

1 CCIM PFAS report - 2023 Update

1.1 Introduction

This section provides an overview of new information and data generated and gathered in 2023. This section covers the following topics:

- Update of Table 11 on limits, thresholds and background values of PFAS
- Regional activities
- Federal activities
- EU activities
- International activities
- Research activities

1.2 Update Table 11

Table 1 Overview of (proposed) limit, threshold and background values of PFAS from Belgium, EU and international initiatives.

Medium	Concentration	Source of the value	Type of value
HBGV (serum)	6.9 ng/mL for the sum of PFOS, PFOA, PFNA and PFHxS (adults)	EFSA 2020	Health Based guidance Values
HBM I (blood serum)	PFOS: 2 ng/L PFOA: 5 ng/L	HBM Commission, 2016	Health Based guidance Values (concentration of a compound in human biological material below which no adverse health effects are expected)
HBM II	Women at child-bearing age PFOA: 5 ng/mL blood plasma PFOS: 10 ng/mL blood plasma All other population groups PFOA: 10 ng/mL PFOS: 20 ng/mL	https://doi.org/10.1016/j.yrtph.2021.104868	Health Based guidance Values (concentration in human biological material which, when exceeded, may lead to health impairment)
Proposed Soil remediation values Flanders (20/10/2020)	Urban: PFOS: 18 µg/kg dw PFOA: 89 µg/kg dw Recreation: PFOS: 110 µg/kg dw PFOA: 643 µg/kg dw Industry: PFOS: 1949 µg/kg dw PFOA: 643 µg/kg dw	OVAM	Provisional limit values for soil remediation, as described in the draft report by VITO (commissioned by OVAM)

	Groundwater PFOS: 120 ng/L PFOA: 120 ng/L		
Target values Soil Flanders	PFOS: 1.50 µg/kg dw PFOA: 0.96 µg/kg dw PFBA: 1.25 µg/kg dw	VITO/OVAM	Based on the study conducted by VITO (commissioned by OVAM) on the presence of PFAS at non suspect locations (Vanermen et al., 2020 draft).
Drinking water	Sum PFAS ¹ : 100 ng/L Total PFAS ² : 500 ng/L	EU	Values determined for the European Drinking Water Directive (2020/2184)
Wastewater	PFOS and PFOA: the emission limit value in the permit is set as low as possible ³	EU	Starting points for these permits are the EU Directive on priority substances (2013/39/EU) and the Industrial Emissions Directive (2010/75/EU)
Inland surface water	PFOS Annual average (AA) = 0.00065 µg/L Maximum allowable concentration (MAC) = 36 µg/L	EU	Environmental Quality Standard (EQS) for PFOS in surface water, as determined in the Water Framework Directive (2013/39/EU). Inland surface waters encompass rivers and lakes and related artificial or heavily modified water bodies.
Other surface water	PFOS AA = 0.00013 µg/L MAC = 7.2 µg/L	EU	Environmental Quality Standard (EQS) for PFOS in other surface water, as determined in the Water Framework Directive (2013/39/EU).
Biota	PFOS: 9.1 µg/kg fw	EU	Environmental Quality Standard (EQS) for PFOS in biota, as determined in the Water Framework Directive (2013/39/EU).
Food	Meat PFOS: 50 µg/kg PFOA: 500 µg/kg Milk PFOS: 6 µg/kg PFOA: 60 µg/kg	FAVV (SciCom,2020)	Limit values determined by the FAVV in December 2020 report (no EU limits available)

¹ From EU2020/2184: 'Sum of PFAS' means the sum of per- and polyfluoroalkyl substances considered a concern as regards water intended for human consumption listed in point 3 of Part B of Annex III. This is a subset of 'PFAS Total' substances that contain a perfluoroalkyl moiety with three or more carbons (i.e. $-C_nF_{2n}-$, $n \geq 3$) or a perfluoroalkylether moiety with two or more carbons (i. e. $-C_nF_{2n}OC_mF_{2m}-$, n and $m \geq 1$).

² From EU2020/2184: 'PFAS Total' means the totality of per- and polyfluoroalkyl substances. This parametric value shall only apply once technical guidelines for monitoring this parameter are developed in accordance with Article 13(7). Member States may then decide to use either one or both of the parameters 'PFAS Total' or 'Sum of PFAS'.

³ There is no single limit value for these permits. The value can differ between permits. Starting points for these permits are the EU Directive on priority substances (2013/39/EU) and the Industrial Emissions Directive (2010/75/EU). The Directive on priority substances states that Priority substances (like PFOS), have to be phased out. This means that, when possible, the quantification limit will be set in permits. The IED states that BAP have to be used, with the norm for substances being based on these BAP.

	Eggs PFOS: 100 µg/kg PFOA: 1000 µg/kg Fish PFOS: 150 µg/kg PFOA: 1500 µg/kg		
Daily intake	0.63 ng/kg for sum of PFNA,PFOA,PFOS and PFHxS	VITO	Value extracted from VITO Minaraad presentation, 16 October 2020.
Weekly intake	4.4 ng/kg for sum of PFNA,PFOA,PFOS and PFHxS	VITO	Value extracted from VITO Minaraad presentation, 16 October 2020.
Blood Serum	6.9 ng/L for sum of PFNA,PFOA,PFOS and PFHxS	VITO	Value extracted from VITO Minaraad presentation, 16 October 2020.
Mother milk	0.133 ng/L for sum of PFNA,PFOA,PFOS and PFHxS	VITO	Value extracted from VITO Minaraad presentation, 16 October 2020.
Tolerable weekly intake	4.4 ng/kg bw for the sum of PFOS, PFOA, PFHxS and PFNA	EFSA	2020
Draft maximum level in food	see point 6.2.4. and more info in website communication ⁴	European Commission, voted text	2022
Indicative level of PFAS in food above which research of sources is recommended	See the published recommendation (EU) 2022/1431 on the monitoring of PFAS in foodstuffs ⁵	European Commission recommendation	2022
Products placed on the market (REACH)	25 ppb for the sum of C9-C14 PFCAs and their salts 260 ppb for the sum of C9-C14 PFCA-related substances	EU	Limit value for manufacturing, placing on the market and use. Certain uses are derogated ⁶
Products placed on the market (POP)	PFHxS PFHxS: 1 mg/kg sum of PFHxS-related compounds: 40 mg/kg PFOS PFOS substance or mixture: 10 mg/kg PFOS in products and articles: 0,1 % by weight Coated materials: 1 µg/m ² PFOA PFOA: 0,025 mg/kg Individual PFOA or PFOA related compound and presence in PTFE: 1mg/kg Transported isolated intermediates: 20 mg/kg	Stockholm Convention	Limit value for manufacturing, placing on the market and use. Certain PFOS and PFOA uses are derogated ⁷

⁴⁴ <https://www.health.belgium.be/nl/europese-maximumgehalten-voor-pfas-verontreiniging-levensmiddelen>

⁵ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32022H1431&qid=1662025579330>

⁶ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32021R1297>

⁷ <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:02019R1021-20230610>

1.3 Regional activities

1.3.1 Brussels region

The Brussels region has conducted a mapping study on PFAS producing activities, as well as research on PFAS treatment from soil and groundwater in 2023. The following information can be consulted:

- Study on PFAS-producing activities (see Annex 1.1.)
- For research and treatment of PFAS in soil and groundwater: [Code van Goede Praktijk](#)
- PFAS contamination map of Brussels:
<https://geodata.environnement.brussels/client/view/13e9e42d-6172-4255-a925-a61cbb14a695>
- More info on the following site: <https://leefmilieu.brussels/burgers/onze-acties/gewestelijke-plannen-en-beleid/pfas-en-bodem-het-brussels-hoofdstedelijk-gewest>

1.3.2 Flemish region

For an overview of the actions by the Flemish authorities on PFAS the following website can be consulted: <https://www.vlaanderen.be/pfas-vervuiling>

The following (ongoing) initiatives are also relevant to specifically mention:

- Emission data from Industrial sites: in Annex 1.1. we have provided an excel file with the latest industrial emissions data from the Flemish region. This data specifically covers measurements from 2020 until 2022.
- The Flemish authorities have conducted a local HBM study on teenagers living near the 3M PFAS production site in Zwijndrecht. The study looked at the presence of PFAS in humans (blood sampling) as well as the presence in house dust and in gardens and eggs etc. A total of 303 teenagers were included, all living within a 5 km radius around the 3M site for at least 5 years. The study showed that exposure to PFOS was significantly higher compared to the mean exposure in Flanders, with only 1 in 4 teenagers having safe levels. PFOS, PFOA and PFHxS were found in all blood samples and PFNA, PFBA and PFDA in most samples. The study also showed that main exposure routes are the location (closer to 3M equals higher exposure), consumption of eggs and locally grown vegetables and fruits, but also other sources like use of lubricants and to a minor degree house dust. Especially consumption of eggs was found to be the highest exposure route (of PFOS specifically). Lastly, the study also investigated the link with PFAS exposure and health impacts. The results show that there are clear links between PFAS exposure and the immune system, as well as effects on growth and puberty. Higher exposure to PFAS was linked with a lower amount of immune cells, as well as higher risks for infections and suppression of the immune system. Furthermore, PFAS exposure was linked with a slower growth and delay of puberty. No signs were found for abnormal development, however the delay in growth and puberty confirm the endocrine disrupting effect of PFAS. More information and the full study report can be found on the study website: [Resultaten \(hbm-pfas.be\)](#)
- Incineration studies: vito is conducting several studies in cooperation with the waste incinerator Indaver to investigate the emissions of PFAS in the waste incineration process. The first exploratory study can be consulted in Annex 1.1.

1.3.3 Walloon region

The Walloon region has conducted biomonitoring on several chemical substances, including certain PFAS substances. More information can be found on the following website:

<http://environnement.sante.wallonie.be/biomonitoring-wallon>

The Walloon region is working on a mapping study to identify potential PFAS pollution sites. On top of this there is also an investigation ongoing on the presence of PFAS in landfills.

1.4 Federal activities

1.4.1 Study on PFAS in Home textiles

The Federal Public Services of Health and Environment have commissioned a study on the use of PFAS in home textiles industry in Belgium. For the study chemical suppliers, textile producers and traders have been surveyed on the use of PFAS in their products. This study shows that PFAS have been largely phased out in home textile uses. However for the following uses PFAS are still being used:

- Use in outdoor furniture and furniture for boats. It has been confirmed by the supplier of these products that alternatives are being developed.
- Use in textile wallpaper for the contractors market. PFAS are used for cleaning and removing glue from the wallpaper. For this use no alternatives have been identified yet, although this use only covers limited (high-end) applications.
- Care sprays in shoes, coats and bags. These products were found to be strongly PFAS based.

Furthermore, the study indicates that alternatives are available for water repellent properties, however for dirt repellent industry indicated that alternatives are less readily available. The full study report can be consulted in Annex 1.1.

1.4.2 NAPED

NAPED's activities include the organization of future awareness-raising campaigns starting in 2024 throughout Belgium, targeting populations vulnerable to exposure to endocrine disruptors (including PFAS), and the co-financing of several research projects as part of the European PARC research program. PFAS are the subject of a 3-year research project on the effect of mixtures on endocrine disruption, which aims to identify associations between disorders linked to thyroid, cardio-metabolic and reproductive hormones and various markers of exposure to metals, flame retardants, PCBs, organochlorine compounds and PFAS. Human biomonitoring studies are also being carried out by the competent regional authorities, particularly around certain hotspots identified in Belgium (e.g. 3M/Zwijndrecht, metal shredders in Wallonia, etc.). Some PFAS (e.g. PFOS, PFOA...) are among the substances measured in participants' blood and/or urine, as well as in the environment (soil samples, plants/vegetables, eggs...).

1.4.3 Belgium Builds Back Circular

Together with the FOD economy the FOD Health and Environment is providing funding of projects within the Belgium Builds Back Circular (BBBC) project. The objective of the BBBC calls is to accelerate the transition towards a circular economy in Belgium. They are part of the National Recovery and Resilience Plan (PNRR) and are supported by a temporary European fund, [Next Generation EU](#). The PNRR is part of Europe's endeavor to revive the economy and assist societies in European states heavily affected by Covid-19, while taking into account the objectives of the [Green Deal](#).

This second BBBC call focuses on two aspects of the circular economy: chemical substitution and ecodesign.

In a broad scope, the substitution of the most harmful substances is being considered, and includes projects focused on introducing to the market alternative chemicals, technologies and/or products that eliminate the use of the most harmful substances or the presence of the most harmful substances in a product.

For the substitution call, we are looking for solutions that tackle the main obstacles in the system, in particular by preventing "regrettable substitution", which involves merely replacing one harmful chemical with another. In particular, projects involving various stakeholders in the supply chain are targeted to ensure sufficient knowledge and transparency regarding the origin of proposed alternatives and potential risks throughout the life cycle.

For this call for projects, three groups of priority substances for substitution in Belgium have been identified, one of which being PFAS. Recognizing the need to eliminate PFAS, the Federal Government is issuing a call to support projects that focus on developing safe and sustainable alternatives to PFAS. Given the problematic nature of all PFAS, as well as their many applications across numerous sectors, no specific priority areas are defined under this theme

1.4.4 FOD economy study on PFAS on the Belgian market

The FOD economy has issued a study to investigate the presence of PFAS on the Belgian Market. This study aims at identifying the presence of PFAS on the Belgium market, with a specific focus on certain sectors (technical textiles, medicinal uses, etc.), as well as investigate the presence of alternatives on the market.

The study is planned to be finalized by the end of 2023.

1.5 EU activities

1.5.1 REACH restrictions

The following restriction dossiers on PFAS are in development under REACH:

- The Annex XVII restriction entry proposal on **PFHxA and related substances** is being discussed in the REACH Committee at the time of writing. The Commission is planning to put the proposal to vote in the December meeting of the REACH cee.

- The Background Document and Final Opinion of the scientific committee's on the restriction of **PFAS in fire fighting foams** have been submitted to the EU Commission in the second quarter of 2023. The Commission will start drafting an Annex XVII entry proposal based on the received documentation.
- **Universal PFAS restriction:** the Annex XV proposal by the 5 Member States has been submitted to ECHA in February 2023. A public consultation was held from March to September 2023. During the public consultation Belgium has submitted 2 written comments (see comments nr 4024 and 9274 of the RCOM documents on the ECHA site: <https://echa.europa.eu/nl/registry-of-restriction-intentions/-/dislist/details/0b02336e18663449b>). The RAC will now finalize its opinion and the SEAC will finalize its draft opinion, after which a 60 day public consultation will be held on the draft SEAC opinion. This second Public Consultation is planned for end 2024/beginning 2025. After this consultation the Opinions and the Background document will be finalized and send to the Commission, who will then start drafting a restriction proposal to be included in REACH.

1.5.2 PFAS in bottled water

In June 2023, the FPS Public Health submitted new legislation on water intended for human consumption in order to transpose the measures of European Directive (EU) 2020/2184 as far as federal competences are concerned, i.e. water used in food manufacturing processes, including bottled water. This legislation contains a standard of 100 ng/l for the sum of 20 PFAS substances. This standard is accompanied by monitoring obligations for food companies and corrective measures in the event of non-compliance. This legislation should have come into force on January 1, 2024, i.e. 2 years earlier than the date set by the European directive. However, because of the decision of the Council of Ministers on July 20, 2023, conformed in 2nd reading on November 10, 2023, to interrupt the process of adopting this legislation pending the opinion of the Superior Health Council, which was requested in order to assess the relevance of setting an additional measure, namely a non-binding guide value of 4 ng/l for the sum of 4 specific PFAS substances. The adoption and entry into force of this legislation has therefore been postponed until 2024, at an unspecified date.

1.5.3 Water, drinking water and groundwater directive

1.6 International activities

1.6.1 Stockholm Convention

As of 2023, PFHxS, its salts and related compounds have been added to the Stockholm convention without specific exemptions. Canada has proposed to include long-chain PFCA's (C9-C20 PFCA's) into the convention, this work is still ongoing.

1.6.2 OECD

In 2023 the CCIEP working group has created a Belgian entry on the webpage of the OECD on PFAS. The webpage can be consulted via the following link: <https://www.oecd.org/chemicalsafety/portal-perfluorinated-chemicals/countryinformation/belgium.htm>

The OECD is currently working on the following reports regarding PFAS:

- Report on PFAS in Cosmetics
- Report on PFAS and Alternatives in Coatings, Paints and Varnishes (CPVs)
- Synthesis Report on Understanding Fluoropolymers and Their Life Cycle
- Synthesis Report on Understanding Perfluoropolyethers (PFPEs) and Their Life Cycle

In February 2023 the OECD will organize a global event on PFAS give the opportunity to OECD member countries to share information and insight regarding PFAS. The Flemish authorities will be presenting during one of the sessions.

1.7 Research activities

1.7.1 Belgian universities

The following studies have been published recently by the University of Antwerp on PFAS in biota and reusable straws:

- <https://link.springer.com/article/10.1007/s11356-023-27237-1>
- <https://www.sciencedirect.com/science/article/pii/S0269749123013064?via%3Dihub>
- <https://link.springer.com/article/10.1007/s11356-022-23799-8>
- <https://www.sciencedirect.com/science/article/pii/S0013935122019715?via%3Dihub>
- <https://www.tandfonline.com/doi/full/10.1080/19440049.2023.2240908?src=>

1.7.2 PARC

Given the size of the PARC project, a complete overview of all ongoing tasks related to PFAS is not possible, but below is a list of some items from the recently received annual work program for year 3 (still to be approved, but most are tasks that have already started) and from the presentations of the Belgian researchers given at the June 2023 national hub meeting

- PFAS is one of the prioritized substances within PARC and is addressed within different work packages & tasks, both monitoring, toxicology and improvement/innovation of chemical risk assessment
- Some examples for work package 4 around monitoring:
 - collection of existing environmental monitoring data for PFAS to establish a baseline and more measurements can be performed, a pilot project on PFAS & ED environmental monitoring is set up and attention is paid to long-term storage of "FAIR" data
 - targeted HBM study for PFAS hotspots or contaminated regions.
 - HBM general population: teenagers (incl. VL) & adults (incl. Wallonia), also within an occupational HBM study PFAS could be analyzed PFAS could be analyzed within an occupational HBM study
 - re-evaluation of the PFAS HBM guidance values
- Also within work package 5 on toxicology, there are several ongoing case studies on PFAS, e.g. on bioavailability of PFAS, as well as within work package 6 on improvement & innovation of risk assessment, e.g. modeling of aggregated exposure (via multiple sources) to PFAS, case studies studying "mixtures" (so-called cocktail effect) (see also NAPED co-funding of Belgian researchers) and a health impact project. Within work package 9 on capacity building there also work on PFAS, e.g. interlaboratory comparisons for PFAS analysis.
- Belgian researchers participate in several of these tasks, e.g. OVAM & ISSEP & other Belgian institutes on the PFAS baseline and further environmental monitoring, VITO and other participating Flemish FLEHS institutes and ISSEP on the HBM for the general population and VITO on the real life mixtures case study (see NAPED), KULeuven on an occupational HBM study - waste management
- Results of this project are published on their website, <https://www.eu-parc.eu/>