

**Urgent opinion 10-2021 of the Scientific Committee established at the FASFC on perfluoroalkyl substances (PFAS) in food of animal and vegetable origin**

In its opinion 15-2017, the SciCom (Scientific Committee established at the FASFC) calculated action limits for two perfluoroalkyl compounds (perfluorooctane sulfonic acid, PFOS, and perfluorooctanoic acid, PFOA) taking into account the tolerable daily intake (TDI) established by the EFSA (2008) (150 ng/kg bw/d for PFOS and 1500 ng/kg bw/d for PFOA).

However, in 2020, based on effects on the immune system, the EFSA has set a tolerable weekly intake (TWI) for the sum of PFOS + PFOA + PFNA (perfluoronitrile) + PFHxS (perfluorooxane sulphonic acid) of 4.4 ng/kg bw/week. This level of chronic exposure to PFAS, applied to women, is expected to avoid exceeding the serum level of 17.5 ng/mL in breastfed children for 1 year (corresponding to the BMDL<sub>10</sub> leading to a decreased vaccine response in these children). According to EFSA (2020), this TWI, based on this mother/child exposure model, applies to the general population.

The SciCom is asked to review the action limits for perfluoroalkyl substances (PFAS) in foodstuffs of animal (meat, eggs, milk, fish) and plant origin (fruit and vegetables) on the basis of new information and taking into account the analytical constraints of the laboratories and the ALARA (As Low As Reasonably Achievable) principle.

Given the environmental contamination with PFAS in the Zwijndrecht area, the following questions are also asked:

- Which sampling area should be considered for the monitoring of the environmental contamination with PFAS in Zwijndrecht, taking into account the available research data of previous similar environmental contaminations and in the absence of concrete data with regard to the geographical distribution that can be retrieved from the soil investigation?
- What type of PFAS congeners (PFOA, PFOS, PFNA, PFHxS) should be considered when performing monitoring in the pollution zone, in the absence of concrete data from the soil investigation?
- Can the Scientific Committee give an indication of the possible transmission of the contaminants of concern via feed to consumer animals?

**Method**

This opinion has been issued urgently on the basis of expert advice, a quick reading of the various reports provided by the applicant and of the scientific literature, and on the basis of the calculation of the estimated acceptable concentrations (EACs) according to the methodology established by the Scientific Committee.

**Conclusion**

The calculated and rounded EACs for the sum of PFOS + PFOA + PFNA + PFHxS are shown in the table below.

Foodstuff	EAC (µg/kg)
Meat	0,07
Milk	0,02
Eggs	0,2
Fish	0,15
Fruit	0,04
Vegetables	0,05
Starchy roots and tubers (potatoes, sweet potatoes, etc.)	0,08

These EACs are very low compared to the limits of quantification (LOQ) of the currently validated analytical methods and of those foreseeable in the near future. The ALARA principle, based on the P95 occurrence of the data of the European Commission, could be a temporary scenario used by the risk manager (in case the EAC is below the P95 contamination value). However, the SciCom points out that the European context is not representative for the Belgian context (which has densely populated and highly industrialised areas, leading to historical environmental PFAS contamination). In order to ensure food safety, the SciCom recommends to apply this ALARA principle as soon as possible by taking into account the P95 contamination levels of the background contamination from Belgian data. These data for background contamination in foodstuffs will have to be obtained with more sensitive analytical methods (with lower LOQs) than those currently used for official controls by the FASFC.

The data below for the sum of PFOS + PFAS + PFNA + PFHxS in foodstuffs (LB scenario) come from a dataset used for the EFSA opinion of 2020 and completed by data transmitted since 2017 by the EU Member States. They have been collected by the European Commission in order to set future European maximum limits. These data are based on samples taken outside known contaminated areas.

<b>Food category</b>	<b>P95 level of the sum of PFOS + PFOA + PFNA + PFHxS (LB-scenario*, µg/kg)</b>
Livestock meat	0,85
Game meat	6,38
Edible offals from game meat	778,57
Edible offals from livestock meat	8,62
Milk	0,03
Eggs	1,55
Eel, perch, carp, char, anchovy, roach, bream, babel, smelt	39,17
Bass, bonito, burbot, grey mullet, Baltic herring, lamprey, pike, pike-perch, plaice, wild salmon, sardine, pilchard, sea catfish, wolf fish, sprat, vendace and whitefish	6,70
Every other fish	1,80
Crustaceans and molluscs	2,59
Fruits	0,02
Vegetables	0,05

\* LB = *lower bound* ; results that were reported as "< LOQ" were considered to be 0 µg/kg

In addition to the food matrices specified in the request for this urgent opinion, the SciCom simply points out that the limits of Directive (EU) 2020/2184 for PFAS in drinking water, intended to ensure the potability of water, could be used, even though the directive has not yet been transposed into Belgian legislation. These limits are 0.50 µg/L for total PFAS (total per- and polyfluorinated alkyl substances) and 0.10 µg/L for the sum of PFAS considered to be of concern for water intended for human consumption according to the Directive.

Based on the data on PFAS contamination of soil, eggs and vegetables in Zwijndrecht, the recommendations of the Flemish government on the consumption of locally produced eggs, and in a worst case scenario, the SciCom proposes to extend the sampling area for foodstuffs to a radius of 15 km around the industrial site responsible for the emission of PFAS into the

environment. The sampling should be done at a gradually increasing distance from the industrial site, in order to see whether PFAS concentrations decrease with distance from the source. However, it should be critically examined whether there are other significant sources of PFAS emissions in the vicinity. The contamination zones of different sources may overlap. In addition, samples should also be taken from an area that is not known to be contaminated with PFAS (reference site for data comparison). The sampling area may be adapted, depending on the analytical results. For example, if the results show that the PFAS contamination is located in a well-defined direction(s), that the contamination of the food chain does not extend up to 15 km or, conversely, remains constant up to 15 km and could therefore go beyond, ...

The analyses must cover the sum of PFOS (linear and branched forms) + PFOA (linear and branched forms) + PFNA + PFHxS, which are compounds that can be analysed in the same analytical cycle.

### **Recommendations**

Based on the available data and expert opinion, the SciCom recommends that analyses of the whole food chain be carried out, with priority given to eggs, edible offal (especially liver), game meat, livestock meat and milk.

In addition, once analytical methods are validated with lower LOQs, it is recommended to determine the background contamination of the food chain. It is recommended to perform analyses for the sum of PFOS + PFOA + PFNA + PFHxS in food, feed and water for animals.

The SciCom also recommends to perform analyses around every known PFAS-contaminated area in Belgium (such as Mechelen and around fire stations), analyses of foodstuffs of animal and plant origin, based on soil analyses. Information on all PFAS analyses in soil in Flanders and Wallonia can be obtained from OVAM (Openbare Vlaamse Afvalstoffenmaatschappij; <https://www.vlaanderen.be/pfas-vervuiling> ) and ISSeP (Institut Scientifique de Service Public; <https://www.issep.be/qualite-des-sols/> ), respectively.

Finally, in order to assess the exposure of the Belgian population in contaminated and uncontaminated areas, the SciCom recommends that the FASFC follows up on the biomonitoring results.

The full text is available on this website in dutch and in french.