.000-1.778	0.000-0.553	0.000-1.778	0.000-1.658	0.000-5.335	0.000-60.756	0.000-195.535
Non alc beverages	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000
Nuts	0.000-0.032	0.000-0.137	0.000-0.032	0.000-0.137	0.000-0.032	0.000-0.137	0.000-0.644	0.000-2.743
Offals	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.003	0.000-0.000	0.000-0.033	0.000-0.000
Other veg	0.000-0.203	0.000-0.712	0.000-0.203	0.000-0.712	0.000-0.405	0.000-1.425	0.000-36.470	0.000-128.241
Potatoes	0.000-0.183	0.000-0.669	0.000-0.183	0.000-0.669	0.000-0.366	0.000-1.338	0.000-34.775	0.000-127.080
Poultry	0.000-0.076	0.000-0.332	0.000-0.076	0.000-0.332	0.304-0.304	1.328-1.328	0.000-10.625	0.000-46.484
Sugars	0.000-0.023	0.000-0.140	0.000-0.069	0.000-0.420	0.000-0.046	0.000-0.280	15.143-15.143	92.362-92.362
Total	0.000-4.834	0.000-14.435	0.518-6.584	2.404-15.516	6.306-11.710	26.736-30.624	15.143-681.334	92.362-1199.710

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

Table D5: Lower to upper bound PBB exposures in pg /kg bw/day for age ≥15 - <18 months.

Food Group	PBB-15		PBB-49		PBB-52	
	Mean	P97.5	Mean	P97.5	Mean	P97.5
Bread	0.000-1.061	0.000-2.846	0.000-0.118	0.000-0.316	0.000-0.118	0.000-0.316
Canned veg	0.000-0.851	0.000-4.024	0.000-0.017	0.000-0.082	0.000-0.009	0.000-0.041
Carcase meat	0.000-1.725	0.000-8.581	0.000-0.173	0.000-0.858	0.000-0.173	0.000-0.858
Dairy products	0.000-2.019	0.000-8.755	0.000-2.019	0.000-8.755	0.000-2.019	0.000-8.755
Eggs	0.000-0.664	0.000-3.497	0.000-0.066	0.000-0.350	0.000-0.066	0.000-0.350
Fats and oils	0.000-2.326	0.000-8.595	0.000-0.233	0.000-0.859	0.000-0.233	0.000-0.859
Fish	0.000-0.890	0.000-4.514	0.567-0.567	2.873-2.873	1.700-1.700	8.618-8.618
Fresh fruit	0.000-3.045	0.000-8.738	0.000-0.117	0.000-0.336	0.000-0.234	0.000-0.672
Fruit products	0.000-0.631	0.000-4.180	0.000-0.053	0.000-0.353	0.000-0.027	0.000-0.177
Green veg	0.000-0.333	0.000-1.253	0.000-0.013	0.000-0.049	0.000-0.026	0.000-0.097
Meat products	0.000-0.175	0.000-0.805	0.000-0.175	0.000-0.805	0.000-0.175	0.000-0.805
Milk	0.000-7.253	0.000-17.570	0.000-0.518	0.000-1.255	0.000-0.518	0.000-1.255
Misc cereals	0.000-12.006	0.000-33.905	0.000-0.667	0.000-1.884	0.000-0.667	0.000-1.884
Non alc beverages	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000
Nuts	0.000-0.117	0.000-1.073	0.000-0.015	0.000-0.134	0.000-0.015	0.000-0.134
Offals	0.000-0.015	0.000-0.000	0.000-0.002	0.000-0.000	0.000-0.002	0.000-0.000
Other veg	0.000-2.725	0.000-9.103	0.000-0.210	0.000-0.700	0.000-0.210	0.000-0.700
Potatoes	0.000-2.744	0.000-8.832	0.000-0.172	0.000-0.552	0.000-0.172	0.000-0.552
Poultry	0.000-0.170	0.000-0.731	0.000-0.085	0.000-0.365	0.000-0.085	0.000-0.365
Sugars	0.000-0.174	0.000-0.863	0.000-0.035	0.000-0.173	0.000-0.035	0.000-0.173
Total	0.000-38.922	0.000-65.069	0.567-5.253	2.873-12.690	1.700-6.481	8.618-15.354

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

Table D5: Lower to upper bound PBB exposures in pg /kg bw/day for age ≥15 - <18 months *cont.*

Food Group	PBB-80		PBB-101		PBB-153		PBB-209	
	Mean	P97.5	Mean	P97.5	Mean	P97.5	Mean	P97.5
Bread	0.000-0.118	0.000-0.316	0.000-0.118	0.000-0.316	0.000-0.471	0.000-1.265	0.000-28.296	0.000-75.923
Canned veg	0.000-0.017	0.000-0.082	0.000-0.017	0.000-0.082	0.000-0.061	0.000-0.287	0.000-16.491	0.000-78.009
Carcase meat	0.000-0.173	0.000-0.858	0.000-0.173	0.000-0.858	0.345-0.345	1.716-1.716	0.000-12.080	0.000-60.083
Dairy products	0.000-2.019	0.000-8.755	0.000-2.019	0.000-8.755	4.037-4.037	17.510-17.510	0.000-80.712	0.000-350.057
Eggs	0.000-0.066	0.000-0.350	0.000-0.066	0.000-0.350	0.000-0.133	0.000-0.699	0.000-6.637	0.000-34.965
Fats and oils	0.000-0.233	0.000-0.859	0.000-0.233	0.000-0.859	0.000-0.465	0.000-1.719	0.000-2.326	0.000-8.595
Fish	0.000-0.081	0.000-0.410	0.486-0.486	2.462-2.462	0.971-0.971	4.924-4.924	0.000-8.904	0.000-45.136
Fresh fruit	0.000-0.117	0.000-0.336	0.000-0.234	0.000-0.672	0.000-0.468	0.000-1.344	0.000-70.540	0.000-202.440
Fruit products	0.000-0.053	0.000-0.353	0.000-0.205	0.000-1.354	0.000-0.169	0.000-1.119	0.000-21.340	0.000-141.285
Green veg	0.000-0.013	0.000-0.049	0.000-0.026	0.000-0.097	0.000-0.052	0.000-0.195	0.000-11.182	0.000-42.079
Meat products	0.000-0.175	0.000-0.805	0.000-0.175	0.000-0.805	0.000-0.350	0.000-1.609	0.000-12.231	0.000-56.320
Milk	0.000-0.518	0.000-1.255	0.000-1.554	0.000-3.765	0.000-1.036	0.000-2.510	0.000-264.296	0.000-640.234
Misc cereals	0.000-0.667	0.000-1.884	0.000-0.667	0.000-1.884	0.000-2.001	0.000-5.651	0.000-73.340	0.000-207.115
Non alc beverages	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000
Nuts	0.000-0.015	0.000-0.134	0.000-0.015	0.000-0.134	0.000-0.015	0.000-0.134	0.000-0.293	0.000-2.683
Offals	0.000-0.002	0.000-0.000	0.000-0.002	0.000-0.000	0.000-0.019	0.000-0.000	0.000-0.242	0.000-0.000
Other veg	0.000-0.210	0.000-0.700	0.000-0.210	0.000-0.700	0.000-0.419	0.000-1.401	0.000-37.733	0.000-126.072
Potatoes	0.000-0.172	0.000-0.552	0.000-0.172	0.000-0.552	0.000-0.343	0.000-1.104	0.000-32.587	0.000-104.873
Poultry	0.000-0.085	0.000-0.365	0.000-0.085	0.000-0.365	0.340-0.340	1.462-1.462	0.000-11.912	0.000-51.173
Sugars	0.000-0.035	0.000-0.173	0.000-0.104	0.000-0.518	0.000-0.069	0.000-0.345	22.921-22.921	113.944-113.944
Total	0.000-4.768	0.000-11.430	0.486-6.559	2.462-13.039	5.694-11.766	20.299-26.844	22.921-714.063	113.944-1206.560

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

Table D6: Lower to upper bound PBB exposures in pg /kg bw/day for age ≥18 - <24 months.

Food Group	PBB-15		PBB-49		PBB-52	
	Mean	P97.5	Mean	P97.5	Mean	P97.5
Bread	0.00-1.12	0.00-2.52	0.00-0.12	0.00-0.28	0.00-0.12	0.00-0.28
Canned veg	0.00-1.48	0.00-5.69	0.00-0.03	0.00-0.12	0.00-0.02	0.00-0.06
Carcase meat	0.00-1.90	0.00-9.78	0.00-0.19	0.00-0.98	0.00-0.19	0.00-0.98
Dairy products	0.00-2.22	0.00-10.29	0.00-2.22	0.00-10.29	0.00-2.22	0.00-10.29
Eggs	0.00-0.50	0.00-2.80	0.00-0.05	0.00-0.28	0.00-0.05	0.00-0.28
Fats and oils	0.00-3.14	0.00-10.03	0.00-0.31	0.00-1.00	0.00-0.31	0.00-1.00
Fish	0.00-1.18	0.00-4.70	0.75-0.75	2.99-2.99	2.25-2.25	8.98-8.98
Fresh fruit	0.00-3.71	0.00-9.73	0.00-0.14	0.00-0.37	0.00-0.29	0.00-0.75
Fruit products	0.00-1.41	0.00-5.46	0.00-0.12	0.00-0.46	0.00-0.06	0.00-0.23
Green veg	0.00-0.28	0.00-1.71	0.00-0.01	0.00-0.07	0.00-0.02	0.00-0.13
Meat products	0.00-0.21	0.00-0.96	0.00-0.21	0.00-0.96	0.00-0.21	0.00-0.96
Milk	0.00-6.78	0.00-21.34	0.00-0.48	0.00-1.52	0.00-0.48	0.00-1.52
Misc cereals	0.00-12.96	0.00-25.30	0.00-0.72	0.00-1.41	0.00-0.72	0.00-1.41
Non alc beverages	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
Nuts	0.00-0.06	0.00-0.09	0.00-0.01	0.00-0.01	0.00-0.01	0.00-0.01
Offals	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00
Other veg	0.00-1.68	0.00-4.94	0.00-0.13	0.00-0.38	0.00-0.13	0.00-0.38
Potatoes	0.00-2.85	0.00-5.84	0.00-0.18	0.00-0.36	0.00-0.18	0.00-0.36
Poultry	0.00-0.20	0.00-0.61	0.00-0.10	0.00-0.31	0.00-0.10	0.00-0.31
Sugars	0.00-0.20	0.00-0.97	0.00-0.04	0.00-0.19	0.00-0.04	0.00-0.19
Total	0.00-41.89	0.00-68.70	0.75-5.82	2.99-13.58	2.25-7.40	8.98-16.51

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

Table D6: Lower to upper bound PBB exposures in pg /kg bw/day for age ≥18 - <24 months *cont.*

Food Group	PBB-80		PBB-101		PBB-153		PBB-209	
	Mean	P97.5	Mean	P97.5	Mean	P97.5	Mean	P97.5
Bread	0.00-0.12	0.00-0.28	0.00-0.12	0.00-0.28	0.00-0.50	0.00-1.12	0.000-29.846	0.000-67.095
Canned veg	0.00-0.03	0.00-0.12	0.00-0.03	0.00-0.12	0.00-0.11	0.00-0.41	0.000-28.607	0.000-110.255
Carcase meat	0.00-0.19	0.00-0.98	0.00-0.19	0.00-0.98	0.38-0.38	1.96-1.96	0.000-13.331	0.000-68.511
Dairy products	0.00-2.22	0.00-10.29	0.00-2.22	0.00-10.29	4.43-4.43	20.58-20.58	0.000-88.598	0.000-411.480
Eggs	0.00-0.05	0.00-0.28	0.00-0.05	0.00-0.28	0.00-0.10	0.00-0.56	0.000-5.002	0.000-28.018
Fats and oils	0.00-0.31	0.00-1.00	0.00-0.31	0.00-1.00	0.00-0.63	0.00-2.01	0.000-3.140	0.000-10.026
Fish	0.00-0.11	0.00-0.43	0.64-0.64	2.57-2.57	1.28-1.28	5.13-5.13	0.000-11.775	0.000-47.027
Fresh fruit	0.00-0.14	0.00-0.37	0.00-0.29	0.00-0.75	0.00-0.57	0.00-1.50	0.000-85.997	0.000-225.454
Fruit products	0.00-0.12	0.00-0.46	0.00-0.46	0.00-1.77	0.00-0.38	0.00-1.46	0.000-47.766	0.000-184.500
Green veg	0.00-0.01	0.00-0.07	0.00-0.02	0.00-0.13	0.00-0.04	0.00-0.27	0.000-9.569	0.000-57.383
Meat products	0.00-0.21	0.00-0.96	0.00-0.21	0.00-0.96	0.00-0.42	0.00-1.93	0.000-14.718	0.000-67.428
Milk	0.00-0.48	0.00-1.52	0.00-1.45	0.00-4.57	0.00-0.97	0.00-3.05	0.000-247.085	0.000-777.455
Misc cereals	0.00-0.72	0.00-1.41	0.00-0.72	0.00-1.41	0.00-2.16	0.00-4.22	0.000-79.178	0.000-154.571
Non alc beverages	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.000-0.000	0.000-0.000
Nuts	0.00-0.01	0.00-0.01	0.00-0.01	0.00-0.01	0.00-0.01	0.00-0.01	0.000-0.156	0.000-0.222
Offals	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.00-0.00	0.000-0.056	0.000-0.000
Other veg	0.00-0.13	0.00-0.38	0.00-0.13	0.00-0.38	0.00-0.26	0.00-0.76	0.000-23.306	0.000-68.349
Potatoes	0.00-0.18	0.00-0.36	0.00-0.18	0.00-0.36	0.00-0.36	0.00-0.73	0.000-33.788	0.000-69.289
Poultry	0.00-0.10	0.00-0.31	0.00-0.10	0.00-0.31	0.40-0.40	1.22-1.22	0.000-13.945	0.000-42.726
Sugars	0.00-0.04	0.00-0.19	0.00-0.12	0.00-0.58	0.00-0.08	0.00-0.39	26.921-26.921	127.415-127.415
Total	0.00-5.18	0.00-12.38	0.64-7.25	2.57-14.07	6.50-13.08	22.64-27.90	26.921-762.784	127.415-1418.820

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

Table D7: Lower to upper bound PBB exposures in pg /kg bw/day for age ≥24 - <60 months.

Food Group	PBB-15		PBB-49		PBB-52	
	Mean	P97.5	Mean	P97.5	Mean	P97.5
Bread	0.000-1.274	0.000-2.962	0.000-0.142	0.000-0.329	0.000-0.142	0.000-0.329
Canned veg	0.000-0.893	0.000-3.472	0.000-0.018	0.000-0.071	0.000-0.009	0.000-0.035
Carcase meat	0.000-1.151	0.000-6.160	0.000-0.115	0.000-0.616	0.000-0.115	0.000-0.616
Dairy products	0.000-1.315	0.000-4.737	0.000-1.315	0.000-4.737	0.000-1.315	0.000-4.737
Eggs	0.000-0.514	0.000-2.909	0.000-0.051	0.000-0.291	0.000-0.051	0.000-0.291
Fats and oils	0.000-2.811	0.000-9.317	0.000-0.281	0.000-0.932	0.000-0.281	0.000-0.932
Fish	0.000-0.902	0.000-3.462	0.574-0.574	2.203-2.203	1.722-1.722	6.610-6.610
Fresh fruit	0.000-2.681	0.000-7.067	0.000-0.103	0.000-0.272	0.000-0.206	0.000-0.544
Fruit products	0.000-1.287	0.000-6.203	0.000-0.109	0.000-0.524	0.000-0.054	0.000-0.262
Green veg	0.000-0.294	0.000-1.193	0.000-0.011	0.000-0.046	0.000-0.023	0.000-0.093
Meat products	0.000-0.254	0.000-0.844	0.000-0.254	0.000-0.844	0.000-0.254	0.000-0.844
Milk	0.000-4.791	0.000-13.826	0.000-0.342	0.000-0.988	0.000-0.342	0.000-0.988
Misc cereals	0.000-10.455	0.000-24.965	0.000-0.581	0.000-1.387	0.000-0.581	0.000-1.387
Non alc beverages	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000
Nuts	0.000-0.190	0.000-2.662	0.000-0.024	0.000-0.333	0.000-0.024	0.000-0.333
Offals	0.000-0.005	0.000-0.000	0.000-0.001	0.000-0.000	0.000-0.001	0.000-0.000
Other veg	0.000-1.890	0.000-6.149	0.000-0.145	0.000-0.473	0.000-0.145	0.000-0.473
Potatoes	0.000-2.681	0.000-7.448	0.000-0.168	0.000-0.466	0.000-0.168	0.000-0.466
Poultry	0.000-0.168	0.000-0.718	0.000-0.084	0.000-0.359	0.000-0.084	0.000-0.359
Sugars	0.000-0.294	0.000-1.235	0.000-0.059	0.000-0.247	0.000-0.059	0.000-0.247
Total	0.000-33.850	0.000-54.408	0.574-4.377	2.203-7.721	1.722-5.576	6.610-12.132

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

Table D7: Lower to upper bound PBB exposures in pg /kg bw/day for age ≥24 - <60 months *cont.*

Food Group	PBB-80		PBB-101		PBB-153		PBB-209	
	Mean	P97.5	Mean	P97.5	Mean	P97.5	Mean	P97.5
Bread	0.000-0.142	0.000-0.329	0.000-0.329	0.000-0.329	0.000-0.566	0.000-1.316	0.000-33.987	0.000-79.009
Canned veg	0.000-0.018	0.000-0.071	0.000-0.071	0.000-0.071	0.000-0.064	0.000-0.248	0.000-17.318	0.000-67.323
Carcase meat	0.000-0.115	0.000-0.616	0.000-0.616	0.000-0.616	0.230-0.230	1.232-1.232	0.000-8.062	0.000-43.130
Dairy products	0.000-1.315	0.000-4.737	0.000-4.737	0.000-4.737	2.630-2.630	9.474-9.474	0.000-52.578	0.000-189.393
Eggs	0.000-0.051	0.000-0.291	0.000-0.291	0.000-0.291	0.000-0.103	0.000-0.582	0.000-5.139	0.000-29.093
Fats and oils	0.000-0.281	0.000-0.932	0.000-0.932	0.000-0.932	0.000-0.562	0.000-1.863	0.000-2.811	0.000-9.317
Fish	0.000-0.082	0.000-0.315	1.889-1.889	1.889-1.889	0.984-0.984	3.777-3.777	0.000-9.020	0.000-34.619
Fresh fruit	0.000-0.103	0.000-0.272	0.000-0.544	0.000-0.544	0.000-0.412	0.000-1.087	0.000-62.118	0.000-163.734
Fruit products	0.000-0.109	0.000-0.524	0.000-2.009	0.000-2.009	0.000-0.344	0.000-1.660	0.000-43.515	0.000-209.670
Green veg	0.000-0.011	0.000-0.046	0.000-0.093	0.000-0.093	0.000-0.046	0.000-0.185	0.000-9.863	0.000-40.073
Meat products	0.000-0.254	0.000-0.844	0.000-0.844	0.000-0.844	0.000-0.508	0.000-1.687	0.000-17.759	0.000-59.040
Milk	0.000-0.342	0.000-0.988	0.000-2.963	0.000-2.963	0.000-0.684	0.000-1.975	0.000-174.577	0.000-503.799
Misc cereals	0.000-0.581	0.000-1.387	0.000-1.387	0.000-1.387	0.000-1.743	0.000-4.161	0.000-63.868	0.000-152.506
Non alc beverages	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.000
Nuts	0.000-0.024	0.000-0.333	0.000-0.333	0.000-0.333	0.000-0.024	0.000-0.333	0.000-0.475	0.000-6.656
Offals	0.000-0.001	0.000-0.000	0.000-0.000	0.000-0.000	0.000-0.006	0.000-0.000	0.000-0.080	0.000-0.000
Other veg	0.000-0.145	0.000-0.473	0.000-0.473	0.000-0.473	0.000-0.291	0.000-0.946	0.000-26.176	0.000-85.158
Potatoes	0.000-0.168	0.000-0.466	0.000-0.466	0.000-0.466	0.000-0.335	0.000-0.931	0.000-31.832	0.000-88.440
Poultry	0.000-0.084	0.000-0.359	0.000-0.359	0.000-0.359	0.335-0.335	1.436-1.436	0.000-11.741	0.000-50.255
Sugars	0.000-0.059	0.000-0.247	0.000-0.741	0.000-0.741	0.000-0.118	0.000-0.494	38.795-38.795	163.001-163.001
Total	0.000-3.885	0.000-7.102	1.889-9.752	1.889-9.752	4.180-9.985	10.661-16.979	38.795-609.713	163.001-1021.230