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# Workshop on the latest advancements of PFASs risk assessment

European Food Safety Authority (EFSA)

## Abstract

Per- and polyfluoroalkyl substances (PFASs) comprise a large group of chemicals, which are extremely persistent and are likely to remain in the environment for extended periods, raising concerns about their long-term impact on both human health and the environment. On the 17<sup>th</sup> November 2025, EFSA organised an online workshop that brought together EU and international agencies, Member States, universities, public research institutes, industry stakeholders and NGOs active in the risk assessment of PFASs, with the aim to share knowledge and to identify opportunities for future collaboration and synergies amongst stakeholders. Ongoing scientific assessments of PFASs were shared, followed by different perspectives from stakeholders. General discussions outlined the current scientific and methodological gaps, the high number and the complexity of PFASs to be addressed. PFASs pose a complex and long-standing scientific and regulatory challenge that requires coordinated actions across disciplines, sectors and organisations. Continued dialogue, collaboration, engagement, capacity building and communication are essential to foster a strong community of practice and to translate scientific knowledge into effective protection of human health and the environment.

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# 1 Introduction and objectives

Per- and polyfluoroalkyl substances (PFASs) comprise a large group of synthetic chemicals used for their water-, grease-, and stain-resistant properties in products such as non-stick cookware, food packaging, water-repellent clothing, and firefighting foams. Pesticide active substances as well as some of their metabolites (e.g. TFA) can also be PFASs. Humans may be exposed to PFASs through various sources, including food, consumer products, and the environment.

Also referred to as “forever chemicals”, PFASs are extremely persistent and are likely to remain in the environment for extended periods, raising concerns about their long-term impact on both human health and the environment.

Public authorities at the international, EU, and Member State levels are working to assess the risks that PFASs pose to human health. EFSA collaborates closely with national authorities and other stakeholders to collect and analyse monitoring data on PFAS contamination in food. In addition, EFSA provides scientific advice on the risks associated with PFASs in food, which supports the European Commission and Member States in making informed decisions on risk management.

On the 17<sup>th</sup> November 2025, EFSA organised an online workshop that brought together World Health Organisation (WHO), EU agencies, Member States (MSs), the EU Partnership on the Assessment of Risk from Chemicals (PARC), the European Commission and other interested stakeholders to discuss the latest scientific developments on PFASs including risk assessment.

## Objectives

The goal of the workshop was to share knowledge and to identify opportunities for future collaboration and synergies amongst stakeholders. In particular, the online event aimed at:

- Share knowledge on ongoing assessments taking place in different international organisations, EU agencies, MSs and at the research level.
- Connect different actors currently working on PFASs.
- Identify potential synergies and opportunities for collaboration.

The Workshop on the latest advancements of PFAS risk assessment comprised three sessions addressing i) the scientific assessments of PFASs, ii) the perspectives of stakeholders on the scientific assessments of PFASs, and iii) general discussions. The detailed agenda of the event is reported in **Appendix A**. The agenda as well as all slides presented during the event are publicly available on the website of the event<sup>1</sup>. An open microphone questions & answers session was held at the end of each session to engage with participants beyond the speakers. It is important to note that the scope of the event did not include risk management issues.

<sup>1</sup> <https://www.efsa.europa.eu/en/events/workshop-latest-advancements-pfass-risk-assessment>

## 2 Workshop summary of discussions

The workshop comprised 17 speakers and chairs and was attended by more than 300 participants online. The event attracted a diverse group of stakeholders from various affiliation categories coming from 53 countries. Of all registrants, the private sector had the highest representation (40%), followed by EU and non-EU national authorities/institutions and agencies (23%) and by universities and public research institutes (22%). Other registered participants included EFSA staff and scientific panels, trade associations, international organisations, NGOs, consulting and press/media (see **Figure 1**).

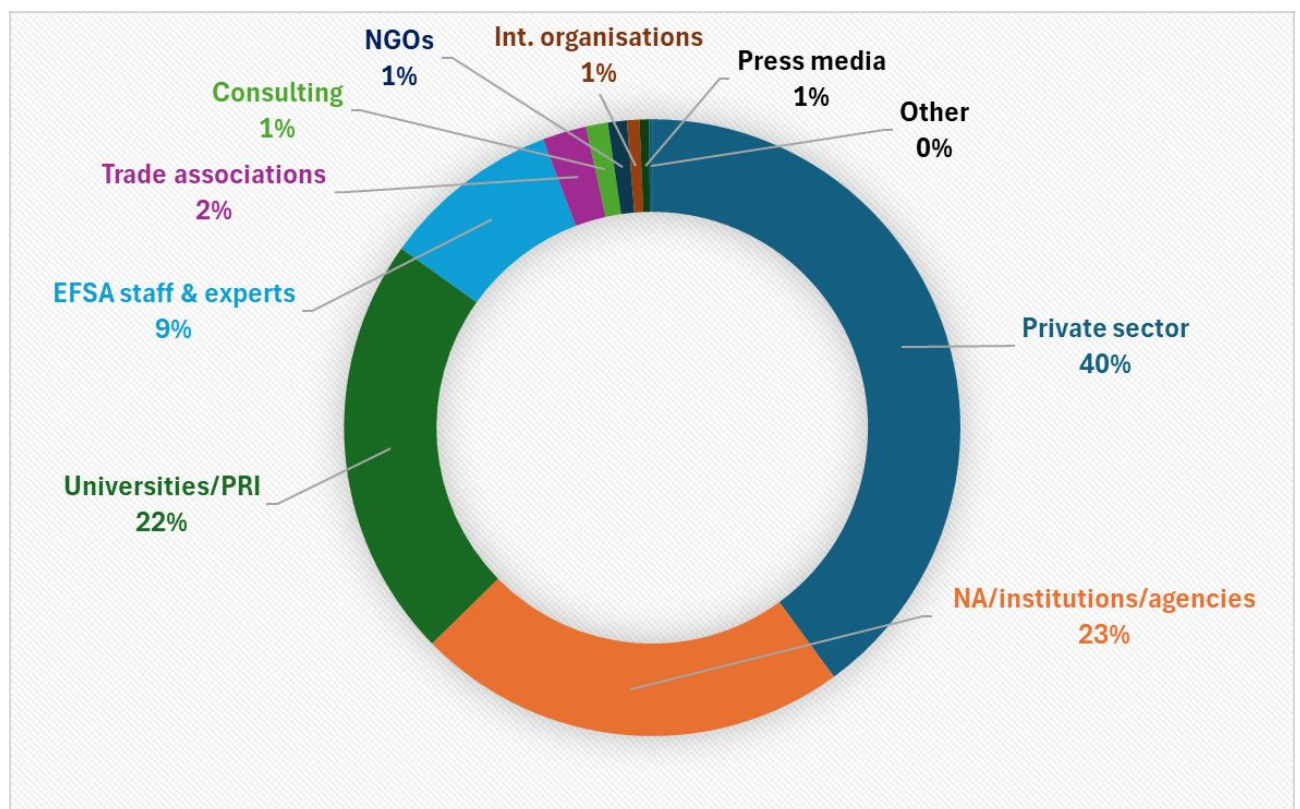



Figure 1: Distribution of affiliation categories of the registrants for the workshop (the data reflect the registrants and not the actual attendance). Int.: International; NA: National Authorities; NGOs: Non-Governmental Organisations; PRI: Public Research Institutes.

### 2.1. Scientific assessments of PFASs

The first session of the workshop was opened by **Guilhem de Sèze** (EFSA, Italy), who clarified the main objectives of the workshop (cf. Section 1). Guilhem also emphasised the need for coordinated efforts across institutions and disciplines in order to address the scientific and environmental challenges posed by PFASs, as well as the need for consistent, evidence-based approaches to its risk assessment. Collaboration between EU agencies, Member States, researchers, stakeholders and international partners is essential to advance the science regarding PFASs.



**Virunya Bhat (WHO, Switzerland)** presented about the WHO initiatives to evaluate PFASs, with particular focus on its Phase 1 which encompassed i) the development of new methodology for conducting a landscape review to identify and prioritize key health effects and occurrence of PFASs and ii) the development of general methodology to derive health-based guidance values (HBGVs) to PFASs through food and water exposure. The landscape review was conducted by compiling a composite database from existing evidence maps, scoping and systematic reviews. Regarding occurrence, 49 databases of systematic evidence maps and reviews were compiled representing around 300,000 observations among 77 PFASs. Regarding health effects, 48 databases of systematic evidence maps and reviews were compiled representing around 57,000 observations among 66 PFASs. The main challenges encountered were discussed, including e.g., differences in ways of capturing the information by authors and the limited reporting of environmental occurrence data. The outcome of the landscape review allowed to identify 77 ingested PFASs (based primarily on occurrence in food, water and biomonitoring information) and 18 health effect categories for PFASs (as reported in existing evidence maps and databases). Following a prioritization scheme developed by the WHO Technical Advisory Group on PFAS Assessment by weighting the most relevant information, 18 ingested PFASs and 6 health effect categories (i.e. cancer, developmental toxicity, hepatic toxicity, immunotoxicity, metabolic toxicity and reproductive toxicity) were prioritised for future assessment in Phase 2. The Phase 1 of WHO's evaluation of PFASs also comprised the development of a preliminary protocol for systematic evidence collection and evaluation supporting the derivation of HBGVs for PFASs<sup>2</sup>. The protocol included among others, approaches to the risk assessment of PFAS mixtures and the proposed methodology for deriving HBGVs for individual PFASs and PFAS mixtures. The Phase 2 of WHO's initiatives to evaluate PFASs is foreseen to take place from 2025 to 2027 supported by the European Commission (EC) and others. The main activities will encompass i) the systematic evidence collection and evaluation of the 6 health effect categories and 18 PFASs prioritised in Phase 1, ii) select grouping for mixtures risk assessment and identify risk assessment approach(es) for individual PFASs and/or PFAS mixtures, and iii) propose a range of HBGVs. The outcomes of Phase 2 will then set the stage for a WHO-FAO Joint Expert Meeting on Food Additives (JECFA) and Guidelines for Drinking Water Quality (GDWQ) expert group assessments.


**Chantra Eskes (EFSA, Italy), Ron Hoogenboom (EFSA Scientific Committee & Wageningen University & Research, Netherlands), Marco Binaglia (EFSA, Italy)** presented on the EFSA risk assessments on PFASs. **Chantra Eskes** provided an overview of EFSA's activities on PFASs, which includes i) risk assessment activities of PFASs in the areas of contaminants in the food chain, pesticides and food contact materials, ii) the monitoring of PFASs in food following the EC recommendation to monitor the presence of PFASs in food from 2022 to 2025<sup>3</sup>; iii) the collaborations and exchanges EFSA has established regarding PFASs with the EU Member States, PARC, sister agencies in the EU and with the WHO; and iv) a project which aimed to investigate the use of NAMs to assess the immunotoxicity of PFASs<sup>4</sup>. **Ron Hoogenboom** followed by presenting the main outcomes of the 2020 EFSA Scientific Opinion on the risks to human health related to the presences of PFASs in food<sup>5</sup>. Based on several similar effects in animals, toxicokinetics and observed concentrations in human blood, the CONTAM Panel decided to perform the assessment for the sum of four PFASs: PFOA, PFNA, PFHxS and

<sup>2</sup> <https://rivm.openrepository.com/entities/publication/90a93c6f-8518-49d0-90ae-3b3cf6d36301>

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

<sup>4</sup> <https://efsa.onlinelibrary.wiley.com/doi/10.2903/sp.efsa.2024.EN-8926>

<sup>5</sup> <https://efsa.onlinelibrary.wiley.com/doi/10.2903/j.efsa.2020.6223>



PFOS. These made up half of the lower bound exposure to those PFASs with available occurrence data, the remaining contribution being primarily from PFASs with short half-lives. Based on available studies in animals and humans, effects on the immune system were considered the most critical for the risk assessment. A study based on infants from Germany showed an inverse association between serum levels of PFOA, but also the sum of PFOA, PFNA, PFHxS and PFOS, and antibody titres against haemophilus influenzae type b (Hib), diphtheria and tetanus in serum sampled from 1-year-old infants, predominantly breastfed. A lowest BMDL<sub>10</sub> of 17.5 ng/mL at the age of 1 year was derived for the sum of PFOA, PFNA, PFHxS and PFOS, based on the inverse association between serum levels of the sum of these four PFASs and antibody titres against diphtheria. Using PBK modelling, this serum level of 17.5 ng/mL in children was estimated to correspond to long-term maternal exposure of 0.63 ng/kg bw per day. Since accumulation over time is important, a tolerable weekly intake (TWI) of 4.4 ng/kg bw per week was established. This TWI also protects against other potential adverse effects observed in humans. However, the need for additional information was identified, in particular regarding the mode of action behind the decreased vaccination response, on the immunotoxicity of other PFASs, and the need to derive relative potency factors for this endpoint. Based on the estimated dietary exposure, but also reported serum levels, the CONTAM Panel concluded that parts of the European population exceed the established TWI, which is of concern. **Marco Binaglia** presented EFSA's assessments of trifluoroacetic acid (TFA). TFA is a persistent metabolite, which can originate from multiple sources; can be formed from the breakdown of PFAS chemicals including some active substances used in plant protection products and biocidal products; and may leach into groundwater or be present as a residue in crops. Among 59 cases, 12 PFAS active substances were shown to produce TFA in residues, soil and/or groundwater. EFSA has assessed TFA formed by pesticides since many years. In 2024, a new classification and labelling proposal has been submitted to ECHA for TFA, and in the same year, the EC requested EFSA to review of the toxicological reference values for TFA<sup>6</sup>. A targeted call for data was launched by EFSA between 6 August to 7 October 2024 addressed to MSs, to the competent authority of Germany, to the TFA task force and to the applicants of all dossiers submitted within the EFSA peer review processes. In total, 170 studies and a position paper were collected. An EFSA Working Group (WG) was established to address the following questions: i) based on the results of the targeted call for data, do the available data raise a concern for genotoxicity; ii) based on the results of the targeted call for data, what is the most suitable basis (leading adverse outcome; critical adverse effect) for setting the acceptable daily intake (ADI); iii) based on the results of the targeted call for data, is there a need for setting an acute reference dose (ARfD), and if so, what is the most suitable basis (leading adverse outcome; critical adverse effect). A draft statement was prepared and shared for a 60-day public consultation from 22 July to 22 September 2025. A total of 177 comments were received from a wide range of stakeholders. The draft statement proposes an ADI of 0.03 mg/kg bw per day (expressed as sodium trifluoroacetate), and an ARfD of 0.6 mg/kg bw (expressed as sodium TFA). The comments received from the public consultation are currently being addressed by the WG, whereby consultation with hearing experts is foreseen (from e.g. NGOs, MSs and industry). The current deadline for the final Statement is foreseen on 31<sup>st</sup> July 2026. Finally, a joint new request has been received by EFSA and ECHA to consider the fate and behaviour of TFA in soil and water<sup>7</sup>. This is linked to the increased concerns about the presence of TFA in the environment and human exposure. The main objectives of the new mandate will be to compile a list of approved substances with potential TFA formation, to indicate factors and conditions influencing TFA formation in

<sup>6</sup> <https://open.efsa.europa.eu/question/EFSA-Q-2024-00502>


<sup>7</sup> <https://open.efsa.europa.eu/question/EFSA-Q-2025-00693>

soil/surface water systems, to assess the suitability of OECD study guidelines to assess the long-term formation of TFA, and to explore alternative prediction methods.

**Matthieu Schuler (ANSES, France) and Jorge Numata (BfR, Germany)** presented the EU Member States Initiative Group on PFASs. **Matthieu Schuler** provided a historical background on how the EU MS Initiative Group on PFASs was established, its main drivers and the fact that the challenges presented by the PFASs risk analysis require (as much as possible) a harmonised and coordinated approach. The main goals of the initiative are to avoid duplication of work, share developments in all aspects of risk, identify shared concerns and promote convergence. The initiative group is composed of two circles of contributors, i.e. a steering board (SB) for sharing science and science to policy concerns, and a risk assessors team (RAT) for more in-depth sharing of scientific assessments. The initiative benefited from a strong support granted by EFSA to start its activities. The EU Member States Initiative Group on PFASs was launched in 2023 and had regular meetings throughout 2024 and 2025. The Initiative comprises today 12 MSs, as well as the participation of EFSA as an observer. The main results achieved include the establishment of a trusted space for the participating MSs to share early information and contribute with each other, the diversity of countries, the capacity to exchange with international organisations dealing with PFASs challenges, and the low formalism. The new challenges identified include the drawing and following of an explicit roadmap, the focus on data sharing and potentially crossing environmental data with health data, the need to keep flexibility to cope with burning questions, and the need for coherence within the risk management of POPs. **Jorge Numata** provided an overview of all risk assessor team meetings held up to now. In addition, subgroup meetings took place regarding the toxicological information of PFASs beyond EFSA-4, and on the transfer of PFASs in the food chain. The initiative offers a central repository for research, risk assessment activities and scientific communication on PFASs. The proposed selection criteria for prioritising the toxicological information of PFASs beyond EFSA-4 and the selected substances were shown. Finally, concrete examples were given on how the EU MSs PFASs initiative allowed to strengthen ties (e.g. Austria and Switzerland working together on toxicology of PFASs beyond EFSA-4) and avoid duplication of work (e.g. advance notice of transfer studies on cows in Netherlands allowed Germany to concentrate on other species).


**Jorge Numata (BfR, Germany)** provided highlights from the BfR International conference on PFASs – challenges and scientific perspectives in human health risk assessment, which took place on 8-10 October 2025<sup>8</sup>. Regarding the **PFASs assessment and regulations**, it was noted that the EU REACH restriction of PFASs aims to minimise environmental emissions during manufacture, use and disposal and the dossier background document was updated in August 2025 with new use sectors considered and a regulatory landscape increasingly emphasising life-cycle analysis across sectors. In addition, it was noted that in the UK, adult exposure to the EFSA-4 PFASs mainly occurs through the diet (around 10 x more than dust ingestion), followed by drinking water and air inhalation. For infants, breast feeding was reported to be the major pathway, and for toddlers, dust. Regarding **external exposure assessment**, the BfR MEAL total diet study showed low food concentrations in general, but isolated hot spots. Furthermore, it was mentioned that the EU drinking water with its three tiers, i.e. PFASs-20, EFSA-4 and PFASs total, reflects a shift towards sum parameters. Regarding the **development and application of targeted and untargeted analysis**, it was noted that there are currently rapid developments in analytics. New methods quantify 57 PFASs in a single run for food and water. However, sensitivity for feed should be improved. The importance of untargeted methods was

<sup>8</sup> <https://www.bfr-akademie.de/english/archive/2025/pfas2025.html>



highlighted for e.g. highly exposed populations. Regarding **internal exposure**, it was noted that harmonised monitoring in Europe showed a significant percentage of teenagers and adults exceeding the HBGV for PFOS alone and also for the sum of EFSA-4. Pooled biobank samples show a decline in PFASs, but still above the HBGV in vulnerable groups. (Ultra)short-chain PFASs contribute to the overall internal exposure of some populations. It was also mentioned that potential dietary TFA exposure from edible plants may rival (or exceed) that from drinking water, showing that TFA sources are multiple. However, it was also noted that we should avoid regrettable substitution in case TFA-producing pesticides are forbidden. Regarding **in silico methods to describe toxicity and toxicokinetics**, an experimentally-calibrated and model-based prediction of PFASs transfer into eggs, milk, offal and meat for many farm species was presented, which may support regulatory decisions by linking feed levels to maximum levels in food (ConTrans website). Furthermore, a combination of PBK models and in vitro ADME was used to explain PFASs kinetics mechanistically in humans and laboratory animals, and a risk ranking based on accumulation potential was discussed. Finally, a comprehensive QSAR and machine learning model for PFASs toxicity endpoints was addressed. Regarding **PFASs toxicity**, toxicological evidence from rodents clarified effects on thyroid gland, development, immune system, liver and reproduction, which were consistent with human epidemiological data for PFOS, PFOA, PFNA, PFHpA. Furthermore, multiple cohort studies showed correlation with effects like increased cholesterol, thyroid disease, and some cancers. Intervention studies in humans showed that treatment with an anion exchange resin reduced PFAS levels (especially PFOS) in serum. The treatment is offered to affected patients meeting specified criteria. Animal and human data also strongly suggest long-chain PFASs affect the immune system. The mechanisms of immunotoxicity were discussed, as well as the IARC carcinogenicity classification of PFOA and PFOS. Regarding **future perspectives**, a critical view of the currently proposed relative potency factors was given, highlighting that data are still lacking for deriving RPFs for the critical low-dose effect on the immune system. Furthermore, the major gaps in analytical standards and toxicity data for the vast number of PFASs (over 14,000) was highlighted, suggesting the pragmatic use of all available evidence including NAM-generated data and uncertainty analysis. The presentation ended with a graphical representation of the panel discussion.

**Peter van der Zandt (ECHA, Finland)**, provided an overview of the different EU legislations for which action on PFASs are undertaken. Existing and ongoing regulatory actions on PFASs include i) restrictions in the POPs regulation (PFOS, PFOA, PFHxS, C9-C21 PFCAs) and in the REACH regulation (C9-C14 PFCAs, TDFAs, PFHxA, PFASs in firefighting foams; ii) PFASs identified as substances of very high concern under REACH (e.g. HFPO-DA (GenX), PFBS, PFOA); iii) PFASs undergoing substance evaluation under REACH; and iv) PFASs having a harmonised classification and labelling. Regarding **TFA**, the current joint mandate to EFSA and ECHA aims to i) identify biocides and pesticides active substances forming TFA, ii) evaluate the suitability of current degradation test guidelines to assess it, and iii) assess alternative methods to predict TFA concentration (from biocides and pesticides) in groundwater and water bodies. Regarding the **universal PFASs REACH restriction proposal** submitted in 2023 by the Netherlands, Germany, Denmark, Sweden and Norway, the restriction proposal report underwent consultation from March to September 2023, and more than 5600 comments were received. An updated background document was received by ECHA in June 2025, based on the comments received. The state of play of ECHA's committees' evaluation of PFASs was given, including a list of sectors for which provisional conclusions were made. The next steps, timelines and sectors to be discussed were presented. Regarding the **revised drinking water directive**, the limit of 0.5 µg/l for PFASs total and of 0.1 µg/l for the sum of 20 PFASs entered into force in January 2021, with 2 years for MSs to transpose into national legislation. The EC Directorate-General for



Environment (DG ENV) made a grant agreement with WHO to assess risks of relevant PFASs and establish HBGVs for relevant PFASs by 2026. The health effects of TFA will also be assessed. The EC has developed technical guidelines for the methods for monitoring the 'sum of PFASs' and 'PFASs total'. Regarding the **water framework directive, groundwater directive, and environmental quality standard (EQS) directive**, these directives have been revised recently including the addition of new EQS for surface water and groundwater. In the surface water EQS directive, TFA has been included in the sum of 25 PFASs (0.0044 µg/l expressed as PFOA equivalent). In the groundwater directive, quality standards were included for the sum of 20 PFASs linked to the drinking water directive, as well as for the sum of 4 PFASs based on the EFSA opinion (0.0044 µg/l).

**Nadia Cerioli (EEA, Denmark)** provided an overview of the different EEA briefings related to PFASs, including i) PFASs in textiles in Europe's circular economy<sup>9</sup> highlighting how textiles are one of the biggest sources of PFASs pollution in Europe, ii) PFASs pollution in European water bodies<sup>10</sup> indicating that PFOS is widespread throughout European waters, often exceeding regulatory threshold levels, and iii) PFAS polymers in focus<sup>11</sup> reporting that PFAS polymers make up a significant part, 24-40%, of the total volume of PFASs on the EU market and may have severe impacts along their life cycles such as toxic effects, impacts on climate change and on ozone depletion, and hindering the recyclability of products. A number of indicators and signals on PFASs have been published in the EEA zero pollution dashboard such as i) the risks of PFASs for human health in Europe<sup>12</sup>, ii) PFASs in European seas<sup>13</sup>; iii) treatment of drinking water to remove PFASs<sup>14</sup> and iv) PFASs contamination and soil remediation<sup>15</sup>. Upcoming EEA products include a briefing on the polluter pays principle and environmental justice, and signal of PFASs other than PFOS in EU waters.

**Lutz Ahrens (Swedish University of Agricultural Sciences (SLU), Sweden) and Thorhallur Halldorsson (Statens Serum Institute, Denmark; University of Iceland)** provided an overview of the various PARC projects related to PFASs, including i) 7 projects under monitoring and exposure (Work Package (WP) 4), ii) 3 projects under hazard assessment (WP 5); iii) 8 projects under risk assessment (WP 6); and iv) one project regarding FAIR data (WP 7). PARC activities on PFASs aim to address the environmental impact of PFASs (including analysis, transformation, partitioning, across all matrices); the health concerns regarding PFASs (including exposure assessment, human health risks, toxicity assessment tools, modelling) and the regulatory challenges (including regulations, limit values, risk assessment and unknown risks). The presentation highlighted the projects addressing human exposure; PFASs analysis; human biomonitoring; immunotoxicity and neurotoxicity studies; tools for PFASs risk assessment (PBK models, aggregate modelling, exposome, one substance-one assessment (1S1A) concepts, omics and read-across methods); and derivation of guidance values for PFASs exposure. Finally, the presentation addressed the current challenges regarding environmental

<sup>9</sup> <https://www.eea.europa.eu/en/analysis/publications/pfas-in-textiles-in-europes-circular-economy>

<sup>10</sup> <https://www.eea.europa.eu/en/analysis/publications/pfas-pollution-in-european-waters>

<sup>11</sup> <https://www.eea.europa.eu/en/analysis/publications/pfas-polymers-in-focus>

<sup>12</sup> <https://www.eea.europa.eu/en/european-zero-pollution-dashboards/indicators/risk-of-pfas-in-humans>

<sup>13</sup> <https://www.eea.europa.eu/en/european-zero-pollution-dashboards/indicators/pfas-in-eu-seas>

<sup>14</sup> <https://www.eea.europa.eu/en/european-zero-pollution-dashboards/indicators/treatment-of-drinking-water-to-remove-pfas-signal>

<sup>15</sup> <https://www.eea.europa.eu/en/european-zero-pollution-dashboards/indicators/pfas-contamination-and-soil-remediation-signal>

impact, health concerns and regulatory challenges, and provided an overview of PARC's role in bridging science to policy.

During the **Q&A session**, it was discussed that the complexity of risk assessment for the large group of PFAS chemicals requires a structured and evidence-based approach. **Virunya Bhat** explained that their methodology begins by identifying ingested PFAS compounds and the adverse effects documented in systematic reviews and databases. These findings are then prioritized based on the strength of evidence, forming the basis for further assessment. This prioritization relies primarily on scientific data, such as occurrence in food, drinking water, and human biomonitoring, as well as adverse health effects. The focus remained on scientific rigor. A follow-up question was raised whether the lack of alternative solutions should influence prioritization. It was clarified that this factor was not considered during the initial stage of methodology development of Phase 1.

Regarding TFA HBGVs, **Marco Binaglia** confirmed that EFSA is working on developing thresholds that will be also functional to crops for human consumption and animal feed. Another question addressed PTFE-based coatings in food contact material applications. **Sandra Rainieri (EFSA, Italy)** clarified that PTFE itself is not assessed; but that the monomer TFE was evaluated in 2016. The assessment investigated migration and accumulation risks under repeated-use conditions, leading to a scientific opinion on such applications.

The discussion then shifted to global regulatory gaps, highlighting that many countries still lack both PFAS-specific regulations and comprehensive surveillance data. **Mathieu Schuler** emphasized the need for a strategic approach that includes assessing exposure data, identifying degradation PFAS products and metabolites (like TFA) and fostering cross-country comparisons to improve understanding as well as correlating monitoring and/or environmental data from areas with widespread PFASs contamination to health outcomes. This integrated approach, he noted, is essential for identifying relevant toxic PFAS compounds (that would be comparable to the "legacy PFAS" in terms of toxicity) within this huge and diverse chemical group.

On harmonization of analytical methods across EU Member States, **Jorge Numata** highlighted that analytical methods across EU Member States follow European Commission frameworks and EU reference laboratory guidelines. Nevertheless, analytical research data gaps for the analysis of PFASs exist. While gold-standard targeted methods exist, challenges remain due to missing analytical standards for certain compounds. Untargeted analysis and advanced tools like machine learning and AI were discussed as potential solutions to bridge these gaps. Harmonization of methods and sector-specific legislation were identified as important steps for improving comparability and regulatory acceptance.

Discussions also addressed emerging toxicological data on the health effects of PFASs, particularly concerning long-term exposure. **Thor Halldorsson** noted that recent findings remain consistent with EFSA's 2020 opinion, highlighting reduced vaccination response as a key adverse effect associated with prolonged exposure to PFASs.

## 2.2. Stakeholders perspectives on scientific assessment of PFASs

**Mary Gilsenan (EFSA, Italy)** introduced the aim of the session, which was to have an understanding of how PFASs are perceived and managed across different parts of society from producers to consumers. Presentations were given by representatives of four key stakeholder


groups, i.e. NGOs, industry, farmers, and consumers. Each stakeholder has a distinct perspective on the topic, and their contribution is essential to ensure that scientific activities take into account their concerns and views.

**Lauri ten Grotenhuis (BEUC, Netherlands)** discussed the results of PFASs testing on 228 consumer products coming from 9 countries including kitchenware, household textiles and health products. An overview of regulated PFASs and their authorised levels in different articles was given. The results of the testing showed that 72% of the tested products did not contain PFASs. A total of 21% of the tested products contained regulated PFASs, 9% contained forbidden PFASs, and 12% contained PFASs to be banned from 2026. Finally, 7% of the tested products had other or non-identified PFASs, including fluoropolymers. In conclusion, PFASs were found to be widespread throughout different consumer product categories, although in almost all categories there were also products without PFASs. For consumers, it is difficult to choose products without PFASs due to lack of information. Restricted PFASs were found in 9% of the tested products, and fluoropolymers like PTFE still remain a challenge. A number of recommendations were made to consumers, manufacturers and regulators.

**Henrik Bang Jensen (COPA-COGICA, Denmark)** shared experiences from the Danish Agriculture and Food Council, which comprises stakeholders from various sectors going from farm to fork. In Denmark there is no widespread problem with PFASs in Danish food, in general. However, a few cases show that the risk is real and can be complex. For example, in a fire training site, severe contamination with very high exposure occurred due to the fact that a few individuals consumed products from a self-supply farm. Another example are eggs containing PFASs coming from fishmeal, in which the problem was solved by bringing attention to sourcing and PFAS limits in the fishmeal. Furthermore, a diffuse contamination, most likely via sea foam occurred in cattle on coastal grazing areas, in which factors such as season, grazing period and animal type influenced the PFAS levels found in blood and meat samples. These cases show that PFASs contamination can occur in very different ways and environments, highlighting why monitoring and knowledge sharing are important. Food safety is paramount, but it is important to note also that food production, especially with grazing livestock, contributes to other important agendas such as preserving natural habitats, biodiversity, locally produced food, employment in rural areas. When choosing tools to protect consumers from PFASs exposure, it is important to safeguard a balance with these other needs. In conclusion, the importance of the following points were highlighted: of having a shared knowledge base on the sources of PFASs contamination; of having a harmonised data collection and risk assessment lead by EFSA; of having robust monitoring tools and analytical methods that can quickly and reliably identify PFASs in feed, water and in the environment; and of balancing the food safety needs with the other existing needs.

**Angeliki Lysimachou (PAN-Europe, Belgium)** described the outcome of a PAN-Europe position paper on TFA<sup>16</sup> showing that TFA was detected in surface and ground water, in tap water and mineral water, in wine and in higher levels in agricultural hot spots and conventional farms as compared to organic farms. TFA was confirmed to be toxic to reproduction in rabbits and rats, and current protection levels are not protective enough. The presentation concluded by stating that there is an urgent need for strict health-based values, considering multiple exposure routes.

<sup>16</sup> <https://www.pan-europe.info/sites/pan-europe.info/files/public/resources/briefings/Position%20Paper%20TFA%20-%2028072025.pdf>



**Emma Brown (CropLife Europe, Belgium)** presented the perspectives from CropLife Europe on the scientific assessment of PFASs. CropLife Europe treats PFASs and TFA as serious issues that must be managed with sound science. In the EU, plant protection products are subject to one of the world's strictest regimens, with case-by-case science-based assessment. Farmers face climate, market and regulatory pressure and a broad ban of PFASs risks removing last-line tools. CropLife Europe experts are working with authorities to improve data collection and scientific methodologies on TFA and PFASs, supporting proportionate, evidence-based decisions.

During the **Q&A session**, the complexity of PFASs risk assessment and the fact that it requires both scientific and regulatory innovation was discussed. **Matthieu Schuler** highlighted that, while PFASs share common characteristics such as environmental persistence and mobility, differences exist in their behaviour across compartments like soil and water (e.g. shorter-chain PFASs being more prevalent in water). He stressed the need to define, within the global PFAS group, PFAS families (with really comparable toxicological mode of action), similar to the approach used for dioxins and other chemical compounds, not for restriction purposes but to better address existing exposure scenarios.

**Nadia Cerioli** noted that numerous monitoring activities are ongoing regarding water, consumer products and others. However, the main challenge lies in coordinating these efforts to achieve a unified view of the problem. She emphasized that the recently adopted 1S1A legislative package represents a significant step forward. This regulation will enable the creation of a common data platform, fostering collaboration among EU agencies and supporting risk evaluation from multiple perspectives. Additionally, the upcoming EU-wide early warning system for chemicals, coordinated by EEA, aims to identify emerging or underestimated risks. She also referenced the European Industry Action Plan (July 2025), which foresees a new monitoring framework for PFASs to centralize information, identify pollution hotspots, showcase remediation practices, and collect legislative data. These two initiatives, albeit not final solutions, mark important progress toward collective data sharing.


A follow-up question explored how the 1S1A approach could close gaps in information sharing. **Gloria Lopez Galvez (EFSA, Italy)** confirmed that the 1S1A legislative package has been recently adopted by the EU Council. The Data Regulation, part of the 1S1A package, foresees the establishment of a common data platform on chemicals (EU-CDPC), which will facilitate the access to chemicals data, including PFASs. Under the Data Regulation, a so-called *Framework of indicators* will be established to measure the effectiveness of the EU chemical strategy; occurrence and/or exposure data on PFASs might be a candidate indicator. Another key feature of the Regulation is the collection of human biomonitoring data throughout a Union-wide study.

Regarding EFSA's assessments, **Chantra Eskes** clarified that, the current assessment of TFA is the only risk assessment on PFASs conducted by EFSA after the 2020 EFSA Opinion on the risk to human health related to the presence of PFASs in food<sup>17</sup>. However, following the EC Recommendation 2022/1431 on the monitoring of PFASs in food, collection of PFASs monitoring data is ongoing via EFSA's annual call for data<sup>18</sup>, to strengthen the evidence base for future evaluations. EFSA is also actively liaising with other organisations to ensure a common dialogue regarding the risk assessment framework of PFASs.

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<sup>17</sup> <https://efsa.onlinelibrary.wiley.com/doi/10.2903/j.efsa.2020.6223>

<sup>18</sup> <https://www.efsa.europa.eu/en/call/annual-call-continuous-collection-chemical-contaminants-occurrence-data-food-and-feed-2026>



**Matthieu Schuler** suggested exploring whether connecting environmental and health data could accelerate chemical risk assessments — a proposal supported by Carlos das Neves (EFSA), who noted that numerous studies are underway at the European level. However, he stressed that these studies must meet minimum quality requirements to ensure their data can be used for regulatory science.

Participants from the industry sector raised the need for improved data on the half-life of PFASs in humans and in the environment. **Matthieu Schuler** agreed, noting that half-lives vary across compartments such as water and soil. Participants added that degradation times remain unclear, while **Jorge Numata** confirmed that the persistence of PFASs is well-documented: some PFASs degrade into other PFASs having their own half-lives, and polymers can release PFASs into the environment, reinforcing their classification as persistent substances.

### 2.3. General discussions

**Carlos das Neves (EFSA, Italy)** steered the general discussions and addressed possible opportunities to facilitate knowledge exchange, collaboration and synergies among stakeholders. The following key challenges were identified.

- Significant scientific knowledge gaps exist, particularly in understanding the formation of relevant PFAS compounds such as TFA in soil and water, as well as the lack of standardisation of methods for assessing PFASs.
- PFASs represent an extremely large family of substances which, although a grouping approach might be useful, will require a harmonised and coordinated approach to address the existing contamination and exposure through e.g., the use of common data platforms.
- There is a need to translate the scientific knowledge into regulatory use. There is an extensive amount of research being conducted, but its utilisation into regulatory applications may be limited, related to the need to validate and standardise methodologies or simply to have sufficient amount of data sets, modelling, etc.
- Strong communication, collaboration and capacity building are necessary to address the complexity of issues PFASs encompass.

In order to address these challenges, the following potential opportunities were highlighted.

- Strengthening collaborations and synergies through e.g., sharing of information across scientific, academic and regulatory domains, can improve the understanding of PFASs and reduce duplication of efforts. Such synergies can also facilitate the harmonisation of analytical methods, of risk assessment methodologies and their integration into regulatory frameworks. Inclusiveness can be ensured by engaging with all involved actors such as regulators, agencies, scientists, consumers, industry and NGOs.
- Establishing a coordinated approach for data collection and sharing to address the environmental and health impacts of PFASs. Such an approach includes a coordinated monitoring framework, as well as the integration of data on environmental, animal and human health to strengthen PFASs risk assessments.
- Increasing capacity building, within and among Member States, to tackle the diversity of challenges posed by PFASs, and keeping the PFAS community of practice operational.

- Facilitating the sharing of data and information through the recently adopted 1S1A legislative package as an enabler for coordination and identification of data gaps.

Overall, progressing the risk assessment of PFASs and closing current scientific knowledge gaps requires determination, commitment and considering all interested parties. To achieve this, fostering dialogue, engagement, and collaboration are needed. Such commitments can enable the development of a joint strategy to prioritise knowledge gaps and generate missing data. They also promote support, training and capacity building. Finally, a coordinated and clear communication network strengthens the risk communication on PFASs among all parties involved.

### 3 Conclusions

The workshop achieved its objective by bringing together a broad range of stakeholders active in the risk assessment of PFASs, including WHO, EFSA, ECHA, EEA, the Member State initiative on PFASs, PARC, as well as representatives from different stakeholders such as industry, food producers, NGOs, and consumers. The discussion confirmed that PFASs pose a complex and long-standing scientific and regulatory challenge that requires coordinated actions across disciplines, sectors and organisations.

While significant progress has been made, participants highlighted scientific and methodological gaps, as outlined above. Addressing these gaps will require closer alignment between academic research, monitoring activities and regulatory risk assessment. The workshop pointed to several concrete ways forward. These include:

- Strengthening coordination and information-sharing across existing initiatives to avoid duplication and accelerate progress;
- Advance harmonised monitoring data collection, and Findable, Accessible, Interoperable, Reusable (FAIR) data-sharing frameworks linking environmental and human data;
- Supporting capacity-building and training, particularly for Member States, to ensure consistent implementation of upcoming legislation;
- Improving coordinated, transparent risk communication to counter misinformation and build public trust.

Overall, the workshop underlined that advancing PFASs risk assessment and closing key knowledge gaps will depend on determination, sustained collaboration and a shared commitment to act collectively. Continued dialogue and engagement are essential to maintain a strong community of practice and to translate scientific knowledge into effective protection of human health and the environment.

## Glossary and Abbreviations

1S1A	One substance–one assessment
BEUC	The European Consumers Organisation
ADI	Acceptable daily intake
ANSES	French Agency for Food, Environmental and Occupational Health & Safety
ARfD	Acute reference dose
BfR	German Federal Institute for Risk Assessment
bw	Body weight
CDPC	Common data platform on chemicals
Copa and Cogeca	EU Agrocooperative & EU Farmers
DG ENV	Directorate-General for Environment
EC	European Commission
ECHA	European Chemicals Agency
EEA	European Environmental Agency
EFSA	European Food Safety Authority
EQS	Environmental quality standard
EU	European Union
GDWQ	Guidelines for Drinking Water Quality
FAIR	Findable, Accessible, Interoperable, Reusable
FAO	Food and Agriculture Organization of the United Nations
HBGV	Health-based guidance value
Hib	Haemophilus influenzae type b
HFPO-DA	Hexafluoropropylene oxide dimer acid
JECFA	WHO-FAO Joint Expert Meeting on Food Additives
MS	Member States
PAN-Europe	Pesticides Action Network Europe
PARC	EU Partnership on the Assessment of Risk from Chemicals
PFASs	Per- and polyfluoroalkyl substances
PFBS	Perfluorobutane sulfonic acid
PFCAs	Perfluorocarboxylic acids
PFHpA	Perfluoroheptanoic acid
PFHxA	Perfluorohexanoic acid
PFHxS	Perfluorohexane sulfonic acid
PFOA	Perfluorooctanoic acid
PFOS	Perfluorooctane sulfonic acid
PFNA	Perfluorononanoic acid
NAM	New Approach Methodologies
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals
TFA	Trifluoroacetic acid



## Workshop on the latest advancements of PFASs risk assessment



TDFAs	(3,3,4,4,5,5,6,6,7,7,8,8,8-tridecafluorooctyl) silanetriol derivatives
TWI	Tolerable weekly intake
WG	Working Group
WHO	World Health Organization
WP	Work Package

## Appendix A - Agenda

### Workshop on latest advancements of PFASs risk assessment

EFSA online event

17 November 2025, 14.00-18.00

#### Final agenda

13:30-14:00	<b>Registration</b>	
<b>SESSION 1   Scientific assessments of PFASs</b>		
<b>Chair: Guilhem de Seze, EFSA (IT)</b>		
14:00-14:10	<b>Welcome and introduction to the event</b>	Guilhem de Sèze, EFSA
14:10-14:20	<b>WHO initiatives to evaluate PFAS (Phase 1)</b>	Virunya Bhat, WHO, Switzerland
14:20-14:30	<b>EFSA risk assessments on PFASs</b>	Chantra Eskes, EFSA, Italy  Ron Hoogenboom, EFSA SC, WUR, Netherlands  Marco Binaglia, EFSA, Italy
14:30-14:40	<b>EU Member States Initiative Group on PFAS</b>	Matthieu Schuler, ANSES, France  Jorge Numata, BfR, Germany
14:40-14:50	<b>BfR international conference on PFASs</b>	Jorge Numata, BfR, Germany
14:50-15:00	<b>ECHA activities on PFASs</b>	Peter van der Zandt, ECHA, Finland
15:00 – 15:10	<b>EEA reports on PFASs</b>	Nadia Cerioli, EEA, Denmark
15:10 – 15:20	<b>PARC activities on PFASs</b>	Lutz Ahrens, University of

		Agricultural Sciences, Uppsala, Sweden  Thorhallur Halldorsson, EFSA SC; Statens Serum Institute, Denmark; University of Iceland, Reykjavík, Iceland
15:20 – 15:50	<b>Questions and answers</b>	Chair, Speakers, Participants
15:50 – 16:10	<b>Coffee break</b>	
<b>SESSION 2   Stakeholders perspectives on scientific assessment of PFASs</b> <b>Chair: Mary Gilsean, EFSA (IT)</b>		
16:10- 16:15	<b>The European Consumers Organisation (<a href="#">BEUC</a>)</b>	Lauri ten Grotenhuis, Netherlands
16:15- 16:20	<b>EU Agrocooperative &amp; EU Farmers (<a href="#">Copa and Cogeca</a>)</b>	Henrik Bang Jensen, Denmark
16:20- 16:25	<b>Pesticides Action Network Europe (<a href="#">PAN-Europe</a>)</b>	Angeliki Lyssimachou, Belgium
16:25- 16:30	<b><a href="#">CropLife</a> Europe</b>	Emma Brown, Belgium
16:30 – 17:00	<b>Questions and answers</b>	Chair, Speakers, Participants
<b>SESSION 3   General discussions</b> <b>Moderator: Carlos das Neves, EFSA (IT)</b>		
17:00- 17:45	<b>General discussions</b>	Carlos das Neves, EFSA, Participants
17:45- 18:00	<b>Concluding remarks</b>	Carlos das Neves, EFSA