The Director General

Maisons-Alfort, 7 February 2017

OPINION
of the French Agency for Food, Environmental and Occupational Health & Safety

on the assessment of the results of bisphenol A contamination of non-canned foodstuffs of animal origin

On 15 December 2015, ANSES received a formal request from the Directorate General for Food (DGAL) to undertake the following expert appraisal: "Request for an assessment of the results of the 2015 experimental plan on bisphenol A contamination of non-canned foodstuffs of animal origin".

1. BACKGROUND AND PURPOSE OF THE REQUEST

In its Opinion of 25 March 2013 on the assessment of the risks related to bisphenol A (BPA) for human health (ANSES, 2013), ANSES demonstrated that diet was the predominant route of exposure. It emerged from this expert appraisal that canned products were responsible for 50% of the dietary exposure to unconjugated BPA. With regard to non-canned foodstuffs, the consumption of meat (meat, offal and delicatessen meats) accounted for 17% of this exposure and that of seafood products 3%, with no explanation as to the source of the contamination of these foodstuffs.

To respond to this issue of contamination of unknown origin, on 14 October 2013, the Directorate General for Food (DGAL) and the Directorate General for Competition, Consumer Affairs and Fraud Control (DGCCRF) formally requested that ANSES propose a sampling plan for monitoring the contamination of products of animal origin by unconjugated BPA. An update of the level of BPA contamination of foodstuffs had become necessary given that the existing data were based on samples collected between 2007 and 2009 whose handling and preparation conditions had been poorly documented in terms of potential contamination with BPA.

Accordingly, relying on the recommendations made by ANSES in its scientific and technical support note of 5 June 2014, the DGAL carried out a sampling and analysis plan in 2015 for unconjugated BPA in non-canned foodstuffs of animal origin.

This current opinion follows on from this analysis campaign, the results of which have now been made available. ANSES was asked by the DGAL to assess the data from this sampling plan and indicate whether it would be necessary to update ANSES's Opinion of 25 March 2013 on the assessment of the risks associated with BPA for human health, and in particular for pregnant women. For this purpose, the contamination data from the 2015 sampling plan were compared with those used in the framework of ANSES's expert appraisal of 2013, and new exposure calculations were made from these more recent data.

In addition, in the event that the toxicological benchmarks defined by ANSES might be exceeded, the Agency was asked to determine whether the existing contextual data could be used to identify one or more sources of contamination. With this aim of identifying potential sources of contamination of these foodstuffs, ANSES called on the Laboratory for the Study of Residues and Contaminants in Food (LABERCA) in the framework of a research and development agreement (CRD), to develop a robust method for measuring the conjugated (glucuroconjugated and sulphoconjugated) forms of BPA and to quantify them in 50 samples from the analysis campaign conducted in 2015. The presence of conjugated compounds would indicate the metabolism and then conjugation of BPA, events that probably occurred *in vivo*, thus demonstrating *ante-mortem* contamination. On the contrary, the absence of conjugates would indicate that the BPA present was probably linked to *post-mortem* contamination of the foodstuff. The results and conclusions of this study are presented in the framework of this Opinion.

2. ORGANISATION OF THE EXPERT APPRAISAL

The expert appraisal was carried out in accordance with French Standard NF X 50-110 "Quality in Expert Appraisals – General Requirements of Competence for Expert Appraisals (May 2003)".

It falls within the sphere of competence of the Expert Committee (CES) on "Assessment of physico-chemical risks in food" (ERCA). The methodological and scientific aspects of the work were presented to the CES on 23 February 2016 and 23 June 2016, on the basis of the results of exposure calculations conducted in-house. The work was adopted by the CES ERCA at its meeting on 11 January 2017.

ANSES analyses the links of interest declared by the experts prior to their appointment and throughout the work, in order to avoid potential conflicts of interest with regard to the matters dealt with as part of the expert appraisal. The experts' declarations of interests are made public via the ANSES website (www.anses.fr).

3. ANALYSIS AND CONCLUSIONS OF THE CES ERCA

3.1. Methodology adopted for handling the request

3.1.1. Methodology adopted for the health risk assessment

3.1.1.1 Hazard characterisation

The toxicological benchmarks selected to conduct this health risk assessment were those established by ANSES in the framework of its Opinion of 25 March 2013 (ANSES, 2013). These toxicological benchmarks had been established for the unborn children of exposed pregnant women.

The toxicological values (TV) chosen were as follows:

- A TV of 0.17 µg.kg $bw^{-1}.d^{-1}$ for effects on the brain and behaviour,
- A TV of 0.33 µg.kg $bw^{-1}.d^{-1}$ for effects on the female reproductive system,
- A TV of 0.29 µg.kg $bw^{-1}.d^{-1}$ for effects on metabolism and obesity,
- A TV of 0.083 µg.kg $bw^{-1}.d^{-1}$ for effects on the mammary gland.

3.1.1.2 Estimate of dietary exposure to BPA

Data on food consumption taken into account

General population
The consumption data used to estimate the exposure of the general population came from the second individual and national study on food consumption (INCA2, ANSES, 2009). This study was conducted in three phases between late 2005 and April 2007 in order to take into account the seasonal variations. Two distinct populations were included in the study: children aged 3 to 17 years (1455 individuals) and adults aged 18 to 79 years (2624 individuals). Data on food consumption were collected over 7 consecutive days using a consumption diary. Each day was broken down into three meals and three snacks between meals.

For each snack or meal, the participant had to give details of all the foods and beverages consumed, estimate the quantity consumed with the help of a photograph manual of servings, or household measures, or unit weights or volumes, and provide information on the type of product (industrial/home-made, fresh/canned/frozen, fortified/low-fat or not). The information collected in the consumption diary on the foods and supplements was verified and harmonised by dieticians.

Pregnant women
The consumption data used to estimate the exposure of pregnant women came from the EDEN[1] study conducted by INSERM Villejuif since 2003 to study the pre- and postnatal determinants for child development and health. Two thousand pregnant women were recruited before the 24th week of amenorrhoea at two maternity departments at the Nancy and Poitiers university hospitals. They were monitored at the end of their pregnancy and then the children born from these pregnancies were monitored for five years. The study included, among other things, measurements of health status, metabolism, the maternal diet, mother/child exchanges, measurements of foetal growth, the diet of the newborn, etc. Several questionnaires and clinical examinations were therefore conducted with the mother and child. The food data available were those relating to the diet of the mother before pregnancy and in the last three months of pregnancy. Data were collected from the mother using a self-administered food frequency questionnaire during the first trimester of pregnancy for consumption habits before the pregnancy, and then in the three days following the birth for the food consumption during the third trimester of pregnancy. Only the consumption data for women in their final trimester of pregnancy were used in the BPA exposure calculations. In total, 1775 women were concerned.

3.1.1.3 Data on contamination taken into account

The contamination data used to estimate dietary exposure to unconjugated BPA came from various sources.

With regard to normal food excluding non-canned foodstuffs of animal origin, the contamination data taken into account were those generated in the framework of the second Total Diet Study (TDS2, ANSES, 2011). These samples were gathered between June 2007 and January 2009.

[1] Study of the pre- and postnatal determinants for child development and health.

Concerning water intended for human consumption (WIHC), the contamination data came from the study carried out by ANSES's Nancy Hydrology Laboratory (LHN), which investigated levels of BPA in the water supply and in different bottled waters (still, sparkling, spring and natural mineral water (ANSES, 2013)).

Lastly, the contamination data concerning non-canned products of animal origin came from the sampling plan carried out by the DGAL in 2015, in which 322 samples were collected between January and October 2015 in 86 *départements* and several places of supply. Unlike the TDS2, these samples were analysed individually and in the raw state, i.e. without preparation[2]. The analytical method used in this study was the one used and validated in the framework of the Opinion of 25 March 2013 (ANSES, 2013).

3.1.1.4 Calculation of dietary exposure to BPA

Exposure was calculated for each of the populations according to a probabilistic approach identical to that carried out in the framework of the 2013 expert appraisal (ANSES, 2013). For each individual and each food, a contamination value was randomly drawn from among all the contamination values measured. This draw was carried out 1000 times, to create the same number of virtual exposures, taking into account every possible configuration. The result of this calculation is therefore a distribution of exposure. The large number of iterations, and therefore of data in the distribution, made it possible to calculate classic parameters such as the 95th percentile. Thus, for each sub-population studied (children aged 3 to 17 years, adults, and pregnant women), 1000 sets of data or exposure were calculated, and each of them were described using a mean, median and high percentiles.

At each iteration, the exposure of each individual was calculated according to the following equation:

$$E_i = \sum_{k=1}^{n} \frac{C_{i,k} \times L_k}{BW_i}$$

where:

- E_i is the total daily exposure of the individual i (µg.kg of body weight^{-1}.d^{-1}),
- $C_{i,k}$ is the daily average consumption of the food k by the individual i (g.d^{-1}),
- L_k is the estimated level of the studied contaminant in the food k (mg.kg^{-1} of fresh weight),
- BW_i is the body weight of the individual i (kg),
- and n is the total number of foods consumed by the individual i.

In the context of the work carried out in 2013, the censored values (values below the limits of detection or quantification) were taken into account according to the WHO recommendations in force at the time of the expert appraisal (GEMS/Food-EURO, 1995). When the total rate of censoring was less than 60%, the censored data were replaced by an average assumption, known as the "middle bound (MB)":

- All non-detected values (<LD[3]) were set at half the value of the LD.
- All non-quantified values (<LQ[4]) were set at half the value of the LQ.

[2] As a reminder, in the framework of the TDS2, the samples analysed were composite samples made up of 15 sub-samples, and they were analysed as consumed.
[3] Limit of detection.
[4] Limit of quantification.

To ensure that the exposure calculated in 2013 could be compared with that calculated in this Opinion, the exposure calculations were performed according to the MB assumption.

Lastly, exposure was calculated according to a "reference" scenario based on the following contamination data:

- Data from the TDS2 for normal food excluding WIHC and non-canned foodstuffs of animal origin (FAO),
- Data from the LHN for WIHC,
- Data from the 2015 sampling plan for non-canned FAOs.

In order to estimate the impact of the consumption of canned foodstuffs, exposure was also calculated according to a "0% cans" scenario, in which the data on contamination of canned foods available in the TDS2 were not taken into account. This scenario corresponds to the exposure of a population not consuming any canned foodstuffs or consuming only canned products that are not a source of BPA.

3.2. Determination of conjugated forms of BPA

In humans and mammals, BPA is rapidly absorbed after oral administration, and then eliminated primarily in the form of glucuronide: BPA-monoglucuronide (BPA-G) or BPA-diglucuronide (BPA-2G) (Dekant and Völkel, 2008). The sulphate form (BPA-S) is also observed but in lesser quantities (Liao and Kannan, 2012; Farbos, 2012; ANSES, 2013).

As the conjugated forms of BPA come from the metabolism of BPA within the body, the presence of these forms of BPA in a food indicates *ante-mortem* contamination and not contamination during food production. Thus, in order to investigate the potential sources of BPA contamination of non-canned FAOs, the LABERCA was asked to develop a robust method for detecting and quantifying the main conjugated forms of BPA (BPA-G, BPA-2G and BPA-S).

3.2.1. Selection of samples

The analyses of the conjugated forms of BPA focused on 50 samples from among the 322 collected in the framework of the 2015 sampling plan. These were selected from among those with the highest levels of contamination by unconjugated BPA. In all, 10 samples of fish, 34 samples of meat and 6 samples of liver from mammals were analysed.

3.2.2. Description of the analytical method

Extraction

The first step of the analytical procedure consisted in a liquid-solid extraction using a mixture of water/acetonitrile (50:50, v/v).

Purification

Solid-phase extraction with strong anion exchange (SAX):

For this step, a SAX Cuqax type column was used. The protocol followed included conditioning with 6 mL of methanol and 6 mL of water, two successive washes with 5 mL of water and 10 mL of methanol, then elution of the glucuronide fraction using 10 mL of methanol + 2% formic acid, a second washing with 10 mL of methanol and finally elution of the sulphate fraction using 10 mL of methanol + 15% ammonia.

Solid-phase extraction
Following the results obtained after conducting the SAX solid-phase extraction, an additional purification step was needed to remove the residual fat observed in most of the complex matrices of interest. This step was carried out on an HR-X type apolar column. The protocol applied included conditioning with 6 mL of methanol and then 6 mL of water. After applying the sample, it was washed with 5 mL of cyclohexane. The sulphate fraction was eluted with 4 mL of acetonitrile. A second wash with 10 mL of acetonitrile was carried out prior to eluting the glucuronide fraction with 20 mL of methanol.

Analysis
The analysis was carried out using ultra high performance liquid chromatography (UHPLC) coupled with tandem mass spectrometry (MS/MS).

Depending on the food matrix considered, the limits of detection (LD) reached and expressed in µg.kg^{-1} of fresh weight were as follows:
- In meat: 0.02 µg.kg^{-1} for BPA-G, 0.40 µg.kg^{-1} for BPA-2G and 0.09 µg.kg^{-1} for BPA-S;
- In fish: 0.37 µg.kg^{-1} for BPA-G, and 0.10 µg.kg^{-1} for BPA-2G and BPA-S;
- In liver: 0.04 µg.kg^{-1} for BPA-G, and 0.02 µg.kg^{-1} for BPA-2G and BPA-S.

3.3. Results

3.3.1. Unconjugated BPA contamination of non-canned FAOs

The unconjugated BPA contamination of non-canned FAOs measured in the framework of this study is shown in the tables in Annexes 2 and 3.

Generally speaking, for all the food categories, the CES ERCA noted a decline in the average contaminations compared to those reported in the previous estimate (Annexes 2 and 3). Nevertheless, given the methodological differences between the two sampling campaigns[5], it is not possible to measure the significance of these differences in contamination by applying a statistical test. It should be noted, however, that in the 2015 sampling plan, certain measured concentrations seemed high compared to the value of 5 µg.kg^{-1} that had been regarded as the background level (ANSES, 2013). This was particularly the case for turkey (60.2 µg.kg^{-1}), liver (51.3 µg.kg^{-1}), pork (43.6 µg.kg^{-1}) and salmon (35.6 µg.kg^{-1}). However, these values seem lower than the maximum concentrations measured in 2013 for the same foods: liver (395 µg.kg^{-1}), veal (224 µg.kg^{-1}) and steamed salmon (97.7 µg.kg^{-1}).

3.3.2. Dietary exposure to unconjugated BPA

The exposure calculated for the population of pregnant women with the data from the 2015 sampling plan and the 2013 data (ANSES, 2013) are detailed in Table 1 below. The results of the

[5] As a reminder, in the framework of the TDS2, the samples analysed were composite samples made up of 15 sub-samples, and they were analysed as consumed. In contrast, the samples from the 2015 plan were individual samples and were analysed in raw form.

exposure calculations for the populations of children and adults are shown in Annex 4. The contribution of the different food categories to this dietary exposure is detailed in Annex 5.

Table 1: Estimate of dietary exposure to BPA of the population of pregnant women ($\mu g.kg\ bw^{-1}.d^{-1}$)

		2013 expert assessment Samples taken between June 2007 and January 2009		**2017 expert assessment** Samples taken in 2015	
		Min	**Max**	**Min**	**Max**
Reference scenario	Mean	0.053	0.060	0.047	0.049
	Median	0.043	0.050	0.037	0.040
	95^{th} percentile	0.117	0.130	0.104	0.119
	97.5^{th} percentile	0.138	0.170	0.123	0.152
	99^{th} percentile	0.160	0.240	0.150	0.189
"0% cans" scenario	Mean	0.026	0.029	0.020	0.021
	Median	0.021	0.022	0.016	0.017
	95^{th} percentile	0.060	0.071	0.045	0.050
	97.5^{th} percentile	0.071	0.089	0.054	0.060
	99^{th} percentile	0.086	0.152	0.061	0.072

When considering the reference scenario, it appears that regardless of the population considered, the average dietary exposure calculated from the 2015 dataset was lower than that calculated in 2013. This is mainly explained by the fact that meat made a smaller contribution to exposure compared with the 2013 estimates. For example, when considering the population of pregnant women, meat accounted for 4.2% of dietary exposure to BPA while this same foodstuff accounted for 12.5% of dietary exposure according to the estimates made in 2013. The same trend can be observed when considering the adult and child populations (Annex 5).

Lastly, it appears that, regardless of the population considered, a canned food-free diet (the "0% cans" scenario) halves exposure. This scenario is probably close to the current situation. Indeed, BPA has been the subject of several successive bans. In January 2011, the European Commission adopted Directive 2011/8/EU[6] prohibiting the use of BPA for the manufacture of polycarbonate infant feeding bottles. In France, the Act of 24 December 2012 suspended the placing on the French market of all food packaging containing bisphenol A with effect from 1 January 2015, therefore including cans. As the samples of normal foods used to calculate the reference scenario had been collected before this ban[7], the contamination and thus the reported exposure is probably higher than what would be measured today.

3.3.3. Assessment of the health risk to the population of pregnant women

As a reminder, the health risk assessment was conducted on the basis of the four toxicological values (TVs) defined for pregnant women and estimates of the exposure of pregnant women, considering firstly the contamination data from the 2015 sampling plan and secondly the data generated in the context of ANSES's work of 2013 (ANSES, 2013). The results of the health risk assessment are shown in Table 2 below.

Table 2: Estimate of the percentage of pregnant women whose exposure to BPA *via* food is above the toxicological benchmarks

[6] Commission Directive 2011/8/EU of 28 January 2011 amending Directive 2002/72/EC as regards the restriction of use of bisphenol A in plastic infant feeding bottles.
[7] As a reminder, the samples of normal foods analysed were collected between 2007 and 2009 in the framework of the TDS2.

		2013 expert assessment Samples taken between June 2007 and January 2009				**2017 expert assessment** Samples taken in 2015			
Effects selected	**Toxicological benchmark ($\mu g.kg\ bw^{-1}.d^{-1}$)**	**Reference scenario**		**"0% cans" scenario**		**Reference scenario**		**"0% cans" scenario**	
		Min	**Max**	**Min**	**Max**	**Min**	**Max**	**Min**	**Max**
Brain and behaviour	**0.17**	1.0%	2.5%	0%	0.9%	0.5%	1.7%	0%	0.1%
Female reproductive system	**0.33**	0%	0.4%	0%	0.3%	0%	0.2%	0%	0%
Metabolism and obesity	**0.29**	0%	0.5%	0%	0.3%	0%	0.3%	0%	0%
Mammary gland	**0.08**	15.7%	19.8%	1.5%	3.5%	11.3%	14.6%	0.2%	0.6%

Considering the exposure *via* food, the risk cannot be ruled out, given the estimated exceedances of the four toxicological benchmarks. In particular, for effects relating to the mammary gland and to the brain and behaviour respectively, between 11.3% and 14.6% and between 0.5% and 1.7% of pregnant women appear to be overexposed. However, taking into account the recent contamination data for non-canned foodstuffs of animal origin, the percentage of pregnant women whose exposure exceeds the four TVs is slightly lower compared to the previous estimates.

Lastly, it appears that non-consumption of canned foods significantly reduces risk. For example, with regard to the effects on the mammary gland, the TV exceedance rate is estimated to be between 0.2 and 0.6%.

3.3.4. Searching for potential sources of contamination of non-canned FAOs

3.3.4.1 Determination of conjugated forms of BPA

The results of the analyses of BPA in conjugated form on the 50 selected samples of FAO are shown in Annex 6. In the 50 samples selected from among those with the highest levels of unconjugated BPA contamination, none of the conjugated forms of BPA were detected. In these foods, BPA was present only in its free form, which implies *post-mortem* contamination from the surrounding environment and/or during food processing.

3.3.4.2 Analysis of contextual data

The information available on the 322 samples collected in the 2015 analysis plan includes the packaging type. For each sample taken, it was stated whether the food was sold pre-packaged or cut to order. For each category of foodstuff, the levels of unconjugated BPA contamination were compared between the foodstuffs sold pre-packaged or cut to order, by performing a Student's t test (Table 3).

Table 3: Comparison of BPA contamination of FAOs according to their packaging (in $\mu g.kg^{-1}$)

Food	**Cut to order**				**Pre-packaged**				Statistical test result
	N	**Ave**	**SD**	**Med**	**N**	**Ave**	**SD**	**Med**	
Meat	48	2.74	6.59	0.73	60	2.81	6.16	0.24	NS
Poultry	18	8.03	14.88	1.45	25	1.33	4.27	0.28	*

Offal (liver)	17	5.48	12.69	0.68	13	1.43	2.61	0.22	NS
Delicatessen meats	30	2.55	4.17	0.79	34	0.57	1.05	0.25	*
Fish	36	2.05	2.35	1.18	34	3.25	6.71	0.66	NS
Crustaceans	3	0.49	0.35	0.64	4	0.13	0.08	0.09	-

NS: not significant; * $p < 0.05$

In general, it seems that the average contamination of pre-packaged foodstuffs is not higher than the average contamination of foodstuffs cut to order when sold. Therefore, pre-packaging does not seem to be the source of contamination when compared to the foodstuffs cut to order. As shown by the results of the analysis of the conjugated forms of BPA, some contamination took place during food processing. Nevertheless, because of the lack of more precise data on the samples collected (cutting location, materials used for cutting, type of packaging used, etc.), it is not possible to identify the sources of contamination of the non-canned FAOs.

3.4. Conclusions of the CES ERCA

Compared with the previous estimates, the CES ERCA noted a decline in contamination in the samples collected in the framework of the 2015 sampling plan, in particular with regard to meat, compared to the concentrations measured in the samples collected between 2007 and 2009 (ANSES, 2013). The contribution of meat to total dietary exposure of pregnant women, adults and children was up to three times lower than the previous estimates. Nevertheless, despite this downward trend in contamination, the toxicological benchmarks were observed to have been exceeded for the population of pregnant women. The risk for this population cannot therefore be ruled out.

As with the conclusions that had been reached in the context of ANSES's expert appraisal of 2013, it appears that not consuming canned foods (the "0% cans" scenario) reduces exposure by half, regardless of the population considered, and the toxicological benchmark relating to the mammary gland was only observed to have been exceeded in 0.2 to 0.6% of cases. This scenario is probably close to the current situation, given the regulatory changes, in particular the Act of 24 December 2012, which suspended the placing on the French market of all food packaging containing bisphenol A with effect from 1 January 2015. Nevertheless, in order to verify this assumption, it would be necessary to determine the contamination levels after the implementation of these regulations and the exhaustion of stocks of cans prepared prior to this date.

Lastly, although a decline in contamination was observed, some samples of non-canned FAOs displayed high levels of contamination. The absence of BPA in conjugated form in the samples of FAO with the highest levels of unconjugated BPA contamination indicates *post-mortem* contamination of the animals from which the FAO were produced. This contamination may be environmental or may occur during food production. Nevertheless, because the information about the samples was not sufficiently precise, the potential sources of contamination of these foodstuffs cannot be identified. In order to identify the potential sources of contamination of these FAOs, the CES ERCA recommends testing for the presence of unconjugated BPA at the different stages of preparation of these foodstuffs, from the slaughterhouse through to the sales outlets (supermarkets, butchers, cutting plants).

4. AGENCY CONCLUSIONS AND RECOMMENDATIONS

The French Agency for Food, Environmental and Occupational Health & Safety endorses the CES ERCA's conclusions.

Dr Roger GENET

KEYWORDS

Bisphénol A – Denrées alimentaires d'origine animale
BPA – Foodstuffs of animal origin

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ANNEXES

Annex 1: Presentation of participants

PREAMBLE: The expert members of the Expert Committees and Working Groups or designated rapporteurs are all appointed in a personal capacity, *intuitu personae*, and do not represent their parent organisation.

EXPERT COMMITTEE

The work that is the subject of this opinion was monitored and adopted by the following CES:

CES on "Assessment of physical-chemical risks in food" (2015-2018)

Chairman

Mr Cyril FEIDT – University Professor – expertise in the transfer of contaminants

Members

Mr Claude ATGIE – University Professor – expertise in toxicology

Mr Pierre-Marie BADOT – University Professor – expertise in the transfer of contaminants

Mr Jacques BELEGAUD – Honorary Professor – expertise in toxicology

Ms Valérie CAMEL – University Professor – expertise in analytical chemistry

Ms Martine CLAUW – University Professor – expertise in toxicology

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Scientific contribution

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Administrative and secretarial assistance

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Annex 2: Levels of BPA contamination of non-canned foodstuffs of animal origin obtained in the framework of the 2015 sampling plan in comparison with the results obtained in 2013 (values expressed in µg.kg^{-1})

		2017 expert assessment Samples taken in 2015							**2013 expert assessment** Samples taken between June 2007 and January 2009						
Group	**Food**	**N**	**Min**	**Ave**	**SD**	**Max**	**Med**	**Rate of censoring**	**N**[8]	**Min**	**Ave**	**SD**	**Max**	**Med**	**Rate of censoring**
Meat	beef steak	46	0.09	2.93	5.51	25.18	0.50	26.1%	15	0.11	3.40	6.66	26.91	1.24	13.3%
	pork chop	6	0.09	1.61	2.80	7.03	0.09	66.7%	16	4.09	16.95	10.34	40.09	15.03	0%
	mutton	10	0.09	3.19	5.92	18.92	0.64	10.0%	11	1.71	7.76	6.43	22.74	6.36	0%
	roast pork	31	0.09	3.45	9.04	43.58	0.29	32.3%	15	2.20	12.44	17.38	68.92	5.58	0%
	veal	15	0.09	1.16	1.65	5.72	0.61	33.3%	13	3.68	34.41	58.73	223.52	12.07	0%
Poultry & game	sauteed turkey breast	30	0.09	4.36	11.80	60.19	0.47	16.7%	14	0.60	6.79	12.83	49.22	2.63	0%
	roast turkey	1	0.09	0.09	/	0.09	0.09	100%	2	3.18	4.08	1.26	4.97	4.08	0%
	chicken	12	0.09	3.91	7.45	20.57	0.57	33.3%	15	0.43	2.62	2.41	9.74	2.25	0%
Offal	liver	30	0.09	3.72	9.79	51.31	0.51	23.3%	15	0.65	30.81	100.8	394.76	3.35	0%
Delicatessen meats	raw ham	29	0.09	1.06	1.66	5.89	0.37	31.0%	6	0.36	2.72	4.29	11.35	0.82	0%
	cooked ham	1	0.09	0.09	/	0.09	0.09	100%	13	0.31	1.17	1.29	5.01	0.66	0%
	pâté	16	0.09	0.95	1.66	6.60	0.42	31.3%	12	0.44	2.71	2.79	9.20	1.53	0%
	chipolata sausage	7	0.26	5.36	7.66	18.69	0.87	0%	2	2.05	5.96	5.53	9.87	5.96	0%
	cooked merguez sausage	5	0.27	1.62	1.67	4.38	1.22	0%	5	1.87	3.94	2.08	7.38	3.47	0%
	Strasbourg or Alsatian knack sausage	6	0.09	0.69	0.46	1.18	0.77	16.7%	8	0.38	0.67	0.17	0.92	0.68	0%
Fish	cooked pollack or coley	32	0.09	2.12	2.52	9.71	1.01	9.4%	4	4.04	16.69	23.87	52.48	5.12	0%
	smoked salmon	1	0.47	0.47	/	0.47	0.47	0%	2	0.24	1.12	1.24	1.99	1.12	0%
	steamed salmon	28	0.09	3.68	7.29	35.58	0.93	21.4%	15	3.39	13.78	23.94	97.93	6.64	0%
	oven-baked salmon	9	0.09	1.46	1.35	3.58	0.88	22.2%	2	1.35	3.98	3.71	6.60	3.98	0%
Crustaceans & molluscs	cooked shrimp	7	0.09	0.28	0.28	0.73	0.09	57.1%	15	2.00	12.02	7.40	26.15	8.41	0%

[8] As a reminder, this concerns composite samples. The samples analysed were made up of 15 sub-samples from different regions.

Annex 3: Levels of BPA contamination by food group of non-canned foodstuffs of animal origin obtained in the framework of the 2015 sampling plan in comparison with the results obtained in 2013 (µg.kg^{-1})

	2017 expert assessment Samples taken in 2015				**2013 expert assessment** Samples taken between June 2007 and January 2009			
Group	**N**	**Min**	**Ave**	**Max**	**N**	**Min**	**Ave**	**Max**
Meat	108	0.09	2.78	43.58	70	0.11	9.71	223.52
Poultry & game	43	0.09	4.13	60.19	31	0.43	4.42	49.22
Offal	30	0.09	3.72	51.31	15	0.65	28.93	394.76
Delicatessen meats	64	0.09	1.50	18.69	46	0.31	2.24	11.35
Fish	70	0.09	2.64	35.58	23	1.35	11.9	97.93
Crustaceans & molluscs	7	0.09	0.28	0.73	15	2.00	6.74	26.15

Annex 4: Estimate of dietary exposure to BPA in the population of adults and children based on the contamination data from the 2015 sampling plan and the contamination data used in 2013. Results expressed in µg.kg bw^{-1}.d^{-1}.

Population of adults (>18 years)

		2013 expert assessment Samples taken between June 2007 and January 2009		**2017 expert assessment** Samples taken in 2015	
		Min	**Max**	**Min**	**Max**
Reference scenario	Mean	0.038	0.040	0.034	0.035
	Median	0.033	0.035	0.029	0.031
	95th percentile	0.077	0.087	0.067	0.074
	97.5th percentile	0.090	0.105	0.078	0.091
	99th percentile	0.109	0.150	0.091	0.116
"0% cans" scenario	Mean	0.023	0.024	0.021	0.022
	Median	0.020	0.021	0.018	0.019
	95th percentile	0.044	0.050	0.040	0.045
	97.5th percentile	0.053	0.068	0.047	0.054
	99th percentile	0.071	0.108	0.057	0.066

Population of children (3-17 years)

		2013 expert assessment Samples taken between June 2007 and January 2009		**2017 expert assessment** Samples taken in 2015	
		Min	**Max**	**Min**	**Max**
Reference scenario	Mean	0.053	0.056	0.048	0.050
	Median	0.042	0.046	0.039	0.041
	95th percentile	0.119	0.141	0.109	0.123
	97.5th percentile	0.146	0.175	0.131	0.159
	99th percentile	0.176	0.224	0.163	0.196
"0% cans" scenario	Mean	0.031	0.033	0.025	0.027
	Median	0.025	0.027	0.021	0.023
	95th percentile	0.066	0.078	0.054	0.063
	97.5th percentile	0.081	0.100	0.065	0.077
	99th percentile	0.099	0.139	0.077	0.098

Annex 5: Results of the exposure calculations performed from data on contamination of non-canned FAOs obtained in 2015 and contribution of the different food categories to exposure. Comparison with the estimates made in 2013.
Exposure expressed in µg.kg bw^{-1}.d^{-1}.

Table A: Population of adults	**2017 expert assessment** Samples taken in 2015			**2013 expert assessment** Samples taken between June 2007 and January 2009		
Product group	**Mean**	**P95**	**Contrib (%)**	**Mean**	**P95**	**Contrib (%)**
Bread and dried bread products	5.4×10^{-4}	1.3×10^{-3}	1.4	1.0×10^{-3}	1.0×10^{-3}	1.2
Breakfast cereals	1.0×10^{-5}	3.0×10^{-4}	0.03	0	0	0
Pasta	7.1×10^{-4}	2.3×10^{-3}	1.8	1.0×10^{-3}	2.0×10^{-3}	1.6
Rice and durum wheat or cracked wheat	1.1×10^{-4}	4.7×10^{-4}	0.3	0	0	0.3
Croissant-like pastries	2.3×10^{-4}	1.8×10^{-3}	0.6	0	2.0×10^{-3}	0.5
Sweet or savoury biscuits and bars	1.3×10^{-4}	1.3×10^{-3}	0.3	0	1.0×10^{-3}	0.3
Pastries and cakes	6.2×10^{-4}	3.1×10^{-3}	1.6	1.0×10^{-3}	3.0×10^{-3}	1.4
Milk	4.3×10^{-4}	4.5×10^{-3}	1.1	0	4.0×10^{-3}	1.0
Ultra-fresh dairy products	2.4×10^{-4}	9.7×10^{-4}	0.6	0	1.0×10^{-3}	0.5
Cheeses	4.3×10^{-4}	2.8×10^{-3}	1.1	0	3.0×10^{-3}	1.0
Eggs and derivatives	2.7×10^{-4}	1.5×10^{-3}	0.7	0	1.0×10^{-3}	0.6
Butter	4.4×10^{-5}	1.5×10^{-4}	0.1	0	0	0.1
Oil	1.1×10^{-4}	4.2×10^{-4}	0.3	0	0	0.2
Margarine	3.8×10^{-5}	2.7×10^{-4}	0.1	0	0	0.1
Meat	1.7×10^{-3}	5.6×10^{-3}	4.2	5.0×10^{-3}	1.8×10^{-2}	12.1
Poultry & game	1.5×10^{-3}	9.3×10^{-3}	3.8	1.0×10^{-3}	6.0×10^{-3}	2.7
Offal	8.9×10^{-5}	4.8×10^{-3}	0.2	0	1.7×10^{-2}	0.7
Delicatessen meats	5.4×10^{-4}	2.4×10^{-3}	1.4	1.0×10^{-3}	3.0×10^{-3}	1.9
Fish	1.9×10^{-3}	1.5×10^{-2}	4.8	3.0×10^{-3}	1.6×10^{-2}	5.9
Crustaceans & molluscs	1.1×10^{-4}	1.4×10^{-3}	0.3	0	3.0×10^{-3}	0.7
Vegetables (excluding potatoes)	1.5×10^{-2}	4.1×10^{-2}	38.2	1.5×10^{-2}	4.1×10^{-2}	34.0
Potatoes and related foods	6.1×10^{-4}	1.7×10^{-3}	1.5	1.0×10^{-3}	2.0×10^{-3}	1.4
Dried vegetables	1.2×10^{-3}	1.7×10^{-2}	3.1	1.0×10^{-3}	1.7×10^{-2}	2.7
Fruits	9.1×10^{-4}	3.7×10^{-3}	2.3	1.0×10^{-3}	4.0×10^{-3}	2.0
Dried fruits and oilseeds	6.0×10^{-6}	6.7×10^{-5}	0.01	0	0	0
Ice cream and frozen desserts	2.3×10^{-5}	2.1×10^{-4}	0.1	0	0	0.1
Chocolate	3.2×10^{-5}	2.3×10^{-4}	0.1	0	0	0.1
Sugars and derivatives	1.7×10^{-4}	5.8×10^{-4}	0.4	0	1.0×10^{-3}	0.4
Water	4.3×10^{-5}	1.2×10^{-4}	0.1	0	0	0.1
Cold, non-alcoholic beverages	6.8×10^{-4}	5.7×10^{-3}	1.7	1.0×10^{-3}	6.0×10^{-3}	1.5
Alcoholic beverages	1.8×10^{-3}	8.2×10^{-3}	4.4	2.0×10^{-3}	8.0×10^{-3}	4.0
Coffee	3.3×10^{-4}	1.6×10^{-3}	0.8	0	2.0×10^{-3}	0.7
Other hot beverages	2.4×10^{-4}	1.9×10^{-3}	0.6	0	2.0×10^{-3}	0.5
Pizza, quiches and savoury pastries	6.5×10^{-4}	4.1×10^{-3}	1.6	1.0×10^{-3}	4.0×10^{-3}	1.5
Sandwiches, snacks	3.8×10^{-4}	4.1×10^{-3}	1.0	0	4.0×10^{-3}	0.8
Soups and broths	1.9×10^{-3}	1.4×10^{-2}	4.8	2.0×10^{-3}	1.4×10^{-3}	4.3
Mixed dishes	5.4×10^{-3}	3.1×10^{-2}	13.7	5.0×10^{-3}	3.1×10^{-2}	12.2
Dairy-based desserts, cream desserts and jellied milks	1.4×10^{-4}	1.8×10^{-3}	0.3	0	2.0×10^{-3}	0.3
Purees and cooked fruits	6.1×10^{-5}	5.3×10^{-4}	0.2	0	1.0×10^{-3}	0.1
Condiments and sauces	1.9×10^{-4}	8.8×10^{-4}	0.5	0	1.0×10^{-3}	0.4
Foods intended for specific diets	1.0×10^{-6}	7.9×10^{-4}	0.001	0	1.0×10^{-3}	0
Total	**0.040**	**0.077**	**100**	**0.044**	**0.085**	**100**

Table B: Population of children	**2017 expert assessment** Samples taken in 2015			**2013 expert assessment** Samples taken between June 2007 and January 2009		
Product group	**Mean**	**P95**	**Contrib (%)**	**Mean**	**P95**	**Contrib (%)**
Bread and dried bread products	5.4×10^{-4}	1.5×10^{-3}	0.9	1.0×10^{-3}	1.0×10^{-3}	0.8
Breakfast cereals	4.7×10^{-5}	2.5×10^{-4}	0.1	0	0	0.1
Pasta	1.6×10^{-3}	4.7×10^{-3}	2.7	2.0×10^{-3}	5.0×10^{-3}	2.4
Rice and durum wheat or cracked wheat	2.2×10^{-4}	8.5×10^{-4}	0.4	0	1.0×10^{-3}	0.3
Croissant-like pastries	8.0×10^{-4}	4.1×10^{-3}	1.3	1.0×10^{-3}	4.0×10^{-3}	1.2
Sweet or savoury biscuits and bars	4.2×10^{-4}	1.9×10^{-3}	0.7	0	2.0×10^{-3}	0.6
Pastries and cakes	1.8×10^{-3}	7.7×10^{-3}	2.9	2.0×10^{-3}	8.0×10^{-3}	2.7
Milk	2.2×10^{-3}	1.5×10^{-2}	3.6	2.0×10^{-3}	1.5×10^{-2}	3.3
Ultra-fresh dairy products	4.9×10^{-4}	2.1×10^{-3}	0.8	0	2.0×10^{-3}	0.7
Cheeses	5.7×10^{-4}	4.1×10^{-3}	0.9	1.0×10^{-3}	4.0×10^{-3}	0.8
Eggs and derivatives	3.8×10^{-4}	2.3×10^{-3}	0.6	0	2.0×10^{-3}	0.6
Butter	6.8×10^{-5}	2.4×10^{-4}	0.1	0	0	0.1
Oil	1.5×10^{-4}	7.3×10^{-4}	0.2	0	1.0×10^{-3}	0.2
Margarine	5.3×10^{-5}	5.0×10^{-4}	0.1	0	1.0×10^{-3}	0.1
Meat	2.7×10^{-3}	9.4×10^{-3}	4.5	7.0×10^{-3}	2.7×10^{-2}	10.9
Poultry & game	2.1×10^{-3}	1.3×10^{-2}	3.4	2.0×10^{-3}	8.0×10^{-3}	2.8
Offal	6.8×10^{-5}	5.5×10^{-3}	0.1	1.0×10^{-3}	9.0×10^{-2}	0.8
Delicatessen meats	9.6×10^{-4}	4.5×10^{-3}	1.6	1.0×10^{-3}	5.0×10^{-3}	2.1
Fish	2.7×10^{-3}	2.2×10^{-2}	4.5	4.0×10^{-3}	2.5×10^{-2}	5.2
Crustaceans & molluscs	6.8×10^{-5}	1.8×10^{-3}	0.1	0	5.0×10^{-3}	0.4
Vegetables (excluding potatoes)	2.3×10^{-2}	7.3×10^{-2}	37.2	2.3×10^{-2}	7.3×10^{-2}	33.8
Potatoes and related foods	1.1×10^{-3}	2.9×10^{-3}	1.7	1.0×10^{-3}	3.0×10^{-3}	1.6
Dried vegetables	2.2×10^{-3}	3.0×10^{-2}	3.7	2.0×10^{-3}	3.0×10^{-2}	3.3
Fruits	1.0×10^{-3}	4.7×10^{-3}	1.7	1.0×10^{-3}	5.0×10^{-3}	1.5
Dried fruits and oilseeds	4.0×10^{-6}	7.8×10^{-5}	0.007	0	0	0
Ice cream and frozen desserts	6.4×10^{-5}	4.7×10^{-4}	0.1	0	0	0.1
Chocolate	8.3×10^{-5}	3.4×10^{-4}	0.1	0	0	0.1
Sugars and derivatives	1.5×10^{-4}	5.8×10^{-4}	0.2	0	1.0×10^{-3}	0.2
Water	5.6×10^{-5}	1.4×10^{-4}	0.1	0	0	0.1
Cold, non-alcoholic beverages	1.8×10^{-3}	8.9×10^{-3}	2.9	2.0×10^{-3}	9.0×10^{-3}	2.6
Alcoholic beverages	2.9×10^{-5}	1.9×10^{-3}	0.05	0	2.0×10^{-3}	0
Coffee	9.0×10^{-6}	5.5×10^{-4}	0.01	0	1.0×10^{-3}	0
Other hot beverages	6.4×10^{-5}	1.2×10^{-3}	0.1	0	1.0×10^{-3}	0.1
Pizza, quiches and savoury pastries	1.1×10^{-3}	6.2×10^{-3}	1.9	1.0×10^{-3}	6.0×10^{-3}	1.7
Sandwiches, snacks	4.5×10^{-4}	4.5×10^{-3}	0.7	0	4.0×10^{-3}	0.7
Soups and broths	1.9×10^{-3}	1.7×10^{-2}	3.2	2.0×10^{-3}	1.7×10^{-2}	2.9
Mixed dishes	9.6×10^{-3}	4.2×10^{-2}	15.6	1.0×10^{-2}	4.2×10^{-2}	14.2
Dairy-based desserts, cream desserts and jellied milks	2.2×10^{-4}	1.2×10^{-3}	0.4	0	1.0×10^{-3}	0.3
Purees and cooked fruits	2.0×10^{-4}	1.3×10^{-3}	0.3	0	1.0×10^{-3}	0.3
Condiments and sauces	3.5×10^{-4}	1.6×10^{-3}	0.6	0	2.0×10^{-3}	0.5
Foods intended for specific diets	0	1.4×10^{-4}	0.0002	0	0	0
Total	**0.061**	**0.135**	**100**	**0.067**	**0.153**	**100**

Table C: Population of pregnant women	**2017 expert assessment** Samples taken in 2015			**2013 expert assessment** Samples taken between June 2007 and January 2009		
Product group	**Mean**	**P95**	**Contrib (%)**	**Mean**	**P95.**	**Contrib (%)**
Bread and dried bread products	0.0002	0.0003	0.3	0.0002	0.0003	0.3
Breakfast cereals	6.0×10^{-6}	2.2×10^{-5}	0.01	0	0	0
Pasta	0.0007	0.0017	1.4	0.0007	0.0017	1.2
Rice and durum wheat or cracked wheat	0.0002	0.0006	0.4	0.0002	0.0006	0.3
Croissant-like pastries	0.0001	0.0004	0.2	0.0001	0.0004	0.2
Sweet or savoury biscuits and bars	0.0001	0.0003	0.1	0.0001	0.0003	0.1
Pastries and cakes	0.0004	0.0014	0.8	0.0004	0.0014	0.7
Milk	0.0012	0.0033	2.4	0.0012	0.0033	2.2
Ultra-fresh dairy products	0.0004	0.0016	0.8	0.0004	0.0016	0.7
Cheeses	0.0010	0.0038	2.0	0.001	0.0038	1.8
Eggs and derivatives	0.0003	0.0010	0.7	0.0003	0.001	0.6
Butter	0.0001	0.0002	0.1	0.0001	0.0002	0.1
Oil	0	4.0×10^{-6}	0	0	0	0
Margarine	4.7×10^{-5}	0.0003	0.1	0	0.0003	0.1
Meat	0.0020	0.0055	4.2	0.0068	0.0173	12.5
Poultry & game	0.0005	0.0015	1.1	0.0004	0.001	0.7
Offal	0.0003	0.0011	0.5	0.0017	0.0073	3.2
Delicatessen meats	0.0002	0.0007	0.5	0.0004	0.0012	0.7
Fish	0.0014	0.0046	3.0	0.0017	0.0049	3.1
Crustaceans & molluscs	3.2×10^{-5}	0.0001	0.1	0	0.0001	0.1
Vegetables (excluding potatoes)	0.0241	0.0737	50.4	0.0241	0.0737	44.4
Potatoes and related foods	0.0005	0.0018	1.1	0.0005	0.0018	1.0
Dried vegetables	0.0014	0.0039	2.9	0.0014	0.0039	2.5
Fruits	0.0013	0.0039	2.7	0.0013	0.0039	2.4
Dried fruits and oilseeds	1.1×10^{-5}	4.8×10^{-5}	0.02	0	0	0
Ice cream and frozen desserts	2.1×10^{-5}	0.0001	0.04	0	0.0001	0.0
Chocolate	2.9×10^{-5}	0.0001	0.1	0	0.0001	0.1
Sugars and derivatives	0.0001	0.0003	0.2	0.0001	0.0003	0.2
Water	3.0×10^{-6}	5.0×10^{-6}	0.01	0	0	0.0
Cold, non-alcoholic beverages	0.0045	0.0279	9.4	0.0045	0.0279	8.2
Alcoholic beverages	2.0×10^{-6}	8.0×10^{-6}	0.003	0	0	0
Coffee	0.0001	0.0003	0.1	0.0001	0.0003	0.1
Other hot beverages	0.0002	0.0007	0.3	0.0002	0.0007	0.3
Pizza, quiches and savoury pastries	0.0006	0.0018	1.3	0.0006	0.0018	1.1
Sandwiches, snacks	0.0004	0.0013	0.9	0.0004	0.0013	0.8
Soups and broths	0.0008	0.0039	1.6	0.0008	0.0039	1.4
Mixed dishes	0.0048	0.0167	10.1	0.0048	0.0167	8.9
Dairy-based desserts, cream desserts and jellied milks	1.0×10^{-5}	3.8×10^{-5}	0.02	0	0	0
Condiments and sauces	0.0001	0.0002	0.1	0.0001	0.0002	0.1
Total	**0.0478**	**0.1056**	**100**	**0.0542**	**0.1154**	**100**

Annex 6: Results of the analysis of the conjugated forms of BPA:BPA-G, BPA-S and BPA-diS (results expressed in µg.kg^{-1}).

Sample	Concentration in free BPA	Concentration in BPA-G	Concentration in BPA-S	Concentration in BPA-2G
Turkey breast	61.42	ND <0.11	ND<0.02	ND<0.4
Bovine liver	57.95	ND <0.31	ND<0.04	ND<0.02
Roast pork	34.79	ND <0.14	ND<0.01	ND<0.4
Chicken	33.36	ND<0.02	ND<0.03	ND<0.4
Salmon	29.27	ND<0.03	ND<0.02	ND<0.1
Swine muscle	29.08	ND<0.08	ND<0.02	ND<0.4
Cut of bovine meat	27.98	ND <0.14	ND<0.03	ND<0.4
Bovine muscle	26.35	ND<0.10	ND<0.04	ND<0.4
Turkey breast	21.72	ND<0.08	ND<0.02	ND<0.4
Fish	21.62	ND<0.01	ND<0.02	ND<0.1
Salmon	18.05	ND<0.01	ND<0.01	ND<0.1
Coley	17.69	ND<0.04	ND<0.02	ND<0.1
Bovine liver	16.48	ND<0.88	ND<0.10	ND<0.02
Ovine meat	15.68	ND<0.23	ND<0.06	ND<0.4
Fish	15.03	ND<0.03	ND<0.01	ND<0.1
Meat	14.67	ND<0.12	ND<0.03	ND<0.4
Chipolata sausage	13.62	ND<0.33	ND<0.02	ND<0.4
Chipolata sausage	12.70	ND<0.37	ND<0.02	ND<0.4
Chicken breast	10.61	ND<0.06	ND<0.01	ND<0.4
Turkey breast	9.41	ND<0.07	ND<0.04	ND<0.4
Fish	9.15	ND<0.03	ND<0.02	ND<0.1
Bovine muscle	8.96	ND<0.04	ND<0.02	ND<0.4
Meat	8.87	ND<0.14	ND<0.02	ND<0.4
Bovine muscle	8.48	ND<0.09	ND<0.02	ND<0.4
Cut of meat	8.34	ND<0.16	ND<0.02	ND<0.4
Bovine liver	8.16	ND<0.83	ND<0.07	ND<0.1
Swine muscle	7.32	ND<0.03	ND<0.04	ND<0.4
Bovine muscle	7.11	ND<0.04	ND<0.02	ND<0.4
Ovine muscle	6.67	ND<0.11	ND<0.01	ND<0.4
Veal meat	6.47	ND<0.14	ND<0.02	ND<0.4
Bovine liver	6.34	ND<2.14	ND<0.05	ND<0.02
Raw ham	5.61	ND<0.03	ND<0.03	ND<0.4
Bovine liver	5.53	ND<1.67	ND<0.03	ND<0.1
Cooked merguez sausage	4.76	ND<0.07	ND<0.43	ND<0.4
Raw ham	4.55	ND<0.12	ND<0.05	ND<0.4
Raw ham	4.29	ND<0.03	ND<0.05	ND<0.4
Roast pork	4.29	ND<0.05	ND<0.02	ND<0.4
Salmon	4.26	ND<0.02	ND<0.02	ND<0.1
Roast pork	3.86	ND<0.05	ND<0.03	ND<0.4
Roast pork	3.78	ND<0.10	ND<0.02	ND<0.4
Salmon	3.53	ND<0.04	ND<0.02	ND<0.1
Parma ham	3.35	ND<0.05	ND<0.03	ND<0.4
Meat	3.11	ND<0.05	ND<0.02	ND<0.4
Pollack or coley	2.98	ND<0.04	ND<0.02	ND<0.1
Bovine muscle	2.76	ND<0.09	ND<0.04	ND<0.4
Fish	2.73	ND<0.04	ND<0.01	ND<0.1
Meat	2.66	ND<0.17	ND<0.04	ND<0.4
Terrine	2.57	ND<0.17	ND<0.06	ND<0.4
Cut of meat	2.46	ND<0.04	ND<0.01	ND<0.4
Bovine liver	1.91	ND<0.65	ND<0.11	ND<0.02

ND: not detected